



ADAPTOGENS

Herbs for Strength,
Stamina, and
Stress Relief



David Winston and Steven Maimes

Adaptogens

Herbs for Strength, Stamina,
and Stress Relief

David Winston, RH(AHG),
and Steven Maimes



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Rochester, Vermont

I dedicate this book to my late nephew Nathaniel Hall, who brought humor, challenges, growth, and a warrior spirit into my life and this great life. He will be missed by all who knew him.

DAVID



I dedicate this book to my family and the next generation.

STEVEN

Adaptogens

“Brilliant! Fully researched, full of information not readily available, as well as being practical and easy to digest. The authors have managed to blend the traditional and recent scientific information into a fully comprehensive and informative text. This will become a classic, a definitive work on this most important group of medicinal plants.”

ROSEMARY GLADSTAR, FOUNDER OF UNITED PLANT
SAVERS AND AUTHOR OF *HERBAL HEALING FOR
WOMEN*

“Essential reading for all involved with adaptogens, whether practitioners or consumers. This is the first comprehensive guide to adaptogens based on good herbalism, good science, and NO hype! A truly excellent book.”

DAVID HOFFMANN, BSc, FNIMH, AUTHOR OF
*MEDICAL HERBALISM AND HERBAL PRESCRIPTIONS
AFTER 50*

“Adaptogenic herbs can be most useful in the quest for health in our stressful society. Finally, David Winston and Steven Maimes explain and champion the use and the benefits of these important herbs.”

JAMES A. DUKE, AUTHOR OF *THE GREEN PHARMACY*

“With *Adaptogens*, David Winston and Steven Maimes have finally made this important healing concept accessible to a wider audience. We need adaptogens—gentle remedies that, over time, have the powerful effect of restoring and protecting our health on many levels. David Winston’s vast clinical and practical knowledge of herbs adds tremendously to the value of the book.”

CHRISTOPHER HOBBS, AUTHOR OF *HANDMADE
HERBAL MEDICINES AND NATURAL THERAPY FOR
YOUR LIVER*

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DAVID

The herb that opened my eyes to adaptogens was holy basil. I would have to say that the presence of this particular herb called me forth to write this book.

As a researcher of herbal adaptogens, I acknowledge the many herbalists who have written about herbs and adaptogens, including coauthor David Winston, who contributed from his vast knowledge of herbs. There are two herbalists that have directly influenced my work; they are Kerry Bone and Paul Schulick.

I would also like to acknowledge the Great Tradition, the wisdom of the ages, and the healing plants that God created. Also, the watchwords: Remember. Be Simple. Be Kind.

STEVEN

Contents

[Cover Image](#)

[Title Page](#)

[Dedication](#)

[Epigraph](#)

[Acknowledgments](#)

[Introduction](#)



[Part One: Herbal Adaptogens](#)

1. [Herbal Medicine around the World](#)

[INTERNATIONAL USE OF HERBAL MEDICINES](#)

[RESEARCH](#)

[TRADITIONAL HERBAL MEDICINE](#)

[HERBAL PERCEPTIONS TODAY](#)

[OFFICIAL STANDARDS FOR PHARMACEUTICALS](#)

2. [Adaptogens: An Overview](#)

[DEFINING ADAPTOGENS](#)

[DIFFERENT PERSPECTIVES ON ADAPTOGENS](#)

[OVERVIEWS OF ADAPTOGENS](#)

[ADAPTOGENS AND PHYTOCHEMICALS](#)

[HOW ADAPTOGENS WORK](#)

3. [History of Adaptogens](#)

[MODERN HISTORY—RUSSIA](#)

[AYURVEDA: THE TRADITIONAL MEDICINE OF INDIA](#)

[CHINESE HERBAL MEDICINE](#)

[ADAPTOGENS IN NORTH AMERICA](#)

4. [Actions of Adaptogens](#)

[ADAPTOGENS AND STRESS](#)

[ADAPTOGENS AND HEALTH AND WELL-BEING](#)

[MIND-BODY INTERACTIONS](#)
[STRIVING FOR HEALTH](#)
[HEALTH CLAIMS FOR HERBAL MEDICINE](#)
[EFFICACY AND SAFETY OF PHARMACEUTICAL DRUGS](#)
[HERBAL EFFICACY AND SAFETY](#)
[SCIENCE, BELIEF, AND PLACEBOS](#)
[STIMULANTS, TONICS, AND ADAPTOGENS](#)
[HEALING THEORY: WESTERN AND EASTERN](#)

5. [Adaptogens and the Stress Response](#)

[THE BODY'S RESPONSE TO STRESS](#)
[HANS SELYE'S GENERAL ADAPTATION SYNDROME](#)
[HOMEOSTASIS AND ALLOSTASIS](#)
[STATE OF NONSPECIFIC RESISTANCE](#)

5. [Health Benefits of Adaptogens](#)

[ADRENAL FATIGUE](#)
[AGING AND LONGEVITY](#)
[ANXIETY AND DEPRESSION](#)
[ARTHRITIS](#)
[ATHLETIC PERFORMANCE](#)
[BRAIN FUNCTION](#)
[BREATHING PROBLEMS](#)
[CANCER](#)
[CARDIOVASCULAR FUNCTION](#)
[DIABETES AND BLOOD SUGAR LEVELS](#)
[DIGESTION](#)
[EYESIGHT](#)
[FATIGUE](#)
[IMMUNE SYSTEM](#)
[LIVER DAMAGE \(HEPATOPROTECTIVE ACTIVITY\)](#)
[MUSCULOSKELETAL HEALTH](#)
[PSYCHOSPIRITUAL HEALTH \(MIND-BODY-SPIRIT CONDITION\)](#)
[SEX HORMONE REGULATION](#)
[SKIN, HAIR, AND NAILS](#)
[SLEEP PROBLEMS](#)
[STRESS](#)
[URINARY SYSTEM](#)
[WEIGHT GAIN AND OVEREATING](#)

[Part Two: Materia Medica](#)

[Using the Materia Medica](#)

[TASTE/ENERGY](#)
[HERBAL SAFETY](#)
[DOSAGE](#)
[HERBAL PREPARATIONS](#)

7. [Monographs on Adaptogens](#)

[AMERICAN GINSENG](#)
[AMLA](#)
[ASHWAGANDHA](#)
[ASIAN GINSENG](#)
[ASTRAGALUS](#)
[CORDYCEPS](#)
[DANG SHEN](#)
[ELEUTHERO](#)
[GUDUCHI](#)
[HE SHOU WU](#)
[HOLY BASIL](#)
[JIAOGULAN](#)
[LICORICE](#)
[LYCIUM](#)
[PRINCE SENG](#)
[REISHI](#)
[RHAPONTICUM](#)
[RHODIOLA](#)
[SCHISANDRA](#)
[SHATAVARI](#)
[SHILAJIT](#)

3. [Nervines: Complementary Herbs for Adaptogens](#)

[BLUE VERVAIN](#)
[CHAMOMILE](#)
[FRESH MILKY OAT](#)
[HAWTHORN](#)
[LEMON BALM](#)
[LINDEN](#)
[MIMOSA](#)
[MOTHERWORT](#)
[PASSIONFLOWER](#)
[SKULLCAP](#)
[ST. JOHN'S WORT](#)
[OTHER NERVINE HERBS](#)

3. [Nootropics: Complementary Herbs for Adaptogens](#)

[BACOPA](#)
[BHRINGARAJ](#)
[GINKGO](#)
[GOTU KOLA](#)
[LAVENDER](#)
[ROSEMARY](#)
[WHITE PEONY](#)
[YUAN ZHI](#)
[OTHER NOOTROPIC HERBS AND SUPPLEMENTS](#)

Part Three: Herbal Adaptogens in Use

10. [Clinical Use of Adaptogens](#)

[CASE REPORTS](#)

11. [Adaptogenic Herbs in Combination](#)

[COMBINING MEDICINAL HERBS](#)
[ADAPTOGENS—SIMPLES OR FORMULAS?](#)
[CLASSIC ADAPTOGEN COMBINATIONS](#)
[FORMULAS IN CLINICAL PRACTICE](#)

12. [Adaptogens as Food](#)

[FUNCTIONAL FOODS](#)
[ADAPTOGENS AS FOODS—USES AND RECIPES](#)

13. [Adaptogens for Animals](#)

[HEALTH BENEFITS](#)
[USING ADAPTOGENS FOR ANIMALS](#)
[VETERINARY FORMULAS](#)
[CLINICAL USE OF ADAPTOGENS IN EQUINE VETERINARY PRACTICE](#)
[ANIMAL COMPLIANCE](#)
[HERBAL USE GUIDELINES](#)
[HERBAL RESOURCES FOR ANIMALS](#)



[Resources](#)

[Glossary](#)

[Footnotes](#)

[Bibliography](#)

[About the Authors](#)

[About Inner Traditions • Bear & Company](#)

[Books of Related Interest](#)

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Introduction

All plants contain adaptogenic/tonic compounds, because plants have to contend with a good deal of stress themselves.

JAMES DUKE, PHD,
SCIENTIST AND ETHNOBOTANIST

We all deal with stress every day, and our bodies strive to adapt and keep balanced and healthy. There is a category of herbs called *adaptogens* that help the human body adapt to stress, support normal metabolic processes, and restore balance. They increase the body's resistance to physical, biological, emotional, and environmental stressors and promote normal physiologic function.

This book is about these herbs. In the past they have been called rejuvenating herbs, qi tonics, rasayanas, or restoratives. Modern research has proven that many of these herbs are important medicines that can be used for the prevention and treatment of a variety of common ailments.

One might say these adaptogenic herbs sound too good to be true. The wide range of health benefits they offer covers almost every area of the body. Yet, if we study history, we understand that these herbs have been used for thousands of years for a reason. The healers of the past knew of these herbs and used them often. Now, it is up to us to renew and expand upon that knowledge and again use what we have learned.

This book focuses on the adaptogens, superior healing herbs that have a long tradition of use and benefits. It also includes information on two categories of herbs that work in a complementary manner with adaptogens—nervines (nerve tonics) and nootropics (cerebral stimulants).

Certainly, there is much more to say about other types of medicinal herbs. We recommend that you consult some of the many excellent books that are available. A few of our favorites are *Medical Herbalism* by David Hoffmann, *Principles and Practice of Phytotherapy* by Simon Mills and Kerry Bone, and *Herbal Therapy & Supplements: A Scientific and Traditional Approach* by Merrily Kuhn and David Winston.

REFERENCES AND SOURCES

In compiling this book, many sources (including scientists, academics, authors, and health care practitioners) were consulted, and the research was assembled so that it could be presented in a readable format for comprehensive understanding. In most cases, references are not provided within the text. For most general readers, these references are not important, but the conclusions are. Sources are listed in the bibliography section of the book. When sources are referenced within the text, the author name and date are provided; the bibliography can then be consulted for a complete citation, including publication details. This book is not an academic text but is intended for a general audience. We have tried to define most of the unfamiliar terms where they occur within the book. There is also a glossary at the end for reference. Information in this book has been obtained from research and sources considered reputable in the specific area of discussion. In most cases, research was verified by several sources.

NAMING THE ADAPTOGENS

This book will increase your understanding of herbal adaptogens, also known as plant adaptogens. In most cases we will just call them *adaptogens*.

In the text, we mainly use the common names of the adaptogens we discuss. So rather than saying *Panax ginseng* root, we generally say Asian ginseng. In table I.1, we have listed the Latin botanical names and plant parts used for all adaptogens discussed. Table I.2 lists other names used for the adaptogens, and within the Materia Medica section of the book (part 2) additional names are also listed.

Table I.1. Adaptogens Discussed in This Book

ADAPTOGEN	BOTANICAL NAME	PLANT PART USED
American ginseng	<i>Panax quinquefolius</i>	Root
Amla*	<i>Emblica officinalis</i>	Fruit
Ashwagandha	<i>Withania somnifera</i>	Root
Asian ginseng	<i>Panax ginseng</i>	Root
Astragalus*	<i>Astragalus membranaceus</i>	Root
Cordyceps	<i>Cordyceps sinensis</i>	Mushroom, mycelium
Dang shen	<i>Codonopsis pilosula</i> , <i>C. tangshen</i>	Root
Eleuthero	<i>Eleutherococcus senticosus</i>	Root, stem bark
Guduchi	<i>Tinospora cordifolia</i>	Root, stem

He shou wu*	<i>Polygonum multiflorum</i>	Root
Holy basil	<i>Ocimum sanctum, O. gratissimum</i>	Herb
Jiaogulan	<i>Gynostemma pentaphyllum</i>	Herb
Licorice	<i>Glycyrrhiza glabra, G. uralensis</i>	Root
Lycium*	<i>Lycium chinensis, L. barbarum</i>	Fruit
Prince seng*	<i>Pseudostellaria heterophylla</i>	Root
Reishi	<i>Ganoderma lucidum</i>	Mushroom, mycelium
Rhaponticum	<i>Rhaponticum carthamoides</i>	Root
Rhodiola	<i>Rhodiola rosea</i>	Root
Schisandra	<i>Schisandra chinensis</i>	Fruit, seed
Shatavari*	<i>Asparagus racemosus</i>	Root
Shilajit	<i>Asphaltum bitumen</i>	Pitch

*Possible adaptogens

The “possible adaptogens” indicated with asterisks in table I.1 do not have the same level of scientific research confirming their use as do the known adaptogens. More research is needed. These herbs all display effects that help to regulate the neuroendocrine and immune systems, provide a defense against stress, and increase the ability of a person to maintain optimal homeostasis. In addition, they all are respected tonics, or *rasayanas* (ayurvedic rejuvenative remedies), with a long history of safety and efficacy. Throughout this book, we have included the possible adaptogens along with the proven adaptogens in our discussion.

We also acknowledge that there are other herbs, besides those listed in table I.1 and discussed in this book, that are considered possible adaptogens. Some of these herbs are *Aralia manshurica*, *Hippophae rhamnoides* (sea buckthorn), *Hoppea dichotoma*, *Lepidium meyenii* (maca), *Morinda officinalis*, *Oplopanax elatus* (Japanese devil’s club), *Pfaffia paniculata* (suma), and *Trichopus zeylanicus*. Hopefully, in the future there will be additional research on these and other emerging tonic herbs.

We often refer to ayurveda or traditional Chinese medicine when discussing adaptogens. The reason is that eighteen of the twenty-one adaptogens we discuss have been used as medicines in either ayurvedic practice or traditional Chinese medicine. Because these traditions are thousands of years old, there is both a rich history and strong credibility as to their use and effectiveness. Table I.2 lists the adaptogens with their Chinese and ayurvedic names and some additional common names.

Many popular books and Web sites refer to adaptogens by a variety of common names. For instance, different sources might refer to lycium as gogi berries, goji berries, or wolfberries. This can lead to confusion and

misunderstandings. The best way to positively identify any herb is to refer to it by its botanical name (listed in table I.1).

In the Old Testament, there is a line from Ecclesiastes that reads: “What has been will be again, what has been done will be done again; there is nothing new under the sun.” Plant adaptogens are not new; it is only that these herbs and their uses are new to many of us. We are humbled by the innate power and wisdom of these herbs and grateful to be able to share their story.

COMMON NAME	CHINESE NAME	AYURVEDIC NAME	OTHER NAMES [†]
American ginseng	Xi yang shen		Sang, seng
Amla	Yu gan zi	Amla, amalaki	Indian gooseberry
Ashwagandha		Ashwagandha	Winter cherry
Asian ginseng	Ren shen		Korean ginseng, Chinese ginseng
Astragalus	Huang qi		Milk vetch
Cordyceps	Dong chong xia cao		Chinese caterpillar fungus
Dang shen	Dang shen		Codonopsis, Asian bellflower
Eleuthero	Ci wu jia		Siberian ginseng
Guduchi	Kuan jin teng	Guduchi	Indian tinospora
He shou wu	He shou wu		Fo-ti, fleecflower
Holy basil	Luo le	Tulsi	Sacred basil
Jiaogulan	Jiao gu lan		Gynostemma
Licorice	Gan cao	Yashtimadhu	Glycyrrhiza
Lycium	Gou qi zi		Goji, wolfberry
Prince seng	Tai zi shen		Pseudostellaria
Reishi	Ling zhi		Ganoderma
Rhaponticum			Maral root, leuzea
Rhodiola	Hong jing tian		Artic root, golden root
Schisandra	Wu wei zi		Chinese magnolia vine
Shatavari	Shatavari	Tian men dong [†]	Indian asparagus root
Shilajit	Shilajit	Mumie	

Part One



Herbal Adaptogens

1

Herbal Medicine around the World

And the earth brought forth grass and herb yielding seed . . . and God saw that it was good.

GENESIS 1:12

Let's begin by reviewing some of the basic terms used to discuss herbal medicine.

A *botanical* is a substance made from part of a plant, including the bark, roots, or leaves. An *herb* is a plant lacking a permanent woody stem (not a tree or shrub). *Herbal medicine* (or *botanical medicine*) is any system of medicine that relies on herbs or other plant-based materials as the source of remedies. *Traditional medicine* is a term used to denote ancient forms of medicine (usually based on the use of medicinal plants) that are still practiced in many communities and countries. *Phytotherapy* is the term primarily used in Europe for the treatment and prevention of disease by using herbal medicines. The prefix *phyto-*refers to plants.

Medicinal plants can be found in every region of the world. James Duke, PhD, a recently retired botanist for the United States Department of Agriculture, put together a database that includes eighty thousand plants with more than twenty thousand species throughout the world that can be documented as being used for medicinal purposes. In North America, excluding Mexico, there are approximately twenty-two hundred species of plants that have been used for medicinal purposes in a traditional context.

Herbal medicine is one of the most ancient forms of health care known to humankind. The use of plants for healing purposes has been prevalent in all cultures throughout history and continues to play an important role in medicine today. The World Health Organization reports that approximately 75 percent of the world's population depends on botanical medicines for its basic health care needs. In fact, people in a number of countries are using medicinal plants as a significant part of their health care regimens.

Herbs have been used as medicines for millennia. Prior to the introduction of modern pharmaceutical drugs, herbal remedies were among the few reliable healing and treatment methods available.

Approximately 25 percent of modern medicines are still made from plants first used in traditional medicine. That is, they contain at least one ingredient derived from a flowering plant.

Botanical medicine was widely used in the United States until around 1920, when herbs were increasingly replaced by pharmaceutical drugs. However, since the late 1960s there has been a growing resurgence of interest in medicinal plants.

INTERNATIONAL USE OF HERBAL MEDICINES

The largest groups of people who use medicinal plants are in China and India. More than three hundred herbs that commonly are used in these countries today have a history of use that goes back at least two thousand years. In that time, a vast amount of experience has been gained that has gone toward perfecting their clinical applications. According to Chinese clinical studies, these herbs, and others that have been added to the list of useful items over the centuries, can greatly increase the effectiveness of modern drugs, reduce their side effects, and sometimes replace them completely.

Approximately five hundred species of plants are listed as official drugs in China. There are an additional five thousand species used as traditional medicines, folk medicines, or local medicines by ethnic groups in various parts of China. Traditional herbal preparations account for 40 to 60 percent of medicines consumed, and traditional Chinese medicine is the second most used medical system in the world after Western (also called allopathic or conventional) medicine. More Westerners are turning to Chinese herbs and medicines because of the vast experience and effectiveness available in this type of natural medicine.

In India, 60 percent of registered physicians are involved in nonallopathic systems of medicine. That country has nearly four hundred thousand registered ayurvedic practitioners, and ayurvedic medicine is the third-largest medical system in the world today. Almost 70 percent of modern medicines used in India are derived from natural products.

In Japan, 80 percent of physicians have prescribed a traditional Chinese medicine in the past year, mostly in formulas known as kampo. Approximately two hundred kampo formulas are officially recognized by the Japanese government. According to the World Health Organization, Japan has the highest per capita consumption of herbal medicines in the world.

More than 70 countries have national regulations on herbal medicines. Internationally, medicinal products or herbs are defined differently in different countries, and varied approaches have been adopted with regard to licensing, dispensing, and manufacturing these products.

Herbal Medicine in Europe

In Europe, especially in Germany, herbal medicines (known there as phytomedicines) are prescribed like other medications and enjoy widespread scientific and medical support. All German medical students must learn phytomedicine, and approximately 80 percent of German physicians regularly use plant medications in their practice. In England, herbalists are recognized health care providers. This is also true in Australia.

Because the primary markets for phytomedicines are Germany, France, and Italy, most research papers on them are published in European journals in non-English languages. However, in recent years more research is being published in English.

Most plant extracts marketed as dietary supplements in the United States are sold as drugs in Europe and undergo a more rigorous regulatory review there. The European phytomedicine market is estimated at more than \$8 billion in annual sales, 70 percent of which are made in Germany, a country with a rich tradition of herbal medicine. One survey revealed that 76 percent of German women drink herbal teas for health benefits.

Herbal Medicine in the United States

Throughout the nineteenth century, several groups of physicians who practiced herbal medicine existed in the United States. These included the Thomsonians or Botanic physicians, their descendents the Physiomedicalists, and the most prominent group known as the Eclectic physicians.

Eclectic medicine was practiced widely from the 1830s until around 1930. This sectarian medical system was founded by a physician, Wooster

Beach, MD, who rejected the mainstream medical practices of bleeding, leeching, purging, and using toxic medicines such as arsenic and mercury. As an alternative, Beach and his followers embraced and studied the American vegetable materia medica. Eclectic physicians during the 1890s constituted 10 percent of the total number of doctors in the United States. Their clinical experience of treating millions of patients over one hundred years was carefully chronicled in their voluminous literature. Today, this is an extremely valuable body of experiential knowledge that describes the successful clinical use of herbal medicines in a time without antibiotics or the advances of modern medical technology.

Naturopathic medicine (which includes the use of botanicals) shares some historical roots with Eclectic medicine and today integrates traditional natural therapeutic agents with modern scientific medical diagnoses.

From the 1920s into the 1960s, the United States entered into a period of time that could be called the “herbal Dark Ages.” During this time the medical use of herbs virtually ceased to exist within the United States. A few ethnic communities continued to use herbs as medicine, but the only herbs that mainstream Americans used were spices in cooking. Out of this almost total lack of exposure, we have seen an amazing resurgence of interest in natural remedies.

In 1994, the Dietary Supplement Health and Education Act (DSHEA) was passed in the United States. This legislation places herbal products in a clearly defined regulatory category of dietary supplements, along with a number of other products including vitamins, minerals, and amino acids. When the DSHEA was passed, the U.S. Food and Drug Administration (FDA) estimated that there were about four thousand dietary supplements on the market. After this law was passed, the number has increased dramatically to more than thirty thousand, with more than one thousand being added each year.

It is difficult to estimate the market for herbal products, but the best estimates place the annual sales for 2005 in the United States around \$5 billion. The global market for botanical medicines stands at more than \$60 billion annually (World Health Organization, 2003) and is growing steadily.

In the past fifteen years, the market for herbs has increased tenfold in the United States. There is a greater interest in complementary and alternative

medicine and, as a result, in herbal medicine. Colleges and professionals are teaching herbal medicine to more people. The American Herbalists Guild represents the goals and voices of many clinical herbalists, the American Herbal Products Association represents the voice of the herbal products industry, and the National Center for Complementary and Alternative Medicine, which is part of the National Institutes of Health, is doing research and providing information on complementary and alternative medicine (including medicinal herbs) to the general public.

The future looks relatively bright for herbal medicine in the United States. However, the FDA still classifies herbs as dietary supplements and forbids manufacturers to claim that their products are effective in treating or preventing specific diseases. Some pharmaceutical companies and physicians would like to see herbs reclassified as drugs rather than foods.

RESEARCH

The vast majority of medicinal plants in use today also were known in the early nineteenth century. In terms of research purposes, about two thousand species are documented as medicinal plants, but another eighteen thousand species have received little or no chemical or biological screening.

In the past twenty years, most of the clinical research on herbal products has been conducted in Germany, France, Eastern Europe, Thailand, Japan, China, and India. Most studies are hard to access in the United States or have never been translated into English. Traditional medical systems in India and China have extensive documentation of the use of botanicals, but the use of classic Western clinical research methods in studying them has been limited.

During the 1940s and 1950s, drug companies spent millions of dollars doing random drug screenings on plants in search of materials for new drugs. There were a few successes, but most programs were failures. Rarely did any new drug develop from random screenings. In the last ten years, pharmaceutical companies once again have begun to search the plant kingdom for new plant-based medicines. They have realized that for thousands of years indigenous people depended on these herbs to treat illness and that exploring traditional medicines makes more sense than random plant screenings. Unfortunately, when the pharmaceutical companies do find something useful, they try to isolate one particular

chemical and discard the rest of the plant. This is in contrast to traditional herbal medicine that favors using the whole herb.

Modern herbalists in the United States, Great Britain, and Australia have begun to carefully chronicle their clinical experience and conduct small-scale clinical studies of herbal treatments.

TRADITIONAL HERBAL MEDICINE

Traditional systems of medicine such as ayurveda from India, traditional Chinese medicine, Tibetan medicine, Greco-Arabic medicine (Unani-Tibb), Eclectic medicine, and kampo from Japan have a long and impressive history of effectiveness. Lesser-known traditions, including Physiomedicalism and Native American, African, and Siddha (Sri Lankan) medicine, also contribute a wealth of knowledge and experience that we can glean. Modern research has confirmed and continues to confirm much of the usefulness and safety of what has been used as primary medical care by much of the world's population.

It is important to understand that traditional herbal medicine differs in theory and practice from Western medicine. In traditional herbal medical systems, medicines (primarily herbal) often were seen as correcting internal disharmonies rather than simply targeting symptoms as in Western medicine. Internal disharmonies were understood as subjective and often described in concepts such as yin and yang, the doshas, and the humors—terms that were widely understood among the general population. The herbalist dealt with internal disharmonies and used herbal remedies to treat these imbalances as well as symptoms. Disharmony equally involved the body and the mind so that one internal disharmony could affect all categories of experience. There was no assumption of a split between the mind and the body, as there often is in Western medicine.

HERBAL PERCEPTIONS TODAY

Certain herbs, such as black cohosh, echinacea, garlic, kava, milk thistle, saw palmetto, and St. John's wort, have become popular over the last twenty years but herbal *medicine* has not. Herbal medicine is still poorly understood by the public, medical practitioners, and the media.

After a brief honeymoon during which herbs have been portrayed as “wonder drugs,” we are now seeing article after article on the dangers of

herbs. As in most situations, the truth lies hidden under the media hype, bad or poorly understood science, exaggerated claims, and our natural resistance to new ideas.

Seeing herbal medicines as either panaceas or poisons blinds us to the reality that in most cases they are neither. The lack of experience, education, and good information about herbs makes consumers easy victims of marketing exploitation and herbal myths. The same lack of experience, education, and information makes many physicians and other orthodox health care providers suspicious and uncomfortable, especially with the exaggerated claims of miracle cures for the unproven remedies their patients are taking.

There is a very real difference between the allopathic use of an herb and the practice of good herbal medicine. Different systems of herbal medicine have their own views and distinctive practices, but most have three things in common.

First, they have an underlying philosophy that creates a foundation and structure for the practice of medicine. Frequently, the underlying belief focuses on what naturopathic medicine calls *vis medicatrix naturae*, or the healing power of nature. This idea was a central tenet of medicine as taught by Hippocrates, Moses Maimonides, the German physician Christoph Hufeland, and the early American physician Jacob Bigalow. In many systems of medicine, not only is the body seen as inherently self-healing, but there is an important relationship and connection between the physical, emotional, and spiritual aspects of each patient. In Chinese, Tibetan, and Cherokee medicine (known as *nvwoti*), attention also may be given to what can be perceived as external relationships and the effects of the family, community, and the environment on each patient.

The second and third aspects of traditional systems of medicine are interrelated—a system of energetics and differential diagnosis. Energetics is an effective way of understanding an herb not by its constituents, which can be very problematic, but by its activity and effects within the human body. The term *energetics* describes the activities and qualities of a given herb. Does it increase (stimulate) or decrease (sedate) bodily functions, increase the benefits of good nutrition, tonify an organ, or moisten dry tissue? This traditional form of pharmacology is used along with various types of differential diagnosis, so there is an understanding of the underlying imbalance or disease and the treatment is specific to the patient. *Good herbal medicine treats people, not diseases.*

OFFICIAL STANDARDS FOR PHARMACEUTICALS

To properly identify herbs and correct dosages, various pharmacopoeias have been written and updated over the years. A pharmacopoeia is an official collection of technical information on specific medicinal drugs (both botanical and pharmaceutical).

United States Pharmacopoeia

The *United States Pharmacopoeia* (USP) is a publication that serves as the official authority and is used to set public standards and regulations for all prescription and over-the-counter medicines and other health care products manufactured and sold in the United States. Monographs for some dietary supplements and ingredients appear in a separate section of the USP.

The FDA recognizes the USP and National Formulary (NF) as official standards, and they are now published as a single volume (USP-NF). The USP-NF also has official government recognition in more than forty countries outside the United States.

The USP was first published in 1820 and described botanical, mineral, and animal-derived materials used in drug preparations. Over time, new materials have been added and others deleted. Unfortunately, many of the items dropped were botanicals. Between 1870 and 1900, the number of botanicals listed fell from more than 600 to 169, and then dropped to 68 in 1970 and 25 in 1990. It is said that revision may be underway to add more botanicals. In 2005, the USP contained 95 dietary supplement monographs, both botanical and nonbotanical.

Why Were so Many Botanicals Dropped from the USP?

Botanical medicine began to be replaced by pharmaceutical drugs beginning around 1880. In part, this was a result of the rise of the modern pharmaceutical industry and the discovery of powerful synthetic coal tar dye compounds by German researchers. With the new century, herbs were seen as old-fashioned and relics of the past. The future of health care was now firmly linked to the laboratory and science. In addition, USP monographs, particularly botanical monographs, have to meet two criteria. They have to be supported by science, and the medications must have proven efficacy. Unfortunately, most herbal medicines have not met the USP's strict requirements because peer-reviewed scientific results often

are not available.

The USP acknowledges that some herbal remedies have been used for hundreds, even thousands of years, yet it goes on to say:

Scientific evidence regarding these products' safety and efficacy may be rare or nonexistent. Most information about botanicals in the United States chronicles historical use, anecdotal writing, and case reports. There are few randomized, controlled clinical trials for botanicals in the U.S. medical literature at the present time. Those that do exist are often of limited utility because of inadequate sample size or insufficient treatment time. The level of evidence must be considered when claims about the properties of botanicals used as dietary supplements are evaluated.

The USP editors are unreceptive to accepting any research that is not placebo-controlled and double-blinded as the basis for determining the efficacy and safety of medicinal herbs. Studies that use placebos give the medication under study to some volunteers and another agent that they know has no effect to others. In studies that are double-blind, neither the researchers nor the volunteers know which drug they are getting. In single-blind studies, the researchers know but the volunteers do not. See our discussion of scientific research in chapter 4.

2

Adaptogens: An Overview

Adaptogens are remarkable natural substances that help the body adapt to stress, support normal metabolic functions, and help restore balance. They increase the body's resistance to physical, biological, emotional, and environmental stressors and provide a defense response to acute or chronic stress. They are unique from other substances in their ability to restore the balance of endocrine hormones, modulate the immune system, and allow the body to maintain optimal homeostasis.

Knowledge about adaptogens dates back thousands of years to ancient India and China, but serious scientific study did not begin until the late 1940s, when Soviet scientists explored the benefits of these substances in fighting stress, preventing and reducing illness, maintaining homeostasis, and strengthening the body.

DEFINING ADAPTOGENS

In 1947, Dr. Nikolai Lazarev defined an *adaptogen* as an agent that allows the body to counter adverse physical, chemical, or biological stressors by raising nonspecific resistance toward such stress, thus allowing the organism to “adapt” to the stressful circumstances.

In 1968, Israel I. Brekhman, PhD, and Dr. I. V. Dardymov formally gave adaptogens a functional definition, as follows:

1. An adaptogen is *nontoxic* to the recipient.
2. An adaptogen produces a *nonspecific response* in the body—an increase in the power of resistance against multiple stressors including physical, chemical, or biological agents.
3. An adaptogen has a *normalizing influence* on physiology, irrespective of the direction of change from physiological norms caused by the stressor.

(A more detailed discussion of these adaptogen pioneers is included in chapter 3.)

Very simply, adaptogens are nontoxic, produce a nonspecific defensive response to stress, and have a normalizing influence on the body. As defined, adaptogens constitute a new class of natural, homeostatic metabolic regulators.

Many scientists continue to use this definition, which was published in the 1960s. However, there is currently no binding definition for the term *adaptogen*. No recognized herbal or scientific organization has come forward with the definitive definition. That means it is especially important to carefully examine what has been said in the realms of both science and traditional medicine. In some circles it has been left up to one's judgment (accurate or not) whether a plant has adaptogenic properties. This book presents various perspectives on adaptogens. When the analysis is complete, we hope both science and tradition will prevail.

Brekhman and Dardymov's definition of the properties of adaptogens was made approximately forty years ago. The basic requirements of adaptogens have been kept the same until recent years, when new research and new interest has produced new interpretations of the original definition. Some of these clarifications and interpretations follow.

Adaptogens Are Nontoxic

Adaptogens should be nontoxic (not harmful). They must cause minimal side effects on physical or mental health. There has been little discussion about this requirement, and it seems to be the most accepted standard.

For instance, there is evidence that bryonia (*Bryonia alba*) root may have adaptogenic properties. However, because this herb is potentially toxic, we have decided not to include it in our list of adaptogens. It is widely used as a homeopathic remedy.

Adaptogens Produce a Nonspecific Defense Response to Stress

To clarify, a *nonspecific response in an organism* implies the power of resistance or adaptation—the building of “adaptive energy” to keep the body balanced when affected by multiple stressors or harmful influences. Nonspecific response also means that adaptogens stimulate, activate, or promote a response in multiple nonspecific ways, including the building of a reserve of adaptive energy.

Ideally this reserve is used when needed in response to an actual stressor rather than used to deplete cells of vital energy. Stimulants, such as amphetamines, are examples of substances that can deplete cells of vital energy.

Adaptogens Have a Normalizing Influence on the Body

It is said by some researchers that adaptogens enhance the body's natural bipolar homeostatic balancing capacity and help return stressed physiological systems to normal regardless of the direction of abnormal deviation. This normalizing influence implies the capability of adaptogens for a *bidirectional* effect on physiological function. This is very unique and has led some observers to declare that adaptogens have "intelligence." In fact, this impact on the body's homeostatic control mechanisms baffles many conventional Western pharmacologists.

Adaptogens produce changes in the body because of their stimulation and balancing of several systems, including the neuroendocrine and immune systems. They are capable of either toning down the activity of hyperfunctioning systems or strengthening the activity of hypofunctioning systems, thus having a normalizing effect.

Asian ginseng is an example of an adaptogen that has demonstrated potential to induce bidirectionality along different metabolic pathways and create a normalizing effect. Among the active ingredients found in Asian ginseng are substances called ginsenosides. The herb contains ginsenoside Rg1, which can stimulate the nervous system, and ginsenoside Rb1, which calms it. This illustrates Asian ginseng's potential to induce multiple bidirectional activities.

In contrast, if an herb or drug acts only in a unidirectional manner there may be a greater potential to cause problems or worsen preexisting disorders in certain individuals. That is why adaptogens usually are not given for one therapeutic action only. Instead of using adaptogens only for high blood pressure, they can be used to normalize blood pressure whether it is mildly elevated or too low.

Adaptogens must demonstrate a normalizing influence on the body's regulatory systems, including the neuroendocrine and immune systems. Secondary sites of action for adaptogens include the liver, cardiovascular system, kidneys, and pancreas.

It is also known that most if not all adaptogens have antioxidant

properties. Many adaptogens also have hepatoprotective (protects the liver), cardioprotective (protects the heart), chemo-radiation protective (protects from effects of chemotherapy and radiation therapy), anticarcinogenic (anticancer), and anti-inflammatory properties. In fact, as we examine these herbs closely, we find many healthful and diverse attributes of adaptogens.

***Tonics, Antioxidants, and Amphoteric*s**

Many herbs can have adaptogenic or tonic properties but not be true adaptogens.

Because adaptogens increase adaptive energy, they can be considered to be *tonics* according to the definition that tonics are substances that alleviate conditions of weakness within the body. Tonic herbs are important in Chinese medicine, in which their main function is to supplement deficiencies and enhance energy and well-being. A tonic can be taken every day, usually with no side effects.

One theory states that adaptogens function primarily due to their *antioxidant* and free radical scavenging effects. Although this theory is partially accurate, it is inadequate to explain the full effects of these medicinals. So, although adaptogens are antioxidants, having antioxidant properties (as do green tea, rosemary, and bilberry) is not enough to make a substance an adaptogen.

Adaptogens also may have *amphoteric effects*. An amphoteric is a substance that normalizes functions of an organ or system within the body. Think of amphoteric as “health food for an organ.” Examples include hawthorn for the cardiovascular system or fresh milky oat for the nervous system. These herbs are amphoteric, but they are not adaptogens. Adaptogens act as broad-spectrum amphoteric to living organisms, but they rarely have a pronounced effect on only one specific organ or system. The concept of “one drug for one disease” does not apply in the use of adaptogens.

DIFFERENT PERSPECTIVES ON ADAPTOGENS

When we try to understand what the term *adaptogen* means, there are many different perspectives to consider. Ayurvedic practitioners say that

certain rasayanas have overall rejuvenating properties. Practitioners of traditional Chinese medicine say that qi or blood tonics nourish the organs and strengthen the protective energy of the body. Russian scientists say that adaptogens increase the resistance within the body to a wide range of stressors and normalize functions. Western researchers and scientists look at how adaptogens regulate the hypothalamic–pituitary–adrenal (HPA) axis and sympathoadrenal system. (These terms will be discussed in chapter 5.) Clinical herbalists use adaptogens to “re-regulate” the neuroendocrine and immune systems to enhance healing and prevent stress-induced disease.

Table 2.1. Summary of Different Perspectives

PERSPECTIVE	TERM	DESCRIPTION OF EFFECTS
Ayurvedic practitioners	Rasayana	Rejuvenates
Traditional Chinese medicine practitioners	Qi tonic, superior herb	Strengthens and stimulates the immune and defense functions of the body
Russian scientists	Adaptogen	Increases the resistance within the body to a wide range of stressors and normalizes functions
Western scientists	Adaptogen	Regulates the HPA axis and sympathoadrenal systems
Clinical herbalists	Adaptogen	Re-regulates disharmonies in the neuroendocrine and immune systems

The term *adaptogen* has not been accepted in Western medicine. This probably is due to a lack of good scientific studies and the difficulties in discerning adaptogens from other categories such as immune system modulators, tonics, anabolic agents, or antioxidants. Most researchers agree that there are plant substances capable of modulating distinct phases of the general adaptation syndrome as defined by Hans Selye, PhD (see in chapter 5). These substances either reduce stress reactions in the alarm stage or prevent the exhaustion stage from occurring and thus provide a certain degree of protection against long-term stress. Ayurvedic, Chinese, and Western perspectives of adaptogens all include immune modulating activity. When normal immune function is strengthened, vitality is also increased.

Some researchers have said that the measurement of antioxidant activity and immune system modulation from the use of herbal adaptogens may serve as a means for functionally relevant quality assessment of the effectiveness of adaptogens. The opinions of clinical herbalists are very important in this discussion. They have approached adaptogens from a hands-on perspective. They have worked with patients and seen the results of adaptogen use (see case histories in chapter 10). Some herbalists have

expanded upon the original Russian definition of adaptogens, and others have added to or simplified it.

Modern Perspectives

Here are some recent definitions of adaptogens that might be useful to contemplate:

Adaptogen: (1) An agent that increases the body's ability to adapt to environmental and internal stress by strengthening the immune, nervous, and glandular system. Enhances an organism's resistance to stress, disease, and environment, as well as normalizes metabolic functions and increases metabolic efficiency. (2) A prophylactic, which heightens in an unspecific way the resistance of the organism to various environmental influences and stimuli and/or reduces the disposition or susceptibility to illness. (3) Enhances the body's nonspecific resistance to external stress or to noxious effects of a physical, chemical, or biological nature. (Singh, Hoette, with Miller 2002)

Adaptogenic: A substance that increases the body's resistance to physical, environmental, emotional, or biological stressors and promotes normal physiologic function. (Bone 2003)

Adaptogen: An herb that increases resistance and resilience to stress, enabling the body to avoid reaching collapse because it can adapt around the problem. (Hoffmann 2003)

An **adaptogen** is a substance that helps bring the body into a state of harmony with its environment by introducing chemical, cellular, and systemic balance. This harmonizing function reduces the effects of unfavorable conditions and stimulates the body's own immune and healing functions. These adaptogenic substances help the body to adapt to various stressful challenges presented by the environment and reduce the damage inflicted on the body. They tend to promote the body's own ability to cope successfully with stress, thus prolonging well-being. (Teeguarden 1998)

Adaptogens are strengthening herbs that bring balance back to the body no matter what the direction of imbalance. They combine both tonic and balancing properties. Examples include Siberian ginseng root bark (*Eleutherococcus senticosus*) and jiaogulan leaves/stem (*Gynostemma pentaphyllum*). (Tillotson 2005)

Adaptogens describe nontoxic substances that nonspecifically increase the resistance of an organism to a wide range of harmful influences and normalize its functions. (Weil 2006)

Adaptogens constitute a new class of metabolic regulators (of a natural origin) that increase the ability to adapt to and avoid damage by environmental factors. (Panossian 2003)

Plant **adaptogens** are compounds that increase the ability of an organism to adapt to environmental factors and to avoid damage from such factors. The

beneficial effects of multidose administration of adaptogens are mainly associated with the hypothalamic–pituitary–adrenal (HPA) axis, a part of the stress-system that is believed to play a primary role in the reactions of the body to repeated stress and adaptation. (Panossian and Wagner 2005)

OVERVIEWS OF ADAPTOGENS

There are many ways to classify adaptogens. What follows are overviews covering geography (by where adaptogens grow) and botanical classification (according to botanists' current opinions). This will be followed by a more extensive section on the phytochemical composition of adaptogens.

For additional information on the use of adaptogens within the various medical systems (Chinese, Ayurvedic, Western) and their energetics, see the individual monographs in part 2. For additional information on the classification of adaptogens according to health benefits and body systems, see chapter 6.

How and Where Adaptogens Grow

Adaptogens have adapted to their growing environments, including high altitude cold weather, and other stressful conditions. If these plants can adapt so well, maybe they also can help us adapt to the current extreme weather changes we are facing globally.

Some adaptogens are found in rugged mountain regions (American ginseng, cordyceps, rhodiola, and shilajit). Varieties of cordyceps have been found at altitudes of about 15,000 feet, and rhodiola grows in Siberia at altitudes of 10,000 feet above sea level. Rhodiola is an example of a plant that has adapted to harsh environmental conditions, including high altitude, extreme cold, low oxygen, and intense irradiation from the sun. This conditioning certainly has affected the plant's chemistry and its effects when used as herbal medicine.

Other adaptogens have medicinal roots that take many years to mature. These include the following: American ginseng (more than seven years), Asian ginseng (five to twelve years), rhodiola (five to eight years), astragalus (four to five years), he shou wu (three to four years), licorice (three to four years), rhaponticum (three to four years), shatavari (three years), and dang shen (three years). The concentrated energy and nutrients

of the plants have been stored in the roots, and the mature roots are the culmination of years of growth and adaptation.

Somewhat unusual for adaptogens, ashwagandha, holy basil, and jiaogulan are exceptionally easy to cultivate and are ready to harvest in less than one year.

The majority of known adaptogens are native to China, India, Korea, and Russia. A few grow in Europe and North America as well. As researchers continue to explore the more than 250,000 known plant species, it is very likely that additional adaptogens will be discovered in Africa, Australia, and North and South America.

Classification of Plant Species

All plants, including adaptogens, are classified according to a scientific system known as botanical nomenclature.

Plants are classified into categories based on shared features. Each species is part of a plant family with names ending in *-aceae* (the Latin ending that indicates a plant family). Each species also has a Latin binomial—a name consisting of two Latin terms.

Table 2.2. Adaptogens Listed by Plant Family, Botanical, and Common Names

PLANT FAMILY	BOTANICAL NAME	COMMON NAME
Araliaceae	<i>Eleutherococcus senticosus</i>	Eleuthero
Araliaceae	<i>Panax ginseng</i>	Asian ginseng
Araliaceae	<i>Panax quinquefolius</i>	American ginseng
Asteraceae	<i>Rhaponticum carthamoides</i>	Rhaponticum
Campanulaceae	<i>Codonopsis pilosula</i>	Dang shen
Caryophyllaceae	<i>Pseudostellaria heterophylla</i>	Prince seng
Clavicipitaceae	<i>Cordyceps sinensis</i>	Cordyceps
Crassulaceae	<i>Rhodiola rosea</i>	Rhodiola
Cucurbitaceae	<i>Gynostemma pentaphyllum</i>	Jiaogulan
Euphorbiaceae	<i>Emblica officinalis</i>	Amla
Fabaceae	<i>Astragalus membranaceus</i>	Astragalus
Fabaceae	<i>Glycyrrhiza glabra, G. uralensis</i>	Licorice
Ganodermataceae	<i>Ganoderma lucidum</i>	Reishi
Lamiaceae	<i>Ocimum sanctum, O. gratissimum</i>	Holy basil
Liliaceae	<i>Asparagus recemosus</i>	Shatavari
Magnoliaceae	<i>Schisandra chinensis</i>	Schisandra
Menispermaceae	<i>Tinospora cordifolia</i>	Guduchi
None	<i>Asphaltum bitumen</i>	Shilajit
Polygonaceae	<i>Polygonum multiforum</i>	He shou wu
Solanaceae	<i>Withania somnifera</i>	Ashwagandha
Solanaceae	<i>Lycium chinensis</i>	Lycium

The *United States Pharmacopeia* and the U.S. Food and Drug

Administration both use the standard common names found in *Herbs of Commerce*, a publication of the American Herbal Products Association, effective January 2006. These names are required on the labels of commercial dietary supplements. However, some herbalists prefer to use different names based on regional popularity and tradition. The names used throughout this book are primarily in harmony with *Herbs of Commerce*, with a few exceptions.

ADAPTOGENS AND PHYTOCHEMICALS

Pharmacology is the study of drugs and their effects on the human body. A drug is a substance that is given to treat or prevent a disease. The study of the chemical makeup of plants is called *phytochemistry*, and the study of naturally derived drugs is known as *pharmacognosy*.

Plants contain both primary and secondary metabolites, which are substances needed for metabolism—the plant’s energy production process. The primary metabolites are necessary to sustain the life of the plant and include enzymes, proteins, lipids, carbohydrates, and chlorophyll. The secondary metabolites contain key chemical groups that can have medicinal value to humans. The phytochemistry of secondary metabolites is complex, and we will discuss briefly some of the key active metabolite compounds in adaptogenic herbs.

Finding which compounds produce bioactive adaptogenic effects has been challenging and complex because of the multitude of targets and activities for these plants. Phytochemical explanations for the observed actions of adaptogens are not clearly understood, and studies are not conclusive as to which compounds within each herb are responsible for its adaptogenic activity. Some studies have shown that components thought to represent the main active ingredient of an adaptogen actually consist of an unrelated mixture of various and often common plant constituents. There is ongoing research in this area.

For example, in recent years Russian, Japanese, and South American researchers discovered potent anabolic (building up) properties in specific plants that contain a plant sterol known as ecdysterone. Sterols are solid steroid alcohols, such as cholesterol, that are present in plants and animals. Preliminary research demonstrated that certain plant sterols display adaptogenic biological activity and may be responsible for improved athletic performance and muscle growth. Only a few adaptogens have been

tested for plant sterol complexes; guduchi and rhaponticum have tested positive. The South American plant suma (*Pfaffia paniculata*) also contains a high concentration and potent complex of plant sterols.

Biochemical Plant Compounds in Adaptogens

Triterpenoid Saponins

Current research indicates that plant compounds with adaptogenic properties seem to fall into two classes—terpenes and polyphenols. Polyphenols include substances called flavonoids, and many of these compounds have antioxidant properties. The terpenes are the largest group of secondary metabolites and enable plants to prosper in their specific environment. The triterpenes include saponins, and within the saponins is a particular class called triterpenoids.

When Israel Brekhman was learning about adaptogens, he discovered that the active compounds in most of the adaptogenic plants he was studying at the time were triterpenoid saponins that had low toxicity and little addictive potential.

Some triterpenoid saponins have been identified as having adaptogenic properties. Other properties of triterpenoid saponins include antiinflammatory, hepatoprotective, and immune system–modulating effects. Some also have a strengthening effect on the adrenal gland, in which they mimic the activity of adrenocorticotrophic hormone (ACTH). This is an important action for relieving many stress problems.

Adaptogens that contain triterpenoid saponins include American ginseng, Asian ginseng, astragalus, dang shen, eleuthero, holy basil, jiaogulan, licorice, and reishi.

Polysaccharides

In biochemistry, sugars and carbohydrates are commonly referred to as saccharides. Monosaccharides are the simplest forms of sugar. Polysaccharides contain multiple monosaccharide units. Herbs containing polysaccharides are immune stimulating; they support a healthy immune system and work to increase the immunity of the individual. On a biochemical level, these saccharides allow cells to communicate with the immune system. Astragalus is an example of a polysaccharide-rich herb, and extensive research has been done to prove its immune-enhancing benefits.

Polysaccharide-rich plants have a long history of use in traditional practices such as Chinese herbal medicine. In addition to stimulating the immune system, they also are used to increase vital energy and are considered qi tonics. Other examples of adaptogens rich in polysaccharides include eleuthero, reishi, dang shen, and cordyceps.

Polysaccharides have been reported to stimulate the following immune system components: cytokines (interferon, interleukin), tumor necrosis factor, natural killer cells, B and T lymphocytes, tumor-infiltrating lymphocytes, lymphokine-activated killer cells, macrophages (immune cells), granulopoiesis (the production of granulocytes in bone marrow) and thrombopoiesis (the production of platelets in bone marrow).

Recent research has confirmed that polysaccharides have immune system-enhancing benefits, but there seems to be a problem with their delivery. According to some researchers, the delivery method that provides maximum therapeutic value is an injectable preparation. Oral preparations (tinctures, teas, capsules) may not be as effective.

Adaptogens that contain polysaccharides include American ginseng, Asian ginseng, astragalus, cordyceps, eleuthero, licorice, lycium, prince seng, reishi, rhaponticum, and shatavari.

Whole Herbs Versus Isolated Phytochemicals

Herbalists usually work with whole plant extracts. They believe that in many cases the whole herb has more value than its individual constituents and that most phytochemicals work better together in their natural matrix rather than in isolation.

When considering different approaches to herbs, it is important to recognize the difference between the traditional herbal approach and the Western pharmacological approach. Traditional herbalists favor ingesting the whole herb or whole herb extract. Western pharmacologists usually take an herb, find the supposed active ingredient, extract it, and then study the isolated compound.

This latter approach has several significant drawbacks. First, no plant has a single active constituent. There may be dozens or even hundreds. Even constituents that are not active may contribute to the herb's activity by increasing its absorption into the body, reducing toxicity, or preventing adverse effects.

ADAPTOGEN	ACTIVE INGREDIENTS ¹
American ginseng	Ginsenosides
Amla	Ellagic acid, phyllembilin, quercetin, emblicol, flavonols
Ashwagandha	Withanolides, sitoindosides, withaferins, somniferiene, withanine, anaferine
Asian ginseng	Ginsenosides
Astragalus	Astragalans, glucuronic acid, astragalosides, flavones, isoflavones
Cordyceps	Cordycepic acid, galactomannins, polyamines, ecdysterones
Dang shen	Tanshenosides, atractylenolides, adenosine
Eleuthero	Eleutherosides
Guduchi	Tinosporoside, tinosporine, tinosporone, tinosporic acid, cordifolisides, syringen
He shou wu	Antioxidant polyphenols
Holy basil	Ursolic acid, rosemarinic acid, oleanolic acid, flavonoids
Jiaogulan	Gypenosides
Licorice	Glycrrhizin, genistein, demulcent polysaccharides, flavonoids
Lycium	Zeaxanthin, cryptoxanthin, flavonoids
Prince seng	Taizishen, heterophyllin, polysaccharides, saponins pseudostellarins
Reishi	Ganoderans, ganoderic and ganoderenic acid, ling zhi-9 protein
Rhaponticum	Ecdysones: ecdysone, turkesterone; 20-hydroxyecdysone
Rhodiola	Rosavins (rosavin, rosin, rosarin), salidroside, flavonoids
Schisandra	Lignans: schisandrins, gomisins, schisohenol
Shatavari	Shatavarins, sarsapogenin, diosgenin
Shilajit	Humic acid, di-benzo-alpha-pyrones, biphenals

A good example of this is seen with the immune system–enhancing mushroom known as maitake. Researchers studied several polysaccharide fractions and claimed that one specific fraction was the most active. However, when they combined the fraction with an extract of the whole mushroom, the activity was increased by more than 80 percent. A reductionist pharmacological way of looking at herbs often doesn't work.

Another example of this problem comes from German research on hawthorn, an herb used as a nerve and cardiovascular tonic. In attempting to discern the herb's active ingredients, researchers concluded that the most important phytochemicals were flavonoids, especially one known as vitexin-0-rhamnoside. When this substance was isolated and extracted, it was found to have no activity. Interestingly, when researchers tried giving the herb minus this specific chemical to animals, it no longer worked either. The active constituent of hawthorn turned out to be the herb itself.

HOW ADAPTOGENS WORK

Adaptogens have been defined and classified in this chapter. Other chapters will cover the history of adaptogen use, what adaptogens do, and health benefits. However, how do adaptogens work?

The explanation that has been most discussed by researchers says that

adaptogens act by stimulating the body's nonspecific stress response via the hypothalamic-pituitary-adrenal (HPA) axis and sympathoadrenal system. However, how do they do this?

Various phytochemicals found in adaptogens have been isolated and researched. Most of the scientific research has been done in animals (in vivo) and in test tubes (in vitro) and published in Asian or European languages. There has been clinical (human) research that has confirmed animal research, but these studies were few and usually involved small samples of test subjects.

Fortunately, there has been significant clinical research on a few adaptogens, including Asian ginseng, eleuthero, reishi, and rhodiola. It is also possible, even probable, that different adaptogens have different modes of action.

Here is an example of what scientists are saying. Scientists have isolated what they believe are the primary active ingredients in Asian ginseng—ginsenosides. Research in China was summarized by Dr. C. Lui in the *Journal of Ethnopharmacology* (1992), in which he wrote that Asian ginseng was found to contain twenty-eight ginsenosides that “act on the central nervous system, cardiovascular system and endocrine secretion, promote immune function, and have effects on anti-aging and relieving stress.”

Our conclusion is that various active constituents found in herbal adaptogens work to stimulate the neuroendocrine and immune systems via multiple metabolic pathways. They affect the brain, nerves, endocrine glands (pituitary, thyroid, parathyroid, adrenal, thymus, pineal, pancreas, ovaries, and testes), and immune system by helping re-regulate, normalize, and enhance function. There are multiple theories as to what is occurring, and even scientists are unsure. We will leave it to them to unlock the mystery of how these substances work.

Herbal practitioners have long known that adaptogens work. They know that if they use good quality adaptogenic herbs, prepare well-made extracts from these herbs, and use adequate doses, there will be significant therapeutic benefits.

3

History of Adaptogens

Herbs grow around the world, and their history is certainly as old as the first vegetation on planet Earth. We cannot date when plants were first used by man, but we know that people in every region on Earth found important uses for herbs. The history and experience of using these plants was transmitted orally for millennia. Around 2000 to 3000 BCE, the earliest written accounts of using medicinal plants were created. For instance, there is a great deal of mythology and history surrounding the plant holy basil. It has captivated the human imagination in India for millennia. Ginseng has been used in Chinese medicine for more than three thousand years. Table 3.1 lists adaptogens by the cultures in which they were traditionally used. As we continue to study how herbs are used in different cultures, we find many similarities, and this is certainly true of adaptogens.

Looking at the history of adaptogens, we will begin in Russia, part of the former Soviet Union, where the modern name *adaptogen* was coined. We will then examine the ancient herbal traditions of India and China.

MODERN HISTORY—RUSSIA

The modern history of adaptogens began in the late 1940s. The former Union of Soviet Socialist Republics (USSR) assigned the Soviet Academy of Science to develop a product that increased the performance of their elite personnel, which included athletes, military personnel, political officers, and chess players, while adhering to strict health guidelines. The Soviets' pursuit of superior military strength, performance in the Olympic Games, political power, and the excellence of the well-known Bolshoi ballet mattered so much to them that whatever they could do to accomplish the goal of dominance was pursued. In 1943, the People's Commissars Council issued an order regarding the goal of finding "tonic substances" for Russian workers and soldiers. The Russian scientists began to study

different substances in search of the perfect performance tonic.

HEALING TRADITION	ADAPTOGEN
Ayurveda	Amla Ashwagandha Guduchi Holy basil Licorice Shatavari Shilajit
Traditional Chinese medicine	Asian ginseng Astragalus Dang shen Cordyceps Eleuthero He shou wu Jiaogulan Licorice Lycium Prince seng Reishi Schisandra
Western medicine (Russia and United States)	American ginseng Eleuthero Licorice Rhaponticum Rhodiola

The term *adaptogen* (from the Latin word *adaptare*, meaning to fit or adjust) was coined by Soviet scientist, medical doctor, and pharmacologist Nikolai V. Lazarev to describe substances that increase the body's nonspecific resistance to stress. Lazarev conducted his studies using a chemical substance, dibazol, that was found to increase the resistance of organisms to stress in experimental studies. According to Lazarev, an adaptogen is an agent that allows an organism to counter adverse physical, chemical, or biological stressors by raising nonspecific resistance toward such stress, thus allowing the organism to adapt to the stressful circumstances.



Adaptogens Will Make You Stress-Free
(Cartoon reprinted with permission, © 1999 calderchism.com)

Lazarev's colleague, Israel I. Brekhman, changed the focus of adaptogenic research from synthetic substances to natural substances. Together they undertook the challenge of researching the usefulness and effectiveness of a group of many plants with pharmacologically active compounds.

Early Russian Research

Much of the early research into adaptogens in the 1950s was done by Brekhman, who studied Asian ginseng (*Panax ginseng*), the classic Chinese herb for longevity. At that time, Soviet researchers were convinced of the potential value of Asian ginseng as an adaptogen.

Because Asian ginseng did not grow in the USSR and was expensive, Brekhman broadened his research to other plants within the Araliaceae plant family that did grow in the USSR. In 1959, Brekhman found that *Eleutherococcus senticosus* (eleuthero, also referred to as Siberian ginseng) had many benefits over Asian ginseng. For example, it was more common, less expensive, easier to harvest, and more broadly adaptable to a wider range of people. Eleuthero also met all of Brekhman and Dardymov's criteria of an adaptogen (see the list on pages 17–18). Its ability to modulate stress and improve performance under a wide variety of conditions was perhaps the most important criteria. The term *adaptogen* was applied to describe the action of eleuthero as a stimulant and tonic.

Is It Really Ginseng?

Asian ginseng (*Panax ginseng*) always has been considered the gold standard of

ginsengs. The term *Panax* comes from the Greek word *panacea*, meaning “all healing.” Panacea in Greek mythology is the goddess of healing. American ginseng (*Panax quinquefolius*) is a related species with some of the same active constituents (ginsenosides), but it is a very different herb. Other *Panax* species, such as Tienqi ginseng (*Panax notoginseng*), Vietnamese ginseng (*Panax vietnamensis*), and dwarf ginseng (*Panax trifolium*) share some similarities to *Panax ginseng* but also have significant differences.

There are as many as twenty-three other herbs that have the word *ginseng* in their common names but are not true ginseng. Only *Panax* is true ginseng. Some manufacturers are using the name *ginseng* for product marketing although these herbs do not have a true relationship to the herb ginseng. They are hoping to gain sales by connecting their plant to the reputation of the widely popular Asian ginseng.

In the United States, it is now illegal to market any herb as ginseng unless it comes from the genus *Panax*. Various plants have been marketed as ginseng, with Siberian ginseng (eleuthero) being the most common. These other herbs (including adaptogens) are useful herbs, but they are not ginseng. Some examples include Indian ginseng (ashwagandha), poor man’s ginseng (dang shen), Southern ginseng (jiaogulan), Tibetan ginseng (rhodiola), Peruvian ginseng (maca), Brazilian ginseng (suma), and even women’s ginseng (dong quai).

Brekhman’s first article on *Eleutherococcus*, “A New Medicinal Plant of the Family *Araliaceae*—The Spiny *Eleutherococcus*,” (1960) had a tremendous impact not only on the scientific community but also on the general public. Only two years after Brekhman’s first published work, eleuthero extract was approved by the Pharmacological Committee of the USSR Ministry of Health for clinical use as a stimulant.

Thousands of Researchers and Studies

Lazarev and Brekhman created a team of more than twelve hundred biologists, scientists, and physicians. They conducted their research at the Russian Academy of Sciences, Institute of the Physiology and Pharmacology of Adaptation in Vladivostok, located in the Primorye region of the Soviet Far East.

Brekhman’s discoveries and research paved the way for more than three thousand clinical trials and experimental studies on adaptogens. Several of these unique plants lived through the Ice Age by adapting to and thriving in the most severe living conditions on Earth. Because of this, Brekhman believed that they might possess qualities that could help our bodies adapt to the stresses of modern life.

The Russian scientists investigated four thousand plants and identified twelve herbs as adaptogens. The majority of the research was done on eleuthero, rhodiola, rhaponticum, and schisandra.

Research into adaptogenic herbs by the Russians was taken so seriously that, in the 1960s, their study became a field of biomedical research. There were two streams of research that led to this: the extensive screening of plants for biologically active substances and research into the effects of stress. By 1984, Russian scientists had published more than fifteen hundred pharmacological and clinical studies on adaptogenic herbs.

After the 1980s, Russia has gone through great political and economic upheavals, and research on adaptogens has declined. It is continuing, however, at a lower level of funding and priority.

Eleuthero

Botanists and researchers know this plant as *Eleutherococcus senticosus*. The plant was formerly known as *Acanthopanax senticosus*, a name still widely used by Chinese scientists. The use of *Eleutherococcus* was not recorded in Russian folk medicine, but by 1976 it was estimated that more than three million people in Russia were using the extract regularly. It was used by Russian athletes to prepare for the Olympic Games in the late 1970s and early 1980s and was included in the space program for cosmonauts in 1977.

Eleuthero was never referred to as Siberian ginseng until it was first marketed in the United States in the late 1960s. We will refer to the plant as eleuthero, which is the name adopted in the American Herb Products Association's publication *Herbs of Commerce*.

Clinical Research—Eleuthero

After the early 1960s, Russian scientists conducted hundreds of clinical studies involving thousands of people. Normal and stressed human subjects were given oral doses of a 33-percent ethanol root extract of eleuthero. Doses ranging from two to sixteen milliliters were taken one to three times a day for up to sixty consecutive days (with a two-to-three-week resting interval between courses of medication). The studies measured the adaptogenic response of humans to adverse conditions such as heat, noise, motion, and workload increase as well as exercise. They also measured improvements in hearing, mental alertness, work output, and the quality of work, both under stress-inducing conditions and in athletic performance.

These studies showed positive results and virtually no adverse side effects (Farnsworth 1985).

Additional studies on the clinical effectiveness and side effects of eleuthero have been conducted that involved more than twenty-two hundred human subjects suffering from a wide variety of ailments including diabetes, hypertension, chronic bronchitis, cancers, and acute head trauma. These studies showed measurable improvements or, in some cases, normalization with few side effects.

The results of Soviet stress studies conducted with eleuthero are summarized below. The information comes from the article “Adaptogens: Natural Protection for Stress.”^{*1}

Subjects: Soviet Olympic teams and other sports teams during challenging training and competition.

Results: Improved stamina and recovery, increased oxygen intake, and better performance.

Subjects: One thousand mine workers in Siberia.

Results: Incidence of cases during an influenza epidemic dropped by two-thirds.

Subjects: Twelve hundred long-distance truck drivers.

Results: Improved productivity, incidence of cases during an influenza epidemic was reduced by 30 percent.

Subjects: Fourteen thousand auto factory workers.

Results: 30 percent decrease in total reported symptoms such as fatigue, insomnia, and anxiety; 40 percent reduction in high blood pressure and heart disease symptoms.

Subjects: One hundred and seven patients receiving drugs for gastric cancer.

Results: 50 percent less damage to the immune system, 50 percent decrease in drug dosage needed to be effective.

More recent studies were performed in Japan and Germany, and the results were consistent with those of the Russian research.

Because each adaptogenic herb has its own unique history, we have

included a more comprehensive history of the individual herbs, including selected research studies, in the monographs in chapter 7.

Russian Exports

From the beginning of the 1960s, Soviet authorities realized that their extensive research on adaptogens could be capitalized on. The Ministry of Health Care of USSR formed a special commercial organization, MedExport, to be in charge of exporting herbal remedies. After the exporting began in 1969, Brekhman, as a representative of MedExport, traveled all over the world to promote Russian adaptogens. As a result of such efforts, the popularity of these herbs, and especially eleuthero, has increased in England, Germany, Switzerland, Japan, and the United States.

Before passing away in 1994, Brekhman formulated a product known as Prime One. This product consists of several adaptogenic herbs from Russia, including eleuthero, schisandra, rhaponticum, rhodiola, and licorice. Today it is being manufactured in the United States and sold by network marketers. The success of this formula in the United States came in 1996, when Prime One was used at the summer Olympic Games in Atlanta by more than 150 American athletes.

AYURVEDA: THE TRADITIONAL MEDICINE OF INDIA

The name *ayurveda* was given to the ancient healing tradition of India. It is derived from the words *ayus* (life) and *veda* (knowledge) and is often translated as the “science of life.” It is an in-depth science of life and encompasses the wholeness of life. It aims to bring about a union of physical, emotional, and spiritual health—a state of harmony with the universe.

Ayurveda evolved more than three thousand years ago and was transmitted orally from teacher to disciple and eventually was written in Sanskrit poetry known as the Vedas.

The first major written classic of ayurvedic medicine contained the teachings of Charaka. His writings, the *Charaka Samhita* (written approximately 200 BCE), identified 350 plants as valuable medicines.

Ayurveda has always held the plant kingdom in high esteem. Here the role of plants is exalted. It was written in the *Chandogya Upanishad*, “The

essence of all beings is Earth. The essence of the Earth is Water. The essence of Water is plants. The essence of plants is the human being” (Swahananda). Similarly, “From the Earth came herbs and from the herbs came the seed that gave life to humans” is written in the pages of the *Taittiriya Upanishad* (Gambhirananda).

According to ayurveda, health is a state of balance between the body, mind, and consciousness. In ayurvedic medicine, there is a balance of the three dosha, or bodily humors, known as the *tridoshas*: *kapha*, *pitta*, and *vata*. The first requirement for health is a proper balance of the doshas. The root cause of imbalance, or disease, is an aggravation of a dosha caused by a wide variety of internal and external factors.

The *Charaka Samhita* states that problems of the digestive system are the root of disease. When the doshas become aggravated and start to accumulate toxins, this causes imbalance and disease. Properly digested food produces *rasa*, which helps to form healthy blood.

Rasayana—Rejuvenation

Ayurveda classifies medicinal plants into multiple groups according to their actions. One of these is the *rasayana* group. The word *rasayana*, which is derived from the words *rasa* (primordial tissue or plasma) and *ayana* (path), literally means “the path that *rasa* takes.” It is believed, in ayurveda, that the qualities of the *rasa* influence the health of other *dhatu*s (tissues) of the body. Hence, any medicines or herbs, such as *rasayanas*, that improve the quality of *rasa* should strengthen or promote the health of all tissues of the body.

Table 3.2. Ayurvedic Rasayana Herbs

RASAYANA HERB	BOTANICAL NAME
Amla*	<i>Emblic officinalis</i>
Arjuna bark	<i>Terminalia arjuna</i>
Ashwagandha*	<i>Withania somnifera</i>
Bacopa (brahmi)	<i>Bacopa monnieri</i>
Bala	<i>Sida cordifolia</i>
Bhringaraj	<i>Eclipta alba</i>
Gotu kola	<i>Centella asiatica</i>
Guduchi*	<i>Tinospora cordifolia</i>
Holy Basil* (tulsi)	<i>Ocimum sanctum</i>
Hoppea	<i>Hoppea dichoroma</i>
Shatavari*	<i>Asparagus racemosus</i>
Shilajit*	<i>Ashphaltum bitumen</i>
Turmeric	<i>Curcuma longa</i>

Rasayana herbs are said to slow aging, be revitalizing and restorative, and prevent disease. They increase the resistance of the body against stress. They also can be taken over long periods of time without causing side effects.

Ayurvedic medicine has many adaptogenic herbs in its pharmacopoeia that normalize numerous physiological functions, improve vitality, and enhance the body's ability to adapt to stress and heal itself. These herbs can be used generally to help cope with stressful situations, improve compromised immunity, and prevent the physiological afflictions of stress. Practitioners of ayurvedic medicine also recognize the contribution of rejuvenating rasayana herbs to restoring balance to the body's systems.

Ayurveda had a strong influence during the formation of traditional Chinese medicine, which in turn influenced ayurveda's further development. Other systems of medicine such as Tibetan and Islamic (Unani-Tibb) traditions were strongly influenced by ayurveda as well. The Buddha (born 550 BCE) was a follower of ayurveda, and the spread of Buddhism into Tibet was accompanied by an increased practice of ayurveda there. Translations of ayurvedic texts also influenced early European medicine.

CHINESE HERBAL MEDICINE

Chinese herbal medicine has been used for thousand of years and continues to be used today by more than one-fifth of the world's population.

The Chinese have accumulated a sizeable pharmacopoeia based on actual human usage and have faithfully recorded their experience and knowledge of these herbal medicines. Knowledge about herbs had been passed down from generation to generation, first as oral tradition and then in the voluminous Chinese medical literature. Currently, Chinese herbal medicine is integrated into the traditional Chinese medicine that is practiced today.

Chinese herbal medicines, compared with those of other countries, are unsurpassed in number, sophistication, and documentation (although mostly in Chinese). China has emerged as a world leader in medicinal plant research.

Classic Texts

The classic Chinese treatise on medicine, the *Huang Di Nei Ching Su Wen* (Yellow Emperor's Classic of Internal Medicine) is considered the most important Chinese medical text and the most ancient. The book's authorship is attributed to Huang Di (known as the Yellow Emperor, he lived around 2600 BCE), but it actually was written by several authors over a long period of time—probably during the period from 475 to 225 BCE. It is commonly believed in China that Huang Di used ginseng, one of the oldest recorded tonics.

Shennong is the legendary originator of Chinese herbal medicine, and the book named after him is known today as the *Shennong Bencao Jing* (the *Shennong Herbal*). This text is also known as the *Herbal Classic of Shennong*, and sometimes the *Divine Husbandman's Classic of the Materia Medica*. It is thought that Shennong lived from 2737 to 2697 BCE, nearly five thousand years ago; this is why it is common to hear that Chinese herbal medicine has a history of five thousand years. However, there is little information about how herbal medicines were used prior to the compilation of this text by authors who lived about 220 CE, nearly eighteen hundred years ago.

Theories of Chinese Herbal Medicine

Chinese herbal medicine is based on a theory of energy that reflects traditional Chinese philosophy. As such, it is plainly different in principle and practice from Western conventional or herbal medicine.

According to the principles of Chinese medicine, health exists when the body is balanced and its energy is freely flowing. The term *energy* refers to *qi*, the life energy that is said to animate the body. The term *balance* refers to the relative factors of yin and yang—the classic Taoist opposing forces of the universe. Medicinal herbs that replenish the vital energy are called qi tonics. In Western pharmacologic terms, they might be called bioenergy modulators.

In an ideal state, yin and yang in all their forms are perfectly balanced in every part of the body. However, external (cold, heat, dampness, dryness, wind) or internal (emotions, stagnation or deficiency of qi or blood) factors can upset this balance, leading to disease. Chinese medical diagnosis and treatment involves identifying the factors that are out of balance and attempting to bring them back into harmony.

Categories of Chinese Herbs

The *Shennong Herbal* records 252 medicinal herbs. The herbs are divided into three categories: superior, ministerial, and assistant. Superior, or kingly, herbs are those believed to be nontoxic and can be taken in substantial amounts for extended periods. Ministerial, or common, herbs are stronger-acting herbs that are medicinal without tonic effect. In overdose, they can produce adverse effects. Assistant, or inferior, herbs can be toxic. They are used to treat specific diseases and should be taken in small amounts for short periods of time.

Superior herbs support at least one of the “three treasures.” The three treasures, according to traditional Chinese medicine, are known as *qi* (kinetic energy), *jing* (essence or vital force), and *shen* (spirit or consciousness). *Qi* is the energy that causes the heart to beat, the lungs to breathe, and the movement of blood throughout the body.

Furthermore, there are five categories within the superior class of Chinese herbs, and some herbs may fit more than one category. These categories include:

- **Qi tonics:** Herbs that increase physiological energy production and are used to treat the depletion of *qi*. Examples include Asian ginseng, dang shen, eleuthero, ginseng, licorice, and prince seng.
- **Blood (*xue*) tonics:** Herbs that nourish the blood and are especially useful for women. Examples include he shou wu, lycium, processed rehmannia, and dang gui.
- **Herbs that nourish the *jing*:** These herbs help conserve or strengthen the vital force. Examples include Asian ginseng, cordyceps, reishi, and schisandra.
- **Yin tonics:** Herbs that nourish the fluids of the body, relieve dryness, and strengthen the lungs, skin, stomach, and bowel. Examples include American ginseng, prince seng, lycium, and shatavari.
- **Yang tonics:** Herbs that strengthen yang. They are especially used for deficient kidney conditions and affect reproductive and adrenal function. Examples include ashwagandha, cordyceps, epimedium, and morinda root.

Another quality that distinguishes the superior tonics is their ability to enhance normal bodily functions rather than force physiological activity in

just one direction. They help to establish and maintain homeostasis. They can strengthen the regulatory mechanisms of the body and mind in such a way that the body can maintain its balance under stress. They tonify the inner regulatory centers of the body, increase inner vitality and energy, and promote disease resistance. They supplement bodily energy to promote health, both in the sick and in the healthy. They are more than just tonics; they have a harmonizing effect on bodily energies that is reflected in the moniker coined by author Stephen Fulder: *harmony remedies*.

Modern research has confirmed that many of the ancient Chinese superior remedies are what we now call adaptogens. They include those herbs listed in table 3.3.

HERB	BOTANICAL NAME	CHINESE NAME
Asian ginseng	<i>Panax ginseng</i>	Ren shen
Astragalus	<i>Astragalus membranaceus</i>	Huang qi
Cordyceps	<i>Cordyceps sinensis</i>	Dong chong xia cao
Dang shen	<i>Codonopsis pilosula</i>	Dang shen
Eleuthero	<i>Eleutherococcus senticosis</i>	Ci wu Jia
Licorice	<i>Glycyrrhiza glabra</i>	Gan cao
Prince seng	<i>Pseudostellaria heterophylla</i>	Tai zi shen
Reishi	<i>Ganoderma lucidum</i>	Ling zhi
Schisandra	<i>Schisandra chinensis</i>	Wu wei zi

All of the herbs listed in table 3.3 are included in the *Pharmacopoeia of the People's Republic of China* (2000 English Edition). Many of these same tonic herbs are part of the Korean, Japanese, Vietnamese, Mongolian, and Tibetan materia medicas.

ADAPTOGENS IN NORTH AMERICA

There are two recognized adaptogens native to North America—American ginseng and rhodiola. There are several other plants that may have adaptogenic effects but none have been studied or have been confirmed as such.

American Ginseng

American ginseng (*Panax quinquefolius*) is native to the Eastern United States and Canada.

Many Native Americans used and still use American ginseng. It was

used by several tribes to treat coughs and headaches, and many native people used the root as a tonic. Ginseng was one of the five most important medicines among the Seneca Indians, primarily used by the elderly. It is also used by the Cherokee, Oklahoma Seminole, Creek, Iroquois, Delaware, Mohegan, Meskwaki, Penobscot, and Ojibwe peoples.

According to Western historical accounts, the first European to take note of American ginseng was a Jesuit priest in Canada in 1716, and it became an import export almost immediately. Ginseng became a cultivated crop in the late 1800s and is still grown widely in the United States, especially in Wisconsin.

American ginseng is related to Asian ginseng but has a different mix of constituents known as ginsenosides. It never became a major medicinal plant in the American materia medica, but the root was listed in the *United States Pharmacopeia* from 1842 to 1888. It was primarily used as a mild stimulant and digestive remedy.

The Chinese have embraced American ginseng—especially wild ginseng. It is considered more yin (cooling) than Asian ginseng and is used to reduce heat in the respiratory and digestive systems. The Chinese have started to grow American ginseng, so future demand for cultivated ginseng from America may be reduced.

Rhodiola

Several varieties of rhodiola species (including *R. rosea*) grow across Alaska, Canada, and the northern mountains of the continental United States. Alaskan natives, such as the Inupiat, used rhodiola as a medicine and a food. Many of these groups used the flowers, both infused and decocted, as a treatment for gastrointestinal ailments, fevers, tuberculosis, and as a general analgesic.

Other Possible Adaptogenic Species in North America

There is one species of licorice that is native to North America, *Glycyrrhiza lepidota*. It grows from western Ontario to Washington State and south to Texas, Mexico, and Missouri. It is called sweet root by the native peoples of the Plains and was used for respiratory and digestive problems. There has been no research to confirm if this species of licorice has any adaptogenic effects.

There is a species of schisandra that grows along the Gulf Coast but has no known history of use. Several other North American herbs including

boar-hog root (*Ligusticum canadense* or *Angelica venenosa*), saw palmetto (*Serenoa repens*), and cross vine (*Bignonia capreolata*) have a reputation of being energizing or endocrine tonics. Some may eventually be found to have adaptogenic activity as well.

Many adaptogens are now being cultivated in North America. American ginseng, astragalus, and rhodiola are grown in Canada. American ginseng, ashwagandha, astragalus, cordyceps, holy basil, licorice, reishi, and schisandra are being grown in the United States. Lycium is grown in Hawaii and amla in Puerto Rico.

Time Line for Adaptogenic Herbs

3000 BCE (approx.): Beginning of ayurveda in India and traditional Chinese medicine in China.

200 BCE (approx.): *Charaka Samhita*, the classic text of ayurveda, mentioned amla, guduchi, holy basil, and shilajit.

77 CE: *De Materia Medica*, written by Greek physician Dioscorides, described six hundred medicinal plants, including licorice and rhodiola.

220: The *Shennong Herbal* recorded 252 medicinal herbs used in China, including Asian ginseng, astragalus, and reishi.

1755: Rhodiola was included in the first Swedish Pharmacopoeia. In the past, Vikings had used the herb to enhance their physical strength and endurance.

1947: The term *adaptogen* is coined by Dr. Nikolai Lazarev.

1958: Soviet researchers describe the action of *Eleutherococcus* as that of an adaptogen.

1960: Israel Brekhman published his article on eleuthero; after that, more than one thousand studies have been published by Soviet scientists concerning the use of adaptogens.

1961: A symposium on plants of the Ginseng family was held in Leningrad, resulting in the publication of an eighty-six-page collection of proceedings.

1962: Eleuthero, rhaponticum, and rhodiola, which are all adaptogens, were included in the Russian Pharmacopoeia.

1969: The first review to be published in the West, covering fifteen years of adaptogen research, was included in the Annual Review of Pharmacology.

1978: Germany published the Commission E monographs for herbal medicine. Ginseng, eleuthero, and licorice were included as approved herbs.

1984: Russian scientists have published in excess of fifteen hundred phytochemical, pharmacological, or clinical studies on adaptogenic herbs, focusing on eleuthero, rhaponticum, and rhodiola. Later research was carried out in Russia, Germany, Armenia, Czechoslovakia, Scandinavia, China, and India—most of which has not been translated into English.

1998: The term *adaptogen* was allowed as a “functional and structural” claim for certain products by the U.S. Food and Drug Administration.

2002: The U.S. National Library of Medicine mentioned the term *adaptogen* when

referring to plant preparations that offer immune support and have antifatigue properties.

4

Actions of Adaptogens

Researchers and herbalists have carefully tried to analyze what it means when it is said that an adaptogen is *nontoxic*, produces a *nonspecific response in an organism to stress*, and that an adaptogen has a *normalizing influence on physiology, irrespective of the direction of change from physiological norms caused by the stressor*. This chapter will discuss how adaptogens act and some of the research that has been done to understand their actions—both by herbalists and by Western scientists.

ADAPTOGENS AND STRESS

Adaptogens modulate our responses to stress (physical, environmental, and emotional) and help regulate and support the interconnected neuroendocrine and immune systems. This re-regulation of an unbalanced or highly stressed system is achieved by the actions of metabolic regulators such as the hypothalamic–pituitary–adrenal (HPA) axis (see chapter 5 for further information on the neuroendocrine system and HPA axis).

Adaptogenic herbs support the entire neuroendocrine system, in particular adrenal function, thus counteracting the adverse effects of stress. They allow our bodies to sustain an adaptive response and minimize some of the damage that a prolonged stress response can cause.

Adaptogens help maintain homeostasis during chronic stress by regulating the body's adaptive reactions. They produce changes in the body due to the stimulation and balancing of several systems, including the neuroendocrine and immune systems. They have an amphoteric effect and can reduce hyperactivity or hypoactivity of the central nervous system, immune system, blood sugar metabolism, mitochondrial functions, and the HPA axis.

Maintaining homeostasis also contributes to the proper regulation of biorhythms and circadian (time-related) rhythms within the body,

including the normalization of body temperature and production of the hormone cortisol.

Adaptogens act as prophylactics by enhancing nonspecific resistance of the body to various stressors. They decrease the incidence of the harmful side effects of stress on the body by stimulating its natural defense systems. This ability to enhance the overall resistance of the body is the key to their health-promoting qualities. These effects help the body resist unfavorable environmental influences such as extreme cold or heat, noise, and exposure to toxic chemicals.

ADAPTOGENS AND HEALTH AND WELL-BEING

Adaptogens enhance general health and well-being, thus creating a positive overall effect on the body and mind. When used along with other therapies, they can help to positively alter the course of many acute and chronic diseases.

In the *Yoga Sutras of Patanjali*, this theme of prevention is known as *heyam dukham anagatam* (Avert the danger that has not yet come).

Adaptogens provide an anabolic effect. They strengthen the entire body by allowing the cells to have access to adaptive energy. They work to protect energy resources from depletion, thus working as tonics in states of fatigue and stress. This anabolic quality of adaptogens is especially important for people involved in athletic training and bodybuilding. It is also important to our bodies as we age and start to develop wasting of the muscles and become weaker.

Adaptogens work at the cellular level to help the body cope with stress-related situations. As powerful antioxidants, they protect cells from oxidative stress (free radical damage). They also affect the basic process necessary for the body to produce energy. The cells use a substance called adenosine triphosphate (ATP) as a major source of energy. Many adaptogens have been shown to enhance the action of cellular ATP and stimulate parts of cells called mitochondria to produce energy. Mitochondrial energy production is a necessity for physical strength and energy.

In addition, some adaptogens also provide needed support to the liver. Among its many functions, the liver promotes glucose production for

cellular energy. Using adaptogens to increase functional liver health can enhance energy, vitality, and well-being, and the removal of toxins helps the body to function more efficiently.

Adaptogens have the ability to slow the biological aging process by reducing the impact of physiological aging factors—primarily oxidation and stress. Adaptogens help reduce wear and tear on the body, balance anabolic-catabolic (building up/tearing down) activity, reduce inflammation, and reduce free radical formation. As such, they are an important component to any longevity program. (See chapter 6 for more information on how adaptogens can slow the aging process.)

MIND-BODY INTERACTIONS

The study of psychoneuroimmunology (mind-body interactions) involves the interaction between the emotions (the psyche), the neurological system (the brain and nervous system), and the immune system. Scientists have realized that the mind plays an important role in both the manifestation and treatment of disease.

Adaptogens have a chemical influence on both the body and the mind. They have the ability to regulate and balance the intricate connections between the brain and the nervous system, the endocrine system, and the immune system. This influence affects the HPA axis and helps regulate and balance these bodily systems, therefore playing a major role in both emotional and physical health.

Although many researchers and physicians believe that the mind and body are one, a significant number still insist that the mind and body are separate entities that have only minimal interaction. For a long time, Western medicine has held this concept of separation. At the same time, Chinese, ayurvedic, and other traditional medical systems have recognized the interconnectedness of the body, mind, and spirit.

The study of mind-body interactions is producing wonderful insights into how we function. For instance, the human mind is so powerful and the connections between perception and physiological response so strong that we actually can set off the “fight-or-flight” stress response by just imagining ourselves in a threatening situation.

Researchers are trying to prove that positive thought can help make you well. They have shown that meditation and prayer can change brain

chemistry and therefore affect bodily chemicals such as neuropeptides and hormones and reduce stress. Individuals can learn to control their own stress response by using the mind. Studies also have shown that positive social interactions can prevent infections and that our moods can affect our immune system.

As an adjunct to taking adaptogens, one could add prayer, ritual, meditation, or positive social support. All of these things will benefit the effectiveness of herbal or conventional medical therapy.

Ayurveda teaches that body and mind are the seats of illnesses. Illnesses and negative conditions that originate in the mind, such as anger, greed, and depression, have a physical impact. Similarly, illnesses that originate in the body also cause mental depression and stress.

Furthermore, ayurvedic and Chinese practitioners have identified certain adaptogens as having psychological and spiritual benefits, including Asian ginseng, holy basil, licorice, reishi, and shatavari (see chapter 6).

STRIVING FOR HEALTH

The World Health Organization defines health as “a state of complete physical, mental and social well-being and not merely absence of disease or infirmity.” Emphasis may be placed on *well-being*.

According to ayurveda and other traditional systems of medicine, health is a state of balance between the body, mind, and consciousness. Many healers have come to the conclusion that the body naturally self-corrects and moves toward maintaining health and balance. Maintaining balance is part of life and, as such, is what we knowingly or unknowingly strive for. Nature and the environment are constantly striving for organization, healing, and balance.

Another nonmedical philosophy of well-being is holistic health, which addresses the care of the whole person—body, mind, spirit, and environment. In practice, this means that every person is seen as a unique individual, and that particular individual is the focus of treatment rather than a particular disease. Disease is understood to be the result of physical, emotional, spiritual, social, or environmental imbalance. Healing therefore takes place naturally when these aspects of life are brought into proper balance.

HEALTH CLAIMS FOR HERBAL MEDICINE

Modern scientific research has much to say about what criteria are used to evaluate health claims for herbs. There seem to be two approaches: (1) the evidence-based or science-based approach and (2) the empirical or traditional approach. In herbal medicinal practice, there is basically only one approach and it involves an integration of both approaches.

There is a longstanding empirical criterion that has been used for thousands of years: do the substances work? The answers are documented based on observations made by herbal practitioners—often called observational studies. The answers also may or may not be documented by modern scientific research.

Consider the simple example of an herbal practitioner who gives someone who is ill an herb. The herb quickly and without side effects cures the illness. This same event is repeated again and again. Is this a case in which a health claim can be made, or does there need to be scientific research studies to verify that the herb might work?

Does Scientific Research Apply to Adaptogens?

The revival of herbal medicine in the United States has created a renewed demand for many herbs. As herbs have become more popular, there has been a backlash from the medical community and media. Herbs were the darlings of the media during the mid-1990s, panaceas for what ailed you. Now they are regularly reported to be serious dangers to your health. From panaceas to poisons, what changed? Some of the change simply is due to the increased study and use of herbal medicines; the more something is used, the more likely idiosyncratic effects and side effects will be noted. Some of the change has to do with the media's desire to sell newspapers or get you to watch their TV stations. Fear and controversy sell. The orthodox American medical community never has trusted herbs. The thinking is that if it doesn't come from a major pharmaceutical manufacturer with the approval of the U.S. Food and Drug Administration (FDA), it must be useless, or dangerous, or both. There is an inherent inconsistency in that belief, but it is widely held.

At the same time, modern scientific research has provided evidence that adaptogenic herbs have real, health-promoting benefits. We are saying "evidence" rather than "proof." Much of the scientific evidence is preliminary and only has been verified by small scientific studies but is

consistent with hundreds and thousands of years of traditional ayurvedic and Chinese claims and uses, so we tentatively give the benefit of any doubt to tradition.

Long-Standing Evidence

For thousands of years, ayurvedic and Chinese physicians, practitioners, and laypeople have observed the health-promoting benefits of adaptogens. Some of the practitioners documented their actions and reported on the efficacy and safety of the herbs. Many of these writings can be found in India (written in Hindi) and China (written in Chinese). There is also an oral tradition of knowledge that has been passed down from generation to generation.

It is our belief that the long-standing practices of ayurveda and Chinese medicine cannot be denied just because they have not been thoroughly tested by modern methods. The results of relatively short-term animal studies (in vivo), experimental test tube studies (in vitro), and small-sample human studies (clinical) are both variable and limited in their applications. Because individuals and conditions are never completely alike, the effect of herbs will not be exactly the same from application to application—even with double-blind, placebo-controlled studies. Furthermore, the experienced practitioner's own perceptions about the effectiveness of a treatment cannot simply be displaced by scientific research.

The famous alchemist and physician Paracelsus said almost five hundred years ago, "Experience is the judge; if a thing stands the test of experience, it should be accepted; if it does not stand this test, it should be rejected."

Humans are physically, mentally, and emotionally very complex. The observations made by practitioners over hundreds or thousands of years may provide more accurate overall assessment of the effect of adaptogens than short-term clinical studies and experiments.

It seems that in the United States, current medical science discounts personal case reports or observational studies as nothing more than anecdotal or subjective. Please understand that when we speak of observations made by practitioners over extended periods of time, we are not referring to anecdotal information and coincidence. Traditional herbal medicine has been carefully evaluated and reevaluated by many practitioners over many generations. As such, it should be highly rated.

Much of the modern research on adaptogens has been on animals. These in vivo studies have tended to corroborate and confirm the related claims in ayurvedic and Chinese literature. This research has confirmed many of the traditionally known actions and therapeutic uses of these herbs, including their remarkable adaptogenic and antistress activities as well as their powerful support for the immune system. Many modern clinical studies are also in agreement with traditional claims from ayurvedic and Chinese literature.

Adaptogens are used for health prevention and promotion and increased well-being. Within scientific research models, it is difficult to measure these actions. It is relatively simple to see if a medication lowers blood pressure or total cholesterol levels. It is much more challenging to measure the subtle but real improvements that adaptogenic herbs supply.

Asian ginseng is an example of herbal medicine that has been used in ancient China for millennia. Traditional Chinese medical literature refers to its long history of use as a reason to recommend it as a health product. Scientific investigations of ginseng are usually aimed at attempting to confirm the validity of traditional use. Thus, herbalists believe the historical basis for consuming ginseng is still relevant, with or without scientific collaboration. This argument can be made for most of the different adaptogens. However, in many cases more clinical research is needed to confirm results and to gain the acceptance of the medical community.

Why Many Published Research Findings Are False

“The great majority of published research is so deeply flawed that it should be considered essentially worthless.” So wrote John Ioannidis, PhD, an epidemiologist affiliated with the University of Ioannina School of Medicine in Greece and Tufts University School of Medicine in Boston, in the August 2005 issue of the journal *Public Library of Science Medicine*.

“For most study designs and settings, it is more likely for a research claim to be false than true,” he stated in the study’s summary. “Moreover, for many current scientific fields, claimed research findings may often be simply accurate measures of the prevailing bias.”

Ioannidis singled out the following types of studies as being particularly likely to lead to a worthless result:

- Studies with a small sample size;
- Studies that consider a small number of possible effects;
- Studies whose outcomes are poorly or subjectively defined;
- Studies in which financial conflict of interest is a factor;
- Studies in which the researchers are prejudiced by being unduly wedded to a particular outcome; and
- Studies of a topic that is currently “hot.”

In addition, the following quote by Scott Zeger (from the *American Journal of Epidemiology* 1991) provides insight into understanding scientific conclusions:

Statistical models are sometimes misunderstood in epidemiology. Statistical models for data are never true. The question of whether a model is true is irrelevant. A more appropriate question is whether we obtain the correct scientific conclusion if we pretend that the process under study behaves according to a particular statistical model.

Herbal Research

If there was more quality scientific research done on medicinal herbs that was designed to circumvent the difficulties discussed above, the scientific and medical community would plainly see the same results that have been reported for thousands of years by those who practiced ayurvedic and Chinese medicine.

There seem to be several reasons why there isn't more significant scientific research being done on medicinal herbs. There are certainly economic concerns. Herbs are inexpensive, especially when compared to the retail price of pharmaceuticals, and companies that market pharmaceutical and nutritional products would find it very difficult to profit from expensive herbal research. It is difficult, although not impossible, to patent herbal products, and without this type of legal protection, few companies are willing to invest significant amounts of money into herbal product research.

When examining herbal research, the following problem areas should be kept in mind:

1. It is not uncommon for studies to be done on animals and the results

extrapolated to humans, even though people may metabolize various phytochemicals quite differently than animals.

2. Researchers have done studies on an herb without making sure that the substance they are examining truly is the herb in question, making results meaningless.
3. It is not uncommon for information on isolated constituents of an herb to be confused with results on the whole herb or for studies on injectable forms of herbs to be confused with studies of herbs taken orally.
4. Factors such as dosage in trials can create varying results. Using Asian ginseng as an example, clinical trials in China get dramatically higher responses than Western trials. Much of the discrepancy may lie in the dosage. Most Western studies are based on daily doses of two hundred milligrams of ginseng, but Chinese studies use much higher amounts—up to ten times more.
5. Rarely are herbalists consulted when studies on herbal products are designed. This is very unfortunate, because they are the authorities on the effective clinical use of these substances. Examples of research flawed by a basic lack of understanding of herbal practice abound. In the last year, we saw two studies showing that echinacea was not effective. One used a product made from the leaf juice (the root is what is usually used) that was five times more dilute than what the vast majority of American herbalists use. It was no surprise to many that the study showed no or little activity. In the second study, researchers used what was probably an effective echinacea product, but the dose was only one-quarter to one-third of what would be considered an adequate therapeutic dose. It, too, was found to be ineffective. This study was comparable to giving someone one-half of an aspirin and wondering why he still has a headache.

These types of misinterpretation and misunderstanding give rise to incorrect data that often continues to be repeated, even decades after the original research has been disproved. Dr. Ronald Siegel's theoretical "ginseng abuse syndrome" continues to be mentioned even after being discredited more than twenty years ago. In Siegel's study, all subjects who had the "syndrome" consumed ginseng together with caffeinated beverages and developed symptoms of elevated blood pressure, anxiety,

and insomnia. What he described had little to do with ginseng and everything to do with excessive caffeine consumption—it was actually “caffeine abuse” not “ginseng abuse.”

Fortunately, in recent years, there have been more attempts to provide reliable scientific validation for medicinal herbs. There are many new studies coming out each year that are being published in peer-reviewed journals, and as such, they can be of great value. In addition, many herbalists and other health care practitioners are sharing their clinical experiences with medicinal herbs in their professional journals and literature. It is our belief that a good clinical herbalist always should be a part of any medicinal plant research team.

EFFICACY AND SAFETY OF PHARMACEUTICAL DRUGS

There is always the question of efficacy—does the medicine work? The following chart provides estimates of how effective pharmaceutical drugs are for treating people with various illnesses or diseases. The range is from 25 to 60 percent effective. That means that pharmaceutical drugs are not effective from 40 to 75 percent of the time. Also, we know that most have side effects and that in some cases the side effects are more pronounced than the condition being treated. Also, they are expensive. For example, Interferon-Ribivirin treatment for hepatitis C (genotype 1) costs over \$25,000 for the necessary one-year treatment.

In light of this, it did not seem far-fetched when Allen Roses, MD, (worldwide vice president of genetics at pharmaceutical company GlaxoSmithKline) made an interesting observation. He said, “Our drugs do not work on most patients” (Connor 2003).

The following table shows the percentage of efficacy for pharmaceutical drugs when used in different disease treatments.

THERAPEUTIC AREA	PHARMACEUTICAL EFFICACY (%)
Alzheimer's disease	30
Asthma	60
Cardiac arrhythmias	60
Depression	32
Diabetes	57
Hepatitis C	47

Incontinence	40
Migraine (acute)	52
Migraine (prophylaxis)	50
Oncology	25
Rheumatoid arthritis	50
Schizophrenia	60

There are often negative side effects with pharmaceutical drugs. Around 40 percent of people taking these modern medicines suffer from various adverse reactions, which can range from mild headaches to kidney damage to death.

A 2006 survey involving three hundred practicing physicians revealed that 70 percent of physicians are worried about the safety of drugs they prescribe and 78 percent would prefer prescribing a drug that has been on the market at least ten years (Medco Health Solutions).

From 1870 to 1930 we had traveling medicine shows in America. Now we have infomercials and consumer advertising from pharmaceutical companies. In many cases, perception clouds reality. When a new pharmaceutical drug is promoted, it is perceived as a wonder drug. However, as time goes on and side effects appear, the positive perception of the drug often diminishes.

HERBAL EFFICACY AND SAFETY

Proving the efficacy of herbal medicine is complicated by the fact that each plant is made up of many different chemical compounds. The gold standard in scientific research is the placebo-controlled, double-blind study, which was primarily designed to test drugs with one active chemical ingredient. The diverse nature of plant compounds, even within the same species, makes it considerably more difficult to assess their effectiveness in controlled studies; herbs do not behave in the body like single-chemical drugs. It must also be added that the quality of the herb and the complexities of the treatment (dosage, duration, compliance, combinations with other herbs) greatly contributes to herbal efficacy.

The established medical community has difficulty examining herbal efficacy. Most doctors have been taught that a specific scientific style of research is the only credible one. In contrast, most herbalists have been taught to view all evidence (traditional, ethnobotanical, historical, observational, and scientific) when gaining insight into the safety, efficacy,

and therapeutic potential of herbal medicine.

Related to evaluating efficacy is the issue of safety. The classic definition of an herbal adaptogen includes a lack of toxicity. It is remarkable to know that all adaptogens are relatively safe. It must also be said that all substances can have harmful effects under extreme conditions such as very high doses or chronic patterns of misuse. No substance is unconditionally safe and beneficial in all possible applications.

One example of a traditional system of medicine that categorizes herbs according to safety or potential toxicity is traditional Chinese medicine. Herbs listed in the Chinese materia medica are divided into three categories, which were discussed in chapter 3: (1) Superior herbs are nontoxic and are used as tonic remedies, (2) Ministerial herbs may have some mild toxicity and are used to support the superior herbs, and (3) Assistant herbs are remedies that are toxic and are used only for specific ailments for limited periods of time. Chinese herbs that have been identified as adaptogens are all considered superior herbs (see chapter 7 for additional discussions on safety).

When looking at therapeutic treatment for patients, the best outcome may be the result of a form of complementary medicine in which both pharmaceutical drugs and medicinal herbs are used, if necessary, to complement each other and best meet the needs of the individual being treated.

Herbal medicine may not be perceived as effective medicine today, but as time goes on and there are more studies with positive results and few side effects, perceptions will hopefully change.

SCIENCE, BELIEF, AND PLACEBOS

Scientific “facts” are always in a state of flux and exist only in the relative conceptual world. All scientific research can do is provide support or corroboration for or against specific hypotheses.

Many people believe that biomedical scientific studies are proof that something works or does not work. The argument of this book is that most scientific-based research involving herbs is flawed and that the true gold standard is clinical observation and includes subjective results—often documented over thousands of years. Yes, there is value in scientific-based research; however, if verified by tradition, its value becomes magnified.

Beyond science, we have a belief that there is relevance to life and our existence and that there is interconnectedness between all living things. This belief applies to the herbs that we take, too. We take adaptogens to promote health and prevent disease. The belief that the herbs may help contributes to their efficacy. As with all medicines, there is a significant mind-body connection.

Some skeptics suggest that the reason herbs work is due to a placebo effect. The placebo effect describes the phenomenon of when a person's belief that something will work is able to positively influence their physiological function or healing. Researchers are divided on whether this phenomenon even exists. Some studies suggest there is little or no evidence of the mind's ability to produce significant clinical effects. Other studies have found positive evidence that this effect can occur from 30 to 60 percent of the time. While we believe that the placebo effect is real and useful, herbs (including adaptogens) do not work due to belief; they have real, demonstrable physiological activity.

STIMULANTS, TONICS, AND ADAPTOGENS

Stimulants such as caffeine, nicotine, and amphetamines increase a person's energy and work capacity after a single dose and can increase alertness and the ability to concentrate on mental tasks. They trigger the release of stress hormones, particularly adrenaline and cortisol, and give a quick rush. They also increase the activity of the sympathetic nervous system. Yet, the use of stimulants is usually followed by fatigue, and long-term use can impair mental function. Stimulants of the central nervous system also can cause insomnia, nervousness, anxiety, and adrenal depletion.

In traditional Chinese medicine, a tonic is different from a stimulant in that it doesn't have the negative physical effects. A tonic supplements, strengthens, and invigorates various organs and body systems. Many tonics continue to increase energy after repeated doses, and there is a residual effect after dosing ceases. Tonic herbs are a part of everyday life in China and are used to maintain balance or wellness.

To be considered a tonic in Chinese medicine, an herb must meet the following criteria:

- Aid in the attainment of a long life;

- Have broad and profound health-promoting actions;
- Have no negative side effects when used reasonably and therefore can be taken continuously over a long period of time if desired, yielding cumulative, long-term benefits;
- Help balance emotional and psychic energy; and
- Taste good enough to be consumed easily and be easily digestible.

For example, astragalus has tonic effects not only on the immune system but also the respiratory and cardiovascular systems and directly and indirectly on the inhibition of the growth of tumors.

Unfortunately, in Western literature the terms *tonic* and *adaptogen* became intermingled. As such, many tonic herbs (such as atractylodes, jujube date, and dang gui) that are not adaptogens have been called that, perhaps solely to satisfy marketing needs.

All adaptogens have tonic effects, but not all tonics are adaptogens. The following list details some of the specific characteristics of adaptogens.

- As tonics, adaptogens improve cellular energy production and help maintain energy reserves.
- Adaptogens stimulate the nervous system by means that are totally different from those of stimulants.
- Adaptogens differ from stimulants by enhancing the recovery process after exhaustive physical work or exercise.
- Adaptogens do not exhibit any of the negative effects of stimulants.
- Adaptogens always have an effect on the neuroendocrine system.

Table 4.2. Differences between Stimulants and Adaptogens

ADAPTOGEN CHARACTERISTIC	STIMULANT EFFECT	ADAPTOGENIC EFFECT
Adaptive energy (vitality)	Increase	Conserve
Enhanced resistance to external stress	No	Yes
Improved recovery after exhaustive physical work	No	Yes
Energy depletion	Yes	No
Performance/survival under stress	Decrease	Increase
Insomnia	Yes	No
Side effects	Common	Rare
Physical or psychological addiction	Yes	No

Adapted from Pannossian (2003).

Asian ginseng is an example of an adaptogen that both acts as a tonic and can provide an immediate boost of energy. It increases adaptive energy (vitality) and boosts energy reserves. Both rhodiola and ashwaganda have a positive effect on sleep and are effective in helping to regulate sleep disorders and improve sleep quality, as opposed to the negative effect on sleep caused by stimulants.

HEALING THEORY: WESTERN AND EASTERN

Orthodox Western medicine teaches that to cure a disease, you need to identify the root cause and eliminate it. This is commonly known as the “doctrine of a specific etiology of disease.”

Western medicine is very effective for treating people with many infectious diseases, life-threatening illnesses, and traumatic injuries. On the other hand, many chronic diseases such as autoimmune diseases, arthritis, migraines, and irritable bowel syndrome often are resistant to standard medical treatment, and many sufferers may find greater relief through the use of herbs, changes in diet, physical exercise, and stress reduction techniques.

Both ayurvedic medicine and traditional Chinese medicine teach that the free flow of energy (*prana, qi*) maintains health and helps to heal disease. It is thought that the use of acupuncture, herbs, massage, t'ai chi, yoga, and other techniques help correct and stimulate the body's innate healing forces.

Pure Water Has No Fish

Ayurvedic and Chinese medicine both do not believe that a disease has to be completely removed. This is in direct contrast to the antipathogen approach of Western medicine. Instead of aiming at destroying external disease-causing pathogens, ayurveda and Chinese medicine aim at strengthening the vitality and innate bodily intelligence within a person by promoting internal balance.

Using the example of viruses, like Epstein-Barr virus (EBV), many patients worry that if they test positive for this virus they are not healthy. The reality is that everybody carries certain viruses in his or her body. It is actually unusual not to have viruses in our bodies. In many cases, herbal

medicine will gradually support the immune system and both control a virus such as EBV and prevent it from doing further harm.

There is a wonderful Chinese saying: “Pure water has no fish.” The concept is that no living things are pure and sterile environments do not sustain life. We can coexist with many viruses, fungi, bacteria, and in some cases even cancer cells, if we maintain a strong immune system, good nutrition, healthy digestion and bowel flora, and a positive attitude.

5

Adaptogens and the Stress Response

Russian research in the 1950s and 1960s on eleuthero and other known adaptogens concluded that they enhanced the body's ability to handle all types of stressors.

This chapter discusses how adaptogens help the body adapt to stress and support normal function from a biological and physiological perspective. It also discusses stress physiology and biomedical stress theory. Throughout the chapter, explanations will range from simple to complex, but terms will be defined. Please view these details as additional reference material because it becomes somewhat technical.

Stress causes changes in hormone levels as well as immune system, cardiac, and gastrointestinal function. Prolonged stress results in predictable effects on the body, and the physiological and psychological consequences of acute and chronic stress can persist well beyond the actual ending of a stressful event.

Stress is also two-sided; a little bit is both good and necessary, but excess or chronic stress can be harmful. It is not exclusively connected to difficulties and unpleasant events. A state of stress can exist even while we are experiencing positive events. It is our body's reaction to changes in our environment and psyches.

The term *stress* also can be used in the negative sense of *distress* and can be used to describe a chronic state of imbalance in the response to stressful events.

Common Stressors

Biological: Caused by exposure to bacteria, viruses, molds, and parasites.

Chemical: Caused by exposure to toxins, pesticides, herbicides, fungicides, insecticides, heavy metals, household and industrial chemicals, fumes, dust, smoke, tobacco, and synthetic drugs.

Environmental: Exposure to extreme cold or heat, noise, ultraviolet sunlight, changes in barometric pressure or altitude, allergens, xenoestrogens (foreign

substances that imitate the effects of estrogen), electromagnetic influences (microwaves, radio waves, electric high voltage lines), and radiation.

Nutritional: Caused by food allergies, refined and highly processed foods, mineral-depleted food (grown in poor soil), nutritional deficiencies, alcohol, drugs, and free radicals (natural byproducts of cell metabolism caused by eating trans fat).

Physical: Caused by high blood pressure, strenuous physical activity including exercise, surgery, trauma, starvation, lack of oxygen, intoxication, drug use, sleep deprivation, severe illness, infection, being pregnant or having a new baby, and chronic overstimulation.

Psychological: Caused by depression, anger, fear, anxiety, worry, desire, grief, loss, mental illness, major change, mental trauma, and overwhelming responsibility. Psychological stress frequently accompanies physical stress.

Spiritual: Caused by a sense of the loss of meaning in one's life and soul sickness.

A stressor is any agent or event that threatens the body's normal homeostasis. Stressors are not uniform events with identical effects on neuroendocrine and immune function. It is difficult to know exactly how they will affect the various body systems. One stressor might lead to intense nervous system activation but have little effect on HPA axis hormonal responses or the effect might be a blend of hormonal activity and nervous system activation. The impact of stressful events also depends on other factors such as a person's body type, personality, and heredity as well as the intensity, severity, timing, and duration of the stressful conditions. All factors that are considered to be stressors strongly affect physiological and psychological function.

THE BODY'S RESPONSE TO STRESS

Regulation of the stress response involves three primary systems of the body: the endocrine system, the central nervous system (particularly the autonomic nervous system, which controls unconscious functioning), and the immune system. The neuroendocrine system, specifically the HPA axis, is one of the body's major auto-regulatory systems. The health of all of these systems is important to our vitality and any disruption or disharmony can cause health problems and disease.

The process of reestablishing homeostasis that is disturbed by stressors is called *adaptive response* because it enables the body to adapt to the influence of stressors.

Stress is managed by two different physiological systems: the *hypothalamic-pituitary-adrenal* (HPA) axis and the *sympathoadrenal*

system (SAS), which is the interface between the sympathetic nervous system and adrenal glands. If the hypothalamus in the brain perceives something as stressful, it activates a cascade of hormones that are referred to as *stress-response hormones*. The body's stress system, the HPA and SAS, produces various changes in the body in response to the influence of stressors. These changes cause the body to adapt and strive to reestablish balance.

Adaptogens help the body achieve an adaptive response to stress; they increase the ability of the body to cope more effectively with stress. They work to modify the body's reaction to stress and alter the release of stress hormones in the body.

When the body is under stress, it is using more energy. The body's energy supply is being depleted because nutrients are being converted to energy. This can cause fatigue if the process goes on for too long and can lead to a variety of health problems.

Another effect of normal metabolism is the creation of free radicals. If the concentration of free radicals exceeds the body's capacity to neutralize them, then cells can be harmed—especially mitochondria, the cell's energy powerhouse. They are neutralized by antioxidants.

Physiological Description of the Stress Response

Stress is perceived by the limbic system within the brain. Almost immediately after a stressful event, neurons activate the HPA axis and the SAS, which releases various hormones that are filtered through the HPA axis and travel through the tissues and bloodstream. In the hypothalamus, stressors stimulate the release of corticotropin-releasing hormone (CRH). Then, CRH travels to the pituitary gland, where it triggers the release of adrenocorticotrophic hormone (ACTH). Next, ACTH triggers the production and release of hormones called glucocorticoids (GCs), primarily cortisol, from the adrenal cortex. The hypothalamus also stimulates the adrenal gland, via the sympathetic nervous system, to release catecholamines, such as adrenaline and noradrenaline, into the bloodstream. The combination of the release of adrenaline and noradrenaline results in the well-known fight-or-flight response. Catecholamines and GCs induce a variety of behavioral, biochemical, and physiological changes, collectively termed the *stress response*. This response will be discussed in the following sections.

Neuroendocrine System

The endocrine system and the nervous system are so closely associated that they are collectively called the *neuroendocrine system*. The hypothalamus and pituitary gland form a complex interface between the nervous and endocrine systems. The brain can influence the activity of nerve cells, which signal the adrenal system to release hormones that can influence the release of other hormones. The neuroendocrine system is complex. This overview will touch on the aspects that affect the stress response. It will also provide definitions of the major components and hormones involved within the neuroendocrine and immune systems.

The HPA axis plays an essential role in the body's response to stress and plays a central role in the function of the neuroendocrine system.

The *limbic system* is a collective term denoting brain structures (including the hippocampus) and interconnections of these structures. It exerts an important influence upon the neuroendocrine system.

Endocrine System

The *endocrine system* is composed of glands that release their hormones directly into the bloodstream to send chemical signals to target cells. These glands include the *pituitary* gland, pineal gland, *hypothalamus*, thyroid gland, parathyroid glands, thymus, *adrenal* glands, ovaries (in females) or testes (in males), and islets of Langerhan's in the pancreas.

The main neural control center in the brain is the *hypothalamus*, also known as the "keeper of internal balance" or the "master switchboard." The hypothalamus secretes hormones that cause other endocrine glands to secrete hormones. It directs the fight-or-flight response of the *autonomic nervous system*. Its main function is *homeostasis*, or maintaining the body's balance. The functions that are balanced include blood pressure, body temperature, fluids and electrolytes, and body weight.

The *hypothalamus* has two main outputs to signal stress response: endocrine signals to the pituitary and adrenal glands and neural signals to the sympathetic nervous system, including signals to the medulla of the adrenal gland.

The hypothalamus can control every endocrine gland in the body and can alter blood pressure, body temperature, metabolism, and adrenaline levels. If the hypothalamus perceives something as stressful, it activates hormones to create the *stress response*.

The *pituitary gland* is suspended from the hypothalamus by a thin stalk. It is sometimes called the “master gland” because it regulates many crucial functions. The pituitary gland produces and secretes hormones in response to commands from the hypothalamus. Structurally, the pituitary gland is divided into two parts, the anterior and posterior lobes, each having separate functions. The anterior lobe regulates the activity of the thyroid and adrenal glands as well as the reproductive glands.

The *adrenal glands* are on top of each kidney. Each gland has a cortex (outer region) and a medulla (inner region). The adrenals handle the stress response by producing hormones and stimulating the sympathetic nervous system. Adrenaline and noradrenaline are secreted from the adrenal medulla in response to sympathetic nervous system stimulation. Cortisol is secreted from the adrenal cortex in response to HPA stimulation.

Autonomic Nervous System

The *autonomic nervous system* is the part of the overall nervous system that is concerned with the control of involuntary bodily functions. Its name comes from the term *autonomous*, and it runs bodily functions without our awareness or control. It regulates, via the nerves, the functions of glands, smooth muscle tissue, and cardiac muscle. It consists of two physiologically and anatomically distinct, mutually antagonistic components: the sympathetic nervous system and the parasympathetic nervous system. The two subdivisions function in a dynamic balance aiming at homeostasis.

The *sympathetic nervous system* is the part of the autonomic nervous system that is active during stress and is a central regulatory system that assists in maintaining homeostasis. It specifically includes nerve cells involved in stress response.

The *parasympathetic nervous system* has many specific functions, including slowing the heart, stimulating the gut and salivary glands, and other responses that are not a priority during stressful situations. As the sympathetic nervous system is active during stress, the parasympathetic system remains calm, recharges the body, and tries to keep things balanced. The state of the body at any given time represents a balance between the sympathetic and parasympathetic systems.

Sympathoadrenal System

The interface between the hypothalamus, adrenal medulla, and

sympathetic nervous system is referred to as the *sympathoadrenal system* (SAS). This system creates the fight-or-flight response that controls the body’s reaction to a stressor, resulting in increased levels of adrenaline and other chemicals.

The fight-or-flight response can be set off by one or more stressors and triggers a wide array of physical responses. These include an increase in all of the following: concentration, speed of heartbeat, rate of breathing, blood flow, blood sugar levels, oxygen consumption, and nervous system activity. The response also triggers a decrease in digestive function and the release of adrenaline and/or noradrenaline into the bloodstream. Under severe stress, men stop producing sperm and hair and women stop producing reproductive hormones and start to store fat. This response also has been called *fright, flight, or fight*.

Stress Hormones

The following section describes the different hormones secreted by the endocrine system and how they relate to the body’s stress response.

Cortisol

Cortisol (hydrocortisone) is the hormone released from the adrenal glands in response to stress; it is often called the “stress hormone.” It is the most potent of the naturally occurring glucocorticoids and is essential to metabolism as well as stress response.

Table 5.1. Endocrine System Hormones

ENDOCRINE GLAND	HORMONE
Hypothalamus	Corticotropin-releasing hormone (CRH)
Anterior pituitary	Thyroid-stimulating hormone or thyrotropin (growth hormone) ACTH Adrenocorticotropic hormone (ACTH) or cortic
Posterior pituitary	Vasopressin and oxytocin
Adrenal cortex	Cortisol or hydrocortisone (glucocorticoid) Dehydroepiandrosterone (DHEA) Aldosterone (mineralocorticoid) Adrenosterone or andrenosterone (adrenal androgen)
Adrenal medulla	Adrenaline or epinephrine (catecholamine) Noradrenaline or norepinephrine

Cortisol secretion increases in response to any stress in the body, whether physical or psychological. When cortisol is secreted, it causes a breakdown of muscle protein, leading to the release of amino acids (the “building blocks” of protein) into the bloodstream. These amino acids then

are used by the liver to synthesize glucose for energy, in a process called *gluconeogenesis*. This process raises the blood sugar level so the brain will have more glucose for energy. At the same time, the other tissues of the body decrease their use of glucose as fuel. Cortisol secretion also leads to the release of fatty acids for use by the muscles. Taken together, these processes that direct and replenish energy prepare the body to deal with stress and ensure that the brain receives adequate energy sources. Cortisol's other important functions in the body are the regulation of blood pressure and cardiovascular function as well as helping the immune system respond to infection and inflammation. Cortisol levels in normal individuals are highest at around six to eight in the morning and are lowest around midnight.

Too much cortisol can suppress immune functions. Symptoms of elevated cortisol can include anxiety, hypertension, sex hormone imbalance, insulin resistance, obesity, osteoporosis, insomnia, and polycystic ovarian syndrome (in women).

Too little cortisol can cause inflammatory disease. Symptoms of depressed cortisol can include depression, chronic fatigue syndrome, hypotension, insomnia, premenstrual syndrome (PMS, in women), infertility, impotence (in men), and fibromyalgia.

Other Stress Hormones

Adrenocorticotrophic hormone (ACTH, also known as corticotropin) is a hormone secreted by the anterior part of the pituitary gland. Levels of this hormone increase in response to stress, disease, and decreased blood pressure. The specific function of ACTH is to stimulate the growth and secretions of the cortex (outer layer) of the adrenal gland. These secretions include corticoids (also known as corticosteroids). Among the corticoids are the glucocorticoids, including cortisol.

Catecholamines (adrenaline, noradrenaline) are released by the adrenal medulla and affect the sympathetic nervous system. They produce widespread effects throughout the body, including an increase in blood pressure and heart rate during times of stress.

Adrenaline (epinephrine) is normally present in the bloodstream in minute quantities. In times of excitement or stress, additional quantities are secreted, causing an effect on body structures in preparation for physical exertion (either fight or flight). Adrenaline stimulates the heart, facilitates blood flow to muscles and the brain, constricts the small blood vessels,

raises the blood pressure, liberates sugar stored in the liver, and relaxes certain involuntary muscles while contracting others.

Noradrenaline (norepinephrine) is chemically related to adrenaline. It helps maintain normal blood circulation and can increase blood pressure. It is also the chemical agent responsible for transmission of nerve impulses in the autonomic nervous system.

Thyroid-stimulating hormone is secreted by the pituitary gland and stimulates the thyroid gland to secrete hormones (T3 and T4) that affect body metabolism.

Dehydroepiandrosterone (DHEA) is an androgenic steroid hormone produced by the adrenal cortex. Its primary function is to inhibit the binding of cortisol. It is a functional antagonist of cortisol. Cortisol and DHEA levels serve as good indicators of HPA axis activity. When cortisol levels go up, DHEA drops, and when DHEA levels are normal, cortisol also normalizes. Low DHEA levels can weaken the immune system.

Corticotropin-releasing hormone (CRH) is the hormone released from the hypothalamus that interacts with the pituitary to produce ACTH.

Aldosterone is a hormone produced by the adrenal cortex that affects the kidneys by its regulation of sodium, potassium, and water retention. It keeps the blood pressure from falling.

In addition to the stress hormones, there are *feedback* controls that are set into motion following an increase in stress hormones, eventually signaling the hypothalamus to stop producing its messenger CRH hormone.

Adaptogens and the Neuroendocrine System

Adaptogenic herbs support the entire neuroendocrine system, in particular the adrenal function, thus counteracting the adverse effects of stress. Adaptogens also help the body with its natural adaptive responses to stress. They do this by exerting a biochemical influence on the hypothalamus and its two main systems to signal stress response—the HPA axis and the SAS.

The stress response pathways are as follows:

HPA: Stressor → hypothalamus → CRH → pituitary → ACTH → adrenal cortex → cortisol (to mobilize energy)

SAS: Stressor → hypothalamus → sympathetic nervous system → adrenal medulla → adrenaline (prepares the body for the fight-or-flight response)

Adaptogens help to modulate and regulate the use of cortisol, allowing the body to maintain a healthy stress response. They also help regulate and support the interconnected neuroendocrine and immune systems allowing the body to maintain optimal homeostasis.

Immune System

The *immune system* is a network of specialized cells, tissues, and organs that protect the body from pathogens (disease-causing agents) such as bacteria, viruses, fungi, and tumors. It includes the lymph nodes, lymphatic vessels, bone marrow, spleen, and thymus. Normal functioning of the immune system is critical to our health and resistance to infection. *Immunity* is an expression of homeostasis within the immune system.

When pathogens invade the body, the immune system launches a nonspecific response through antibody and cellular actions. It begins with inflammation, which is increased blood flow to the affected area. Inflammation signals chemical messengers to send white blood cells to destroy invading pathogens. When the immune system is functioning properly, it can protect the body against many pathogens.

The *neuroendocrine system* works in concert with the immune system, communicating via neurotransmitters, which are substances that send signals between nerve cells, and hormones that travel through the tissues and the bloodstream. They interact to maintain homeostasis, even while a person is under acute or chronic stress.

The release of stress hormones involves a *negative feedback system* to inhibit continued release of cortisol and other hormones. This feedback system temporarily suppresses the immune system and also can reduce the number of beneficial white blood cells that protect the body.

Researchers have found that the brain is the dominant player that controls the immune system. Yet, they also found that the cells of the immune system can communicate among themselves and that interleukins can interact with nerve cells, thereby creating a link between the immune system and the nervous system. As discussed in chapter 4, the study of psychoneuroimmunology (mind-body interactions) is a relatively new science that is helping us to better understand how the mind and immune systems interact to impair or improve our health.

Other Immune System Components

Lymphocytes are white blood cells formed in lymphatic tissue (lymph

nodes, spleen, thymus, bone marrow). The two main classes of lymphocytes that are responsible for producing the immune response are the B cells and T cells. B cells (“B” for bone marrow) grow to maturity in the bone marrow, and T cells (“T” for thymus) mature in the thymus. The *lymphatic system* is composed of vascular channels that transport varying numbers of white blood cells (chiefly lymphocytes) throughout the body.

Lymphocytes react to *antigens*, which are substances released by invading pathogens. To fight pathogens, B cells release *antibodies*, proteins that attach to antigens, keeping them from harming the body.

Cytokines (including interleukins and interferon) are proteins (peptides) produced by white blood cells that act as chemical messengers between cells. They can stimulate or inhibit the growth and activity of various immune cells. *Interleukins* are chemicals found in leukocytes that stimulate them to fight infection. *Interferon* is a complex protein that is produced by cells in response to a virus (or bacteria) and inhibits virus development. *Natural killer (NK) cells* are lymphocytes that lack B-cell and T-cell receptors. They are designed to kill certain mutant and virus-infected cells. *Helper cells* activate the production of antibodies by B cells.

Stress and the Immune System

Chronic stress suppresses the ability of the immune system to do its job. This is in contrast to acute stress. The difference between acute (shortlived) stress and chronic (ongoing) stress must be recognized. The neuroendocrine system reacts to stress in seconds or minutes. The immune system can take hours or days to react. Short-lived stress can usually be dealt with, and as such, does not adversely affect the immune system.

When stress turns chronic, then the immune system begins to be impaired. Cortisol from the adrenal glands adversely affects the immune system, decreasing the number of white blood cells. Accumulated or compounded stress over time can lead to a state of allostatic overload in which serious problems can result (see discussion of allostasis).

Any type of stress has a harmful effect on the ability to maintain optimal levels of NK-cell activity. A severely stressful event can be associated with up to a 50 percent reduction of NK-cell activity. Chronic stress preceding an acutely stressful event also significantly impacts NK-cell activity.

Adaptogens and the Immune System

Adaptogens have a focused effect on immunity and the immune system. They help to counter chronic immune cell depletion, and they improve the body's defenses by increasing the production of specialized cells, including helper T cells, B cells, and NK cells. They also help produce an increased secretion of cortisol in response to injury or infection, and they have a direct effect on the nervous system, allowing for an improved mind-body connection.

Immune function is influenced by many factors, including stress, age, sex, lifestyle, and nutritional status. Because adaptogens provide a nonspecific defense response to stress, they also offer an increased resistance to pathogens and infection by providing increased immunity.

Most adaptogens have immunomodulating or immunostimulating properties. An immunomodulator, or immune amphoteric, affects the immune system due to its ability to modify or regulate immune function. Immunomodulators include ashwagandha, American ginseng, Asian ginseng, cordyceps, eleuthero, guduchi, holy basil, licorice, reishi, and shilajit.

Immunostimulants boost activity of the immune system but are not known to have the ability to normalize excessive immune response. Immune stimulants include astragalus, jiaogulan, lycium, rhaponticum, and schisandra.

HANS SELYE'S GENERAL ADAPTATION SYNDROME

There are several models to look at when we talk about the biological reaction to stress. The most popular model over time has been Hans Selye's general adaptation syndrome (sometimes referred to as biological stress syndrome). There is also the homeostasis/allostasis concept originated by Peter Sterling and Joseph Eyer and later expanded by Bruce McEwen. Both of these models will be discussed.

Modern research on stress began during the 1930s with work that was carried out by Hans Selye, a Canadian professor who is acknowledged internationally as the "father of stress research." Selye defined stress as "the nonspecific response of the body to any demand made upon it." What he meant by *nonspecific* was that the stress response can result from a variety of different kinds of stressors (see the list of types of stressors at

the beginning of this chapter).

In 1936, Selye developed a theory called the general adaptation syndrome and hypothesized that stress is a major cause of disease because chronic stress causes long-term chemical changes within the body. He observed that given any source of external biological stress, the body responds with a predictable biological pattern in an attempt to restore its internal homeostasis. Selye also determined that there is a limited amount of adaptive energy and that this supply declines with continuous exposure to stressors.

Selye proposed that a human's adaptive response to stress had three stages: *alarm*, *resistance*, and *exhaustion*. Each stage can be defined by its underlying biochemical mechanisms.

Table 5.2. Hans Selye's General Adaptation Syndrome

STAGE	BIOCHEMICAL MECHANISM; METABOLIC ACTIVITY
Alarm	Adaptive response; HPA activation of nervous system and adrenal glands; catabolic
Resistance	Adaptation to stress; anabolic
Exhaustion	Loss of ability to adapt; catabolic

Alarm Stage

When we are under stress, the body's first response is called the alarm reaction. This is the body's recognition of danger and its preparation to deal with threats. It is the immediate reaction to a stressor (physical, emotional, or environmental). The body responds by producing hormones for a fight-or-flight response and to mobilize energy.

At this stage, a person either reaches a point of optimal adaptation or suffers from too much stress. When the HPA axis is functioning properly, the body has adequate adaptive energy to deal with stress. When stress upsets the balance over time, the body transitions to the resistance stage.

Biology of the Alarm Stage

The initial alarm triggers the body's natural defense mechanism. The hypothalamus releases CRH and signals the pituitary glands to release ACTH, which affects the adrenal glands. This response is characterized as HPA axis activation. The adrenal glands release cortisol, adrenaline, and noradrenaline to increase the rate of metabolism, which in turn provides immediate energy. This acts to prepare the body for fight or flight. The adrenal glands also release DHEA.

The secretion of adrenaline and noradrenaline into the bloodstream produces several effects, including a narrowing of capillaries, an elevation of the blood pressure and heart rate, an increase of the blood sugar level, and a reduction of the functional activity of the digestive system.

The alarm reaction can be harmful to the body because it's actually an overreaction, resulting in the production of much more adrenaline than is necessary for coping with stress. If this overproduction is not used by physical activity, it can become harmful. With too much adrenaline, the resulting surges in blood pressure can damage the blood vessels of the heart and brain, creating a risk factor for heart attack and stroke.

The body also produces excess cortisol, which causes catabolic processes that break down cells and destroy muscles. Many physical dysfunctions and diseases are due to elevated cortisol levels in the blood, including many common diseases such as cardiovascular conditions, stroke, gastric ulcers, and increased blood sugar level.

Alarm Stage: Adaptogen Response

Adaptogens build up adaptive energy and enhance overall vitality. They do this by normalizing the production of hormones produced by the body. They modulate cortisol levels. Adaptogens work in a natural way to restore hypothalamic sensitivity so that far less cortisol is required. One way they do this is by affecting the feedback control mechanism, making it more responsive so that the hormonal feedback response is cut off faster.

In addition, adaptogens reduce stress reactions in the alarm phase, thereby delaying or avoiding the exhaustion stage. They recharge the adrenal glands, which are the body's mechanism for responding to stress and emotional changes. They also fine tune and make the best use of resources to keep the body in balance and prepare the body to resume homeostasis after stressors are removed.

Resistance Stage

In this stage, the body adapts to resist stress and attempts to deal with the stressors it is exposed to. If the stressors continue to be present, then resistance also continues. Hormone levels may return to normal, and the body may have reduced defenses (adaptive energy) left. If the body learns to cope efficiently with the stressor, the stress may be resolved and the body returns to its normal resting state. If not, exhaustion follows.

Biology of the Resistance Stage

This stage of resistance is marked by a continued state of arousal. If the stressful situation is prolonged, the high level of hormones may upset homeostasis and harm internal organs, leaving the body vulnerable to disease.

When healthy, we can usually handle some amount of resistance, unless we are wasting all of our energy coping with an overload of stress hormones in the body. Adaptive energy declines with increased exposure to stressors.

Resistance causes an increase in cortisol and a decrease in DHEA. Stress can also disrupt the regular circadian (time-related) secretion of cortisol.

Resistance Stage: Adaptogen Response

Adaptogens can fine-tune the stress response by increasing adaptive energy. They help the body adapt to stress by inducing a state of nonspecific resistance. This helps the body defend itself against the adverse effects of stress, whether they are biological, physical, or environmental in nature.

Exhaustion Stage

At this stage, the stress has continued for some time. This is the point at which the body loses its ability to adapt because its energy supply is depleted. The adaptation process is over and stress adversely affects the body. Exhaustion can lead to fatigue, immune system dysfunction, and other symptoms and diseases.

Biology of the Exhaustion Stage

This stage of exhaustion occurs as a result of chronic stress. The energy of adaptation is used up, and the resistance of the organism becomes overwhelmed. This state sometimes is called adrenal fatigue, maladaptation, or dysfunction.

Adrenal dysfunction can be caused by the following conditions: (1) an excess or inadequacy of cortisol, DHEA, ACTH, and/or CRH, (2) relative imbalances of these hormones and releasing factors, (3) a loss of sensitivity of the hypothalamus and pituitary gland to the normal inhibiting effects of these hormones, and (4) depletion of energy reserves and a general loss of adaptation ability.

Exhaustion Stage: Adaptogen Response

The theory behind using adaptogens to relieve or prevent stress holds that adaptogenic herbs will lessen the reactions of the alarm phase and thereby delay or minimize the onset of exhaustion. Research has shown that adaptogens can reverse the depletion of adrenal cortisol associated with adrenal dysfunction.

HOMEOSTASIS AND ALLOSTASIS

Brekhman and Dardymov noted that adaptogens have a normalizing influence on a body's physiology. The normalized condition has been called homeostasis. Selye defined stress as a state of threatened homeostasis. So, what is homeostasis, a term that represents a fundamental paradigm in the study of physiology?

Homeostasis is often described as the body's need to maintain a steady internal state, a state of equilibrium or balance. It comes from the Greek root words *homeo*, meaning "same," and *stasis*, meaning "stable"—remaining stable by staying the same. Many bodily conditions must not only remain constant, they must stay the same or at least remain within fixed, prescribed limits.

Examples of bodily components that should operate in a state of homeostasis include temperature, blood pressure, fluid and electrolyte balance, and the amount of oxygen that reaches the brain. Each of these components is held to a precise value called the set point. Although these set points can change over time, from day to day they are remarkably fixed. If they change by much, a person can die.

The term *allostasis*, first introduced by scientists Peter Sterling and Joseph Eyer, describes an additional process of reestablishing homeostasis, one that responds to a challenge instead of a constant flux.

Rather than referring to all responses to biological situations as *stress*, two new terms were introduced: *allostasis* and *allostatic load*. *Allostasis* comes from the Greek root words *allo*, meaning "variable," and *stasis*, meaning "stable"—maintaining stability (homeostasis) through change. *Allostasis is simply the ability to achieve stability through change.*

Our lives are constantly changing, and the body responds to change by adapting and achieving stability—allostasis. Examples of allostasis variables include extreme heat, extreme cold, infection, physical trauma,

and psychological and emotional threats.

For example, the homeostatic process can adjust internal body temperature in response to climate changes that come with the changing seasons. However, *allostasis* is the term used to describe the condition of the body (under stress) when it's exposed to unexpected events such as a sudden drop in temperature or prolonged severe temperatures. In this case, the body must react, adapt, and regain homeostasis to survive.

Biology of Allostasis

There are many examples of the body adapting to achieve allostasis, which is stability through change. Physiological mediators such as adrenaline act upon various organs to produce effects that are adaptive in the short run but can be damaging if the mediators are not shut off when no longer needed.

The concept of *allostatic load* refers to the wear and tear that the body experiences due to repeated cycles of allostasis as well as the inefficient turning-on or shutting-off of the body's responses to stress. Allostatic load is the cumulative biological burden exacted on the body by continued allostasis in attempts to adapt to life's demands.

The HPA axis is the foundation of allostasis and of allostatic load. It is where the nervous system and endocrine glands are brought together and either held in balance—or not. The HPA axis is responsible for the adjustment phase of the allostatic response. Allostatic load can be measured, and cortisol levels serve as one of the indicators of HPA-axis activity. Within the HPA axis, it is the function of the hypothalamus to maintain homeostasis and enhance allostasis.

Stress hormones (cortisol, adrenaline, noradrenaline, DHEA) are released as part of allostasis. Stress hormones, when over- or undersecreted, may tip the HPA axis out of balance. Over time, allostatic load can accumulate, and the overexposure to stress mediators can have adverse effects on various organ systems, leading to a state of *allostatic overload* in which serious changes can lead to disease. Allostatic overload can lead to a multitude of problems including hypertension, obesity, diabetes, heart disease, depression, and asthma. It also can cause a decrease in immune-system function, resulting in a reduction of NK-cell activity and a decline in immunoglobulin levels. Individuals differ in their health and well-being because they differ in the amounts of adaptive energy they have available. Protecting the body against overexposure to stress

hormones is as important as the ability to mount an *adequate allostatic response* in the first place. Any type of imbalance in allostasis qualifies under the definition of the term *allostatic load*.

Adaptogens, Homeostasis, and Allostasis

Homeostasis and allostasis work together to regulate the human response to stress, and adaptogens help maintain homeostasis and prevent allostatic overload. Adaptogens assist the body in its ability to normalize homeostasis and enhance and improve allostasis. When regulated appropriately, the various stress hormones protect the body from a wide variety of stressors.

Adaptogens enable the body to maintain homeostasis for longer periods of time. Even if under stress, one can still perform effectively because homeostasis is not disrupted. Adaptogens also increase resistance to stress and prevent exhaustion.

STATE OF NONSPECIFIC RESISTANCE

According to Lazarev and other Soviet scientists, adaptogens induce a state of nonspecific resistance in the body. This is a state of increased or heightened resistance that improves the body's response to stress. Adaptogens improve the capacity and sustaining power of the body to adapt to stress (adaptive response) and minimize the effects of stress.

Under stressful conditions, the body goes from its normal steady state of homeostasis to a heightened state of nonspecific resistance. This heightened state has normalizing effects on the neuroendocrine and immune systems.

As we have seen, adaptogens assist the body by both protecting against and reducing the effects of physiological stress. The following chapter continues the discussion of stress management and how adaptogens affect all areas of health.

6

Health Benefits of Adaptogens

“For every human illness, somewhere in the world there exists a plant which is the cure.”

RUDOLF STEINER

When compiling research on the health benefits of adaptogens, the amount of data is almost overwhelming. This is due to the large number of studies and the fact that adaptogens have such a broad influence on the entire body.

The reality of adaptogens is that they are effective tonics and can be taken daily for overall health. In fact, throughout the world millions of people are using these products on a daily basis.

Many of the adaptogens that are commonly used today have a history of use that goes back hundreds and thousands of years. Over that time, a vast amount of experience has been gained that has gone toward understanding their therapeutic applications.

Adaptogens can greatly increase the effectiveness of some modern drugs, including antibiotics, anxiolytics (anxiety relief), antidepressants, and hypoglycemic (blood sugar lowering) agents. They also can reduce, and in some cases eliminate, the side effects of some drugs. They have a proven record of being safe, efficacious, and quite versatile in their treatment of many conditions.

All adaptogens have antistress qualities that provide stabilizing effects on the neuroendocrine system, especially the HPA axis. All adaptogens help to modulate and enhance the immune system. All adaptogens provide antioxidant nutrients.

The following chart provides a few of the key applications for each of the adaptogens.

Table 6.1. Leading Applications for Adaptogens

ADAPTOGEN	LEADING APPLICATIONS
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American ginseng	Mild CNS stimulant and nourishing to the HPA axis
Amla	Antioxidant, antihistamine, and anti-inflammatory
Ashwagandha	Calming adaptogen, relieves muscle pain
Asian ginseng	Stimulating adaptogen for adrenal exhaustion
Astragalus	Immune tonic, heart tonic
Cordyceps	Lung and kidney tonic, immune amphoteric
Dang shen	Immune tonic, gastroprotective
Eleuthero	Immune tonic, adrenal tonic, antifatigue, performance enhancer
Guduchi	Hepatoprotective, immune amphoteric
He shou wu	Supports the liver, kidney, blood, and male reproductive function
Holy basil	Supports normal cortisol and blood sugar levels
Jiaogulan	Immune stimulant, calming
Licorice	Immune amphoteric, heals stomach and bowel
Lycium	Antioxidant, immune tonic, supports the liver, kidney, and eyes
Prince seng	Immune and lung tonic
Reishi	Immune amphoteric calms the shen (mind, consciousness)
Rhaponticum	Immune stimulant, heart tonic
Rhodiola	Immune amphoteric, cardioprotective
Schisandra	Balances the nervous system, antioxidant, hepatoprotective
Shatavari	Female reproductive tonic, immune and lung tonic
Shilajit	Lowers blood sugar levels

This chapter mentions highlights from both research and tradition. The listed benefits and uses of adaptogens are based on all available information, including modern scientific research, records of their use in traditional medical systems, ethnobotany, and clinical observations made by practitioners.

It is important to remember the following conclusions about the health benefits of adaptogens:

1. All adaptogens have antistress qualities that help provide stabilizing effects on the neuroendocrine system, especially the HPA axis.
2. All adaptogens help to modulate and/or enhance the immune system.
3. Most if not all adaptogens have antioxidant properties.

Because they have these qualities, adaptogens have been proven to help:

- Reverse immunosuppression caused by stress.
- Reverse the decline of immune-system function as people get older.
- Reduce the risk of cancer and heart disease.

Herbs are pharmacologically active substances. Please be cautious when selecting adaptogens for specific conditions. It is always best to consult

with a health professional or clinical herbalist. In some cases, a product containing several adaptogens as a general tonic would be most beneficial.

Most readers are interested in the effects or actions that herbs have on the human body and want to know which adaptogens are useful for specific indications. This chapter will provide information about specific adaptogens that can be used for many conditions, including aging, cancer, elevated cholesterol levels, decreased immune-system function, fatigue, stress, and weight management. The disorders have been arranged alphabetically to assist readers in locating the conditions that most interest them.

ADRENAL FATIGUE

The adrenal glands mobilize the body's response to every kind of stress. Adrenal fatigue is caused by adrenal insufficiency that occurs when the glands cannot adequately meet the demands of chronic stress.

In adrenal fatigue the adrenal glands function, but not enough to maintain normal, healthy homeostasis. Their output of regulatory hormones has been diminished by overstimulation. This overstimulation can be caused either by a very intense single stress or by chronic or repeated stresses that have a cumulative effect.

People suffering from adrenal fatigue often have to use coffee, colas, and other stimulants to get going in the morning and keep themselves going during the day.

With each increment of reduction in adrenal function, every organ and system in the body is more profoundly affected. The body does its best to make up for underfunctioning adrenal glands, but it does so at a price. Many people who feel fatigued and exhausted eat more to provide additional energy. Thus, adrenal fatigue also can promote obesity and its inherent risks.

Adaptogens for Adrenal Fatigue

When a person is under stress, more stress hormones are released and manufactured. Adaptogens help the adrenal glands respond more effectively and efficiently to the excess in hormones. When stress stops, adaptogens help the adrenal glands shut down more quickly. Adaptogens also support adrenal function by allowing cells access to more energy and preventing oxidative damage.

The following adaptogens provide adrenal support: American ginseng, ashwagandha, Asian ginseng, cordyceps, dang shen, eleuthero, holy basil, jiaogulan, licorice, reishi, rhaponticum, rhodiola, and schisandra.

Adaptogen Notes

- *American ginseng* is an endocrine amphoteric and adaptogen useful for mild to moderate depletion of the HPA axis and adrenal glands.
- *Asian ginseng* and *licorice* can be used together for adrenal exhaustion (Addison's disease) along with conventional therapy.

AGING AND LONGEVITY

Aging is an ongoing process, and our bodies will continue to age. With aging, there is the decline in most physiological functions, including cellular immunity. As the body ages, it has a decrease in its adaptive capacity needed to maintain homeostasis when under stress. When homeostasis cannot be maintained, physical, emotional, and mental health declines.

Adaptogens have the ability to slow the biological aging process by reducing the impact of physiological aging factors—primarily stress and oxidation.

Cortisol levels normally do not decrease as we get older, unlike the levels of other hormones such as testosterone and DHEA. Some researchers believe that many age-related diseases may result from the combined effects of increase in cortisol levels and a decrease in DHEA levels.

There are several characteristics of aging that need to be discussed, including the accumulation of wear and tear on the body, anabolic and catabolic activity, inflammation, and oxidative damage.

Wear and tear of the body happens over the years as cells are not effectively replaced, circulation is impaired, and levels of cellular antioxidants decrease. The accumulated daily wear over many years leads to an increase in allostatic load and a decrease in adaptive energy. Chronic mental stress also causes wear and tear of the body.

Anabolic and catabolic activity is another factor of aging. The condition of the body as we age often relates to the level of anabolic activity within

the body. Aging seems to be a shift from youthful anabolic (building up) metabolism to increasing levels of catabolic (tearing down) activity. As we age, the body experiences a loss of muscle mass (catabolism) and often an increase in body fat.

Inflamm-aging is a new term that describes how the body manages inflammation. As we age, inflammatory levels increase. Scientists are beginning to realize that we are experiencing an epidemic of inflammatory disease, including heart disease, Alzheimer's disease, diabetes, arthritis, atherosclerosis, and cancer.

Oxidative stress refers to the burden placed on the body by the increased production of free radicals, which are formed through normal metabolism. These compounds, known as reactive oxygen species (ROS) and reactive nitrogen species (RNS), can cause cellular damage. Both stress and certain disease states can cause an increase in the presence of free radicals. They are fairly easy to control under normal circumstances. However, when the body's defenses are overwhelmed, cellular components oxidize (oxidative stress), and cells and organs become weakened. This generally weakened condition of the body makes possible the development of many age-related diseases and contributes to a shortened life span.

Cellular oxidation and aging formerly were thought to be irreversible. Scientists are now realizing that the aging process can be slowed down and in some cases even mildly reversed. *Antioxidants* reduce oxidation by binding with and neutralizing free radicals. They protect key cellular components. Health depends on the balance between oxidative stress and antioxidant defenses. The lack of sufficient antioxidant defenses over time can lead to age-related diseases. Yet, if antioxidant defenses are strong, a longer life with less disease is possible.

Adaptogens for Longevity

Adaptogens help deal with the wear and tear of the body, anabolic and catabolic activity, inflamm-aging, and free radicals because they contain antioxidant and anti-inflammatory compounds.

Practitioners of traditional Chinese medicine have studied longevity herbs for thousands of years. Asian ginseng has been known in China as the leading longevity herb, and its use has been widely documented. Reishi has been called "the mushroom of immortality," jiaogulan currently is being touted as "China's immortality herb," and he shou wu has been used for centuries as an invigorating tonic to promote longevity, fertility, and

vitality. Some texts also mention lycium as a longevity herb.

In the ayurvedic tradition, all of the rasayana herbs promote longevity. Another Sanskrit name for guduchi is *amrit* (or *amrita*), which means “immortality,” or “nectar of immortality.” The Chyavanprash formula, which contains amla, is believed to help maintain youthfulness, vigor, and vitality.

Basically, all of the Chinese tonic herbs and ayurvedic rasayanas help to slow the aging process and promote longevity.

- ✦ **The following adaptogens protect against oxidative damage because of their antioxidant activity:** American ginseng, amla, ashwagandha, Asian ginseng, astragalus, cordyceps, dang shen, eleuthero, guduchi, he shou wu, holy basil, jiaogulan, licorice, lycium, prince seng, reishi, rhaponticum, rhodiola, schisandra, shatavari, and shilajit.
- ✦ **Antiaging in general is supported by the following adaptogens:** Asian ginseng, cordyceps, eleuthero, jiaogulan, lycium, he shou wu, reishi, rhodiola, and shilajit.
- ✦ **The following adaptogens have anti-inflammatory activity:** amla, ashwagandha, Asian ginseng, cordyceps, eleuthero, guduchi, holy basil, jiaogulan, licorice, reishi, rhodiola, schisandra, and shilajit.
- ✦ **The following adaptogens have anabolic activity:** American ginseng, ashwagandha, Asian ginseng, eleuthero, rhaponticum, schisandra, and shilajit.

Adaptogen Notes

- *Eleuthero* is especially beneficial for an aging immune system.
- *He shou wu* can significantly increase the amount of superoxide dismutase (SOD), which is a powerful natural antioxidant and free radical scavenger that has been shown to have powerful antiaging benefits.

ANXIETY AND DEPRESSION

Anxiety disorders, as a group, are the most common mental illnesses in America. Different types of anxiety disorders include panic disorder,

obsessive-compulsive disorder, post-traumatic stress disorder, and general anxiety disorder. In this last condition, symptoms include constant worrisome thoughts and tensions about everyday life events and activities lasting at least six months. Some of the many physical symptoms of anxiety disorders can include depression, nervousness, fatigue, muscle tension, headaches, difficulty concentrating, insomnia, nightmares, and sweating.

The category of clinical depression includes major depressive disorder, dysthymia (a milder, chronic form of depression), and bipolar disorder. Depression affects the general quality of life and can complicate other medical conditions. General symptoms of depression include anxiety, poor appetite or overeating, insomnia, low energy or fatigue, muscle pain, low self-esteem, poor concentration, difficulty making decisions, and feelings of hopelessness.

If we can improve our mental condition, we can improve overall health. This is supported by recent studies that indicate that mental stress triggers changes in the immune system. People suffering from depression also have a higher risk of having heart disease, cancer, diabetes, and hormonal disorders.

Adaptogens for Anxiety and Depression

Adaptogens have a direct effect on nervous system health. They enhance mood and relieve stress. Many adaptogens have anxiolytic, antidepressant, and nervine (nerve tonic) effects.

- ✦ **The following adaptogens can provide relief from anxiety:** ashwagandha, jiaogulan, reishi, and schisandra.
- ✦ **The following adaptogens act as antidepressants:** ashwagandha, Asian ginseng, holy basil, rhaponticum, rhodiola, and schisandra.
- ✦ **Central nervous system support is provided by the following adaptogens:** Asian ginseng, rhaponticum, schisandra, and shilajit are stimulating; and ashwagandha, cordyceps, jiaogulan, and schisandra are calming.

Nervines (nerve tonics) also support and complement adaptogens for the treatment of nervous system conditions such as anxiety and depression.

- ✦ **Nervines that have anxiolytic activity include:** blue vervain, chamomile, fresh milky oat, hawthorn, linden, motherwort,

passionflower, and skullcap. Nervines that have antidepressant effects include Lemon balm, St. John's wort, mimosa, lavender, and rosemary.

Adaptogen Notes

- *Asian Ginseng* regulates the central nervous system and mildly stimulates it.
- *Jiaogulan* is a calming adaptogen, so it is appropriate for anxious or agitated people who have labile (erratic) hypertension, stress headaches, and anxiety-induced insomnia.
- *Rhodiola* reduces cortisol levels while increasing key brain chemicals involved in mood, such as serotonin and dopamine. Regular use also can lead to increased levels of beta-endorphin in the brain. Beta-endorphin is a potent endorphin released by the pituitary gland that relieves stress and pain.
- *Schisandra* is both calming and stimulating and helps relieve anxiety. It also can provide a feeling of alertness without the stimulating effects of caffeine.

ARTHRITIS

Arthritis (inflammation of the joints) produces pain, loss of movement, and sometimes swelling. It is caused by tissue injury or joint disease. The two most common types of arthritis are osteoarthritis and rheumatoid arthritis. Fibromyalgia often is considered an arthritis-related condition, but it is not a true form of arthritis because it does not cause inflammation or damage to the joints. According to the Arthritis Foundation, nearly one in three adults has arthritis or chronic joint symptoms, and arthritis is the leading cause of disability among Americans older than age fifteen.

Adaptogens for Arthritis

Adaptogens can help reduce inflammation and as a result reduce the pain associated with arthritic conditions.

- ✦ **The anti-inflammatory action of the following adaptogens makes them useful for relief from arthritis:** amla, ashwagandha, Asian ginseng, cordyceps, eleuthero, guduchi, holy basil, jiaogulan, licorice, reishi, rhodiola, schisandra, and shilajit.

- ✦ **The following adaptogens are useful for relief from rheumatoid arthritis (an autoimmune disease):** amla, ashwagandha, cordyceps, guduchi, licorice, and reishi.

Adaptogen Notes

- *Amla* is used to help prevent and treat damage associated with connective tissue disorders such as rheumatoid arthritis and lupus.
- *Ashwagandha* is used to treat fibromyalgia and autoimmune diseases such as rheumatoid arthritis and polymyositis.
- *Guduchi* is used to modulate excessive immune system response in autoimmune diseases such as rheumatoid arthritis. It can also enhance uric acid excretion and relieve arthritis with accompanying gout.
- *Holy basil oil* is used topically for arthritis.

ATHLETIC PERFORMANCE

Athletes, and health professionals who work closely with athletes, are constantly looking for effective ways to enhance health and performance. Athletes need energy, muscle, endurance, and help resisting and defending against stress.

Adaptogens for Enhanced Athletic Performance

Adaptogens have been proved to enhance athletic performance capacity. Through extensive experiments on athletes (especially in Russia), scientists reliably have demonstrated the value of adaptogens for increasing endurance and shortening recovery time from both training and sports injuries.

According to Russian research, some adaptogens, such as rhodiola, have been shown to significantly increase the levels of ATP and creatine phosphate in the muscles by increasing the levels of fatty acids. The body uses ATP as a source of energy. During intense physical activity when the body needs energy, more ATP is converted into more fuel for the muscles. Adaptogens also increase both strength and muscle mass by affecting the amount of oxygen available for prolonged physical exertion. Increasing the amount of oxygen circulated to the brain and muscles is what helps increase an individual's energy level.

Other benefits of adaptogen use for athletes include improvements in pulse rate, and endurance and reduction of fatigue. In addition, adaptogens have a favorable influence on the cardiovascular and respiratory systems. They provide an anabolic effect—aiding the building and regeneration of muscle and tissues, thus adding to muscular mass and strength.

Elite athletes have more stress and a greater need for adaptogens. Adaptogens are not banned by any international sports organizations and are natural and safe alternatives to anabolic steroids. There are no adaptogens on the 2006 list of prohibited substances published by The World Anti-Doping Agency.

Adaptogens have been used by many athletes who have participated in Olympic Games. At the 1972 Olympics in Munich, Soviet athletes used eleuthero and other adaptogens for the first time. In the 1980s and 1990s, Olympic athletes used Brekhman's adaptogenic formulas to improve performance. In fact, Brekhman's Prime One adaptogenic formula was used in 1996 at the summer Olympic Games in Atlanta by more than 150 American athletes. Chinese athletes used cordyceps in 1993 during the Olympic Games in Australia. Swedish athletes have used rhodiola.

✦ **The following adaptogens help fight fatigue and increase energy, endurance, strength, and physical performance:**

American ginseng, ashwagandha, Asian ginseng, cordyceps, dang shen, eleuthero, holy basil, jiaogulan, rhaponticum, rhodiola, schisandra, and shatavari.

✦ **Anabolic activity is encouraged by the following adaptogens:**

American ginseng, ashwagandha, Asian ginseng, eleuthero, rhaponticum, rhodiola, schisandra, and shilajit.

✦ **These herbs help increase bone density:** amla, rhaponticum, and shilajit.

Adaptogen Notes

- *Asian ginseng* is used in traditional Chinese medicine to restore energy.
- *Eleuthero* is used to increase energy and is one of the best adaptogens for athletes under stress. It increases endurance and stamina, enhances mitochondrial activity, speeds recovery, and prevents immune system depletion from excessive training. It can be combined with *cordyceps*,

rhodiola, or *schisandra* to enhance athletic performance and improve alertness and cognitive function when under severe stress or working long hours.

- *He shou wu* is used topically in “hit medicine” (martial arts medicine) as a liniment for bruises and contusions.
- *Lycium* can be eaten daily to strengthen weak muscles and ligaments.
- *Rhodiola* increases mitochondrial activity and muscular ATP and creatine levels—resulting in enhanced physical strength and endurance. It also increases blood supply to the brain and muscles. *Rhodiola* is used to reduce fatigue associated with Lyme disease.
- *Shilajit* provides energy and, translated from Sanskrit, means “conqueror of mountains and destroyer of weakness.”

BRAIN FUNCTION

The brain is part of the nervous system, along with the spinal cord, nerves, and sensory organs. It is responsible for basic body functions and movement, the senses, intelligence, learning, and memory. The nervous system responds to chronic stress in multiple ways. Some people may develop migraine headaches, and others suffer from sleep deprivation, anxiety, and even depression. Over long periods of time, cortisol can cause cells in the brain to shrink, and under very dire circumstances, it can actually cause some cells to die.

Alzheimer’s disease, the most common cause of dementia in those aged sixty-five or older, is characterized by a progressive decline in cognition and memory. Evidence suggests that increased levels of stress, along with high levels of cortisol and inflammatory processes, may play a significant role in causing this illness. Research indicates that high cortisol levels promote degeneration and death of nerve cells along with decreased memory function. One recent report showed that chronic stress is associated with the risk of developing Alzheimer’s disease.

Stress also affects our mental capacities in more subtle ways. There is a modern condition that is sweeping our technological world called partial attention. We have become distracted by technology and its many tools (cell phones, computers, BlackBerry devices, instant messaging), and many are finding it difficult to pay attention. We can to some extent blame technology for partial attention, but it is probably overall stress that is the

greatest hindrance to mental work capacity. Adaptogens can certainly help in this area.

Adaptogens for Improved Brain Function

Adaptogens have a direct effect on nervous system health. They normalize neurotransmitter levels in the brain and are used to prevent and treat neurological health problems, including headaches, migraines, impaired memory and concentration, anxiety, depression, insomnia, Alzheimer's disease, dementia, and chronic fatigue syndrome. Furthermore, adaptogens have the ability to increase both the amount of mental exercise a person can carry out as well as the quality of that work.

- ✦ **The following adaptogens enhance brain function and mental clarity:** American ginseng, ashwagandha, Asian ginseng, dang shen, eleuthero, guduchi, rhaponticum, rhodiola, and schisandra.
- ✦ **The following adaptogens prevent atrophy (wasting) of nerve cells in the brain:** ashwagandha, Asian ginseng, and rhaponticum.
- ✦ **The following adaptogens support the central nervous system:** Asian ginseng, rhaponticum, schisandra, and shilajit are stimulating; and ashwagandha, cordyceps, jiaogulan, and schisandra are calming.

Nootropics (herbs that enhance cerebral function) also support and complement adaptogens in treating nervous system conditions.

- ✦ **Nootropic herbs include the following:** bacopa, bhringaraj (eclipta), ginkgo, gotu kola, lavender, rosemary, white peony, and yuan zhi.

Adaptogen Notes

- *Rhaponticum* and *schisandra* enhance reading comprehension, aptitude, and speed.
- *Rhodiola* enhances a person's ability for memorization and prolonged concentration. Regular use can lead to improvements in learning and memory retention.
- *Schisandra* has an unusual dual effect on the nervous system. It is a mild stimulant that enhances reflexes, work performance, and mental activity. At the same time, it is calming and helps relieve mild anxiety. Scientists at Seoul University have speculated that schisandra

could help people with Alzheimer's disease.

BREATHING PROBLEMS

A multitude of factors affect our breathing. Respiratory and lung disorders include asthma, bronchitis, emphysema, pneumonia, influenza, tuberculosis, chronic obstructive pulmonary disease, and lung cancer. Breathing problems can be caused by infections, inflammation, allergies, smoking, and environmental pollution. The organs involved in breathing make up the respiratory system and include the nose, throat, larynx, trachea, bronchi, and lungs.

Adaptogens for Healthy Breathing

Most adaptogens do not have specific effects on the respiratory system, but some do provide specific benefits. Adaptogens can decrease respiratory demands during physical activity and decrease stress-induced shortness of breath and many inhibit allergies and allergic asthma.

✦ **The following adaptogens benefit the lungs and entire respiratory system:** amla, astragalus, cordyceps, dang shen, holy basil, jiaogulan, licorice, prince seng, reishi, rhodiola, and schisandra.

Adaptogen Notes

- *Amla* is used for respiratory concerns such as asthma, frequent chest colds, and emphysema.
- *Astragalus* strengthens the lungs and is used to treat people with asthma.
- *Cordyceps* is a major lung tonic used for allergic asthma and chronic obstructive pulmonary disease.
- *Jiaogulan* and *rhodiola* are widely used to reduce oxygen deficiency at high altitudes.
- *Licorice* is used as an expectorant, a pectoral (lung tonic), an antibacterial, and an antiviral for sore throats, coughs, hoarseness, asthma, and bronchial congestion.
- *Prince seng* is sometimes called the “ginseng of the lungs” because of its ability to strengthen and nourish weak, dry, and damaged lung

tissue. It is considered a “food for the lungs” and is used for hot/dry asthma, dry cough, emphysema, and during recovery from pertussis, bronchitis, and pneumonia.

- *Schisandra* is used for asthma, bronchitis, and chronic cough.

CANCER

Cancer is a disease that develops when abnormal cells in the body begin to grow out of control, forming malignant tumors. There are many factors that can cause the development of cancer, including heredity, lifestyle, and environment. Stress is a major contributor to cancer. Because cancer is the second-leading cause of death in the United States, taking preventative measures is essential, as is anything that can be done to aid those diagnosed with the disease.

Adaptogens for Cancer Prevention and Treatment

Many adaptogens have antitumor properties as well as immune-enhancing actions that are useful as part of a cancer protocol. They are used to promote production of tumor-fighting K and NK cells, interleukins, interferons, and Th1 T lymphocytes. They also help prevent chemotherapy- and radiation-induced immune suppression and help prevent the spreading or recurrence of cancer.

Cancer and *Fu Zheng* Therapy

In China, many types of cancer are treated with chemotherapy and radiation therapies similar to Western treatments. However, from the Chinese medical perspective, it is considered unethical to give such powerful drugs that cause such severe side effects without trying to mitigate those effects. Over the last thirty years, an entirely new Chinese medicinal therapy has been developed known as *fu zheng pei ben* (support the normal qi and strengthen resistance) therapy to address these concerns.

This therapy uses adaptogenic and tonic herbs to help prevent many of the side effects of cancer treatment, including decreased red and white blood cell counts, nausea, fatigue, and immune system suppression. Not only do the *fu zheng* formulas help prevent or relieve such problems but they also enhance the effectiveness of chemotherapy. Cancer survival rates increase for patients receiving *fu-zheng* therapy as an adjunct to Western cancer treatments (Pang Mingji 1992).

Fu zheng formulas for enhancing immune function would include some of the

following herbs: Asian ginseng, astragalus, cordyceps, dang shen, eleuthero, he shou wu, jiaogulan, licorice, lycium, prince seng, reishi, and schisandra. A formula is used for patients with cancer to increase immune activity, especially the immune reservoir. Adaptogens that strengthen the immune reservoir (a person's overall immune potential) seem to have a broad, nonspecific ability to promote immune competence.

All adaptogens contain antioxidants, and one of the major uses for antioxidants is to help prevent cancer.

Also, some adaptogens protect healthy cells from radiation damage that can cause cancer. There are many sources of ionizing radiation, including the sun, X-rays, radiotherapy, and leaks at nuclear power plants. Radioprotective properties of adaptogens include the ability to protect the DNA of the body from the dangerous, mutating power of various forms of radiation. Free radical scavenging and antioxidant activity is the likely mechanism involved in this radioprotective effect.

By causing oxidative damage in the DNA, free radicals can produce mutations that, over time, can lead to cancer. Some adaptogens protect the heart and liver cells from oxidative and chemical damage caused by chemotherapy used to treat cancer. Chemoprevention also refers to protective activity against chemically-induced malignant tumors.

- ✦ **Chemoprotective and radioprotective adaptogens include:** American ginseng, amla, ashwagandha, astragalus, Asian ginseng, dang shen, eleuthero, guduchi, holy basil, lycium, reishi, and rhodiola.
- ✦ **The following adaptogens have antitumor properties:** American ginseng, amla, ashwagandha, Asian ginseng, astragalus, cordyceps, dang shen, eleuthero, guduchi, holy basil, jiaogulan, licorice, reishi, rhaponticum, rhodiola, schisandra, and shilajit.
- ✦ **With their antioxidant activity, the following adaptogens protect against oxidative damage:** American ginseng, amla, ashwagandha, Asian ginseng, astragalus, cordyceps, dang shen, eleuthero, guduchi, he shou wu, holy basil, jiaogulan, licorice, lycium, prince seng, reishi, rhaponticum, rhodiola, schisandra, shatavari, and shilajit.

Adaptogen Notes

- *American ginseng*, in animal studies, was found to inhibit cancers of the lungs, liver, stomach, pancreas, and ovaries.
- *Amla*, in animal studies, protected against cellular damage induced by radiation.
- *Ashwagandha* may inhibit the growth of cancers of the breast, lungs, and colon.
- *Astragalus* is known for its immune-system-stimulating properties and is often included in cancer protocols.
- *Asian ginseng* may prevent cancer by acting as an anti-inflammatory, antioxidant, and by suppressing the growth of new blood vessels required to feed cancerous tumors (a process called *angiogenesis*). Asian ginseng can bolster the immune system in cancer patients as well as prevent or reverse leukopenia (low white blood cell counts) caused by radiation therapy or chemotherapy.
- *Eleuthero* has shown in vitro antitumor effects against breast, stomach, mouth, and ovarian cancers. Cancer patients receiving chemotherapy and radiation often develop bone marrow suppression and leukopenia. In one clinical study, eleuthero was able to reverse these conditions in most patients.
- *Guduchi* can be used to support the immune system and prevent liver or bone marrow damage in cancer patients who are undergoing chemotherapy.
- *Holy basil* has antitumor activity (due to its ursolic and oleanolic acids) and protects against chemotherapy-induced damage.
- *Licorice* is reported to have toxic effects on tumor cells and, because of its isoflavone content, may slow the progression of estrogen-sensitive cancers.
- *Lycium* polysaccharides have been shown to enhance the effects of chemotherapy and radiation while protecting cancer patients from leukopenia.
- *Reishi* is being used by more cancer patients to supplement their therapeutic programs. The mushroom enhances host immunity and reduces side effects of chemotherapy and radiation. It also possesses cancer-fighting properties and may aid in recovery. It is reported that reishi suppresses the growth of colon, prostate, and breast cancers.
- *Rhodiola*, because of its broad-reaching benefits, can be included as

part of a clinical protocol for cancer. In animal studies, rhodiola inhibited tumor growth and decreased metastasis (the spreading of cancer). Russian scientists found that giving patients rhodiola decreases the probability of metastases (Yaremenko 1990). More human studies are needed to affirm its anticancer benefits.

- *Shatavari*, according to several animal studies, may inhibit breast cancer.

CARDIOVASCULAR FUNCTION

The cardiovascular system includes the heart (the prefix *cardio*), blood, blood vessels (*vascular*), and circulation. The heart is the busiest organ of the body and under constant mechanical stress. Every cell in the body depends on the healthy circulation of blood to deliver oxygen and nutrition and remove carbon dioxide and waste. Loss of adequate circulation can cause tissue damage (ischemia) and result in many types of diseases.

Cardiovascular health is extremely important. Major cardiovascular disorders include myocardial infarction (heart attack), atherosclerosis, and stroke. Heart disease is the leading cause of death in the United States, and stroke comes in third. Risk factors for both include high blood pressure, obesity, elevated C-reactive protein, and elevated LDL cholesterol levels.

Millions of people are taking prescription drugs such as Lipitor, Zocor, Pravachol, Mevacor, and Crestor to lower cholesterol levels. The prescribing of these drugs is based on the hypothesis that high cholesterol levels cause heart attacks. Unfortunately, serious side effects have been reported for these drugs, which are prescribed for preventive purposes.

Cholesterol reduction in some cases can be achieved without drugs, and adaptogens can help. Several adaptogens, when used along with dietary changes, exercise, and supplements, can help reduce cholesterol levels.

Adaptogens for Cardiovascular Health

Most adaptogens are not specific cardiovascular tonics, but they do have numerous effects that are beneficial, including normalization of blood pressure, vascular protection, and mild blood thinning qualities, thereby decreasing the likelihood of strokes. Some can lower levels of low density lipoprotein (LDL) and very low density lipoprotein (VLDL) cholesterol, and they protect against damage caused by cardiotoxic drugs. In addition, adaptogens tend to enhance cardiac oxygen use and mildly strengthen

cardiac mitochondria.

- ✦ **The following adaptogens help protect the heart (are cardioprotective):** American ginseng, amla, ashwagandha, Asian ginseng, astragalus, cordyceps, eleuthero, jiaogulan, reishi, rhaponticum, rhodiola, and schisandra. Several nervines and nootropics also have cardioprotective and cardiogenic effects, especially hawthorn, rosemary, linden flower, and motherwort.
- ✦ **Cholesterol can be mildly reduced by using these adaptogens:** American ginseng, amla, Asian ginseng, cordyceps, eleuthero, he shou wu, holy basil, jiaogulan, licorice, lycium, reishi, rhaponticum, rhodiola, and shilajit.
- ✦ **The following adaptogens regulate blood pressure:** astragalus, cordyceps, holy basil, jiaogulan, and reishi.

Adaptogen Notes

- Although not clinically proven, *American ginseng* may raise the level of high density lipoproteins (HDL—good cholesterol), while reducing total cholesterol levels.
- *Ashwagandha* taken as a powder in milk or mixed in molasses is rich in iron and can treat iron-deficient anemia.
- *Astragalus* is useful for treating people with angina and mild congestive heart failure.
- *Cordyceps* benefits the vascular system and helps regulate blood pressure and strengthens the heart muscle.
- *Dang shen* is used to build the blood (*xue*). Studies indicate that this root not only enhances absorption of nutrients but it also increases the number of red blood cells and the hemoglobin content.
- *Eleuthero*, in clinical studies, has been shown to help relieve angina symptoms and lower LDL cholesterol and triglyceride levels. It is unlikely to cause overstimulation and can be taken over long periods of time.
- *Jiaogulan* reduces LDL and VLDL cholesterol and triglyceride levels, mildly lowers blood pressure, inhibits platelet aggregation, and improves cardiac function. It is ideal to use, along with diet and exercise, to reduce the chances of a heart attack or stroke in people with many cardiac risk factors.

- *Lycium* stabilizes capillaries, veins, and arteries throughout the body. It can be used to treat or prevent varicose veins, spider veins, cold hands and feet, diabetic neuropathies (nerve damage from diabetes), and atherosclerosis (narrowing of the arteries).
- *Reishi* has been effective for improving cardiovascular function. Regular use lowers LDL and VLDL cholesterol and triglyceride levels, inhibits clumping of platelets, and mildly lowers blood pressure. In clinical studies, it reduced cardiac pain (angina), arrhythmias (irregular heartbeats), and helped prevent arteriosclerosis (hardening of the arteries).
- *Rhodiola* prevents stress-induced cardiac damage, arrhythmias, and improves the strength of the heart muscle.
- *Schisandra* has an amphoteric (normalizing) effect on blood pressure, lowering elevated blood pressure and raising low blood pressure.

DIABETES AND BLOOD SUGAR LEVELS

Diabetes is a disease in which blood sugar levels are chronically above normal. People develop diabetes when the pancreas does not make enough insulin or the body does not properly use insulin.

The ability of the body to properly control the levels of blood sugar and regulate insulin and cortisol in the body is essential to reducing stress and promoting longevity. Stress leads to increased cortisol secretion and can produce elevated levels of sugar in the blood (hyperglycemia). Repeated insulin release to lower blood sugar levels eventually can lead to insulin resistance, which is the cause of metabolic syndrome, which is directly implicated in obesity, type 2 diabetes, atherosclerosis, heart disease, polycystic ovarian syndrome, and cancer.

Adaptogens for Regulating Blood Sugar

Adaptogens help regulate blood sugar by keeping cortisol levels in balance and help enhance the body's use of glucose.

- ✦ **The following adaptogens normalize insulin and blood sugar levels:** American ginseng, amla, Asian ginseng, cordyceps, dang shen, eleuthero, guduchi, he shou wu, holy basil, licorice, reishi, rhaponticum, rhodiola, and shilajit.

Adaptogen Notes

- *American ginseng* helps control metabolic syndrome as well as type 2 diabetes. It is a useful medicine to enhance digestion and absorption of nutrients.
- *Holy basil* may benefit people with diabetes, and studies have shown it to have substantial effects on the lowering of blood sugar levels that were similar to those of standard oral diabetes medications. Diabetes is one of the few conditions for which holy basil has been formally tested in people. People with noninsulin-dependent diabetes who took two and one-half grams of dried holy basil leaf powder every morning showed significant reductions in their blood glucose levels.
- *Shilajit* helps counter diabetes and regulates blood sugar.

DIGESTION

The digestive system includes the mouth, esophagus, stomach, liver, pancreas, small intestine, colon, and rectum. Digestion often is affected by stress. Stress hormones can slow digestion, allowing food to ferment and stagnate. Stress also has a significant influence on the balance of intestinal microflora (bacteria that aid digestion) and can cause indigestion, diarrhea, and irritable bowel syndrome.

Ayurveda: Digestive Fire

Ayurveda teaches that it is important to have a strong digestive fire (*jatharagni*). The digestive fire breaks down the food we eat and provides nourishment to the tissues of the body. If there is good digestion, then we can make better use of the food and herbs that we eat.

Amla increases digestive fire and is found in Chyavanprash, a traditional herbal jam (see chapters 11 and 12).

Ayurvedic practitioners often use fermented herbs (arishtams) prepared with *ghee* (clarified butter) and honey. This preparation aids digestion of the herbs and also protects the stomach from possible irritation.

Adaptogens for Digestive Health

Most adaptogens are not used as specific digestive tonics, but they support many aspects of digestion and absorption, including countering belly-fat weight gain, regulating metabolism for effective weight

management, and antiulcer activity. In some cases, they stimulate digestive function.

- ✦ **The following adaptogens support digestive health:** amla, American ginseng, Asian ginseng, astragalus, dang shen, holy basil, licorice, prince seng, shatavari, and shilajit.

Adaptogen Notes

- *Amla* is good for digestive system disorders, including indigestion, constipation, colitis, flatulence, and hemorrhoids. It also increases the digestive fire.
- *American ginseng* is a useful medicine to enhance digestion and absorption of nutrients. Chewing on a small bit of the root can help stimulate gastric acid and digestive juices. This action makes it useful for lack of stomach acid (achlorhydria), intestinal rumbling (borborygmus), and impaired absorption.
- *Astragalus* is used for chronic diarrhea, chronic ulcers, and hemorrhoids.
- *Holy basil* can lower cholesterol and triglyceride levels and is a carminative (relieves digestive upset) that is useful for relieving gas, nausea, and vomiting.
- *Licorice* offers significant benefit for irritable bowel syndrome and inflammatory bowel diseases, including Crohn's disease and ulcerative colitis. It is a good choice for irritation, inflammation, or ulceration of the gastrointestinal tract. It is a prominent remedy for gastritis, gastric and duodenal ulcers, ileitis, and leaky gut syndrome, and it is an excellent digestive tonic.
- *Lycium* promotes the growth of healthy bowel flora.
- *Prince seng* moistens mucous membrane tissue and can also be used for heat in the gastrointestinal tract, gastritis, dry constipation, and inflammation of the large and small intestines.
- *Shatavari* is used for gastric irritation and ulcers and to prevent aspirin-induced stomach irritation.
- *Shilajit* protects against gastric damage and gastritis.

EYESIGHT

Vision is controlled by the nervous system. Therefore, factors that affect the nerves also can affect eyesight. Maintaining a healthy nervous system will help support eyesight and prevent eye disease.

Adaptogens for Improved Eyesight

By providing antioxidant support, adaptogens support both the nervous system and eyesight.

- ✦ **The following adaptogens promote healthy vision:** amla, eleuthero, lycium, and schisandra.

Adaptogen Notes

- *Lycium* is extremely rich in two carotenoids (antioxidant compounds that produce the orange or yellow color in vegetables and fruits): lutein and zeaxanthin. They are pigments used by the retina of the eye and are critical for eye health. *Lycium* stabilizes the small capillaries in the eyes and is used for poor night vision; dry, red, or painful eyes; macular degeneration; excessive tearing; and to help prevent cataracts and glaucoma.
- *Schisandra* increases visual acuity and decreases eye fatigue in tasks requiring extended visual concentration. It increases peripheral sensitivity of the retina, enhances night vision, and increases the eye's adaptation to darkness.

FATIGUE

The quest for more energy and less fatigue dates back millennia. Additional energy always was needed to perform the daily tasks of life, and finding ways to increase energy always has been a health priority. When the body is under stress, it uses more energy. This causes fatigue and can lead to exhaustion.

Adaptogens for Increased Energy

Adaptogens enhance a person's capacity for physical work and provide an increased flow of steady energy throughout the day. They help to increase performance, endurance, and rehabilitation and aid recovery after strenuous physical activity. Adaptogens provide an adaptive energy reserve that can be tapped under extreme physical tension and during

recovery from fatigue, when the body needs it most. This adaptive energy also helps the body withstand and recover from the cumulative effects of stress. In addition, adaptogens are effective in enhancing mental capacity. This was discussed in the Brain Function section.

At the cellular level, stress affects the body's ability to transform glucose into energy. Adaptogens counter the effects of stress and stimulate the liver to convert glycogen to glucose, providing more energy for the body to use.

- ✦ **The following adaptogens give the body and mind an energy boost:** American ginseng, ashwagandha, Asian ginseng, cordyceps, dang shen, eleuthero, holy basil, jiaogulan, rhaponticum, rhodiola, schisandra, and shatavari.

Adaptogen Notes

- *Asian ginseng* is used in traditional Chinese medicine to restore energy.
- *Eleuthero* is used to increase energy, endurance, and stamina.
- *Rhodiola* increases mitochondrial activity (cellular energy). It is used to reduce fatigue associated with Lyme disease.
- *Shilajit* provides energy and, translated from Sanskrit, means “conqueror of mountains and destroyer of weakness.”

IMMUNE SYSTEM

The immune system is a network of specialized cells, tissues, and organs that protect the body from pathogens and rogue cells. It includes white blood cells, lymph glands, the spleen, the thymus, and bone marrow (see chapter 5). One of the early and problematic consequences of chronic stress is decreased activity of the immune system. Stress suppresses immunity by increasing levels of cortisol and inhibits one's resistance to various forms of bacterial, fungal, or viral attacks. Medical science has known for a long time that a strong immune system is a leading factor in fighting illness and disease.

There is much evidence that adaptogens act to stimulate the immune system and bring about increased resistance through a nonspecific self-regulating process. Adaptogens work to increase natural or innate

immunity and provide vital support to the immune system.

Adaptogens for the Immune System

All adaptogens are used for immune system support. They strengthen and modulate the immune system, improve immune response, enhance humoral and cellular immunity (increase T-cell and B-cell function), and have anti-inflammatory, antioxidant, and antiallergy activity. Adaptogens support a healthy immune system that provides protection from acute illness (colds and flu). They also are used to treat immunological health problems such as viral infections, autoimmune disorders including rheumatoid arthritis, allergies, and cancer. Adaptogens have been shown to improve immune dysfunction and help reverse immunosuppression caused by stress or drugs.

- ✦ **The following adaptogens modulate and enhance the immune system:** American ginseng, amla, ashwagandha, Asian ginseng, astragalus, cordyceps, dang shen, eleuthero, guduchi, he shou wu, holy basil, jiaogulan, licorice, lycium, prince seng, reishi, rhaponticum, rhodiola, schisandra, shatavari, and shilajit.
- ✦ **The following adaptogens have anti-inflammatory actions:** amla, ashwagandha, Asian ginseng, cordyceps, eleuthero, guduchi, holy basil, jiaogulan, licorice, reishi, rhodiola, schisandra, and shilajit.
- ✦ **The following adaptogens have antibacterial and microbial activity:** astragalus, holy basil, licorice, and shatavari.
- ✦ **Antiviral activity has been noted in:** amla, astragalus, holy basil, licorice, reishi, and rhodiola.

Adaptogen Notes:

- *American ginseng* can be of benefit for allergies and allergic asthma.
- *Asian ginseng* enhances natural killer cell activity and the production of interferon.
- *Astragalus* is a broad-spectrum tonic for people who are run-down and need an overall immune system boost. It is used for long-term strengthening of the immune system, and its activity may improve resistance to colds and flu. Astragalus also is used to help people with a variety of viral conditions, including herpes, chronic fatigue

syndrome, chronic hepatitis, and human immunodeficiency virus (HIV). It increases T-cell activity, NK-cell activity, and interferon production.

- *Cordyceps* mushrooms boost T-helper cells, which fight pathogens and create NK cells, which fight off viruses and cancer.
- *Dang shen* is used in protocols for chronic fatigue immune deficiency syndrome.
- *Guduchi* is appropriate for rheumatoid arthritis because it is an immune amphoteric (immune system modulator), reduces excessive immune response, and enhances a deficient immune system.
- *He shou wu* increases cellular immunity by increasing or maintaining levels of T lymphocytes and immunoglobulin in the blood.
- *Holy basil* modulates inflammation and has antiviral properties.
- *Licorice* is an immune system amphoteric and is useful for immune suppression and allergies, especially allergic asthma and animal dander sensitivities. It is antiviral and can be added to protocols for hepatitis and herpes.
- *Prince seng* is used to gradually strengthen the immune system, especially macrophage (immune cell) activity.
- *Reishi* possesses immune system modulating effects and has antitumor activity. It also regulates the immune system in cases of autoimmune disease and allergies.
- *Rhodiola* improves T-cell immunity, thereby, increasing the body's resistance to infections. It also may prevent the suppression of B-cell immunity that can occur with stress.

LIVER DAMAGE (HEPATOPROTECTIVE ACTIVITY)

Our bodies are under constant assault from toxic substances in our environment. Every day, we are exposed to residue from pesticides and industrial chemicals, xenoestrogens, air pollution, heavy metals, and even pharmaceuticals. Our bodies face an ever-growing challenge to remove these toxins. Many toxins are stored in our fat tissues and resist easy elimination. This creates increased metabolic load, oxidative stress, and potential for hepatic (liver) damage.

As the second largest organ of detoxification, the liver is constantly bombarded with toxins, drugs, and many other substances that enter the body. A damaged or diseased liver leaves us more susceptible to infections, compromises our digestion, and saps us of vital energy. Accumulated toxins in the body place a constant drag on the immune system and make us more susceptible to degenerative diseases. If any one organ is compromised, others will be affected eventually, leading to a cumulative negative effect on health.

Hepatoprotective Adaptogens

Fortunately, many adaptogens are hepatoprotective and help protect against liver damage and dysfunction. By increasing functional liver health, we enhance energy, vitality, and well-being.

- ✦ **The following adaptogens protect against liver damage and dysfunction:** amla, astragalus, cordyceps, guduchi, he shou wu, holy basil, jiaogulan, licorice, lycium, reishi, rhaponticum, and schisandra.

Adaptogen Notes

- *Guduchi* is called a detoxifying herb because of its ability to scavenge free radicals and heavy metals as well as alleviate symptoms of liver toxicity, hepatitis, and liver fibrosis. It helps stimulate regeneration of liver cells and the hepatic immune cells known as Kupffer cells. It traditionally was used for treating jaundice and today is used as a supportive therapy for patients with hepatitis B and C.
- *Licorice* is a premier liver tonic and is hepatoprotective. It heals liver damage and is used in treating hepatitis and cirrhosis.
- *Lycium* has mild hepatoprotective activity. It helps regenerate liver cells and protects against liver damage caused by medications or hepatotoxic chemicals.
- *Reishi* protects the liver and enhances its ability to detoxify metabolic wastes.
- *Schisandra* is the most beneficial adaptogen for the liver. It is hepatoprotective and helps regenerate liver cells and increases the presence of hepatic glutathione, an essential liver nutrient. In animal studies, it has been shown to significantly protect against chemical-

and drug-induced liver damage and promote the healing of existing damage.

MUSCULOSKELETAL HEALTH

The musculoskeletal system involves the body's muscles and skeleton, and it also includes the joints, ligaments, tendons, and spinal discs. It is important to help the body maintain a healthy musculoskeletal system. This can be especially critical for athletes and the elderly.

Adaptogens for Musculoskeletal Health

Adaptogens have a number of benefits for musculoskeletal health. Many have antiarthritic and anabolic activity, and they regulate cortisol, thus reducing the gradual loss of minerals from bones (bone demineralization, which can lead to osteoporosis). They can help prevent and treat musculoskeletal health problems, including fibromyalgia and muscle pain in the back and neck and assist in recovery following trauma or surgery.

✦ **The following adaptogens can be used as aids in musculoskeletal system health:** American ginseng, amla, ashwagandha, Asian ginseng, eleuthero, he shou wu, lycium, rhaponticum, rhodiola, schisandra, and shilajit.

Adaptogen Notes

- *Amla* strengthens bones and teeth.
- *He shou wu* is used topically in “hit medicine” (martial arts medicine) as a liniment for bruises and contusions.
- *Lycium* can be eaten daily to strengthen weak muscles and ligaments.

PSYCHOSPIRITUAL HEALTH (MIND-BODY-SPIRIT CONDITION)

In the West, we don't have a perfect word to describe the mind-body-spirit connection. We sometimes use the terms *psychospiritual* and *psychophysiology* to express the mind-body-spirit connection. There is also *psychoneuroimmunology*, the study of mind-body interactions and their effects on the immune system. Mind-body and/or spiritual energy are

integrated with, not separate from, our physical body, and many believe that good health includes nourishing this connection.

Adaptogens for Psychospiritual Support

Several adaptogens have been used to aid meditation and deliver nutrients to the mind that are necessary for the experience of enlivened consciousness. They can be used as aids to elevate the mood and spirit and to calm the mind.

- ✦ **The following adaptogens have been used to enhance the mind-body spirit connection:** Asian ginseng, holy basil, licorice, reishi, and shatavari.

Adaptogen Notes

- *Asian ginseng* calms the spirit and helps one gain wisdom. It also could be said that ginseng calms the distressed mind while strengthening the body.
- *Holy basil* affects the body's "energy field" according to ayurvedic physician and author Dr. Vasant Lad. Ayurvedic tradition says that holy basil performs the indispensable spiritual function of balancing and toning the energetic chakra system. It is considered the *maha guna* (great quality) that balances *sattva* (pure quality), and it delivers nutrients to the mind necessary for the experience of enlightenment. "Its quality is pure sattva. . . . Holy basil opens the heart and the mind, bestowing the energy of love and devotion (bhakti). Sacred to Vishnu and Krishna, it strengthens faith, compassion and clarity. Basil gives the protection of the divine by clearing the aura and strengthening the immune system" (Frawley and Lad 1986).
- *Licorice* commonly is used as a tea by Buddhist monks and called "the peacemaker" herb by the Chinese. Licorice root tea helps calm and prepare the mind for meditation.
- *Reishi* generates a sense of inner calm and harmony while also heightening mental perception, both logical and intuitive.
- *Shatavari* is thought to foster the energy of tolerance and compassion.

SEX HORMONE REGULATION

The testes and ovaries are part of the endocrine system, which produces hormones. The testes and, to a lesser degree, the ovaries produce the hormone testosterone, which is necessary for normal sperm production and needed by both men and women for adequate libido (sexual drive) and general energy. The ovaries also produce the hormones estrogen and progesterone. Estrogen is necessary for the production of the ovum (eggs), and progesterone regulates ovarian function, the uterine lining, and breast development and is required for pregnancy. Men also produce small amounts of estrogen. These hormones also modulate immune system function.

These three sex hormones interact with the neuroendocrine system, particularly the HPA axis. As such, they have an effect on the stress response. The interaction works both ways; the HPA affects sex hormones, and sex hormones affect the HPA.

There are many factors that influence the regulation of sex hormones. We know that as we age, there is a decrease in sex hormones. We also know that extreme stress can cause an antifertility effect and may reduce the estrogen levels in females and the sperm count in men.

Adaptogens for Sexual Health

Adaptogens, in their general support for neuroendocrine balance, also work to regulate and balance the sex hormones and reproductive function. Some adaptogens can be used for sexual enhancement, especially in tired, qi deficient, depressed, or anxious people. They increase libido in both men and woman and may reduce the incidence of male and female infertility.

- ✦ **The following adaptogens provide benefits for the male reproductive system:** American ginseng, ashwagandha, Asian ginseng, cordyceps, he shou wu, lycium, rhodiola, rhaponticum, and shilajit.
- ✦ **The following adaptogens provide benefits for the female reproductive system:** cordyceps, licorice, rhodiola, and shatavari.
- ✦ **The following adaptogens help relieve menopausal symptoms:** American ginseng, Asian ginseng, astragalus, licorice, shatavari, and schisandra.

Adaptogen Notes

- *Ashwagandha* is used by both men and women to boost sexual desire. Long considered India's most potent sex-enhancing plant, the country's women have used ashwagandha for years to stimulate their sex drives. It is used by men for low sperm count and sexual debility.
- *Asian ginseng* is used by millions of men to enhance libido and sexual vitality. In one erectile dysfunction study, men who took ginseng had a 42 percent improvement in erectile function compared with those who took placebos.
- *Asian ginseng* lessens menopause-based fatigue, insomnia, and depression. It has proved to have a mild estrogen-promoting activity in some women and thus should not be taken by women in whom estrogen is already excessive. Women of childbearing age should use ginseng sparingly; eleuthero would be a better choice.
- *Astragalus* stimulates sperm motility and may be beneficial for menopausal sweating.
- *He shou wu* is capable of increasing sperm count and sperm motility. It also is used for men with a lack of libido.
- *Holy basil* is reported to have an antifertility effect and should be avoided if a woman is trying to get pregnant.
- *Lycium* may benefit infertility (low sperm count and/or motility) in men.
- In women, *rhodiola*, according to several preclinical investigations, may help restore loss of menstrual cycles (amenorrhea) and increase fertility resulting from minor hormonal imbalances or stress. In men, it may help improve erectile dysfunction.
- *Schisandra* tones the sexual organs of both men and women. For men, it increases the production of sexual fluids, improves sexual stamina, and treats premature ejaculation and low sex drive. For women, it is reported to increase circulation to the genitals as well as enhancing sensitivity.
- *Shatavari* in Sanskrit means "she who has hundreds of husbands," implying its ability to increase fertility and vitality. It also is said to be nourishing to the female reproductive system and to help balance the production of female hormones. The plant is popular with nursing mothers for its ability to increase milk flow. It also is useful for women with menopausal symptoms such as vaginal dryness, lack of libido, and dry skin. Several animal studies have indicated that it may

inhibit breast cancer and stimulate an increase in immune system response.

SKIN, HAIR, AND NAILS

The skin, hair, nails, and oil and sweat glands are known as the integumentary system. The skin is the largest organ in our body, and its function involves the regulation of body temperature, elimination of wastes, and reception of temperature, pressure, and pain signals. The skin, as a sense organ, also has a connection with the nervous system, and in ayurveda, skin is believed to support both physiology and psychology.

Adaptogens for Integumentary Health

The condition of the skin, hair, and nails can serve as visible proof of the power of adaptogens to rejuvenate and nourish the body.

- ✦ **The following adaptogens benefit the integumentary system:**
amla, astragalus, he shou wu, holy basil, licorice, reishi, schisandra, and shatavari.

Adaptogen Notes

- *Amla* has been used as a hair tonic, enriching hair growth and hair pigmentation. It strengthens the roots of the hair and helps maintain color and luster.
- *Astragalus* treats disorders of the skin including burns. It also has been used for the treatment of skin tumors. For topical use, mix the powder with sesame oil and apply.
- *He shou wu* has been used for centuries to help maintain the youthful color of one's hair and also to help diminish hair loss.
- *Holy basil* contains ursolic acid—one of the cosmetic industry's latest favorites because not only does it quickly heal the skin but it also improves elasticity and removes wrinkles. It also shows benefits for preventing skin cancer. A poultice made from the herb is used topically for its antifungal and antibacterial actions.
- *Licorice* is used topically for herpes, eczema, psoriasis, and allergic dermatitis. Licorice has been found to boost the body's natural steroid hormones to counteract inflammation and irritation.

- *Schisandra* relieves allergy-induced skin conditions, including hives and eczema.
- *Shatavari* root infused in oil is used topically to treat skin diseases. The leaves can be infused in ghee and applied to boils and sores.

SLEEP PROBLEMS

Many people suffer from insomnia and related sleep problems. Stress can disrupt the regular circadian (time-related) secretion of cortisol and can be a major cause of sleep problems. Cortisol normally obeys the body's inner clock and responds to light and dark, morning and night. Cortisol levels are highest in the early morning, lower in the afternoon, and lowest at night. Cortisol helps to synchronize activity, patterns of eating, and patterns of sleeping.

Adaptogens for Improved Sleep

Adaptogens regulate the production of cortisol, reducing stress. A relaxed, less stressful body allows for better and more rejuvenating sleep.

- ✦ **The following adaptogens aid the body in sleeping:** American ginseng, ashwagandha, eleuthero, jiaogulan, rhaponticum, rhodiola, and schisandra.
- ✦ **The following adaptogens help relieve the symptoms of jet lag, which is caused by a disruption of the body's circadian rhythms:** American ginseng, Asian ginseng, eleuthero, jiaogulan, rhaponticum, and rhodiola.

Adaptogen Notes

- *American ginseng* helps people with insomnia that is associated with chronic fatigue syndrome.
- *Ashwagandha* is a calming adaptogen and traditionally is used for insomnia and nervous conditions.
- *Eleuthero* improves sleep quality and prevents nighttime waking.
- *Jiaogulan* is a calming adaptogen and is appropriate for anxious or agitated people with unstable hypertension, stress headaches, and anxiety-induced insomnia.
- *Rhodiola* is used to regulate sleep disorders and improve sleep

quality.

- *Schisandra* is reported to relieve insomnia and dream-disrupted sleep.

STRESS

The ability of the body to manage stress successfully is critical to health and vitality. Stress is handled primarily by the endocrine system, which includes the following glands: pituitary, thyroid, parathyroid, adrenal, thymus, pineal, pancreas, ovaries, and testes. The endocrine system regulates the body's activities through the delivery of hormones via the circulatory system. Stress also is regulated by the sympathetic nervous system via neurotransmitters in the tissues of the body.

Stress may be the leading cause of illness and disease. The American Institute of Stress reports that as many as 75 to 90 percent of visits to physicians are due to stress-related complaints. In survey after survey, Americans identify stress as their number one health concern today and more than 50 percent of adults in the United States report high stress on a daily basis.

Stress is a phenomenon that manifests itself in our bodies in many different ways. Some of the more common symptoms of stress include problems with sleep, depression, anxiety, irritability, and fatigue. Chronic and acute stresses can cause or aggravate most diseases, including heart disease, cancer, diabetes, rheumatoid arthritis, asthma, ulcers, insomnia, hypertension, and obesity. According to some estimates, prolonged stress is the initial reason for approximately 80 percent of common diseases (excluding inherited and developmental defects). Acute and chronic stresses also can result in immune suppression; this fact is well-known to athletes. Scientists have demonstrated that both acute and chronic levels of stress contribute to elevated cortisol levels. Cortisol—the stress hormone—is often misunderstood. Balance is the key with cortisol. In naturally small doses, it stimulates the immune system, but in excess, it causes immune suppression. When cortisol is not available because the adrenal glands have become exhausted from too much stress, inflammation is allowed to continue unchecked. Excess cortisol is a contributing factor that leads to the development of many chronic diseases. It hastens the aging process and increases deposits of belly fat, which is highly inflammatory and can promote heart disease, arthritis, and cancer.

Adaptogens for Stress Management

Adaptogens have a proven ability to combat and resist stress and can be considered antistress supplements. One way they do this is by lowering and normalizing excess cortisol levels, allowing the body to maintain a healthy stress response. They provide a balancing action that counteracts an active adrenal response to stress and reduces cortisol secretion back down to normal levels, thus allowing us to maintain an inner balance (homeostasis) for longer periods of time. Adaptogens also lower the stress-induced release of adrenal hormones. All of this, over time, strengthens and preserves the body's adaptive energy and prevents stress from causing disruptions, illnesses, and premature aging.

Adaptogens have the ability to increase resistance to stress and improve tissue damage caused by stress as well as reduce the symptoms of some chronic diseases linked to stress. To maintain health, the body needs to exhibit enhanced adaptation to both stress and the results of stress.

Very often, the root of many dysfunctions is nonspecific because they are caused by chronic stress. For example, in some people, stress causes their blood pressure to go up. With others, it causes a drop in pressure. It is the same thing for blood sugar. Stress causes excessive blood sugar levels for some, while causing low blood sugar levels for others. Adaptogens help to normalize these and other body functions and to keep the body's systems in balance. This amphoteric effect, that is, the ability to promote homeostasis, is a very important quality of adaptogens. If there is hypoactivity (deficient functioning), adaptogens will strengthen and increase function; if there is hyperactivity (excessive functioning), they will gently reduce and normalize activity.

Table 6.2 shows how adaptogens respond to various stress-related disorders.

STRESS DISORDER; RESULTS	ADAPTOGENIC EFFECTS¹
Reduced immunity: chronic, viral, bacterial, and fungal infections	Improves immunity, especially B cells, Th1 T-lymphocytes, macrophages, NK cells
Disturbed central nervous system; depression, hypertension, schizophrenia and psychosis	Calms the central nervous system
Muscular fatigue; weakness	Improves stamina by promoting mitochondrial function
Increased adrenaline; increased blood pressure and heart rate	Reduces blood pressure and heart rate
Irregular bowel movement; constipation, emotional diarrhea, irritable bowel syndrome	Regulates enteric (gut) functioning, which relieves spasm
Increased free radicals; cell damage	Antioxidant activity reduces cell damage

Bacterial, fungal, viral, and parasitic infections including pneumonia, colds, herpes
Cancer treatment; side effects from chemotherapy and radiation therapy

Immune enhancement, antibacterial, antifungal, antiviral activity
Immune enhancement, tumor inhibition, chemoprotection and radioprotection

- ✦ **All adaptogens have antistress qualities, and they all have stabilizing effects on the HPA axis. The list of all adaptogens is as follows:** American ginseng, amla, ashwagandha, Asian ginseng, astragalus, cordyceps, dang shen, eleuthero, guduchi, he shou wu, holy basil, jiaogulan, licorice, lycium, prince seng, reishi, rhaponticum, rhodiola, schisandra, shatavari, and shilajit.
- ✦ **The following adaptogens modulate levels of adrenaline, noradrenaline, and cortisol:** American ginseng, Asian ginseng, cordyceps, dang shen, eleuthero, holy basil, jiaogulan, licorice, reishi, rhaponticum, rhodiola, schisandra, and shilajit.
- ✦ **For hypothyroidism (sluggish thyroid), the following adaptogens are of benefit:** ashwagandha, holy basil, and rhodiola.

Adaptogen Notes

- *Ashwagandha* is an important tonic for people who are generally stressed-out. Rather than being overstimulating, it has a mild calming effect. In animal and human studies, this root was found to stimulate the thyroid, making it useful for hypothyroidism.
- *Rhodiola* enhances thyroid function without causing hyperthyroidism.

URINARY SYSTEM

The urinary system produces, stores, and eliminates urine. It includes the kidneys, ureters, bladder, prostate, and urethra. Problems in the urinary system include urinary infections, incontinence, kidney stones, and prostate problems and can be caused by aging, illness, or injury.

Adaptogens for Urinary Health

Adaptogens benefit the urinary system by decreasing inflammation and in some cases protecting the kidneys against drug-induced damage. They also reduce some urinary problems caused by aging.

- ✦ **The following adaptogens support the kidneys and urinary functions:** amla, Asian ginseng, astragalus, cordyceps, dang shen,

guduchi, holy basil, he shou wu, licorice, lycium, reishi, schisandra, and shilajit.

- ✦ **The following adaptogens are diuretics (increase the excretion of urine):** ashwagandha, astragalus, guduchi, holy basil, and shatavari.

Adaptogen Notes

- *Astragalus* is a mild diuretic.
- *Cordyceps* is used as a kidney tonic for degenerative kidney diseases. It offers benefits for people with renal autoimmune disease, including glomerulonephritis and Berger's disease as well as chronic nephritis with degeneration.
- *Guduchi* is used to treat kidney problems, and its fresh juice is a powerful diuretic that is used for burning urination, urethral discharges, gout, and gouty arthritis.
- *Holy basil* seeds are used for relieving urinary problems and as a diuretic. They also have a strengthening effect on the kidneys.
- *Shilajit* is effective in treating prostatic enlargement.

WEIGHT GAIN AND OVEREATING

Individuals prone to chronic stress often respond by overeating or increasing alcohol consumption. Stress is often the trigger for binge-eating habits and causes and increases the desire to eat. Binge-eating disorders are characterized by frequently eating large amounts of food regardless of hunger, eating quickly, and feeling out of control while eating.

A long-term increase of cortisol encourages the metabolic system to produce fat, especially increased abdominal fat. Belly fat is particularly unhealthy because it is proinflammatory and associated with metabolic syndrome, hypertension, heart disease, and diabetes. Belly fat also can stimulate the progression of atherosclerosis as well as the growth of tumors and fibroid tissue.

Adaptogens for Weight Management

Adaptogens support weight management by regulating blood sugar, insulin metabolism, and cortisol levels; enhancing digestion and improving the

digestive fire; and regulating body metabolism. By increasing adaptive energy and creating a balanced endocrine system, weight management becomes more controllable.

- ✦ **The following adaptogens support weight management:** American ginseng, amla, Asian ginseng, cordyceps, dang shen, eleuthero, guduchi, he shou wu, holy basil, licorice, reishi, rhaponticum, rhodiola, and shilajit.
- ✦ **The following adaptogens help to increase energy and can enhance digestion:** American ginseng, ashwagandha, Asian ginseng, cordyceps, dang shen, eleuthero, holy basil, jiaogulan, rhaponticum, rhodiola, schisandra, and shatavari.

Adaptogens that support normalization of blood sugar, increase energy, and aid digestion also support weight management.

Adaptogen Notes

- *Eleuthero* has the ability to shift the body's metabolism to a greater use of fat for energy. This shift is reported to delay lactic acid buildup associated with muscle fatigue.

Part Two



Materia Medica

Using the Materia Medica

The materia medica includes a series of herbal monographs. Each monograph focuses on a specific herb and includes background on the history and modern uses of the herb under discussion. A safety rating is provided for each herb and possible herb/drug interactions and other safety issues are discussed. Directions and general dosages for different methods of herbal preparation are detailed. We hope that the monographs will offer a solid basis upon which to begin your exploration of adaptogens and the complementary herbs that can enhance their effects. Before presenting the monographs themselves, some background on some of the information you will find in the materia medica is provided in the following sections.

TASTE/ENERGY

In traditional medical systems, the energetic qualities of the herbs and of the person's symptoms along with some form of differential diagnosis allow a practitioner to match an herb or therapy precisely to the patient. Energetics include the taste (sweet, sour, salty, bitter, spicy, pungent, acrid) and energetic qualities (hot, cold, dry, damp) of each herb as well as the energetic quality of the patient's symptoms and constitution. This is an effective way of understanding an herb, not by its constituents, but by its activity and effects on the human body.

In early Western thought, there were four basic elements: earth, air, fire, and water. In Chinese tradition, however, there are five elements: wood, earth, fire, metal, and water. They also consider the body as divided into five organ networks. The five yin organs in Chinese medicine are the heart, kidneys, liver, lungs, and spleen. Although the names are similar to the Western anatomical organs, the Chinese organs often have a broader sphere of function. For instance, the Chinese kidney includes aspects of the endocrine glands and reproductive function. The organs each have their own functions, but they also work together.

How does this relate to herbs? In traditional Chinese medicine, herbs

that are sweet tasting are nourishing to the Chinese spleen. Herbs that are salty affect the kidneys and bladder. Spicy or acrid herbs are used for the lung and large intestine, and sour herbs tone the Chinese liver. Lastly, bitter herbs are used for the Chinese heart, in which they calm the shen (mind, consciousness) and clear heat and dampness.

Information on the taste and energetic qualities is given for each of the adaptogens in the chapter 7 monographs.

HERBAL SAFETY

In the monographs, each herb is given a safety rating from one to three stars. The following chart lists the criteria for those safety ratings. All of the adaptogens are classified as either very safe or generally safe.

Safety Ratings for Adaptogens	
RATING	EXPLANATION
***	Very safe. Regular use unlikely to cause any adverse effects.
**	Generally safe. Use as recommended, do not exceed dose or suggested length of time for use.
*	May have significant adverse effects, even when used in normal therapeutic doses. Not for home use. used only by trained clinicians.

Although some people have been properly introduced to herbal medicines, many others still equate natural substances with harmlessness. Anyone who uses herbal products needs to understand a few basic safety rules.

We need to be aware that the herbal products found in the United States marketplace are generally very safe. Having said this, just because something is “natural” does not mean it is safe.

To better understand herbal safety, let’s look at classifications of plant medicine from Cherokee medicine. In this system, there are three categories of herbs: foods, medicines, and poisons. Adaptogens are considered food or medicine herbs; none are considered poisons.

1. *Food Herbs*: These herbs are safe, gentle in action, and have very low toxicity. They are unlikely to cause an adverse response. Examples of food herbs include lemon balm, hawthorn, ginger, linden flower, chamomile, and lycium. These herbs can be used in substantial quantities over long periods of time without any acute or chronic toxicity.

2. *Medicine Herbs*: These herbs are stronger acting, and they need to be used with more careful attention to dosage and the reasons for their use. They are useful for specific conditions (with a medical diagnosis) and usually for a limited period of time. These herbs are not daily tonics, and they should not be taken just because “they are good for you.” They have a greater potential for adverse reactions and, in some cases, drug interactions than do the food herbs. Examples of medicine herbs include boneset, ephedra, goldenseal, and senna.
3. *Poison Herbs*: These herbs have strong potential for either acute or chronic toxicity and should be used only by trained clinicians who clearly understand their toxicology and appropriate use. Even though the herb industry is often portrayed as unregulated and irresponsible, the vast majorities of the herbs in this category are not available to the public and are not sold in health food or herb stores. Examples of poison herbs include aconite, arnica, datura, and gelsemium.

Readers also should be aware that allergic reactions can occur from consuming any food, medicine, or herb. So although some herbs are very safe, a severe allergic response (anaphylaxis) is possible whenever anyone ingests a new substance. Idiosyncratic responses (unique and unexpected reactions to a substance) are also possible, so the first few times someone eats an unfamiliar mushroom, food, or herb, small doses are probably a good idea.

A clear understanding of an herb’s benefits and possible risks as well as a clearly defined patient diagnosis are essential for a practitioner to safely and effectively counsel patients as to safe and effective choices in herb use.

DOSAGE

Americans seem to have been convinced by advertising that more is always better. With herbs, this is not necessarily true.

A well-publicized example is the herb ephedra (*ma huang*), which has been inappropriately used for weight loss or as a stimulant. Serious adverse reactions, including death, have occurred, and in most cases, the people involved were foolishly taking two to four times the recommended dosage.

Many herbs are useful and safe in small, appropriate doses, but as with any medication, overdoses can cause unwanted side effects, injuries, and if the statistics are correct, rare fatalities.

General dosage information is provided in each monograph. However, dosing of herbal preparations is highly dependent on a variety of factors, such as the age of the patient, his weight and constitutional strength, and the type and quality of the herbal product that is being used. Each person may require a different dosage.

In ayurveda, it is believed that many diseases are due to weakness of the digestive fire, called *angimandya*. This affects the dosage of herbs because if a person's digestive fire is weak, a higher dose is needed. If the person has a strong digestive fire, then a smaller dose is needed.

Elderly patients (especially in their seventies to nineties) often have a lack of gastric hydrochloric acid (achlorhydria). This causes impaired digestion, absorption, and abnormal drug metabolism. Dosages for the elderly are usually lower than for younger people and must be monitored more carefully. Many elderly patients take a substantial number of pharmaceutical medications. If a person wants to add herbs to such a regimen, she should consult a naturopathic physician or clinical herbalist before taking herbs.

For children, there are several methods of calculating dosage. One uses the child's age, but the most accurate way is to divide the child's weight by the average adult weight (150 lbs.). The resultant fraction provides an accurate percentage of the adult dose appropriate for a child. An example might be that if an adult dose is fifty drops of tincture three times per day and a child weighs seventy-five pounds (75 divided by 150 equals $\frac{1}{2}$), the correct dose for the child would be twenty-five drops three times per day. For infants that are breastfeeding, herbs such as fennel seed can be taken by the mother. The essential oils pass into the breast milk, preventing colic in the child.

People who are very sensitive and have many allergies should take one new herb at a time. If these people take a formula and have an allergic response, there is no way to determine which ingredient was a problem.

There are a few descriptions in the Chinese medical literature about the best time to take herbal remedies. These generally have to do with timing in relation to meals and the differences between morning and evening treatments.

The classic Chinese medical text *Shoushi Baoyuan (Achieving Longevity by Guarding the Source 1616 CE)* says that tonics should be taken in the morning and are best taken on an empty stomach (before meals). It is considered most appropriate to wait one-half hour before taking any food.

General guidelines for taking herbs include:

1. Take herbs before meals except when they cause irritation or nausea.
2. Take herbs that might irritate the stomach or intestine with or after meals.
3. Take digestive herbs before meals.
4. Use stimulants in the morning, sedatives at night.
5. Most herbs are best taken in smaller doses, spread out throughout the day.

HERBAL PREPARATIONS

Herbs as medicines can be administered in many forms. Some can be taken as foods and consumed regularly in the diet, like basil, blueberries, garlic, or ginger. Each monograph in the materia medica includes general dosages for the common forms in which the given herb is administered. These methods of herbal preparation are described in this section.

Teas and decoctions are a reliable way of administering some herbs. Drinking a hot cup of a pleasant-tasting tea can be a wonderfully relaxing and healing experience in itself. Liquids also are absorbed more quickly than solids, especially in patients with impaired digestion. For certain herbs (green tea, slippery elm), tea is the most effective way to take them. The drawbacks to teas are that many herbs (boswellia, ginkgo, gum guggal, milk thistle) have constituents that do not dissolve well in water and are not effective as teas. Other herbs have an unpleasant taste (saw palmetto, feverfew, valerian), and getting patients to drink cupfuls of a noxious-tasting brew will limit patient compliance. Some patients also will find having to make teas too time-consuming or impractical.

Tinctures are extracts of herbs in a mixture of alcohol and water. While not very concentrated (1:5 weight/volume), tinctures have the benefits of being a liquid. The alcohol and water mixture extracts a wide range of constituents from the herb, and alcohol increases absorption of the herb by approximately 30 percent, so the doses are much smaller than with teas.

Therefore, the taste factor is less of a problem, and they are convenient. A patient can carry a small one-ounce dropper bottle, and the tincture can be placed in water, tea, or juice when needed. An additional benefit for tinctures is that herbs that lose potency when dried (echinacea, eyebright, skullcap) can be made into fresh tinctures (1:2 weight/volume), which preserves their activity very effectively. The biggest limitation for tinctures is that they contain alcohol, and people with alcohol-abuse issues or serious liver disease as well as pregnant women should avoid using them.

Fluid extracts are more concentrated alcohol and water extracts (1:1 weight/volume), and they offer many of the same benefits as tinctures with greater potency and a smaller dosage. True fluid extracts are not common in the American marketplace, and there is great confusion because different manufacturers use different terminology, technology, and extraction liquids to produce their products. The pharmaceutical definition of a fluid extract includes the use of heat in the manufacturing process, which can be useful for heat-soluble constituents or damaging to heat-sensitive constituents.

Spray-dried extracts are liquid extracts that are spray-dried onto a powdered carrier such as cellulose and powdered herbs. These extracts are fairly concentrated (8:1, 5:1, 4:1 weight/volume), often can maintain the activity of the whole herb, and are easily encapsulated, so taste is not an issue. Spray-drying also creates a significant amount of heat in the process, and this can damage heat-sensitive constituents such as essential oils.

Capsules containing ground, dried herbs tend to have very limited activity and digestibility. Herbs that should be taken in this form are ones containing minerals as primary constituents (alfalfa, horsetail, nettles, oat straw). As long as the patient has reasonable digestive function, capsules are a superior way to ingest mineral-rich herbs. The drawback of capsules in general, whether they contain ground herbs or a spray-dried extract, is that they are more difficult to digest than liquids. Patients (especially young children) who can't swallow capsules also cannot use this type of product.

Gelcaps are a useful method of ingesting oily nutrients like vitamin E or oil-based supplements such as borage seed oil, flax seed oil, or evening primrose seed oil. Gelcaps are easier to swallow than capsules or tablets, but the ingredients are subjected to considerable heat during processing and the possibility that the oils can become rancid is a substantial problem.

Tablets often are difficult to digest, but greater amounts of herbs and herb extracts can be squeezed into this format. Uncoated tablets are harder to swallow but are more easily digested. Most tablets contain formulas of herbs and/or supplements that are unique to the manufacturers, and their effectiveness is dependent on the quality of ingredients and the validity of the formula as a therapeutic regimen.

Ayurvedic Rasayanas

Some of the traditional ayurvedic rasayanas are prepared in a concentrated herbal paste or jam with honey and ghee. The Indian use of ghee may have become standard because this substance is especially protective for the stomach and intestines against the spicy effect of the herbs that are frequently relied on to strengthen the digestive fire. Preparations made with honey, ghee, and cane sugar are believed to be superior over the common pills and gelatin capsules we are accustomed to taking in the West. The potency of the herbs is permanently locked into the ghee and honey. According to ayurvedic texts, ghee that is older than ten years develops strong medicinal qualities, and the astringent property of honey that is older than one year also contains medicinal effects.

In the modern practice of ayurvedic medicine, herbs usually are prepared in tablets or capsules and neither honey nor ghee is included.

Chinese Tonics

Many of the herbs used in Chinese medicine are not particularly pleasant tasting. The Chinese believe that “good medicine is bitter but good for treating disease, the more bitter the better.” There are some exceptions to the general rule of foul-tasting Chinese herbs. In fact, some herbs (see chapter 12, “Adaptogens as Food”) are cooked in rice porridge or soups as nourishing tonic remedies.

Standardized Herbal Products

Standardized herbal products frequently are recommended in the literature, especially by authors who are not herbalists. The idea that each dose of an herb has the exact same levels of active constituents is an attractive concept and a comfortable one for practitioners used to dealing with pharmaceutical products. However, the majority of herbs are not used for life-threatening conditions, nor do they have substantial toxicity, so dosages do not need to be as precise as with pharmaceutical medications.

The belief that each herb has a single active constituent is usually false. Most herbs have dozens or even hundreds of constituents that may contribute to their activity. Some of the constituents may have direct activity, and other “inert” ingredients may not have direct effects but may increase availability to the body, reduce toxicity, or stimulate function via an unrelated mechanism. To most herbalists, the active constituent is the herb itself. Many manufacturers and academic “herbal authorities” would have you believe that only standardized herbal products work and that all herbs should be standardized, but this is disingenuous and more about marketing and belief systems than fact. The reality is that less than 10 percent of the standardized products in the marketplace are standardized to the known active constituents of the herbs involved.

There are actually two types of standardization. The first is true standardization, in which a definite phytochemical or group of constituents is known to have activity. Ginkgo, which consists of 26 percent ginkgo flavones and 6 percent terpenes, is a good example of real standardization. Other products that meet these parameters are milk thistle, curcumin (made from turmeric), and saw palmetto (which consists of 85 to 95 percent fatty sterols). These products are highly concentrated and they no longer represent the whole herb, so they are now considered to be phytopharmaceuticals. In many cases, such as with ginkgo and milk thistle, they are vastly more effective than the whole herb, but some effects of the herb may be lost and the potential for adverse effects and herb/drug interactions may increase. For instance, curcumin may have stronger anti-inflammatory activity than whole turmeric, but in large doses it can irritate the gastric mucosa, whereas the whole root extract of turmeric has a gastro-protective effect.

The other type of standardization is based on manufacturers guaranteeing the presence of a certain percentage of what is known as a marker compound. These marker compounds are usually not active constituents, and while they may help to identify the herb, they are not indicators of therapeutic activity. An echinacea product standardized to caffeic acid or a St. John’s wort product standardized to 0.3 percent hypericin is virtually meaningless. Neither of these compounds represents the therapeutic activity or quality of the herb. This is not to say that no quality standards are needed; they most certainly are. First, every herbal product needs to be identified botanically to make sure the correct herb is in the product. Adulteration of skullcap with germander has resulted in

liver damage in several people.

In addition to accurate botanical identification, it is very important that the right part of the plant is used, that it is harvested at the right time and prepared properly, and that the appropriate pharmaceutical techniques are used to make the best medicines.

Herbalists always have standardized their herbal products. St. John's wort was gathered when it was in bud or flower, and only the tops of the plants were picked. The tincture or oil of hypericum should turn a deep burgundy red and have a strong and distinctive aroma. How much hypericin is present per dose? How much hyperforin per dose? Herbalists don't know, but they do know that the preparation will be active and will work because the markers that they always have looked for are present. Herbalists have standardized their medicines to quality, not numbers.

As the herbal marketplace continues to grow, simply using the old quality standards probably isn't practical. However, herbalists would suggest that simply using various amounts of an easy-to-test-for phytochemical isn't the answer either. A synthesis of traditional herbal knowledge and modern research will benefit the herbal manufacturer, the consumer, and the practitioner.

7

Monographs on Adaptogens

In addition to the standard information provided in each of the monographs in the materia medica, for each adaptogen, a section is included on the geographic origin and the cultivation of the herb. The properties and constituents also are listed for each of the adaptogens as well as information on selected research studies. Images of the adaptogens are also provided.

Table 7.1 lists each of the adaptogens discussed in this chapter with their botanical names and the part of the plant that is used medicinally.

ADAPTOGEN	BOTANICAL NAME	PLANT PART USED
American ginseng	<i>Panax quinquefolius</i>	Root
Amla	<i>Emblica officinalis</i>	Fruit
Ashwagandha	<i>Withania somnifera</i>	Root
Asian ginseng	<i>Panax ginseng</i>	Root
Astragalus	<i>Astragalus membranaceus</i>	Root
Cordyceps	<i>Cordyceps sinensis</i>	Mushroom, mycelium
Dang shen	<i>Codonopsis pilosula</i> , <i>C. tangshen</i>	Root
Eleuthero	<i>Eleutherococcus senticosus</i>	Root, stem bark
Guduchi	<i>Tinospora cordifolia</i>	Root, stem
He shou wu	<i>Polygonum multiflorum</i>	Root
Holy basil	<i>Ocimum sanctum</i> , <i>O. gratissimum</i>	Herb
Jiaogulan	<i>Gynostemma pentaphyllum</i>	Herb
Licorice	<i>Glycyrrhiza glabra</i> , <i>G. uralensis</i>	Root
Lycium	<i>Lycium chinensis</i> , <i>L. barbarum</i>	Fruit
Prince seng	<i>Pseudostellaria heterophylla</i>	Root
Reishi	<i>Ganoderma lucidum</i>	Mushroom, mycelium
Rhaponticum	<i>Rhaponticum carthamoides</i>	Root
Rhodiola	<i>Rhodiola rosea</i>	Root
Schisandra	<i>Schisandra chinensis</i>	Fruit, seed
Shatavari	<i>Asparagus racemosus</i>	Root
Shilajit	<i>Asphaltum bitumen</i>	Pitch

Examples in the following monographs refer to David Winston's experiences in clinical herbal practice.

AMERICAN GINSENG



American ginseng

(From Illustrated Flora of the Northern States and Canada, vol. 2, by N. L. Britton and A. Brown, 1913)

Botanical Name: *Panax quinquefolius*

Family: Araliaceae

Common Names: Sang, seng

Taste/Energy: Sweet, bitter, slightly cool, and moist

Parts Used: Root and (less frequently) leaf

Location/Cultivation: American ginseng is native to the eastern United States and Canada, from the Catskill Mountains of New York and the Berkshire Mountains of Massachusetts, north into Ontario, west to Iowa, south to Arkansas and Kentucky, and east through the highlands of Alabama, Georgia, Tennessee, North Carolina, and Virginia. American ginseng requires rich soil with a high humus content and full shade, and it prefers deciduous woodlands, especially those with tulip poplars. It takes a minimum of seven years to grow a mature root from the time of germination. Due to this plant's endangered status, wild plants should be left alone, and you should avoid purchasing products labeled "wild American ginseng." The best American ginseng on the market is grown organically in the plant's native woodland habitat.

Safety Rating: * * *

Properties: Adaptogen, antioxidant, bitter tonic, mild central nervous

system stimulant, mild demulcent (soothes mucous membranes), hypoglycemic agent, and immune amphoteric.

onstituents: The active constituents include triterpene saponins, known as ginsenosides or panaxosides. The bitter taste comes from its sesquiterpene content.

History/Ethnobotany

American ginseng has a long history of use by native peoples. The Cherokee, who call it *yvwi usdi* (little man) and *atali gali* (mountain climber), believe this plant is the chief of the medicine plants. It was grandfather ginseng who decided to pledge the aid of the plants when the insect and animal people gave humans disease. Both *Panax quinquefolius* and *P. trifolus* (dwarf ginseng) are used in Cherokee medicine for shortness of breath, coughing, digestive upset, headaches, convulsions, fatigue, female reproductive problems, and general weakness.

The Seminole call this herb “white medicine” and use it as a love medicine, for coughs, as a general tonic and topically for arthritis, boils, sore eyes, earaches, and gunshot wounds. The Iroquois use the root to stop vomiting, for lack of appetite, as a mild stimulant for fevers and asthma, and like the Seminole, topically for sores, earaches, and painful eyes. Many native people, including the Cherokee, Creek, Seminole, Delaware, Mohegan, Meskwaki, and Menominee, used ginseng root or leaf as a spiritual and ceremonial medicine to improve hunting, for protection, to gain affection, and to enhance the power of other herbs in difficult-to-treat cases.

In 1716, Father Francois Lafitau, a Jesuit priest in Canada, stumbled across American ginseng growing in the woods near Montreal. He recognized the plant from descriptions of the related *Panax ginseng* written by Jesuits living in China. The discovery of this “panacea” started the export of American ginseng to China, a trade that continues to this day. American ginseng is very popular in Chinese medicine, in which it is known as *xi yang shen* (western sea’s ginseng) and is used for yin deficiencies in the lungs and kidneys. It is considered to be an effective remedy for dry coughs with hemoptysis (coughing blood), fatigue, diabetes, wheezing asthma, dry mouth, and gastritis.

Daniel Boone, in Kentucky, made his fortune trading ginseng, although he is remembered as a fur trader. It is reported in a book called *Woodland*

Nuggets of Gold that George Washington wrote to Boone, “The war effort needs money, bring ginseng.” American ginseng helped support the revolutionary war effort, and the most valuable cargo to leave New York by ship in that time period was in the *Empress of China*, which was carrying American ginseng to the Orient.

In the Americas, the use of ginseng was quite limited. Mainstream and Eclectic physicians saw it as little more than a mild bitter tonic or digestive aid. Only in Appalachia and the Ozarks did American ginseng become a popular folk medicine. Tommie Bass, the famed “herb doctor of Shinbone Ridge,” called ginseng the “king of herbs.” He used it as an alterative (an herb that enhances elimination and metabolic function), tonic, and male aphrodisiac.

It is these last two qualities for which this plant is best known: its purported benefits on male libido and sexual performance and its ability to enhance energy and relieve fatigue. To this day, it is not uncommon for mountain people in North Carolina and Tennessee to take fresh ginseng roots and put them in a bottle or cask of corn liquor to set aside for a while. After steeping for six months or a year, the ginseng “cordial” is ready for use. It is believed that a shot of this “mountain medicine” is good for what ails you—every now and then.

Modern Uses

Modern research confirms that the American species of ginseng is an endocrine amphoteric and adaptogen that is useful for mild to moderate depletion of the HPA axis and adrenal glands. People with adrenal insufficiency often have dark circles under their eyes, are chronically fatigued, and have elevated cortisol levels. Because American ginseng affects the HPA axis, it can help correct dysfunction of the immune system, including depletion that leads to a person constantly catching colds.

Amphoterics help balance deficient or excessive bodily functions, so as an immune amphoteric, American ginseng can also be of benefit for allergies and allergic asthma. It also re-regulates overly stressed nervous systems, helps deficient insomnia associated with chronic fatigue syndrome, and relieves many of the symptoms of jet lag.

The pancreas is also regulated by the HPA axis, and American ginseng root also has been shown to help control metabolic syndrome (hyperinsulinemia) as well as type 2 diabetes.

The reputed “male sexual tonic” effects of American ginseng also may turn out to be real. For years, many herbalists assumed that any sexual effect was due to either a placebo effect or to increased energy caused by using an adaptogenic herb. Recent studies found that the related Asian ginseng (*Panax ginseng*) enhanced erections and sexual performance. It is not too much of a stretch to conclude that the American species, especially with its history of use as a sexual tonic, could share this effect as well.

The Eclectic physicians, as mentioned previously, used this root as a simple digestive bitter. Although it has a multitude of other uses it is, in fact, a useful medicine to enhance digestion and absorption of nutrients. Chewing on a small bit of the root can help stimulate the production of stomach acid and other digestive juices, making it useful for achlorhydria (lack of stomach acid), borborygmus (intestinal rumbling), and impaired absorption.

Additional Information

Many years ago, when I was a young man, I noticed that my Cherokee uncle often would put a pinch of the dried leaf of American ginseng in almost every herbal formula he gave to people he was doctoring. One day I asked him why he did this. His response was that ginseng (the leaf or the more frequently used root) made everything work better.

Research has shown that adaptogens do just that. Through re-regulation of the endocrine, immune, and nervous systems, they—in simple terms—“make everything work better.” Phytochemical studies have revealed that the leaves of plants in the *Panax* genus actually contain more of the ginsenosides (the plants’ active constituents) than do the roots. Many ancient traditions, when examined by science, are found to have more than a seed of truth.

Dosage and Safety

incture (1:5): 30 percent alcohol, 3–5 ml (60–100 drops), three times per day.

ecoction: Take 1–2 tsp. dried cut/sifted root to 12 oz. water. Gently simmer for 1/2 hour, steep an additional 1/2 hour. Take 4 oz. three times per day.

apsule: Two 500 mg capsules, twice per day.

afety Issues: None likely.

erb/Drug Interactions: In a recent human trial, high doses of American ginseng altered the effects of the medication warfarin (Coumadin) in twenty healthy patients. Avoid using large amounts of this herb if taking this medication.

Selected Research Studies

Efficacy of COLD-fX in the Prevention of Respiratory Symptoms in Community-Dwelling Adults: A Randomized, Double-Blinded, Placebo Controlled Trial (McElhaney et al. 2006).

In this study, a proprietary extract of American ginseng root reduced the risk of catching cold or acute respiratory illness by 48 percent and the duration of such conditions by 55 percent.

American Ginseng Reduces Postprandial Glycemia in Nondiabetic Subjects and Subjects with Type 2 Diabetes Mellitus (Vuksan et al. 2000).

American Ginseng lowered blood sugar levels in both healthy volunteers and patients with diabetes.

AMLA

otanical Name: *Emblica officinalis* (synonym: *Phyllanthus emblica*)

amily: Euphorbiaceae

ommon Names: Amalaki, emblic myrobalans, Indian gooseberry

aste/Energy: Sour, sweet, cool, dry

art Used: Fruit

ocation/Cultivation: Amla is native to India, Sri Lanka, Myanmar, southern China, and Malaysia. It commonly is cultivated throughout India, below elevations of three thousand feet.

afety Rating: * * *

Properties: Adaptogen (mild), anti-inflammatory, antioxidant, antiviral, aperient (mild laxative), diuretic, and lowers cholesterol.

Constituents: Amla is rich in antioxidant polyphenols, including ellagic acid, phyllembin, quercetin, and emblicol. It also contains significant amounts of vitamin C as well as condensed tannins and flavonols.

History/Ethnobotany

According to Hindu legend, two goddesses, Lakshmi and Parvati, were on a pilgrimage. At the same time, each declared that they wanted to worship the greater gods in a new and unique way. They were so happy at this simultaneous desire that they cried tears of joy. From these tears grew the tree Amalaki. In modern Hindu practice, this tree is considered to be sacred to both Vishnu and Shiva, and regular use of it prolongs life, memory, and youthfulness.

Amla is one of the most commonly used rasayanas (rejuvenative remedies). It restores appetite, relieves nausea, stops vomiting and hemorrhaging, and cures liver dysfunction. In the *Charaka Samhita*, amla is mentioned as the best medicine to promote resistance to disease, nourish the blood, heal fractures, and prevent aging. Its name in Sanskrit means “the sustainer,” and it traditionally is used to provide nourishment to all the tissues.



Amla

(Reprinted with permission from *The Yoga of Herbs* by Dr. David Frawley and Dr. Vasant Lad)

The fresh Amla fruit is used in Turkey to cure inflammation. In Iran, the tea is used to lower fevers. In Unani-Tibb medicine, Amalaz (the Arabic name) is used to restore vigor and vitality to the brain and heart. It is used as a restorative tonic to help in convalescence after debilitating fevers.

Amla also is used traditionally with the beleric and chebulic myrobalan

fruits to make one of the most famous formulas in ayurvedic medicine—*triphalā*. This medicine is used as a bowel tonic for constipation and diarrhea and to help lose weight, treat diabetes, and strengthen the eyes and circulatory system.

An elderly sage, Chyavan, was concerned that he would not be able to satisfy the needs of his young bride. In meditation, he became aware of the herbal formula that would restore his youthful vitality. This formula became known as Chyavanprash, or the jam of Chyavan. It is made in a base of amla fruit. Other adaptogens are added, including ashwagandha, shatavari, and guduchi, as well as honey, ghee, pippali long pepper, bamboo mana, and cardamom. This elixir is the great tonic remedy of Indian medicine. It is used as an adaptogen, to enhance endocrine, immune, and nervous system function and to strengthen the heart, digestion, circulation, elimination, and respiratory function.

Modern Uses

As with many important ayurvedic remedies, amla has hundreds of uses. Does it really do all that is claimed? For some things, like prolonging life and restoring youthfulness, perhaps not. However, for many of its claimed uses, research has confirmed that it has real benefits. Amla fruit is rich in vitamin C and antioxidant flavonoids and polyphenols. Because of these compounds, it is anti-inflammatory and helps stabilize connective tissue, blood vessels, bones, hair, and the eyes.

In clinical practice, I use amla to help prevent and treat damage associated with connective tissue disorders such as rheumatoid arthritis and autoimmune diseases such as lupus. It also strengthens the veins, capillaries, and arteries to prevent atherosclerosis, lowers LDL and VLDL cholesterol levels, and improves cardiac tone.

Amla fruit combined with blueberry or bilberry, lycium fruit, and chrysanthemum flowers nourishes the eyes, improves night vision and visual acuity, and can help prevent age-related or diabetes-related eye damage.

This fruit helps improve vision because it stabilizes the small capillaries in the eyes. It also helps reduce capillary fragility elsewhere in the body and can greatly reduce excessive bruising, bleeding gums, spider veins, and nose bleeds.

Amla combined with nettles and horsetail speeds up the healing of

broken bones, helps prevent tooth decay, and improves the strength of the hair and nails.

Research has indicated that amla could have adaptogenic qualities, which in many ways is a modern equivalent of the ancient Indian concept of a rasayana. In animal studies, amla protected against cellular damage induced by radiation. It also protected against carcinogens, liver damage caused by medications or viruses, and gastric damage caused by drugs, and it helped prevent toxicity caused by arsenic, cadmium, and cardiotoxic medications.

Various animal and in vitro studies suggest that amla enhances immune system function, especially macrophage activity, reduces excessive histamine production, and prevents allergy symptoms.

Dosage and Safety

incture (1:4 or 1:5): 60–90 drops, three or four times per day.

ecoction: Take $\frac{1}{2}$ to 1 tsp. of the dried fruit in 8 oz. water, decoct 10 minutes, let steep 1 hour. Take up to two or three cups per day.

afety Issues: Avoid use in diarrhea or dysentery.

erb/Drug Interactions: This herb contains tannins, and these substances can interfere with mineral absorption, especially iron. Tannins also can bind alkaloid medications such as theophylline. Separate the ingestion of amla and iron or alkaloid medications by three to four hours.

Selected Research Studies

Adaptogenic Properties of Six Rasayana Herbs Used in Ayurvedic Medicine (Rege, Thatte, and Dahanukar 1999).

Six traditional rasayana herbs were studied to determine if they had adaptogenic activity. All six (amla, guduchi, shatavari, ashwagandha, pippali long pepper, and haritaki) were found to protect mice against a variety of biological, physical, and chemical stressors. The study suggested that amla not only prevents oxidative damage but also stimulates production of anti-inflammatory prostaglandins.

Vitamin C Content and Antioxidant Activity of the Fruit and of the Ayurvedic Preparation of *Emblica officinalis* (Scartezzini 2006).

Scientists have gone back and forth; some claiming amla was the richest known food source of Vitamin C and others saying it had no Vitamin C at all. In this study, researchers found that amla does indeed contain Vitamin C (as well as antioxidant flavonoids, polyphenols, and tannins) and that a traditional form of processing known as *svaras bhavana* (cooking the herb in its own juice) significantly increases its antioxidant effects.

ASHWAGANDHA

Botanical Name: *Withania somnifera*

Family: Solanaceae

Common Names: Winter cherry, asgandh (Hindi)

Taste/Energy: Bitter, warm, dry

Part Used: Root

Location/Cultivation: Ashwagandha is native to the drier subtropic regions of India, Pakistan, Sri Lanka, and parts of Africa. It easily is cultivated as an annual in temperate climates. It should be planted indoors like tomatoes and then set out in a garden area, with well-drained soil and full sun, after the danger of frost has passed. The roots are gathered in the autumn and then cleaned and dried.

Safety Rating: * * 1/2



Ashwagandha

(Reprinted with permission from *The Yoga of Herbs* by Dr. David Frawley and Dr.

properties: Adaptogen, anti-inflammatory, antioxidant, immune amphoteric, antitumor, nervine, antispasmodic, mild astringent, and diuretic.

constituents: Steroidal lactones, including withanolides A to Y; sitoindosides; and alkaloids, including somniferiene, withanine, and anaferine.

History/Ethnobotany

The Hindi name for this plant, *asgandh*, refers to its horse sweat-like odor. It is believed that this herb also gives its users the stamina and strength of a stallion. In ayurvedic medicine, this herb is considered a rasayana and is used for prolonging life, stimulating the mind, and enhancing vigor and sexual prowess as well as for its recuperative powers. The dried root is used widely in India for many conditions, including malnutrition in children, paralysis, coughs, edema (accumulation of fluid), impaired cognitive function, asthma, infertility, rheumatism, gastric ulcers, and fevers. In different parts of India, it is used for a number of different diseases. In the Punjab, it frequently is used for low back pain and as an aphrodisiac. In the Sind region, it is believed to cause abortion, and the Rajputs use the root for lumbago, arthritis, and dyspepsia (digestive upset). The fresh root has been used as a poultice for decubitus ulcers (bedsores), boils, and glandular swellings. The leaves are used topically to heal boils or sores and internally as an anthelmintic (destroys intestinal worms) and to treat alcoholism.

Ashwagandha frequently is used in ayurvedic formulas along with ghee (clarified butter) and honey for low sperm count and sexual debility in men. In Pakistan, practitioners of Unani-Tibb use it for general debility, to prevent osteoporosis, to treat muscle wasting, and to improve weakness from heavy menstrual bleeding. Also, it is taken during convalescence from serious illness to enhance recuperation.

In Africa, the southern Sotho people use a decoction of the root for chills and colds. Other indigenous African people use it as a uterine tonic for women who habitually miscarry, to treat syphilis, typhoid fever, diarrhea, and lack of libido and for infections and eruptive diseases. For eruptive diseases, it is used topically as well as orally, and there are many other

reported external uses for the root, leaf, and berry. The Xhosa people apply the leaf juice to anthrax lesions and mix it with anthrax-infected meat to disinfect it. The green, unripe berry is crushed and used as a poultice for ringworm as well as for saddle sores on horses. The Masai use the leaf juice to treat conjunctivitis (pink eye).

Modern Uses

Most adaptogens are stimulating; ashwagandha is a bit unusual in that it is a calming adaptogen. It enhances endocrine function, especially helping to re-regulate the thyroid, testes, and adrenal glands. Few herbs have a direct effect on thyroid function, but in animal and human studies, ashwagandha root was found to stimulate the thyroid, making it useful for hypothyroidism.

Because of its nervine and adaptogenic functions, ashwagandha is very effective for anxiety, fatigue, cloudy thinking, stress-induced insomnia, and neurasthenia (nervous exhaustion). It has significant benefit for hyper- or hypoimmune function and has been used clinically (in India) as part of protocols for cancer (it suppresses tumors and prevents depletion of white blood cells), chronic fatigue immune deficiency syndrome, and autoimmune diseases such as rheumatoid arthritis and polymyositis (autoimmune inflammation of voluntary muscles).

Ashwagandha is rich in iron and can be used to treat iron-deficient anemia when taken as a powder in milk mixed with molasses. Women, who are seven to ten times more likely than men to develop anemia, can benefit from this herb, and it also relieves some perimenopausal symptoms such as muscle pain and cloudy thinking.

I regularly use this plant along with kudzu root (*Pueraria lobata*), cyperus root (*Cyperus rotundifolia*), and black cohosh root (*Cimicifuga racemosa*) for the chronic muscle pain of fibromyalgia. It also can be useful for neck and back pain, restless legs syndrome (when taken with magnesium), and arthritis.

In a human trial done in India, ashwagandha wine was given to thirty patients with anxiety neurosis. Moderate improvements were noted in symptoms such as headaches, fatigue, dyspepsia, anorexia, and irritability. The most profound improvement was noted for “nervousness.” In another clinical study, forty-six patients were given ashwagandha root powder for rheumatoid arthritis. One-quarter of the patients had complete remission, significant improvement occurred in ten, and eleven patients showed mild

improvement.

Dosage and Safety

incture (1:5): 30–40 drops, 3 times per day.

ecoction: Take $\frac{1}{2}$ tsp. dried root in 8 oz. water, decoct 10 minutes, steep $\frac{1}{2}$ hour. Take 4 oz. three times per day. The dried root starts to lose its activity after two years.

apsules: One 400–500 mg capsule, twice per day.

afety Issues: Avoid using this herb if you are sensitive to plants in the nightshade family, and do not use the powder internally if you have hemochromatosis (excess iron). Avoid using this herb if you have hyperthyroidism.

The herb is regularly used in India as a tonic in milk during pregnancy, but because other reports mention that it is used to cause abortion in Africa and the Sind region of India, it is probably best to avoid its use during pregnancy.

erb/Drug Interactions: Ashwagandha can enhance or increase the effect of barbiturates.

Selected Research Studies

Hypoglycemic, Diuretic, and Hypocholesterolemic Effect of Winter Cherry (*Withania somnifera*) Root (Andallu and Radhika 2000).

In this small study, six patients with mild non-insulin-dependent diabetes mellitus and six with elevated cholesterol levels took powdered ashwagandha root for one month. There were significant decreases in LDL and VLDL cholesterol, triglyceride, and blood glucose levels as well as increased urinary output.

Effect of Ashwagandha (*Withania somnifera* dund.) on the Process of Aging in Human Volunteers (Kuppurajan et al. 1980).

In this older, double-blind clinical trial, 141 men who were fifty to fifty-nine years old took this herb. Researchers noted increased levels of red blood cells, hair melanin, and hemoglobin. Sexual interest also

increased, and serum cholesterol and red blood cell sedimentation rate decreased.

ASIAN GINSENG

Botanical Name: *Panax ginseng*

Family: Araliaceae

Common Names: Ren shen (China), Chinese ginseng, Korean ginseng

Taste/Energy: Sweet, bitter, warm, moist

Part Used: Root

Location/Cultivation: Asian ginseng originally grew in the mountainous forests of eastern Manchuria, northern China, and Korea. It is virtually extinct in the wild. It is cultivated on a large scale in China and North and South Korea.

Safety Rating: * * *

Properties: Adaptogen, antioxidant, central nervous system stimulant, immune amphoteric, and anti-inflammatory.

Constituents: A range of triterpenoid saponins known as ginsenosides or panaxosides, panaxanes.

History/Ethnobotany

Ginseng has a long history of use in the Orient as a superior, or kingly, tonic remedy. Its Chinese name, *ren shen*, translates as “man root,” and in ancient texts such as the *Shennong Bencao Jing* (the *Shennong Herbal*), it was credited with supplementing the five yin organs, calming the shen (mind, consciousness), and pacifying the *hun* (ethereal soul) and *po* (corporeal soul).

It also was known as *ren xian* (human incarnation) and *gui gau* (ghost shield) and was used to open the heart, strengthen the mind, eliminate pernicious qi, and prolong life. In Li Shizhen’s famous *Ben Cao Gang Mu* (1593), he mentions other names for this herb, including *tu jing* (earth

essence) and *shen cao* (miraculous herb).



Asian ginseng
(Russian drawing, 1972, collection of David Winston)

According to legend, wherever ginseng grows, there will be a purple cloud over it. Light from within the cloud comes from the last star of the Big Dipper, which is the source of this plant's power. If human governance of the mountains and rivers is virtuous, the star will be bright and ginseng plentiful. If the governance is corrupt, the star dims and the wild ginseng no longer grows. Certainly a loss of habitat (poor governance) has contributed, along with overharvesting, to the loss of wild Asian ginseng.

Folk uses for this herb abound, and ginseng is used in Korea for malaria, hysteria, alcoholism, acute gastritis, and as an aid in convalescence from serious illness. In Japan, Asian ginseng is used for diarrhea, dyspepsia, vomiting, coughs, and diabetes. In Hong Kong, the root is used to treat drunkenness, dizziness, amnesia, and general weakness.

Modern Uses

Asian ginseng is one of the most studied herbs in the world. Because of this, there is a significant body of literature showing its effects on animals and humans. Some of this research confirms the traditional Chinese medical uses of this plant, and other studies suggest new applications for it.

In Chinese medicine, *ren shen* currently is used as one of the great tonic remedies. It supplements the *yuan* (original) qi *and* the upright qi *and* nourishes the Chinese spleen, lung, and kidney qi. When the yuan qi is depleted, a person is exhausted and feeble. When there is a total depletion

of the upright qi with yang collapse, a person is in shock, with a feeble pulse, shallow respiration, shortness of breath, cold extremities, and a cold sweat. Asian ginseng is used to alleviate these symptoms, replenish the qi, and restore vitality. When the lung and kidney qi are depleted, people can develop asthma with wheezing and shortness of breath.

Ginseng with licorice and schisandra berry helps the kidneys grasp the lung qi, thus improving respiratory function. In people with deficient kidney yang, symptoms such as impotence, low back pain, weak knees and ankles, and frequent urination can occur. Ginseng, along with *suo yang* (*Cynomorium songaricum*) or *rou cong rong* (*Cistanche deserticola*) and morinda root can correct these problems.

Because ginseng generates fluids, it is also used for dry coughs and constant thirst. It is used for *xiao ke* (wasting and thirsting) syndrome, which most often is caused by diabetes or tuberculosis. Ginseng leaves (*ren shen ye*) are used to resolve hangovers and for hoarseness.

In Western clinical practice, Asian ginseng is considered the most stimulating of the adaptogens. This makes it quite appropriate for weak, qi deficient, or exhausted people. Like other adaptogens, it helps re-regulate the HPA axis, and it has a broad effect on the immune system, adrenal glands, pancreas, circulation, and nervous system.

Like its Western relative, American ginseng, Asian ginseng is an immune amphoteric. This ability to normalize immune function means that this herb can be used to enhance depleted immune system function in cases of cancer, chronic fatigue immune deficiency syndrome, and autoimmune disease. It also can be used to reduce excessive immune response in allergies and some autoimmune conditions as well. (Autoimmune illnesses often produce systemic immune depletion and excess immune response to a specific tissue at the same time.) Studies indicate that Asian ginseng can bolster the immune system in cancer patients as well as prevent or reverse leukopenia (low white blood cell counts) caused by radiation therapy or chemotherapy.

Adrenal depletion (symptoms include dark circles under the eyes, a quivering tongue, fatigue, and allergies) responds well to ginseng. Addison's disease (adrenal exhaustion) can be treated with ginseng and licorice, along with conventional therapy.

In human studies, patients with mild type 2 diabetes, when given ginseng, had reduced blood glucose and a significant reduction of

associated symptoms.

Further studies show that this root can reduce unhealthy blood lipid levels (cholesterol and triglycerides), enhance circulation, and prevent atherosclerosis due to its antioxidant effects. This makes Asian ginseng the “root of use” for mild hypertension, atherosclerosis, erectile dysfunction, Raynaud’s syndrome, and possibly, intermittent claudication.

In my practice, I also use Asian ginseng for disturbed shen (emotional problems), conditions such as deficient insomnia, poor memory, and depression and to delay the progression of Alzheimer’s disease symptoms. I use it in combination with white peony root, ginkgo leaf, bacopa herb, and holy basil herb.

Types of Ginseng

Asian ginseng comes in many forms and varieties. There are several varieties of white and red ginseng. Dried, uncured white ginseng is known as *sheng shai shen*. Red ginseng is steamed and is much warmer (more stimulating) than uncured ginseng. It is known as *hong shen*. Ginseng tails or rootlets are a cheap but weaker substitute for the root.

White ginseng is cooler than red ginseng, and most white ginseng roots are five to seven years old when they are harvested for use. One special type of white ginseng is *yi-sun* ginseng; it is of very high quality and quite expensive. It is grown in the Chang Pai Mountains. *Yi-sun* roots are at least eight to twelve years old before they are used.

Shui chu red ginseng is graded according to the size and age of the roots. The best quality is #16, which relates to the number of roots per catty (equivalent to 21.33 oz.). This is followed by #25, #35, #45, #55, and #80; the higher the number, the smaller the roots and the lower the quality.

Kirin red ginseng is grown in China’s Kirin province. The best quality is #1, followed by #2 and #3. These are usually six to ten-year-old roots.

Korean Heaven grade is the highest quality Korean ginseng.

There are several other species of ginseng that are used in traditional medicine. *Panax vietnamensis* is used in Vietnam as a tonic and is similar to *Panax ginseng*. *P. notoginseng*, also known as tienchi ginseng, has mild adaptogenic effects but is mostly used in traditional Chinese medicine to stop bleeding. *Panax japonicus* is used as an adaptogen in traditional Japanese medicine (kampo), and in Cherokee medicine the leaves of *Panax trifolium* are used as a strengthening tonic herb.



Asian red ginseng roots
(Photograph by David Winston)

Dosage and Safety

incture (1:5): 20–40 drops, up to three times per day.

ecoction: Take 1–2 tsp. of the ground herb or one root, slowly decoct (in a nonmetal pot) for $\frac{1}{2}$ hour. Let steep an additional hour. Take up to two cups per day.

apsules: Powdered herb in capsules, two 400–500 mg capsules, two to three times per day; powdered extract, one 400–500 mg capsule, twice per day.

afety Issues: Type A people who are anxious or have insomnia or hypertension may experience a worsening of these symptoms if they are taking excess Asian ginseng (especially red). Such people should avoid using large quantities of this herb or drinking coffee along with it.

erb/Drug Interactions: Several reports suggest that Asian ginseng may increase the effects of warfarin (Coumadin). It also may increase the effects of medications that lower blood sugar and older types of antidepressants called monoamine oxidase inhibitors (MAOIs). Asian ginseng should only be used with these drugs if a person is carefully monitored by a physician.

Selected Research Studies

Effects of *Panax ginseng*, Consumed with and without Glucose, on Blood Glucose Levels and Cognitive Performance during Sustained “Mentally Demanding” Tasks (Reay, Kennedy, and Scholey 2006).

Asian ginseng lowered blood sugar levels and enhanced cognitive

function in this recent study.

Effects of *Panax ginseng* Extract on Exercise-Induced Oxidative Stress (Kim et al. 2005).

Administration of ginseng extract to seven healthy but sedentary subjects significantly increased exercise duration and the levels of the antioxidant enzymes catalase and superoxide dimutase.

ASTRAGALUS

Botanical Name: *Astragalus membranaceus*

Family: Fabaceae

Common Names: Huang qi (Chinese), kibana-ogi (Japanese), hwang-gi (Korean), milk vetch

Taste/Energy: Sweet, slightly warm, moist

Part Used: Root

Location/Cultivation: Astragalus is native to China. It is grown in Shaanxi, Gansu, Heilong, and Jiang provinces. It requires full sun and sandy soil with low nitrogen levels to produce good roots.

Safety Rating: * * *

Properties: Adaptogen (mild), antibacterial, antioxidant, antiperspirant, heart tonic, hepatoprotective, and immune tonic.

Constituents: Astragalus contains immune-stimulating polysaccharides astragalans I, II, and III and glucuronic acid as well as astragalosides I to VII, flavones, and isoflavones.

History/Ethnobotany

The herb's Chinese name, huang qi, means "yellow leader." It is called this because its quality roots are yellow and it is the "leader" of the tonic herbs. According to Shennong, astragalus treats festering sores by expelling pus and relieving pain. In his book, the *Shennong Herbal*, he

also stated that it cures five kinds of hemorrhoids and great *wind lai* disease (leprosy), relieves weakness, and is good for hundreds of diseases in children.



Astragalus
(Chinese drawing, collection of David Winston)

Other classic texts further elaborate on the usefulness of this herb. Da Ming, in his book *Da Ming Ri Hua Ben Cao* (713 CE) wrote that astragalus is good for treating asthma, deafness due to deficient kidneys, diseases with chills and fevers, and coughing with phlegm and that it strengthens the tendons, bones, and muscles.

Li Gao, in the book *Huang Di Nei Jing Lingshu* (Canon of Medicine of the Yellow Emperor: Miraculous Pivot) wrote that astragalus replenishes the three portions of the body cavity and reinforces the body's resistance to external evils (disease). Combining astragalus with licorice and ginseng, he stated, "forms a miraculous prescription for eliminating heat in the muscles and restlessness and irritation." A related species, *A. floridus*, is used in Tibetan medicine. It is called *she-sayr* and is used to stop excessive sweating and night sweats, to relieve weakness from prolonged illness, and for diarrhea and excessive vaginal or seminal discharge.

Modern Uses

Astragalus is used today in China for many purposes, some quite ancient and others very new. It is a spleen qi tonic, and it can be used for lack of appetite, organ prolapse, fatigue, and wasting and thirsting syndrome (usually caused by diabetes or tuberculosis).

Astragalus strengthens the lung qi and, because the lungs help create the

wei qi, is able to strengthen this type of qi. Wei qi is the protective energy that helps prevent illness caused by external pernicious influences. When the wei qi is deficient, people can get sick more easily, sweat too much or not enough, and develop sores that won't come to a head. In addition, by strengthening the wei qi, this herb reduces excessive sweating, menopausal sweating, and night sweats and promotes suppuration of boils and carbuncles.

Astragalus enhances immune system function and helps prevent colds, influenza, bronchitis, mononucleosis, pneumonia, infection by the coxsackie B virus (the major cause of myocarditis), and other forms of external evil. It also helps prevent immunosuppression caused by chemotherapy and has tumor-inhibiting activity. In Chinese studies, astragalus combined with ligusticum fruit increased survival times in patients with breast and non-small-cell lung cancers.

More recently, this herb has been used to improve cardiac blood flow. Combined with dan shen (*Salvia miltiorrhiza*), dang gui, and corydalis tuber, astragalus is useful for treating angina and mild congestive heart failure.

Regular use of the root has been shown to prevent kidney and liver damage caused by medications and viruses. It is usually combined with other hepatoprotective herbs such as milk thistle, schisandra, and turmeric or nephroprotective (protects the kidney) herbs such as cordyceps, nettle seed, and *S. miltiorrhiza*.

Dosage and Safety

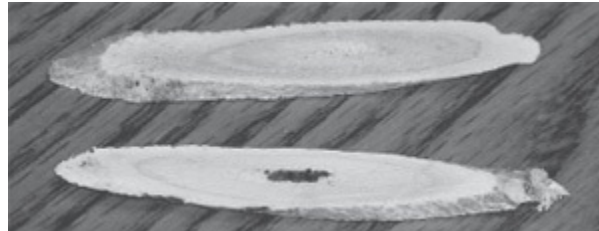
incture (1:5): 40–80 drops, three times per day.

ecotion: Add 2 tsp. dried cut/sifted root to 12 oz. water. Slowly decoct for twenty to thirty minutes. Let steep another 1/2 hour. Take up to three cups per day.

afety Issues: In traditional Chinese medicine, tonic herbs such as astragalus should not be taken when someone has an acute infectious illness such as colds, flu, bronchitis, or pneumonia, because it can cause stagnation and “feed” the illness.

erb/Drug Interactions: Animal and human studies show that this herb enhances the effects of recombinant interleukin 2 and recombinant–alpha

interferon 1 and 2 immunotherapy. It also reduces side effects and enhances the effects of other types of chemotherapy and radiation therapies. There is a theoretical concern about using astragalus as an immune potentiator along with immunosuppressive medications. Use cautiously together.



Astragalus root
(Photograph by David Winston)

Selected Research Studies

The Effect of Herbal Medicine Including *Astragalus membranaceus*, *Codonopsis pilosula*, and *Glycyrrhiza uralensis* on Airway Responsiveness (Wang et al. 1998).

In this small study, twenty-eight patients were given an herbal combination that included astragalus. After six weeks of treatment, inflammatory markers and airway reactivity were reduced significantly.

The Protective Effects of *Radix Astragali* and *Rhizoma Ligustici chuanxiong* on Endothelial Dysfunction in Type 2 Diabetic Patients with Micro-albuminuria (Lu et al. 2005).

In this study, twenty-one patients with type 2 diabetes were given a combination of huang qi and chuan xiong. After six months of treatment, they had decreased urinary albumen excretion and improvements in kidney function and circulation.

CORDYCEPS

Botanical Name: *Cordyceps sinensis*

Family: Clavicipitaceae

Common Names: Dong chong xia cao (Chinese, means “winter insect, summer grass”), Chinese caterpillar fungus

taste/Energy: Sweet, slightly acrid, warm, moist

part Used: Mushroom

Location/Cultivation: Cordyceps fungus is gathered from the wild in the alpine grasslands in the foothills of the Himalaya Mountains in Tibet and Bhutan. In the wild, cordyceps is fairly rare and is being over-harvested due to its increased popularity. In Bhutan's Jigme Dorji National Park, the local people, along with Tibetan poachers, eagerly dig the mushroom, threatening its survival and despoiling the environment.



Cordyceps
(Chinese drawing, collection of David Winston)

The Tibetan (*xi zang*) cordyceps is the best quality and is gathered in July. *Qing hai* cordyceps is gathered in June. It is smaller than the Tibetan variety and slightly less active. *Sichuan* cordyceps is the smallest variety. It is brown (the others are golden-yellow) and is the least effective variety of the caterpillar fungus. The mycelium of the fungus is easily grown in cooked soybeans and is commercially cultivated.

Due to environmental issues and the extremely costly nature of the wild fungus (currently, it sells for \$2,000 to \$3,000 per kilo), only cultivated *C. sinensis* or *C. mycelia* products should be used.

safety Rating: * * ¹/₂

properties: Adaptogen, antiasthmatic, antileukemic, antioxidant, hepatoprotective, hypocholesteremic (lowers elevated cholesterol levels), immune system amphoteric, nephroprotective, and sedative.

constituents: The cordyceps mushroom contains immunostimulating polysaccharides (galactomannins, cordycepic acid), amino acids, fatty

acids, polyamines, and ecdysterones.

History/Ethnobotany

Because of its rarity, cordyceps was reserved for the use of the emperor and royal family in ancient China.

It was used like stuffing in a duck, which was roasted. The mushroom-infused duck meat was considered not only a delicacy but also was believed to restore vigor, prevent illness, and promote longevity. Cordyceps is also cooked in tonic soups and with pork, chicken, and seafood. When cooked with pork, it has been used to treat opium addiction and poisoning as well as anemia and impotence. When cooked in a soup with pork and chicken, it helps strengthen and nourish people recovering from tuberculosis, pneumonia, and other debilitating diseases.

In Tibet, this fungus is known as *yartsa gunbu*. It has been used as a tonic for more than five hundred years. In Tibetan medicine, cordyceps is used for people with kidney and heart problems as well as to enhance male virility. In Japan, it is known as *tochukasokin* and is used for people with impotence and aching of the thighs and knees.

Modern Uses

The cordyceps fungus colonizes the larvae (caterpillars) of the *Thitarodes* genus of ghost moths. After fully infecting and devouring the host insect, the fungus grows a stalk, which releases new spores to start the process again. It is the remnant of the caterpillar and the fruiting body (mushroom) that is collected for use. They are gently cleaned and dried and, when cooked, have a mushroom flavor without a hint of the original insect.

In traditional Chinese medicine, cordyceps has been used since the 1730s or possibly earlier. The first mention of this herb in the Chinese medical literature is in Wu Yi Luo's *Ben Cao Cong Xin* (New Compilation of Materia Medica), written in 1757. However, a Jesuit priest wrote in 1736 that the emperor's physicians successfully used this fungus to treat the emperor for some unnamed condition.

Today cordyceps is used to treat deficient yin and yang of the kidneys caused by excessive physical exertion or chronic disease. In Chinese medicine, the kidneys store the *jing* (life essence) and controls not only fluid metabolism (along with the Chinese spleen and lung) but also healthy sexual functioning, bone health, and hearing. This herb is used to treat infertility in both men and women as well as impotence, frequent

urination, night sweats, dizziness, ringing in the ears, and fatigue. It also is used to strengthen respiratory function in cases of dry lungs with a chronic cough. Furthermore, it has demonstrated benefits for treating hemoptysis (coughing blood) and tuberculosis.

In 1993, two unranked Chinese athletes broke world records in swimming competitions and Chinese women runners won six of nine track meets at the world championships in Germany. In addition to normal training regimens, all of these athletes took cordyceps and attributed much of their success to it.

Animal, human, and in vitro studies confirm that this mushroom enhances aerobic capacity and cellular energy stores, reduces myocardial (heart muscle) oxygen consumption, lowers cholesterol levels, prevents damage to cells caused by free radicals, and normalizes immune function. In human studies, cordyceps was found to prevent immunosuppression and help restore normal macrophage and natural killer (NK) cell activity. In one study, it helped reduce tumor size in 50 percent of the patients. Because this fungus is an immune amphoteric, it also has benefits for people with allergic asthma, hay fever, Berger's disease (an autoimmune kidney disease), and glomerulonephritis (an autoimmune kidney disease).

I frequently use cordyceps as a kidney tonic for people with degenerative kidney diseases. As mentioned previously, it has benefits for people with glomerulonephritis and Berger's disease as well as chronic nephritis with degeneration. I combine cordyceps with nettle seed (*Urtica dioica*), processed rehmannia, dan shen (*Salvia miltiorrhiza*), and small amounts of rhubarb root.

Cordyceps has also been found to improve lung function and symptoms of chronic bronchitis.

Dosage and Safety

incture (1:4, 1:5): 20 to 40 drops, up to three times per day.

ecoction: Add $\frac{1}{4}$ to $\frac{1}{2}$ tsp. mycelia powder or crushed mushroom to 10 oz. water. Decoct for 15 minutes, steep for 1 hour. Take one or two cups per day.

afety Issues: Excessive amounts of cordyceps can depress immune system function as well as cause edema, anxiety, and headaches.

Many mycologists (scientists who study fungi) have concerns about consuming whole cordyceps mushrooms imported from Asia. In the natural wild form, cordyceps grows on caterpillars. It is possible that contaminant organisms (mold and bacteria) may be associated with this product. Cordyceps also is cultivated, and the mycelia are grown on grains (primarily rice and soybeans). We believe that this is a safer way to take this mushroom.

Herb/Drug Interactions: Some books recommend that cordyceps should be avoided by people who are taking immunosuppressive drugs such as cyclosporine (used to prevent organ transplant rejection) because it might interfere with the drugs' effects. In a 1995 placebo-controlled study, sixty-nine people who had received kidney transplants were given cordyceps along with the pharmaceutical drug cyclosporine. Not only did cordyceps not interfere with cyclosporine but it also helped to prevent nephrotoxic (toxic to kidney cells) side effects of the drug. Other studies found that cordyceps can help prevent nephrotoxic side effects from amikacin sulfate, prednisone, and gentamicin.

Selected Research Studies

Effect of *Cordyceps sinensis* on the Th1/Th2 Cytokines in Patients with Condyloma Acuminatum (Gao, Wu, and He 2000).

Two groups of patients with venereal warts were studied, a control group and a second group who received cordyceps. Blood levels of interleukin 2 and interleukin 10 were checked, and in those who took cordyceps, levels of interleukin 2 were increased and levels of interleukin 10 were decreased. According to the authors, this shows that cordyceps enhances Th1 immune response in patients with venereal warts and reduces recurrence as well.

Effect of *Cordyceps sinensis* on T-lymphocyte Subsets in Chronic Renal Failure (Guan, Hu, and Hou 1992).

In a group of twenty-eight patients with chronic renal failure, twenty-three patients were given three to five grams of cordyceps per day and five did not receive any cordyceps. The group that was given cordyceps had improved renal and immune function.

DANG SHEN

Botanical Names: *Codonopsis pilosula*, *C. tangshen*

Family: Campanulaceae

Common Names: Codonopsis, Asian bellflower, tojin (Japanese), tangsam (Korean)

Taste/Energy: Sweet, moist, slightly warm

Part Used: Root

Location/Cultivation: Dang shen is native to China, where it is cultivated widely in Shaanxi, Gansu, and Sichuan provinces. It is a vine and grows on trellises, preferring partial shade and well-drained but moist soil.

Safety Rating: * * *

Properties: Adaptogen, antiulcerogenic (protects against ulcers), gastroprotective (protects the digestive system), hypoglycemic agent, and immune tonic.

Constituents: Dang shen contains triterpenoid saponins known as tangshenosides, sesquiterpenes (atractylenolide I & II), and water-soluble polysaccharides.

History/Ethnobotany

When one considers that the practice of Chinese medicine is possibly three thousand to four thousand years old, a plant that was introduced into widespread use in 1670 is a relative newcomer. That is the case for dang shen, which was first noted in Zhang Lu's text *Origin of the Classic of Materia Medica*, printed in 1670. He recommended it for many of the same applications for which it is currently used in traditional Chinese medicine. The famed Qing Dynasty emperor, Qian Long, took dang shen daily and credited it for his longevity. In other parts of Asia, it has been used as a traditional and folk medicine. In Korea, tangsam (or *man-sam*) is used to treat people who have coughs, palpitations, and anorexia. In Japan it is used to treat people who have shortness of breath and weakness. In Hong Kong, it is known as dong sum and is used to treat people with weak spleen qi and lung conditions with wheezing, dry cough, and lack of appetite.

Modern Uses

In modern Chinese medicine, dang shen is used as a qi tonic for people who are weak, deficient, and tired. It is often used as a milder and less expensive substitute for Chinese ginseng. Dang shen strengthens the stomach/spleen qi, enhancing appetite, improving digestion, and building the *xue* (blood). Studies indicate that this root not only enhances absorption but also increases the number of red blood cells and the blood's hemoglobin content. Thus, the traditional use of dang shen for people with anemia and tiredness makes sense. In traditional Chinese medicine, it also is used for people with deficient lung qi, dry mouth, and wheezing.



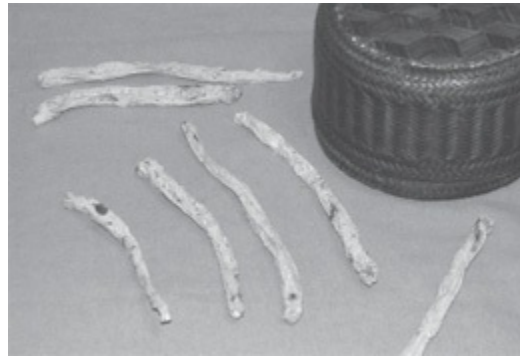
Dang shen
(Chinese drawing, collection of David Winston)

In China, cancer is treated with chemotherapy and radiation therapy similar to Western treatments. From the Chinese perspective, it is considered unethical to use such powerful treatments that cause such severe side effects unless you can moderate those effects. Over the last thirty years, an entirely new practice of Chinese medicine has developed known as fu zheng therapy.

This therapy uses adaptogenic and tonic herbs to help prevent many of the side effects of cancer treatment (decreased white blood cell counts, decreased red blood cell counts, nausea, fatigue, and immunosuppression). Fu zheng formulas not only help prevent or relieve such problems but they also enhance the effectiveness of chemotherapy. Dang shen commonly is used in these formulas to strengthen the immune system. Another recent use for this herb is as a gastroprotective agent. When used with licorice and aloe gel, it helps heal gastric and duodenal ulcers.

As an adaptogen, dang shen is very useful for people who are easily overstimulated by Asian ginseng.

I use dang shen in protocols to treat people who have chronic fatigue immune deficiency syndrome. For people who have mononucleosis, I use dang shen along with astragalus and myrrh. I also use it for people who get frequent colds or winter lung infections and for those who have borderline diabetes, in whom it helps normalize blood sugar levels.



Dang shen roots
(Photograph by David Winston)

Dosage and Safety

incture (1:4 or 1:5): 40–80 drops, three to four times per day.

ecoction: Take 2–3 tsp. of the dried cut/sifted root or whole root and slowly decoct in 16 oz. of water for $\frac{1}{2}$ hour. Steep an additional hour. Take up to two cups per day.

afety Issues: In Chinese medicine, dang shen should not be taken by people with diarrhea, flatulence, and poor digestion. Tonic herbs such as dang shen also are believed to be inappropriate during acute viral or bacterial illnesses such as colds, bronchitis, and influenza. Because this herb increases hemoglobin levels, it should be avoided by people who have excessive iron levels.

erb/Drug Interactions: None known.

Selected Research Studies

Dang Shen (*Codonopsis pilosula*) and Bai Guo (*Ginkgo biloba*) Enhance Learning and Memory (Singh et al. 2004).

Ginkgo is well-known for improving cerebral circulation and memory. In this study, participants were given a placebo, a capsule with ginkgo alone, or a combination of ginkgo extract and dang shen. Both products

produced increased learning and memory retention compared with the placebo's effects. The product that contained ginkgo and dang shen was more effective than the one with ginkgo by itself.

The Effect of Herbal Medicine Including *Astragalus membranaceus*, *Codonopsis pilosula*, and *Glycyrrhiza uralensis* on Airway Responsiveness (Wang 1998).

Patients treated with these herbs exhibited reduced airway responsiveness and pulmonary inflammation.

ELEUTHERO

Botanical Name: *Eleutherococcus senticosus* (synonym: *Acanthopanax senticosus*)

Family: Araliaceae

Common Names: Ci wu jia (Chinese), Siberian ginseng, ezoukogi (Japanese)

Taste/Energy: Sweet, slightly bitter, slightly warm

Parts Used: Root and stem bark

Location/Cultivation: Eleuthero grows throughout Siberia, northern China, Korea, and northern Japan.

Safety Rating: * * *

Properties: Adaptogen, anticholesterolemic, antioxidant, immune tonic.

Constituents: The active constituents are a group of compounds known as eleutherosides A to G.

History/Ethnobotany

The historical use of eleuthero in Chinese medicine is more than a bit confusing. It, along with several other plants, is known as *wu jia* (five leaves). Included in this group is what is now called *ci wu jia* (*E. senticosus*) and *wu jia pi* (several species of *Acanthopanax*, especially *A.*

gracistylis, as well as a totally unrelated plant, *Periploca sepium*).

Unlike *Eleutherococcus* and the closely related *Acanthopanax* species, *Periploca sepium* has significant potential for toxicity (see Safety Issues section). Because of the confusion, these plants have a very limited use in traditional Chinese medicine. All of these plants are used for treating people with “wind” or “damp” conditions. Wind conditions are spasmodic and dampness correlates to swelling and edema.

In Li Shizhen’s *Ben Cao Gang Mu* (1593), he differentiated between the different wu jia plants and stated that the one with five leaves on one stem that grows in Han Zhong and Yuan Ju is of top quality. It is believed this is what we now call ci wu jia. He recommended its use for people with hernias, paralysis, weak tendons, and ligaments. He further stated that long-term use of the plant makes one feel happy and vigorous and that it helps to retard aging.



Eleuthero
(Russian botanical drawing)

The most common form of use of this plant in ancient China was as a wine. Usually it was mixed with other herbs such as yuan zhi (*Polygala* root), lycium root, mu gua (*Chaenomelis* fruit), and niuxi (*Achyranthes* root) as a tonic for fatigue, arthritis, and low back pain.

Modern Uses

Eleuthero is used in China to strengthen the qi and the Chinese spleen and kidneys. The Chinese spleen is very different from the organ known as the spleen in the West. In traditional Chinese medicine, the spleen separates the “pure” from the “impure.” This relates to the ability to extract nutrients or “grain qi” from foods. Symptoms of deficient spleen qi include fatigue, listlessness, chronic low-grade diarrhea, lack of appetite, and abdominal

bloating. Using this herb, usually along with digestive herbs and other stronger tonic herbs, helps to relieve these symptoms.

As an adaptogen, eleuthero is mild and is equally appropriate for men or women, young people or the elderly. It is unlikely to cause overstimulation and can be taken over long periods of time.

In clinical studies, this herb has been shown to help relieve angina symptoms and lower LDL cholesterol and triglyceride levels. It relaxes the arteries and can be used to treat “white coat” (stress induced) hypertension when combined with motherwort and chrysanthemum flower.

Eleuthero also strengthens the immune system, and regular use will reduce the incidence of colds and other common infectious diseases. Cancer patients receiving chemotherapy and radiation therapy often develop bone marrow suppression and decreased white blood cell counts. In one clinical study, eleuthero was able to reverse these conditions in most patients.

Athletes can benefit from using eleuthero. It increases endurance and stamina, enhances mitochondrial activity, speeds recovery and prevents immune-depletion from excessive training. It can be combined with cordyceps, rhodiola, or schisandra for enhancing athletic performance and for improving alertness and cognitive function when under severe stress or when working long hours. Physicians with long shifts who get little sleep, those with flex shift jobs, and students pulling “all nighters” will likely feel better, perform better, and recover more quickly when using these adaptogenic tonic herbs.

In my clinical practice I use eleuthero for stressed-out, type A people who work long hours, don’t get adequate sleep or nutrition, and have a motto of “work hard, play hard, and hardly sleep.” It acts as a nervine to improve the quality of sleep and prevents nighttime waking. I also use it for patients with attention deficit hyperactivity disorder (ADHD), chronic fatigue immune deficiency syndrome, jet lag, and adrenal fatigue.

Dosage and Safety

incture (1:4): 60–100 drops, three or four times per day.

ecoction: Add 1–2 tsp. dried powdered root to 12–16 oz. of water. Decoct slowly for 20–30 minutes, steep 1 hour. Take up to three cups per day.

fluid Extract (1:1): 20–40 drops three times per day.

safety Issues: In rare cases, eleuthero can cause overstimulation in sensitive people. In the past, eleuthero frequently has been adulterated with *Periploca sepium*. Ingestion of *P. sepium* has been implicated in several reports of toxicity originally believed to be caused by eleuthero. *P. sepium* contains cardiac glycosides that can interact with cardiac medications such as digoxin (Lanoxin). It is also possible that “real” eleuthero can interact with these medications as well. There is also a report of neonatal androgenization (a baby born with excessive hair) that was most likely caused by ingestion of *P. sepium* during pregnancy. Be sure that any eleuthero product is from a reputable company and botanically authenticated to avoid unknowingly ingesting *P. sepium*.

Herb/Drug Interactions: There are reports of eleuthero interacting with digoxin. It is unclear whether the substance that caused the interaction was eleuthero or the adulterant *P. sepium*. Because it is possible that both substances can interact with digoxin, avoid concurrent use.

The use of eleuthero along with mycin-class antibiotics enhanced their effectiveness.

Selected Research Studies

Effects of Siberian Ginseng (*Eleutherococcus senticosus*) on Elderly Quality of Life: A Randomized Clinical Trial (Cicero et al. 2004).

This is a fascinating study, as it uses a group of elderly patients who have high blood pressure and take the cardiac medication digoxin (see Herb/ Drug Interactions above). The results show no herb/drug interactions and improvements in the patients’ mental status and energy over four weeks of use.

Effect of *Eleutherococcus* on Short-Term Memory and Visual Perception in Healthy Humans (Arushanian et al. 2003).

Ingestion of an eleuthero fluid extract improved short-term memory and increased visual sensitivity and visual perception. It is reported that nervous, weak people who are highly sensitive to stress had a more pronounced effect.

GUDUCHI

Botanical Name: *Tinospora cordifolia*

Family: Menispermaceae

Common Names: Indian tinospora, heart-leaved moonseed

Taste/Energy: Bitter, warm, dry



Guduchi

(From *Indian Medicinal Plants* by B. D. Basu, 1918)

Parts Used: Stem and root

Location/Cultivation: This herb is a vine that commonly grows throughout the tropical parts of India, Myanmar, and Sri Lanka.

Safety Rating: ** 1/2

Properties: Adaptogen, anti-inflammatory, antioxidant, choleric, diuretic, febrifuge, hepatoprotective, and immune amphoteric.

Constituents: The active constituents are diterpene compounds, including tinosporone, tinosporic acid, cordifolisides A to E, and syringin.

History/Ethnobotany

Guduchi is used in ayurvedic medicine as a rasayana. It is recommended, in combination with several other herbs, in the ancient medical texts the *Charaka Samhita* and the *Susruta Samhita* for treating people with venomous snakebites and scorpion stings. In other early Hindu medical texts, this herb is used as an aphrodisiac and to treat people with diabetes, liver problems, and kidney problems. The fresh juice of the plant is a powerful diuretic that is used to treat people with burning urination, urethral discharges, and gonorrhoea.

In Sri Lanka, the stems are used in a decoction to treat people with fevers, skin diseases, jaundice, and syphilis.

The Mundas, a tribal people from Chota Nagpur, use the finely powdered herb topically to heal fractures. In Unani-Tibb medicine (Greco-Islamic medicine), a mixture of guduchi and sesame oil is thought to make an excellent massage oil. Unani-Tibb practitioners also use guduchi for people with coughs, giddiness, vomiting, hemorrhoids, and anemia and as a digestive tonic.

Modern Uses

Most of the traditional ayurvedic uses of this plant are just as appropriate today. The exception is using guduchi to treat snakebites because some sources say it is not effective for that.

Research indicates that guduchi is beneficial for enhancing renal, immune, and hepatic function. It acts as a nonirritating diuretic and it increases uric acid excretion, making it of use for people with gout and gouty arthritis. Its ability to enhance elimination of metabolic wastes, along with its anti-inflammatory activity, makes it useful for people with osteoarthritis and rheumatoid arthritis. Rheumatoid arthritis is not only an inflammatory condition but it is also an autoimmune disease. Guduchi is appropriate for this condition because it is an immune amphoteric (immunomodulator) that can reduce excessive immune response as well as enhance a deficient immune system.

Guduchi can be used to support the immune system and prevent liver or bone marrow damage in people with cancer or tuberculosis who are undergoing chemotherapy. Several clinical studies have shown that this herb enhances phagocytic activity against foreign pathogens in the body and immune response in children with upper respiratory tract infection or

inflammation of the middle ear. It also reduces hay fever symptoms in adults.

Guduchi shows promise as a hepatoprotective agent. Animal and human studies have shown that it can protect against chemicals that can damage the liver such as carbon tetrachloride and that it helps stimulate regeneration of liver cells (hepatocytes) and the hepatic Kupffer (immune) cells. It traditionally was used for treating jaundice, and today it is used as a supportive therapy for patients with hepatitis B and C.

Other traditional uses of guduchi were for treating people with enlarged spleens, high fevers, chills, and fatigue caused by malaria. A recent small clinical study in India found that adding this herb to chloroquine, a standard medication used to treat people with malaria, improved patient outcomes significantly.

Dosage and Safety

incture (1:5): 30–40 drops, three times per day.

ecoction: Add 1 tsp. dried herb to 8 oz. water. Decoct 10–15 minutes, steep an additional $\frac{1}{2}$ hour. Take 4 oz. up to three times per day.

afety Issues: In the traditional ayurvedic literature, large doses of guduchi are reported to cause constipation. In one human study, patients with diabetes who were taking this herb had mild elevations of liver enzymes.

erb/Drug Interactions: Guduchi has been shown to protect mice against bone marrow suppression caused by the chemotherapeutic drug cyclophosphamide.

Selected Research Study

Efficacy of *Tinospora cordifolia* in Allergic Rhinitis (Badar et al. 2005).

Guduchi dramatically reduced hay fever symptoms (sneezing, nasal congestion, nasal itching, and runny nose) in 61 to 83 percent of patients using it compared with those who received a placebo.

HE SHOU WU

otanical Name: *Polygonum multiflorum*

amily: Polygonaceae

ommon Names: Fo-ti, seikasku (Japanese), fleeceflower, hasuo (Korean), ha thu o (Vietnamese)

taste/Energy: Sweet, bitter, slightly warm

art Used: Root

ocation/Cultivation: This perennial vine is native to China, northern Vietnam, Japan, and Taiwan. It is cultivated in Henan, Hubei, Guizhou, Sichuan, and Guangxi provinces in China. It prefers rich, well-drained soil and is harvested in the autumn of its third or fourth year.

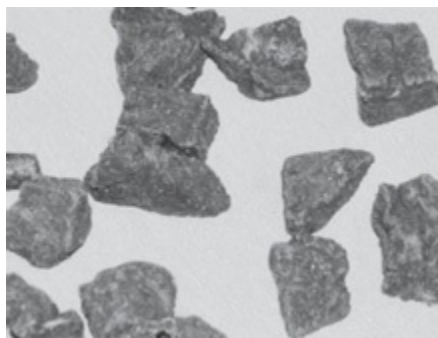
afety Rating: * *

roperties: Antioxidant, astringent, cholagogue, cholesterol lowering, hepatoprotective, laxative, and neuroprotective.

onstituents: He shou wu contains anthraquinones, which give it laxative and tumor-inhibiting properties, as well as lecithin and antioxidant polyphenols.

History/Ethnobotany

The name *he shou wu* translates as “black haired (Mr.) He.” It is named after the legendary man who discovered the use of this herb. Mr. He was an old man who was ill and could not father children. He noticed that the vines of the plant mingled together during the night, and this suggested that it might help him to have the same ability with his wife. After consuming the roots for several years, the old man’s hair had turned black again, his health was restored, and he was able to father children.



He shou wu root

(Photograph by David Winston)

In Li Shizhen's book *Ben Cao Gang Mu* (1593), an elaborate description of the types and uses of he shou wu is noted. According to this text, when the root of this plant is fifty years old, it is the size of a fist, and if it is taken regularly for a year, it will keep the hair black. When the root is one hundred years old, it is the size of a bowl. If this root is taken for a year, it gives one a healthy and cheerful countenance. A root that is 150 years old is as large as a basin. This root is called "hill uncle," and if taken for a year, a new set of teeth will grow. At two hundred years old, the root is known as "hill father," and it restores youthful vitality and vigor. Finally, a three-hundred-year-old root is known as "mountain spirit," and if this is taken for a period of time, it makes one an immortal.

In Japanese kampo medicine, he shou wu is used to treat people with constipation, boils, and chronic enteritis (inflammation of the intestines).

In Korea, he shou wu is used for weakness of the body and to strengthen the liver. In traditional Vietnamese medicine, it is used to nourish the kidneys and liver and is prescribed for weakness, fatigue, back pain, erectile dysfunction, poor vision, dizziness, night sweats, and insomnia.

Modern Uses

In Chinese medicine, he shou wu is used to nourish the liver, kidneys, blood, and *jing* (essence). It can be used to treat people with yin or blood deficiency symptoms such as dizziness, ringing in the ears, anemia, poor vision, low back pain, and premature graying of the hair. It is also used for impotence, excessive vaginal discharge, uterine bleeding, and weak knees and ankles. The root is used topically in "hit medicine" (martial arts medicine) as a liniment for bruises and contusions.

Research has started to reveal some additional uses for he shou wu and possible explanations for some of its traditional uses. There are many animal studies that indicate that prepared he shou wu has neuroprotective effects. In rat studies, oral consumption of this herb inhibited the formation of beta-amyloid plaques (which are associated with neurodegeneration in people with Alzheimer's disease), prevented dopaminergic degeneration caused by toxic pesticide exposure, and improved mental acuity and recall.

Regular use of he shou wu stimulates liver and gall bladder function by increasing bile flow, enhances intestinal function, and lowers unhealthy cholesterol levels.

In animal studies, regular use of he shou wu promoted increased adrenal and thyroid hormone secretions, enhanced T lymphocyte and macrophage activity, and prolonged the life spans of various animals.

In clinical practice, this herb is often used for men with lack of libido, low sperm count, and poor sperm motility. It can be combined with ashwagandha, *suo yang* (*Cynomorium songaricum*), and morinda root to enhance the effects.

The leaf and vine of he shou wu are known as *ye jiao teng*, and they occasionally are used to calm nervousness, treat insomnia, and reduce itching.

Most he shou wu in the marketplace is prepared by steaming the roots with black bean juice and yellow rice wine. The processed root is known as *zhi he shou wu*. It has less of a laxative effect and is used more to tonify the blood.

Unprocessed he shou wu (*sheng he shou wu*) is a strong laxative. It is used internally and topically to clear fire poison (sores, boils, lymphadenomas), and it is taken with *Artemisia annua* (sweet annie) to treat people with malaria.

Dosage and Safety

incture (1:5): 30–40 drops, three times per day.

ecoction: Add 1–2 tsp. dried root to 10 oz. water, decoct 15–20 minutes, steep 40 minutes. Take 4 oz. up to three times per day. Do not decoct in a metal pot.

afety Issues: Large doses of the processed root can cause diarrhea in sensitive people. There have been three reported cases of a product made from he shou wu, which is known as *shou wu pian*, causing hepatitis.

erb/Drug Interactions: Avoid use with hepatotoxic medications such as acetaminophen, tetracycline, and statin drugs.

Selected Research Study

Progress of Study on Brain Protective Effect and Mechanism of *Polygonum multiflorum* (Wang and Wang 2005).

In this paper, researchers reviewed the various studies on the

neuroprotective effects of he shou wu. They determined that it has antioxidant activity and that, in some ways, it mimics medications that act as calcium channel blockers, cholinesterase inhibitors, and cholinomimetic medications. The effects were broad-based, and it is suggested that this herb may have benefits for people with Alzheimer's disease, Parkinson's disease, and impaired cerebral circulation.

HOLY BASIL

Botanical Name: *Ocimum sanctum* (synonym: *O. tenuiflorum*), *O. gratissimum*.

Family: Lamiaceae

Common Names: Tulsi (Hindi), tulasi (Hindi), surasa (Sanskrit), sacred basil

Taste/Energy: Pungent, sweet, warm

Part Used: Herb

Location/Cultivation: Holy basil is found throughout the lowlands of India as well as in Sri Lanka, Pakistan, Bangladesh, Myanmar, southern China, Thailand, and Malaysia. In India, small patches of it are widely cultivated for daily use. There are at least three types of holy basil. The green-leafed variety *sri* or *rama tulsi* is the most common. The second type (*Krishna tulsi*) bears dark-green to purple leaves; this variety has a stronger taste and smell. The third type (*vana tulsi*, *O. gratissimum*) is a green-leafed forest variety that often grows wild.



Holy basil

(From *Indian Medicinal Plants* by B. D. Basu, 1918)

afety Rating: * * *

roperties: Adaptogen, antibacterial, antidepressant, antioxidant, antiviral, carminative, diuretic, expectorant, galactagogue (promotes the flow of mother's milk), and immunomodulator

onstituents: Essential oils such as eugenol, carvacol, linalool, caryophylline, and methyleugenol as well as triterpenes such as ursolic acid and flavonoids.

History/Ethnobotany

Holy basil is sacred to the Hindu god Vishnu and is used in morning prayers to insure personal health, spiritual purity, and family well-being. Strings of beads made from the plant's stems are used in meditation to give clarity and protection. The ancient ayurvedic texts, the *Charaka Samhita* (approx. 200 BCE) and *Sushruta Samhita* (400–100 BCE) both mention the use of this herb to treat people with snakebites and scorpion stings.

Holy basil is classified as a rasayana, an herb that nourishes a person's growth to perfect health and promotes long life. For perhaps three thousand years, holy basil has been considered one of India's most powerful herbs. The daily use of this herb is believed to help maintain the balance of the *chakras* (energy centers) of the body. It is acclaimed as possessing *sattva* (energy of purity) and as being capable of bringing on goodness, virtue, and joy in humans. In the *Puranas* (a sacred Hindu text), everything associated with the plant is holy, including water given to it and

the soil in which it grows as well as all its parts, among them leaves, flowers, seed, and roots.

In Indian folk medicine, the leaves of the holy basil plant are brewed in a tea that is used as an expectorant to treat people with excessive bronchial mucus and bronchitis. The tea also is used for people with upset stomach, biliaryness, and vomiting. The powdered/dried leaves have been used as a snuff for nasal congestion, and the juice of the fresh leaf is put in the ear for earaches. A decoction made from the root is used to lower malarial fevers, and a poultice made from the fresh roots and leaves is applied to bites and stings from wasps, bees, mosquitoes, ants, and other insects as well as leeches. The seeds are mucilaginous (slimy) and have been used to soothe the urinary tract when urination is difficult or painful.

In Thailand, holy basil is called *bai gkaprow* or *kaphrao daeng*. It is used as a spice in cooking and as a medicine for people with gas, intestinal cramps, ulcers, colds, influenza, headaches, coughs, and sinusitis.

This plant has become naturalized in Suriname in northern South America, where it is used for many of the same conditions that it was used for in India—snakebites, abdominal pain, and to lower fevers.

Modern Uses

There has been a significant amount of both animal studies and human clinical research on the benefits of holy basil. Today, we know this versatile plant is an adaptogen with antioxidant, neuroprotective, stress reducing, and radioprotective (protects against the damaging effects of ionizing radiation) effects.

In animal studies, pretreatment with methanol extracts of holy basil reduced brain damage caused by reduced cerebral circulation. Alcohol extracts of this herb showed significant antistress activities in mice exposed to acute and chronic noise stress. Use of holy basil prevented increased corticosterone levels that indicate elevated stress levels. A water extract of holy basil protected mice against radiation damage to the liver and chromosome damage to the cells. It prevented this damage by reducing hepatic lipid peroxidation and increasing the presence of two powerful cellular antioxidants: superoxide dismutase and superoxide catalase.

Other animal studies provided preliminary evidence that holy basil lowers blood sugar levels, helps prevent gastric ulcers, and enhances

antibody production while inhibiting the symptoms of allergies.

There have been a few human studies. In one, holy basil was found to help reduce asthma symptoms, and in another, patients with type 2 diabetes had significant reductions in blood sugar levels (17.6 percent) while fasting and smaller decreases in blood sugar levels and cholesterol levels after eating.

In my clinical practice I use holy basil to enhance cerebral circulation and memory. It is used in ayurvedic medicine to relieve “mental fog” caused by chronic cannabis smoking. It can be combined with other cerebral stimulants such as rosemary, bacopa, and ginkgo to help people with menopausal cloudy thinking, poor memory, attention deficit disorder (ADD) and attention deficit hyperactivity disorder (ADHD), and to speed up recovery from head trauma.

I also use holy basil as an antidepressant for “stagnant depression.” The term *stagnant depression* is one that I coined, and it describes a specific type of situational depression. In this case, some type of traumatic event occurred in a person’s life, and because he is unable to move on, his life comes to revolve around the trauma. In addition to therapy, herbs such as holy basil, damiana, rosemary, and lavender are especially useful for treating this condition.

Lastly, I frequently use holy basil to treat people with allergic rhinitis and allergies to animal dander and mold. Combined with reishi and a solid extract from blueberries, it can reduce the symptoms of hay fever and allergic asthma.

Dosage and Safety

incture (1:5 or 1:2): 40–60 drops, three times per day.

ea: Add 1 tsp. dried leaf to 8 oz. hot water, steep, covered, 5–10 minutes. Take 4 oz. up to three times per day.

apsules: Various forms of capsulated products are available. These include extracts in gelcaps, dried or powdered herb in capsules, and standardized extracts (2 percent ursolic acid) in capsules.

afety Issues: There have been contradictory animal studies showing that holy basil might be toxic to embryos. Until conclusive information exists,

avoid using it during pregnancy. Holy basil also is reported to have an antifertility effect and should be avoided if a woman is trying to get pregnant.

Herb/Drug Interactions: Preliminary studies indicate that holy basil might enhance CYP-450 activity, thus speeding up the elimination of some medications.

Selected Research Study

There have been many animal studies indicating that holy basil has antistress and immunomodulating activity. However, there have not been any human studies confirming this.

Randomized Placebo-Controlled, Single Blind Trial of Holy Basil Leaves in Patients with Type 2 Diabetes. (Agrawal, Rai, and Singh 1996)

This study indicates that holy basil can be a useful adjunct for the treatment of type 2 diabetes (see Modern Uses section).

JIAOGULAN

Botanical Name: *Gynostemma pentaphyllum*

Family: Cucurbitaceae

Common Names: Gynostemma, amachazuru (Japan)

Taste/Energy: Sweet, slightly bitter, neutral

Part Used: Herb

Location/Cultivation: Jiaogulan is native to the mountains of southern China and Korea, and it also grows in Japan. It can be grown as an annual in most temperate climates and prefers well-drained soil and full sun.

Safety Rating: * * 1/2

Properties: Adaptogen, antioxidant, expectorant, hepatoprotective, cholesterol-lowering, hypotensive, immune system tonic, and nervine.

Constituents: Jiaogulan contains triterpenoid saponins known as

gypenosides. Eighty-two gypenosides have been isolated in jiaogulan and four are identical to ginsenosides found in Asian ginseng.

History/Ethnobotany

Information on the historical use of jiaogulan is scanty; it first was mentioned in Zhu Xio's book *Materia Medica for Famine* (1406 CE) as a survival food. Wu Qi-Jun, in his book *Zhi Wu Ming Shi TuKao Chang Bian* (Plant Materials Which Are Well Known, Accurately Illustrated) (1848), discussed a few medicinal uses for this lesser-known plant. Its use was limited mostly to the mountains of southern China, where it was a folk remedy used for fatigue, to increase endurance, to prevent colds and respiratory disease, and to enhance longevity.



Jiaogulan
(Courtesy of Aum Tea Company, Thailand)

Modern Uses

Research on the uses of jiaogulan started in Japan and China in the late 1960s and early 1970s. While looking at this herb's constituents, it was discovered that several of its triterpenoid saponins were identical to those found in Asian ginseng. The idea that this easy-to-grow, weedy plant might be an inexpensive source for adaptogenic compounds fueled what has become a significant body of Chinese research on this plant. Although it is a member of the Cucurbitaceae (gourd/cucumber family), which contains many plants with toxic compounds, this herb has been shown to be nontoxic.^{*1}

Studies have found that jiaogulan enhances immune system function, especially the activity of macrophages, T lymphocytes, and natural killer cells, and that it acts as a tumor inhibitor. In clinical trials in China and in clinical practice in the United States, jiaogulan extracts have been used to enhance immune system function in cancer patients and to prevent or reverse immunosuppression caused by chemotherapy and/or radiation

treatments.

Jiaogulan has significant antioxidant activity, and it has been found to increase endogenous superoxide dismutase, a powerful cellular antioxidant that inhibits reactive oxygen species and protects cellular membranes. This may explain some of the herb's benefits for patients undergoing radiation therapy. This activity also suggests that it might be useful for people with other oxidative diseases, including atherosclerosis, ischemic (lack of blood flow) heart disease, and diabetes mellitus.

Human studies have shown that jiaogulan reduces levels of LDL and VLDL cholesterol and triglycerides, mildly lowers blood pressure, inhibits platelet aggregation, and improves cardiac function. It is ideal to use, along with diet and exercise, to reduce the chances of a heart attack or stroke for people with many cardiac risk factors.

Used in combination with hawthorn, dan shen, kudzu root, and tienchi ginseng, jiaogulan can be of significant benefit for people with angina and mild congestive heart failure and to treat and/or prevent arterial disease and arterial insufficiency.

Jiaogulan is a calming adaptogen, so it is appropriate for anxious or agitated people with labile (erratic) hypertension, stress headaches, and anxiety induced insomnia. It also has been found to help prevent altitude sickness when used with dang shen, and it can be of benefit for relieving jet lag.

Dosage and Safety

incture (1:5): 80–120 drops, three times per day.

ea: Add 1–2 tsp. dried herb to 8 oz. hot water, steep 40 minutes. Take one to three cups per day.

apsules/Tablets: These contain an extract standardized to 10 mg gypenosides per dose. Take one or two capsules or tablets, three times per day.

afety Issues: Jiaogulan may cause gastric upset when taken on an empty stomach. Excessive doses have been reported to cause a rash, fatigue, dizziness, and palpitations.

erb/Drug Interactions: Use jiaogulan cautiously with warfarin

(Coumadin) or other blood-thinning medications. Animal studies have indicated that taking jiaogulan with tranquilizers or sedatives may increase the effects of those drugs. Use them cautiously together.

Selected Research Studies

Traditional Chinese Medicine in Treatment of Hyperlipidaemia (La Cour, Molgaard, and Yi 1995).

Several Chinese herbs were tested for their ability to lower levels of LDL and VLDL cholesterol and triglycerides. In this and other studies, jiaogulan was shown to reduce unhealthy blood lipid levels.

Therapeutic and Tonic Effects of Jiaogulan on Leukopenia Patients (Liu et al. 1991).

Thirty patients with suppressed white blood cell counts were given gypenoside tablets. Their white blood cell counts doubled in one month's time.

LICORICE

Botanical Names: *Glycyrrhiza glabra*, *G. uralensis*

Family: Fabaceae

Common Names: Gan cao (Chinese), kanzo (Japanese), Glycyrrhiza

Taste/Energy: Sweet, slightly bitter, warm, moist

Part Used: Root

Location/Cultivation: Licorice is native to southeastern Europe and southwestern Asia. It also grows in northern China and Russia. Today most of the commercial licorice crop is cultivated in Spain and Italy.

Safety Rating: * *

Properties: Adaptogen, antiviral, antidiuretic, antihistamine, anti-inflammatory, antioxidant, antitumor, demulcent, expectorant, hepatoprotective, and immunomodulator.



Licorice

(From Köhler's *Medizinal Pflanzen* by Franz Köhler, 1887, Germany)

onstituents: Licorice contains sweet-tasting triterpenoid saponins, collectively known as glycyrrhizin. It also contains isoflavones such as genistein, demulcent polysaccharides, and anti-inflammatory flavonoids.

History/Ethnobotany

Licorice has been used for a long time as a food and medicine in China and the Middle East. The ancient Greek botanist Theophrastus (third century BCE) in his classic *Enquiry into Plants* mentioned that the roots that grow in Scythia (in Asia Minor) are very sweet and are used for people with dry coughs and respiratory diseases.

Dioscorides (c. 40–90 CE), a Greek physician who wrote one of the most influential medical books in the ancient world, *De Materia Medica*, gave licorice its Latin genus name, *Glycyrrhiza*. In ancient Greek *glukos* means “sweet” and *riza* means “root.” So the Latin name for this plant is derived from the Greek words meaning “sweet root.” Dioscorides wrote that licorice can be used for people with burning of the stomach and “griefs” of the throat, liver, and kidneys.

John Parkinson, the famed English gardener and herbalist, grew licorice in his garden and used the roots to make herbal beer. He also recommended its use for people with hoarseness of the throat, ulcers of the bladder, wheezing, painful urination, and consumption (tuberculosis). He made a formula with licorice, figs, and maidenhair fern; the combination was boiled in water to make a sweet, pleasant-tasting medicine.

In ancient China, licorice was considered a principle drug among all drugs. It is perhaps the most commonly used herb in classical

prescriptions. Legendary emperor Shennong ruled during the San Huang dynasty (3000–2700 BCE). Known as the Divine Farmer, he is credited with the invention of agriculture, wooden plows, Chinese herbal medicine, and markets. A version of his book, the *Shennong Bencao Jing* (the *Shennong Herbal*) is still in print today. This book is based on a much later version written by the Chinese physician Tao Hong-jing in the fifth or sixth century CE. The book states that licorice is used to balance the five viscera (organs) and six bowels. It also reports that licorice strengthens the sinews and bones, enhances muscle growth and strength, and is used topically to heal wounds.

Modern Uses

In modern Chinese medicine, licorice almost always is used in small amounts in formulas. It is used to strengthen the stomach and spleen qi. It stops diarrhea and relieves fatigue, lack of appetite, and gastric irritation. It also is used similarly to the old European uses for people with dry cough, dry mouth, asthma, spasmodic coughs, wheezing, and pertussis (whooping cough). It is used to clear heat and dispel toxins (bacterial infections), both topically as a poultice and internally as a gargle for sore throat. It frequently is used to alleviate symptoms of poisoning caused by pesticides, herbicides, arsenic, lead, and pharmaceutical medications.

Western uses of licorice include a number of relatively new uses for the root. Licorice is an effective adaptogen, immune amphoteric, nootropic, anti-inflammatory, and hepatoprotective agent.

As an adaptogen, licorice benefits the HPA axis function and the sympathoadrenal system (SAS). I frequently use it for people with adrenal insufficiency who have symptoms of fatigue, tiredness upon waking up in the morning, elevated cortisol and blood sugar levels, and frequent colds. Because it is an immunomodulator, licorice can be used to stimulate immune system function in people with cancer and chronic fatigue immune deficiency syndrome and reduce excessive immune response in people with autoimmune disease (rheumatoid arthritis, lupus, scleroderma) and allergies (animal dander allergies and allergic asthma).

Licorice also is of significant benefit for people with irritable bowel syndrome and inflammatory bowel disease (Crohn's disease, ulcerative colitis). Most inflammatory bowel diseases are autoimmune in nature, so this herb's ability to reduce excessive immune system response plus its anti-inflammatory effects makes it a good choice for people with irritation,

inflammation, or ulceration of the gastro-intestinal tract caused by these diseases. It is a prominent remedy for gastritis, gastric and duodenal ulcers, ileitis, and leaky gut syndrome (hyperpermeability).

Other uses for this versatile herb include its use as a hepatoprotective agent to prevent drug- or viral-induced liver damage, and to balance the female reproductive system during menopause. I use licorice with black cohosh, chaste tree, and white peony to reduce menopausal hot flashes, sweating, and formication (sensations of skin crawling). Licorice also can be used topically to help heal herpes virus lesions (shingles, oral, or genital herpes).

Dosage and Safety

incture (1:5): 10–20 drops, three times per day.

ecoction: Add $\frac{1}{2}$ tsp. dried root to 8 oz. water, decoct 10–15 minutes, let steep 10–15 minutes. Take 4 oz. twice per day.

ablets: A preparation known as DGL licorice has most of licorice's benefits without the risk of elevated blood pressure (see Safety Issues below). Chewable tablets are most effective. Take one 200–300 mg chewable tablet before meals (three times per day).

afety Issues: There are many warnings in the medical and popular literature about the dangers of licorice. At the same time, it has been used safely and frequently in European, Middle Eastern, and Chinese medicine for millennia. Why the discrepancy? Licorice in excess can cause a condition known as hyperaldosteremia, in which a person retains sodium, loses potassium, and develops elevated blood pressure. This condition usually does not occur when this herb is used in small amounts in formulas, as is traditional. Cases of licorice-induced hyperaldosteremia usually involve eating excessive amounts of licorice solid extract (in real-licorice candies or chewing tobacco) or licorice tea (four or more cups per day). As with most things, moderation is important when using herbs, and traditional formulas and dosages often offer guidelines for safe use today.

Avoid the use of licorice for patients with hypertension. For anyone who is taking licorice for an extended period of time, eating a diet that is high in potassium and low in sodium and checking blood pressure regularly are

recommended.

Herb/Drug Interactions: Licorice has been shown to increase the effectiveness of steroids such as prednisone and reduce their toxicity. It has been used for thousands of years in traditional Chinese medicine to harmonize herbal formulas and reduce toxicity of potentially dangerous herbs such as jack-in-the-pulpit and processed aconite. Do not use licorice with potassium-depleting diuretics, digoxin, or older types of antidepressants called monoamine oxidase inhibitors (MAOIs).

Selected Research Studies

Effect of Licorice on the Reduction of Body Fat Mass in Healthy Subjects (Armanini et al. 2003).

In this interesting study, seven men and eight women took 3.5 grams of a commercial licorice product per day for two months. Test subjects had a 10-percent reduction in body fat mass with no change in caloric intake.

The Treatment of Atopic Dermatitis with Licorice Gel (Saeedi, Morteza-Semnani, and Ghoreishi 2003).

A 20-percent licorice gel used for two weeks was very effective in reducing the redness, swelling, and itching associated with atopic dermatitis.

LYCIUM

Botanical Name: *Lycium chinensis*, *L. barbarum*

Family: Solanaceae (nightshade family)

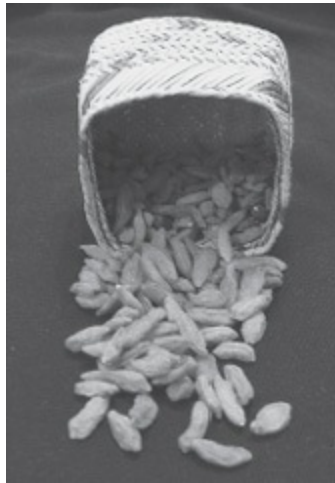
Common Names: Gou qi zi (Chinese), goji berry, wolfberry, gugijanamu (Korean), kukoshi (Japanese)

Taste/Energy: Sweet, slightly warm

Part Used: Fruit

Location/Cultivation: Lycium is native to China and mostly cultivated in Ningxia province. It is naturalized in Hawaii, and a related species grows wild in the southwestern United States. It needs average soil with good

drainage and full sun.



Lycium fruits
(Photograph by David Winston)

safety Rating: * * *

properties: Anti-inflammatory, antioxidant, chemoprotective, hepatoprotective, immune tonic, lowers blood sugar levels, and nutritive.

constituents: Lycium contains antioxidant and anti-inflammatory carotenoids (zeaxanthin, cryptoxantine) and flavonoids.

History/Ethnobotany

Lycium fruit, leaf, bark, and seedling have been used in Chinese medicine for millennia. The red berry ripens in the autumn and is used as a food and medicine. The young leaf is edible and can be cooked in soups as a bitter green. According to the ancient text *Shi Shu*, written by Lu Ji, eating the fruit and leaf “makes one feel happy and vigorous.” The root bark is known as *di gu pi* and is used to lower fevers and treat arthritis. The seedling of the herb is called *gou qi ye*, and it is used to make soup. An old saying was to not eat this herb “when traveling thousands of miles away from home.” This was because it was a powerful tonic and enhanced sexual desire. One ancient formula calls for using the flower, fruit, stem, leaf, and root to make a healing ointment.

Another preparation using the entire lycium plant combined the seedling, flower, fruit, and root. Each was collected in the appropriate season and dried in the shade. They were then soaked in wine overnight. Then they were dried in the open for forty-nine days to absorb the energy of the sun

and moon. When fully dry, they were powdered, mixed with honey, and made into pills. Legend says a hermit, Master Zhang, took this medicine daily (one pill in the morning, one at night), and because of this he lived more than one hundred years. Even at that advanced age, he could still walk with vigor, his teeth regrew, and he could still perform sexually.

In Korean traditional medicine, lycium fruit is used for people with exhausting coughs and debility, and in Japanese tradition, it is used for people with lumbago, spermatorrhea (involuntary discharge of semen without orgasm), and diabetes.

Modern Uses

Lycium is used in traditional Chinese medicine as a nutritive tonic for the liver, kidneys, and blood. It can be eaten daily to strengthen weak muscles and ligaments, improve male sexual performance, and relieve cachexia (malnutrition usually associated with cancer or AIDS) and night sweats.

In Chinese medical theory, the liver opens to the eyes, so liver tonics enhance vision. Because the lycium fruit is rich in carotenoids and flavonoids, it stabilizes the small capillaries in the eyes. It is used for people with poor night vision, dry, red, or painful eyes, macular degeneration, and excessive tearing as well as to help prevent cataracts and glaucoma. It is usually combined with chrysanthemum flowers, mulberry fruit, and butterfly bush flowers.

Lycium fruit can be used with other yin tonics (moistening herbs) to relieve dryness of the lungs. It can be combined with ophiopogon, Solomon's seal root, lily bulb, or licorice for people with dry coughs, dry mouth, and sticky, hard-to-expectorate mucus.

Lycium not only strengthens the capillaries in the eyes but it also stabilizes capillaries, veins, and arteries throughout the body. It can be used to treat or prevent varicose veins, spider veins, cold hands and feet, diabetic neuropathies, and atherosclerosis.

Lycium has a number of other modern uses. The fruit has hepatoprotective activity; it helps regenerate liver cells and protects against liver damage caused by medications or hepatotoxic chemicals. The fruit also has been shown to enhance the effects of chemotherapy and radiation therapy while protecting cancer patients from leukopenia (decreased white blood cell counts).

The dried fruit can be eaten like raisins, cooked with rice, or made into a

tea. Regular consumption of lycium fruit promotes the growth of healthy bowel flora, lowers LDL and VLDL cholesterol levels, and it can even mildly lower blood sugar levels.

In one Chinese study, forty-two men with infertility (low sperm count and/or motility) were given $\frac{1}{2}$ ounce of lycium fruit per day. After two months of treatment, thirty-three patients had returned to normal levels of fertility and all of them were able to eventually father children.

Dosage and Safety

incture (1:4): 60–90 drops up to four times per day.

ecoction: Add 2 tsp. dried fruit to 12 oz. water, decoct 15–20 minutes, steep 40–50 minutes. Take up to three cups per day.

s a Food: Eat up to 1 oz. per day.

afety Issues: Avoid using lycium fruit if you are sensitive to plants in the nightshade family. Avoid its use in patients with diarrhea, flatulence, and abdominal bloating.

erb/Drug Interactions: Patients undergoing chemotherapy or radiation therapy can use lycium fruit to protect against lowering of white blood cell counts and to enhance the effects of the therapy.

Selected Research Study

Observation of the Effects of LAK/IL-2 Therapy Combining with *Lycium barbarum* Polysaccharide in the Treatment of 75 Cancer Patients (Cao, Yang, and Du 1994).

In this interesting study, seventy-five patients with advanced cases of cancer were given immunotherapy agents (lymphokine-activated killer cells and interleukin-2). Some also were given a polysaccharide extract from lycium fruit. The remission rate for the patients who received immunotherapy alone was 16.1 percent, and the rate for the patients who received the combination therapy was 40.9 percent. Those patients who received the combination treatment also had a longer period of remission.

PRINCE SENG

Botanical Name: *Pseudostellaria heterophylla*

Family: Caryophyllaceae

Common Names: Pseudostellaria, tai zi shen (Chinese), hai er shen (Chinese), gaijijin (Japanese), haeasam (Korean)

Taste/Energy: Sweet, slightly bitter, cool, moist

Part Used: Root

Location/Cultivation: Prince seng is native to central and southern China and is cultivated in Jiangsu, Anhui, Hubei, and Shandong provinces. The roots are harvested in the autumn, when the above-ground plant dies back.

Safety Rating: * * *

Properties: Adaptogen (mild), demulcent, immune tonic, and lung tonic.

Constituents: Prince seng contains immunostimulating polysaccharides (PH-1A, 1B, 1C) as well as saponins and peptides (pseudostellarin H and D).

History/Ethnobotany

Prince seng is a recent addition to the Chinese materia medica. It first was recognized officially in 1959 in Chung Yao Chih's *New Chinese Materia Medica*. The name *tai zi shen* means "prince root." This refers to its ability to tonify or strengthen the lungs and spleen like Asian ginseng (ren shen). However, although ginseng is a king, this herb is a less important (or effective) prince. Another name, *hai er shen*, means "child root" referring to the root's small size.

Modern Uses

In Chinese medicine, prince seng is used to strengthen the lungs and spleen. It is sometimes called "ginseng of the lungs" because of its ability to strengthen and nourish weak, dry, and damaged lung tissue. I consider this herb a "food for the lungs" and use it for people with hot/dry asthma,

dry cough, and emphysema and during a person's recovery from pertussis, bronchitis, or pneumonia. I often combine it with other lung qi tonics such as bei sha shen (glehnia root), mai men dong (ophiopogon root), or tian men dong (Chinese asparagus root).

Because the effects of prince seng are much weaker than those of Asian ginseng, it must be used in larger amounts and for longer periods of time. It is especially appropriate for weak, energy deficient people who might be overstimulated by Asian ginseng. It can also be used when the lung and wei qi are deficient, which would give rise to frequent colds or respiratory tract infections, inappropriate sweating, fatigue, dry mouth, and constant thirst.



Prince seng roots
(Photograph by David Winston)

Prince seng's effects for strengthening the spleen qi are also very mild, but it can be of benefit for people with anorexia, poor appetite, and malaise.

Prince seng can be used as an ingredient in fu zheng formulas that are used to enhance immune system function. It is combined with other tonic herbs such as reishi, schisandra, dang shen, jiaogulan, or eleuthero for patients with cancer, human immunodeficiency virus (HIV), or chronic fatigue immune deficiency syndrome. These formulas increase immune system activity, especially what I call (it is my own personal term) the "immune reservoir." This concept describes the individual's immune potential or the ability to mount an effective and appropriate immune system response to bacteria, virus, or cancer cells. Various aspects of the immune system (Th1 T lymphocytes, Th2 T lymphocytes, T-4 cells, T-8 cells, K cells, NK cells, macrophages) are depleted. Herbs that strengthen the immune reservoir seem to have a broad, nonspecific ability to promote immune system competence.

Prince seng moistens mucous membrane tissue and also can be used for gastritis, dry constipation, and inflammation of the large and small intestines.

Dosage and Safety

incture (1:5): 40–80 drops, three or four times per day.

ecoction: Add 1–2 tsp. dried root to 12 oz. water. Decoct slowly for 20–30 minutes, steep 1 hour. Take 4 oz. up to four times per day.

afety Issues: Use of prince seng should be avoided in patients with excessive clear or white phlegm, diarrhea, or abdominal bloating and gas.

erb/Drug Interactions: None known.

Selected Research Study

The Effect of *Radix Pseudostellariae* from 8 Habitats on Spleen-Deficiency and Immunologic Function (Gong et al. 2001).

In this Chinese animal study, extracts of prince seng increased body weight, thymus and spleen function, and survival time under stressful conditions and also inhibited prednisolone-induced hypersensitivity reactions.

REISHI

otanical Name: *Ganoderma lucidum*

amily: Ganodermataceae

ommon Names: Ganoderma, ling zhi (Chinese)

aste/Energy: Bitter, warm

art Used: Mushroom

ocation/Cultivation: Various species of reishi grow in Asia, Europe, North America, and even in the Amazon rain forest. In the southeastern and southwestern United States, it is found growing on oak trees. In the

northeastern United States, it usually is found growing on maple trees.

safety Rating: * * *

properties: Adaptogen (mild), cholesterol-lowering, anti-inflammatory, antioxidant, antiviral, heart tonic, hepatoprotective, immunomodulator, and nervine.

constituents: Reishi contains immunostimulating polysaccharides known as β -glucans, bitter triterpenes such as ganoderic acid and ganoderenic acid, and a protein known as ling zhi-9 protein.

History/Ethnobotany

Ling zhi, reishi's Chinese name, translates as "spirit plant," and this mushroom has a long history of use in Chinese medicine. In *Shennong Bencao Jing* (the *Shennong Herbal*), it is listed first under the heading for superior class herbs. In that section, Shennong mentions six types of reishi: (1) *qing zhi*, blue/green reishi, (2) *chi zhi*, red reishi, (3) *huang zhi*, yellow reishi, (4) *bai zhi*, white reishi, (5) *hei zhi*, black reishi, and (6) *zi zhi*, purple reishi.^{*2}



Reishi
(Photograph by David Winston)

Each type of reishi has unique qualities. The blue/green reishi strengthens the eyes, calms the mind and ethereal soul, and helps a person become more compassionate. Taking this herb for years helps prevent senility and increases the life span. The red reishi (*G. lucidum*) strengthens the heart, improves cognitive function, and can prolong life. The yellow reishi promotes and strengthens the spleen qi and helps a person become loyal, honest, and relaxed. The white reishi (*G. applanatum*) enhances respiratory function, relieves coughs, quiets the mind, and gives fortitude and bravery. The black reishi (*G. sinensis*) strengthens kidney qi and

benefits people with urinary problems. It also enhances hearing and, as with all other types of reishi, prolongs life. The purple reishi strengthens the muscles, ligaments, bones, and tendons, relieves joint stiffness, protects the shen, and prevents senility.

In Li Zhi Shen's *Ben Cao Gang Mu* (1593), reishi is discussed extensively. He states that "the four white-headed old men collected Zhi while they lived in the wild. It is a thing that immortals lived on. It is a kind of edible mushroom." He further notes that all six types of reishi are the "herbs for the immortals."

Modern Uses

Reishi is relatively rare in the wild, and throughout the history of China, its use was restricted mostly to the emperor, his court, and the upper classes.

Today reishi is cultivated and widely available. In traditional Chinese medicine, this mushroom is used to nourish the Chinese heart, which stores shen. The term *shen* usually is translated as "spirit," which is frequently misunderstood by non-Chinese speakers.

The word *shen* does not mean the soul (in traditional Chinese medicine, there are two aspects of the soul known as the *hun* and the *po*) or your individual spirit. It is a person's mind/consciousness and emotional balance. Disturbances of shen produce anxiety, insomnia, bad dreams, moodiness, listlessness, and poor memory. Reishi is used for people with these conditions, along with other nervine, adaptogenic, or sedative herbs as they are indicated for the patient. It also is used for people with deficient qi and blood, which manifests as fatigue, weakness, shortness of breath, neurasthenia, and dizziness.

Research on the chemistry, pharmacology, and therapeutic benefits of the reishi mushroom have been extensive. It is an immunomodulator capable of strengthening the immune system (it enhances monocyte, macrophage, and T lymphocyte activity) and down-regulating excessive immune system response in patients with immune dysregulation (autoimmune diseases) and allergies. It is commonly used in *fu zheng* therapies for cancer treatment (see the Dang Shen monograph). Also, it contains polysaccharides that have been shown to stimulate a fivefold to twenty-ninefold increase in cancer-fighting compounds such as tumor necrosis factor, interleukins 1 and 6, and Th1 T lymphocytes.

This amazing mushroom also has been effective for improving

cardiovascular function. Regular use lowers levels of LDL and VLDL cholesterol and triglycerides, inhibits clumping of platelets, mildly lowers blood pressure, and in clinical studies, has been shown to reduce cardiac pain (angina) and arrhythmia and to help prevent arteriosclerosis.

Reishi has anti-inflammatory activity and can be of benefit for people with asthma (especially allergic asthma), chronic obstructive pulmonary disorder, and hepatitis B and C. It also has hepatoprotective and antiviral activity.

Reishi's adaptogenic effects are mild and cumulative, but research shows it improves adrenocortical function and relieves stress. One interesting use for this fungus is to prevent and treat altitude sickness. It can be combined with cordyceps, ginger, and rhodiola and should be taken for four to six weeks before visiting high-altitude locations.

There are several other species of reishi that have been studied or are being used in herbal medicine. Artists conk, or white ganoderma (*G. applanatum*), is a common polypore mushroom that can grow very large and weigh as much as fifty pounds. It contains many of the same immune-enhancing polysaccharides as *G. lucidum*. A water extract of this mushroom can be used to stimulate immune response, and it also has antibacterial and expectorant effects. The black or purple reishi (*G. sinensis*) and the Japanese reishi (*G. japonicum*) are very similar, with some taxonomists stating that they actually are the same species. These mushrooms also have immune-stimulating and anti-inflammatory activity.

An American species, *G. tsugae*, grows on hemlock trees. Some American herbalists call this "American reishi." This is unfortunate, because although this mushroom has immune-enhancing and anti-inflammatory properties, like all other *Ganoderma* species, it does not seem to have the profound effects that *Ganoderma lucidum*, the true reishi, is known for.

Dosage and Safety

incture (1:5): 80–100 drops, four to six times per day.

ecoction: Add 1–2 oz. dried cut/sifted mushroom to 32 oz. water, slowly decoct for 2–4 hours until reduced by one-half (16 oz.). Take up to three to four cups per day.

apsules: Mycelial extracts. Take three 500 to 1000 mg tablets, three times per day.

afety Issues: Avoid using reishi if you have mushroom allergies.

erb/Drug Interactions: Use cautiously with blood-thinning medication.

Selected Research Studies

Anticancer Effects of *Ganoderma lucidum*: A Review of Scientific Evidence (Yuen and Gohel 2005).

This article is a review of several small human and animal studies as well as in vitro studies done on reishi. The authors concluded that the mushroom not only may enhance the immune system but also has some antitumor activity. In one quoted study, 65 percent of patients with lung cancer had an improved quality of life and enhanced cellular immune response after using reishi.

A Randomized, Double-Blind and Placebo-Controlled Study of a *Ganoderma lucidum* Polysaccharide Extract in Neurasthenia (Tang et al. 2005).

One hundred and thirty-two patients diagnosed with neurasthenia (fatigue), mild depression, and chronic fatigue immune deficiency syndrome took part in a study of reishi's effects on those diseases. The group given a polysaccharide extract made from the mushroom had significantly superior reductions in fatigue and an improved sense of well-being compared with patients who received a placebo.

RHAPONTICUM

otanical Name: *Rhaponticum carthamoides*

amily: Asteraceae

ommon Names: Maral root, leuzea

aste/Energy: Bitter, slightly sweet and resinous, cool, slightly dry

art Used: Root

Location/Cultivation: This herb grows in the alpine and subalpine fields of southern and eastern Siberia (Buryatia, Tuva, and Gorno-Alay regions), as well as in Kazakhstan, Mongolia, and Xingjiang province in China. It needs well-drained soil and full sun. The three-year-old roots are gathered in the autumn.

Safety Rating: * * 1/2

Properties: Adaptogen, antioxidant, antitumor, heart tonic, hepatoprotective, immune stimulant, and nerve.

Constituents: Rhaponticum contains compounds that are identical to insect hormones known as ecdysterones. A group of ecdysterones, known as levesteins, are the most biologically active compounds in the herb. Some rhaponticum products are standardized to include only a specific compound, 20-hydroecdysone.

History/Ethnobotany

Rhaponticum is a long-living perennial (75–150 years) that has a history of use in Mongolian, Siberian, and possibly Chinese medicine. In Mongolian medicine, the root is used to treat people with respiratory, liver, and kidney diseases as well as fevers and severe sore throats. In Siberia, it is known as maral root, named after the maral deer that eat its roots. In Siberian folk medicine, this root was used to enhance physical and sexual energy, improve mood and concentration, and help people survive the cold and challenging climate of Siberia.



Rhaponticum

(Russian drawing, 1972, collection of David Winston)

Modern Uses

Modern studies of rhaponticum began in the Soviet Union in the late 1940s. Two researchers, E. Kushka and Y. Aleshkina, published an extensive monograph on this plant in 1955. It was listed as an official, state-recognized medicine in the ninth edition of the *State Pharmacopoeia of the Union of Soviet Socialist Republics* in 1961. It was recommended to enhance recuperation after illness, relieve tiredness, and promote physical and mental performance.

Soviet and Russian athletes have used and still use rhaponticum to improve athletic performance, endurance, and recovery from intensive training. Regular use of this herb promotes the building of muscle tissue, enhances the excretion of uric and lactic acid, and stimulates blood flow to the muscles and brain.

Workers exposed to extreme conditions (sailors, workers on arctic icebreakers, miners) showed increased resistance to cold, heat, noise, lack of sleep, and anxiety when taking this herb. It also helped to prevent stress-related sleep problems, weight loss, fatigue, depression, and poor job performance.

Other studies, in both animals and humans, have shown that rhaponticum enhances immune system function, helps stabilize blood sugar levels, has a protective effect on the heart and brain, and prevents hemolytic anemia (excessive destruction of red blood cells) associated with chemotherapy and radiation. It also enhances sexual functioning in men.

A 1995 Russian study found that taking four ounces of tea made from rhaponticum root four or five times per day dramatically helped relieve depression in recovering alcoholics.

Animal studies have shown that this herb can enhance memory and learning, lower LDL and VLDL cholesterol levels, reduce blood viscosity and blood pressure, and help prevent carcinogenesis (the onset of cancer).

Additional Information

A related Chinese species, *R. uniflorum*, also has been found to contain ecdysterones. In traditional Chinese medicine, the name *lou lu* refers to either *R. uniflorum* or a related plant, *Echinops latifolius*. The dried roots of these herbs are used for clearing heat (infections) and removing toxins.

They traditionally are used for relieving mastitis (breast infection), hemorrhoids, boils, and enlarged lymph nodes.

Dosage and Safety

incture (1:4): 40–80 drops, three times per day.

ecoction: Add 1–2 tsp. of the dried root to 12 oz. of water, decoct for 15–20 minutes, steep for an additional 40 minutes. Take 4 oz. twice per day.

apsules: Standardized rhaponticum is available (standardized to 5 percent ecdysterone). Take 2 capsules twice per day.

afety Issues: Avoid using rhaponticum in pregnancy because it has been shown to stimulate labor.

erb/Drug Interactions: Several Russian studies indicate that rhaponticum helps prevent the side effects of steroids.

Selected Research Studies

Effects on Leuzea Tincture and Leveton on Hormonal Immunity of Athletes (Azizov, Fulla, and Chubarova 1997).

A tincture of this herb and a standardized ecdysterone product made from this herb were found to restore normal immunity in track and field athletes undergoing intense physical training. Both medicines improved the production of IgG and IgA immunoglobulins that were suppressed by training and improved working capacity.

The Use of a Decoction of the Rhizome of *Leuzea Carthamoides* for Treatment of Alcoholics with Depressive States (Ibatov 1995).

In this study, previously referred to in this monograph, twenty-eight recovering alcoholics with depression had relief from the symptoms of their depression for up to two years. In addition, patients also noted improved digestion.

RHODIOLA

otanical Name: *Rhodiola rosea*

amily: Crassulaceae

ommon Names: Rose root, golden root, hong jing tian (Chinese)

taste/Energy: Sweet, slightly bitter, spicy, cool, dry

art Used: Root

ocation/Cultivation: Rhodiola is native to the northern circumpolar regions of Canada, Scandinavia, and Siberia. It also is found at higher elevations in the Alps, Pyrenees, and Carpathian Mountains in Europe. It now is being cultivated in Finland, Sweden, and Russia. It prefers dry, sandy soil, cool temperatures, and full sun.

afety Rating: * * *

roperties: Adaptogen, antidepressant, antioxidant, antiviral, immune system stimulant, nervine, mild central nervous system stimulant, antiarrhythmic (protects against irregular heartbeats), cardioprotective, and neuroprotective.

onstituents: Rhodiola contains rosavins (rosavin, rosin, rosarin), salidroside, and flavonoids (rodionin, rodionin).

History/Ethnobotany

Rhodiola has a long history of use in Tibet, Siberia, and Scandinavia. In Tibetan medicine, it is used to nourish the lung and treat lung problems such as coughing blood and pneumonia. It also is used to lower fevers, improve blood circulation, and enhance energy. The fleshy leaves of a related species, *Rhodiola wallichianum*, are used in Nepal as a poultice for wounds and burns.



Rhodiola

(From *Illustrated Flora of the Northern States and Canada*, vol. 2, by N. L. Britton and A. Brown, 1913)

Chinese emperors, who were always looking for the secret to long life and immortality, sent expeditions into Siberia to collect and bring back the plant. Siberians secretly transported the herb down ancient trails to the Caucasian Mountains, where it was traded for Georgian wines, fruits, garlic, and honey.

In Siberia, rhodiola was taken regularly, especially during the cold and wet winters, to prevent sickness. In Mongolia, it was used for the treatment of tuberculosis and cancer. In mountain villages of Siberia, a bouquet of rhodiola roots still is given to couples prior to marriage to enhance fertility and assure the birth of healthy children.

Rhodiola was first noted in the West by Dioscorides, a famous Greek physician. In his classic text, *De Materia Medica* (77 CE), he noted that it grew in mountainous Macedonia and that the root had a distinct, fragrant, roselike odor. Linnaeus, the father of modern botany, gave this plant its official Western botanical name, *Rhodiola rosea*. In his book, *Materia Medica* (1749), he mentioned that the herb grew in the Alps and in Lapland. He said that it was a styptic and astringent that was used for people with hernias, leucorrhea (vaginal discharge), dysentery, hysteria, and headaches.

Rhodiola was popular with the Vikings, who used it to enhance mental and physical endurance, and it was included in the first Swedish pharmacopoeia in 1755.

Modern Uses

An excellent review of the use of rhodiola was printed in *HerbalGram*, a publication of the American Botanical Council (Brown, Gerbarg, and Ramazanov 2002). The authors noted that since 1960, more than 180 studies on the uses, chemistry, and pharmacology of this herb have been published. A major reason that this plant was little-known in the West until the last ten years is that almost all of these studies were written in Russian, Swedish, German, or Chinese. Only recently have any of these studies been translated into English, thus making them available to Western researchers and clinicians.

The plant has been an official, accepted medicine in the Soviet (now Russian) pharmacopoeia since 1969, where it is listed as an adaptogen, nervous system tonic, and antidepressant. Rhodiola has been used for decades in the traditional medicine of Russia, Sweden, Norway, France, Germany, and Iceland.

Rhodiola is a cooling adaptogen; therefore it is less likely to cause overstimulation (nervousness or insomnia) that occasionally can occur when people are taking red Asian ginseng. It has significant benefits for the nervous system, and it has been shown to enhance alertness, reduce fatigue, and improve memory and depressed mental states.

I regularly use rhodiola for people with deficient (asthenic) depression, altitude sickness (used with cordyceps, reishi, and holy basil), and attention deficit hyperactivity disorder (ADHD) as well as to help people recover from head trauma injury.

Rhodiola also can act to prevent or treat immune depletion caused by overwork, excessive physical training, chemotherapy, or radiation therapy. In animal studies, it protected cells and organs against chemical and radiation damage.

Like all adaptogens, rhodiola has effects on various endocrine glands, and it helps balance blood sugar levels, decrease symptoms of Parkinson's disease, relieve muscle stiffness and spasms, and enhance male and female reproductive function. In men, it improves erectile dysfunction, and in women, it relieves amenorrhea and infertility caused by minor hormonal imbalances or stress.

In both animal and human studies, rhodiola has shown substantial benefit for the heart. It was able to prevent stress-induced heart damage and arrhythmias and improve the strength of the heart muscle.

Because of its broad-reaching benefits, I believe that using rhodiola as a

part of a clinical protocol for people with Alzheimer's disease, cancer, fibromyalgia, chronic fatigue immune deficiency syndrome, diabetes, and congestive heart failure makes very good sense.

Additional Information

Several other species from the *Rhodiola* genus are used in folk medicine. None of them contain the rosavins found in *R. rosea*, and they do not seem to have the same level of activity. Some species, such as *R. crenulata*, *R. fastigita*, *R. kirilowii*, *R. sacra*, and *R. sachalinensis*, have been tested in animal and in vitro studies and found to have radioprotective, hepatoprotective, neuroprotective, and antioxidant effects.

Dosage and Safety

incture (1:4): 40–60 drops, three times per day.

ecoction: Take 1–2 tsp. of the cut/sifted dried root and decoct in 8–10 oz. of water for 15 minutes, steep (covered) an additional 45 minutes. Take one to three cups per day.

apsules: Capsulated products are usually standardized to 3 to 5 percent rosavins and 1 percent salidroside. Take two to four per day.

afety Issues: Avoid using rhodiola in patients who are bipolar, manic, or paranoid. It can cause insomnia in sensitive people.

erb/Drug Interactions: None known.

Selected Research Studies

Acute *Rhodiola rosea* Intake Can Improve Endurance Exercise Performance (De Bock et al. 2004).

In this double-blind, placebo-controlled, randomized study, rhodiola was found to enhance exercise capacity in healthy young test subjects. Improvements were noted in muscle strength, speed of limb movement, reaction time, and attention span.

A Randomized Trial of Two Different Doses of a SHR-5 *Rhodiola rosea* Extract Versus Placebo and Control of Capacity for Mental Work (Shevtsov et al. 2003).

In this study, military cadets were given either a placebo or one of two differing doses of a proprietary standardized extract. Cadets in the two groups that received the rhodiola had significantly reduced levels of fatigue compared with those taking the placebo.

SCHISANDRA

Botanical Name: *Schisandra chinensis*

Family: Magnoliaceae

Common Names: Wu wei zi (Chinese), gomishi (Japan), omija (Korean), Chinese magnolia vine

Taste/Energy: Sour, sweet, salty, bitter and pungent, warm, dry

Parts Used: Fruit and seed

Location/Cultivation: *S. chinensis* is grown in Liaoning, Jilin, Heilongjiang, and Hebei provinces in China. Another species, *S. splenantha*, which is less effective, is grown in southern China and used as a substitute for *S. chinensis*.

Safety Rating: * * *

Properties: Adaptogen, antioxidant, anti-inflammatory, immune tonic, astringent, hepatoprotective, nervine, and expectorant.

Constituents: Lignans such as schisandrin B, gomisans, and schisandrol A are considered to be active constituents of schisandra. The berries also contain essential oils and vitamin C.

History/Ethnobotany

The Chinese name for schisandra is wu wei zi, which means “five flavors fruit.” According to Chinese medical traditions, schisandra berries have all five flavors (sweet, sour, bitter, pungent, and salty) recognized in that tradition. The peel and flesh are sweet and sour, the seed is pungent and bitter, and the whole fruit is salty. Because it has all of the tastes, it benefits the five yin organs: the liver, kidneys, heart, lungs, and spleen.

This herb was considered so useful that in the late sixteenth century, officials in the Hezhong prefecture (territory) sent large quantities of it to the emperor as tribute.



Schisandra

(Russian drawing, 1972, collection of David Winston)

In Japan, schisandra is known as gomishi and is used for people with coughs, weakness, excess phlegm, and “hood vertigo” (a feeling of congestion and constriction around the head). In Korea, it is called omija, and the Koreans use it very much like the Japanese. In Hong Kong, among Cantonese speakers, it is known as *ng may gee* and is used for people with dysentery, wheezing, jaundice, and spermatorrhea.

Modern Uses

In modern Chinese medicine, schisandra is used to “astringe the jing.” This means it is used to control diarrhea, frequent urination, excessive vaginal discharge, and premature ejaculation. Because it dries up excess fluids, it also is used along with astragalus and Chinese dogwood fruit to control excess sweating, night sweats, and menopausal sweating. Schisandra frequently is used when the kidneys are not grasping the lung qi. In Chinese medical theory, the kidneys help the lungs to fully inhale. When the kidneys are weak, the person has difficulty taking a full breath. Schisandra fruit, because of its anti-inflammatory and antiasthmatic effects, is very useful for people who have asthma with wheezing, wet coughs, and chronic obstructive pulmonary disorder. It also calms the shen and is effective for people with stress-induced palpitations, deficient

insomnia, anxiety, and bad dreams.

Years of research on this herb have found even more uses for it. It is hepatoprotective, helps regenerate hepatocytes, and increases hepatic glutathione, an essential liver antioxidant. In animal studies, it has been shown to provide significant protection against chemical- and drug-induced liver damage and to promote healing of existing damage.

Like other adaptogens, schisandra has very real effects on the nervous, immune, and endocrine systems. It has an unusual dual effect on the nervous system. It is a mild central nervous system stimulant that enhances reflexes, work performance, and mental activity. At the same time, it is calming and helps relieve anxiety and stress-induced asthma or palpitations. Schisandra can help prevent immune system depletion caused by stress. It also affects other aspects of endocrine function. For instance, female mice given this herb showed enhanced function of the ovaries and male mice produced more sperm.

The berries and/or seeds enhance endocrine system and nonspecific (endocrine-mediated) immune system function. The non-specific immune system is the part of the immune system that is most affected by stress and is inhibited by chronic anxiety, anger, depression, or fear. People who suffer from acute and chronic stress are more likely to catch colds or the flu and to develop immune deficiency conditions such as cancer or chronic fatigue immune deficiency syndrome.

Studies have found schisandra has an amphoteric (normalizing) effect on blood pressure, lowering elevated blood pressure and raising low blood pressure. It also is useful, along with bacopa, fresh oat extract, and rhodiola, for treating attention deficit hyperactivity disorder (ADHD) in teenagers and adults.

In Nepal, the fruit of the related *Schisandra grandiflorum* plant is eaten as food rather than as a medicine.

Dosage and Safety

incture (1:5): 40–80 drops, three to four times per day.

ecoction: Add 1–2 tsp. of the dried berries to 8–10 oz. water, decoct 5–10 minutes, steep 20–30 minutes. Take 4 oz. three times per day.

apsules: One to two 400–500 mg capsules, two to three times per day.

safety Issues: In Chinese medicine, tonic remedies like schisandra should not be taken by people with acute viral or bacterial infections such as colds, influenza, bronchitis, and pneumonia.

Herb/Drug Interactions: In animal studies, schisandra increased the effects of barbiturates. Because schisandra is hepatoprotective, it may prevent liver damage that can be caused by hepatotoxic medications such as acetaminophen and tetracycline.

Selected Research Studies

Biochemical Basis of the “Qi-Invigorating” Action of Schisandra Berry (Wu-Wei-Zi) in Chinese Medicine (Ko and Chiu 2006).

The authors of this in vitro study found evidence that schisandra enhances mitochondrial antioxidant status. They proposed that this effect offers generalized protection against environmental, emotional, and chemical stressors.

Effects of Heavy Physical Exercise and Adaptogens on Nitric Oxide Content in Human Saliva (Panossian et al. 1999).

In this placebo-controlled, double-blind study, athletes were given schisandra. Those that took it before exercise had increased levels of nitric oxide and cortisol in their blood and saliva, which is similar to levels in athletes who have undergone intense training. This correlates with increased performance. After training, the test subjects who took schisandra returned to normal levels of nitric oxide and cortisol much more quickly, showing the protective effects of this herb.

SHATAVARI

Botanical Name: *Asparagus racemosus*

Family: Liliaceae (lily family)

Common Names: Shatamuli, Indian asparagus root

Taste/Energy: Sweet, bitter, warm, moist

Part Used: Root

Location/Cultivation: Shatavari is native to tropical and subtropical regions of India, Southeast Asia, Malaysia, Africa, and northern Australia.

Safety Rating: * * *

Properties: Adaptogen, antibacterial, antispasmodic, aphrodisiac, demulcent, diuretic, immune tonic, lung tonic, galactagogue, and gastroprotective.

Constituents: Shatavari contains anti-inflammatory steroidal glycosides such as diosgenin, shatavarins I to IV, and sarsapogenin. It also has immune-stimulating polysaccharides.



Shatavari

(Reprinted with permission from *The Yoga of Herbs* by Dr. David Frawley and Dr. Vasant Lad)

History/Ethnobotany

Shatavari first is mentioned in two ancient religious texts, the *Rig Veda* and the *Atharvaveda*. It was noted as a powerful rasayana that enhances physical strength, maintains youthfulness, and improves memory and intelligence. The word *shatavari* literally translates as “she who has hundreds of husbands.” It has been used for millennia as an aphrodisiac and to enhance fertility in women (and men as well). The fresh juice of the plant’s roots is used in several classic formulas claimed to be sexual tonics.

A classic shatavari formula, *ghrita*, combines ghee, shatavari root juice, and milk. This is boiled together, and then sugar, honey, and pippali long pepper are added. A second preparation, *phalaghrita*, combines ghee, shatavari juice, milk, amla fruit, asafoetida, beleric myrobalans, chebulic myrobalans, Indian madder root, calamus root, and a dozen other herbs. This is cooked down to form a paste. Small amounts of this paste are taken

daily to cure infertility and diseases of the female genitalia as well as to increase the quantity and quality of seminal fluid.

The root infused in oil is used topically to treat skin diseases. The leaves can be infused in ghee and applied to boils and sores.

Modern Uses

In modern ayurvedic practice, shatavari still is used as a female reproductive tonic. Animal studies have confirmed that it enhances fertility and libido. Clinically, I especially find it useful for women with minor hormonal imbalances that prevent pregnancy and menopausal symptoms such as vaginal dryness, lack of libido, and dry skin.

Shatavari also is used as an adaptogen and as an immune system and nutritive tonic. It frequently is prescribed for people with fatigue, poor appetite, anemia (taken in milk with amla fruit and ashwagandha), cachexia, and chronic fatigue immune deficiency syndrome. Several animal studies have indicated that it may inhibit breast cancer and stimulate increased immune system response. There is a long history of this plant being used to increase milk flow in lactating women.

Because of its ability to stimulate prolactin and libido, it is likely that shatavari has a stimulatory effect on the pituitary gland. The pituitary is one of the endocrine glands that are part of the HPA axis, which is a control center of much of the body.

Shatavari, like its relative, asparagus, is a diuretic. Because it is a soothing demulcent (yin) tonic, it relieves urinary, respiratory, and gastric irritation. The root tea, powder, or tincture can be used to soothe urethritis (inflammation of the urethra), cystitis (inflammation of the bladder), gastric ulcers, irritable coughs, and hard to expectorate, sticky, mucus. In human and animal studies, this herb was found to help heal gastric ulcers and prevent aspirin-induced stomach irritation.

Dosage and Safety

tincture (1:5): 40–80 drops, three times per day.

decoction: Add 2 tsp. dried, powdered root to 8 oz. water, decoct 10–15 minutes, steep for 40 minutes. Take up to two cups per day.

capsules: Take 2–3 capsules^{*3} three times per day. In a powdered form,

up to 20 grams per day is used.

safety Issues: Those with diarrhea and abdominal bloating may want to avoid using shatavari or, at the very least, mix the herb with ginger so that it does not aggravate the condition.

Herb/Drug Interactions: Shatavari has been shown to prevent aspirin-induced stomach irritation and diarrhea caused by taking cisplatin.

Selected Research Studies

Randomized Controlled Trial of *Asparagus racemosus* (Shatavari) as a Lactagogue in Lactational Inadequacy (Sharma et al. 1996).

In this human study, shatavari increased milk production and milk flow in lactating women.

Adaptogenic Properties of Six Rasayana Herbs Used in Ayurvedic Medicine (Rege, Thatte, and Dahanukar 1999).

In this animal study, shatavari and five other common rasayana herbs were given to mice. This herb (as well as the other five) protected against a variety of biological, physical, and chemical stressors.

SHILAJIT

Botanical Name: *Asphaltum bitumen*

Family: None

Common Names: Shilajotu, mumiyo (Russian), mumie, momia, asphaltum

Taste/Energy: Bitter, slightly pungent, salty, warm. It smells like stale cow's urine.

Part Used: Pitch

Location/Cultivation: Shilajit is a blackish-brown substance that exudes from rocks in the high mountains of India, Tibet, Nepal, China, Russia, Afghanistan, Bhutan, China, and Kashmir.

safety Rating: * *

properties: Adaptogen, anti-inflammatory, antioxidant, hypoglycemic, immunomodulator, antiulcerogenic, inhibits allergic response.

constituents: Shilajit is composed of humus, various minerals, dibenzo-alpha-pyrones, and organic acids such as fulvic, humic, benzoic, and hippuric acids.

History/Ethnobotany

Shilajit is a tarlike bituminous substance that in hot weather oozes out of cracks in rocks. In ayurvedic tradition, this herbal/mineral compound is considered a rasayana.

Ancient texts describe four types of shilajit by color: red, yellow, bluish-grey, and black to brown. It is this latter type that is used in medicine. According to the *Charaka Samhita*, “There is no curable disease in the universe that cannot be cured by Shilajitu.” In traditional Indian medicine, it is used to enhance virility (used with ashwagandha) and for people with diabetes, anemia, ulcers, kidney stones, asthma, arthritis, anxiety, heart disease, jaundice, epilepsy, and gallstones.

The rediscovery of the power of shilajit is said to have been made by Himalayan villagers who were observing large white monkeys migrate to the mountains in the warm summer months. The monkeys were seen to be chewing a semisoft substance that flowed from between layers of rock. The villagers credited the monkeys’ great strength, longevity, and wisdom to the strange substance. They began to consume it themselves and reported many improvements in health.

The ancient Vedic text *Rig Veda* speaks about a mythical substance called *soma* and states that soma “has mountains and stones for its body” and “dwells within the mountainous rock where it grows.” Mountainous rocks are the “abode of soma,” and it is “plucked from between the rocks by mountain dwellers and brought to the priests-chemists who prepared the soma by washing and grinding and cooking.” Soma was considered the elixir of immortality, the secret substance used by alchemists to perfect both body and mind. This sounds like what we know to be shilajit.

A classic medicinal confection known as yogaraja was made by combining shilajit, prepared iron, iron pyrite, and silver, along with triphala, ginger, black pepper, pippali long pepper, plumbago root, and baberang seeds, with sugar and honey. This formula was used for people with anemia, tuberculosis, hemorrhoids, and weakness.

In Unani-Tibb (Greco-Arabic medicine), shilajit is known as *momia* or *mumijo* and is used internally as an antidote for poisons and to treat a wide variety of diseases. The *hakims* (healers) apply shilajit topically to swellings, arthritic areas, and bruises.

Modern Uses

There has been extensive research to discern what shilajit actually is. There are several theories, including one that says it is the remains of bacterial and/or fungal degradation of plants that are rich in resin and latex. Another theory suggests that it is created by mosses and liverworts that break down soil and rocks. Whatever the actual source, different locations produce shilajit with varying chemical compositions.

The material from the Himalayas is considered vastly superior to the material gathered in Russia or China. Modern research (mostly performed with animals) has confirmed many of the traditional uses of this substance.

Mouse studies have shown that shilajit is better than the drug metformin at reducing blood sugar levels and that when shilajit is combined with the drug Glibenclamide, a greater drop in blood sugar was noted than when using either of them alone. Shilajit also had benefits for people with problems involving blood lipids. It reduced total cholesterol levels and increased levels of healthy high density lipoproteins (HDL—good cholesterol). In clinical practice, the combination of triphala (which is composed of *Emblica officinalis*, *Terminalia chebula*, and *Terminalia bellerica*), gymnema, and shilajit is very effective for treating people with insulin resistant diabetes, hyperlipidemia, elevated triglycerides, and obesity.

A second animal study found that, taken over five days, shilajit given to mice increased their levels of dopamine, the neurochemical that helps you feel calm. At least in mice, it relieved anxiety and stress. One other study found that it also enhanced learning and memory in rats.

Further studies have shown that this substance can help prevent gastric and duodenal ulcers caused by aspirin and has benefit as an antiinflammatory in mice with arthritis.

A Russian study using mumie (a Russian variety of shilajit) for men with mild cases of benign prostatic hyperplasia found that it relieved their symptoms. Dr. Nikolai Volkov, a Russian researcher, has used it to enhance performance of Russian athletes and cosmonauts and has

published a number of human studies on the use of this substance; unfortunately they only are available in Russian.

Dosage and Safety

apsules: Take 1–2 capsules (of 500 mg) twice per day. In capsules, shilajit usually is mixed with other substances such as milk, honey, triphala, amla fruit, or gymnema, depending on its intended use.

afety Issues: Good-quality shilajit is processed by mixing the raw tar with water. It then is filtered, and the water is evaporated in the sun. This process is repeated six more times. Unprocessed shilajit can be contaminated with potentially toxic fungi. Shilajit contains substantial amounts of uric acid and should not be taken by people with gout, gouty arthritis, or uric acid calculi (small uric acid kidney stones).

erb/Drug Interactions: When shilajit is combined with metformin or glibenclamide, it enhances the medications' ability to lower blood sugar levels.

Selected Research Studies

Effects of Shilajit on Memory, Anxiety, and Brain Monoamines in Rats, Indian (Jaiswal 1992).

This animal study suggested that shilajit has nootropic (cerebralenhancing) effects and can relieve anxiety.

Effect of Shilajit on Blood Glucose and Lipid Profile in Alloxan-Induced Diabetic Rats (Trivedi et al. 2004).

This study helped confirm that the traditional use of this substance for people with diabetes was effective and pointed researchers toward possible new uses of shilajit for promoting healthier blood lipids.

8

Nervines: Complementary Herbs for Adaptogens

In our fast-paced, stress-filled world, adaptogens can provide significant benefits to help relieve the negative impact of constant worry, overwork, inadequate sleep, and unsustainable lifestyles.

It also is obvious that adaptogens alone will not make up for lack of sleep, poor diet, lack of exercise, and a host of other issues that are the basic contributors to poor health. Americans are overfed but undernourished. Obesity has become an epidemic in the pantry of plenty, yet in addition to our ever-expanding waistlines, we often are deficient in many nutrients, including magnesium, zinc, selenium, folate, vitamin D, omega 3 fatty acids, and even dietary fiber. Herbs are no substitute for healthier eating.

In addition, the average American gets slightly more than seven hours of sleep per night. In one study, it was stated that in 1910 the average person in this country slept nine hours per night. If this is accurate, it means most Americans are sleep deprived.

Adaptogens can help in this case, but more sleep is also required. A job sitting at a desk all day long and a regular lack of physical exercise can contribute to sleeplessness, obesity, insulin resistance, and poor circulation. Again, adaptogens may offer benefits, but regular exercise, both strength training and cardiovascular fitness, are essential for good health. There are many additional issues that contribute to illness, including smoking, drug use, excessive alcohol use, feeling isolated and alone, being spiritually malnourished, and exposure to indoor or environmental pollution. They are all risk factors for disease.

In addition to lifestyle and dietary changes, there are other herbs that can enhance the effects of adaptogens. First and foremost among these are the nervines. Nervines are nerve tonics, that is, calming herbs that are mildly relaxing without the overtly suppressant effects of sedatives. This type of

herb restores emotional balance and nourishes the nerves and nervous system. Nervines help calm anxiety, heart, or gastrointestinal tract symptoms that are caused by stress, mild sleeplessness, irritability, and white coat hypertension.

Some adaptogens also are used as nervines, including ashwagandha, eleuthero, jiaogulan, reishi, rhaponticum, rhodiola, and schisandra.

NERVINE HERB	BOTANICAL NAME	PLANT PART USED
Blue vervain	<i>Verbena hastata</i>	Herb
Chamomile	<i>Matricaria recutita</i>	Flower
Fresh milky oat	<i>Avena sativa</i>	Immature seed
Hawthorn	<i>Crataegus oxycanthoides, C. monogyna</i>	Berry, flower, leaf
Lemon balm	<i>Melissa officinalis</i>	Herb
Linden	<i>Tilia platyphyllos, T. cordata</i>	Flower, bract
Mimosa	<i>Albizia julibrissin</i>	Bark
Motherwort	<i>Leonurus cardiaca</i>	Herb
Passionflower	<i>Passiflora incarnata</i>	Herb
Skullcap	<i>Scutellaria lateriflora</i>	Herb
St. John's wort	<i>Hypericum perforatum</i>	Flowering tops

The monographs in this chapter were written by David Winston, and examples refer to his experiences in clinical herbal practice.

BLUE VERVAIN

Botanical Name: *Verbena hastata*

Part Used: Herb

Blue vervain, a little-known herb, is a nervine, anxiolytic (relieves anxiety), and antispasmodic. It is one of my favorite herbs for treating people with anxiety. I use it in combination with motherwort (*Leonurus cardiaca*), yuan zhi root (*Polygala tenuifolia*), and fresh oat (*Avena sativa*) for women with premenstrual syndrome (PMS) or menopausal anxiety.

Blue vervain also is used with ashwagandha and skullcap for people with nervous tics, restless leg syndrome, mild Tourette's syndrome (a tic disorder), and tardive dyskinesia (involuntary movements of the muscles and tongue). It especially is indicated for women who have premenstrual or menopausal anxiety or other issues related to hormonal fluctuations. It

can relieve menstrual cramps, vaginismus (painful spasm of the vagina preventing intercourse), mood swings and irritability from premenstrual syndrome, spastic bladder, and menstrual headaches.

The European species, *Verbena officinalis*, commonly is used in France and Germany for people with nervous exhaustion, myalgia, encephalomyelitis (which is called chronic fatigue immune deficiency syndrome in the United States), nervous headaches, convulsions, and agoraphobia.

Dosage and Safety

incture (1:2.5): 20–40 drops, up to three times per day.

tea: Add 1 tsp. dried herb to 8 oz. hot water, steep 15–20 minutes. Take 4 oz. three times per day.

safety Rating: * * ¹/₂

safety Issues: Avoid use during pregnancy. Excessive doses of this herb can cause nausea; always combine it with carminative herbs such as ginger, cinnamon, and orange peel.

erb/Drug Interactions: None known.

CHAMOMILE

otanical Name: *Matricaria recutita*

art Used: Flower

Chamomile flowers have a very long history of use as a medicine and beverage tea. In Europe, chamomile tea is consumed by millions of people each day as a relaxing tea for relief from anxiety, upset stomach, irritability, nervous headaches, insomnia, and irritable bowel syndrome.

Chamomile is an excellent herb for children due to its safety, efficacy, and pleasant taste. I use it mixed fifty/fifty with apple juice for children with attention deficit hyperactivity disorder (ADHD), growing pains, fevers with restlessness and irritability, teething pain, and nightmares. It also can help prevent or relieve colic in infants when it is taken by the

mother because the gas-relieving essential oils pass into her breast milk.

I also use chamomile to relieve premenstrual syndrome anxiety, menopausal mood swings, and menstrual cramps. It is especially useful for people whose moods are erratic—agitated one minute, fine the next, and then anxious ten minutes later.

Chamomile is one of my favorite remedies for stress-induced gastrointestinal symptoms; you get stressed out, and you develop diarrhea, nervous stomach, constipation, acid reflux, heartburn, bowel spasms, or hiccups. I combine chamomile with catnip, hops, or valerian for people with these conditions.

Roman chamomile (*Chamaemelum nobilis*) has similar uses to the better known common, or German, chamomile (*M. recutita*). German chamomile is better tasting and more useful for digestive upsets. Roman chamomile has a somewhat stronger antispasmodic effect.

Dosage and Safety

incture (1:2.5 or 1:4): 60–90 drops, up to four times per day. **Tea:** Add 1–2 tsp. dried flowers to 8 oz. water, steep 30–40 minutes. Take up to three cups per day.

safety Rating: * * *

safety Issues: There has been one reported case of a person drinking chamomile tea, having a severe allergic reaction (anaphylaxis), and dying. There have been other cases of people having less severe allergic reactions as well. Although this is a concern, it must be put into context. Thousands of people die every year from allergic reactions to peanuts, shellfish, and other common foods. Quite literally, there is someone, somewhere who is probably allergic to almost any food. Considering that hundreds of millions of cups of chamomile tea are consumed yearly, it only can be seen as a very safe herb.

Avoid taking chamomile and other flowering herbs from the Asteraceae family (feverfew, Roman chamomile, calendula, yarrow, boneset, and echinacea flowers) if you have severe ragweed pollen allergies. Because these plants are related to ragweed, there is a possibility that the pollen from them could cause an allergic reaction, as well.

Herb/Drug Interactions: None known.

FRESH MILKY OAT

Botanical Name: *Avena sativa*

Part Used: Immature seed

For one week out of the growing cycle of common oats, the immature oat seed is filled with white “milk.” At this time, the chemistry of this food herb changes, and if it is harvested quickly and made into a fresh tincture or glycerite (liquid extract made with herbs and glycerin), it becomes what I believe is the greatest nervous system trophorestorative. A trophorestorative is literally a food for a specific tissue or organ, one that nourishes the tissue, restoring normal function and vitality to the organ. Rolled oats, oatmeal, and oatstraw, all come from the same plant but do not have the same effect as the fresh, undried milky oat.

Fresh milky oat extract is a superb food for the nervous system. It is a slow-acting tonic remedy that calms shattered nerves, relieves emotional instability, reduces the symptoms of drug withdrawal, and helps restore a sense of peace and tranquility to overstressed, angry, and chronically upset people. This may sound too good to be true, but for more than 150 years, since it first was used by the Eclectic physicians, this simple herb has been used and continues to be used for just such problems.

In my clinical practice I use fresh milky oat (usually with adaptogens) for women with premenstrual syndrome, menopausal anxiety, and mood swings. I also use it for people who have nervous exhaustion or sexual neurasthenia (sexual weakness) caused by an excessive lifestyle and the agitation that comes from withdrawal from cigarettes, coffee, amphetamines, or prescription sleep medications. It is most appropriate for people who are emotionally “frazzled”—people who become oversensitive and hyperreactive to both physical and emotional stresses, cry at the drop of a hat, have emotional outbursts, shake, can’t deal with even small issues, and look like a deer in the headlights. In addition, people with chronic fatigue immune deficiency syndrome, multiple chemical sensitivities syndrome, and panic disorder all can benefit over time from this gentle, non-habit-forming food herb that has no real side-effects or drug interactions.

Dosage and Safety

incture (1:2): 80–100 drops, three or four times per day.

lycerite (1:2): 120–140 drops, three or four times per day.

safety Rating: * * *

safety Issues: Avoid use in patients with celiac disease (gluten intolerance).

erb/Drug Interactions: None known.

HAWTHORN

otanical Names: *Crataegus oxycanthoides*, *C. monogyna*

arts Used: Berry, flower, leaf

Hawthorn is a trophorestorative for the heart and circulatory system. It is frequently used for people with angina pain, mild congestive heart failure, and many other cardiovascular conditions as well as to treat or prevent atherosclerosis. Few people are aware that hawthorn also is an excellent nervine. In Chinese medicine, the heart stores the shen. Disturbed shen symptoms include anxiety, insomnia, bad dreams, palpitations, and irritability.

Interestingly enough, Candice Pert, PhD, author of the book *The Molecules of Emotion*, confirms the heart/emotion connection claimed in Chinese medicine. She shows that, based on her research, the heart is not just an organ to pump blood but also is an organ with receptors for a wide range of hormones and neuropeptides, which are body chemicals that affect emotions. In this case, although hawthorn is a “heart herb,” or perhaps because of it, it is effective for people with conditions caused by disturbed shen, especially attention deficit hyperactivity disorder (ADHD).

In my practice, I prefer to use a solid extract of the hawthorn berry for children and adults who can’t sit still, are fidgety, can’t stop talking, are disruptive, and have no ability to concentrate. It works and it has none of the side effects associated with the prescription medicines used to treat these conditions.

I also use a combination of hawthorn berry, leaf, and flower, mimosa bark, and rose petals to treat people with broken hearts, sadness, and grief (see Mimosa section).

Dosage and Safety

incture (1:5): 60–80 drops up to four times per day.

ecoction: Add 1–2 tsp. dried berries to 10 oz. water, decoct 15–20 minutes, steep $\frac{1}{2}$ hour. Take up to three cups per day.

olid Extract: $\frac{1}{4}$ – $\frac{1}{2}$ tsp., two to three times per day.

safety Rating: * * *

safety Issues: Hawthorn occasionally may lower blood pressure in people with hypotension (low blood pressure).

erb/Drug Interactions: There are theoretical concerns that hawthorn may increase the effects of digitalis-based medications such as digoxin (Lanoxin). Several recent studies have indicated that there is no such interaction. I have seen two cases in which hawthorn increased the effects of beta-blockers, so use them together cautiously.

LEMON BALM

otanical Name: *Melissa officinalis*

art Used: Herb

Lemon balm makes a delightful-tasting tea that can be drunk simply for pleasure or for its mood-elevating and nervine effects. Human studies have indicated that this lemony-smelling member of the mint family can enhance cognitive function, improve mood, and relieve some of the symptoms of mild to moderate Alzheimer's disease, especially irritability and forgetfulness. It also can be taken for stress headaches, to promote better sleep quality (used with chamomile and linden flower), for nervous stomach, for attention deficit hyperactivity disorder (ADHD), and most importantly, for seasonal affective disorder (SAD). For seasonal affective

disorder, I use equal parts St. John's wort and lemon balm as a tea or a tincture. This pairing of herbs is a simple but elegant example of the concept of "synergy" in herbal prescribing (see chapter 11). Each has a mild effect on people with seasonal affective disorder, but the two together are vastly more effective than either one alone.

Gather lemon balm before it flowers, when it has a delightful odor and mild, fragrant lemony taste. If gathered later, it will have a bitter taste. I frequently use lemon balm along with other pleasant-tasting herbs (chamomile, hibiscus, ginger, linden flower, and fennel seed) as "beverage medicines." They are safe, tasty, and have gentle, health-promoting effects for children, teenagers, pregnant or nursing women, and the elderly.

Dosage and Safety

tincture (1:2.5): 80–100 drops up to four times per day.

tea: Add 1–2 tsp. dried leaf to 8 oz. hot water, steep, covered, for 15 minutes. Take two to three cups per day.

safety Rating: * * *

safety Issues: Lemon balm in large amounts is a thyroxin inhibitor. Avoid using it for patients with Hashimoto thyroiditis and other hypothyroid conditions.

Herb/Drug Interactions: It is theoretically possible (although unlikely) that large amounts of lemon balm may act as an antagonist to the drugs Synthroid and Levoxyl.

LINDEN

Botanical Names: *Tilia platyphyllos*, *T. cordata*

Parts Used: Flower and bract

Linden flower also is known in Europe as lime flower. It makes a delightful-smelling and tasting tea. Linden flowers (actually, the medicinal part is the flower and a modified leaf known as a bract) have nervine, mild antidepressant, and blood-pressure-lowering effects. Although this herb

can be used as a tincture, the tea is the preferred form for use. Teas made from combinations of linden flower, lemon balm, chamomile, catnip, damiana, and other pleasant-tasting herbs are an enjoyable and effective way to reduce stress, irritability, mild anxiety, depression, and nervous headaches. Linden mixed with chrysanthemum flower and motherwort can reduce mildly elevated blood pressure. Linden mixed with hawthorn, lemon balm, and chamomile can calm children who or attention deficit hyperactivity disorder (ADHD).

A simple tea made from linden flower, chamomile, and fennel seed can relieve digestive upset, trouble sleeping, coughs, and agitation in children with fevers. For people with insomnia and bad dreams, mix lime flowers with passionflower, reishi, and lavender.

The American species of linden, *Tilia americana*, commonly called basswood, has flowers that look identical to linden flowers, yet it does not have the sweet aroma or medicinal activity of its European relatives.

Dosage and Safety

tea: Add 1–2 tsp. dried flowers and bracts to 8 oz. hot water, steep 10–15 minutes. Take up to three cups per day.

safety Rating: * * *

safety Issues: Allergies to the flower pollen are possible but have not been reported in the literature.

erb/Drug Interactions: None known.

MIMOSA

otanical Name: *Albizia julibrissin*

art Used: Bark

Mimosa is called *he huan pi* in Chinese medicine, which means “collective happiness bark.” In Chinese tradition, it is used for people with symptoms of disturbed shen, including bad dreams, irritability, anger, depression, and poor memory. Mimosa blossoms (*he huan hua*) also can be used to calm the shen and elevate mood, but they are weaker and less effective than the

bark.

Clinically, I use mimosa bark with hawthorn berries and rose petals for “broken hearts,” grief, and deep sadness. I have used this formula for almost ten years, and the results simply are astonishing. I have patients who have had significant recoveries from posttraumatic stress disorder, long-term unresolved grief, depression, and fear. I even know people who would not think of going to see their therapist without first taking this formula. They claim it allows them to feel more deeply, bring up unresolved issues, and to move quickly from sadness, tears, and pain to a place of emotional balance.

Dosage and Safety

incture (1:5): 40–80 drops, up to three times per day.

ecoction: Add 1–2 tsp. dried bark to 8 oz. water. Decoct for 10 minutes, steep 30–40 minutes. Take 4 oz. up to three times per day.

afety Rating: * * ¹/₂

afety Issues: Avoid using mimosa bark during pregnancy.

erb/Drug Interactions: None known, but use cautiously with prescription antidepressants.

MOTHERWORT

otanical Name: *Leonurus cardiaca*

art Used: Herb

Motherwort is the herb I most frequently combine with blue vervain for people with simple anxiety. I use two parts motherwort to one part blue vervain. This combination is also superb for women with premenstrual syndrome or menopausal irritability and mood swings. In addition to its nervine and anxiolytic effects, motherwort also has antispasmodic, blood-pressure-lowering, and cardiac tonic activity.

The name *motherwort* comes from this plant’s long history of use for women with reproductive problems, including menstrual pain, lack of

menstruation, ovulatory pain, and menstrual headaches. I also use it with passionflower for menopausal insomnia. With this type of insomnia, a woman has little or no difficulty falling asleep but routinely wakes up at 2 or 3 a.m. and can't get back to sleep. The combination of these two herbs with a possible addition of fresh milky oat or lavender can treat this problem effectively. Chinese motherwort (*L. heterophyllus*) is known as *yi mu cao*. It also is used for women with reproductive problems and for people with hypertension.

Motherwort is also of benefit for people with “white coat” hypertension—a case of “my blood pressure only goes up when I go to the doctor.” It used to be thought that this type of hypertension was relatively harmless, but in reality this stress-induced high blood pressure doesn't occur just when a person goes to the doctor. It also occurs when stuck in traffic, frustrated, having an argument, getting yelled at by the boss, or feeling that there is never enough time in the day to get everything done. In other words, anytime a person is anxious, upset, angry, or nervous, his or her blood pressure goes up. Motherwort, along with fresh milky oat, reishi, and rhodiola, can help moderate both stress and the rise in blood pressure that for many people comes with it.

One other use for this herb is for relieving stress-induced cardiac palpitations. If you recall the old television show, *Sanford and Son*, Fred Sanford (played by Redd Fox) would get upset, grab his chest, and yell, “Elizabeth, I'm coming. . . .” He could have used some motherwort.

Dosage and Safety

incture (1:2.5): 50–80 drops, three or four times per day.

ea: Add 1 tsp. dried herb to 8 oz. water, steep 15–20 minutes. Take 4 oz. three times per day.

afety Rating: * * *

afety Issues: Avoid using motherwort during pregnancy.

erb/Drug Interactions: None known, but caution should be used if combining this herb with blood-thinning medication.

PASSIONFLOWER

Botanical Name: *Passiflora incarnata*

Part Used: Herb

Passionflower herb is a nervine, sedative, antispasmodic, and anxiolytic herb. Of all of the nervines, it has the most defined sedating effect. The specific indication of the need for passionflower is circular thinking that causes insomnia. The person can't shut off his mind at night, and he lays in bed thinking about the day, yesterday, tomorrow, last month, next month, what if this, and if only that. I have had patients tell me it's like they have a talk radio station on in their heads and they can't find the off switch. Passionflower is the off switch. For menopausal insomnia, I give it with motherwort. For anxiety, it can be combined with fresh milky oat, blue vervain, and motherwort.

Passionflower also is used for stress-induced headaches, bruxism (teeth grinding, used with skullcap), and torticollis (wry neck). In human studies, it was shown to be beneficial for reducing drug withdrawal symptoms.

The fruit of passionflower can be made into juice or jellies. Passionflower gives canned "fruit punch"-flavored juice its characteristic taste. On a somewhat humorous note, passionflower frequently is added to "herbal male enhancement" products. The joke is that this herb has no benefit for stimulating libido or improving erectile function. Obviously, it was chosen because of its suggestive name, meaning the formulators either put it in thinking the consumer won't know what it really does or they themselves didn't really know. Either situation is a sad commentary on the state of much of today's herb industry. Passionflower's name derives from its supposed symbolic reflection of the Passion of Christ, not its ability to stimulate physical passion. The only benefit this herb may have on sexual functioning is for performance anxiety in men or vaginismus (painful spasm of the vagina) in women.

Dosage and Safety

Infusion (1:2 or 1:5): 60–80 drops, three to four times per day.

Tea: Add 1–2 tsp. dried herb to 8 oz. water, steep 20–30 minutes. Take 4 oz. up to four times per day.

safety Rating: * * *

safety Issues: None known.

Herb/Drug Interactions: Passionflower may increase the effects of prescription sedatives, antispasmodics, and anxiolytics; use them together with caution. Do not use passionflower with older type of antidepressants called monoamine oxidase inhibitors (MAOIs).

SKULLCAP

Botanical Name: *Scutellaria lateriflora*

Part Used: Herb

The history of this herb in many ways mirrors the history of herbal medicine in the United States. Skullcap first was introduced as a medicinal herb in the early 1800s and touted as a cure for hydrophobia (rabies). Notable physicians such as Dr. Lyman Spalding, the father of the *United States Pharmacopoeia*, and Dr. James Thacher wrote books recommending the use of this herb for treating people with the dreaded rabies. As the years went by, it fell into disuse by the orthodox medical profession (probably because it didn't really cure rabies) and only herbalists and sectarian physicians such as the Eclectics, physiomedicalists, and botanic practitioners continued to use the plant. Although it was no longer used for treating rabies, it was used for epilepsy, delirium tremens, nervousness, insomnia, torticollis (wry neck), muscle spasms, and other nervous conditions. As botanic practitioners disappeared during the twentieth century, so did the use and popularity of this herb.

The fairly recent increased interest in and use of skullcap also brought reports of problems. In the late 1980s, reports started to surface with cases of what was believed to be herb-induced hepatitis. These cases only occurred in people using multiple-herb formulas. At first the hepatic damage was blamed on mistletoe, a very strong and potentially toxic herb. Later skullcap was implicated, although there are no known hepatotoxic compounds in the herb. The answer to this riddle most likely lies in the problem of adulteration. At that time, much of the skullcap sold in the United States, the United Kingdom, and Europe was actually another

plant, germander (*Teucrium* spp.), also erroneously known as pink skullcap (real skullcap has blue flowers). As it turns out, germander has known liver-damaging chemicals and is definitely implicated in many cases of liver damage.

These events clearly show the importance of high standards of botanical identification needed to make sure a person gets the correct herb and the necessity of botanically identifying the herb or herbs in a product before publishing an article in a medical journal claiming it has caused harm or injury. For more than a decade after the herb industry became aware of this problem of adulteration and corrected it, no additional cases of “skullcap-induced” hepatotoxicity have occurred.

In clinical practice, I and thousands of other herbalists, naturopathic physicians, and even a few mainstream medical doctors use skullcap safely and regularly. It is indicated for stressed-out people who, when nervous or agitated, develop muscle spasms, nervous tics, or tight, painful muscles.

I also use skullcap for the spasms and tremors associated with tardive dyskinesia (involuntary movements of the muscles and tongue), restless legs syndrome, mild Tourette’s syndrome, and bruxism (grinding of the teeth). It even can offer some relief from the tremors caused by Parkinson’s disease. I also use skullcap for people with stress-induced headaches, petit mal seizures (used with lobelia, blue vervain, and gastrodia tuber), neck and back pain, and panic disorder (used with motherwort, blue vervain, yuan zhi, and pulsatilla).

For the most part, dried skullcap is inert, necessitating its use as a fresh tincture or freeze-dried product. Some herbalists use a separate species, *S. galerialata*, which they claim retains its activity even when dried.

Dosage and Safety

Tincture, Made from Fresh Herb, (1:2): 60–80 drops, up to four times per day.

Freeze-Dried Herb in Capsules: Two capsules, three times per day.

Standardized Extract: Two capsules, twice per day.

Safety Rating: * * *

Safety Issues: Only buy skullcap from reputable companies that fully

identify the raw material, either by careful visual and microscopic examination or by laboratory testing.

Herb/Drug Interactions: None known.

ST. JOHN'S WORT

Botanical Name: *Hypericum perforatum*

Part Used: Flowering top

St. John's wort has become known as the "depression herb." This is unfortunate, because although it is useful for some types of depression, it has a much broader range of uses. Stating that St. John's wort is the "depression herb," saw palmetto is the "prostate herb," or black cohosh is the "menopause herb" is good for companies selling these herbs, but it does a great disservice to the plant and the public.

Each herb has a personality—a range of uses, activities, and specific qualities that make it appropriate, or not, for each person. Real herbal medicine is more than using an herb to replace a pharmaceutical medication. Real herbal medicine uses diet, herbs, and lifestyle changes to prevent illness, relieve symptoms, and enhance normal physiological function. Truly getting to know the scope and function of each herb allows the practitioner to finely tune his or her recommendations to fit each distinct and unique patient. I believe you get the best results when you treat the patient rather than the disease.

When we apply this concept to St. John's wort, we find that the herb has been used since the time of the ancient Greeks to treat conditions of the nervous system. In the ancient herbals, it is recommended for "nervous griefs," melancholia, nerve pain, and numbness. In modern clinical practice, herbalists still use this wonderful plant for all of these conditions and more. When I was starting to learn about herbs in the late 1960s, I was taught that St. John's wort was effective not so much for depression as for nerve pain and nerve damage. It is used orally and topically (the topical preparation is known as hypericum oil) for people with Bell's palsy (paralysis of the facial nerve), trigeminal neuralgia, carpal tunnel syndrome, head trauma injuries, vulvodynia (vaginal pain), peripheral nerve pain, phantom limb pain, temporomandibular joint dysfunction, and

injuries to tissue that contains a profusion of nerves, such as the fingers, spine, nipples, or genitalia. Hypericum oil also is used topically for people with first-degree burns, painful bruises, muscle tears, insect bites, shingles, and painful puncture wounds.

St. John's wort was used for melancholia, which to the ancient Greeks meant that a person had an excess of the black bile. This caused fatigue, lethargy, indigestion, a dark outlook with a sense of emotional unease, and apathy. To a great degree this describes the type of depression for which St. John's wort is most effective—mild to moderate depression with a sour disposition and a “sour stomach.” Think of Mr. Scrooge in *A Christmas Carol*. He goes to work every day, he eats, he goes through the motions, but he has no joy in his life. Think of this herb as being useful for people who are in the dark, living a shadow life. It opens the “emotional windows” and lets the sunlight in.

As I mentioned in the Lemon Balm monograph, the combination of that herb and St. John's wort is very effective for people with seasonal affective disorder, which is caused by a lack of sunlight.

St. John's wort also can be used with rosemary and evening primrose herb (the herb, not the oil) for bilious, or hepatic, depression. This type of depression is synonymous with the description of melancholia given previously.

Dosage and Safety

incture (1:2 or 1:5): 40–60 drops, three to four times per day.

ea: Add 2 tsp. dried flowers/buds to 8 oz. hot water, steep 30–40 minutes. Take 4 oz. three to four times per day.

apsules: Take a capsule containing 350 mg of standardized extract three times per day.

afety Rating: * * *

afety Issues: In large doses this herb has been shown to cause sensitivity to sunlight in cows and in a few cases in people as well. Some people have suggested using hypericum oil as a sunscreen. This is a bad idea because it can increase sun sensitivity and cause severe sunburn.

Herb/Drug Interactions: St. John's wort is well-known for enhancing liver detoxification, which reduces blood levels of many medications. Do not take St. John's wort with warfarin (Coumadin), digoxin, protease inhibitors, organ transplant antirejection drugs such as cyclosporine, or chemotherapy agents such as irinotecan. Use caution when taking this herb with contraceptive pills. Only use St. John's wort with antidepressants known as selective serotonin reuptake inhibitors (SSRIs) under a physician's supervision.

St. John's wort is available in a low-hyperforin extract that shows little, if any, ability to increase drug metabolism. The ability to stimulate cytochrome P450 pathways (CYP3A4, CYP2D6, CYP2C19) is dose-dependent, and the traditional use of this herb in a formula with several other herbs is likely to reduce the possibility of drug interactions as well.

OTHER NERVINE HERBS

There are many other herbs that have nervine qualities. Many are little known or better known for other properties. I would like to mention briefly a few other nervous system tonics.

- **Catnip** (*Nepeta cataria*) is effective for children who have fevers with irritability and convulsions. In adults, I use it with chamomile for people with digestive problems that are caused or made worse by stress.
- **Damiana** (*Turnera* spp.) mostly is thought of as an aphrodisiac; in actuality it is not. Damiana is a nervine and mild antidepressant that is useful for people who have depression with loss of libido or elderly people with mild depression.
- **Wood betony** (*Pedicularis* spp.) is mostly used for people with occipital headaches and sore overworked muscles. Another herb often confused with wood betony is European betony (*Stachys betonica*). It is little used in the United States but commonly is used in the United Kingdom for people with nervous tension, mild anxiety, and stress-induced insomnia.

9

Nootropics: Complementary Herbs for Adaptogens

In addition to adaptogens and nervines, there is another category of herbal medicine that is both complementary and especially useful for enhancing emotional and mental well-being and promoting cerebral circulation. These herbs are called nootropics.

The word *nootropic* is derived from the Greek words *noos* (mind) and *tropos* (a bend) meaning “acting on the mind” and is pronounced “no-trop-ik.” These herbs, supplements, and pharmaceutical medications (for example, galantamine) are used to enhance memory, slow or prevent the onset of age or Alzheimer’s disease–related cognitive decline, reduce oxidative or ischemic damage to the brain, and improve mood.

The media have dubbed these substances “smart drugs,” especially the isolated phytopharmaceuticals such as vinpocetine, huperzine A, and grape seed extract. A better short definition would be “cerebral stimulants.” Researchers are looking carefully at nootropics to find effective and safe remedies to ward off mental decline in our increasingly aging population.

Table 9.1. Nootropic Materia Medica

NOOTROPIC HERB	BOTANICAL NAME	PLANT PART USED
Bacopa	<i>Bacopa monnieri</i>	Herb
Bhringaraj	<i>Eclipta alba</i>	Herb
Ginkgo	<i>Ginkgo biloba</i>	Leaf
Gotu kola	<i>Centella asiatica</i>	Herb
Lavender	<i>Lavendula angustifolia, L. latifolia</i>	Flower
Rosemary	<i>Rosmarinus officinale</i>	Herb
White peony	<i>Paeonia lactiflora, P. albiflora</i>	Root
Yuan zhi	<i>Polygala tenuifolia</i>	Root

The monographs in this chapter were written by David Winston, and examples refer to his experiences in clinical herbal practice.

BACOPA

Botanical Name: *Bacopa monnieri*

Part Used: Herb

Bacopa also is known as *brahmi* (there is confusion as to whether gotu kola or bacopa is the “true” brahmi) and water hyssop. It is a water loving-plant, usually found in tropical and semitropical wetlands, tidal zones, and shallow ponds. It is native to India and Sri Lanka and has been naturalized in Australia, Florida, the Gulf Coast, and southern California. In addition to being a nootropic, bacopa also is a nervine, mild anticonvulsive, antispasmodic, and antioxidant. It has a very long history of use in ayurvedic and Siddha medicine as a rasayana. Bacopa recently has been found to mildly stimulate thyroid function, and it can reduce seizure activity. There are several species of bacopa sold as flowering ornamentals. These plants are lovely but cannot be used in place of the “official species.”

Bacopa is used to promote memory and focus, relieve anxiety, and slow the progression of Alzheimer’s disease. It also is used for children and adults with attention deficit hyperactivity disorder (ADHD) (used with hawthorn, fresh oat, and holy basil). I frequently use bacopa for patients recovering from head trauma injuries (used with St. John’s wort, ginkgo, and holy basil).

In one remarkable case from many years ago, I had an opportunity to use a similar formula with great success. A friend’s wife came down with bacterial meningitis. Luckily, they caught it early enough. She was rushed to the hospital and given intravenous antibiotics. Her life was saved and she was discharged from the hospital, but she still had severe cognitive problems. Her ability to hear, see, speak, and smell all were seriously impaired. She was unable to hold a conversation, work, or read; even food had a strange taste. Her doctors had done all they could do and advised her that these troubling symptoms would hopefully resolve after six to twelve months. I was asked to help at this point and recommended several nootropic and adaptogenic herbs. In two weeks, she reported significant improvement, and after a month on this formula, she stated that she was “back to normal, and maybe even better than that.” This case, although remarkable in its quick and total success, is not all that unusual and shows

how herbs can offer significant benefits for many “untreatable conditions.”

Dosage and Safety

incture (1:5 or 1:2): 30–50 drops, three to four times per day.

ea: Add 1 tsp. dried herb to 8 oz. hot water, steep 40 minutes. Take 4 oz. three times per day.

afety Rating: * * *

afety Issues: Make sure that the bacopa used has been organically grown because commercially grown bacopa can absorb whatever pollutants (especially lead and nitrates) are in the water it grows in.

erb/Drug Interactions: In animal studies, bacopa has been shown to reduce hepatotoxicity and neurotoxicity caused by morphine. It also relieves “brain fog” caused by the antiepilepsy drug phenytoin (Dilantin).

BHRINGARAJ

otanical Name: *Eclipta alba*

art Used: Herb

Bhringaraj is used in ayurvedic medicine as a rasayana and has a reputation of increasing longevity. There are several possible reasons why it might enhance life span, including that it protects the liver against chemical and viral damage, improves digestion, and relieves infections of the upper respiratory tract. It also is believed to improve memory and capacity for learning. Animal studies have indicated that it has nervine and anxiolytic as well as nootropic activities.

A related species, *E. prostata*, is used in Chinese medicine for people with dizziness, blurred vision, ringing in the ears, and other neurological symptoms. Bhringaraj is popular as a general tonic for debility, and it is said to help preserve hearing, vision, and sense of smell, even into old age. Also, bhringaraj commonly is used as a hair rinse to keep hair black and prevent dandruff and hair loss.

Dosage and Safety

tincture (1:5): 30–40 drops, three times per day.

tea: Add 1 tsp. dried herb to 8 oz. hot water, steep 20–30 minutes. Take 4 oz. up to four times per day.

safety Rating: * * 1/2

safety Issues: Excessive doses may have a cardiac-stimulating effect.

Herb/Drug Interactions: None known.

GINKGO

Botanical Name: *Ginkgo biloba*

Part Used: Leaf

The medicinal use of ginkgo leaf is, for the most part, a modern invention. There has been little traditional use of the leaf and no research on using ginkgo in any form but the standardized extract. The active constituents (ginkgo flavones and terpenes) are not water soluble, so using a tea of this herb has little or no benefit.

I use the tincture for mild circulatory deficiencies and the standardized extracts for more serious cerebral or circulation deficits. There has been significant research on the use of the standardized product for people with poor cerebral circulation, degenerative effects of Alzheimer's disease and senile dementia, poor memory, hearing loss, tinnitus, erectile dysfunction, atherosclerosis, varicose veins, and peripheral neuropathies.

As mentioned in the Bacopa monograph, I use ginkgo for people recovering from head trauma injuries, and I frequently use it in formulas to slow or prevent glaucoma, cataracts, and diabetic retinopathy (used with blueberry, chrysanthemum flowers, and lycium).

Ginkgo can inhibit the activity of platelet-activating factors. These are inflammatory compounds that are associated with asthma, chronic obstructive pulmonary disorder, and respiratory allergies. Also, ginkgo can be used along with reishi, schisandra, and licorice to gradually reduce

inflammation of the respiratory tract.

In human studies, ginkgo not only delayed the progression of dementia but also had mild anxiolytic activity and was shown to help treat anorgasmia (inability to achieve orgasm) caused by antidepressant medication.

Dosage and Safety

incture (1:4): 40–60 drops, three times per day.

tandardized Extract: Consists of 24 percent ginkgo flavones, 8 percent terpenes. Take 60–120 mg twice per day.

afety Rating: * * ¹/₂

afety Issues: Avoid using ginkgo in patients with vasodilative headaches. It can occasionally cause headaches in sensitive people. There also are conflicting reports of ginkgo causing bleeding of the eyes.

erb/Drug Interactions: Some authors recommend against using ginkgo with blood-thinning medication. A recent study found no significant interaction between ginkgo and warfarin (Coumadin) in the usual dose levels. Still, it is a good idea to use caution if you are using ginkgo with such drugs and ask your doctor to schedule regular blood tests to be sure there is no interaction. Older reports claim that ginkgo has monoamine oxidase-inhibiting effects, but this information seems to be incorrect. In one study, ginkgo reduced anorgasmia in women taking antidepressant medications.

GOTU KOLA

otanical Name: *Centella asiatica*

art Used: Herb

Gotu kola is known as *kula kud* in India. It is sometimes also called *brahmi*, but there is a significant controversy as to whether bacopa or gotu kola is the true brahmi. Both are anxiolytics and nervines in addition to nootropics, and they are used as rasayanas in ayurvedic medicine.

Fresh gotu kola leaves are sold in markets in Thailand as a stimulant and afternoon “pick-me-up.” A drink called water pennywort juice, made with gotu kola juice, sugar, and water, also is used to enhance energy and concentration.

In clinical practice, gotu kola can be used for people with poor memory, head trauma injuries, anxiety, mental fatigue, and irritability. In animal studies, gotu kola has been shown to promote nerve development and has shown some mild adaptogenic effects by preventing the increase of cortisol and adrenaline levels. Gotu kola also is used as an anti-inflammatory for people with skin and connective tissue that is red, hot, and inflamed, which can be caused by rheumatoid arthritis, cellulitis, and psoriasis.

Dosage and Safety

incture (1:2): 20–40 drops, three times per day.

tea: Add 1 tsp. dried herb to 8 oz. hot water, steep 30–40 minutes. Take up to 4 oz. four times per day.

safety Rating: * * *

safety Issues: Use gotu kola cautiously during pregnancy. In high doses, it can cause headaches and palpitations. In sensitive people, the fresh leaf may cause contact dermatitis (skin rash).

erb/Drug Interactions: Gotu kola may increase the effects of barbiturates, sedatives, and analgesics.

LAVENDER

otanical Names: *Lavendula angustifolia*, *L. latifolia*

art Used: Flower

Lavender has a long history of use in cosmetics and perfumes and as a medicine. As a medicine, it is best known as a carminative for people with gas, nausea, and vomiting. Lavender also is a nervine, antidepressant, and a mild nootropic agent. Lavender essential oil can be used topically for

burns and fungal infections and as an antibacterial medication for cuts and wounds.

Lavender is one of the herbs I use to treat people with stagnation in the gastrointestinal tract or emotional stagnation. The most common emotional condition that fills this description is stagnant depression (see the Holy Basil monograph in chapter 7). It is a depression in which a person has had a traumatic experience that becomes the focus of his or her life. Everything comes to revolve around that event, with constant repetitive thinking about the experience. Lavender, rosemary, holy basil, and damiana all help to resolve this type of depression.

Lavender as a tea or its essential oil used in aromatherapy reduces difficulty falling asleep, promotes more restful sleep, and prevents nighttime waking, especially in the elderly. It also has benefit for people with nervous headaches, nervous exhaustion, mildly elevated blood pressure, and old age-induced anxiety. The flowers of this aromatic herb are rich in essential oils that have antioxidant and anti-inflammatory activities. When combined with rosemary, blueberry, and hawthorn, the flowers can inhibit the development of atherosclerosis, help prevent aneurisms, and delay depression and mental decline related to Alzheimer's disease.

Dosage and Safety

incture (1:5): 15–30 drops, three to four times per day.

ea: Add $\frac{1}{2}$ tsp. of the dried flowers to 8 oz. of hot water, steep, covered, 15 minutes. Take up to two cups per day.

afety Rating: * * *

afety Issues: Avoid using large amounts of lavender during pregnancy.

erb/Drug Interactions: None known.

ROSEMARY

otanical Name: *Rosmarinus officinale*

art Used: Herb

Rosemary is a well-known culinary spice used in Mediterranean cooking, especially with lamb and potatoes. It also has been used as long, if not longer, as a medicine. It has powerful antioxidant and anti-inflammatory activity and is used in Europe as a mild nervine, nootropic, carminative, and liver tonic. An old saying states that “rosemary is for remembrance.” According to a pamphlet published in 1607, rosemary “helpeth the brain, strengtheneth the memorie, and is very medicinable for the head.”

Modern herbalists use it for people with cloudy thinking, menopausal brain fog, liver headaches (pain behind the eyes), stagnant depression (used with holy basil, lavender, and/or damiana), and postural hypotension (low blood pressure with dizziness that occurs when standing up) and to prevent atherosclerosis.

Rosemary extract is a more powerful antioxidant than the common food preservatives butylated hydroxytoluene (BHT) or butylated hydroxyanisole (BHA). They can be used to preserve massage oils, ointments, and foods. The antioxidant compounds (flavonoids and essential oils) that are in rosemary extract also can help prevent oxidative diseases, including atherosclerosis, diabetic neuropathies, cancer, and arthritis. A few drops of the essential oil are used in shampoos and hair rinses to keep black hair black and prevent dandruff.

Dosage and Safety

incture (1:5): 20–40 drops, three to four times per day.

ea: Add 1/2 tsp. freshly powdered rosemary leaf to 8 oz. hot water, steep, covered, 15–20 minutes. Take up to two or three cups per day.

afety Rating: * * *

afety Issues: Avoid using rosemary in people with vasodilative headaches or in large doses during pregnancy.

erb/Drug Interactions: None known.

WHITE PEONY

otanical Names: *Paeonia lactiflora*, *P. albiflora*

Part Used: Root

White peony is a major blood (*xue*) tonic in Chinese medicine. It has analgesic, anti-inflammatory, antispasmodic, and nootropic activity as well as mild sedative effects. It frequently is used in traditional Chinese medicine to treat women with gynecological problems such as painful menstruation, erratic or abnormal uterine bleeding, fibroids, polycystic ovarian syndrome, and menopausal sweating. Because it builds the blood and yin, it enhances circulation and promotes cognitive function.

I use white peony to improve memory and reduce menopausal “brain fog.” It can help prevent dementia related to Alzheimer’s disease when used with bacopa, ginkgo, and other cerebral circulatory stimulants. White peony also has antispasmodic effects and can be used for people with spasms, cramps, and neurological symptoms such as headaches, high blood pressure, dizziness, seizures, and facial nerve pain.

Do not substitute domesticated, hybridized peonies for the Chinese peony (*bai shao yao*).

Dosage and Safety

Infusion (1:5): 30–50 drops, three times per day.

Decoction: Add 1/2–1 tsp. dried root to 8 oz. water, decoct 10 minutes, steep 40 minutes. Take up to 4 oz. three times per day.

Safety Rating: * * 1/2

Herb/Drug Interactions: There is a theoretical possibility that this white peony can increase the effects of antispasmodic, barbiturate, and anti-seizure medications.

YUAN ZHI

Botanical Name: *Polygala tenuifolia*

Part Used: Root

Yuan zhi, also known as Chinese Polygala, is an important remedy in Chinese medicine that has anticonvulsant, anxiolytic, and sedative as well

as nootropic effects. In traditional Chinese medicine, it is used to calm the shen and reduce anxiety, irritability, bad dreams, and insomnia.

I usually combine yuan zhi with blue vervain and motherwort for people with general anxiety disorder. For people with pent-up emotions and suppressed anger, I combine it with mimosa bark and holy basil.

Yuan zhi also is used to resolve “phlegm clouding the heart,” which describes a number of conditions such as schizophrenia, amnesia, Alzheimer’s disease, dementia, and the mental confusion caused by serious cardiac illness. In animal studies, a compound found in yuan zhi known as tenuifoliside B has been shown to have neuroprotective and cognitive-enhancing effects.

Yuan zhi is an active expectorant used for people with excessive mucus, and it can be used topically for people with boils, mastitis, and painful infections.

Dosage and Safety

incture (1:5): 20–40 drops, up to three times per day.

ecoction: Add $\frac{1}{2}$ tsp. dried root to 10 oz. water, decoct 10 minutes, steep 40 minutes. Take 4 oz. twice per day.

afety Rating: * * *

afety Issues: In people with gastric irritation, ulcers, and irritative lung conditions, use yuan zhi with caution. In some people with sensitive stomachs, this herb can cause nausea or vomiting. Avoid using it during pregnancy.

erb/Drug Interactions: Yuan zhi can increase the effects of anxiolytic, sedative, and anticonvulsant medications.

OTHER NOOTROPIC HERBS AND SUPPLEMENTS

Several other herbs and supplements have been reported to have nootropic effects.

- **Butterfly pea** (*Clitoria ternata*) is used in ayurvedic medicine for its laxative, diuretic, and demulcent activities. In animal studies, this herb also has shown the ability to enhance memory and reduce anxiety. Because these are not traditional uses for this herb, further studies are needed in humans to confirm its effectiveness.
- **Licorice** (*Glycyrrhiza glabra*, *G. uralensis*), which was discussed under adaptogens, has been shown in several animal studies to improve memory. Researchers have speculated that its anti-inflammatory and antioxidant effects, as well as possible promotion of cholinergic transmission in the brain, are the reasons it shows this benefit.
- **Huperzine A** is extracted from the Chinese club moss (*Huperzia serrata*). It is one of several highly concentrated extracts derived from plants that also are being touted as nootropic supplements. This substance crosses the blood brain barrier, and it inhibits the actions of acetylcholinesterase in the brain for up to three hours. Acetylcholinesterase breaks down the neurotransmitter acetylcholine, which promotes the transmission of nerve impulses. Substances that have temporary AChE-inhibitory effects are used to treat Alzheimer's disease and myasthenia gravis (a neuromuscular disorder). In animal studies, this substance has been shown to have neuroprotective effects, and to prevent nerve damage caused by pesticide poisoning. Huperzine A is a powerful substance that can interact with numerous prescription medications, so it only should be used under a physician's supervision.
- **Vinpocetine** is a second plant derived extract that is being used to enhance memory. It is extracted from the common or lesser periwinkle (*Vinca minor*). The periwinkle herb itself has been used to improve cerebral blood flow and treat vasoconstrictive headaches. Vinpocetine is stronger than the herb and has been recommended for people with Alzheimer's disease and other conditions that reduce blood circulation to the brain. This herbal "drug" can interact with some medications, especially warfarin (Coumadin), so it only should be used under a doctor's supervision.
- **Acety-L-carnitine** is a safe supplement that has neuroprotective effects. Various human and animal studies have shown conflicting results as to the benefits of this supplement in treating people with Alzheimer's disease and other age-related dementias. Some studies

have indicated that it may have modest benefits, while in others it has failed to improve memory. Acety-L-carnitine does help prevent diabetes-related erectile dysfunction and peripheral nerve pain and damage caused by diabetes (used with cinnamon and alpha lipoic acid).

- **Grape seed extract** (*Vitis vinifera*) is a powerful antioxidant that can help prevent atherosclerosis, arthritis, and age-related memory loss. Studies of this substance have shown benefits for patients with hypertension. It improves wound healing, prevents varicose veins and degenerative eye problems, and has anti-inflammatory and antiallergy effects. There are no known drug interactions for grape seed extract, and it has little in the way of adverse effects.

Part Three



Herbal Adaptogens in Use

10

Clinical Use of Adaptogens

Adaptogens are extremely well suited to be used to enhance physical and emotional well-being and to prevent disease. They also can be used in many protocols to treat disease as well.

Although taking an adaptogen by itself is unlikely to be curative for most serious illnesses, using adaptogens as part of a treatment plan can speed up a patient's recuperation, reduce inflammation and oxidation, normalize or enhance immune system response, promote restful sleep, support endocrine re-regulation, and relieve psychological and emotional stress.

Coauthor David Winston says that he wouldn't think of working in his clinical practice with patients who have autoimmune diseases, immune deficiency conditions (cancer, chronic fatigue immune deficiency syndrome, fibromyalgia), depression, anxiety, allergies, infertility, erectile dysfunction, type 2 diabetes, and a host of other health problems without using adaptogens.

Roy Upton, LAc, RH(AHG), herbal educator, clinician, and editor of the *American Herbal Pharmacopoeia and Therapeutic Compendium*, echoes this sentiment when he says that "In my opinion, everyone who cares about their health and wants to help counter the stress of modern civilization and environmental chemicals should be taking adaptogens."

CASE REPORTS

The following case reports, clinical anecdotes, and ideas come from David Winston's case files and from the files of many of the top herbalists and naturopathic physicians in the United States, Canada, and the United Kingdom.

From David Winston's Case Files—Poor Sleep, Aching Joints

This case involves a woman in her mid-fifties who complained of poor

sleep, mild anemia, chronically aching joints, and irritable bowel syndrome.

Ms. E.'s blood work had come back "normal." She ate a very healthy diet, took appropriate supplements, exercised regularly, and was in a happy marriage. Her stress level was fairly low, but her increasing health issues were making her "feel old." After making some minor changes to her diet and supplement regime, I gave her an herbal formula that included adaptogens (amla, ashwagandha, rhodiola), anti-inflammatory herbs (wild yam root, kudzu root), and nervines (catnip, motherwort, linden flower).

After two weeks on this formula, Ms. E. reported that her painful joints and sleep quality had improved. After several more weeks, most of the joint pain was gone. She stated that she was sleeping less (seven-and-one-half to eight hours instead of more than nine hours per night) but waking feeling more refreshed and energetic. She also experienced less nighttime waking, and when she did, it was much easier to get back to sleep. After six weeks, her irritable bowel symptoms became less noticeable, and after four months on the formula, her alternating diarrhea and constipation were mostly a thing of the past. Now she only has a flare-up when under extreme stress (for example, a visit from her in-laws), and she mentioned that it took more to "really get her going and make her crazy." Although it is a good idea to change a formula every four to six months, Ms. E. still takes her adaptogens and nervines, and she has seen first hand what a difference they can make.

From Christopher Hobbs' Case Files—American Ginseng for Enhanced Health

Christopher Hobbs, LAc, RH(AHG), is the author of eighteen books on herbal medicine. He is very well respected in the herbal, Oriental medicine, and mycological communities as a practitioner and educator.

Hobbs says that after recommending adaptogens for years and experimenting with many himself, his favorite is American ginseng.

I would have to say that it is on the top of my short list of all-time favorite herbs, period. I use it daily myself and have seen many amazing effects from it. It is hard to give a case history because I'm always recommending so many different things. But after twelve years

of clinical work as a licensed practitioner, I have seen definite effects based on many patients (and myself) starting and stopping the herb throughout a course of treatment and clearly seeing results. A very decided energy increase is seen many times, and not the jittery, shallow kind of energy that comes from caffeine, but more like tapping into a deep wellspring of energy. I've noticed a number of times that mental clarity and mental performance is enhanced as well as increased physical (sports) performance. I can confirm this myself after three-and-one-half years of difficult undergraduate science classes. I account for some of my academic success because of the steady use of American ginseng.

Americans are often yin deficient, and this is my top herb for nourishing the yin energy. It is especially useful for chronic liver and heart yin deficiency, where few other herbs can suffice. So, it is effective for treating adrenal burnout, for liver support (in patients with hepatitis), asthma, COPD, and chronic inflammatory lung conditions.

From Amanda McQuade Crawford's Case Files—Arthritis

Amanda McQuade Crawford, MNIMH, RH(AHG), is an herbalist who trained in Great Britain and is now living and practicing in California. She is the author of *The Herbal Menopause Book* and *Herbal Remedies for Women*. She is a founding member of the American Herbalists Guild and maintains a very busy clinical practice.

Crawford was treating a healthy eighty-one-year-old man for arthritis. He had some joint deterioration but X-rays and blood work supported his physician's diagnosis of moderate to severe osteoarthritis with no added concerns. He was taking no medications for the arthritis. However, Crawford's usual herbal anti-inflammatories and antirheumatics weren't working.

Over several visits we worked methodically through the usual supplements and nutritional protocols. He ate well; digestion presented no problem. Asking myself to reconsider the man, not his presenting complaint, I reflected on our frequent discussions about his emotional health. Though he enjoyed time with friends, he was suffering through a highly stressful family tragedy. After our next appointment, I dispensed ashwagandha, Asian ginseng, eleuthero, and urtica as a combination of 1:2 tinctures, in descending order, keeping in mind reduced dosage ranges of each because of his age. But he never did what I asked. He drank two tablespoons diluted in a "tall" glass of

water the first day and took the same over the course of a second day.

He phoned me at 8 a.m. the third day, saying he had already been up since six, hiking one of our less strenuous canyon trails in the Ojai foothills. No joint pain, no stiffness. However, he was skipping “like a lamb” and dancing. He demanded to know why I hadn’t given him the miracle arthritis cure before. On my request, he limited his dose to 2 ml in water three times a day. I sent him back to his GP to make sure he wasn’t overdoing the tincture and thus feeling no pain but perhaps damaging vulnerable joints. His range of motion on exam had improved a little, but swelling and stiffness were both reduced. The doctor and the patient also monitored his sleep patterns, heart health, C-reactive protein and other markers, and joint health. The joints looked about the same after ten months of feeling “on top of the world,” though hiking mainly in the rolling foothills. He continues to thrive and plans to stay on the adaptogens indefinitely.

From Alan Tillotson’s Case Files—Shilajit for Dysentery

Alan Tillotson, PhD, RH(AHG), is a brilliant ayurvedic-trained herbalist and the author of *The One Earth Herbal Sourcebook*.

There are situations where adaptogens do more than relieve minor health problems. In this real-life story, Tillotson tells how one of the greatest Nepali traditional doctors saved his life with the adaptogen shilajit:

Here is my own case history. In 1976, I was trekking in Afghanistan and contracted severe amoebic dysentery, compounded by being a diabetic. I began to rapidly lose weight, and was down from my normal 185 pounds at six feet three to 165 in less than a month. Then I continued my travels on to Nepal, because I had heard of this ayurvedic physician, Dr. Mana (Vaidya Mana Bajra Bajracharya). However, it was a few weeks before I could get to him. When I saw him, he gave me medicine for the dysentery, which calmed down in a few days. But I was staying in a hotel, and had a skin puncture, and developed blood poisoning, and my weight began to again drop further, the diarrhea returned, and I finally was down to 125 pounds when I got back to see Mana and could hardly walk from the motorbike (Nepali cab) to the clinic—fifty yards.

At that point he gave me a strong-smelling black pill, along with a diet and more dysentery medicine, and told me I was close to death, that my

heart may give out from the sixty-pound weight loss and nonstop diarrhea. As soon as I began the new tonic, my energy rapidly came back, perhaps 30 percent in a week, and I was on the mend. My weight came up to 150 pounds in the next two months, and I began my study with him. The medicine he gave to me was shilajit rasayana (tonic), a compound about 50 percent shilajit, 30 percent triphala, and a number of other minor herbs. I am certain that if it did not save my life, it certainly restored my devastated health much more rapidly than could have conceivably occurred otherwise.

From Kathy Abascal's Case Files—Addiction Recovery (Smoking Cessation)

Kathy Abascal, JD, RH(AHG), is the coauthor of *Clinical Botanical Medicine* and the author of *Herbs & Influenza*.

Adaptogens and nervines are important supportive therapies for patients experiencing drug withdrawal regardless of whether they are quitting legal habits such as cigarettes, alcohol (do not use alcohol-based tinctures for alcoholics), or coffee or quitting illicit drugs such as cocaine, ecstasy, or amphetamines. Quitting and withdrawal symptoms are still going to be difficult, but adaptogens and nervines can make the difference between success and failure. Abascal also recognizes the importance of this type of herb in addiction recovery:

I pretty much always incorporate them [adaptogens] and always find them highly useful. The one instance where I think we forget to use adaptogens is in smoking cessation. Quitting smoking is always difficult. Most people make it through the physical withdrawal period with the use of appropriate nervines and pure resolve. But people smoke as a way of coping with stress, and they need a new way to handle their triggers if they are going to remain nonsmokers. Adaptogens help change how they react to stress. I find the adaptogenic effect becomes more noticeable four to six weeks into not smoking, which is about the time that most folk's resolve melts away. In addiction, adaptogens often express themselves by making people more inclined to make positive changes for themselves without as much effort. Explaining why they are taking the adaptogen helps people understand that smoking is more than an addiction to nicotine. It makes them aware that there are tools to help them with the more

difficult problem of finding a way to cope with the stress in their life.

From Chanchal Cabrera's Case Files—Autoimmune Disease (Polymyalgia Rheumatica)

British-born herbalist Chanchal Cabrera, MSc, MNIMH, RH(AHG), teaches in the botanical medicine program at the Boucher Institute of Naturopathic Medicine and practices near Vancouver, British Columbia. She is the author of *Fibromyalgia, a Journey Toward Healing*.

This patient was a sixty-four-year-old woman with the autoimmune disease polymyalgia rheumatica. Her symptoms were being controlled with prednisone, but she was very concerned about the long-term effects of this medication on her bone density. Cabrera carefully worked with the patient on her diet and lifestyle issues and gave her a complex set of herbal formulas. The first, neurofort tea blend, combined nervines such as skullcap, blue vervain, St. John's wort, chamomile, and fresh milky oat with nootropic and inflammatory herbs such as rosemary and gotu kola. A tincture combined circulatory stimulants (prickly ash, cinnamon, ginger) with anti-inflammatories (turmeric, wild yam), analgesics (kava, Jamaica dogwood), and adaptogen immune modulators (licorice, astragalus). The patient also was given some supplements (fish oil, bromelain) and an emergency pain formula. Over a period of a year, she slowly was weaned off the prednisone until she was drug- and symptom-free, which continues to this day.

From Mary Bove's Case Files—Autoimmune Hyperthyroidism (Graves' Disease)

Mary Bove, ND, MNIMH, is a midwife, naturopathic physician, and herbalist who trained in the United Kingdom, and at the National College of Naturopathic Medicine in Portland, Oregon. She has a very busy practice in Brattleboro, Vermont, and is the author of *The Encyclopedia of Natural Healing for Children and Infants*.

Kay, thirty-four years old, a new mother of just seven weeks, had recently been diagnosed with autoimmune hyperthyroidism, known as Graves' disease. Kay had been experiencing a rapid pulse, heart palpitations, anxiety, insomnia, and night sweats since a week or so after her baby girl was born. She was breastfeeding her new baby and was not interested in using the treatments offered to her by the endocrinologist. She came to Bove to consult about her options for managing her condition with natural medicines.

Kay had a normal pregnancy and delivery. During her pregnancy, she

reported chronic problems with vaginal yeast. Since she had started breastfeeding, she had experienced yeast in her nipples and thrush in her baby's mouth. She was put on a low-sugar diet that excluded processed-grains and was given some herbal medicines to discourage yeast growth. Kay was given an herbal formula of ashwagandha, astragalus, nettles, lemon balm, and motherwort. Along with the herbs, she and Bove discussed ways for her to manage the stress in her life, as it was not going away. She got back to her yoga routine and found ten minutes a day for visualization work on seeing her thyroid slow down. After several weeks of taking the formula, Kay began to notice her pulse rate was slowing down and her heart palpitations had diminished significantly. She continued to improve over the next several months until at the three-month mark she repeated her lab tests. Kay's lab values were normalizing, along with diminished symptoms and a resolution of her yeast problem. Kay continued with the herbal formula for six more months until she had normal levels of thyroid hormone. At which time, she was put on a smaller dose to maintain support for her endocrine and immune systems.

From Mary Bove's Case Files—Low White Blood Cells (Leucopenia)

Carol, a fifty-seven-year-old woman, had a history of chronic low white blood cell counts, known as leucopenia. She reported having seen this in her blood work for the last ten-plus years. She had been to see several specialists over the years with little insight into the reason for the low count and had just become accustomed to this. Carol was generally healthy, exercised daily, ate a whole-foods diet, took her daily vitamins, liked her job, and loved her family. She came wanting to discuss her recent bone density test result of osteopenia. While reviewing her blood work, she mentioned her history of low white blood cells. Carol was prescribed a formula of four powdered herbs: reishi, shiitake, maitake, and cordyceps, at two grams of powder daily. After six weeks, she repeated her blood test. Not only had her white blood cell count risen, it had normalized for the first time in over ten years.

From Christopher Hedley's Case Files—Multiple Symptoms

Christopher Hedley, RH(AHG), is one of the most respected herbalists in England. He is a clinician, educator, and the coauthor (with his wife, Non Shaw) of *Herbal Remedies: A Practical Beginner's Guide to Making Herbal Remedies in the Kitchen*.

Hedley used a formula containing an adaptogen (eleuthero), nervines (motherwort, hawthorn, St. John's wort, linden flower), a nootropic

(ginkgo), and several other herbs (saw palmetto, prickly ash, and mistletoe) for a sixty-three-year-old man who had a lack of energy, headaches, mild Parkinson's disease, erectile dysfunction, hypertension, constipation, and the residual effects from a stroke eight years earlier as well as a cardiac bypass a year prior. He was taking multiple pharmaceutical medications and had a poor diet. This patient was most concerned about his inability to have a sex life, and after only two weeks on this formula noted "slight signs of life in the reproductive system." After two more months, his constipation improved and his sex drive was erratic but no longer nonexistent. This patient continued on this formula for another six months, stating that he found the herbs "helpful." His statement was the epitome of British understatement, but he was exceptionally punctual in asking for refills of his formula, saying that it was important that "he could have some more."

From Thomas Avery Garran's Case Files—Astragalus for Bedsores

Thomas Avery Garran, LAc, is a clinical herbalist and acupuncturist. He is the chair of the Department of Herbal Medicine at the Institute of Clinical Acupuncture and Oriental Medicine in Honolulu, Hawaii.

Garran tells of the case of an eighty-six-year-old male who had been bedridden for some ten years due to an unknown paralyzing pathology. He was called in to help with the man's constipation, but he also was able to help heal bedsores as well. As Garran recounts the story:

The reason I was called in was to try to help with his constipation, but when I arrived at the patient's home I was made aware of significant problems with bedsores. Several were larger than a silver dollar. Many things had been tried, primarily using biomedicine, and the dressing was generally changed twice a day. At first I was primarily giving him an internal formula for his bowels, treating him with acupuncture, and trying simple external therapies. Although there was marked improvement, they were not healing sufficiently. When he began to move his bowels regularly (about two weeks), I added astragalus to the prescription. At first it seemed to help only a little, but when I increased the dosage to nine grams a day (in three separate three-gram doses, given as a 4:1 powdered extract), there was a very marked increase in the granulation. At this point there was a renewed faith that the ulcers could heal, and external therapies were continued with three dressing changes per day. Within one month the ulcers were

completely healed.

From Kevin Spelman’s Case Files—Chronic Fatigue and Depression

Kevin Spelman, RH(AHG), is a clinical herbalist and the chair of the Clinical Division in the Masters Degree Program in Botanical Medicine at Tai Sophia Institute in Laurel, Maryland.

A thirty-seven-year-old woman was running a major company involved in health care services. She complained of chronic fatigue and depression. She was a pleasant, well-groomed woman, clearly anxious, who stated that she didn’t have enough time to eat and had little to no appetite. The majority of her food intake was from fast-food restaurants. She was extremely driven to increase the company’s business and had been working at least twelve-hour days for about three years.

Spelman gave her a tincture combination of ashwagandha, licorice, and reishi. After two weeks, she stated she was amazed at the increase in her energy level; she even had enough energy to cook for herself when she got home late in the evenings from a fourteen-hour workday. She also noted that her staff had noticed a significant difference in her mood and insisted that she take her herbs and come for her follow-up appointment. After another three weeks, she was becoming aware of a sense of well-being and calmness that she had not even been aware of losing.

From Jill Stansbury’s Case Files—Multiple Conditions

Jill Stansbury, ND, is a multitalented musician, artist, and philosopher as well as a prominent naturopathic physician and the chair of the Botanical Medicine Department at the National College of Naturopathic Medicine in Portland, Oregon.

Stansbury uses adaptogens in many ways, including the following:

I often use adaptogens (ashwagandha, Asian ginseng, eleuthero, rhodiola) for perimenopausal women with stress symptoms, insomnia, and anxiety and emotional disturbance. I expect to see results within a week or so. I also use adaptogens long-term for those with chronic fatigue syndrome—at least six months to a year of treatment, and I expect to see some sort of improvement within several weeks, increasing as time goes on.

For “male menopause” or andropause when there is a loss of stamina, muscle mass, libido or sexual function, and emotional stability (“crotchety old man syndrome”), I use adaptogens over a period of many months.

For those who catch every cold going around and when simple colds tend to become bronchitis, sinusitis, or other more serious complications that can linger for many weeks, I use adaptogens for three to six months, especially prior to the winter cold and flu season.

For those who find it hard to concentrate, complain of a loss of mental focus, and are easily flustered by everyday little stressors, I use adaptogens for several months, expecting to see improvements in under a month.

From Bill Mitchell's Case Files—Debilitated Nervous System and Increased Energy

The late William (Bill) Mitchell, ND, was one of the most respected naturopathic physicians in North America. He had a busy practice in Seattle, Washington, and was one of the founders of Bastyr University in Kenmore, Washington.

In his book, *Plant Medicine in Practice*, Mitchell mentions two favorite formulas using eleuthero. The first combines one part eleuthero with two parts fresh milky oat tincture. He recommends thirty drops of this mixture, four times per day, for people whose nervous systems are debilitated after illness or injury. The second formula combines two parts eleuthero with one part licorice and one part American ginseng. Mitchell suggests sixty drops of this formula for increasing energy.

Mitchell is not only a superb physician but he also is a philosopher and wise man. He mentions that he regularly tells patients that “the best way to adapt to the increasingly stressful environment is to clean up one’s own environment and to get involved in nonviolent ecology.” He suggests finding projects sponsored by the Arbor Society, the Sierra Club, and local community-supported agriculture farms . . . and tells patients to get involved, make a difference, and feel better!

11

Adaptogenic Herbs in Combination

There is an empirical maxim that says if one superior herb is good, more than one is better. Throughout the history of herbal medicine, the use of multiherb formulas rather than single herbs (simples) has been the more common practice. Single-herb therapy occurs in folk traditions and as home remedies, but virtually all traditional systems of herbal medicine rely on complex and well-thought-out formulas.

Unlike classic homeopathy, in which a single remedy is matched to the multitude of symptoms that a patient has, most herbalists create formulas that attempt to match a patient's complex symptom pattern. Some herbs may treat the major symptoms while others enhance absorption or improve circulation, digestion, or the quality of sleep.

One important consideration when using herbal formulas is the complementary and synergistic effects of combining certain herbs. For example, two different herbs may have shown beneficial effects for inhibiting cancer. Both herbs, as single agents, have limitations. However, when combined, these herbs act synergistically to enhance their beneficial effects. This has been proven scientifically with regard to several adaptogens.

Adaptogens often work better in combination than when used separately. A good example is Asian ginseng. It can be too warming and stimulating if used alone. However, when combined with licorice and astragalus, it has a broader sphere of influence and isn't overstimulating.

The concept of creating a harmonizing adaptogenic formulation can be applied for both prevention and treatment of disease as well as to improve general health. Adaptogenic herbs support a healthy, balanced response to stress and provide natural support for healthy stress management. As such, they are highly beneficial for most people. Because many of our health problems are interrelated, it is best to take combinations of adaptogenic herbs to support different body systems. In addition, combining several adaptogens along with other complementary herbal remedies (see chapters

8 and 9) can offer additional benefits.

COMBINING MEDICINAL HERBS

There are numerous ways to combine medicinal herbs. Ayurveda, traditional Chinese medicine, Japanese kampo medicine, Tibetan medicine, and other traditional medicine systems all have time-tested practices that give guidance for creating a formula.

In ayurveda, herbs often are prescribed in combinations, typically involving three to fifteen herbs, although numerous very large formulas are recorded in the ancient texts. Herbs often are mixed with milk, honey, yogurt, or ghee to improve flavor and absorption. Herbs also can be made into cultures, called *arishtams*, and fermented in ghee to preserve potency, increase assimilation, and enhance digestion.

Herbal formulas within traditional Chinese medicine can contain from four to twelve different herbs. Several herbs are used to address the main problem, others are added to direct these herbs to the target area, additional herbs harmonize the formula, and others affect secondary but related organs or imbalances.

In Cherokee medicine, formulas often have four or seven herbs. In Eclectic medicine, where the ideal was to use a single remedy, physicians more often used simple formulas of two or three herbs.

Understanding the Qualities of Herbs

In creating a good herbal formula, it is important to understand the qualities (energetics and chemistry) of the herbs you are using and avoid combining incompatible substances. In traditional Chinese medicine, there are lists known as the “eighteen incompatibles” and the “nineteen counteractions,” detailing which substances should not be used together. Older American pharmacy books mention three types of incompatibilities when mixing medicines: chemical, pharmaceutical, and therapeutic incompatibilities. Knowing about incompatible substances helps prevent the creation of ineffective formulas. For example, giving a stimulant and sedative together (therapeutic incompatibility) does not make sense, and combining herbs like marshmallow with bayberry root bark makes both useless (pharmaceutical incompatibility).

The following list provides guidelines for making effective herbal formulas:

1. Match the herbs to the patient and his or her unique symptoms.
2. Pay attention to the energetic qualities of the herbs (heating, cooling, drying, or moistening) and whether they are appropriate to the person's symptoms.
3. Avoid incompatibilities or overly large formulas. For beginners, small, simple formulas are probably best.
4. Use herbs that help create a synergistic effect, adding herbs to enhance absorption (spicy herbs such as black pepper, ginger, pippali long pepper, cayenne pepper) enhances the activity of everything else in the formula. Using several herbs that have complementary but different ways of working can be very useful. An example would be giving saw palmetto, nettle root, and white sage for prostate enlargement. Each has a different mechanism of action, and the three herbs combined are vastly more effective than any one alone.
5. For teas, add herbs to improve the flavor. The best formula is useless if a person refuses to take it because of its unpleasant taste.
6. Mucilaginous herbs should be used only in teas. Herbs with high levels of sticky resins should be taken as tinctures or in pill form. Understanding simple phytochemistry can mean the difference between an effective formula and one that has little or no activity.

ADAPTOGENS—SIMPLES OR FORMULAS?

In modern times, adaptogens (especially in Russia, Europe, and the United States) have been studied mostly as single remedies, and they can certainly be used that way. Many Americans take Asian ginseng extracts by themselves, and many Russians use eleuthero as a simple. Although this is safe and certainly has benefit, skillfully combining adaptogens can enhance their positive effects and reduce problems such as side effects, high cost (as with cordyceps), or a disgusting taste (as with shilajit).

Licorice is used in traditional Chinese medicine to harmonize formulas, improve flavor, and reduce toxicity and gastrointestinal irritation caused by harsh herbs such as ephedra, skunk cabbage, or lobelia. However, by itself and in excess quantities, licorice can cause people to retain sodium and excrete potassium. This can cause elevated blood pressure and other health problems. The key to using licorice safely is to use small amounts combined with other herbs. This is how it is usually used in Chinese

medicine and has been used safely for millennia.

Another example is red Asian ginseng. It is a heating and stimulating herb, and in some type A, hypertensive, or anxious people, it can be overstimulating and cause insomnia, irritability, and a rise in blood pressure. The answer to this dilemma is simple: either use a less stimulating herb such as American ginseng, eleuthero, or rhodiola or use a small amount of red ginseng with nervines and nonstimulating adaptogens. Either strategy will work.

In traditional Chinese medicine, *fu zheng* therapies commonly are used along with chemotherapy and/or radiation therapy to treat various cancers. The *fu zheng* formulas combine adaptogens and immune tonics (which are often the same) to promote immune system function, decrease tumor growth, reduce side effects from radiation or chemotherapy, and prevent cachexia (malnutrition) and leucopenia (low white blood cell counts).

There are many *fu zheng* formulas, but virtually all of them combine several adaptogenic herbs such as Asian ginseng, dang shen, eleuthero, jiaogulan, licorice, reishi, schisandra, or licorice with other immune tonics (astragalus, ligustrum lucidum seed, oldenlandia herb), blood tonics (he shou wu, processed rehmannia, dang gui), and herbs that enhance digestion and circulation (ginger, orange peel, cinnamon). This type of combination therapy is vastly more effective than any single herb possibly could be.

CLASSIC ADAPTOGEN COMBINATIONS

Traditional Chinese Medicine Formulas

Many classic Chinese formulas combine several adaptogenic tonic herbs. A small selection of such formulas is covered in this section.

Bu zhong yi qi tang combines Asian ginseng and astragalus with licorice and several other herbs. This formula has been called the “king of combinations.” It improves digestive function, enhances the immune system, and is a general tonic for fatigue, excess sweating, shortness of breath, and diarrhea.

Sheng mai san (generate the pulse powder) combines Asian ginseng, schisandra, and ophiopogon tubers. This formula is used for people with dry coughs, a weak pulse, asthma, palpitations, and atherosclerosis.

Gui ling wu wei gan cao tang combines schisandra, licorice, cinnamon,

and *fu ling* mushroom to strengthen the lungs and the kidney yang. It can be used for people with coughing, cold hands and feet, dizziness, and chest pain.

Bao yuan tang (preserve the basal decoction) combines astragalus with Asian ginseng and honey-fried licorice. These three herbs are decocted with sticky rice. This formula is used to resolve lethargy, malaise, diarrhea, cachexia, and shortness of breath.

Ayurvedic Formulas

Many classic Indian formulas are made into jams, syrups, or wines so they easily can be taken daily as tonic foods.

As mentioned in the Amla monograph, the most famous of all ayurvedic formulas is Chyavanprash. This complex formula can contain as many as forty-seven different ingredients, including amla, guduchi, licorice, and shatavari. It is used as a tonic for the blood, immune, endocrine, and nervous systems.

Another classic ayurvedic formula is known as triphala. It combines amla with harada (*Terminalia chebula*) and behada (*T. belerica*) fruits. This formula is phenomenally effective for treating people with constipation and sluggish bowels, lowering cholesterol and triglyceride levels, and promoting weight loss. When it is combined with an equal part shilajit, it is used to treat people with diabetes.

Another formula with amla combines the fruit's juice with licorice, pippali long pepper, raisins, ginger, honey, and bamboo manna. They are slowly cooked into a thick syrup, or electuary. This formula, known as *amalaki avaleha*, is used to treat people with anemia, jaundice, and spermatorrhea (involuntary discharge of semen without orgasm).

In India, ashwagandha and shatavari are frequently combined and cooked in milk as a restorative combination for the male and female reproductive systems.

Cherokee Formulas

In Cherokee medicine, several herbs are used in a formula for their physiological effect (such as relieving pain, increasing urinary excretion, or stopping bleeding). Another one or two herbs are used for their "personality," the herb's inherent nature (strength, flexibility, persistence), which can be transferred from the plant to the person taking it. Last, one

herb is added to give the formula spiritual potency.

FORMULAS IN CLINICAL PRACTICE

In more than thirty years of clinical practice coauthor David Winston has used thousands of unique formulas, each chosen for a specific patient. Certain combinations get repeated, and eventually these combinations come to be seen as almost inseparable. Similar to the way some people associate peanut butter and jelly or milk and cookies, I have come to think of certain combinations of herbs, including the following:

- Eleuthero is a mild adaptogen, especially useful for overexcited, anxious, or overstimulated people. It combines very well with nervines or antidepressants such as fresh milky oat, mimosa bark, hawthorn, and St. John's wort.
- For deficient, anemic women, ashwagandha, dang shen, and shatavari are effective for increasing hemoglobin levels and stamina.
- Red Asian ginseng along with licorice and reishi is used to treat people with Addison's disease (adrenal insufficiency).
- He shou wu can be combined with ashwagandha, dang shen, and lycium to nourish the blood and to relieve low back pain, dizziness, poor memory, and fatigue.
- Chinese studies show that dang shen, jiaogulan, and cordyceps help prevent and treat altitude sickness and jet lag. Another formula for altitude sickness combines amla, cordyceps, reishi, and rhodiola.
- Asian ginseng combined with licorice and schisandra helps relieve shortness of breath and asthma.
- Prince seng along with dang shen and schisandra helps reduce wheezing and asthma and can be taken over a considerable period of time to reduce fatigue associated with chronic fatigue syndrome.
- For speeding up recovery from head trauma injury, holy basil and rhodiola can be combined with nootropics such as ginkgo or bacopa.
- Astragalus combined with rhodiola and hawthorn can enhance cardiac function and reduce angina pain.
- Ashwagandha, Asian ginseng, cordyceps, and rhodiola can offer significant benefits for men suffering from erectile dysfunction; this formula enhances male fertility as well.

12

Adaptogens as Food

Animals and people always have relied on plants as a major source of nutrients. In fact, many metabolic reactions in the body require plant-derived food. These plant foods are essential for cellular metabolism and the function of all the body systems.

In addition to fruits and vegetables, people since ancient times have used specific plants in the form of spices, condiments, and teas to enhance appetite, alter mood, and promote physical and mental wellbeing. Many plants also were used by healers as medicines to improve poor health and restore vitality in sick patients.

Throughout history, people selected which plants to use by carefully observing their effects on animals and other people. Although not scientific, this process for selecting physiologically active plants was effective because people were used as trial subjects. Most toxic plants were eliminated, and the food and herbs that were nourishing were added to the diet.

It was easy to identify the sweet and sour fruit adaptogens such as schisandra berries, lycium fruit, and amla fruit. These fruits are eaten widely in many parts of the world. The sweet-tasting roots of dang shen and licorice were likewise a pleasant addition to the diet. Other adaptogens with less pleasant tastes, such as shilajit or ashwagandha, rarely would be thought of for their culinary qualities.

The most common traditional form of taking adaptogens is as a tea. Almost all adaptogens (with the exception of shilajit) can be made into a tea, either by decoction or infusion. There is a substantial difference between a beverage tea and a medicinal tea. Beverage teas are foods. They are pleasant-tasting, and although they have medicinal properties, they mainly are used for their pleasant flavor. Adaptogens such as ashwagandha, Asian ginseng, rhaponticum, and rhodiola generally are safe to consume daily, but they have a medicinal taste that few people would enjoy or consider as a “beverage.”

Some of the root adaptogens such as ashwagandha, dang shen, and ginseng traditionally are cooked with *congee* (rice porridge), milk, honey, or ghee to make them edible and turn them into “medicinal foods.”

Medicinal mushrooms, including black reishi (*Ganoderma sinensis*), cordyceps, maitake, and shiitake, can be cooked and used to make delicious soups, stir fries, casseroles, and stuffing.

Several leafy plants such as jiaogulan and holy basil have been cooked as potherbs, like spinach.

Not all plant parts can be eaten. Reishi and eleuthero are hard and woody, and the dried fungus or wood is inedible to say the least. Cordyceps mushrooms need to be cooked to kill any harmful bacteria. Ashwagandha leaves are toxic, and he shou wu fruit has been reported to be poisonous. Lycium berries should be eaten only when ripe because the unripe fruit can cause gastric irritation. Shilajit is unpleasant tasting and smelling and is mostly used in pill form.

FUNCTIONAL FOODS

One of the newest trends in nutrition is functional foods, which are defined as foods that provide health benefits beyond basic nutrition. Basically, everything from fruits and vegetables to breads and dairy can be fortified or enhanced with added nutritional supplements or herbs to impart additional health benefits.

The most common avenue for the use of adaptogens within functional foods is in beverages. There are now many drinks that contain ginseng, rhodiola, or schisandra, not for taste but for a functional health benefit. They are sold either as teas or tonic energizer drinks. This trend surely will continue and who knows, people may be eating Reishi Rigatoni and Eleuthero-O’s cereal in the near future. The downside to this trend is that few of these products actually contain enough of the herb to have any real health benefit.

ADAPTOGENS AS FOODS—USES AND RECIPES

The following recipes only provide a basic introduction to the many uses of herbal adaptogens as food. The authors know there is so much more to

be said, but they just want to whet your appetite.

American Ginseng

American ginseng can be made into a tea, but the bitter taste is not appreciated by many people. Some herbalists add ginger or licorice root to American ginseng to increase its effectiveness and enhance the flavor of the tea.



American Ginseng Chicken Soup

Add two or three ginseng roots to your favorite recipe for chicken soup. Try it with beef or pork soup, too. Other herbs such as astragalus or lycium also may be added.



Quail's Eggs with American Ginseng Dessert

- $\frac{1}{2}$ ounce dried tremella (white jelly fungus) mushrooms
- $\frac{1}{3}$ ounce American ginseng roots
- $\frac{1}{4}$ ounce fu ling (poria) mushrooms
- 3 rice bowls (600 ml or 2.5 cups) water
- 10 cooked and shelled quail's eggs or 5 small chicken eggs
- 2 ounces water chestnut flour
- Rock sugar according to taste

Chop the soaked tremella mushrooms and discard the tough ends. Place the tremella mushrooms, American ginseng, poria mushrooms, and water into a soup pot and simmer, covered, on low heat for one hour. Add the eggs and steam for another fifteen minutes. Mix the water chestnut flour with a little water and add it to the steamed dessert and stir. Add sugar to taste. All of the exotic ingredients can be found in a good Asian market. Serves 3.



Ginseng Corn Liquor

This recipe comes from the mountain people of North Carolina and Tennessee. Take several fresh ginseng roots and put them in a bottle or cask of corn liquor to set aside. After steeping for six months or a year,

the “tonic” is ready for use. It is believed that a shot of this “mountain medicine” stimulates digestion and is good for what ails you, every now and then.

Amla

Amla is one of the major ingredients in two of the most famous ayurvedic preparations: *triphalā* (see chapter 11) and *Chyavanprash* (see Amla monograph, chapter 7), a sweet tonic jam for people of all ages. Amla berries are powerful antioxidants and are known to contain high levels of naturally occurring vitamin C.

Chyavanprash is a traditional herbal jam made in a base of honey, ghee, and amla fruit. Other adaptogens are added, including ashwagandha, guduchi, licorice, and shatavari as well as a large number of other herbs. This type of preparation is believed to carry the active constituents of the herbs to a deeper tissue level, and it has significant antioxidant activity. One teaspoon a day is taken for rejuvenation. There are many different recipes for this classic jam, but all are made with amla. Chyavanprash is the most popular ayurvedic product in all of India.

Woodcutters in Southeast Asia eat amla fruit to avoid thirst, as the fruit stimulates the flow of saliva. It is reported in India that the fruit followed by water produces a sweet and refreshing aftertaste. In both India and Thailand, buses stop along highways to let thirsty travelers go to the trees to gather the fruit. The ripe fruit has been recommended to be eaten for forty days after a fast to restore health and vitality. It is a common practice in Indian homes to cook the fruit whole with sugar and saffron and give this confection to the children each morning.

A sherbet can be made with amla by grinding the fresh fruit in a small amount of cold water to fully extract the juice. This is filtered, and raisins, honey, and dried draksha (black pepper, pippali long pepper, and ginger) are added. This mixture is frozen to produce a wonderful dessert that also acts as a diuretic.

The unripe green fruit and the fresh ripe fruit are pickled and used as appetizers to stimulate the appetite. The largest fresh fruits are candied with sugar syrup to use as a restorative treat.

The fresh fruit is thinly sliced and dried. These fruit chips are seasoned with caraway seed, salt, and yogurt as a nutritive snack for people who have fasted or for people with poor digestion.

A traditional form of processing amla known as *svaras bhavana* (cooking the herb in its own juice) significantly increases its antioxidant effects.

Ashwagandha

Ashwagandha is not particularly pleasant-tasting, but in India it is commonly cooked in milk with molasses as a sweet, nourishing beverage to relieve weakness, anemia, and insomnia. The powdered root is combined with equal parts ghee and honey and eaten by men to relieve impotence or low sperm count. Ashwagandha seeds are used in Sudan to coagulate milk for making cheese.

Asian Ginseng

Small amounts of Asian ginseng can be used in soups and in chicken, beef or pork dishes. Fresh ginseng roots that have been cleaned thoroughly and thinly sliced also can be candied.



Asian Ginseng Tea with Ginger and Licorice

- 1 ounce (approx.) whole dried ginseng root
- 10 cups water
- $\frac{1}{3}$ ounce whole licorice root
- $\frac{1}{3}$ ounce fresh ginger root

Put the ginseng and 8 cups of the water in a saucepan over medium heat. Bring to a boil, reduce heat, and simmer for one hour. Add the licorice root and ginger root and the remaining 2 cups cold water. Bring the tea to a boil again, reduce heat, and simmer for thirty minutes and strain. Serve in small cups. Serves 7–10.



David Winston's Revitalizing Ginseng Soup

The soup can be made with any number of vegetables or meats. Winston prefers chicken, but beef, pork, or salmon can be used. This soup is especially useful during the transition from autumn to winter and during the flu season to prevent getting sick.

- 1 large onion, diced
- 4–6 cloves garlic, minced

2 large carrots, peeled and sliced into rounds
2–3 boneless chicken breasts cut into $\frac{1}{2}$ inch chunks
olive or sesame oil
8 cups water or stock
1 large sweet potato, peeled and cubed
12–16 dried shiitake mushrooms (black mushroom). Soak first in water to rehydrate
1 small ($\frac{1}{2}$ inch) piece fresh ginger, minced
1–2 whole red or white ginseng roots
1 ounce lycium fruit
3–4 astragalus sticks
salt or tamari, pepper, and hot oil to taste

In a large soup pot, sauté the onion, garlic, carrots, and chicken in a little olive oil or sesame oil. When the onion pieces start to become transparent, add the water or stock. Then add the sweet potato, shiitake, ginger, and herbs. Let simmer for several hours. Add salt or tamari, pepper, and hot oil to taste. For variety, you can use other meats and other vegetables (rutabagas, leeks, shallots, corn, celeriac, celery, fennel bulb) as are seasonably available and depending on your preferences. Serves 4–5.



Ginseng Congee

This Chinese recipe is for individuals with general debility. It is highly effective for strengthening the body and it helps prevent premature aging and senility.

1 cup uncooked white rice
6 cups water
3–6 grams ($\frac{1}{10}$ – $\frac{1}{5}$ ounce) Asian ginseng
9–14 grams ($\frac{1}{3}$ – $\frac{1}{2}$ ounce) dang shen
honey or barley malt

Add the rice, water, and herbs. Slow cook until the rice is done. Sweeten to taste with honey or barley malt. Serves 4.



Ginseng Cordial

Asian ginseng root also has been used as a flavoring for liquors. The

following recipe is for a ginseng liqueur:

Mix 3 ounces of finely chopped or sliced white ginseng with 1 quart of vodka, whisky, or brandy. Add 2 ounces honey and let sit for four to six weeks. Take 1 ounce of this cordial after dinner.

Astragalus

Astragalus root has a mild flavor (some describe it as sweet) and often is cooked in soups and stews. Astragalus cooked in a stew with lamb is said to moisten and strengthen the lungs and enhance the immune system.



Nourishing Chinese Tonic Broth (t'ang)

Here is a wonderful nourishing tonic broth that is made with the following herbs:

- 1 liter water
- 4 tablespoons astragalus root
- 4 tablespoons dang shen root
- 2 tablespoons lycium berries

Fill a large stockpot with a liter of water, add the herbs and cover. Bring to a boil and simmer for 40 minutes; add additional water if necessary. Remove the herbs from the pot and allow the broth to cool. The broth can be drunk alone or used as a base for soup recipes. Serves 2–3.



Immune Support Tonic Soup

- 2 ounces dried astragalus
- 2–4 ounces black reishi mushroom
- 2–4 ounces shiitake mushroom, sliced
- 2 ounces burdock root, sliced thin
- 1–2 ounces fresh ginger root
- 4 quarts water
- 4 ounces chicken stock (optional)

Presoak herbs for 30 minutes. Add to stockpot with 4 quarts of water. Simmer 45 minutes. Remove astragalus and reishi. Use what remains for soup or as a soup base.



Chinese Folk Recipe for the Heart

This recipe is rather unusual. It is a Chinese folk recipe used to treat people with heart disease.

10 grams astragalus root
10 grams cinnamon
100 ml (3¹/₂ ounces) water
2 eggs

Take 10 grams (about ¹/₃ ounce) astragalus root and 10 grams cinnamon. Decoct the herbs in 100 ml (3¹/₂ ounces) water for 15 minutes. Crack open two eggs and add them to the herb decoction until cooked. This makes two doses. Take one dose (¹/₂ the decoction and 1 egg) each day for 10 days.

Cordyceps

Cordyceps traditionally is cooked with duck, chicken, or pork. For many Westerners, the idea of eating a mushroom that looks like and originally was a caterpillar is disgusting. In reality, the fungus has consumed the insect totally, leaving only the mushroom. Cordyceps also is cultivated and the mycelia are grown on grains (primarily rice and soybeans).

When cordyceps is cooked, it has a wonderful mushroom flavor. Because this mushroom is so expensive, combine a few cordyceps mushrooms with shiitake or other edible mushrooms. In ancient China, the emperor and the royal family were served duck stuffed with cordyceps to enhance longevity and preserve their health.

Dang Shen

Dang shen root has a sweet taste and is cooked in soups, stews, and rice porridge. Dang shen tea nourishes the digestive, immune, and endocrine systems (see the dang shen monograph, page 154, for decoction instructions).



Dang Shen Sweet Rice

This is a delightful dessert that strengthens the immune system, lungs, and spleen qi.

2 1/4 cups water
1 1/4 cups short grain sticky rice
2 tablespoons lycium fruit
2 tablespoons dried jujube dates (pitted)
2 tablespoons dried longan fruits (pitted)
2–3 dang shen roots, cut into
1/4 inch pieces 1/4 cup sweet coconut milk (optional—if adding coconut milk
decrease water by 1/4 cup)

Bring water to a boil, add short grain rice, and stir. Bring back to boil, turn down the heat to low. Add the fruits and dang shen. Stir, cover, and cook 45–60 minutes until the rice is tender and there is no extra liquid. Serves 4.

Eleuthero

The dried leaves of this plant have been used as a tea substitute. In Korea and Siberia, the young leaves and buds are cooked as a potherb.

Eleuthero bark can be used as an ingredient in homemade herbal beers, along with sarsaparilla, American ginseng, or spikenard.

Guduchi

Guduchi is a woody herb for which there are no known culinary applications.

He Shou Wu

The young shoots of he shou wu have been cooked and used as an asparagus substitute.



He Shou Wu Wine

He shou wu is put into a ceramic container and covered with wine. (Approximately 1 ounce he shou wu to 16 ounces wine.) The mixture is left for a few weeks and then strained. Small doses (1–2 ounces) of it are then taken on a daily basis as a restorative tonic for deficient blood and male reproductive weakness. It also can be mixed with Asian ginseng, eucommia bark, and dogwood fruit.

Holy Basil

Holy basil has a pleasant aroma, and different varieties may smell and taste of peppermint, cloves, licorice, or lemon. It is not to be confused with culinary basil. Holy basil (*tulsi*) can be enjoyed as a simple herbal tea.

Holy basil can be mixed with other herbs and teas to add flavor. A tea made of holy basil with ginger or alone is good for digestion. With chamomile, it is good before bed. Licorice and gotu kola also can be added as well as chai spices and regular green or black tea. When sick, increase the strength of your holy basil tea. To lower a fever, use three to five tea bags.

Holy basil commonly is used in Thai and other Southeast Asian cuisines raw in salads, cooked as a potherb, or in soups and stir-fries and as a flavoring agent for fruit salads, sweet dessert breads, and preserves. The mucilaginous seeds are soaked in water, and sweeteners are added to make a soothing and refreshing drink.



Tulsi Tea

Pour 8 ounces hot water over 1 teaspoon dried holy basil leaf (or tea bag). Infuse (covered) for 3 or more minutes.

Jiaogulan

Jiaogulan leaves have a slightly sweet taste and are commonly used as a beverage tea. In Guizhou province of China the inhabitants would drink jiaogulan tea instead of the more common green tea. According to local tradition, people who drank the tea rarely developed cancer and lived to a very old age.

Jiaogulan tea is used by millions of people in China, Japan, and Thailand. Local people steep the herb in hot water, making a tea infusion that is taken before work to energize the body, during the day to improve concentration, and after coming home to reduce tension and induce relaxation. The leaves and young stems also can be cooked as a green vegetable and are used in casseroles and soups.



Jiaogulan Tea

Pour 8 ounces hot water over 1 teaspoon dried jiaogulan leaf. Infuse (covered) for 3 or more minutes.

Licorice

A tea made from licorice roots is an excellent thirst quencher. The leaves are used as a tea substitute in Mongolia. Licorice roots have an extremely sweet taste and a slightly bitter aftertaste. They are used to sweeten herb teas or as a flavoring in candies, baked goods, soft drinks, and chewing tobacco. The root contains glycyrrhizin, a substance that is fifty times sweeter than sucrose. The dried root often is used as a chewing stick and a tooth cleaner. Unfortunately, in the United States most licorice candy contains only a minimal amount of actual licorice extract. Instead, artificial flavorings often are used and sometimes anise seed.



Licorice Spice Tea

- 1/4 tablespoon dried licorice root
- 1/4 tablespoon dried ginger root
- 1/4 tablespoon dried holy basil leaf
- 1/4 tablespoon dried cinnamon bark

Add the herbs to 8 ounces water, decoct 10–15 minutes, steep 10–15 minutes. Take 4 ounces, two times per day. Serves 1.



Honey-Roasted Licorice Tea

- 5 licorice sticks (if honey-roasted licorice sticks are available, skip roasting instructions)
- 1 tablespoon honey
- 1 piece fresh ginger (approx. 3 inches), cut into smaller pieces
- 6 cups water

First prepare honey-roasted licorice sticks. Preheat the oven to 450 degrees. Place the licorice sticks on a roasting pan and coat with honey. Roast for 5 minutes, turn and roast for 3 more minutes. Transfer to a rack and cool. When the sticks are cool enough to handle, place them, along with the ginger, into 6 cups water in a saucepan. Cover and bring to a boil. Lower heat and simmer for 20 minutes. Strain and serve. Serves 4.



Licorice Ulcer Formula

A simple Chinese food formula for treating ulcers combines 3¹/₂ ounces (100 grams) of licorice with 3¹/₂ ounces of orange peel. They are soaked in 8 fluid ounces water for 1 hour, then decocted for 20 minutes. This process is repeated three times. The mixture is condensed by slowly cooking it until reduced to 2 fluid ounces, and honey is added. The dose is 1 tablespoon twice per day.

Lycium

Lycium berries are sweet and make a good addition to other tea blends as a sweetener. The dried leaves have also been used as a tea substitute. Lycium fruit tea nourishes the eyes, enriches the blood, and helps control blood sugar levels.



Lycium Tea

Add 2 tablespoons dried lycium fruit to 12 ounces water, decoct 10–15 minutes, steep 10–15 minutes.

Lycium berries have been described as having a sweet, mild, raisin-like flavor. In fact, the Chinese call them “red raisins.” Whole, dried berries have a pleasant taste and can be eaten raw (up to 1 ounce per day). They can be added to hot and cold cereals, shakes, smoothies, salads, desserts, trail mix, fruit and nut bars, and soups.

The young leaf is edible and can be cooked in soups as a bitter green. The seedling of the herb also is used to make soup and congee (rice porridge). The roasted seed has been used as a coffee substitute.



Lycium Lamb Stew

A Chinese recipe for lycium, chestnut, and lamb stew is used for women with menopausal symptoms such as hot flashes and extreme sweating. Take 1 ounce shelled chestnuts, ¹/₂ ounce lycium fruit, and 2¹/₂ ounces cubed lamb. Stew them in sufficient water until the meat is cooked. A small bowl of this stew should be eaten daily. Serves 1.

Prince Seng

A few of the small roots of prince seng can be added to rice along with

jujube dates, longan fruit, lycium fruit, or other sweet herbs to make “respiratory tonic rice.”



Tasty Respiratory Tonic Tea

1 tablespoon dried prince seng root
1/4 tablespoon dried glehnia root
1/4 tablespoon dried hibiscus flowers
1/4 tablespoon dried orange peel
16 ounces water

Add herbs to the water. Decoct slowly for 20–30 minutes, steep 1 hour. Take 4 ounces up to four times per day.

Reishi

Red reishi (*Ganoderma lucidum*) is very bitter, and most people would find it unpalatable as a tea or cooked in food. Black reishi (*G. sinensis*) is less active medicinally but has a pleasant mushroom flavor. It can be cooked in soups or stews, but remove the woody mushroom before eating the soup or stew.

Rhaponticum

Traditionally, Siberians drank the bitter-tasting rhaponticum tea as a natural stimulant in cases of fatigue. It also was used as an energizing remedy after the long Siberian winter and is reported to offer dramatic relief in recovering alcoholics with depression.

In Russia, rhaponticum extract is included in the popular tonic beverages *baikal* and *sayany* and also in the syrup known as *petrovsky*.

Rhodiola

Rhodiola root does not taste all that good, so it usually is not thought of as a beverage tea. Yet, in Siberia it is said that “those who drink rhodiola tea regularly will live more than one hundred years.”

The young, slightly bitter leaves and shoots can be eaten raw in a salad or cooked like spinach. The stems can be cooked and eaten like asparagus. The starchy roots can be cooked as a root vegetable. Inuit peoples fermented the fleshy leaves and stems in water to make a sauerkraut-like dish, and they preserved the roots in seal oil so they could be available and

eaten during the long arctic winters.

In present-day Ukraine, a medicinal alcoholic drink called *nastojka* is prepared by mixing 80 proof vodka with an equal weight of fresh rhodiola roots and allowing the mixture to stand for a few weeks. Only a few teaspoonfuls should be consumed daily.

Schisandra

Young schisandra leaves can be cooked and used as a vegetable. The fresh fruit can be eaten raw or cooked and made into a jelly or jam. For use as a general tonic in China, patients are advised to chew dried schisandra berries daily for one hundred days. Dried schisandra berries were used as a staple food for Siberian hunters and gatherers and taken on journeys to relieve fatigue. A restaurant in Amherst, Massachusetts, sells a product called Sandra Berry Juice. This wonderful energizing juice combines fresh schisandra berry juice with water and sugar. In Russia, schisandra berries are cooked and mixed with hardy kiwi berries to make a filling for confections.



Schisandra Five-Flavor Tea

- 1 tablespoon dried whole schisandra berries
- 3–4 sticks licorice, cut into small pieces
- 3-inch piece of fresh ginger, coarsely chopped
- 6 cups water
- Honey to taste
- Eleuthero also can be added to this tea

Combine the herbs in a saucepan with 6 cups of water. Cover and bring to a boil over high heat. Keep covered, reduce the heat to medium low, and let simmer for 15 minutes. Strain, add honey, and serve. Serves 5.

Shatavari

The tender young shatavari shoots can be boiled or steamed as a vegetable, or they can be eaten raw in salads. A preserve prepared from the blanched shoots is said to be very agreeable, and the tuber can be candied as a sweetmeat. Shatavari commonly is boiled with milk, ghee, and ginger, cinnamon, or cardamom to increase its tonic properties. The roasted seeds have been used as a coffee substitute.



Women's Beverage Tea

- 1 ounce shatavari root
- 1 ounce chamomile flower
- $\frac{1}{2}$ ounce ginger root
- 2 ounces raspberry leaf
- $\frac{1}{2}$ ounce cinnamon bark

Add 2 tablespoons of this mixture to 8 ounces of boiling water. Cover and let steep for 20 minutes. Take up to 4 ounces three times per day to nourish the female reproductive system.

13

Adaptogens for Animals

Animals always have used plants as both food and medicine. Everyone with a dog or cat has seen their pet eat grass to vomit and clean out fur balls and other indigestible substances. Who hasn't seen a cat get inebriated with catnip? (Valerian also has this effect on cats, including lions, tigers, and mountain cats.) There is an entire field of study called zoo-pharmacology that studies animals and how they use plants to prevent illness, treat diseases, and alter consciousness.

Indigenous people have many stories telling how their ancestors learned about many medicines from various animals. Native American tribes in the Rocky Mountains tell how they learned about osha root (Bear's medicine) from watching bears use it for wounds. In Siberia, the maral deer eat maral root (rhaponticum), and people learned how to use it as a tonic remedy from watching the deer. Researchers have found that many animals, including monkeys, bears, elephants, chimpanzees, birds, horses, and deer use various herbs to purge parasites, heal wounds, prevent or treat skin mites and fleas, treat itching, and relieve stress. Humans also have used herbs for many thousands of years to treat their horses, camels, elephants, oxen, cows, sheep, and goats as well as their house pets. The term ethnoveterinary medicine refers to the knowledge and practices of using plants for the care of animals that has been developed by farmers and herders and usually is transferred orally from generation to generation. We have included some examples of adaptogenic herb use within ethnoveterinary medicine in the discussions of adaptogenic uses later in the chapter.

Many of the adaptogens mentioned in this book have been used to heal animals as well as humans. The animals discussed in this chapter are primarily common companion animals—dogs, cats, and horses. Dogs are the most dominant of the small companion animals, cats next, and horses (including work horses, racehorses, and companion horses) are the fewest in numbers but no less cherished and loved than the smaller species.

People often are very attached to their pets, and the herbal market for animals actually is expanding much more quickly than the human market.

Animals are very similar to humans. They are living longer and develop the same chronic conditions that humans get. They often have nutritional deficiencies from their diet. They also have complicated relationships with other members of their household and can suffer from separation anxiety or be the victims of abuse. Animals can also be very sensitive to their owners' emotions and stress levels. As a result, animals have increased levels of stress and anxiety that affects their endocrine, nervous, and immune systems.

One of the first published medical studies on stress in animals was conducted by American physiologist Walter Cannon, MD, in 1896. He used an X-raylike machine called a fluoroscope to study the digestive system of dogs. When the dogs were under stress, he noticed that the digestive system did not function properly. Later studies revealed that the stress hormone cortisol is released by the animal's adrenal gland during periods of stress and is responsible for decreased secretion of gastric acids, which prevents the adequate digestion of food. Constant stress and elevated cortisol levels also reduce circulation, promote tumorigenesis, interfere with sleep, and can cause elevated insulin levels.

HEALTH BENEFITS

There are many health problems in animals for which adaptogens can make a significant difference. These include arthritis, skin and coat problems, anxiety and stress, lack of energy and performance enhancement, immune system dysfunction, and poor digestion.

Arthritis is the most common musculoskeletal disorder in pets, especially among dogs from large breeds that are eight years old and older. It is reported that 30 percent of dogs and cats have arthritis. Amla, ashwagandha, licorice, and shilajit have shown benefits for animals with rheumatoid arthritis and osteoarthritis.

An animal's skin and coat is another area where problems frequently occur. The skin acts to protect the animal from injury and infections, helps control internal temperature, and serves as a reservoir for certain nutrients. Amla, eleuthero, holy basil, and shatavari can be useful for some skin problems.

Most adaptogens can be beneficial for high-strung pets that are easily scared, anxious, or have neurotic behaviors. Ashwagandha, reishi, rhodiola, and schisandra are useful, as would be the nervine herbs.

For elderly or weakened pets that need to strengthen their immune systems, all adaptogens can be used to promote immune competence, including ashwagandha, astragalus, eleuthero, schisandra, rhodiola, rhaponticum, and dang shen.

Many companion animals are fed foods that are far from their original diet. This can lead to digestive problems. Amla, dang shen, guduchi, holy basil, and licorice all have been used to enhance digestion and relieve gastric upset and inflammation.

Also, ashwagandha, cordyceps, ginseng, licorice, and shatavari have shown the ability to enhance fertility in male and female animals.

After a preliminary review of adaptogenic use among veterinarians, the authors have found that the leading two adaptogens used for animals are ashwagandha and eleuthero. More research in this area is needed. There also are many other useful herbs for animals that are not considered adaptogens, including boswellia, echinacea, and garlic.

Many of the same adaptogens that are given to people can be given to animals. However, because most people are unfamiliar with adaptogens for animals, it is best to consult a knowledgeable herbal veterinarian or herbalist who specializes in animal health to get the desired results. The good news is that adaptogenic herbs are safe and in most cases would not cause unfavorable side effects in animals even if the wrong herb was selected.

USING ADAPTOGENS FOR ANIMALS

American Ginseng

American ginseng (*Panax quinquefolius*) is the preferred ginseng for dogs and is used to enhance vitality in older dogs. It helps relieve dry coughs (kennel cough) when used with astragalus and can be used to help promote a healthy immune response in animals with immune deficiency (cancer, feline leukemia) or autoimmune diseases. Interestingly enough, deer seem to go out of their way to eat American ginseng. Whether they like the taste or recognize some type of health benefit is unknown. Unfortunately, they, along with overharvesting by humans, are contributing to the

endangerment of this threatened species.

Amla

Amla (*Emblica officinalis*) is used as a nutritional support for promoting healthy bones, muscles, fur, skin, claws, and teeth. A formula of amla, ashwagandha, and holy basil is used with horses for immune system support, to improve poor performance, as a calming agent, and for its antioxidant effects.

Farmers have many uses for amla fruit. It is used as food for cows, sheep, and goats. All parts of the plant are used to cure topical problems (burns, wounds, mastitis, sprained hooves, ringworm, and abscesses), urinary tract conditions (blood in the urine and urinary blockages), and digestive disorders (dysentery, diarrhea, and digestive upset) as well as coughs.

Ashwagandha

Ashwagandha (*Withania somnifera*) seems to be one of the leading adaptogens used for animals, and it is helpful for a wide variety of health issues.

It is used to calm dogs (and other animals) when they are experiencing symptoms of nervousness, fear, excessive barking, and overexcitement. It also can be mixed with holy basil or reishi.

It is beneficial for elderly, debilitated, or convalescent dogs and cats. It is used for animals with immune dysfunction, arthritis, nondeficiency anemia, and hypothyroid conditions.

Ashwagandha and boswellia in combination have been effective in treating animals with osteoarthritis and hip dysplasia. Both herbs have anti-inflammatory properties. Ashwagandha allows animals to sleep better and to wake with less stiffness and soreness. It also relieves discomfort and pain. It may take about three weeks of regular use before significant improvement is noticed.

Ashwagandha has been tested in experimental animals. In one study, it was found to have significant anti-inflammatory activity and it reduced autoimmune response to an animal model of arthritis to a similar degree as a cortisone drug. In another study, ashwagandha reduced both degeneration of the joints and the swelling induced by an arthritis-inducing drug.

Ashwagandha is used alone or in combination with bacopa for animals suffering from cognitive dysfunction and other effects of old age. The results are usually gradual, but definite improvements can be seen in a reduction of aimless wandering, barking, and confusion.

On farms, the root is used to treat animals with coughs, edema, rheumatism, and sores. The green, unripe berry is crushed and used as a poultice for external use; it has antibacterial and antifungal properties. It is used to prevent infection in skin wounds and to treat skin diseases, including psoriasis, ringworm, and scabies. It also is used for saddle sores and girth gall in horses.

Asian Ginseng

In animal studies, Asian ginseng (*Panax ginseng*) has been shown to prevent high blood sugar levels and neurological damage caused by lack of oxygen to the brain. It also has been shown to enhance exercise performance, learning, and memory. In one study on dogs (Kwon 2003), red ginseng significantly helped lower liver enzyme levels and regenerate liver tissue in animals that had hepatic surgery.

Astragalus

Astragalus (*Astragalus membranaceus*) is used for elderly or debilitated pets and can be taken regularly. It enhances the immune system and is useful to strengthen the body against viral or bacterial infections by stimulating natural killer cell activity and interferon production. It also can be useful for animals undergoing cancer treatment, along with Asian ginseng, eleuthero, and reishi. Astragalus also has anti-inflammatory properties and can enhance cardiac function.

Astragalus is an option for early treatment of various forms of respiratory infection, including kennel cough. It can be used with American ginseng and licorice for animals with dry, irritative coughs. It also is used to prevent itching in animals and for allergy relief in cats; for these purposes, it can be used with amla, holy basil, licorice, or lycium. Animals normally respond quite well to this herb and easily take it due to its mild taste.

Dang Shen

Dang shen (*Codonopsis pilosula*) is used to normalize the immune system, reduce gastric and respiratory irritation, and balance endocrine function. In

animal studies, older animals given dang shen tea showed improved memory and ability to learn, reduced lipid peroxidation (oxidation of fats), and increased levels of the important cellular antioxidant SOD. It is a mild herb that can be added to dog food or horse feed. In cats, small amounts of tincture are the most easily used dosage form.

Eleuthero

Eleuthero (*Eleutherococcus senticosus*) increases energy, endurance, longevity, immunity, skin and muscle tone, and bone strength. It can be used in mature, elderly, convalescing, or chronically ill pets. It is an excellent mild tonic that relieves stress and improves resistance to infections.

Eleuthero also is used in animal breeding to increase fertility, and it has been shown to protect animals with cancer from harmful side effects of radiation therapy and chemotherapy.

Guduchi

Guduchi (*Tinospora cordifolia*) is used for animals with urinary tract infections, kidney problems, and hepatitis. When used with shatavari, it has been shown to protect animals from bone marrow suppression caused by chemotherapy.

In India, farmers use the guduchi vine to stimulate appetite and to expel internal parasites in cows and goats. Guduchi also is used for digestive problems and diarrhea in poultry. The stem, root, and whole plant are used to treat sprains, fractures, abscesses, tumors, and wounds in animals. It also is used in the treatment of animals with pneumonia, asthma, coughs, colic, constipation, and tetanus.

He Shou Wu

He shou wu (*Polygonum multiflorum*) has been studied in several animal species and found to enhance cognitive function and prevent age-related neural degeneration. It also was shown to prevent lipid peroxidation and increase life span in several studies.

Holy Basil

Holy basil (*Ocimum sanctum*) is used to improve digestion, relieve flatulence, and reduce allergic response. It is used to treat animals with diabetes when combined with dang shen, jiaogulan, and licorice. Holy

basil also can protect against radiation-induced damage in animals that are receiving radiation therapy. A formula of holy basil and vasa leaves (*Adhatoda vasica*) is used for animals with coughs and colds.

The whole holy basil plant is used by farmers for animals with inflammation of the tongue, ulcers, pneumonia, constipation, liver flukes, opacity of the cornea and sore eyes (the fresh juice is squeezed into the animal's eye), rapid heartbeat, and sprains. The leaves are used for cows and sheep with coughs, colds, udder infections, and for wound healing.

Jiaogulan

In animal studies, jiaogulan (*Gynostemma pentaphyllum*) has shown superior anti-inflammatory activity compared with the pharmaceutical drug indomethacin. It reduced cholesterol levels, enhanced bronchodilation (ease of breathing), helped prevent liver damage, and inhibited cancer growth.

Licorice

For animals, licorice (*Glycyrrhiza glabra*, *G. uralensis*) is used in cough formulas and to relieve dry, spasmodic coughs. It also is used to improve skin tone, support immunity, and relieve allergies (used with amla, holy basil, and reishi).

It is used with shatavari to adjust female dog and cat hormones after spaying. It has mild estrogenic activity and has been used to help increase fertility in mares.

Licorice reduces gastric acid secretion and is recommended for use with horses or dogs with gastric ulcers. It also relieves gastritis and irritation in the small and large intestines.

It is said that dogs love the taste of licorice. Avoid using large amounts of the root or using it for long periods of time with animals. Use caution with pets that have high blood pressure and/or heart disease and edema.

Farmers in India have been using licorice extensively from ancient times for the treatment of various ailments of domestic animals, for purposes similar to those in humans. For example, it is used for coughs and colds, as an expectorant, and as a wound-healing agent in cows, sheep, and goats.

Lycium

Multiple animal studies using polysaccharides derived from lycium

(*Lycium chinensis*) have found that they reduced insulin resistance, slowed tumor growth, prevented chemotherapy-induced bone marrow suppression, and enhanced immune function. Water or alcohol extracts of the fruit had strong antioxidant activity, lowered unhealthy cholesterol levels, and reduced inflammation and atherosclerosis.

Prince Seng

In one Chinese animal study, a combination of ophiopogon tuber, processed rehmannia root, and prince seng (*Pseudostellaria heterophylla*) was found to reduce hyperthyroid function and prevent peripheral conversion of thyroid hormones T4 to T3.

Reishi

Reishi (*Ganoderma lucidum*) is an immune amphoteric and can be used for animals with immune system depletion, cancer, and autoimmune disease. It also relieves allergies (used with amla, holy basil, and licorice), calms nervousness, and helps protect the liver against damage caused by hepatotoxic viruses, drugs, or chemicals. Studies on various types of animals also have shown that reishi can help control nausea and vomiting caused by chemotherapy, lower cholesterol levels, heal gastric ulcers, and help prevent drug-induced kidney damage. In a horse study (Lai 2004), animals given reishi had increased humoral immunity (CD5+, CD4+, CD8+, T lymphocytes) and were able to produce a much higher level of specific antibodies more quickly.

Rhaponticum

Rhaponticum (*Rhaponticum carthamoides*) enhances muscle development, endurance, and blood circulation. The roots are eaten by deer, cows, and horses, improving their stamina, preventing illness, and increasing tolerance to cold or harsh conditions. Animal studies with rhaponticum indicate that it protects against brain damage due to ischemia, improves memory and learning capacity, and reduces blood viscosity (thickness).

Rhodiola

Rhodiola (*Rhodiola rosea*) enhances mental and physical performance, normalizes heart rate, and improves nervous system function. In animal studies, rhodiola helped prevent ischemic damage to the brain and heart, protected the liver against damage caused by toxic solvents, and increased

work capacity. In a study on dogs, rhodiola capsules decreased myocardial oxygen consumption and coronary artery resistance, lowered blood pressure, and strengthened the heartbeat. These results strongly suggest that rhodiola could be of great benefit (along with astragalus, hawthorn, and tienchi ginseng) for older dogs with mild congestive heart failure or weak hearts.

Schisandra

Schisandra (*Schisandra chinensis*) enhances performance, facilitates recovery, and combats fatigue in racehorses. It also is used for animals with allergies and those under stress.

In a 1994 randomized, double-blind, cross-over study (Hancke et al. 1994), eighteen healthy horses received a single dose of schisandra concentrate (equivalent to about fifty grams of dried berries and containing 1.2 percent schisandrins) or a placebo thirty minutes before a test race. Treatment with schisandra reduced the horses' heart rate and respiratory frequency, increased plasma glucose, and decreased lactate levels.

In an earlier study (Ahumada et al. 1989) involving thoroughbred horses, a single dose of extract equivalent to 192 grams of schisandra produced similar results. The racehorses were on average 1.8 seconds faster over 800 meters. It was postulated that schisandra may cause a lower synthesis of lactate in muscles under anaerobic conditions and also stimulate lactate clearance by the liver.

Shatavari

Shatavari (*Asparagus racemosus*) has been used topically to treat animal wounds, and fresh or dried shatavari is used to increase animals' milk production. Guduchi and shatavari have been found to protect against chemotherapy-induced bone marrow suppression. Animal studies have shown that this herb can relieve diarrhea, urinary irritation, and coughs and enhance immune function in animals.

Shilajit

Shilajit (*Asphaltum bitumen*) has been used to treat arthritis and other inflammatory connective tissue disease in animals. Animal studies have shown that it heals gastric ulcers, helps reduce elevated blood sugar levels, and enhances both male and female fertility.

VETERINARY FORMULAS

When treating animals (or people) within both the Chinese and ayurvedic medical systems, herbs mostly are used in combinations as formulas for specific conditions. Animals are treated as individuals, and either custom-designed formulas or classic formulas are used for treatment.

Dosages for Animals

To determine an appropriate dosage for an animal, you can adjust the human dosage by dividing the animal's weight by 150 pounds (the average human weight). The resultant fraction is the appropriate percentage of the adult dose suitable for an animal. (For more information see the Dosage section at the beginning of part 2.)

Note: Do not use this formula for horses or cows. They should be given approximately two to four times the human dose of an herb or formula. Larger animals require a smaller dose per pound of body weight than a small animal, and horses seem particularly sensitive to herbs.

Adaptogenic herbs may be given to animals in pill, tablet, capsule, granular, or raw form. The pills, tablets, and capsules are best for those animals that will comply with taking them orally. The granular herbs and raw herbs may be added to the food of animals that have good appetites and are not finicky. Raw herbs also may be cooked together with some home-prepared food in soup or stew for debilitated animals.

Suggested Doses Recommended by Veterinarians

Some general guidelines are provided here. For more information consult a veterinarian familiar with botanical medicine.

- American ginseng: For medium-sized dogs more than six years old, one 500 mg capsule once or twice a day is suggested.
- Ashwagandha root: Dried herb, 25 mg/lb three times a day (general guidelines for any animal).
- Astragalus root: Dried herb, 30–60 mg/lb three times a day (general guidelines for any animal).
- Eleuthero: For medium-sized dogs, one 500 mg capsule twice a day.

CLINICAL USE OF ADAPTOGENS IN EQUINE

VETERINARY PRACTICE

A selection of case histories from botanical veterinarians and animal herbalists treating horses are discussed in this section.

From Stacey Small's Case Files—Repressed Immune System

Stacey Small is a graduate of David Winston's Center of Herbal Studies two-year herbal training program. She is the founder of Equilite, Inc., a manufacturer of herbal products for horses, and copublisher of *Holistic Horse* magazine.

Small relates a case in which she was called by a frustrated trainer to discuss a thoroughbred filly that he had.

Gary was beside himself because the horse had been sick for weeks, and three vets and seven antibiotics could not bring this filly around. Gary and the vets gave up on this filly and sent her out to a farm since she could not be trained and was taking up valuable stall space at the racetrack.

Upon my arrival to the farm, I found a thin filly despondently looking out of the stall. She had copious white mucus glued around each nostril. Her eyes were running clear tears down her face. The feed in her bucket was barely touched. Her overall body language was one of total despair and lack of vital energy. The vet determined that her immune system was severely repressed and needed some help. I created a blend for her that included astragalus, schisandra, garlic, vitamin C, and a touch of zinc. In less than a week, I received a phone call from the trainer asking me what I had done. He was amazed that she was eating again and how much brighter she was. He was excited that her health had returned and he was able to return her to training. The vet commented that she seemed to be on the right track and hoped the medications would be able to kick in now and work better for her since the immune system was not as repressed.

From Nick Larkin's Case Files—Cushing's Disease

Dr. Nicholas Larkins, BVSc, MRCVS, is a veterinarian who has practiced on equine, farm, and exotic animals in the United Kingdom, the United States, and Zimbabwe.

Cushing's disease was diagnosed in a pony named Bilbo Baggins in the winter of 1996. The pony was given Perlactin for four months, but this was considered too expensive for long-term use. Bilbo's owner decided to try NAF D-Tox, a product containing eleuthero and schisandra among several

other herbs, having heard of other horse owners' success with this product for horses with Cushing's disease. An improvement was seen within a month. The pony was taken off the herbs for three months, but he began to get heat in the feet and urinate excessively again. Within one month of restarting this formula, the feet were cooler and less sensitive, the stable was drier, and the pony shed his surplus coat.

From Nick Larkin's Case Files—Laminitis

After PB had her horse, Mouse, for more than fifteen years, the horse developed laminitis. The vet prescribed Finadyne injections, followed by a powder, remedial shoeing, and Bute. A blood test also revealed a hormonal imbalance. The mare had been on Bute for two months but reacted to it, with ulcers around the mouth and sores on the muzzle; hence, the owner was keen to find an alternative. Two products, one containing eleuthero and schisandra, the other containing MSM and chondroitin, were suggested. An improvement was seen within a week, and the owner declared herself completely happy with these products' performance after two months. Mouse is now 95 percent sound and back to her old self according to her owner, "behaving more like a twoyear-old than a twenty-two-year-old horse!"

ANIMAL COMPLIANCE

Animal compliance is as important as human compliance. Owners must understand that although some herbs are used for a short time, other herbs must be taken for at least several weeks before clinical improvement can be seen and may take months of use before complete resolution.

Some animals, especially cats, can be difficult to give herbs, while dogs and horses often will eat them with a bit of additional flavoring. When cats are given alcohol, they often foam at the mouth. This is a rather disconcerting experience, but many herbal veterinarians feel that small doses of a tincture, which contains alcohol, actually are the most effective and easily used form of herbs for felines.

Adding herbal medicine to a treatment protocol for a horse usually is quite easy. Horses are herbivores, so their digestive tract is made to digest the cellulose and fiber present in plant material.

HERBAL USE GUIDELINES

The Veterinary Botanical Medicine Association has these useful comments to share.

1. Herbs can be used in cooking for your pets or as medications.
2. As medications, herbs can be helpful for a variety of chronic problems.
3. As medications, herbs can have side effects and interact with other medications.
4. For help using herbs, contact a veterinary herbalist.

HERBAL RESOURCES FOR ANIMALS

To find a veterinarian who uses botanical medicine, contact:

Veterinary Botanical Medicine Association

334 Knollwood Lane
Woodstock, GA 30188
www.vbma.org

Books for the Pet Owner

The Complete Herbal for Farm and Stable by Juliette de Bairacli Levy (London: Faber & Faber, 1991).

The Complete Herbal Handbook for the Dog and Cat by Juliette de Bairacli Levy (London: Faber & Faber, 1992).

All You Ever Wanted to Know about Herbs for Pets by Mary Wulff-Tilford and Gregory Tilford (Irvine, CA: Bowtie Press, 1999).

Books for Clinicians

Complementary and Alternative Veterinary Medicine by Allen Schoen and Susan Wynn (Philadelphia: Mosby Publications, 1998).

Chinese Veterinary Herbal Handbook by Dr. Huisheng Xie (Reddick, FL: Chi Institute of Chinese Medicine, 2004).

Veterinary Herbal Medicine by Susan Wynn and Barbara Fougère (St. Louis: Mosby/Elsevier, 2007).

Resources

SOURCES OF ADAPTOGENIC PRODUCTS

Adaptogens in America

www.adaptogensinamerica.com

adaptogen@gmail.com

Source for adaptogens.

Banyan Botanicals

6705 Eagle Rock Ave NE

Albuquerque, NM 87113

800-953-6424 (toll-free)

www.banyanbotanicals.com

Manufacturer of ayurvedic herbal products.

Dragon Herbs

315 Wilshire Blvd.

Santa Monica, CA 90401

888-55-TONIC (558-6642) (tollfree)

www.dragonherbs.com

Manufacturer of Chinese herbal products.

Fungi Perfecti

PO Box 7634

Olympia, WA 98507

800-780-9126 (toll-free in the United States and Canada)

360-426-9292

www.fungi.com

Manufacturer of mushroom products.

Herbalist & Alchemist, Inc.

51 S. Wandling Avenue

Washington, NJ 07882

800-611-8235 (toll free)

www.herbalist-chemist.com

David Winston's herbal products and educational materials.

Herb Pharm

PO Box 116

Williams, Oregon 97544

800-348-4372 (toll-free)

www.herb-pharm.com

Manufacturer of herbal products.

Natura Health Products

1945 Ashland Mine Road

Ashland, Oregon 97520

www.naturahealthproducts.com

Manufacturer of herbal and nutritional products.

New Chapter

90 Technology Drive

Brattleboro, VT 05301

800-543-7279 (toll-free)

www.new-chapter.com

Manufacturer of herbal and whole-food nutritional products.

Om Organics

3245 Prairie Avenue Suite A

Boulder, CO 80301

888-550-VEDA (8332) (toll-free)

www.omorganics.com

Manufacturer of ayurvedic herbal products and Tulsi tea.

Planetary Formulas

PO Box 533

Soquel, CA 95073

800-717-5010 (toll-free)

www.planetherbs.com

Manufacturer of herbal products.

Swedish Herbal Institute

ProActive BioProducts

500 Foothills South Drive, Suite 2

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877-282-5366
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EDUCATION AND RESEARCH

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HERBAL ORGANIZATIONS

American Botanical Council

6200 Manor Rd.

Austin, TX 78723

512-926-4900

www.herbalgram.org

Provides education to promote the responsible use of herbal medicine.
Publisher of *HerbalGram*.

American Herbalist Guild

141 Nob Hill Road
Cheshire, CT 06410
203-272-6731

www.americanherbalistsguild.com

Peer-reviewed clinical herbalists' organization.

United Plant Savers

PO Box 400
East Barre, VT 05649
802-476-6467

www.unitedplantsavers.org

Works to protect medicinal plants and their habitats.

Veterinary Botanical Medicine Association

1785 Poplar Drive
Kennesaw, GA 30144

Office@vbma.org

Glossary

acetylcholinesterase (AChE): An enzyme that breaks down the neurotransmitter acetylcholine, which is needed for nerve transmission.

acute: A type of disorder having a sudden onset with severe symptoms and generally a short or self-limited duration (see chronic).

adaptive response: The capacity and sustaining power of the body to adapt to stress and minimize the effects of stress. Also, the process of reestablishing homeostasis disturbed by stress.

adaptogen: Adaptogens are herbs that are nontoxic, produce a nonspecific defensive response to stress, and have a normalizing influence on the body. Adaptogens help the body adapt to stress, support its normal functions, and restore balance. They increase the body's resistance to physical, biological, emotional, and environmental stressors. They are unique from other substances in their ability to balance endocrine hormones and the immune system and allow the body to maintain optimal homeostasis (see chapter 2).

adenosine triphosphate (ATP): The primary source of cellular energy.

adrenal fatigue: State produced when the adrenal glands cannot adequately meet the demands of stress.

adrenal glands: A pair of glands located above the kidneys. The adrenal medulla (outer region) produces hormones such as adrenaline, and the adrenal cortex (inner region) produces hormones such as corticosteroids and androgens.

adrenaline (epinephrine): Hormone produced by the outer region of the adrenal gland (adrenal medulla) that normally is present in the bloodstream in minute quantities. In times of excitement or stress, additional quantities are secreted, causing an effect on body structures in preparation for physical exertion (fight or flight).

adrenocorticotrophic hormone (also known as ACTH and corticotropin): A hormone secreted by the anterior part of the pituitary gland. Levels of this hormone increase in response to stress and disease.

aldosterone: Hormone produced by the inner region of the adrenal gland

(adrenal cortex) that affects the kidneys by its regulation of sodium, potassium, and water retention.

allopathic medicine: The dominant medical philosophy of conventional Western medicine that focuses on drugs and surgery in an attempt to heal dysfunction and disease.

allostasis: A state of stability (homeostasis) that is achieved through change or adaptation. Allostasis comes from the Greek roots allo, meaning “variable,” and stasis, meaning “stable” (see homeostasis).

allostatic load: The cumulative biological burden exacted on the body through attempts to adapt to life’s demands, caused by continued allostasis.

Alzheimer’s disease: The most common cause of dementia in those age sixty-five and older, characterized by a progressive decline in cognition and memory.

amphoterics: An herb that normalizes function in a tissue or organ. An immune amphoteric can be used for people with hypoimmune (cancer, chronic fatigue immune deficiency syndrome) or hyperimmune (allergies, autoimmune diseases) conditions.

anabolism: The metabolic process of building tissue from simpler molecules, especially the building of muscle protein from amino acids. The opposite of catabolism.

angina: Cardiac pain caused by ischemia (lack of blood flow and oxygen) to the heart.

antioxidant: Substance that prevents damage to cells by inhibiting oxidation and trapping free radicals.

anxiolytic: Antianxiety agent.

aphrodisiac: Substance that stimulates sexual desire.

attention deficit hyperactivity disorder (ADHD): A disorder of attention, organization, and impulse control that appears in childhood and often persists into adulthood.

autonomic nervous system: The part of the nervous system that is concerned with the control of involuntary bodily functions.

ayurveda: A traditional system of medicine originally practiced in India and now practiced throughout the world. Ayurvedic practitioners combine herbs, massage, diet, and other natural systems in treating diseases.

botanical: A substance, including herbs, derived from part of a plant (bark, root, or leaves).

bruxism: Involuntary grinding of the teeth while sleeping. It often is indicative of magnesium deficiency.

cachexia: Malnutrition and wasting associated with late-stage cancer, HIV/ AIDS, tuberculosis, and other wasting conditions.

cancer: A malignant tumor characterized by abnormal cell proliferation. Types include carcinoma, sarcoma, lymphoma, and leukemia.

cardiovascular system: A system in the body that includes the heart (cardio), blood, blood vessels (vascular), and circulation.

catabolism: The metabolic breakdown of large chemical compounds in the body, often accompanied by a release of energy.

catecholamines: Hormones (adrenaline and noradrenaline) that are released by the adrenal medulla and affect the sympathetic nervous system.

celiac disease (celiac sprue): A condition caused by gluten intolerance (gluten is found in wheat, rye, barley, oats, spelt). Its effects can range from mild symptoms (inflammation of the bowel, diarrhea) to severe ulceration of the bowels, intestinal bleeding, and malnutrition.

central nervous system (CNS): The brain and spinal cord.

Charaka Samhita: One of the classic texts of ayurvedic medicine.

chemoprevention: Using pharmaceutical drugs to prevent, stop, or reverse the development of cancer.

chemotherapy: A treatment of disease by using any chemical substances. It is used most often to refer to the chemical treatments used to combat cancer cells.

Chinese heart: The heart in traditional Chinese medicine includes not only the physical organ but the blood vessels as well. The Chinese heart controls the blood, stores the shen (mind, consciousness), and opens to the tongue. The Chinese heart is susceptible to depleted yin from stress (nervousness, anxiety), heat (myocarditis), and stagnant phlegm (heart attack).

Chinese kidney: The Chinese kidney includes the actual kidneys and their ability to filter the blood and excrete wastes via the urine. They also are the source of jing (vital essence). The kidneys also control the adrenal glands, reproductive function, the bones, teeth, hair, and nails, and open

to the ears/hearing. The kidneys lose jing through excessive ejaculation and are susceptible to heat (kidney infection).

Chinese liver: The Chinese liver is responsible for moving the qi (energy) and blood evenly and smoothly throughout the body. The liver stores blood, controls the sinews, and opens to the eyes. The liver is susceptible to wind (spasms, tetany, numbness), heat (liver headaches, painful red eyes), and stagnation (depression, painful menstruation, and amenorrhea).

Chinese lung: In Chinese medicine, the lungs not only control respiration but they also create the wei qi (protective energy). It is in the lungs that the air qi and gu qi (grain energy) mix to create the wei qi. The lungs control sweating and open to the nose. The lungs are known as the tender organs and are susceptible to cold, heat, excessive dampness, or dryness and stagnation.

Chinese spleen: The Chinese spleen has no connection to the Western organ known as the spleen. It combines aspects of what Western physiology recognizes as the small intestine and pancreas. The Chinese spleen separates the pure (gu qi, or grain energy) from the impure. The spleen is responsible for raising the “food qi” to the heart and lungs where it mixes with air qi to create blood (xue). The spleen controls the muscles and sinews and opens to the mouth. The spleen is susceptible to dampness (diarrhea) and cold (lack of appetite, gas, nausea).

cholesterol: A fatty substance produced predominantly by the liver. It is necessary for building cell membranes, insulating the central nervous system, covering fats for blood transport, forming bile acids, oiling the skin, and making steroid hormones. Types are classified as low density lipoprotein (LDL), very low density lipoprotein (VLDL), and high density lipoprotein (HDL).

cholinergic: A substance that increases or mimics the effects of acetylcholine, which is needed for nerve transmission.

chronic: A type of long-term or persistent disease (see acute).

chronic fatigue immune deficiency syndrome (chronic fatigue syndrome): Condition characterized by symptoms of persistent and disabling fatigue, sleep disturbances, and immune suppression.

clinical: A type of observation based on a person’s perceived condition and symptoms.

corticotropin-releasing hormone (CRH): The hormone released from

the hypothalamus that interacts with the pituitary gland to produce adrenocorticotrophic hormone (ACTH).

cortisol (hydrocortisone): The hormone released from the adrenal glands in response to stress; it is often called the “stress hormone.” It is essential to metabolism and the body’s reactions to stress. It helps metabolize foods, heal damaged tissue, and regulate blood pressure. Long-term overproduction of cortisol can cause depletion of the immune system, impaired circulation, hypertension, and poor digestion.

cytokines (includes interleukins and interferon): Proteins produced by white blood cells that act as chemical messengers between cells.

decoction: Extract of an herb (usually made from roots or bark) made by boiling or simmering herbs in water. Decoctions are used for extracting constituents from hard, woody material. Infusions (pouring hot water over herbs) are used for most leaves and flowers.

dehydroepiandrosterone (DHEA): An androgenic steroid hormone produced by the adrenal cortex. Its primary function is to inhibit the binding of cortisol.

delirium tremens: Tremors and agitation associated with alcohol withdrawal.

demulcent: Moistening herbs that soothe mucous membrane tissue, usually due to their mucilaginous polysaccharides.

diabetes: A disease characterized by elevated blood sugar levels. Type 2 diabetes also is called noninsulin dependent diabetes mellitus.

Dietary Supplement Health and Education Act of 1994 (DSHEA): Legislation that placed herbal products in a clearly defined regulatory category of dietary supplements, along with a number of other dietary supplements, including vitamins, minerals, and amino acids.

digestive system: A system in the body that includes the mouth, esophagus, stomach, liver, pancreas, small intestine, colon, and rectum.

doshas: In ayurvedic medicine the bodily humors, or essential bodily fluids. Includes the tridoshas (vata, pitta, and kapha).

drug: Any substance that can be used to modify a chemical process in the body. Drugs are used to treat illness, relieve symptoms, enhance performance or ability, and alter states of mind.

drug interaction: An occurrence that happens when multiple drugs are taken together or drugs are taken with certain herbs or foods. Drug

interactions may enhance or reduce the action of a drug and may increase its side effects.

Eclectic physicians: Eclectic medicine developed in the United States around 1830 from the medical reform movement begun by Dr. Wooster Beach (1794–1868). The Eclectic physicians primarily used indigenous American herbal remedies.

endocrine system: The system composed of glands that release their hormones directly into the bloodstream for chemical signaling of target cells. These glands include the pituitary gland, pineal gland, hypothalamus, thyroid gland, parathyroid glands, thymus, adrenal glands, ovaries (in females), testes (in males), and the pancreas.

energetics: An effective way of understanding an herb not by its constituents but by its activity and effects on the human body.

epilepsy: A disorder of the nervous system characterized by recurrent seizures.

estrogen: A hormone made by the ovaries, adrenal glands, and fatty tissue (breasts, belly fat). Estrogen is the primary female sex hormone and it promotes development of secondary sexual characteristics in women.

“fight-or-flight” response: The body’s stress response. It is caused by one or more stressors and triggers increased awareness, rapid heartbeat, faster breathing, and the release of adrenaline and/or noradrenaline into the bloodstream.

fire poison: A term in traditional Chinese medicine that describes red, painful bacterial infections such as mastitis, boils, and carbuncles.

free radical: A by-product of normal metabolism that is formed when oxygen is metabolized. These compounds are highly reactive and can cause oxidation, cellular damage, and inflammation.

fu zheng therapy: Chinese herbal formulas used in cancer treatment and to enhance immune function.

galactagogue: An herb that stimulates milk production and milk flow in nursing women.

general adaptation syndrome (GAS): Condition described by Hans Selye, PhD, who believed that stress is a major cause of disease because chronic stress causes long-term chemical changes within the body. He proposed that a human’s adaptive response to stress had three stages: alarm, resistance, and exhaustion. Each stage can be defined by its

underlying biochemical mechanisms.

ghee: Clarified butter made by heating it and removing the foam that forms on top and the sediment that settles to the bottom.

glomerulonephritis: A degenerative autoimmune disease of the kidneys.

hepatitis: Inflammation of the liver.

hepatocytes: Liver cells that are necessary for cholesterol synthesis, production of bile, hepatic detoxification, and protein synthesis.

herb: A plant lacking a permanent woody stem (not a tree or shrub) grown for culinary or medicinal value.

herbalism: The study of herbs. Medical herbalism refers to the practice of using plants as medicinal remedies.

herbal medicine (botanical medicine): Any system of medicine that relies on herbs or plant-based substances as the source of remedies to treat, prevent, or cure various health conditions.

holistic medicine: The art and science of healing that addresses care of the whole person—body, mind, spirit, and environment.

homeostasis: A steady internal state, a state of equilibrium or balance within the body. It comes from the Greek roots *homeo*, meaning same, and *stasis*, meaning stable—remaining stable by staying the same (see *allostasis*).

human immunodeficiency virus (HIV): The causative agent of AIDS.

hun: The Chinese name for the ethereal soul.

hypertension: High blood pressure. “White coat” hypertension is a term used to describe high blood pressure that occurs when someone is experiencing a stressful situation.

hypoglycemia: Low blood sugar, which causes the brain to receive an inadequate supply of glucose to carry out its normal functions.

hypothalamic-pituitary-adrenal axis (HPA): An interacting group of organs that includes the hypothalamus, pituitary glands, and adrenal glands. The HPA axis plays an essential role in the body’s response to stress and in the function of the neuroendocrine system.

hypothalamus: A part of the brain also known as the “keeper of internal balance” or the “master switchboard.” The hypothalamus secretes hormones that make other endocrine glands secrete hormones. It directs the fight-or-flight response of the autonomic nervous system. Its main function is homeostasis, or maintaining the body’s balance.

immune amphoteric: An immune modulator. An herb that can enhance depressed immune function or reduce excessive immune response to create a normal state.

immune reservoir: A theoretical concept describing a person's overall immune potential.

immune response: The activity of the immune system against outside invaders such as bacteria and viruses or the body's own tissues (autoimmune response).

immune system: A network of specialized cells, tissues, and organs that protect the body from outside pathogens, including bacteria and viruses as well as rogue cells (cancer). It includes the lymph nodes, lymphatic vessels, bone marrow, spleen, thymus, and gut associated lymph tissue (GALT).

immunity: An expression of homeostasis within the immune system. A condition that enables the body to resist and overcome disease or infection.

immunomodulator: A substance that affects the immune system due to its ability to modify or regulate immune functions, also called an immune amphoteric.

interferon: A type of protein (cytokine) produced by the immune system in response to viruses, parasites, bacteria, or cancer cells.

interleukins: Chemicals found in leukocytes that stimulate them to fight infection.

in vitro: The term applied to biological processes studied experimentally in isolation from the organism; test-tube.

in vivo: Latin for "in the living." Studies done on living organisms (animal or human).

ischemic: Lack of oxygen to a tissue.

jing: A term in traditional Chinese medicine denoting the vital essence or life force. Jing is primarily stored in the Chinese kidney.

kampo: Traditional medicine of Japan.

Kupffer cells: Specialized macrophages (immune cells) that are located in the liver.

limbic system: A system in the brain that generates feelings and emotions.

liver: A large organ that plays an important role in the metabolism of sugars and fats, synthesizes several proteins, and filters toxins from the

blood.

lymph: A clear fluid that flows through lymph vessels and is collected from the tissues throughout the body. Its function is to nourish tissue cells and return waste matter to the bloodstream.

lymphatic system: An interconnecting group of vascular channels that transport lymph fluid and white blood cells (chiefly lymphocytes) throughout the body.

lymph nodes: Part of the lymphatic system; these nodes trap foreign bacteria and viruses.

lymphocyte: A type of white blood cell that fights infections. Two major types are B lymphocytes and T lymphocytes.

macrophage: An immune cell. Macrophages protect the body against bacteria and viruses.

metabolic syndrome (hyperinsulinemia): A condition in which a person has elevated insulin levels due to the inability of beta cells in the pancreas to use already secreted insulin.

metabolism: The sum total of changes in an organism to achieve a balance (homeostasis).

metabolite: A substance produced by metabolism.

mitochondria: Components found in cells that serve as primary energy sources for all cellular functions.

natural killer (NK) cells: Lymphocytes that lack B-cell and T-cell receptors. They are designed to kill certain mutant and virus-infected cells.

nervine: A nerve tonic that gently reduces stress and anxiety. It affects the nervous system and nerve function due to its ability to soothe the nerves and alleviate irritation and stress.

neurasthenia: Nerve weakness.

neuroendocrine system: The endocrine system and the nervous system are so closely associated that they collectively are called the neuroendocrine system.

neuron: A nerve cell.

neuropeptides: Compounds such as endorphins that are found in neural tissue. They influence neural activity or functioning.

neurotransmitter: A biochemical substance such as norepinephrine, serotonin, dopamine, and endorphin that relays messages from one

neuron to another.

nootropic: Herbs, medications, or supplements that enhance cerebral circulation and memory. They act on the mind and often are called “smart drugs” or “cerebral stimulants.”

noradrenaline (norepinephrine): A hormone secreted by the adrenal gland (adrenal medulla) that is chemically related to adrenaline.

nvwoti: Cherokee word for medicine and the word used to denote Cherokee medical practice.

organism: Throughout scientific literature, organism means “any living entity, whether plant or animal, considered as a whole.” This book often uses the term body rather than organism because we are mainly referring to the human body.

osteoporosis: Decreased bone density that can lead to increased risk of bone fractures.

parasympathetic nervous system: A division of the autonomic (involuntary) nervous system that controls normal digestive, reproductive, cardiopulmonary, and vascular functions and stimulates most bodily secretions.

pharmacodynamics: The study of the actions of drugs on the body—what a drug does to the body.

pharmacognosy: The science and study of naturally derived medicines.

pharmacokinetics: The study of the movement of drugs within the body and the body’s reaction to drugs, including the processes that control the absorption, distribution, metabolism, and excretion of drugs—what the body does to a drug.

pharmacology: The study of drugs, including their sources, chemistry, production, use in treating diseases, and side effects.

pharmacopoeia: An official collection of technical information on specific medicinal drugs, both botanical and pharmaceutical.

Physiomedicalism: A medical reform movement founded by Alva Curtis in 1840s. This medical sect used nontoxic herbs to treat disease.

phytochemicals: Plant compounds or chemicals.

phytopharmaceuticals: Druglike supplements extracted from plant sources. These compounds can be single isolated constituents of the plants such as vinpocetine or concentrated standardized extracts such as ginkgo, which is a fifty-to-one concentrate.

phytotherapy: The term primarily used in Europe for the treatment and prevention of disease using herbal medicines.

pituitary gland: An endocrine gland that is sometimes called the “master gland” because it regulates many crucial functions. It produces and secretes hormones in response to commands from the hypothalamus.

placebo: A pharmacologically inactive substance. Placebos often are used to compare clinical responses against the effects of pharmacologically active substances in experiments.

po: The Chinese name for the corporeal soul.

polysaccharides: Complex carbohydrates that are reported to be immune-stimulating.

prophylaxis: Prevention.

psychoneuroimmunology: The study of mind-body interactions and their effects on the immune system.

qi: The term in traditional Chinese medicine for the energy that causes movement in our bodies, on the earth (tides, wind), and in the universe (the planet’s rotation around the sun).

radiation: The emission and transmission of energy in the form of particles or electromagnetic waves (in particular, X-rays). High-energy radiation is harmful to cells.

radiation therapy: This term usually refers to the treatment of cancer with ionizing radiation from roentgen rays, radium, or other radioactive substances.

rasayana: This term means “the path that rasa takes.” It is derived from the words rasa, “the primordial tissue or plasma,” and ayana, “a path.” It is believed, in ayurvedic medicine, that the qualities of the rasa influence the health of other dhatus (tissues) of the body. Hence, a rasayana is any medicine that improves the quality of rasa and strengthens or promotes the health of all tissues of the body.

reactive oxygen species (ROS): A category that includes oxygen ions and free radicals. These substances can cause damage to cell structures.

respiratory system: A system in the body that includes the organs involved in breathing: nose, throat, larynx, trachea, bronchi, and lungs.

saponin: A plant compound (glycoside) that when combined with water produces a soapy mixture. Some triterpenoid saponins have been identified as having adaptogenic properties.

seasonal affective disorder (SAD): A depressive mood disorder that usually occurs in the winter due to lack of sunlight.

sedative: A substance that affects the nervous system and nerve function due to its ability to exert a calming or tranquilizing effect and reduce anxiety, stress, irritability, and excitement.

shen: A Chinese term that usually is translated as “spirit” but is more accurately “mind or consciousness.” In traditional Chinese medicine, shen is stored in the heart. Disturbed shen causes anxiety, irritability, insomnia, and bad dreams.

Siddha: The traditional Tamil medical system of Sri Lanka and southern India.

simples: The use of single herbs as therapy.

spleen: The organ that is part of the immune system and is partially responsible for the formation of white blood cells (red blood cells in childhood).

splenomegaly: An enlarged spleen, which can be caused by malaria, mononucleosis, or hemolytic anemia.

stagnant depression: A term used to denote a type of chronic situational depression wherein a traumatic event becomes the central focus of a person’s life.

state of nonspecific resistance: A state of increased or heightened resistance that allows the body to respond to stress.

stimulant: A substance that increases energy and work capacity, often by stimulating the central nervous system.

stress: Any perceived physical or psychological change that disrupts the body’s metabolic balance. Stress is a state of threatened homeostasis.

stressor: Any agent or event that threatens homeostasis or causes stress.

stress response: The body’s response to stress. When the brain perceives something as stressful, it sends a signal to the hypothalamus, which activates a cascade of hormones that cause the body to react to the stress.

sympathetic nervous system: The part of the autonomic nervous system that is active during stress and is a central regulatory system that assists in maintaining the body’s balance (homeostasis).

sympathoadrenal system (SAS): The connection of the hypothalamus to the adrenal medulla via the sympathetic nervous system.

synergistic: Synergy describes the exponential or additive effect of

combining two or more herbs to create increased activity and effects not found in either herb by itself.

systemic: Throughout the entire body.

tardive dyskinesia: Involuntary muscle spasms and movements usually caused as a side effect of long-term use of antipsychotic medication.

T cells: Lymphocytes that are produced in the bone marrow and mature in the thymus.

tea: An infusion made by pouring boiling water over an herb (usually one teaspoon of herb to eight ounces of water). Traditionally, the word tea refers to both the dried leaves or buds of the *Camellia sinensis* plant and the beverage made from them, but it generally can refer to any infused beverage, such as herb tea. Teas can be enjoyed as beverages or used medicinally.

testosterone: A hormone made by the testicles (and to a much lesser degree the ovaries) that in men cause secondary sexual characteristics and in women stimulates libido and energy.

Thomsonian: The Thomsonian movement was founded by Samuel Thomson (1769–1843) and was the first of many sectarian medical movements that flourished in the United States during the early nineteenth century. Thomsonian practitioners used a simple system of herbal remedies and steam baths to cure diseases.

thymus: An endocrine system gland that plays an important role in immune system function.

thyroid: An endocrine system gland that produces thyroxin and other hormones involved in regulating metabolism.

thyroid-stimulating hormone: A hormone secreted by the pituitary gland that stimulates the thyroid gland to secrete hormones (T3 and T4) that affect body metabolism.

tincture: An extract of an herb using a mixture of water and alcohol.

T lymphocytes: Various types of white blood cells (cytotoxic T cells, helper T cells, natural killer cells, etc.) that search out and destroy viruses and cancer cells, as well as help maintain immunological tolerance.

tonic: A substance that alleviates conditions of weakness within the body. It strengthens and invigorates and can work on any or all body systems.

torticollis (wry neck): An acute and painful spasm of the neck muscles.

traditional Chinese medicine: A comprehensive healing system developed over several thousand years. It incorporates the use of herbal formulas, acupuncture, massage, diet therapy, and exercise (t'ai chi).

traditional medicine: Forms of medicine, often very ancient, that were developed over time and for the most part do not make use of modern medical science and technology. Traditional medicine often involves the use of medicinal plants.

tumor: An abnormal growth of cells. Tumors are either malignant (cancerous) or benign (harmless).

Unani-Tibb: The traditional Muslim system of medicine that is derived from ancient Greek medicine.

United States Pharmacopeia (USP): The publication that serves as the official authority and is used to set public standards for all prescription and over-the-counter medicines, some dietary supplements, and other health care products manufactured and sold in the United States.

urinary system: The organs of the body that produce, store, and carry urine. It includes the kidneys, bladder, the prostate, and the urethra.

vaginismus: Involuntary spasms of the vaginal muscles that make sexual intercourse painful or impossible.

vis medicatrix naturae: Latin term meaning "the healing power of nature."

wei qi: Chinese term for the energy created by the Chinese lungs that protects against external pernicious influences (heat, cold, dryness, dampness, wind) or what Western medicine calls viruses, bacterial, fungi, and environmental stress.

white blood cell: A blood cell that does not contain hemoglobin and plays a major role in our immune defense system.

yin and yang: In traditional Chinese thought, these are the two elements that form the universe and are present in every living thing, ideally existing in balance. Yin is the passive, contractive, and cooling property, and yang is the active, expansive, and heating quality.

xenoestrogens: Substances foreign to the body that imitate the effects of the hormone estrogen.

Footnotes

Introduction

*1 For additional names see the individual monographs in chapter 7.

† *Asparagus cochinchinensis* from China is a related species with many similarities and similar uses.

Chapter 2

*1 The main active ingredients are listed here. For more complete information see Constituents in the individual monographs in chapter 7.

Chapter 3

*1 Research summarized from “Adaptogens: Natural Protection for Stress” by Ward Dean, MD, and Ben Tabachnik, PhD. Vitamin Research Products, Inc. 1999 (www.vrp.com). Used with permission.

Chapter 4

*1 Source: Reported by Steve Connor, Science Editor, *Independent* [UK], 12-8-03. Statistics from Brad Spear and colleagues; published in *Trends in Molecular Medicine* (2001).

Chapter 6

*1 Not every adaptogenic herb displays all of these qualities.

Chapter 8

*1 The Cucurbitaceae family of plants has many members with significant toxicity (cucumbers, gourds, and squash are prominent exceptions to this fact). In addition to jiaogulan, there is one other

member of this plant family that has been studied as an adaptogen—bryony (*Bryonia alba*). When I first came across information claiming that this herb was adaptogenic, I was more than a bit surprised. Why? Because bryony is known as a very toxic plant. However, according to researchers, only the summer-harvested root is toxic, and if the root is gathered in the spring or autumn, it lacks toxicity and has the ability to prevent radiation-induced cell damage and side effects from chemotherapy as well as enhance physical endurance and work capacity. An adaptogenic product made with bryony, known as Lostak, is sold in Eastern Europe.

[*2](#) In some cases we are not certain which herbs were being identified as these different types of reishi. When known, genus and species are provided in this section.

[*3](#) Capsules come in various sizes: 0, 00, and 000. The most common size is 00.

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