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Hibiscus

Hibiscus sabdariffa
Family: Malvaceae

Introduction

Native to parts of North Africa and Southeast Asia, *Hibiscus sabdariffa* is a shrubby tropical plant that produces light yellow flowers with reddish-purple centers.[1] After the petals drop from the flower, its remaining deep red calyces (the cup-like structures formed by the sepals) grow into seed-containing pods that look like flower buds. Most of the hibiscus plant's economic value, particularly as an ingredient in herbal teas, comes from the red calyx, although the leaves, seeds, and flowers are also used in local forms of traditional medicine.[1] In commerce the calyces are known by the names hibiscus and roselle.

History and Cultural Significance

Hibiscus is now widely cultivated for its flowers, fruit, and calyces in the tropical and subtropical regions of almost every continent. The hibiscus plant has many medicinal, decorative, and culinary uses. In Egypt and Sudan the deep red tea from the calyces, called *karkade*, is popular as a "refrigerant," i.e., a beverage that helps lower body temperature. In Egypt preparations from the calyx have been used to treat cardiac and nerve diseases and also to stimulate diuresis (increased production of urine).[1] Elsewhere in North Africa, calyx preparations are used to treat cough, sore throat, and genital problems, and the emollient leaf pulp is used for treating external wounds and abscesses.[2] In Europe dried calyces and epicalyces (a group of bracts simulating a calyx) are used primarily as a caffeine-free beverage tea.[3] In 1990 the German Commission E evaluated various European uses of hibiscus and determined that efficacy for the claimed uses has not been substantiated, including its uses to stimulate appetite, for colds, catarrhs of the upper respiratory tract, to dissolve phlegm, as a gentle laxative, diuretic, and for circulatory disorders.[4] Still, hibiscus is used in many medicinal herbal products in the German-speaking countries. It is used particularly in medicinal teas in combination with lemon balm leaf (*Melissa officinalis*, Lamiaceae) and St. John's wort herb (*Hypericum perforatum,* Clusiaceae) for nervous restlessness and difficulty falling asleep.[5] In Iran, sour hibiscus tea is a traditional treatment for hypertension.[6] The stalks are used in making rope in Africa and the seeds are expressed for the oil.[7]

Modern Research

The traditional uses of hibiscus for its blood pressure (BP)-lowering effect have been clinically researched. A standardized extract of hibiscus was shown effective in lowering BP in hypertensive humans in a controlled Mexican trial.[8] A clinical study in Iran also investigated the BP-lowering effects of sour tea (hibiscus tea) and found it superior to placebo in hypertensive patients.[9] A recent double-blind, reference-controlled trial demonstrated a significant reduction in BP in the hibiscus group when compared directly with the antihypertensive drug lisinopril.[8] Animal research suggests potential antioxidant and cholesterol-lowering effects of hibiscus teas.[10] A recent clinical trial supports this activity.[11]

Animal research has tested the potential use of topical hibiscus extract from a different species, *H. rosa-sinensis*, as a cancer chemopreventive agent,[12,13] but there are no human clinical studies supporting this activity.

An official quality control standards monograph for the whole or cut calyces and epicalyces collected during fruiting is published in the 5th edition of the *European Pharmacopoeia* under the European common name Roselle (Hibisci sabdariffae flos).[14]

Future Outlook

The main supply of hibiscus comes from Thailand, Sudan, China, and Mexico and is known as *jamaica* (ha-my-kah).[15] Sudanese hibiscus, formerly the primary source of hibiscus sold in herbal teas in the United States, is considered by many in the herb trade as the preferred product. Due to the US trade embargo on agricultural goods from Sudan due to the conflict in Darfur, Sudanese hibiscus is now sold through brokers in Germany at a substantial price mark-up. Therefore, the majority of hibiscus in the United States now comes from China and Thailand. Germany and the United States are the main importers of hibiscus products. There is a growing industry of hibiscus production in the African nations of Gambia (where it is called *wanjo*), Mali, Namibia (*omutete*), Nigeria (*zobo*), Senegal (*bissap*), Tanzania, and Uganda, plus the Tamil Nadu area of South India, as well as in the Carib-

Continues on page 4

Hibiscus *Hibiscus sabdariffa* Photo by Steven Foster. ©2007 stevenfoster.com

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bean islands. Some of the African hibiscus production has focused on organically grown material, based on initiatives by the Swedish International Development Agency (SIDA) and a group called the Export Promotion of Organic Products from Africa (EPOPA).[7] Additionally, the United States Agency for International Development (USAID)-backed Agriculture in Sustainable African Plant Products (ASNAPP) supports initiatives in which over 4000 rural farmers, mostly women, are growing the herb, mainly in the west-African area around Senegal.[16]

In 1999, reports from the Food and Agriculture Organization of the United Nations stated that the demand for hibiscus had been increasing steadily. At that time, about 15,000 metric tons of hibiscus were involved in international trade over a period of one year.[15]

—Gayle Engels

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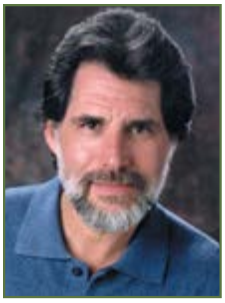
dear *reader*

Garlic Trial Shows No Cholesterol-Lowering Effect; Other Cardiovascular Benefits Documented



The biggest herbal clinical trial so far this year that has gotten the media's attention was published in February—the latest in a series of disappointing trials on many of the most popular herbs in the United States. This time it was garlic's turn to take a hit.

Researchers at Stanford University reported that reasonable doses of fresh garlic, plus 2 popular garlic supplements, failed to lower LDL cholesterol in 6 months in patients with moderately high levels of cholesterol (130-190 mg/dl).[1] The headlines included variations based on the predictable Stanford University press release, "Stanford Study Drives Stake Through Claims that Garlic Lowers Cholesterol Levels"[2] or "Garlic's Cholesterol Benefits Stink," etc.

Though disappointing to many in the herb field, this trial is not surprising. Most of the recent studies on garlic preparations have not shown any significant LDL-lowering effects. To the researchers' credit, this trial appears to have been well-designed and was conducted by some respected experts on garlic chemistry and pharmacology, using two very different products—Garlicin® (Nature's Way, Springville, UT) and Kyolic® (Wakunaga USA, Mission Viejo, CA)—the latter being the world's most scientifically and clinically researched garlic preparation. (Neither manufacturer was involved in the design of the trial and did not supply the pills.)

The biggest concern should be how its results may be misinterpreted by the general public, health professionals, and the media. Despite the failure of garlic to lower LDL cholesterol in this trial, there are still other cardiovascular benefits of garlic, a chief one being its documented ability to inhibit and even reverse the buildup of arterial plaque (atherosclerosis). There are 6 trials that support this action. This is probably a more significant marker for cardiovascular disease than measuring for LDL levels. Atherosclerosis can lead to hypertension and possibly increased risk of stroke or heart attack.

Of course, there's another potential benefit of garlic (as well as other species of *Allium*), helping reduce the incidence of certain cancers, particularly cancers of the gastrointestinal tract. The support for this is compelling, including publications from the National Cancer Institute.

To their credit, the authors of this trial leave the door open for other benefits of garlic, as does an editorial in the same issue of the journal: "The results do not demonstrate that garlic has no usefulness in the prevention of cardiovascular disease."[3] It was refreshing to see the authors of the trial and editors of this journal treat this trial in such an open-minded and fair manner.

Wakunaga issued a "rebuttal" in which, among other points, it emphasized that garlic "works on multiple risk factors of cardiovascular diseases," noting that garlic may have more of an observable LDL-lowering effect in patients with higher LDL levels, as indicated in published trials on its product in patients at levels of 170 or higher.[4]

Hopefully, health professionals and the public will understand these benefits of garlic and not throw the baby out with the bathwater. However, given how the media likes to play these kinds of stories, it's definitely problematic. To their credit, however, some reporters have covered the other cardiovascular benefits besides the cholesterol issue, so it's possible that this story may not have as much of a negative impact on garlic use as it might have otherwise.

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HERBALGRAM

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features

34 **Herbal Medicine in Iran**

by Hamid-Reza Adhami, PharmD; Bita Mesgarpour, PharmD; and Hassan Farsam, PharmD, PhD

This article explores the evolution of herbal medicine in Iran, from ancient Persia to the present. The people of Iran have a long history of using and trading medicinal plants, and early herbal knowledge within Iran is recorded in the ancient religious text, the *Avesta*. Various early Persian scholars, profiled in this article, made advances in science and medicine that influenced the European Renaissance. Western conventional medicine was introduced to Iran in 1850, marginalizing traditional and herbal healers. Traditional medicine, however, is still practiced and highly regarded in many areas of the country. The authors address the latest research and recent regulatory measures on herbal medicine and traditional therapies.

Ibn Sina (980-1037 CE), called Avicenna by the Western world, a prominent contributor to the sciences of pharmacy and medicine. ©Pfizer Corporation from the book *Great Moments in Pharmacy: A History of Pharmacy in Pictures*

44 **Paradise Nearly Lost: Jamaica's Forgotten Cinchona Gardens**

by Kevin Spelman and Jill Yesko

The Cinchona Botanical Station, a plantation and research facility situated on a peak of Jamaica's Blue Mountains, was established in 1863 by the British government. For decades, scientists and researchers used the station to cultivate cinchona trees for extraction of quinine for the treatment of malaria and to study various tropical plants. Government agencies and research organizations lost interest in the station in the early 1900s, and it fell into a state of disrepair. The facility was largely neglected until restoration efforts were initiated in the 1980s. The authors of this article explore the history and relevance of this unique facility, as well as the ethnobotany of its featured plant, the cinchona tree.

54 **Illegal Stripping and Conservation of Slippery Elm Trees**

by Courtney Cavaliere

This article covers the ethnobotanical history, medicinal uses, harvesting practices, and current threats to the slippery elm tree. The bark, which has been utilized for its medicinal properties for centuries, is sometimes illegally stripped from slippery elms on national forest and private lands by poachers selling to the herbal market. Such illegal harvesting, in addition to land development, Dutch elm disease, and other factors, has placed the slippery elm in an ambiguous position. Officials at one national forest are now actively working to prevent further illegal stripping of their slippery elms, and some conservation organizations are striving to cultivate and preserve slippery elm populations.

departments

10 ABC News

The American Botanical Celebration Launches ABC's New 'Creating an Herbal Legacy' Campaign

Creating an Herbal Legacy: Protecting and Preserving Healthy Herb Solutions

Employee Profile: Ellyn Smith

HerbalGram Changes Policy on the Inclusion of Botanical Authority with Latin Binomials

15 Organization News

Stephen Straus Steps Down as NCCAM's First Director

16 Research & World News

Intravenous Milk Thistle Compound Used to Save Victims of Poisonous Mushrooms

India Passes Bill to Create New Regulatory Category for Dietary Supplements

New UK Committee Assists in Regulation of Herbal Medicines

Botanical Text Owned by Jean-Jacques Rousseau Found and Exhibited at Lloyd Library

22 Research Reviews

Korean Red Ginseng Shown Safe and Possibly Useful in Treating Type 2 Diabetics

Topical Use of Lavender, Clary Sage, and Rose Oils Reduces Dysmenorrhea in College Students

Clove as Effective as Topical Anesthetic

Use of Valerian-Lemon Balm Extract in Children with Restlessness and Sleep Disorders

Three Systematic Reviews of Echinacea Clinical Trials Suggest Efficacy with Cold Symptoms

Trial Shows Herbal Laxative Tea (Smooth Move®) Effective in Treatment of Chronic Constipation for Elderly Adults

62 Legal & Regulatory

FDA Approves Special Green Tea Extract as a New Topical Drug for Genital Warts

66 Conference Report

Egyptian Medicinal and Aromatic Plant Conference Covers Recent Trends in Production, Manufacture, and Marketing

Natural Product Researchers Convene to Honor Gordon Cragg

70 Book Reviews

The Healing Power of Rainforest Herbs

Chamomile: Industrial Profiles

Medicinal Spices: A Handbook of Culinary Herbs, Spices, Spice Mixtures and Their Essential Oils

New Book Profiles

74 In Memoriam

Anne Ophelia Todd Dowden

William A. Mitchell, Jr.

Zakir Ramazanov

78 Calendar

79 Access

80 Classifieds

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The American Botanical Celebration Launches ABC's New 'Creating an Herbal Legacy' Campaign

Awards Dinner for Herb Researchers and Industry Members Raises over $60,000 for ABC

The American Botanical Council (ABC) recently hosted its second annual American Botanical Celebration at the conclusion of the Nutracon Conference and just prior to the Natural Products Expo West (NPEW) conference and trade show in Anaheim, California.

More than 275 leaders from across the herbal and natural products community and around the world gathered on March 8, 2007, in the Hilton Hotel in Anaheim to honor botanical excellence and to help ABC launch its "Creating an Herbal Legacy" campaign. (See the article on page 12 for more details about the campaign launch.)

ABC honored its Sponsor Members, who provide generous financial support to ABC's nonprofit educational programs. "It has been a long time since so many people from the herbal community were in one room. This truly is a Celebration for the herbal medicine community. I am pleased you are also here to witness the genesis of the Creating an Herbal Legacy initiative," said Peggy Brevoort, president of the ABC Board of Trustees. The event also honored the 8-member ABC Board of Trustees and the 61-member Advisory Board who provide editorial and peer-review support.

ABC Founder and Executive Director Mark Blumenthal kicked off the program with a serious and sometimes whimsical overview of ABC and its history, both in words and images, including some historical (and in some cases hysterical) photos. Blumenthal said, "With the generous support and commitment from friends and colleagues in academia, health professions, industry, government, media, and the general public in over 70 countries, ABC has grown into a truly international organization, advocating research and rational regulation of herb and medicinal plant preparations to be responsibly used for self-care and healthcare. Tonight we launch our new Creating an Herbal Legacy campaign to help ensure the future viability of a robust herbal medicine agenda."

Following Blumenthal, the "Creating an Herbal Legacy" campaign was introduced by ABC Board of Trustees members Neil Blomquist and Morris "Mo" Shriftman. Loren Israelsen of United Natural Products Alliance emphasized the compelling need for supporting such a campaign. In an understated 15-minute presentation, an overwhelming response from attendees resulted in more than $60,000 in pledges and donations to the new campaign.

The second annual Botanical Excellence Awards were presented toward the end of the evening. The James A. Duke Botanical

Left photo: ABC Board of Trustee President Peggy Brevoort welcomed the Celebration participants and thanked all who participated in making the event happen. Photo ©2007 ABC

Bottom left photo: Mark Blumenthal, ABC Founder and Executive Director, provided a visual overview of ABC and served as emcee. Photo ©2007 ABC

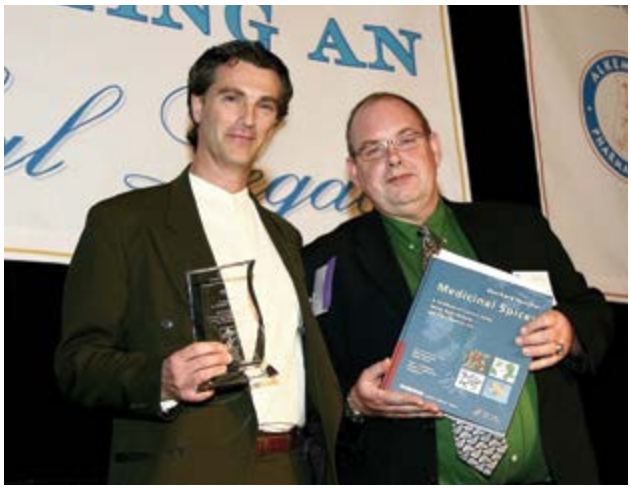
Below photo: New ABC booth stayed busy with meetings and visitors at the Natural Products Expo West during the 3 days after the Celebration. Photo ©2007 ABC

Literature Award was presented to Prof. Eberhard Teuscher of Triebes, Thuringia, Germany, for the publication of the English edition of *Medicinal Spices: A Handbook of Culinary Herbs, Spices, Spice Mixtures and Their Essential Oils* (Medpharm, CRC Press, 2006). (Read the review of this book on page 71 of this issue.) Josef Brinckmann, the co-translator and editor of the book, accepted the award on behalf of Prof. Teuscher. The Norman R. Farnsworth Botanical Research Award was presented to Prof. Edzard Ernst, MD, PhD, for his extensive publications that systematically review clinical research on numerous herbs and phytomedicines. Prof. Ernst, the Laing Chair in Complementary Medicine, Peninsula Medical School, Universities of Exeter & Plymouth in the UK, sent a pre-recorded acceptance speech in which he expressed his deep appreciation for the award, adding a humorous side of research as he recounted his efforts at using artichoke extract as an attempted herbal remedy to prevent an alcohol-induced hangover!

The ABC Celebration was sponsored by the following companies and organizations: Alkemists Pharmaceuticals, Aloecorp, Avesthagen, CV Technologies, Indena, Maitake Products, Nature's Way, New Hope Natural Media, Unigen, and United Natural Products Alliance. The Celebration provided a venue for ABC's diverse leaders and industry members to meet, recognize accomplishments, and make plans for the future of herbal medicine.

Blumenthal summed up the event: "Tonight's event and the establishment of our new Creating an Herbal Legacy fund will help take ABC to a higher level of expanded operations and fulfillment of our nonprofit educational mission, and, in turn, help take herbs and plant-based products for improving human health to a greater degree of public acceptance."

—Wayne Silverman



The James A. Duke Botanical Literature Award to Prof. Eberhard Teuscher was accepted by Josef Brinckmann (L) and presented by Steven Foster, member of ABC Board of Trustees. Photo ©2007 ABC

Six ABC staff members helped in Anaheim with the Celebration and trade show. Here, Lori Glenn, HerbClip Managing Editor; Nancy Moon, Executive Assistant to Mark Blumenthal; and Ellyn Smith, Membership Coordinator, (L to R) welcomed guests to the Celebration. Photo ©2007 ABC

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Creating an Herbal Legacy: Protecting and Preserving Healthy Herb Solutions

The American Botanical Council (ABC) has launched a new initiative designed to help ensure that herbal medicine plays an expanded role in self-care and healthcare. More than $60,000 in pledges and contributions were received at the launch of the new campaign, with more being received afterwards.

The campaign was formally launched during the American Botanical Celebration on March 8, 2007, at the close of the Nutracon conference and the beginning of the Natural Products Expo West in Anaheim, California. Attendees received an overview of the initiative from key leaders in the natural products community.

The "Creating an Herbal Legacy" campaign will provide long-term financial support for ABC in three key areas. Individuals, companies, foundations, and organizations can select the area that is of interest to them by designating support to one or more of the following funds:

- **ABC Endowment Fund**
- **ABC Scholarship Fund**
- **ABC Green Development and Beautification Fund**

At the Celebration, ABC Board of Trustee Morris ("Mo") Shriftman set the stage for the rationale on which Trustees decided to create this campaign of designated giving. According to Shriftman, Senior Vice-President of Marketing for Avalon Natural Products, "ABC has been at the center of the campaign for the recognition and acceptance of the efficacy of plant-based medicine and now seeks to put into place the initiatives to help ensure its future."

Neil Blomquist, an ABC Trustee and formerly the President and CEO of Spectrum Organic Products, outlined a description of the three funds and reasons that each was established. "The Legacy campaign has the unique quality of giving donors the opportunity to choose and control how they want to allocate their contribution," said Blomquist.

Finally, Loren Israelsen, president of the LDI Group and the Executive Director of United Natural Products Alliance, challenged participants at the event to join together to ensure a solid future for herbs and herbal medicine. Israelsen, a pioneer in working for the creation of a rational legal and regulatory environment for herbs in the United States, explained to the group that ABC was a highly respected and unique organization whose persistent nonprofit educational activities and publications have been the primary driving force in helping to create a rational, science-based herbal movement in the United States.

Participants in this initiative select one or more funds and then decide whether to make a one-time tax-deductible gift, a multi-year pledge, or to make this giving a part of their own estate or planned giving efforts.

"Creating an Herbal Legacy is ABC's effort to ensure a solid future for herbs and herbal medicine," said Mark Blumenthal, ABC Founder and Executive Director. "We are grateful for the magnitude of the support provided at the launch of this initiative and are grateful to our many friends and supporters in academia, the health professions, and industry who helped us initiate this campaign."

Although ABC receives much of its annual support for operating funds from its members as well as other revenue-generating educational programs, the Legacy funds represent a new way of supporting the herbal medicine movement into the future. The Legacy funds provide a means to make financial support to ABC count in very specific and tangible ways that will have an impact well into the future. In addition, some ABC supporters can use the Legacy fund as an opportunity to provide long-term support using instruments that are a part of their estate planning. What follows are detailed explanations of each Legacy fund.

The Endowment Fund

This fund was established by the Board of Trustees in 2003 to provide a safety net for ABC's long-term future. This "quasi-endowment fund" will build over time and the Trustees will determine the potential use of income from the fund. Trustees will have the discretion to use the principle if they determine that financial exigencies warrant such action. Once the fund begins to grow, the Trustees may form an Investment Advisory Committee to manage the assets of the fund.

The ABC Scholarship Fund

This fund was established to provide support for the extensive internship program that ABC has conducted since 1999 and to provide support for healthcare practitioners or students whose financial needs prevent them from participating in ABC's annual ethnobotanical tours.

ABC Trustees Morris Shriftman and Neil Blomquist, and ABC supporter Loren Israelsen, look on as participants at the Celebration respond to their appeal to participate in the Legacy campaign. Photo ©2007 ABC

The Scholarship Fund of the Legacy campaign will support the healthcare practitioner Internship Program at ABC. Sara Rinaldi, dietitian intern (L) and, Katie Welch, pharmacy intern. Photo ©2007 ABC

ABC hosts both pharmacy doctoral candidates who participate in 6-week internships and dietitian interns who participate in 1-week rotations. These rotations involve teaching students many aspects of herbal research, including how to locate clinical research, create educational materials (e.g., new overviews for the Healthy Ingredients database), assist in research for ABC members, work in ABC's medicinal gardens, create herbal preparations from freshly picked plants, and participate in other educational experiences. The interns are trained and supervised by ABC Education Coordinator Gayle Engels.

ABC has trained more than 100 interns and currently averages more than 20 per year. Three regional universities participate regularly, and students have also come to ABC from other states and countries. Short visits are also conducted by medical residents from the University of Texas Medical Center at Galveston. Students in all programs have consistently communicated to ABC and their program coordinators that the rotation at ABC is one of the most meaningful of their rotations. Many have stayed in contact with ABC and have become professional members as they moved into their pharmacy and nutrition careers. Some students told ABC that they selected the university program based on the ABC internships.

As former ABC interns move into the workplace, they are better able to answer patient and customer questions, they incorporate their knowledge into their work, and they are better able to advise their colleagues and other professionals regarding the responsible and appropriate use of herbal preparations. In a steady but quiet way, ABC has had an impact on the educational background of an ever-increasing number of conventional health practitioners.

ABC has never had adequate funding to provide stipends for housing and related expenses. For the 3 regional universities, this has not presented a challenge, but ABC receives inquiries from many other locations and students are often unable to cover the costs on their own.

ABC also cosponsors annual ethnobotanical tours in Peru, and occasionally, other parts of the world. These tours provide accredited continuing education for physicians and pharmacists. ABC would like to offer small amounts of financial support for those not able to fully fund their way and to offer funding for students who will be entering healthcare professions. The healthcare practitioners and students who have attended ABC's ethnobotanical tours over the past 13 years have consistently commented on the positive impact these tours have had on their own healthcare practice.

ABC Green Development and Beautification Fund

ABC headquarters is located on an historic site—the Case Mill Homestead, established in the 1850s as a result of a 450-acre land grant from the Republic of Texas to build the first grist mill in the region. The original 150-year-old house is where most of the ABC staff work. The 2.5 acre campus consists of the following facilities: the Main Building where most staff have their offices; the Carriage House, which serves as the warehouse for ABC educational materials along with the shipping/receiving functions and garden office; the Annex, which houses a meeting room and library; the Greenhouse where plants for the gardens are propagated and where tropical plants spend the winter; and 25 herbal demonstration gardens including medicinal and cultural themes as well as medicinal trees.

From the beginning, ABC has employed green building and restoration practices. All materials used to construct the Annex were made of either recycled or recyclable materials that were approved as either not producing out-gassing of potentially toxic compounds or not creating harmful future disposal problems. ABC received a partial grant from the City of Austin to install a rainwater harvesting system, which has been functional through the years but was limited to one-third of the designed capacity since funding was initially limited. Two more 10,000 gallon tanks would expand water-holding capacity significantly, especially during the summer. The 150-year-old main building is in need of maintenance and the paving around the facility needs upgrading. In addition, Austin is one of the most advanced cities in the country in providing funding for 80% of the installation of solar energy projects. ABC would like to take advantage of this benefit.

How to Participate

ABC is requesting financial contributions to these funds in the form of one-time gifts, grants, and multi-year pledges. In addition to direct financial contributions, simple estate planning or planned-giving instruments that could be applied to this fund are being requested. These include bequests in wills, assignment or purchase of life insurance, donation of appreciated assets, and other methods.

By giving supporters choices of where their funds can best be used, ABC is providing more control to those who wish to support ABC's work and to those who want to be very specific about the use of their donations. Interested parties are encouraged to contact the ABC Development Office (e-mail: development@herbalgram.org) to make a contribution or to inquire about the choices available for Creating an Herbal Legacy.

—Wayne Silverman

Employee Profile: Ellyn Smith


Smith

An integral part of any member-based nonprofit organization's operation is the need to ensure that its members receive all their available benefits and that members have access to someone who will effectively handle their inquiries. The person on the ABC staff who fills this function is Ellyn Smith.

Ellyn came to ABC just over a year ago and started as our receptionist. With her pleasant personality and continual smile, she was a perfect person to fill that role. As she took on increasing responsibilities around the office, more and more of her duties pertained to assisting members with inquiries, processing new memberships, and related tasks, growing into the role of ABC's Membership Coordinator. Ellyn's duties are focused on what we call our Core Membership, the several thousand Individual, Academic, and Professional members. Whenever a new member joins ABC, or a valued current member renews his or her membership, Ellyn coordinates the mailing of letters, packets, and any premiums (e.g., herb books, ABC letter openers, etc.).

As part of her role Ellyn also works on the Development and Marketing team, helping to fulfill all Core Member-based functions of any new initiative or program. She also helps the Development department with administrative support in preparing proposals to prospective Corporate and Sponsor members. She also is responsible for ensuring that ABC members are able to gain access to the appropriate areas of the ABC Web site and that their personal user names and passwords are current. She regularly updates the special donor/member database with changes in membership information and adds new Sponsor and Corporate Member listings and links on the ABC Web site. She also helps to ensure that all members' e-mail addresses are updated for the special database so that everyone receives the monthly electronic newsletter, HerbalEGram (if you are an ABC member and you are not receiving HerbalEGram each month, please contact her at membership@herbalgram.org).

For the ABC Sponsor Members and those members who pay extra for the HerbClip mailings (printed copies of HerbClips with the original articles attached), Ellyn maintains this database. She also supports the Development and Marketing team in preparing for conference and trade show shipments and production of brochures and marketing materials, and attends key trade shows as needed. At a recent trade show, her co-workers voted her most-valuable-person for her ability to charm show attendees out of the aisles and into ABC's booth where she convinced many to become ABC members.

Ellyn is not only a highly competent worker, but she also fulfills her responsibilities and performs her roles with a deep level of grace, friendliness, and good humor.

—Mark Blumenthal

HerbalGram Changes Policy on the Inclusion of Botanical Authority with Latin Binomials

The *HerbalGram* policy for the scientific naming of plants has been to format Latin binomials according to the style presented in the American Herbal Products Association's *Herbs of Commerce*, 2nd Edition. Beginning with this issue, *HerbalGram* will continue to identify a plant according to its genus, species, and family, but will no longer include the plant's authority, a practice that *HerbalGram* has maintained for about a decade.

Latin binomials (literally, two names) consist of the name of a plant's genus plus the name for the specific species. In complete botanical citations (e.g., those used in botany journals), the name or initial of the botanist who first published that specific binomial is included after the species name. This is commonly referred to as the authority. For example, the binomial and authority for goldenseal is *Hydrastis canadensis* L., where "L." refers to Carl von Linne' (Linnaeus), the 18th century Swedish biologist who is credited with creating the modern binomial system used in botany and zoology. But very often the issues get somewhat complicated. For example, in the case of black cohosh, the initial name given to it by Linnaeus was *Actaea racemosa*; thus, its name read "*Actaea racemosa* L." Later, however, the 19th century botanist Thomas Nuttall renamed the plant by transferring it into the genus *Cimicifuga*, so Linnaeus' designation as the initial authority of the previous taxon is subsumed in parentheses and Nuttall's name, or its abbreviation, is also appended to the name: *Cimicifuga racemosa* (L.) Nutt. Eliminating the authority will allow *HerbalGram* to reduce what some readers (other than botanists and a few others) might consider unnecessary jargon. For example, consider the botanical name for kudzu: *Pueraria montana* (Lour.) Merr. var. *lobata* (Willd.) Maesen & S.M. Almeida, Fabaceae. ABC Trustee and herbal authority Steven Foster, an author of over a dozen books on herbs and hundreds of articles and reviews, believes that "unless the reader happens to be a taxonomist, that information is of little or no value to readers of *HerbalGram*" (e-mail to N. Dennis, November 9, 2006). By deleting the authorities, the scientific name, including family name, would read "*Pueraria montana* var. *lobata*, Fabaceae." This provides the reader with a reliable scientific name of what plant is being discussed or referenced in a particular article, without the difficulty of dealing with the authorities' names.

Another reason to omit the authority is based on the frequent difficulty in locating reliable sources to verify the correct authority. Foster agrees that "the 'authoritative' botanical literature is fraught with inconsistencies in the citation of the botanical authority." Renowned ethnobotanist and author James A. Duke, PhD, one of the original founders of ABC, supports this decision even though, "as a taxonomically trained botanist," he was "always taught to insist on the author of the scientific name as an integral part of the name" (e-mail to N. Dennis, November 9, 2006). He recognizes the practicality of deleting the authority because "having been called in to help your editors a time or two, I know how much work is involved."

As a peer-reviewed journal, *HerbalGram's* readership comprises academia, health professionals, regulators, members of industry, journalists, consumers, and others. Omitting the botanical authorities should help to expand the *HerbalGram* readership by making articles more accessible to the general public. With this new policy, *HerbalGram* editors aim to provide accurate, readable plant identifications that reflect a continued commitment to high scientific standards with greater appeal to a broader audience.

Stephen Straus Steps Down as NCCAM's First Director

By Courtney Cavaliere

Stephen E. Straus, MD, the first director of the National Institutes of Health's (NIH) National Center for Complementary and Alternative Medicine (NCCAM), relinquished leadership of the Center on November 7, 2006, for health reasons. Dr. Straus will now serve as senior advisor to NIH Director Elias A. Zerhouni, MD. Ruth L. Kirschstein, MD, formerly the acting director of NIH, has been appointed acting director of NCCAM.[1]

"Steve Straus has done a tremendous job in creating and leading NCCAM," said Dr. Zerhouni in an NIH press release.[1] "His total dedication, superb intelligence, extraordinary vision, high energy, and singular wit are all qualities that make him an extraordinary leader. Steve has been one of my most trusted advisors, and I will continue to rely on his experience and perspective."

"Dr. Straus brought a powerful measure of rational science into the thinking about how to study CAM interventions," said Paul Coates, PhD, director of the Office of Dietary Supplements (ODS) at NIH (e-mail, December 20, 2006). "For him, there was a single standard—the scientific one."

Dr. Coates and Dr. Straus attended monthly meetings with one another throughout the majority of Dr. Straus' tenure at NCCAM. "My working relationship with Dr. Straus was especially rewarding. More than half of the portfolio of NCCAM deals with biologic therapies, most of which are marketed in the US as dietary supplements. So we had much to discuss," Dr. Coates explained.

According to Dr. Coates, Dr. Straus recognized the importance of collaboration, and he worked closely with other NIH institutions, in addition to approaching both CAM researchers and conventional Western medicine researchers for CAM development. "He challenged CAM investigators and conventional investigators to bring their best ideas forward," said Dr. Coates. "Some major initiatives from NCCAM brought both CAM and conventional scientists together." For instance, many centers were initiated to promote collaborations between CAM and conventional researchers, particularly the Developmental Centers for Research on CAM.

Norman R. Farnsworth, PhD, research professor of pharmacognosy and distinguished university professor at the University of Illinois at Chicago (UIC), noted that the UIC/NIH Center for Botanical Dietary Supplements Research on Women's Health received significant funding through NCCAM in 1999 to investigate botanicals that affect women's health. According to Dr. Farnsworth, Dr. Straus' work at NCCAM helped to place all elements of CAM on a scientific basis, by validating many CAM modalities through scientific research and raising further questions about modalities that did not show efficacy. "Dr. Straus is a world-class clinical virologist. Many thought he was committing professional suicide by taking over the directorship of NCCAM," said Dr. Farnsworth (e-mail, December 20, 2006). "He has stated that NCCAM's role was to scientifically validate the elements of complementary and alternative medicine. I admire the man."

According to the NIH press release, research at NIH into CAM grew threefold during Straus' term of leadership, from 1999-2006.[1] NCCAM supported more than 1500 projects in research, training, and career development at over 260 US institutions during Straus' directorship.[2]

Dr. Coates said that ODS is continuing to collaborate with NCCAM and that he has already begun attending regular meetings with the new acting director of NCCAM, Dr. Kirschstein. "We want to do the best we can in serving the research needs in this field, and we don't want there to be any loss in momentum," Dr. Coates said (oral communication, December 20, 2006).

Dr. Coates expressed great confidence in Dr. Kirschstein, who has had a long and gloried career at NIH. She was the first woman director of an NIH institute—the National Institute of General Medical Sciences—from 1974 to 1993, and she served as acting director of NIH from January to May 2002.[3]

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Intravenous Milk Thistle Compound Used to Save Victims of Poisonous Mushrooms

By Courtney Cavaliere

A family of 6 in California became the first recipients in the United States of an intravenous milk thistle (*Silybum marianum*, Asteraceae) fruit (seed) extract to treat mushroom poisoning in January of 2007.[1,2] The US Food and Drug Administration (FDA) permitted emergency use of the drug Legalon Sil® (Madaus Pharma, Brussels; div. of Madaus AG, Cologne, Germany) for the patients, and 5 of the victims survived the poisoning.

The 6 family members, who have not been identified in the media, became ill after eating tacos made with wild mushrooms, which they picked from the Wilder Ranch State Park in Santa Cruz, CA, on New Year's Day.[1] Doctors at Dominican Hospital in Santa Cruz soon determined that the patients were suffering from amatoxin poisoning, which is caused by eating poisonous mushrooms such as the "death cap" (*Amanita phalloides*) mushroom, and which can shut down liver function over a period of days.

Todd Mitchell, MD, a physician at Dominican Hospital, knew of no "ironclad" antidote for mushroom poisoning, and he used the Internet search engine Google Scholar to look for promising treatment options. He thus discovered references to milk thistle and its beneficial effects on the liver. He further learned that the phytopharmaceutical company Madaus Pharma, based in Brussels, Belgium, produces Legalon-Sil, an intravenous preparation made of silibinin, one of the flavonolignans in milk thistle extract. Dr. Mitchell called the company's office in Germany, where the drug is approved for use, and the company agreed to donate enough Legalon to treat all 6 family members.

Milk thistle *Silybum marianum* Photo ©2007 ABC

Before the drug could enter the United States, it had to receive an emergency IND (Investigational New Drug) number from the FDA, identifying it as an investigative new drug. While waiting to hear from the FDA, the staff of Dominican Hospital prescribed oral milk thistle extract supplements (Bio-Silymarin™, Aloha Medicinals Inc., Haiku, HI) to the patients. The FDA granted Legalon an emergency IND number the same day that the agency received the request from Dominican Hospital. "Surprisingly [Mitchell] was able to get this within a matter of hours," said Joe Veilleux, RPh, president of EuroMed, a Madaus subsidiary in the United States, according to an article in the *Santa Cruz Sentinel*.[1] "People were asking me, 'What are the chances he'll get permission?' I said one in 1,000."

Once approval was given, Madaus shipped the medication by personal courier to the United States. The patients were treated with Legalon-Sil, in combination with penicillin, activated charcoal, and an antidote for Tylenol overdose. Five of the patients have been released from the hospital and were progressing towards full recovery, according to reports in January.[1,2] The oldest poisoning victim, an 83-year-old woman, died of kidney failure. "The one victim who died was actually showing signs of liver recovery at her time of death, but she was very old and her kidneys gave out before she could fully recover," said Mr. Veilleux (e-mail, February 9, 2007). "I think the encouraging part is that despite her age and frail condition, her liver function was improving because of her treatment, and unfortunately factors other than her liver resulted in the final complications."

Dr. Mitchell informed the American Botanical Council that he has met with the head of the Poison Control Center and that they are hoping to work with the FDA toward obtaining the drug's approval to make it more readily available in the United States (T. Mitchell, oral communication, February 20, 2007). Mushroom poisoning sent nearly 400 people to the hospital in California in 2006.[1]

Legalon extract, the world's first pharmaceutical-grade milk thistle extract, is made from the fruits (often called seeds) of milk thistle, standardized to 80% flavonolignans (silibinin [silybin], silydianin, and silychristin). Numerous published animal studies and human clinical trials have shown that milk thistle extract is safe, has antioxidant properties, assists in regeneration of RNA (ribonucleic acid) in the liver to create new hepatocytes, and eliminates toxins from the liver. The leaves of milk thistle, native to the Mediterranean area, have been used both as an edible plant and as a liver remedy in traditional medicine since Greco-Roman times. An extensive therapeutic monograph on milk thistle is available in *The ABC Clinical Guide to Herbs*.[3]

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India Passes Bill to Create New Regulatory Category for Dietary Supplements

By Courtney Cavaliere

The Indian Food Safety and Standards Bill 2005, which stands to revitalize India's dietary supplement industry and increase foreign trade, was signed into law in late 2006.[1] The bill essentially creates a new regulatory category in India for dietary supplements, nutraceuticals, functional foods, and foods for special dietary applications.

The new rule establishes what kind of health/nutritional claims can be made for these products and encourages manufacturers to perform testing and clinical studies and form structure-function claims based on the results.[2] According to a release posted on the NPIcenter Web site, Bhushan Karnik, PhD, president of the nutraceutical ingredient supply company GCI Nutrients-India, said the bill will have as significant an impact on the Indian dietary supplement industry as the Dietary Supplement Health and Education Act of 1994 (DSHEA) had on the US dietary supplement industry.[3] He added that it should also provide increased opportunities to dietary supplement companies across the world that want to sell to the Indian market.

According to reports released in October 2006, it has not yet been decided whether the new act will be governed by India's Ministry of Health or Ministry of Food Processing Industry.[2,3] Manufacturers in India will be able to apply for fresh licenses under the new rule, although these companies will not be under the threat of revoking their current licenses issued under the Prevention of Food Adulteration Act.[2]

Dietary supplement trade associations in the United States have expressed their approval of the bill. "India has such a rich tradition in Complementary and Alternative Medicine (CAM) and Modalities, it is great progress to see such a bill expand the use of such products as dietary supplements similar to the availability DSHEA afforded the US market," said Daniel Fabricant, PhD, vice president of scientific affairs of the Natural Products Association (NPA), a US-based trade association, in an article published by NutraIngredients.com.[2]

John Hathcock, PhD, vice president of scientific and international affairs for the US-based trade association the Council for Responsible Nutrition (CRN), echoed such sentiments about the new law. "It clearly recognizes that supplements can be effectively related under food law and it requires that be done," he told NutraIngredients.com.[2] "This should effectively preclude arbitrary and uneven declaration as attempted recently by some Indian States that supplements are drugs merely because of the physical form, e.g., capsules and tablets. The list of permitted ingredients is similar to that in the US in that vitamins, minerals, amino acids, plant materials and even animal products are permitted." He added that the law's administrative authorities should ensure that sections of the new law do not conflict with the Codex Alimentarius' Vitamin and Mineral Food Supplements Guideline.

"For the first time dietary supplements now have a clear status in Indian law," said Simon Pettman, executive director of the International Alliance of Dietary Supplement Associations (IADSA). "This should be the first step to removing them from the continual push and pull of regulatory authorities with different views and interpretation of the existing regulations across India and the beginning of the first stage of creating a world-class regulatory system" (e-mail, December 17, 2006).

The original bill as introduced to the Indian Parliament may be accessed at: http://mofpi.nic.in/foodsfty.pdf. [1]

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New UK Committee Assists in Regulation of Herbal Medicines

By Courtney Cavaliere

A recently formed Herbal Medicines Advisory Committee (HMAC) now assists the United Kingdom's Medicines and Healthcare products Regulatory Agency (MHRA) in monitoring the country's herbal medicinal products. Moreover, the committee has taken on a key role in helping to regulate herbal medicines under the UK's new Traditional Herbal Medicines Registration Scheme (THMRS).[1] MHRA is the government agency responsible for ensuring the safety of medicines and medical devices in the United Kingdom.

The HMAC was established in October of 2005, and MHRA announced that the first members of the committee had been appointed in February of 2006.[2] The committee consists of 15 individuals who have herbal science or health professional expertise, as well as two lay members.[3] Members of HMAC are not permitted to hold any personal interests in the pharmaceutical and herbal industries, and they must exclude themselves from any discussions in which their interests might be regarded as affecting their impartiality.[2] The HMAC advises UK Ministers and the MHRA on any issues relating to registration of herbal medicinal products under the THMRS, which was established in October of 2005, and to issues regarding safety and quality of unlicensed herbal remedies supplied under Section 12 of the UK's Medicines Act of 1968. In this latter capacity, HMAC is likely to play an important role in monitoring the safety of herbal medicines used by UK herbalists who are currently in the process of being statutorily regulated.

"The creation of this committee is a recognition of the growing public and scientific interest in herbal medicine," said Silke Thomson, press officer at MHRA (e-mail, November 28, 2006). "There is a large agenda related to bringing the unregulated herbal medicines sector into effective regulation in the UK in the interests of public health and informed consumer choice."

Herbal products classified as medicines in the United Kingdom are regulated in one of 3 different ways: (1) unlicensed herbal remedies; (2) registered traditional herbal medicines; and (3) licensed herbal medicines.[4] Most herbal medicines in the United Kingdom currently reach consumers as unlicensed herbal medicines, which until now have not been required to meet specific standards of safety or quality.

Under the new THMRS, unlicensed manufactured herbal medicines placed on the market under section 12(2) of the Medicines Act before April 30, 2004, will need to comply with the safety and quality requirements outlined in the scheme so as to obtain Traditional Herbal Registrations by April 2011. (Those that entered the market after April 30, 2004, have already been required to either meet such standards or obtain a marketing authorization [license].) In November 2006, MHRA granted its first product registration under this new scheme, which is required by the European Directive on Traditional Herbal Medicinal Products, to A.Vogel® Atrogel Arnica Gel (Bioforce UK Ltd), a gel based on arnica (*Arnica montana* Asteraceae) for the symptomatic relief of muscular aches and pains, stiffness, and bruises.[5] Licensed herbal medicines in the UK are those that have met safety, quality, and efficacy criteria in a similar manner to any other licensed medicine, such as aspirin.[4]

> **"The creation of this committee is a recognition of the growing public and scientific interest in herbal medicine."**

Those herbal medicines regulated under the new THMRS will have the continued opportunity to obtain a marketing authorization based on demonstration of required levels of safety, quality, and efficacy.

According to Thomson, MHRA's Licensing Authority will normally be expected to consult the HMAC before rejecting any applications for registration under the new THMRS on the grounds that the medicine does not satisfy the Directive's requirements. HMAC will also be responsible for advising on all aspects relating to quality, safety, and traditional use of applications for registration (S. Thomson, e-mail, November 28, 2006).

"Currently standards in the UK unlicensed herbal sector are patchy," Thomson explained. "The consumer in many cases has to guess whether the herbal products they are taking are made to acceptable standards and whether information supplied with products is reliable. We would like to see HMAC play an important role in helping to change this situation to one where reliable standards of safety, quality and patient information with herbal medicine

become the norm. Overall, we would like to see HMAC recognized for making authoritative, soundly based, scientific judgments and for its contribution in improving public health protection and promoting informed consumer choice."

Philip Routledge, MD, professor of clinical pharmacology at the University of Wales College of Medicine and chairman of the HMAC, expressed his support of HMAC's role: "I am confident that HMAC will play a crucial role in facilitating the safe and informed use of herbal medicines and, through this, will help to promote public health in the UK" (S. Thomson, e-mail, November 28, 2006).

The HMAC has met only a few times since it was first launched, and those early meetings have focused on herbal safety issues, advice on issues regarding the first applications to register products under the new THMRS, and discussions with MHRA about the agency's developing plans to reform the regulation of herbal medicines made up by or for individual practitioners (S. Thomson, e-mail, November 28, 2006). The HMAC was also involved in a high-profile issue regarding black cohosh (*Actaea racemosa*, Ranunculaceae; syn. *Cimicifuga racemosa*) in 2006. The committee participated in a review of available data regarding black cohosh use and a potentially increased risk of liver disorders and determined that there was a possible association between the two, leading MHRA to require warnings on labels of UK black cohosh products in July of 2006.[6,7]

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Botanical Text Owned by Jean-Jacques Rousseau Found and Exhibited at Lloyd Library

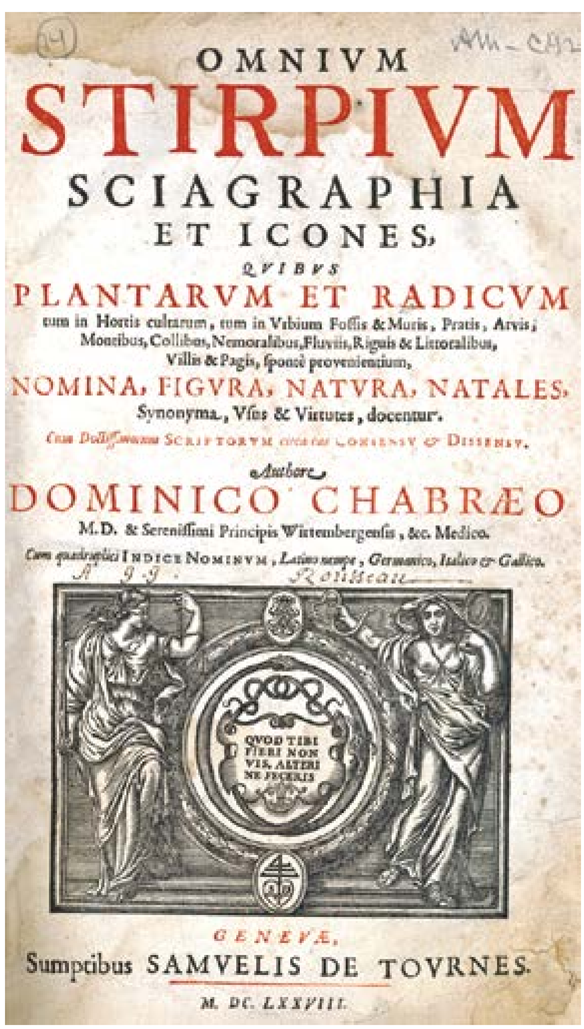
By Courtney Cavaliere

The Lloyd Library and Museum in Cincinnati, OH, is presenting an exhibit titled "In Rousseau's Own Hand: His Book, His Notes, and Botany" from March 10 to May 31, 2007. The exhibit showcases a botanical text recently discovered at the Lloyd as having been owned and annotated by the 18th century French philosopher Jean-Jacques Rousseau.[1] A copy of Dominique Chabrey's 1678 *Omnium Stirpium Sciagraphia et Icones* (roughly translated, *Diagrams and Illustrations of All Plants*), containing Rousseau's signature and hundreds of his handwritten annotations, was recently uncovered in the Lloyd stacks and verified as having once belonged to the famous utopian philosopher. The discovery of the book has provided insight into both Rousseau's botanical knowledge and the distribution of his literary collection.

Jean-Jacques Rousseau is renowned as one of the great philosophers of Europe's Enlightenment period. He wrote several influential philosophical works, including *Discourse on the Sciences and Arts* (1750), *Discourse on the Origin of Inequality* (1755), and his political classic, *The Social Contract* (1762).[2] Rousseau is known to have been an ardent student of botany, and his library once contained a great number of botanical works.[1] Scholars were aware that a 1678 edition of Chabrey belonged to Rousseau at the time of his death, but its whereabouts was unknown until the volume was discovered in the Lloyd's stacks in early 2006. Rousseau scholar Takuya Kobayashi investigated and verified the book's authenticity.

"The discovery and verification of a book once owned and inscribed by Jean-Jacques Rousseau is remarkably significant," said Maggie Heran, director of the Lloyd Library and Museum (e-mail, February 27, 2007). "Rousseau expert Takuya Kobayashi commented that with this discovery there are now 8 botanical books worldwide verified as having been Rousseau's. In the United States, only Harvard and the Lloyd hold botanical books from Rousseau's library. The importance of having this book at the Lloyd is that it is the only place where one can study a botanical book owned by Rousseau and investigate many other books known to have been in his library. Kobayashi found this context invaluable during his visit to the Lloyd."

In addition to the two books at Harvard University and the Lloyd Library, three botanical texts recognized as having belonged to Rousseau are located in the United Kingdom, one is in France, and two are found in private collections.[1]



Cover of *Omnium Stirpium Sciagraphia et Icones*
Image courtesy of the Lloyd Library

Dominique Chabrey was a Swiss physician and botanist. He edited and published a huge volume of work by earlier botanists Jean Bauhin and Johann Heinrich Cherler, which included descriptions and woodcut illustrations of numerous European plants, titled *Historia Plantarum Universalis*.[3,4] Chabrey's *Omnium Stirpium Sciagraphia et Icones* is considered an abridged version of *Historia Plantarum Universalis*. In addition to the 1678 Chabrey, the Lloyd exhibit features several other botanical books known to have been in Rousseau's library at the time of his death, although not his personal copies.[1] The exhibit will also display botanical works written by Rousseau, including the 1805 edition of *La Botanique* and *Letters on the Elements of Botany: Addressed to a Lady*.

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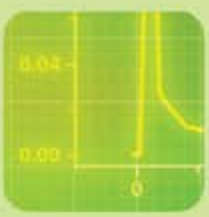




Korean Red Ginseng Shown Safe and Possibly Useful in Treating Type 2 Diabetics

Reviewed: Vuksan V, Sung M, Sievenpiper J, et al. Korean red ginseng (*Panax ginseng*) improves glucose and insulin regulation in well-controlled, type 2 diabetes: results of a randomized, double-blind, placebo-controlled study of efficacy and safety. *Nutr Metab Cardiovasc Dis*. July 21, 2006 [E-pub ahead of print].

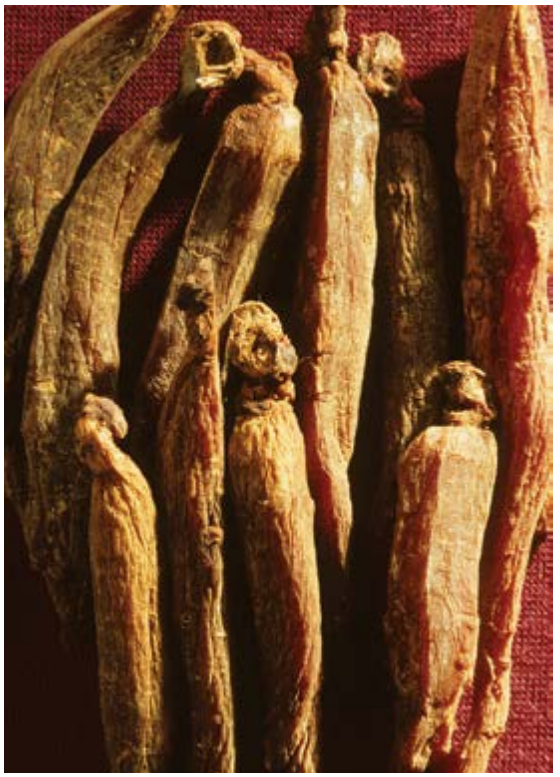
Diabetes is a growing epidemic around the world. Drug treatment is not completely successful in people with type 2 diabetes, and there is a compelling need for better prevention and treatment strategies. A survey of physicians revealed that about 75% of patients use some form of complementary and alternative medicine (CAM), even though physician knowledge, regulatory standards, and evidence of safety and benefit are often lacking.[1] Rigorous clinical testing is required to provide evidence of the safety and effectiveness of CAM therapies in people with diabetes and other chronic diseases.

The purpose of this study was to test the long-term safety and efficacy of a Korean red ginseng (*Panax ginseng*, Araliaceae) preparation selected from an acute clinical screening program in people with type 2 diabetes. (Korean red ginseng [KRG] is made from Korean white ginseng through a traditional steaming process which turns the fresh, steamed roots a dark reddish, auburn color and changes the chemistry of the roots. Korean ginseng is a synonym for Asian ginseng, denoting the geographical origin of the root.) This Canadian research group has previously published clinical trials demonstrating that American ginseng (*P. quinquefolius*) root can improve long-term glycemic control in patients with type 2 diabetes.[2,3]

This study represents an "East-West" collaboration between Canadian and South Korean researchers that was supported by the Ministry of Agriculture, South Korea. There were two phases. The first phase, which was published previously,[4] consisted of sequential acute preparation- and dose-finding studies with Korean red ginseng. This screening program identified the Korean red ginseng preparation, dose, and mode of administration with the greatest efficacy to be used for long-term testing. The second phase consisted of the present study, in which this information was applied using a longer term, randomized, double-blind, placebo-controlled, crossover design in people with type 2 diabetes.

The study was conducted at St. Michael's Hospital and University of Toronto in Canada. Men and women aged 18 to 65 years were eligible for the study if they were diagnosed with type 2 diabetes more than 6 months prior to the study, had relatively stable blood sugar levels, and were not taking insulin, herbs, or dietary supplements.

Study treatments were determined based upon the previous acute clinical screening program. Powder made from ground, dried Korean red ginseng rootlets at a dose of 2 g in four 500 mg capsules administered as a preprandial agent taken 40 minutes before each meal was selected as the active treatment. Identical vanilla-flavored capsules containing cornstarch administered at the same dose and by the same mode of administration were selected for placebo. In addition, subjects were instructed to adhere to their underlying conventional diabetes treatment, which included a diet based on the Canadian Diabetes Association's recommendations and/or oral hypoglycemic medications. The design of the study consisted of 4 parts. In the first part, all subjects took placebo capsules for 4 weeks to get accustomed to the regimen. In the second part, subjects were randomly assigned to take either placebo or the selected Korean red ginseng for 12 weeks. In the third part, all subjects took placebo during a 4-6 week washout period. In the fourth part, subjects who received placebo in the second part were crossed over to ginseng and subjects who received ginseng were crossed over to placebo for 12 weeks. Subjects took 4 capsules containing either cornstarch (placebo) or Korean red ginseng (Korea Ginseng Manufacturing Plant, National Agricultural Cooperative Federation, Chung-buk, Korea) 40 minutes before a meal 3 times a day, for a daily total of 6 g of ginseng.



Korean Red Ginseng *Panax ginseng* Photo ©2007 stevenfoster.com

The subjects completed a baseline visit and returned for study visits every 6 weeks. At each visit, investigators examined the subjects and collected blood and urine samples. Subjects turned in 7-day dietary records and unused capsules to evaluate compliance, rated their symptoms, and reported any side effects. At the beginning and end of the two 12-week treatment periods, 2-hour oral glucose tolerance tests (OGTT) and 24-hour blood pressure monitoring were conducted. Thirty-nine subjects were enrolled in the study, but only 19 subjects completed the trial. Conventional diabetes treatment in these subjects included diet alone (n=5) or diet plus sulfonylurea (n=3), diet plus metformin

(n=3), diet plus acarbose (n=1), diet plus sulfonylurea plus metformin (n=5), diet plus sulfonylurea plus rosiglitazone (n=1), or diet plus sulfonylurea plus metformin plus rosiglitazone (n=1). The main measure of clinical efficacy, HbA1c, did not change during the ginseng treatment or the placebo treatment. HbA1c is a measure of longer term glucose control, and all subjects remained well controlled during the study with a mean HbA1c of 6.5%. Fasting plasma insulin values decreased significantly by 34% and fasting insulin sensitivity indices increased significantly by 33% when subjects took ginseng compared to placebo ($P < 0.05$). There was no significant difference in fasting plasma glucose between ginseng and placebo treatment. Six of the 7 OGTT glucose and insulin evaluations improved significantly during ginseng treatment compared with placebo treatment ($P < 0.04$). These improvements were reflected in a 33% increase in whole body insulin sensitivity assessed by an OGTT derived insulin sensitivity index during ginseng treatment compared with placebo treatment ($P < 0.03$). Blood pressure readings and measures of liver and kidney function did not change during either treatment. One adverse event was reported during ginseng treatment (hypoglycemia), and 2 adverse events were reported during placebo treatment (rapid heart beat and the combined symptoms of hypoglycemia, headache, blurry vision, irritability, and insomnia). Compliance with the study regimen was similar between the placebo and ginseng groups, based on the proportion of pills taken, analysis of dietary records, and changes in body weight. Differences in these efficacy, safety, and compliance outcomes were interpreted as being beyond those seen on their underlying conventional diabetes treatment (diet and/or medications).

The purpose of this study was to test the long-term safety and efficacy of a Korean red ginseng (*Panax ginseng*, Araliaceae) preparation selected from an acute clinical screening program in people with type 2 diabetes.

This study is one of the first well-controlled, randomized clinical studies to examine the safety and effectiveness of Korean red ginseng in people with type 2 diabetes. The authors explain that clinical efficacy (as assessed by HbA1c) was not demonstrated for the selected Korean red ginseng in this study. However, supplementation with the selected Korean red ginseng improved the regulation of plasma glucose and insulin beyond that achieved on their conventional treatment (diet and/or medications) in people with well-controlled type 2 diabetes. The study demonstrated the safety of the selected Korean red ginseng in this population, despite previous warnings about the potential for blood pressure elevation and impaired blood clotting function with ginseng supplementation.

Mechanisms by which the selected KRG treatment improved glycemic control were unclear. The authors propose an insulin-sparing mechanism coupled with increased glucose transport. This was seen in the increases in the fasting and OGTT-derived indices of insulin sensitivity. A growing database of animal and in vitro studies was also cited by the authors to support this mechanism. They stressed, however, that this mechanism needs to be tested directly by more rigorous techniques.

The authors provide a balanced discussion of the limitations of the study. This included the high number of dropouts. The more than 50% attrition rate in the study was greater than the 35-40% expected. Exclusions resulted largely from protocol violations related to changes in patients' antidiabetic medications. The changes were necessitated by the ethical prohibition of maintaining the study protocol in participants who developed uncontrolled glycemia. Other limitations discussed included the possibility that the results might not be generalizable to patients whose diabetes is not well controlled and the possibility that other sources or formulations of KRG may not yield the same results. Additional studies with larger groups of subjects, including those with poorer diabetes control, are needed to further evaluate the clinical effectiveness and safety of Asian ginseng in type 2 diabetes.

—Heather S. Oliff, PhD, and Mark Blumenthal

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Topical Use of Lavender, Clary Sage, and Rose Oils Reduces Dysmenorrhea in College Students

Reviewed: Han S, Hur M, Buckle J, Choi J, Lee M. Effect of aromatherapy on symptoms of dysmenorrhea in college students: a randomized placebo-controlled trial. *J Altern Complement Med.* 2006;12(6):535-541.

Dysmenorrhea (painful menstruation) includes symptoms such as menstrual cramps, headache, fatigue, nausea, vomiting, and diarrhea. A survey of female college students in Korea revealed that 83% experience menstrual cramps and nearly 20% describe their menstrual pain as severe. Dysmenorrhea can be treated with a variety of drugs, including pain relievers, sedatives, antispasmodics, prostaglandin inhibitors, and oral contraceptives. However, these drugs may produce unacceptable side effects. Aromatherapy is the therapeutic use of essential oils from plants. Components of the essential oils can be absorbed through the skin or inhaled through the mouth and nose and, in some cases, essential oils can be administered orally, either in relatively small doses due to the highly concentrated nature of the oils, or in some cases in specifically-designed oral dosage forms, e.g., enteric-coated capsules containing oil of peppermint (*Mentha* x *piperita*, Lamiaceae) used to treat symptoms of irritable bowel syndrome.

Various essential oils used in aromatherapy have been reported to be an effective alternative therapy for relief of menstrual cramps.[1-5] The purpose of this study was to investigate the effects of aromatherapy on menstrual cramps and other menstrual symptoms.

This randomized, placebo-controlled study was conducted at the School of Nursing at Wonkwang Public Health College in Iksan, Korea. Female college students were eligible for the study if they reported a menstrual pain score of 6 or higher on a 10-point scale, had no systemic or reproductive diseases, and were not taking oral contraceptives. At baseline (the first and second day of the cycle prior to the treatment cycle) the subjects used the 10-point visual analog scale to indicate the intensity of their menstrual cramps. Researchers evaluated subjects' menstrual symptoms and the impact of symptoms on daily life. The severity of dysmenorrhea was rated using a 4-point scoring system (1 none; 2 mild; 3 moderate; 4 severe). The women were randomly assigned to an experimental group, a placebo group, or a control group.

The experimental group received aromatherapy containing essential oils of lavender (*Lavandula officinalis*, Lamiaceae), clary sage (*Salvia sclarea*, Lamiaceae), and rose (*Rosa centifolia*, Rosaceae) daily, applied topically, beginning 1 week before the start of menstruation and ending the first day of menstruation. The aromatherapy consisted of 2 drops of lavender oil, 1 drop of clary sage oil, and 1 drop of rose oil mixed with 5 ml of almond oil. Subjects in the experimental group received 15 minutes of aromatherapy provided in the form of abdominal massage in a quiet room. The placebo group received 15 minutes of abdominal massage using only almond oil in the same setting and for the same duration as the experimental group. Subjects in the aromatherapy and placebo groups did not know if they were

The study indicates that lower abdominal massage in combination with essential oils of lavender, clary sage, and rose may be a simple, safe, and low cost method to alleviate menstrual cramps.

receiving active aromatherapy or the placebo (although the group receiving the aromatherapy would have known they were in the active group because of the aroma of the oils). The control group received no therapy. All subjects continued their usual routine and repeated the menstrual cramp intensity and dysmenorrhea severity assessments on the first and second days of menstruation.

Sixty-seven women were enrolled in the study and all completed the study. None of the subjects reported any adverse side effects during the trial. The intensity of menstrual cramps on both the first and second days of menstruation was significantly lower in the aromatherapy group than in the placebo group or the control group ($P < 0.01$). Compared to the control group, aromatherapy was associated with a decrease in dysmenorrhea severity score from baseline to the first day of menstruation ($P = 0.02$) and the second day of menstruation ($P = 0.006$); the reduction was just over 50% for both days. Placebo therapy was not associated with decreased dysmenorrhea scores compared to the control group.

The authors conclude that aromatherapy with topically applied lavender, clary sage, and rose oils is effective in reducing the severity of menstrual cramps and dysmenorrhea. They state that aromatherapy should be offered as a safe, cost-effective, and viable part of nursing care for women experiencing dysmenorrhea. The authors caution that nurses should have clinical training in aromatherapy before incorporating it into their care. This is the first published clinical trial evaluating the effects of aromatherapy on dysmenorrhea. While the results of this study suggest benefits of aromatherapy, longer studies involving more than one menstrual cycle should be conducted to further evaluate the feasibility and effectiveness of aromatherapy in women suffering from primary dysmenorrhea.

A peer reviewer of this article for *HerbalGram*, Gail Mahady, PhD, assistant professor and director of the clinical pharmacognosy laboratory in the College of Pharmacy at the University of Illinois at Chicago, made the following comments about this trial:

The limitations of the study are the placebo, which was not a true placebo in that it did not match the treatment product exactly, particularly in odor. Han et al attempted to overcome this problem by indicating to the patients that they would be treated with one of two products to reduce dysmenorrhea. One of the most difficult issues to overcome in aromatherapy interventions is the placebo issue, as it is almost impossible to have a placebo with the same odor as the intervention.

Another limitation is associated with the blinding used in the trial. It is preferable to have participants randomized by a third party (often the project biostatistician or someone otherwise not associated with the study) using a computer-generated random-number procedure. [In this trial], the blinding procedure used was the arbitrary drawing slips from a box, and thus would be considered inadequate by modern clinical trial standards.

Taking into consideration the limitations of the trial, the study is still of interest on a number of levels. First, it indicates that lower abdominal massage in combination with essential oils of lavender, clary sage, and rose may be a simple, safe, and low cost method to alleviate menstrual cramps. This is interesting, as it appears that similar methods (but not the same plant oils) are used in other countries such as Guatemala and Costa Rica (my own personal data) as well. In addition, the study indicated that no [adverse] side effects were found and that it may be an adjunct method to other treatments to reduce dysmenorrhea in vulnerable populations. Considering that most women tend to suffer through menstrual pain, enhancing the quality of life and reducing the numbers of sick days due to menstruation (estimated that this issue costs the US about $6 billion dollars annually in lost work time) would be of significance and is worthy of further investigation.

—Heather S. Oliff, PhD

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Clove as Effective as Topical Anesthetic

Reviewed: Alqareer A, Alyahya A, Andersson L. The effect of clove and benzocaine versus placebo as topical anesthetics. *J Dentistry*. November 2006;34(10):747-750.

Dentists employ injections of local anesthetics to reduce pain and anxiety when performing dental procedures. However, these local injections themselves can be a source of pain and anxiety for many patients. Topical anesthesia is therefore widely used in dental procedures, especially for pediatric patients. One of the most commonly used agents is benzocaine. A "substantial number" of studies of varying design have been conducted on benzocaine as a topical anesthetic. However, the results have been inconsistent, with some studies showing "a good effect," whereas others indicate that benzocaine is "not particularly efficacious." There are several disadvantages to the use of topical anesthetic drugs, including toxicity, possible adverse side effects, and the potential for systemic absorption. Systemic absorption is of particular concern for pediatric dentistry. Dentists may therefore need to reduce the amount of local anesthetic they can inject in that population.

The present randomized, single-blind study was designed to investigate "whether the natural herb clove (*Syzygium aromaticum*, Myrtaceae) can replace benzocaine as a topical anesthetic." The traditional cooking spice, clove, contains eugenol, an oily liquid that has analgesic and antiseptic properties. In fact, eugenol is the primary compound in oil of clove. Both oil of clove (obtained by steam distillation of the cloves), and later, eugenol itself, have been used in dental plasters, fillings, and cements for many years for their topical analgesic properties. Eugenol and other constituents of clove, such as vanillin and iso-eugenol, have also been reported to have antimicrobial effects. To the authors' knowledge, this is the first study to compare the efficacy of clove vs. 20% benzocaine in reducing needle stick pain.

Participants for this study were recruited from healthy dental, medical, and pharmacy students at Kuwait University, where the study was conducted. Four materials were tested in this trial: (1) home-made clove gel, (2) benzocaine 20% gel (Topex™ Sultan Dental Products, Englewood, NJ, USA), (3) placebo resembling clove gel, and (4) placebo resembling benzocaine. To prepare the clove gel, commercially available cloves were ground to a fine powder and mixed with glycerin in a 2:3 (clove:glycerin) ratio. The clove placebo consisted of pumice mixed with glycerin, which created a texture similar to that of clove gel. The benzocaine placebo was made from petroleum jelly, which has a texture similar to that of benzocaine. All 4 materials were stored in identical containers.

All the participants were smell- and sight-blinded prior to the experimental procedure. A protective goggle was placed over the eyes. A cotton roll covered with both materials used in the study was mounted in a special projection on the goggles to blind the participants to smell.

The 73 participants were randomized to 1 of 2 groups. In 37 volunteers, clove gel was applied on one side of the mouth, and placebo was applied to the other side of the mouth. In 36 volunteers, benzocaine was applied on one side and placebo was applied on the other side. The order of application (placebo or active drug first), and which side of the mouth received the first application was randomly determined.

Two grams of material were applied to a cotton roll, and then to an area approximately 1.5 centimeters in diameter on the buccal mucosa superior to the gingiva over the canine prominence. After 4 minutes the material was applied again to compensate for any washout by saliva. After removal of the cotton roll and any excess material, a needle-stick was performed 3 mm superior to the mucogingival border. A 25 gauge needle was used and inserted until bone contact was achieved, then withdrawn. Participants were then unblinded and instructed in the use of a 100-mm visual analog pain scale (VAS). On the VAS "0" indicates "no pain at all," and "100" indicates "unbearable pain." After scoring their pain level, volunteers rinsed their mouths and rested for a short time. Then the same procedure was repeated using the second material on the opposite side of the mouth.

The pain scores of the 2 placebo groups were not significantly different, so the information was pooled and the data analysis was performed as if there were 3 groups. There was no significant difference between the pain scores of the clove gel group and the benzocaine group. Both substances had significantly lower pain scores than the placebo group (P=0.05). In general, females had significantly higher pain scores than males (P=0.026).

The application of both benzocaine and clove gel caused a burning sensation in most of the participants. Four volunteers (5.4%) developed small aphthous-like ulcers on the site of clove gel application. Eugenol is known to cause tissue irritation, so further research is necessary to determine the optimal concentration of clove gel with the least side effects.

The results of this study "showed that both clove and benzocaine 20% gels are able to significantly reduce pain from needle sticks when compared with placebo." Clove gel is widely available in rural areas and costs one-fifth as much as other topical anesthetics.

Thus, clove gel provides dentists with an alternative to benzocaine for topical anesthesia in their daily practice, especially for use with children and in areas where cost and availability limit access to pharmaceutical topical anesthetics.

—Cathleen Rapp, ND

Use of Valerian-Lemon Balm Extract in Children with Restlessness and Sleep Disorders

Reviewed: Muller SF, Klement S. A combination of valerian and lemon balm is effective in the treatment of restlessness and dyssomnia in children. *Phytomed.* 2006;13:383-387.

Dyssomnia includes a variety of sleep disorders. Children with dyssomnia may have difficulty falling asleep, may wake up during the night, may have night terrors, or may walk in their sleep. Although these sleep disturbances might be temporary, up to 30% of children can suffer from them. Motor restlessness is another condition that affects children. Children with motor restlessness are unable to sit still and concentrate, particularly in situations that demand discipline and attention. General motor restlessness may be temporary, or it may be a personality characteristic that continues beyond childhood. Previous clinical trials have shown that the combination of valerian (*Valeriana officinalis*, Valerianaceae) root and lemon balm (*Melissa officinalis*, Lamiaceae) herb improves sleep quality and mood in adults with sleep disorders. Both herbs are approved by the Commission E of the German government for nervous sleep disorders.[1] The purpose of this study was to evaluate the effectiveness and tolerability of valerian and lemon balm in children with motor restlessness and nervous dyskoimesis (sleep disturbance).

This open-label study was conducted at 207 pediatric clinics in Germany and included 938 children under the age of 12. Each child completed a baseline study visit that included a complete medical history, review of current diagnosis, and documentation of the incidence and severity of symptoms by the child's doctor. The child was instructed to take up to 4 tablets daily of Euvegal® forte (Schwabe Pharmaceuticals, Karlsruhe, Germany). Each tablet contains 160 mg valerian root dry extract with a drug-extract ratio of 4-5:1 (extraction solvent ethanol 62% V/V) and 80 mg lemon balm leaf dry extract with a drug-extract ratio of 4-6:1 (extraction solvent ethanol 30% V/V). The child returned for the second and final study visit after taking Euvegal forte for about 4 weeks. At this visit, the child was examined, and the child's doctor recorded the incidence. The doctor assessed the tolerability of the product, and both the parent and the doctor completed questionnaires to evaluate the child's response to the product.

The authors state that children taking the valerian and lemon balm combination for 4 weeks experienced fast and significant improvement of their symptoms.

A total of 918 children were evaluated in the study. The average age of the children was 8.3 years. The mean duration of study participation was 31.9 days. The mean start dosage was 3.5 tablets per day, and 74.6% of the children were given the maximum dose of 4 tablets per day. The percentage of children reporting daily symptoms fell from 61.7% at baseline to 12.5% after taking Euvegal forte for 4 weeks. The symptoms of restlessness and dyssomnia were rated as moderate or severe in the majority of children at baseline. At the final visit, restlessness and dyssomnia were rated as absent or mild in the majority of children. The majority of the parents and the doctors rated the efficacy of the product as "good." The doctors rated tolerability as "very good" or "good" for 96.7% of the children. Two adverse events of vomiting and urinary tract infection were reported, but neither was judged to be related to use of Euvegal forte.

The authors state that children taking the valerian and lemon balm combination for 4 weeks experienced fast and significant improvement of their symptoms. The authors conclude that Euvegal forte is well-tolerated and effective in the treatment of children with restlessness and dyssomnia. Current standard treatments for restlessness and dyssomnia in children are synthetic psychotropic drugs, which may bear a high risk of addiction or adverse side effects. The authors recommend conducting head-to-head comparison clinical studies of Euvegal forte with synthetic drugs in children to directly compare the safety and efficacy and to eventually provide an alternative with a better risk-benefit ratio. Although this study evaluated a large number of children, and the results show benefits that are consistent with the traditional use and published research on each herbal ingredient, the results are limited because of the trial's design as an open study. Thus, no statistical analysis is reported, there is no placebo and/or active control, and the children, parents, and investigators all knew what the children were taking.

—Heather S. Oliff, PhD

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Three Systematic Reviews of Echinacea Clinical Trials Suggest Efficacy with Cold Symptoms

Echinacea Stained glass by Dennis V.C. Awang. Mark Blumenthal collection. Photo ©2007 ABC

Reviewed: Linde K, Barrett B, Wolkart K, Bauer R, Melchart D. *Echinacea* for preventing and treating the common cold (review). *The Cochrane Library*. 2006;1:1-39.

Reviewed: Schoop R, Klein P, Suter A, Johnston S. *Echinacea* in the prevention of induced rhinovirus colds: a meta-analysis. *Clin Ther.* 2006;28(2):174-183.

Reviewed: Shah SA, Sander S, White CM, Rinaldi M, Coleman CI. Evaluation of echinacea for the prevention and treatment of the common cold: A meta-analysis of randomized, controlled trials [abstract and poster]. *Amer Coll Clin Pharmacol.* September 2006.

In 2006, 3 meta-analyses reviewed clinical trials on various species of *Echinacea* (Asteraceae) and determined that the preponderance of published evidence still supports some benefits for the now somewhat beleaguered herb. A meta-analysis for the Cochrane Collaboration by Linde et al and another by Schoop et al were published evaluating the relative efficacy of echinacea preparations. A yet-to-be published third meta-analysis concluded that the controlled clinical trials reviewed supported a positive assessment for echinacea preparations (Shah et al, 2006).

Over a year has elapsed since the highly publicized clinical trial by Turner et al[1] in the *New England Journal of Medicine* in which 3 preparations made from the extract of the root of *Echinacea angustifolia* were deemed ineffective in preventing or treating upper respiratory tract infections in healthy college students inoculated with a rhinovirus. The widespread reporting of these negative results, when added to negative outcomes of other well-controlled echinacea trials,[2,3,4] has created considerable confusion among health professionals, the media, and the general public about the relative value of echinacea preparations.

In the case of both the reviews by Linde et al and Schoop et al, some interesting benefits can be attributed to various types of echinacea preparations, as noted by Bruce Barrett, MD, PhD, in a recent editorial in *HerbalGram*.[5] After reviewing all the relevant clinical trials published on echinacea preparations as well as the Schoop review, Dr. Barrett, one of North America's most knowledgeable experts on echinacea clinical trials and a co-author of the Linde et al meta-analysis, concluded that "Echinacea remains a reasonable choice for prevention or treatment of the common cold, as sadly, there are few if any well-proven remedies, conventional or alternative."[5*]

The assessment of echinacea's effectiveness is complicated for several reasons: (1) 3 different species (*Echinacea angustifolia, E. purpurea,* and *E. pallida*) are used medicinally; (2) different parts of the plant (root, herb, flower, or whole plant) are used in various preparations; (3) various preparation methods are used in production (dried herb material, extraction, fresh-pressed juice, etc.); (4)

some echinacea preparations contain combinations of species, plant parts and/or types of preparation methods; and (5) some echinacea-based products also contain other plant extracts or (in other countries) homeopathic components.†

The Linde et al Review

The objective of Linde et al's updated systematic review was to evaluate whether evidence exists from randomized controlled trials (RCTs) that echinacea preparations are more effective than no treatment, more effective than placebo, or about as effective as other treatments in preventing and treating the common cold. An interesting aspect of this review is the inclusion of pharmaceutical experts as authors to better examine outcome data from primary studies.

In the Linde et al review, the authors conducted a literature search to identify RCTs of the effectiveness of echinacea preparations in preventing and treating nonspecific viral and other types of upper respiratory tract infections. To be included in the review, the studies had to contain clinical outcome measures related to the occurrence (prevention studies), duration, or severity (treatment studies) of infection. Studies of combinations of echinacea with other herbs were excluded. The following databases were searched: the Cochrane Central Register of Controlled Trials (2005), PubMed (1997 to April 2005), EMBASE (1998 to June 2005), AMED (through August 2005), and the Centre for Complementary Medicine Research (1988 to May 2005). At least 2 authors independently assessed the quality of the identified trials for eligibility in this review. For the prevention trials, the outcomes of interest were the number of subjects with one or more colds, the duration of the colds, and the severity of the colds. For the treatment trials, the outcome measures were total symptom scores, nasal symptoms, and the duration of the colds.

For this review, 16 studies met the inclusion criteria: 5 from the United States, 5 from Germany, 3 from Canada, 2 from Sweden, and 1 from Russia. Most of these studies were rated as being of "reasonable to good methodological quality." Two of the studies were classified as prevention trials, 5 as self-treatment trials, and 9 as treatment trials. There were a total of 20 experimental groups in the 16 trials reviewed.

In the 2 prevention trials, no significant differences between the echinacea-treated and placebo groups were found with regard to the number of participants with colds or the duration or severity of the colds. One treatment trial with a no-treatment comparison group showed a trend towards better symptom scores in children with colds who received a freshly expressed juice preparation of *E. purpurea* aerial parts. One trial that tested the efficacy of pressed juice from the aerial part of *E. purpurea* in preventing "the full picture of a cold" in persons with early cold symptoms showed a significant effect over placebo. Of 6 trials that measured the effects of 5 different echinacea preparations on the severity and duration of colds relative to the effect of placebo, only 2 showed a significant effect over placebo.

Only one of the trials reviewed compared the effectiveness of an echinacea

* Dr. Barrett's comments were written before he reviewed the clinical trials on COLD-fX® (CVT-E002; CV Technologies, Edmonton, Alberta, Canada), a polysaccharide-based special extract from the roots of North American ginseng (*Panax quinquefolius* L., Araliaceae), for a literature review on this patented preparation to be published by the American Botanical Council in 2007. Nor do his comments include the research that has been conducted on the andrographis-eleuthero extract fixed combination (SHA-10, Kang Jang®, Swedish Herbal Institute), as noted in this article, for which there are numerous published clinical trials strongly suggesting safety and efficacy in treating upper respiratory tract infections secondary to colds and flu.

† Regulations in the United States do not allow for the mixing of herbs or other dietary supplement ingredients (technically foods under US law) with homeopathic materials (technically regulated as drugs).

preparation with that of a non-echinacea intervention (a proprietary herbal preparation containing extracts of the leaves of andrographis [*Andrographis paniculata*, Acanthaceae] and the roots of eleuthero [*Eleutherococcus senticosus*, Araliaceae]—known as SHA-10 or Kang Jang®, Swedish Herbal Institute, Goteborg, Sweden). The results of that trial showed that the non-echinacea intervention decreased the severity of cold symptoms in children significantly better than did a fresh-pressed juice preparation of *E. purpurea* aerial tops. Of the 16 trials reviewed, the primary authors and the reviewers concluded that 9 trials showed significant effects over placebo, 1 showed a trend in favor of the echinacea preparation, and 6 showed no significant differences between the echinacea-treated groups and the comparison groups.

These trials covered a total of 2601 subjects (3447 if all randomized subjects are considered); these include 411 subjects as participants in prevention trials, 1064 in self-treatment trials (1910 were randomized but only 1064 actually were infected with a cold and started treatment), and 1126 in treatment trials (K. Linde, e-mail to M. Blumenthal, December, 12, 2006).

The main findings of this systematic review were as follows:

1. The variety of commercially available echinacea-containing products assessed contained different amounts of bioactive compounds and cannot be considered biochemically comparable. 2. The methods used to assess cold variables in the trial subjects were highly variable. 3. Most of the trials reviewed had reasonable to good methodology based on assessment of 2 independent reviewers using the Jadad method.[6] 4. Preparations based on the aerial parts of *E. purpurea* "[may] be effective in the early treatment of colds in adults, but results are not fully consistent." There is no clear evidence that other preparations work or that children benefit. 5. Adverse side effects associated with echinacea preparations were infrequent or minor and mostly similar to placebo. Rashes were reported in one trial in children.[7]

The authors note that the findings were not easy to interpret because of the heterogeneity of the products tested, because other unpublished and probably negative trials exist that were not identified, and because the results of the placebo-controlled treatment and self-treatment trials were "clearly positive…or negative." The authors expected that a larger number of trials would show "less extreme results."

Linde et al also state that it is important that consumers be aware of the great differences between echinacea-containing products and that most of these products have not undergone clinical testing. The German Commission E, an expert panel of the German government that has evaluated the safety and efficacy of about 300 herbs and herb combinations, has recommended that those echinacea preparations that were approved for use at the time (i.e., from aerial parts of *E. purpurea* and roots of *E. pallida*) not be used for longer than 8 weeks because after this period, if the symptoms for which the echinacea is being used (i.e., upper respiratory tract infections or lower urinary tract infections—the 2 indications for which echinacea preparations were approved) were not resolved, then more aggressive therapy (e.g., conventional pharmaceutical drugs) was probably required.[8] Due to the widespread use of echinacea products, these authors write that "further research is clearly desirable." This review contains several pages of tabular data containing detailed characteristics of the 16 studies reviewed, including the specific echinacea preparations studied, dosages, treatment periods, and subject data. Some characteristics of other trials of echinacea that were not included in this review are also listed.

The Schoop et al Review

Echoing the results of the review by Linde et al, the authors of the second systematic review (in this case, a meta-analysis) reported that the efficacy of echinacea preparations, as a whole body, remains uncertain because there are clinical trials published with both positive and negative findings. Whereas evidence for efficacy in the treatment of cold episodes exists, conclusive proof for the preventative efficacy of echinacea preparations has been lacking so far. These authors (Schoop et al) write that the efficacy of echinacea extracts as assessed in clinical trials basically seems to depend on the quality of the product (raw material, standardization, preparation, etc.) or the dosage utilized. The purpose of this meta-analysis was to determine whether the negative findings from prevention trials were a consequence of lack of efficacy (as has been widely reported by some media) or of inadequate sample size of the number of subjects in each trial.

In this meta-analysis researchers in Switzerland, Germany, and the UK conducted a systematic search of electronic databases. Search terms included echinacea, black Sampson, coneflower, and *Roter Sonnenhut* (English and German common names for various species of echinacea). The inclusion criteria for this review required that studies had to deal with direct inoculation with a pathogen rather than spontaneously developed common colds; i.e., the trials had to be based on a design in which the patients were intentionally exposed to a rhinovirus (usually sprayed into the nose) as opposed to looking at a particular population and measuring the incidence of infection with colds via chance. The clinical trials identified were assessed for suitability using Quality of Reporting of Meta-analyses criteria. The primary outcome of the trials in this meta-analysis was the development of symptomatic clinical cold.

Three inoculation studies were identified that were of high quality, randomized, double-blind, and placebo-controlled. None of these 3 trials were included in the meta-analysis by Linde et al described above. All 3 used similar inoculation protocols and standardized echinacea products for investigation, thereby allowing the data from all 3 trials to be pooled, i.e., combined into one dataset for analysis. To summarize the 3 studies, prophylactic treatment started 7 or 14 days before virus challenge and continued until day 5 or day 7. The studies used 300 mg of *E. purpurea* extract 3 times daily [Note: the original study does not describe the product used in this trial], 300 mg of *E. angustifolia* root extract 3 times daily, *E. purpurea* above-ground plant parts 3 times daily (176 mg EchinaGuard® [Echinacin®] Madaus GmbH, Cologne, Germany), or a placebo. Additional information on the products was not described in the meta-analysis.

There were a total of 390 subjects in the 3 combined studies. Based on the meta-analysis, the likelihood of experiencing a common cold was 55% higher with placebo than with echinacea. Overall echinacea preparations (as opposed to placebo) were effective in reducing the incidence of (i.e., preventing) symptoms of the common cold after clinical inoculation.

According to the authors, this was the first meta-analysis to find prophylactic efficacy of standardized echinacea prepa-

rations. A clinical study would need to include 340 patients per group to detect the effect found in this meta-analysis with a statistical power of 80% and a significance level of 5%. The findings support the results of randomized, double-blind, placebo-controlled clinical trials that report the efficacy of echinacea preparations for the prevention of spontaneous colds. A limitation of this meta-analysis was the low number of eligible studies. Large clinical trials are needed to confirm the finding. According to the lead author of the present meta-analysis (R. Schoop, a scientist at Bioforce AG in Switzerland, the manufacturer of one of the echinacea products that was clinically tested and included in the meta-analysis), the results of this meta-analysis challenge the conclusions drawn from the high profile rhinovirus challenge trial in the *New England Journal of Medicine*[1] and renews the discussion about the efficacy of echinacea preparations in preventing symptoms of the common cold (R. Schoop e-mail to M. Blumenthal, March 2, 2006).

The Shah et al Review

The third review on echinacea in the past year has not yet been published. It was presented as a poster abstract at the American College of Clinical Pharmacology in September 2006 (Shah et al, 2006) but is reported as currently in press (S. Shah e-mail to M. Blumenthal, February 12, 2007). The authors, from the University of Connecticut School of Pharmacy, searched the following databases for all RCTs on echinacea preparations from 1966 to April 2006: Medline, CINAHL, Web of Science, and the Cochrane Database of Systematic Reviews, as well as conducting a search of references used for the Echinacea monograph in the *Natural Medicines Comprehensive Database*. Incidence of the common cold was reported as an odds ratio (OR) with 95% confidence interval, while duration of the common cold was reported as the weighted mean difference (WMD) with 95% confidence interval.

In all, 14 studies reporting incidence or duration data were included, encompassing 1,356 and 1,630 participants, respectively. This review demonstrated that the echinacea preparations used in the respective trials in total decreased the odds of developing the common cold by 58% [OR 0.42 (95%CI 0.25 to 0.71)] and the duration of a cold by 1.9 days [WMD –1.85 (95%CI –2.76 to -0.96)]. The authors conclude, "The totality of current evidence supports Echinacea's benefit in decreasing the incidence and duration of the common cold." Although it is reportedly in press, since the results of this meta-analysis have yet to be published in a peer reviewed journal, it is possible that the statistical data may change upon additional rigorous analysis.

The conclusions of these systematic reviews, when viewed as a body of literature, based on the preponderance of the evidence from published RCTs on various types of echinacea preparations, supports the proposition that there is benefit in the rational use of various echinacea preparations for either prevention or treatment of symptoms of upper respiratory tract infections related to colds or flu.

— Mark Blumenthal, Brenda Milot, ELS, and Heather S. Oliff, PhD

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Trial Shows Herbal Laxative Tea (Smooth Move®) Effective in Treatment of Chronic Constipation for Elderly Adults

Reviewed: Bub S, Brinckmann J, Cicconetti G, Valentine B. Efficacy of an herbal dietary supplement (Smooth Move) in the management of constipation in nursing home residents: a randomized, double-blind, placebo-controlled study. *JAMDA*. November 2006;7(9):556-561.

Elderly nursing home residents are at a high risk of developing chronic constipation. This is due to several factors including constipation-causing medication, chronic medical conditions, immobility, dietary changes, and dementia. Chronic constipation can lead to impaction, considered to be a serious event meriting investigation when it is reported in nursing homes. For this reason, chronic constipation is aggressively managed by nursing home staff. This randomized, double-blind, placebo-controlled clinical trial, published in the *Journal of the American Medical Directors Association*, examines the effect of treating chronic constipation with Smooth Move® herbal tea (Traditional Medicinals®, Sebastapol, California) as an addition to constipation treatments that the patients were already receiving.

The study was conducted at the County Nursing Home in Allentown, Pennsylvania, where all of the patients were residents at the time of the study. In keeping with the focus on a "real-life situation," patients continued to receive their regular diets, medications, and constipation treatments throughout the study period, with the exception of any patients already receiving Smooth Move tea, who were subject to a wash-out period.* Patients received either daily laxatives or the "bowel routine protocol" to manage their chronic constipation. Constipation treatments used include milk of magnesia, rectal suppositories, and enemas. Patients' bowel movements were monitored for 28 days; this was followed by a 28-day study period in which the patients received 1 cup of either a placebo tea (see below for details) or Smooth Move tea daily at lunchtime.

The primary outcome measure was the difference in the average number of bowel movements between the 2 periods (the study and the prior wash-out period). Secondary outcome measures were the differences in the average number of standard treatments and the average treatment costs between the 2 periods.

Each single serving of Smooth Move tea is 2,000 mg and contains 1,080 mg of senna leaf (*Senna alexandrina*, Fabaceae, syn. *Cassia angustifolia*), providing 20 mg of sennosides A and B per cup of tea when prepared as directed. Sennosides A and B are anthraquinones, which are generally recognized as safe and effective (GRASE) stimulant laxative active ingredients for nonprescription drugs by the US Food and Drug Administration (FDA).[1] Smooth Move was marketed as an over-the-counter (OTC) drug, with the sennosides being the active ingredients, until 2000. Later it transitioned to the dietary supplement (technically, food) regulatory category when FDA's final rule allowed laxatives for occasional constipation to be labeled and marketed as supplements or drugs.[2]

Other ingredients in Smooth Move tea include licorice (*Glycyrrhiza glabra*, Fabaceae) root, bitter fennel (*Foeniculum vulgare* ssp. *vulgare*, Apiaceae) fruit (normally called fennel seed), sweet orange (*Citrus sinensis*, Rutaceae) peel, cassia (*Cinnamomum aromaticum*, Lauraceae, syn. *C. cassia*) bark, coriander (*Coriandrum sativum*, Apiaceae) fruit (commonly referred to as seed), ginger (*Zingiber officinale*, Zingiberaceae) rhizome, and essential oil of sweet orange peel dried on acacia gum (*Acacia senegal*, Fabaceae). The authors write that these other herbs "are traditionally combined with senna leaf." Fennel fruit and coriander fruit are included for their carminative and spasmolytic properties. Licorice root is included "as an antispasmodic component" and, according to the authors of this trial (citing an authoritative German pharmacognosy text), because it potentiates the actions of senna leaf (thus lowering the dose needed for an effect).[3]

The authors conclude that the results show that Smooth Move herbal tea is superior to a placebo in the treatment of chronic constipation.

* A reasonable question may be raised regarding participants who used/tasted Smooth Move tea prior to the trial; that is, participants might recognize its flavor when it was administered blindly during the trial, thereby potentially having a placebo effect with the active treatment and possibly skewing the results in favor of the treatment, a particularly possible occurrence since this preparation is not in pill form and thus flavors are not masked. During the peer review process of this *HerbalGram* article, one of the co-authors (Josef Brinckmann) answered this question as follows: "Interesting question, but I say no. First of all, 55% of the study population were dementia/Alzheimer's patients whose participation was obtained by informed consent of their legal guardians. Secondly, the placebo tea was created to have indistinguishable sensoric [taste] characteristics. Some residents were using Smooth Move and therefore, to remove a potentially confounding factor, it was decided that a wash-out period for those few residents prior to the start of the study was necessary. The other laxatives being taken were in all various dosage forms, from pills, to psyllium [*Plantago* spp., Plantaginaceae] powders, to Milk of Magnesia, etc.

† Cinnamon has been used in traditional Chinese medicine (TCM) to treat diarrhea. A peer reviewer of this article inquired whether the presence of cinnamon in either the active and/or placebo teas might be a confounding factor. A co-author (Josef Brinckmann) responded, "We thought long and hard about making sure that the placebo tea could not reasonably be expected to have an effect either way. Both Smooth Move and the placebo tea contain a sub-therapeutic level of cinnamon bark (100 mg). In TCM, cinnamon bark is used to treat vomiting and diarrhea in deficiency-cold syndrome but at a therapeutic dosage level of 1,000 to 4,500 mg, which is 10 to 45 times higher than the level appearing in Smooth Move and/or placebo tea. Basically, it occurs as a flavor corrective component for palatability at a sub-therapeutic level. We also needed the placebo tea to have an appearance, odor, and taste that would be indistinguishable from the active tea. Thus we included some of the same non-active components of Smooth Move in the placebo, but substituting senna (*Senna alexandrina*, Fabaceae) with carob (*Ceratonia siliqua*, Fabaceae)" (J. Brinckmann, personal communication to M. Blumenthal, February 7, 2007).

The placebo tea was packaged identically to the Smooth Move tea and was designed to be similar in taste, smell, and appearance to Smooth Move tea, without a laxative active ingredient component. The placebo tea included 2,000 mg of the following culinary herbs and spices: roasted carob (*Ceratonia siliqua*, Fabaceae) fruit, fennel fruit, sweet orange peel, Saigon cinnamon (*Cinnamomum loureirii*, Lauraceae) bark, coriander fruit, ginger rhizome, and "orange flavor."†

A total of 92 patients with chronic constipation were randomized using a statistical software package (MINITAB v14) to receive Smooth Move tea (n=45) or the placebo tea (n=47). Of the patients who started the study, 1 died and 2 dropped out of each group. A total of 42 patients from the Smooth Move group and 44 patients from the placebo group were included in the final data analysis. A total of 4 patients experienced 5 adverse effects: 0 patients from the Smooth Move group and 4 patients from the placebo group. The adverse effects were determined to be unrelated to the study. Patients who received Smooth Move tea had an average of 4.14 more bowel movements during the treatment period than during the pre-treatment wash-out period, when compared with the placebo group (P=0.017). There were no significant differences between the 2 groups in terms of the differences in treatment costs and the number of standard treatments; although a difference in total costs was observed (total cost was reduced in the Smooth Move group). The authors conclude that the results show that Smooth Move herbal tea is superior to a placebo in the treatment of chronic constipation. No significant adverse effects due to the tea were observed; however, the authors warn that it "should be used no more than 3 times per week when bulk or osmotic laxatives fail." This warning is consistent with the generally accepted precaution related to the use of stimulant laxatives, which can cause laxative dependence if used long term.

The authors write that the results of this clinical trial warrant a follow-up multicenter clinical trial "to further assess efficacy and cost-effectiveness." In addition to assessing the number of bowel movements, data on stool consistency, stool weight, and ease of defection would enhance the value of future trials.

Introduced in 1974, Smooth Move is the number-one best selling medicinal tea in the natural foods channel in the United States, according to SPINS scan data. The manufacturer states that 25 million doses of Smooth Move are sold each year, including sales in Canada, the United Kingdom, and the United States (J. Brinckmann personal communication to M. Blumenthal, February 7, 2007).

This study was funded by the manufacturer, and one of the manufacturer's employees helped to design the trial and was a co-author of the trial.

—Marissa Oppel, MS, and Mark Blumenthal

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Herbal Medicine in Iran

by Hamid-Reza Adhami, PharmD; Bita Mesgarpour, PharmD; and Hassan Farsam, PharmD, PhD

Image courtesy of the Library of Congress

introduction

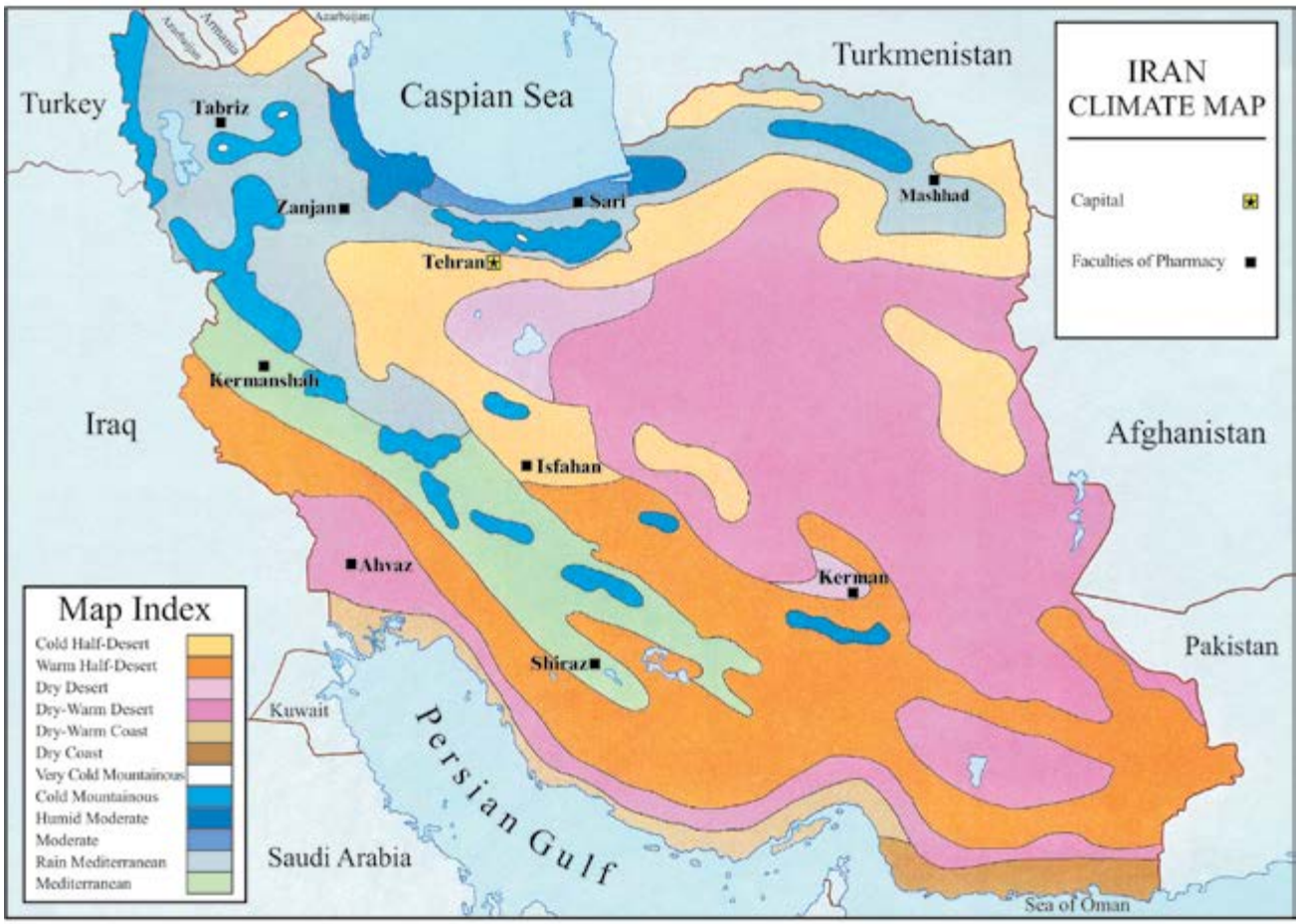
Iran (formerly called Persia) is located in southwest Asia, within the Middle East region. It covers a territory of 1,648,195 square kilometers and has a population of about 70 million people. Iran's borders extend 7,774 km, about one-third of which are seacoasts. Northern Iran borders the southern coastal areas of the Caspian Sea (663 km) while southern Iran borders the northern coastal areas of the Persian Gulf and the Sea of Oman (1,952 km).[1]

Iran's specific geographical position and variable climates make it unique in the world with its diverse climatic conditions. Among its 12 different geographic environments, Iran is divided into 5 major climates including Mediterranean, Desert and Half-desert, Warm-Humid, Warm-Dry, and Mountainous (see Figure 1).[2]

Due to this variety of climate, more than 7500 plant species grow in Iran, and about 1800 of those species are considered medicinal. Among these species, some are not found in any other part of the world.[3] The rich floral biodiversity in Iran has its origin mostly from diverse climate conditions and partly from its great trade routes to India and China. During the Sassanid dynasty in the sixth century CE, Burzūya (Perzoes in Latin), one of the famous physicians sent to India, brought many Indian medicinal plants into Persia. The trade of medicinal plants between Persia and India throughout history had an important influence on the Iranian medicinal plant heritage.[4]

The Iranian people are largely descendants of the Medo-Persians, an Indo-European culture, thus making Iranians more closely related to Afghanis, whose original language is Persian, than their Arab/Semitic neighbors. The traditional knowledge on medicine and pharmacy in Persia is an amalgamation of the prehistoric beliefs and practices of early inhabitants of the Mesopotamian plains, plus that of the later Babylonians, Assyrians, Elamites, and other ancient civilizations.[5,6]

Figure 1. Iran Climate Map and Distribution of Faculties of Pharmacy



Note: There are 3 faculties of pharmacy in Tehran

One of the main sources of medical and herbal knowledge of the ancient inhabitants of Iran is the *Avesta* (the holy book of the Zoroastrians, aka Zarathustrans). In this book, *Thrita* (or *Serita*) was the first mythical physician to whom Ahura-Mazda (The Wise God of Light in the dualistic theology of Zoroastrianism) gave thousands of healing plants (*urvarō baešada* in the Avestan language). The term *urvarō baešazau* (*gyaah pezeshk* in the Persian language), or herbal physician, is one of the 5 categories of physicians named in this book and the term *bēšāzišnīh kartrīh* in the Pahlavi (Median Farsi) language means growing and caring for medicinal plants. It may be constructive to mention that the word *drug* was probably derived from the ancient Iranian word *dārāv*, meaning the stem of a plant, as the origin of medicinal herbs. This word later changed into *dāruk* in the Pahlavi language, and later became *droga* in Latin, *drogue* in French, *drug* in English, and *dāru* in the present Persian languages. Many herbs are introduced in this book for various ailments. Some herbal extracts, infusions, decoctions, abortifacients, and disinfectants are also well described in the *Vandidad* and *Yashts*, 2 sections of the 5 sections of the *Avesta*.[4,7-13]

One of the most sacred herbs was *hōm* or *hāomā*, which has been identified by Flattery and Schwartz as *Peganum harmala*, Zygophyllaceae (*esfand* in Farsi).[14] But according to other reputed documents, this plant is identified as *Ephedra vulgaris*, Ephedraceae.[8] Many other herbs and herbal treatments are also mentioned in different sections of the *Avesta*.[6] Determining the exact scientific name for these plants is a delicate and perhaps even impossible scientific task. However, some of these plants are given probable scientific names through logical reasoning. A selection of these plants is shown in Table 1 (on page 40), which lists their ancient names, common Persian names, equivalent English names, attributed botanical names, and ancient indications.[8,12,15]

The Jundishapur academic center in ancient Persia, due to its cosmopolitan nature, could be defined as one of the earliest universities in the world. Sabur (or Shapur) Sahl, a well-known pharmacist of this institution, composed his *Aqrabadin-e-Kabir* (great pharmacopeia) in 869 CE, which became the first pharmacopeia to receive widespread acceptance. His book was used in hospitals and pharmacies of the time.[4,16] According to Edward Brown: "The most cogent evidence for ancient Iranian interest in pharmacy is the Iranian origin of many drug names in medieval medicine."[17]

With the establishment of an Islamic state in Iran and neighboring lands in the seventh century CE, the cultural knowledge of different nations, such as Egyptian, Babylonian, Persian, Greek, Roman, Indian, and even Chinese, came under the rule of Islam. A new era of medical, pharmaceutical, and other sciences came into being that was later disseminated into Europe, which greatly influenced the European Renaissance. Iranian scholars played an exceptional role in the advancement of sciences and arts in this period. The Arabic language became the dominant language of art and science. Unfortunately, an in-depth discussion of this era within the short space in this article would not be possible, especially when considering the thousands of relevant writings that existed in this period.[18-21] For example, according to Levey, "during this era over 600,000 manuscripts were dispersed in depositories throughout the world." These manuscripts are mostly in Arabic and some in Persian languages.[5] The first book on pharmacology in the Persian language was written about 975 CE by Abu-Mansur Muvaffaq Heravi and was titled *Kitab ul-Abniya an Haqa'iq-il Adviya* (*Book of the Foundation of the True Properties of Remedies*). This book ushered a new trend in pharmacology in Persia.[4] When reviewing the primary humanist and rationalist sages in the history of Persian medicine and pharmacy, some well-known scholars and writings must be mentioned.

Ali ibn Sahl Rabban al-Tabari (circa 818-870 CE). This Iranian scholar was born in Marv, Tabaristan, from a respectable Jewish family. His father Sahl was a well-known physician and a reputable philosopher called Rabbin (Great teacher). As a result of his association with his learned father, Tabari was educated in the fields of medicine, calligraphy, astrology, and mathematics. He was also proficient in Syriac and Greek languages. Later, he was obliged to leave Marv and fled to Ray, the birthplace of the famous physician Zakariya Razi (near present Tehran). Then he moved to Baghdad and converted to Islam. However, he introduced his previous religion as Christianity in one of his writings, *Deen-o-Doulat* (although it is not clear why he would have done so, having been raised Jewish). Some historians have described him as a tutor of Razi, which is not accepted by others (e.g., Myerhof, due to the differences on their birth and death dates). However, Razi, as a disciple, remembered him several times in his well-known book *Al-Hawi fi Tibb*. It is quite possible that Razi had taught many aspects of medicine and pharmacy from Tabari's writings. In Tabari's famous book about medicine and pharmacy, *Ferdous al-Hikamat* (*The Paradise of Wisdom*), 2 out of 7 sections are dedicated to drugs and poisons.[4,22] Some writers consider this book the first medical encyclopedia. Tabari's reliance on information from Greek medicine and the traditional uses of Indian herbal drugs can be seen in this book.

Mohammad ibn Zakariya Razi (Rhazes in Latin) (865-925 CE). This chemist, pharmacist, musician, physicist, philosopher, and great clinical physician was a leading figure in the field of medieval medicine.[23] He wrote his famous encyclopedia (*Al-Hawi fi Tibb*) in about 26 books, which was translated from Arabic into Latin under the name of *The Continens of Rhazes* by Faraj ibn Salim (Farragut) in 1279 CE. The first Latin edition of this book was printed in Brescia, Italy, in 1486. This edition was published in Venice 4 times from 1505-1542. The book was among the 9 books employed by the Paris Faculty of Medicine in 1395.[18,22] Razi's book, *al-Hawi fi Tibb*, based on his clinical approach, did not make as strong an impression on Western medical history as did Ibn Sina's works, which were more theoretical in approach and had been translated earlier, incorporating the Greco-Roman Galenic theories of the second century CE.

Two volumes of Razi's encyclopedia were dedicated to pharmacy and pharmacology and served as one of the main sources of pharmacology even a long time after the scientific Renaissance in Europe.[24] Razi's work on pharmacy is greatly appreciated. He introduced mercurial ointments and apothecary apparatuses such as pestles, flasks, beakers, and glass vessels into the Western world.[25] His independent mind is revealed in his famous book *Shukuk 'ala Jalinus* (*Doubts about Galen*), a critique of the writings and practice of the second century (CE) Greco-Roman physician Galen. His independent thinking is seen even is his clinical records.[23,26,27]

Abu Ali al-Husain ibn Abdallah ibn Sina (Avicenna in Latin) (980-1037 CE). This philosopher, mathematician,

A view of Persepolis, Shiraz. Photo ©2005 William Grassie

writer, poet, politician, physician, and pharmacologist was known in Europe as "The Prince of Physicians."[28] In 1491 CE his masterpiece *Al-Qanun fi-Tibb* (*The Canon of Medicine*) was translated into Latin by Gterardus Cremonensis in Naples, and it was translated into other languages and taught in many European universities for years. He dedicated 2 of the 5 volumes of this book to pharmacy and pharmacology. Ibn Sina also mentioned about 900 drugs, mostly herbal, in these 2 volumes.[29] He also was one of the first persons to introduce the concept of polypharmacy (using compound drugs) on humoral theory, and he discussed the changing effects of drugs from one person to another, which is considered an important factor in pharmacokinetics today.[28,30]

In this era many herbal formularies and compendia were written by different scientists as separate fascicules or as a part of a collection. These classified and coded writings have had a strong influence on the advancement of medical, pharmaceutical, and pharmacological sciences.[18] Ibn Sina occupies a prominent place among the European scholars and philosophers who indirectly translated his works into Latin, thereby significantly impacting Western medical literature and university curriculum and helping to awaken Europe to the Renaissance.[28]

Other Important Texts

Two popular pharmacopeias in Farsi have been used as main sources of traditional remedies by later physicians, traditional healers, and even traditional herbalists: (1) *Tuhfat al-Mu'minin* (*The Gift of two Mumins*) written by Muhammad Zaman e-Tunekabuni in about 1669, and (2) *Makhzan al-adviyah* (*The Storage of Medicaments*) written by Muhammad husayn ibn al-Alavi al-Khurasani al-Shirazi in 1771 CE.[21,31]

The Advent of Western Medicine in Iran

Modern Western conventional medicine was introduced into Iran with the establishment of Dar-ul-Fonun (Polytechnic School) in Tehran in 1850. With the advent of Western medicine, the traditional knowledge of herbs and healers was gradually ignored and eventually excluded from the mainstream of the Iranian medico-pharmaceutical community. Nevertheless, traditional medicine has continued its survival through medical services rendered by unauthorized healers, sometimes even within urban areas that have well-equipped hospitals.[32]

People choose Iranian traditional medicine and herbal therapies mostly because of their socio-cultural beliefs and, of course, partly because of the barriers presented by the complicated, time-consuming, and expensive system of modern health care. Currently, the following categories of traditional healers can be found in Iran.

1. Herbal Sellers (Attaries)

These are usually laymen who sell medicinal herbs, dispense herbal drugs, and even provide medical services. A number of them have traditional knowledge and experience in herbal medicine. Many Iranian people continue to consult these herbal sellers/practitioners.

2. Unauthorized and Unofficial Healers

Usually these healers have some information of Iranian traditional medicine. They are usually recognized by the community rather than by the health authorities. At present the government has no plan to include folk healers in the scope of officially authorized medical services. These healers are frequently engaged in medical, pharmaceutical, and even non-medical activities. No statistical data are available for this category of healers.

3. Physicians and Pharmacists

The main sources of information for physicians are older Iranian herbal books written by Iranian scholars, newly-published manuscripts translated from other languages into Farsi, and other European or American books on herbal medicine in original languages.

A group of pharmacists provide as nonprescription drugs (NPD) various herb-based pharmaceuticals and

At left: An illustration of a variety of Sorrel, *Rumex* spp. Photo ©Roland Michaud (Nasr SH. *Islamic Science: An illustrated study.* London: Kazi Publication; 1976)

The tapping of a Balsam Tree, *Commiphora opobalsamum*. Photo ©Roland Michaud (Nasr SH. *Islamic Science: An illustrated study.* London: Kazi Publication; 1976)

An illustration of anthropomorphous flower from a Persian botanical treatise. Photo ©Roland Michaud (Nasr SH. *Islamic Science: An illustrated study.* London: Kazi Publication; 1976)

herbal preparations by themselves. They also dispense them according to the order or suggestion (prescription) of conventional physicians or traditional and complementary and alternative medicine (CAM) practitioners.

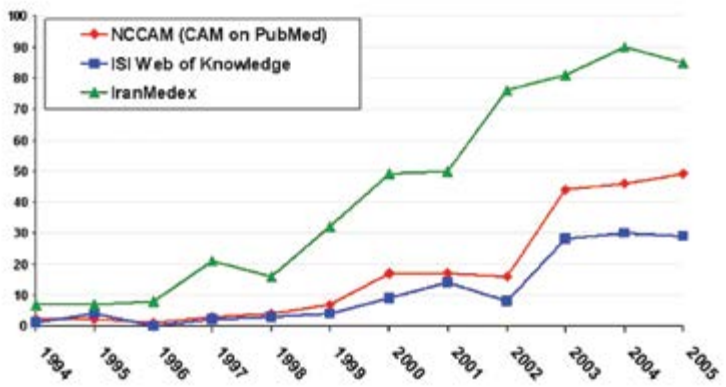
4. Bonesetters (Shekasteh-band in Persian)

Bonesetters are traditional orthopedists who have not undergone formal institutional training. They acquired their skill from other experienced persons, often close family members. They usually have a considerable reputation and some people believe strongly in them. They use herbal or animal materials for management of sprains and broken bones.

***5. Traditional Birth Attendants (Ghabeleh* or *Mama* in Persian)**

A number of babies in rural areas are still delivered by local midwives or birth attendants who are not trained in official conventional medicine. They usually acquire their skills by working with other experienced persons. These traditional birth attendants also use herbal preparations before or after delivery.

Figure 2. Indexed Articles on Herbal Medicine by Iranian Researchers in PubMed, ISI, and IranMedex



Recent Changes in Herbal Medicine

During the last 2 decades there have been appreciable changes in the attitudes of the general public as well as medical and pharmaceutical authorities towards medicinal plants and herbal products. Serious attempts have been made to promote traditional medicine (TM) and to avoid possible misuse of other TM and CAM systems. Reform has been carried out within the framework of a national drug policy (NDP) toward the promotion of TM/CAM implementations of

technical guidelines for ensuring quality, safety, and efficacy of herbal medicines and other approved TM/CAM products. These reform measures establish an effective system for regulation, quality assurance, and the rational use of herbal drugs according to World Health Organization (WHO) recommendations.[33] The expert committee on medicinal herbs has formulated a separate regulation for herbal products under the supervision of the Ministry of Health and Medical Education.[32] This panel of experts is also charged with evaluating the safety and efficacy of herbal products.[34]

The Iranian Academy of Medical Sciences has taken steps to revive and promote traditional and herbal medicines and to integrate Iranian traditional medicine into the scientific conventional medical system.[33] The primary health care system in Iran is internationally acknowledged as one of the best in the world as reported by UNICEF. There are plans to gradually substitute traditional birth attendants with trained midwives so that each village would have one trained birth attendant.[32]

Iranians are still interested in using herbal remedies. A recent cross-sectional study of 4123 people (more than 15 years old) in Tehran showed the following:

- 75.6% of the studied population were familiar with herbal therapy,
- 50.8% of the population familiar with herbal therapy had used it at least once, and
- 38.4% of the total population had used it at least once.[35]

On the other hand, many conventional physicians use herbal drugs, alone or in combination with synthetic drugs, to treat their patients. Another study that surveyed knowledge, attitude, and practice of CAM among general practitioners in Tehran showed that 85% of them believed complementary medicine had become more popular. In their opinion, the most commonly used modality in Iran is herbal medicine.[36] An investigation on the knowledge of Iranian pharmacists about herbal medicine revealed that those pharmacists who had some courses about herbal medicine had a fair knowledge on this subject.[37]

In addition to its traditional popularity, phytotherapy is accepted as a recognized CAM by the state authority. According to new regulations of this modality, only physicians (usually general practitioners) who pass specific courses on phytotherapy are allowed to treat patients.

Fortunately, the knowledge of traditional Iranian medicine is largely based on written documents. However, complex challenges and problems surrounding the use of this knowledge need urgent scientific review, documentation, and validation.

Institutional and Research Activities

Educational Activities

The most important educational activities in herbal medicine are related to faculties (colleges) of pharmacy. There are 11 Faculties of Pharmacy in different provinces of Iran. All

Table 1. Selected Medicinal Plants Mentioned in the *Avesta*

Ancient Name		Common Name		Attributed Latin Name	Ancient Indication
Avestan	Pahlavic	Persian	English		
Vahugaonā	Hugun	Kondor	Frankincense, Olibanum	*Boswellia carterii*	Disinfectant, Aromatic
Banghā	Mang, Šāhdānk	Shāhdāneh	Hemp	*Cannabis sativa*	Anesthetic, Abortifacient
Vanpašak	Vanafšak	Gol-e Banafsheh	Violet flower	*Viola odorata*	Aromatic, Emulient
Vātrang	Vātrangbōy	Bādranjbuyeh	Lemon balm	*Melissa officinalis*	Sedative
Gāokerenā	Kukren	Kuknār, Khashkhāsh	Opium poppy	*Papaver somniferum*	Hypnotic, Analgesic
Urvasnā	Čandal	Sandal	White sandalwood	*Santalum album*	Aromatic, Antiseptic
Hāδāneāptā	Anār	Anār	Pomegranate	*Punica granatum*	Disinfectant
Āvišan	Āwišan	Āvishan	Thyme	*Thymus vulgaris*	Stomachic
Mitrogyā	Mahrkyā, Mahrgyā	Mahrgyāh	Mandrake	*Mandrogora officinalis*	Sedative
Hirbazān	-	Shirinbayān	Licorice	*Glycyrrhiza glabra*	Stomachic
Hāomā, Hōm	Hōm	Rishboz, Ormak	Ephedra	*Ephedra vulgaris*	Religious mythical plant, Stimulant
Spand	Spand	Esfand	Harmel	*Peganum harmala*	Antiseptic, Protection of devil eye as fumigation
Murta	Murt	Murd, Murt	Myrtle	*Myrtus communis*	Antiseptic
Mabāk	Čambak	Zanbag	Orris	*Iris* spp	Aromatic oil
Spitjambak	Sōsan	Susan	Lily	*Lilium* spp	Analgesic oil
Sparγam	Šahsparham	Shāhesparm, Reyhān	Basil	*Ocimum basilicum*	Aromatic, Diaphoretic
Aerakeonā	Hamak vahār	Hamisheh bahār	Marigold flower	*Calendula officinalis*	Dermatic

Iran's diverse climate produces more than 7500 plant species—about 1800 of which are considered medicinal.

of these colleges have a Department of Pharmacognosy (the study of drugs of natural origin, usually with an emphasis on plant-derived drugs), and they present various courses on medicinal herbs. The geographic distribution of these faculties/colleges is shown in Figure 1 on page 35.

Pharmacognosy is among the 7 major postgraduate (PhD) programs, which have been taught only in 4 colleges of pharmacy (Tehran, Shahid Beheshti, Isfahan, and Tabriz) in Iran since 1989. Some specific courses of CAM are in practice in some colleges. However, these courses are limited to a few permitted CAM subjects such as homeopathy, acupuncture, Iranian traditional medicine, herbal medicine, and a few others.

Research Activities

1. *Faculties (Colleges) of Pharmacy*

The main body of research on herbal medicine is concentrated in the faculties of pharmacy. Research on medicinal plants, which is carried out in different departments of these faculties, play an important role in education and promotion of herbal knowledge. Over the past two decades, in accordance with the new wave of medicinal plant usage and initiation principles of doctorates in pharmacognosy and other branches, research activities have shown significant progress. Ethnobotanical information forms the starting point for many of these research activities. The results of these investigations have been published in reputable international periodicals as well as domestic journals.

The indexed articles in *Medline*, *ISI Web of Knowledge,* and *IranMedex* about herbal medicine by Iranian researchers are presented in Figure 2 on page 39.

2. *Research Centers*

There are 6 research centers on herbal medicine in Iran. The broad range of investigation carried out in these centers includes phytochemical, pharmacological, and clinical studies on medicinal plants. Parts of these investigations are based on the plants described in the classic books and treatises written by famous Iranian scholars as well as those supported by ethnological customs. Furthermore, there are some medical institutes such as the Iranian Cancer Institute, the Research Institute on Gastroenterology, and others that are concerned in part with research on medicinal plants.

3. *Herbal Medicine Research Network*

The Herbal Medicine Research Network has been established since 2003 in the office of the Deputy of Research and Technology at the Ministry of Health and Medical Education. The major goals of this network are summarized as follows:

a. Development of a medicinal plant industry.
b. Organization and management of network communications with other research centers.
c. Development of education and research on medicinal plants.
d. Development of local and international market activities.

Industrial Activities

1. *Pharmaceutical*

There are 30 pharmaceutical companies producing herbal products either as unprocessed medicinal herbs in bulk or as finished products.[34] The government's good manufac-

Cultivated **Echinacea** *Echinacea purpurea*, Golestan. Photo ©2003 Mohammad-Hadi Soleimani

turing practice (GMP) requirements for finished herbal drug products are the same as those required for conventional drugs. Safety assessment requirements are used to document potentially harmful effects.[38] Currently, 223 herbal drugs are registered and 130 approved herbal drugs have been produced and marketed.[39] These drugs are usually available as Nonprescription Drugs (NPD) and have popular use among the Iranian people.[15] Many of them are also prescribed by physicians. Aromatic waters containing medicinal herbs are also produced for both local markets as well as for export to other countries.

2. *Agricultural*

To protect wild and native species of medicinal plants as a national heritage, some of these species, as well as those medicinal plants brought from abroad, are cultivated by private or state agricultural corporations. The products of these agricultural corporations are usually used by local factories or are exported to other countries.

Summary

Iran's diverse climate produces more than 7500 plant species—about 1800 of which are considered medicinal. Iran also has an impressive heritage of medico-pharmaceutical knowledge. One of the main sources of this medical knowledge comes from the ancient inhabitants of Persia who wrote *Avesta* (the holy book of Zoroastrians). This book mentions numerous medicinal plants with their indications and five categories of physicians including herbal physician.

With the establishment of the Islamic state in Iran and neighboring lands in the seventh century, a new era of arts and medicine came into being that was later disseminated into Europe, which influenced the European Renaissance. Iranian scholars such as Rhazes (Razi) and Avicenna (Ibn-Sina) played a major role in this advancement. The introduction of Western medicine in 1850 CE eventually supplanted much of Iran's traditional medicine. However, even today various categories of traditional medicine are still practiced by unauthorized healers who are supported by the general population. With the advancement of herbal medicine throughout many parts of the world, Iranian medical authorities have adopted a new strategy. Iran's Ministry of Health is strongly committed to promoting the use of herbal drugs and traditional medicines as well as several types of CAM systems of medicine in the public health sector.

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View across the herb garden and past the main cottage at Cinchona Gardens. Photo ©2004 Kevin Spelman

PARADISE NEARLY *Lost*

By Kevin Spelman and Jill Yesko

Jamaica's Forgotten

Calla lily *Zantedeschia aethiopica* at Cinchona Gardens. Photo ©2004 Kevin Spelman

In 1863 the British government established a state-of-the-art botanical research station, laboratory, and cinchona plantation on a peak in Jamaica's Blue Mountains. This facility gave botanists the opportunity to study first-hand Jamaica's more than 800 endemic and 2700 native plant species—among them the climbing bamboo (*Chusquea abietifolia,* Poaceae), which flowers at intervals that can reach decades.

The Cinchona Botanical Station was established for a good reason—to grow *Cinchona* trees as a treatment for malaria, a disease that has bedeviled healers and physicians since ancient times. Malaria was once known as *ague,* a term of Italian origin (from the Latin *acuta* meaning sharp, as in an acute fever). Although primarily associated with tropical climates, malaria has also been present in non-tropical climates, from Britain to the southeastern United States.* Malaria's symptoms are so distinct that historians have traced its presence to ancient civilizations dating from 1000 BCE. The symptoms—paroxysmal fever, shaking, chills, sweating—have been described in the Hippocratic Collection.[1] So incapacitating is the disease that the expansion of civilizations and empires in the past depended on a cure for the debilitating fevers of malaria. It is speculated that Alexander the Great—whose armies conquered much of what was then the civilized world—may have died of malaria in Babylonia.[1]

As the British Empire expanded into tropical regions of Africa, India, and the Caribbean, so did the risk of exposure to malaria. By far one of the most common, debilitating and often deadly of the tropical diseases, malaria was the one disease that 18th and early 19th century colonists could expect to contract if they spent any significant time

* Historical records show that "ague" caused high levels of mortality in British marshlands and fens from the 15th to the 19th century. Evidence that the illness was malaria emerged in the early 19th century when treatments and advances in fever diagnosis enabled a distinct separation between malaria and other acute fevers. Certain indigenous species of mosquito, which prefer to breed in the brackish water along river estuaries, are capable of transmitting malaria in England. Contemporary accounts of the distribution of ague in 16th and 17th century England reflect the ecology and distribution of one such species. The foul odor of these marshes and fens were widely perceived at that time as the actual cause of ague, hence the Italian term "mala aria," meaning "bad air." Sources: Kuhn KG, Campbell-Lendrum DH, Armstrong B, Davies CR. Malaria in Britain: past, present, and future. *PNAS.* 2003;100(17):9997-10001; and Reiter P. From Shakespeare to Defoe: malaria in England in the little ice age. *Emerg Infect Dis.* 2000;6(1):1-11.

Cinchona Gardens

View of storeroom and gardens at Cinchona Gardens. Photo ©2007 Limetreefarm.com

THE BRITISH WERE WELL MOTIVATED TO CULTIVATE LOJABARK (*CINCHONA OFFICINALIS*, RUBIACEAE), FROM WHICH CAME THE ALKALOID QUININE, THE FIRST DRUG TO CURE MALARIA.

Main lawn of Cinchona Gardens. Photo ©2007 Limetreefarm.com

in the tropics. The toll from malaria and other tropical diseases was so deadly that West Africa earned the nickname "the white man's grave." Although contraction of malaria did not necessarily mean a death sentence, the general debility from malarial fevers often resulted in increased susceptibility to other diseases.[2] Thus, to solve the puzzle of malaria was to significantly decrease the death rate of populations and troops in both temperate and tropical climates.

Staying healthy in the tropics was reason enough for the British to actively encourage the cultivation of cinchona trees. In 1869, a master gardener named William Nock, from the Royal Botanic Gardens at Kew in Britain, was sent out to supervise the planting of 40 acres of cinchona trees (allegedly stolen from Peru) at altitudes between 4500 and 5500 feet, along with coffee and tea export crops.

The British were well motivated to cultivate lojabark (*Cinchona officinalis,* Rubiaceae), also known as china bark and fever tree, from which came the alkaloid quinine, the first drug to cure malaria. Cinchona is native to the Andes and thrives on steep mountain slopes with an annual rainfall of over 59 inches. Of the 38 species in the genus *Cinchona*, only a few—for instance, yellow cinchona (*C. calisaya* syn. *C. ledgeriana*), lojabark, and red cinchona (*C. succirubra* syn. *C. pubescens* syn. *C. officinalis*)—have economic value for the production of quinine.

The search for a cure for malaria followed Spanish conquistadors and Jesuit missionaries in South America as they entered the Amazonian jungles in search of indigenous peoples to convert to Christianity.† The first known record of the cure for malaria was written in the 15th century by the Spaniards Juan Fragoso and Nicolas Monardes, both of whom published accounts of a medicinal bark from a tree they chose not to name. However, their descriptions leave little doubt that they are describing cinchona.[3] They wrote about a remedy that was much respected by the South American natives who passed it on to the Spaniards. South American natives had used cinchona brews, which they called "quinas," for fevers and other conditions.[4,5] A later record

By the 1880s, the Cinchona Botanical Station had become a first-class research facility for the study of … Cinchona species.

† The establishment of Jesuit missions and their conversion of tribes such as the Guarani of Paraguay are well documented. For a more thorough history of the Jesuits and their missionary activities in South America, consult *The Lost Paradise: The Jesuit Republic in South America* (1975) by Philip Carman.

Cinchona Great House built in 1868. Photo ©2007 Limetreefarm.com

came almost one hundred years later by Calancha of Lima (Peru), an Augustinian monk. He wrote in 1633 that a powder of quina "given as a beverage, cures the fevers and tertians."[6] By 1643, the European medical literature also recorded the use of this New World fever remedy, which earned the name "Jesuit's bark" in the British apothecaries because of the importation and distribution of cinchona bark by the Jesuits whose missions extended from the Amazon to Patagonia.[7,8]

Legend and various historical accounts have it that cinchona was named after the Countess of Chinchon, wife of a Viceroy of Peru who contracted malaria and was said to have been cured by taking a powder made from the bark of the Quina tree.‡ Historians believe the name cinchona actually comes from the Native American word *quina* meaning bark.[9§]

In the late 17th century, the famed physician Francesco Torti began using the bark prophylactically. He also insisted, unlike his contemporaries, in using high doses of the powdered bark swiftly and repeatedly at the first signs of malarial fevers.[10] His results eventually encouraged fellow physicians to follow his protocol. In 1820, Pelletier and Caventou, French chemist-pharmacists, isolated quinine out of the 30 or so alkaloids in cinchona. This, coupled with the German chemist Sertürner's previous isolation of morphine from opium poppy (*Papaver somniferum,* Papaveraceae) in 1805, profoundly shifted the direction of medicine to therapeutics based on single plant-derived chemicals,[11] the advent of the modern pharmaceutical industry and the use of pure compounds as the basis of most conventionally used medicines.

By the 1880s, the Cinchona Botanical Station had become a first-class research facility for the study of not just *Cinchona* species, but other plant species found in Jamaica's montane tropical forests, as well as experiments on the propagation of non-native plants. Oranges, forage, and fiber plants such as China grass (*Boehmeria nivea,* Urticaceae) were also cultivated

‡ The Royal Horticultural Society, citing *The Oxford English Dictionary,* says the plant was named in 1742 by the Swedish botanist Linnaeus in honor of the Countess of Chinchon. Other sources, such as Duran-Reynals' *The Fever Bark Tree: The Pageant of Quinine* (1946) and Jarcho's *Quinine's Predecessor: Frances Torti and the Early History of Cinchona* (1993), give further information on the misappropriation of the name cinchona. According to Jarcho, Linnaeus based his name for the bark on the story of the Countess but misspelled the name.

§ The *Oxford English Dictionary* states that the word cinchona has no etymological connection to the Peruvian word quina.

Instead of becoming "a Mecca for those of our biologists who are interested in tropical problems," Cinchona became a lost cause. Between 1917 and 1920 ... not one American scientist was able to visit Cinchona.

Right photo: Andreas Oberli at the base of the last **Hoop Pine** *Araucaria cunninghamii* at Cinchona Gardens (other hoop pines were destroyed by hurricane). Photo ©2004 Kevin Spelman

Bottom photo: **Orchids** *Bulbophyllum dearei* of Cinchona. Photo ©2004 Kevin Spelman

at slightly lower altitudes while scientists engaged in research on propagating Old World plants in New World environments. With nearly the entire botanical staff of the Jamaican Department of Public Gardens and Plantations stationed at the Cinchona Botanical Station, Cinchona became a jumping-off point for taxonomists to explore the interior tropical montane forests of the Blue Mountains, which held hundreds of species of ferns, mosses, and seed plants.[12] Under William Nock's guidance, construction of cottages, greenhouses, and outbuildings—many elegantly outfitted with mahogany furnishings—were completed. Complementing the architectural charm, Nock supervised the planting of elaborate English-style gardens to rival any found in his native land. Beds of exquisitely tended roses, Easter lilies, gladiolas, *Cymbidium* orchids, azaleas, nasturtiums, and other flowering plants spread out before the cottages and laboratories along Cinchona's gently sloping and perfectly manicured lawns. The acres surrounding the buildings were planted with eucalyptus and candelabra-like *Cryptomeria* trees. Specific to tropical conifer plantations, stands of hoop-pine (*Araucaria cunninghamii,* Araucariaceae) also figured prominently in the horticultural landscape of Cinchona.[13]

However, even with all of the best equipment and the brightest scientific minds at work, by 1900 Cinchona was practically abandoned. Attempts by the British to cultivate cinchona and Assam tea (*Camellia sinensis* var. *assamica*, Theaceae), along with other plants, failed. The buildings and carefully planted gardens languished under the rains and winds of Jamaica's often harsh upland climate. With the British government losing interest in Cinchona, the New York Botanical Garden under its director N. L. Britton and in collaboration with his local counterpart William Harris, superintendent of public gardens and plantations and a plant collector, secured a lease for the gardens from 1903 to 1913. This was followed by the Smithsonian Institution, which negotiated to lease the gardens for a payment of £50 twice a year "for the benefit of botanical investigators."[14]

It was then that the Smithsonian began its short tenure as stewards of the Cinchona Botanical Gardens. Professor Duncan S. Johnson of the Johns Hopkins Botanical Laboratory was picked by the Smithsonian to help form a consortium of US scientists to contribute to the upkeep of Cinchona. But what should have been an opportunity for scientists to visit one of the most unusual high-altitude tropical arboretums in the world became an oblique casualty of disruptions in the scientific community as a result of World War I, as well as petty squabbling on the part of the British government of Jamaica.

Letters flew back and forth between Johns Hopkins, the Smithsonian, and the British government over which party would be responsible for collecting the lease monies and who would keep Cinchona's buildings, furniture, and effects "in good repair if damaged by accidents, fire, earthquake, tempest, and other acts of God and the King's enemies excepted." For their part, the Americans seemed less than eager to allow access to the gardens to their British scientific counterparts.[15]

Instead of becoming "a Mecca for those of our biologists who are interested in tropical problems," Cinchona became a lost cause.[15] Between 1917 and 1920, letters exchanged between Professor Johnson of Johns Hopkins University and Robert Johnstone, the colonial secretary of Jamaica, indicated that "owing to the impossibility of sending botanists to Jamaica during the war," not one American scientist was able to visit Cinchona.[16]

As World War I waned, so did interest in keeping Cinchona Botanical Gardens as a permanent tropical research station. Before the Smithsonian's lease expired, two American scientists did visit the gardens. In 1920, the last year of the Smithsonian's lease, two scientists from the National Herbarium—W.R. Maxon and E.P. Killip—spent three weeks at Cinchona examining the taxonomy of native ferns and angiosperms. On June 30, 1921, Cinchona was returned to the Jamaican colonial government. In October of 1921, Johnson addressed his final correspondence about Cinchona to C.G. Abbot, acting director of the Smithsonian: "…this will end for the present American participation in the maintenance of the Cinchona Laboratory as a tropical station."[17]

With the posting of Johnson's letter, Cinchona fell into a state of precipitous decline. Like a botanical Sleeping Beauty waiting to be awakened, Cinchona went to sleep in splendid isolation until the 1980s. That's when Andreas Oberli, a Swiss teacher then working as a photographer in Jamaica, dedicated himself to single-handedly restoring Cinchona to its former glory. Oberli has made the restoration of Cinchona to its former state one of his life's missions. What some may call folly, Oberli sees as a passion to preserve both the botanical and historical legacy of Jamaica's horticultural past.

From 1982 to 1986, Oberli, now director of the Plant Conservation Centre in Jamaica, along with a small but dedicated crew of Jamaicans, worked tirelessly to turn back the hands of time. With a shoestring budget, Oberli and his crew managed to clear away decades of debris from hurricanes and reconstruct what looters and the elements had destroyed. Remaining true to William Nock's vision of a perfect English gentleman's garden, Oberli again planted terraced gardens filled with some of the same lilies, roses, orchids, hydrangeas, and other flowering plants favored by Nock. He also built ponds filled with water lilies and converted an old water tank into water gardens.

To counter the often howling winds that swirl the mountain top, Oberli planted the South African Outeniqua yellow wood (*Podocarpus falcatus,* Podocarpaceae) as a windbreak. Vestigial tea plants line the walking trails along with an impressive tunnel formed by rows of Japanese bamboo (*Arundinaria japonica,* Poaceae). Native trees, including towering juniper trees (*Juniperus barbadensis* var. *lucayana,* Cupressaceae), as well as the exotic weeping cypress (*Cupressus lusitanica,* Cupressaceae), Monterey cypress (*C. macrocarpa*), Mediterranean cypress (*C. sempervirens*), American arborvitae (*Thuja occidentalis,* Cupressaceae), Chinese Arborvitae (*Platycladus orientalis,* Cupressaceae), the gigantic Masson's pine (*Pinus massoniana,* Pinaceae) from China, Taiwanian Cryptomeria (*Taiwania cryptomerioides,* Cupressaceae), and many other conifers dot the property. Outstanding and mature specimens, typical for 19th century, are the chestnut leaf oak *(Quercus castaneifolia,* Fagaceae), large rhododendron (*Rhododendron arboreum,*

Views of Cinchona's buildings and gardens. Photos ©2007 Limetreefarm.com

Orchids *Cymbidium* spp. at Cinchona Gardens. Photo ©2007 Limetreefarm.com

Ericaceae), *Polyspora axillaris* (Theaceae), the silkoak (*Grevillea robusta,* Proteaceae), along with the jelly palm (*Butia capitata,* Arecaceae) from Brazil and Martius' windmill palm (*Trachycarpus martianus,* Arecaceae) from the Himalayas. During his tenure at Cinchona, Oberli identified over 35 different species of Eucalyptus within the garden's 17 acres.

Oberli also partially restored some of the buildings, including Nock's yellow cottage with a red cedar roof. He hopes to rebuild Cinchona's laboratories as they were intended—as facilities for visiting scientists to conduct research on native and non-native plants. Until then, Cinchona Gardens will remain a vestige of a former age, a remnant of a colonial-era high-altitude tropical scientific research station crossed with a perfect recreation of an English garden. For the hardy souls willing to endure the bone-crushing two hour ride up rutted jeep paths to gain access to Cinchona, the journey is well worth the time and expense to gain a rare glimpse into the not-so-distant past.

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View of New England, Jamaica, from Cinchona Gardens. Photo ©2007 limetreefarm.com

Illegal Stripping and Conservation of

Slippery Elm *Ulmus Rubra*
Illustration from *The North American sylva, or, A description of the forest trees of the United States, Canada and Nova Scotia* by François André Michaux (1770-1855) Courtesy of Missouri Botanical Garden

SLIPPERY ELM TREES

By Courtney Cavaliere

For the past few years, officials at the Daniel Boone National Forest in Kentucky have received complaints and discovered the girdled remains of slippery elm trees (*Ulmus rubra*, Ulmaceae syn. *U. fulva*) illegally stripped of their bark by poachers selling to the herbal market (B. Bishop, oral communication, January 23, 2007). Such thieves are elusive, but US Forest Service officers were able to apprehend several offenders in the summer of 2006.[1] Forest officials are working diligently to prevent further stripping of slippery elms, which appear to be joining the ranks of American ginseng (*Panax quinquefolius*, Araliaceae) root, goldenseal (*Hydrastis canadensis*, Ranunculaceae) root, and other medicinal plants as common victims of illegal harvesting.

The slippery elm is native to North America, with populations extending across much of central and eastern United States and into eastern Canada.[2] Its inner bark is coated with a mucilaginous lining, for which the tree earned both its name and its long-standing reputation as a medicinal agent. The bark has demulcent, expectorant, emollient, diuretic, and nutritive properties,[2] and it is one of the few herbal materials still classified by the Food and Drug Administration (FDA) as an approved, nonprescription, over-the-counter (OTC) drug (See Table 1). Much of the slippery elm bark that reaches the herbal market is acquired through wild-harvesting, which is difficult to validate as legally or sustainably obtained.

Barry Bishop, a law enforcement officer with the US Forest Service, said he began to notice illegally stripped slippery elms in the 706,000-acre Daniel Boone National Forest in 2003 (B. Bishop, oral communica-

Left top photo: **Slippery Elm**
Ulmus rubra Photo

Left photo: **Slippery Elm**
Ulmus rubra Photo

tion, January 23, 2007). Officials at the forest are aware of around 60 slippery elm trees that have been stripped of their bark over the past few years. Law enforcement officers, however, were unable to catch anyone in the act of perpetrating the crime until 2006. "We were finally at the right place at the right time," Bishop said.

Bishop apprehended 3 individuals who were illegally stripping slippery elm bark in June of 2006. Two of these illegal harvesters had been apprehended shortly beforehand by US Forest Service Special Agent Courtney McCrae for the same crime, and they told Bishop that they were stripping slippery elm bark in order to raise money to pay the ticket for their first offense. Special Agent McCrae apprehended 7 individuals for stealing slippery elm bark in June and August of 2006 (C. McCrae, oral communication, January 30, 2007).

The removal of timber or other forest products from public land, without special authorization, is prohibited under Title 36 of the *Code of Federal Regulations*.[3] According to Bishop, federal statute dictates that anyone caught collecting or harvesting forest materials without a permit may be issued a fine ranging from $250 to $5,000 or arrested on charges for "theft or unlawful taking" or "criminal mischief in the first degree." Six of the individuals caught by McCrae were issued citations ranging from $75 to $275. The three individuals apprehended by Bishop pled guilty to criminal mischief in the second degree and were sentenced to serve 6 months of jail time in Leslie County, KY. "These people were jobless and had no base source of income, so the [state court] didn't seek [financial] restitution. There wouldn't have been a point," Bishop said.

"This activity is illegal and we're going to do what we can to stop it," said David Taylor, a US Forest Service botanist for the Daniel Boone National Forest (oral communication, January 23, 2007). "Law enforcement officials are keeping their ears to the ground. They're taking the reports seriously and checking them out."

Although it is possible to harvest the bark of slippery elm trees in a fashion that does not kill the tree—by removing only segments of bark at any given time—some harvesters girdle, and thereby kill, the tree. The inner layers of the bark provide for the flow of water and nutrients throughout the tree, and this process is cut off when the bark is completely or mostly removed.[1] The tree literally starves to death.

Taylor noted that legal harvest of some materials within the forest is sanctioned when the harvester obtains the appropriate permits. "We do provide permits for many botanicals, such as ginseng or black cohosh," he said. These permits enable visitors to collect or harvest a set amount of certain herbs or materials from the forest for personal use. "We don't issue permits for slippery elm bark because it leaves dead or half-dead trees standing, which can be dangerous." Taylor explained that the stripped trees are often more susceptible to diseases or fungi, which could spread to adjacent trees.

Taylor said he did not know if illegal stripping of slippery elms is as prevalent within other state or national forests. "I do know that poaching in general of herbaceous species is pretty high."

Above photo: **Slippery Elm** *Ulmus rubra* bark detail Photo ©2007 Steven J. Baskauf

Bottom photo: The rust-colored buds are the source of Slippery Elm's species designation "rubra" meaning red. **Slippery Elm** *Ulmus rubra* Photo ©2007 Steven Foster

Table 1. Selected Data from Government and Authoritative Sources on Elm Bark as an FDA-Approved Nonprescription (Over-the-Counter) Demulcent Drug Ingredient

ELM BARK

Name of Category I* Active Ingredient

[Note: Slippery elm bark is referred by 3 common names in various compendia.]

- Code of Federal Regulations (CFR) Monograph: Elm bark (FDA, 1991).
- United States Pharmacopeia (USP) Monograph: Elm (USP, 2006).
- American Herbal Products Association's (AHPA) Standardized Common Name (SCN): Slippery elm (McGuffin et al., 2000).

Regulatory Status and Rulemaking History

- FDA Review Panel: The OTC Oral Cavity Drug Products Advisory Review Panel.
- FDA Report: Oral Health Care Report of FDA Panel.
- Drug Category: OTC Demulcent Active Ingredient.
- Advance Notice of Proposed Rulemaking: Category I*: 21 CFR §356.16(a) (FDA, 1982).
- Notice of Proposed Rulemaking: Category I: 21 CFR §356.18(a) (FDA, 1988).
- Proposed Rule: Category I: 21 CFR §365.18(a) (FDA, 1991).
- Final Rule: Pending (FDA, 2006a).

Definition

The botanical raw material complies with the qualitative and quantitative standards defined in the Elm monograph of the United States Pharmacopeia (Elm USP).

Elm USP: Elm is the dried inner bark of *Ulmus rubra,* Muhlenberg (*Ulmus fulva,* Michaux) (Fam. Ulmaceae). It contains not more than 2% of adhering outer bark (USP, 2006).

Statement of Identity

The labeling of products containing elm bark as the demulcent active ingredient includes the established name of the drug, if any, and identifies the product as an "oral demulcent" (FDA, 1991).

Purpose of the Active Ingredient

Demulcent: A bland, inert agent that soothes and relieves irritation of inflamed or abraded surfaces such as mucous membranes (FDA, 1991).

Use

For temporary relief of minor discomfort and protection of irritated areas in sore mouth and sore throat (FDA, 1991).

Directions and Dosage

The product is 10 to 15% elm bark in a solid dosage form (FDA, 1991); e.g., incorporated in an agar or other water-soluble gum base in the form of a lozenge (FDA 1982).

Adults and children 2 years of age and older: Allow lozenge to dissolve slowly in the mouth. May be repeated every 2 hours as needed or as directed by a dentist or doctor. *Children under 2 years of age*: Consult a dentist or doctor (FDA, 1991).

Packaging requirements: Elm lozenge packages for retail sale are exempt from the tamper-evident packaging requirements of the finished pharmaceuticals current good manufacturing practices (cGMPs) for OTC human drug products (FDA, 1998).

Permitted Combinations with other Herbal Oral Health Care Active Ingredients

Elm bark and menthol (FDA, 1991).

Warnings

Stop use and ask doctor or dentist

- if sore throat is severe,
- persists for more than 2 days,
- is accompanied or followed by fever, headache, rash, nausea, or vomiting, or if sore mouth symptoms do not improve in 7 days (FDA, 1991).

Sore throat warning: Severe or persistent sore throat or sore throat accompanied by high fever, headache, nausea, and vomiting may be serious. Consult physician promptly. Do not use more than 2 days or administer to children under 3 years of age unless directed by physician (FDA, 2006b).

If pregnant or breast-feeding, ask a health care professional before use. **Keep out of reach of children.**

* Category I refers to an FDA-approval for safety and efficacy of an active ingredient in a nonprescription (over-the-counter) drug.

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Source: Adapted from Brinckmann J. *Herbal Drugs: Monographs of the United States of America Code of Federal Regulations.* Austin, TX: American Botanical Council. In press.

Bishop, meanwhile, said he was aware of numerous complaints from private land owners regarding stripped slippery elms.

Slippery elm bark has been valued for its medicinal properties for centuries. Various Native American tribes, for instance, employed slippery elm bark as a medicine or food.[4] It was utilized as a sore throat remedy by the Iroquois and Mohegan tribes; a laxative by the Omaha, Pawnee, and Dakota tribes; a dermatological aid by the Menominee, Meskwaki, and Potawatomi tribes; and a tuberculosis remedy by the Cherokee, Catawba, and Iroquois tribes—to name just a few (See Table 2).

> **"Every species out there plays some role in the environment—including slippery elms"**

The tree soon became a source of medicine and nutrition for Euro-American settlers as well. It has been reported that soldiers of the Revolutionary War in 1776 subsisted on a jelly created from slippery elm bark after losing their way and being deprived of resources for over a week, and German botanist Prince Maximilian wrote of the medicinal properties of slippery elm in 1832.[2] The company Thayers Natural Remedies began producing and marketing slippery elm lozenges in 1847. According to John Gehr, Thayers' vice-president of sales and marketing, Thayers remains the only company that sells a lozenge containing enough slippery elm material (150 mg) for the botanical to serve as an active ingredient, based on the FDA's OTC standards (J. Gehr, oral communication, October 24, 2006).[5] Gehr claims that Thayers currently uses approximately 10,000 pounds of dried slippery elm bark each year. According to the *Tonnage Survey of Select North American Wild-Harvested Plants, 2004-2005*, prepared by the American Herbal Products Association (AHPA), the 2005 aggregate harvest of slippery elm bark consisted of 203,984 pounds of dried wild-harvested bark, 1,731 pounds of dried cultivated bark, and 74 pounds of fresh wild-harvested bark.[6] The 2004 harvest was much lower, with only 78,380 pounds of dried wild-harvested bark and 803 pounds of dried cultivated bark reported, but data from 2001-2003 show figures on the same level as 2005. Gehr said that, to his understanding, the vast majority of processed slippery elm bark is used as bulk material for supplements and products, primarily as a digestive aid.

Thayers purchases its slippery elm bark from third-party suppliers, who obtain the bark through wild-harvesting. "Unfortunately, there's no way for us to know with certainty what the source of the slippery elm is, because it's only wild-crafted," Gehr explained.*

Chuck Wanzer of Botanics Trading LLC, a company based in Blowing Rock, NC, which provides ethically wildcrafted and cultivated botanicals, noted that this is a common problem for buyers of wild-harvested plants and materials (C. Wanzer, oral communication, January 9, 2007). Even wildcrafters who obtain their plant materials legitimately often do not like to disclose the locations they used for harvesting, in some cases because they do not want other harvesters to find and infiltrate their sites. "It's a tradition, especially up in the mountains, to do wildcrafting as a way of life and for the secondary income," Wanzer stated. According to Wanzer, there are a few ethical herb companies growing slippery elm trees for sustainable use, but the practice is not particularly cost-effective. Slippery elm bark that is certified as organic and sustainably grown usually sells for $9 a pound while non-certified bark typically sells for $4 a pound, making slippery elm one of the more under-priced herbal materials on the market.

This low market value may be saving many slippery elms from illegal harvesting. "The illegal stripping of the inner bark of slippery elm trees is unconscionable, but it is not occurring widely in the southern Appalachia area yet, mostly because the price of slippery elm is too low," said Lynda LeMole, executive director of United Plant Savers (UpS), a nonprofit dedicated to preserving native medicinal plants (e-mail, October 17, 2006). "This is an area where high-priced medicinal plants like American ginseng and goldenseal are abundant, and people are very aware of plant theft."

Wanzer argued that wildcrafting does not pose the greatest threat to slippery elms. "Development and logging are taking out much more of these trees than wildcrafters," he said. "There is a problem with habitat depletion killing everything—slippery elms included." Furthermore, once forest areas are cleared, any replanting is usually done in pines and firs, as opposed to elms. Dutch elm disease has taken its toll on some populations of slippery elms as well.[2]

The many threats facing slippery elms have placed the tree in a rather ambiguous situation. According to Wanzer, slippery elm populations may be threatened in certain areas, but the tree itself is not in any immediate jeopardy as a species. He noted that slippery elms grow across a wide stretch of the United States and that there are plenty of thriving elms throughout the country. Taylor echoed such sentiments: "It's not a terribly common tree, but it's not rare either," he said. Gehr noted that Thayers has not witnessed any significant changes in the availability or cost of slippery elm material in recent years, which could further indicate that the tree's populations are not seriously threatened.

Some organizations, however, are taking precautionary measures to preserve and strengthen slippery elm populations.

*** *HerbalGram* received the following comment from a reviewer of this article: "My company [Traditional Medicinals, Inc., Sebastopol, CA] uses nearly as much dried elm bark annually as Thayers, but for many years we have been obtaining it under organic certification rules for wild crops, which have some traceability and transparency requirements. We know where our organic wild elm bark is harvested. I have discussed the sustainable wild harvest management plan with the harvester, and he has invited us to the collection site in order to observe and document the harvest. So it is possible to know more about where your elm is coming from if you can justify paying the premium for organic certification" (J Brinckmann, e-mail, March 28, 2007).**

Above photo: **Slippery Elm** *Ulmus rubra* branch and leaves. Photo ©2007 Steven J. Baskauf

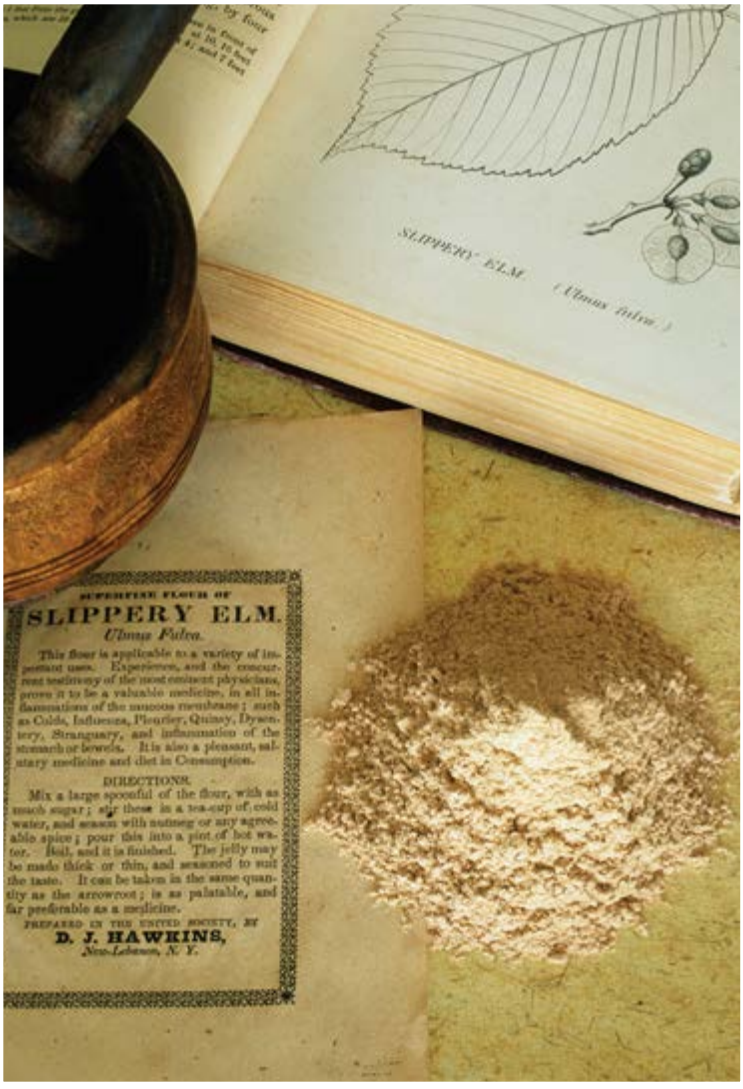
Left photo: The wafer-like fruits of **Slippery Elm** *Ulmus rubra*. Photo ©2007 Steven Foster

Table 2. Medicinal Use of Slippery Elm by Native Americans

Tribe	Medicinal Use of Slippery Elm
Alabama	Gynecological aid (bark)
Catawba	Tuberculosis remedy (bark)
Cherokee	Antidiarrheal (bark); Burn dressing (bark); Cold remedy*; Cough medicine*; Dermatological aid (bark); Eye medicine (bark); Gastrointestinal aid*; Gynecological aid (bark); Laxative*; Respiratory aid*; Throat aid*; Tuberculosis remedy*
Chipewa	Throat aid (bark/root)
Creek	Witchcraft medicine (bark)
Dakota	Laxative (bark)
Iroquois	Blood medicine*; Emetic*; Eye medicine (bark); Gastrointestinal aid (bark); Gynecological aid (bark); Kidney aid (bark); Respiratory aid (leaves); Stimulant*; Throat aid (bark); Tuberculosis remedy*
Kiowa	Oral aid (bark)
Mahuna	Orthopedic aid (bark)
Menominee	Cathartic (bark); Dermatological aid (bark)
Meskwaki	Dermatological aid (bark); Gynecological aid (root)
Micmac	Dermatological aid (bark); Pulmonary aid (bark)
Mohegan	Cough medicine (bark); Pulmonary aid (bark); Throat aid (bark)
Ojibwa	Dermatological aid (root); Gastrointestinal aid*; Hemostat (root); Throat aid (bark); Venereal aid*
Omaha	Laxative (bark)
Pawnee	Laxative (bark)
Ponca	Laxative (bark)
Potawatomi	Dermatological aid (bark); Eye medicine (bark); Throat aid (bark)
Winnebago	Laxative (bark)

* Plant part used in remedy not specified

Source: Moerman D. *Native American Ethnobotany*. Portland, OR: Timber Press; 1998.



Powdered **Slippery Elm** *Ulmus rubra* with pre-1850s Shaker label, and plate from George B. Emerson's *A Report on the Trees and Shrubs Growing Naturally in the Forest of Massachusetts*. 2nd ed. Boston: Little Brown, and Company, 1875. Photo ©2007 Steven Foster

The National Center for the Preservation of Medicinal Herbs, a nonprofit that researches ways to raise and replenish medicinal botanicals, has placed the slippery elm on its protection list,[7] and UpS has similarly added the tree to the organization's "At Risk" list.[8] UpS planted 500 young slippery elms in its botanical sanctuary in Meigs County, OH, in 1998 to both replenish slippery elms and to serve as a possible research site for experimenting with cures for Dutch elm disease and other diseases affecting elms, such as elm phloem necrosis (L. LeMole, e-mail, October 17, 2006). According to LeMole, approximately 90% of the planted elms are still thriving in the sanctuary. "One helpful aspect for slippery elm trees is that each tree casts out a tremendous amount of seed," said LeMole. "The trees begin producing seed at about 12-18 years of age. Since the wood of the slippery elm (also known as the red elm) is so hard, the trees contract the Dutch elm disease at about 12-18 years old. So it is a race—Can they produce seed before perishing from disease? Therefore, it is important to keep planting the trees and keep them going in the hope that a disease resistant strain will develop or that they can cross to produce a valuable variety that is disease resistant."

Forest officials at the Daniel Boone National Forest are similarly striving to maintain their slippery elm populations. Bishop said the US Forest Service is spreading information about forest regulations to ensure that people understand that stripping slippery elm bark on public land is illegal. The Forest Service has also asked that the public assist in reporting such illegal activities.[1,7]

"Every species out there plays some role in the environment—including slippery elms," said Taylor. According to Taylor, the illegal harvesting of any plant from the forest disrupts the natural environment and makes it difficult for forest officials to adequately assess plant populations and determine how various activities are influencing forest species. "The [US Forest Service] is a conservation organization. We want to be able to provide these resources down the road," he added. HG

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FDA Approves Special Green Tea Extract as a New Topical Drug for Genital Warts

Expert Says Development Marks the Birth of a "New Industry"

By Mark Blumenthal

On October 31, 2006, the US Food and Drug Administration (FDA) approved a special extract of green tea as a prescription drug for the topical (external) treatment of genital warts caused by the human papilloma virus (HPV).[1] The new drug, called Polyphenon® E (Veregen™) Ointment, is the first prescription botanical (herbal) drug approved by FDA under its current regulatory policy for botanical products as well as FDA's new Drug Application Process.

The active drug ingredient, Polyphenon E (15% strength), represents a proprietary mixture of naturally occurring phytochemicals called catechins, produced from a partially purified water extract of green tea leaves. Catechins are polyphenolic compounds with antioxidant properties. Tea, brewed from the leaves of the tea plant (*Camellia sinensis*, Theaceae), is considered the most popular beverage worldwide, second only to water. Unlike leaves used for black or oolong teas, leaves used to prepare "green" tea do not undergo a fermentation process, thereby retaining higher levels of antioxidants.

Green tea catechins have been shown to have significant pharmacological activities when tested both internally and externally.[2,3] Two randomized, double-blind, placebo-controlled trials to confirm the safety and efficacy of Polyphenon E Ointment were conducted in 397 adults with external genital and anal warts. In both trials, test subjects applied the ointment 3 times daily until complete clearance of all warts. The median time to clear warts completely was 16 weeks and 10 weeks, in the respective studies. The most commonly reported side effects were skin changes, including redness, itching, burning, pain/discomfort, ulceration, swelling, and local hardening, where the ointment was applied.

Polyphenon E 15% Ointment will be available in the United States by prescription only. While not a cure (new warts may develop following the ointment therapy), this drug adds another proven intervention to be used in the treatment of warts, under the guidance of a physician. The drug was developed by Medigene AG, (Martinsried/Munich, Germany) and will be marketed in the United States in the second half of 2007 by Bradley Pharmaceuticals of Fairfield, NJ.[4]

Regulatory Breakthrough

"This is the first time a complex herbal preparation has come to market as a prescription drug in the US in more than half a century," said Freddie Ann Hoffman, MD, a regulatory expert who specializes in complex natural products, particularly botanicals. "A new drug industry has just been born—perhaps 'reborn'—in the United States: the *polymolecular* botanical drug industry," she continued. Dr. Hoffman is a former FDA official and founder of HeteroGeneity, LLC, a Washington, DC-based consulting firm advising companies seeking to market botanically-based drugs.

Dr. Hoffman refers to changes in federal law passed by Congress in 1962, known as the Kefauver-Harris Amendments, in response to the thalidomide tragedy, requiring drugs to be proven both safe and effective prior to being marketed.[5] Over time, most of the botanical drugs that were marketed in the United States prior to 1962 disappeared from the market and new regulatory applications to FDA for botanical drugs also disappeared in the United States. Drug manufacturers lost interest in the chemically complex botanical drugs in favor of synthetic, single chemical entity compounds.

"Though many within the FDA may not yet recognize it as such, this approval represents an historic milestone for the agency," she continued. "It is proof that FDA can deal with botanicals—not only as foods and dietary supplements, but also as medicines approved under current law."

Dr. Hoffman added, it "will hopefully stimulate more serious research efforts regarding the clinical uses of botanicals. Manufacturers should also now be more willing to pursue a medical indication for their products, along with appropriate marketing claims."

Dr. Hoffman also views FDA's action as pivotal in addressing the nexus of an ongoing debate regarding the safe use of herbals for medical conditions. "Health professionals, insurance carriers, and consumers themselves must realize that this botanical drug is not a nutritional supplement or an 'alternative' therapy, but a mainstream therapy fully supported by clinical evidence of safety and efficacy equal to that of any chemical or biotechnology drug approved by FDA in the US today. This approval indeed paves the way for a new pharmaceutical industry."

According to Dr. Hoffman, it is too early to access whether or not a new class of botanical—or "polymolecular"—drugs will have cost benefits over synthetic or biotechnology products. "We will need to see more drug approvals before anyone can speculate on cost-savings of this drug class over others." She adds, "The fact that botanicals derive their uses from prior human experience—from traditional, historical, and even current use as foods and supplements—should shorten their pathway to drug approval in the US."

Polyphenon E is one of several hundred products being evaluated by FDA under its June 2004 *Guidance for Industry for Botanical Drugs*, a policy that takes into consideration the complex chemistry of botanicals.[6] In the guidance document, FDA defines a "botanical" as a product that exclusively contains ingredients from plants, algae or fungi (although fungi are not botanical per se). In contrast to most conventional pharmaceutical drugs comprised of one single chemical, botanicals contain complex mixtures of naturally-occurring chemicals. US law defines "drugs" as "articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease … and … articles (other than food) intended to affect the structure or

any function of the body of man or other animals."[7] The FDA's guidance document provides advice to potential botanical drug manufacturers, describing both the application process and providing recommendations as to how chemically complex products might satisfy the requirements of FDA's rigorous "new drug" review and approval process.[8]

External genital warts, caused by human papilloma viruses (HPV type 6 or 11), are one of the most common and fastest-spreading venereal diseases worldwide. Scientists estimate that as many as 1 million new cases of genital warts are diagnosed in the United States each year. Approximately 14 million people in North America and 15 million people in Europe are infected with HPV.[1]

The development of Polyphenon E Ointment is an excellent example of increasing global trade and cooperation.[9] In 1997, a patented method of treating external genital warts through the topical application of Polyphenon E green tea extract was licensed by Epitome Pharmaceuticals Ltd., a privately owned Canadian company (Halifax, Nova Scotia) from the food company Mitsui Norin, Ltd. (Tokyo, Japan). Epitome sublicensed the technology to MediGene AG of Martinsried/Munich, Germany, which collaborated in numerous multi-center clinical trials in both Europe and the Americas. Medigene submitted the New Drug Application (NDA) to the FDA Center for Drug Evaluation and Research in September 2005, which was accepted for filing in early December 2005.

MediGene is the first German biotech company to obtain marketing authorization for a drug in the United States. The company predicts peak sales potential for Polyphenon E Ointment of up to $100 million annually.[10] Medigene's marketing partner, Bradley Pharmaceuticals, Inc. (NYSE: BDY), will commercialize the product in the United States through its subsidiaries, Doak Dermatologics and Kenwood Therapeutics division.

The author gratefully acknowledges the kind assistance of Freddie Ann Hoffman, MD, and Holly Bayne for their assistance in preparing and reviewing this article.

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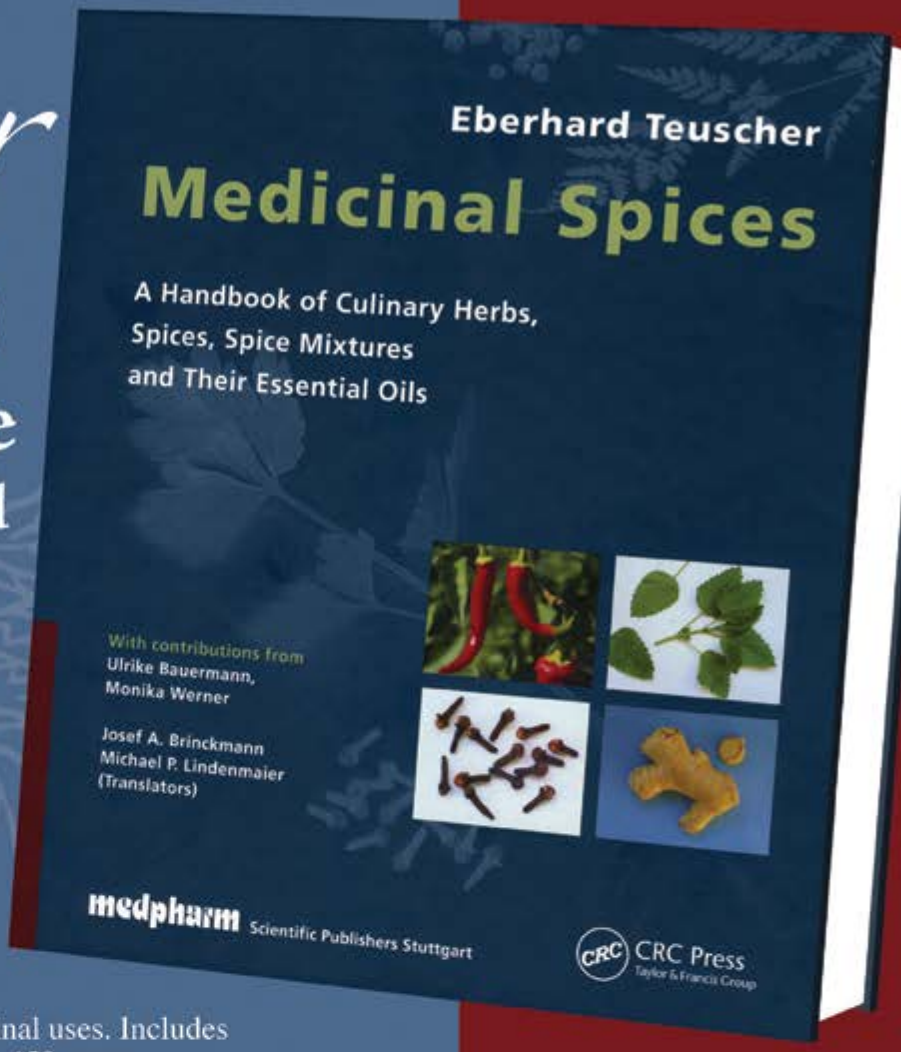

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Egyptian Medicinal and Aromatic Plant Conference Covers Recent Trends in Production, Manufacture, and Marketing

By Josef Brinckmann

The 12th International Conference and Exhibition of the Egyptian Society for the Producers, Manufacturers and Exporters of Medicinal and Aromatic Plants (ESMAP) was held on November 21-23, 2006, at the International Center for Agriculture, Giza, Egypt. About 90% of Egyptian Medicinal and Aromatic Plants (MAPs) are produced for the export market, 85% of which are produced in Upper Egypt. Egypt exports about 50,000 tons of MAPs annually, with the United States as its largest foreign market, followed by the European Union (EU). The event sponsors included the Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA), the Food and Agriculture Organization of the United Nations (FAO), and the Desert Research Center. A complete proceedings book will be published and distributed by the FAO.

After opening remarks by conference chairman, Professor Ismail Abdel-Galil, director of the Desert Research Center, and co-chairman, Professor Farouk El-Shobaki, chairman of ESMAP, the conference began with the "Development of an International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP)," presented by this author, a member of the ISSC-MAP Decision Board. Also presenting in the First Session was Patrick Papiana, of the USAID-funded MAP project in Morocco, Agriculture Partnerships for Productivity and Prosperity (AP3), on the topic "Strategic Communication to Catalyze System-Wide Change: Experience and Results from the Medicinal and Aromatic Plant Sector in Morocco."

Dr. Mohamad Said Ali Safwat, Faculty of Agriculture, Minia University (Egypt), presented on the topic "Exporting Herbs, Spices and Essential Oils: Guidelines for Exporters in Developing Countries." Dr. Safwat's presentation covered the current market situation and an overview of herbal products from developing countries available on the German market. He also discussed general requirements for import into the EU as well as quality requirements, packaging and labeling, and how to find business partners in Germany. In a presentation on "The Role of the Desert Research Center in Protecting Medicinal and Herbal Plants," Dr. Yasser Adel Hanafi stated that there are 342 species of medicinal plants that are wild collected in Egypt. The Desert Research Center is surveying, screening, and evaluating propagation methods and differences between wild and cultivated plants. Dr. Hanafi is developing techniques for the cultivation of important MAPs in the Egyptian desert. Professor Wafaa M. Amer, Faculty of Science, Cairo University, presented on the topic "Economic Herbal Relatives in Egyptian Flora," in which he stated that there are 200 species of wild medicinal flora in Egypt, of which only 20 are also under cultivation. His talk focused on threats to wild medicinal plant populations in Egypt, plant diversity and biopharmaceutics, and the interactions between cultivated MAPs and wild relatives. "The Debate on Genetically Engineered Products, International and National Considerations," by Ossama M. El Tayeh, PhD, Faculty of Pharmacy, Cairo University, included discussion on the following: World Intellectual Property Organization (WIPO): Process vs. Product, Disclosure of Origin, and Traditional Knowledge; the World Trade Organization (WTO): TRIPs Agreement Article 27; and the UN International Regime on Access and Benefit Sharing. Also discussed were cases of biopiracy reported in Egypt, among other related topics. Other interesting presentations at the ESMAP Conference included "Collection and Conservation of Medicinal Plants in Oman," by Eng. Safaa M. Al-Farsi, Ministry of Agriculture, Oman, and "Species of Medicinal and Aromatic Plants Being Threatened by Extinction in Morocco, and the Strategy of their Protection," by Dr. Al-Fayez Shawqi, coordinator of Genetic Resources, Plant Breeding Research Unit, Rabat, Morocco.

Professor Wafaa M. Amer's talk focused on threats to wild medicinal plant populations in Egypt.

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Natural Product Researchers Convene to Honor Gordon Cragg

By James S. Miller, PhD, and Bruce Ponman

On November 10 and 11, 2006, speakers and participants convened at the Missouri Botanical Garden in St. Louis to take part in the symposium "Realizing Nature's Potential: The Once and Future King of Drug Discovery." The two-day conference was held in honor of Gordon M. Cragg, DPhil, former chief of the Natural Products Branch of the Developmental Therapeutics Program at the National Cancer Institute (NCI). Dr. Cragg was an early and powerful advocate for the harvesting of nature's chemical diversity for the benefit of humankind. For a while, looking to nature for new and miraculous drugs was the latest "next big thing," and the major drug companies all had natural products (NP) divisions. But expectations exceeded results (among other factors) and NP research was supplanted by combinatorial chemistry (CC). Now that the enthusiasm for CC has waned somewhat, natural products research is poised to make a sort of comeback, although it won't look the same as it did before.

The symposium's organizing committee was made up of the following: one of the authors of this article (James Miller); David Kingston, PhD; David Newman, DPhil; Flora Katz, PhD; and Joshua Rosenthal, PhD. The symposium was divided into 4 sessions, each hosted by a member of the organizing committee. The first session, "The Natural World: A Wealth of Chemical Diversity for Drug Discovery," was led by this writer (James Miller), formerly director of the Wm. L. Brown Center at the Missouri Botanical Garden. Mansukh Wani, PhD, from the Research Triangle Institute in North Carolina, kicked things off with the story of his isolation of the anticancer blockbuster drug Taxol from crude plant material, Pacific yew bark (*Taxus brevifolia*, Taxaceae). The next 3 presenters showed how the search for valuable compounds has itself evolved since the 1960s. David Newman of the NCI spoke about his search for interesting compounds in marine organisms. John Daly, PhD, of the National Institute of Diabetes, Digestive and Kidney Diseases, reviewed his work, much of it recent, on compounds found in amphibian skin. Finally, Jerry Kukor, PhD, of Rutgers University, presented a wild tale of new screening methods and direct cloning of environmental bacterial DNA used to increase the rate of discovery of new bioactive molecules from microbial sources.

Jon Clardy, PhD, from Harvard University, began the session on "Modern Innovation in Natural Products Research" with a discussion of a DNA-based approach, using microorganisms, to the discovery of new drugs. Jay Keasling, PhD, from the University of California, Berkeley, who was named 2006 "Scientist of the Year" by *Discover* magazine, discussed how he and his lab are constructing highly genetically modified strains of *E. coli* that are capable of producing artemisinin, a valuable anti-malarial drug originally sourced from sweet Annie (*Artemisia annua*, Asteraceae), which is now in short supply. Bill Gerwick, PhD, from the Scripps Oceanographic Institute, followed with a discussion of his search for interesting molecules among marine algae and cyanobacteria, particularly those of the genus *Lyngbya*. Jim McAlpine, PhD, from Ecopia Biosciences, shifted the focus to actinobacteria, perhaps the greatest source of useful drug compounds, and put forward the notion that the modular nature of their biosynthetic systems and clustering of metabolite-assembling enzymes at a single locus on the chromosome suggest that these bacteria are capable of producing a multitude of as yet unseen secondary metabolites.

Participants adjourned to Monsanto Hall, the grand entrance to the botanical gardens, for refreshments just as night was falling. The evening's program began with the presentation of the Wm. L. Brown Award for Excellence in Genetic Resource Conservation to Dr. Cragg in recognition of his tireless efforts as an advocate for the conservation of natural resources, which he recognized early on as a vast but finite repository of chemical diversity upon which humankind must rely for the future of healthcare. He also played a key role in the development of the Letter of Intent, later Letter of Collection, which is the boiler plate agreement ensuring equitable benefit sharing with source countries. This has been a great model; it anticipated by 3 years the Convention on Biological Diversity (CBD) and has been used as the number one model for such agreements in all subsequent discovery programs. The importance of such agreements to the future of natural products discovery cannot be understated.

The Brown Award medal was presented to Dr. Cragg along with a check for $10,000 and a framed illustration of *Ludia craggiana* (Flacourtiaceae), a newly discovered Malagasy plant named in his honor. By way of thanks, his evening lecture recounted the hard work

of many others in the areas of benefit sharing conservation and drug discovery that have gotten us to where we are today. Dr. Cragg's optimism and generosity filled the room. By all accounts, it was a memorable evening.

The importance of, and legal mechanisms for, benefit sharing were explored the following morning during the third session, "Legal and Ethical Issues: From Convention on Biological Diversity to Conservation." Michael Balick, PhD, of the New York Botanical Garden, started the session with an account of the role that the Natural Products Branch of NCI played in setting up benefit sharing agreements early on, which in turn paved the way for the CBD. As with any situation where monetary and other interests may conflict, access and benefit-sharing agreements have grown more complex and harder to negotiate. Michael Gollin, JD, from Venerable LLP, offered a simplified approach to benefit sharing that would remove unnecessary hurdles to progress. An example of a country's response to the situation was presented by Lohi Matainaho, PhD, from the University of Papua New Guinea, who outlined the case of Papua New Guinea. Bronwyn Parry, PhD, a geographer from the University of London, offered her thoughts about the implications of such agreements in new areas of scientific endeavor. The morning session closed with a paper presented by Joshua Rosenthal and co-authored by Flora Katz, both from the Fogarty International Center at the National Institutes of Health (NIH), about the experience gained from International Cooperative Biodiversity Groups (ICBG) program(s), which are models of collaboration and sharing of information and expertise.

Gordon Cragg

Dr. Cragg was an early and powerful advocate for the harvesting of nature's chemical diversity for the benefit of humankind

One of the authors of this report (James Miller) opened the final session, "The Role of Natural Products in Future Drug Development," with a look at estimates of the number of species that may comprise various large taxonomic groups. The large number of as yet undiscovered plant species, along with insects and microorganisms, suggests that there is a vast amount of chemical diversity that remains unknown. The process of taking a substance found in nature and building an effective drug from it was described in the case of Paclitaxel (Taxol) by David Kingston from Virginia Polytechnic Institute and State University. Gary Strobel, PhD, of Montana State University, talked about some of his discoveries of interesting compounds produced by endophytic microorganisms, residing within the living tissues of plants; this promises to be a significant source of new natural products. The last word was had by Guy Carter, PhD, of Wyeth Research. As human understanding has increased about the way secondary metabolites affect living systems, and as the business end of these molecules can be more easily modified or manipulated, there has been a renewed interest in natural products as the source of novel and effective drugs. The almost limitless potential that resides in nature was once again given its due recognition.

James S. Miller, PhD, is dean and vice president for science at the New York Botanical Garden.

Bruce Ponman is information coordinator for the Wm. L. Brown Center for Plant Genetic Resources at the Missouri Botanical Garden.

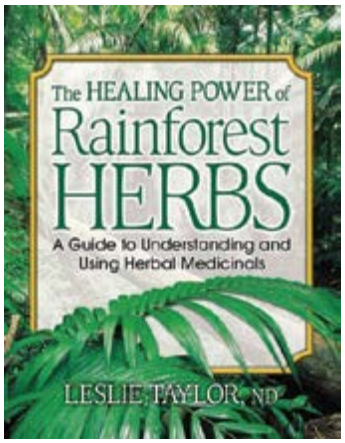
The Healing Power of Rainforest Herbs by Leslie Taylor. Garden City Park, NY: Square One Publishers; 2005. Paperback; 535 pages. ISBN: 0-7570-0144-0. $23.95.

"I firmly believe that medicinal plants such as those discussed in this book, are the true wealth of the rainforest and the means by which it can be saved from destruction. They have for centuries positively affected the health and well-being of the inhabitants of the forest. Through their sustainable harvesting, they can and will positively affect the health, well-being and continuance of the rainforest itself."

—Leslie Taylor

I like that quote from Taylor's brief personal introduction, even though it is juxtaposed with one error I found in this great book. The quote stands next to a photograph of the author, Leslie Taylor, and shaman Antonio Montero Pisco, but she misidentified him as Antonio Monteviero. Following this brief introduction, there's an important philosophical chapter on rainforest destruction and survival. Those introductory sections lead into a three-chapter Rainforest Herbal Primer, treating the differences and similarities of medicinal plants and drugs, methods of herbal preparations, and some rainforest remedial recipes. Then there's a three-chapter Guide to Medicinal Plants of the Amazon covering the actions and properties of rainforest plants, herbal treatments for specific ailments (Table 6 enumerates the more important herbs for more than a hundred ailments), and then a summary overview of the 73 herbs, leading into the 73 individual monographs.

The 73 monographs, averaging about 4.5 pages each, are consistently formatted so that one can quickly find specific data for which one might be searching. I know because I mined a lot of data from her book for my own databases (with her permission). She has used my USDA database for some of her chemical listings. I found her monographs most useful in updating my own Latin American research, and I'd like to publicly acknowledge that the author said she'd be flattered if I used and cited her book. Since traveling to the upper Amazon with her on an ABC/ACEER ecotour (Madre de Dios river in southern Peru) in 2005, we have actively shared complementary data with each other, each of us striving to save the rainforest, preaching renewable utilization of rainforest resources, and advocating economic benefits for the Native American curators of this remarkable resource, the most diverse but least studied forest in the world. Covering monographically 73 of the conservatively estimated 90,000 Latin American species from the total estimate of 250,000 species in the world's flora, Taylor's accounts are well researched. I'll focus on her treatment of *anamu* (*Petiveria alliacea*, Phytolaccaceae) since it is in flower in my greenhouse now, over wintering next to several other herbs covered by Taylor. Under the title line of the monograph, she summarizes main actions, other actions, and dosage. To the left of this tabular summary she gives the nomenclature, family, genus, species, and common names (dozens of them). Then she goes into a narrative coverage of tribal uses of the herb, a paragraphic coverage summarizing the phytochemicals present with attributes and activities of some of the more important constituents. Then another set of paragraphs summarizes documented biological activities: human clinical data (when available) as well as in vitro laboratory and in vivo animal data. This is what to me constitutes the evidence base, sometimes almost as strong as that for the so-called "evidence-based" conventional pharmaceutical medicines, which seems to flip flop frequently. Then there's a paragraph on Current Practical Uses, another on Traditional Preparation, another on Contraindication, and a final list of Drug Interactions. Finally, in the *anamu* monograph, as in all monographs, is an interesting table called Worldwide Ethnobotanical Uses. Here the author shows how the *anamu* is used in different areas of the Western hemisphere, in this case, Argentina, Brazil, Colombia, Cuba, Guatemala, Latin America (in general), Mexico, Nicaragua, Paraguay, Peru, Puerto Rico, Trinidad, Venezuela, and elsewhere.



In a land of oral traditions, with little written down, as contrasted with the written histories of TAM (traditional Ayurvedic medicine) and TCM (traditional Chinese medicine), it's hard to prove such statements like this one: "Cat's claw (*U. tomentosa*) has been used medicinally by the Aguaruna, Ashaninka, Cashibo, Conibo, and Shipibo tribes of Peru for at least 2000 years." Still I find nothing written regarding medicinal use before the 1930s, and I can say that about many of the monographed herbs. They may have been used traditionally for millennia, but there's no paper or archaeological trail to prove it.

The book shows the hand of a skilled and scholarly researcher. Thanks to the diligent data digging by the author, she demonstrates that many rainforest remedies are safe, efficacious (even if confirmatory clinical trials are still lacking to prove such), and often competitive with more expensive and often more dangerous pharmaceuticals. Here's a list of some of these fairly well-documented herbs and their uses:

- *Cat's claw* (*Uncaria tomentosa*, Rubiaceae): Its clinically validated immune-enhancing (some might specify immunomodulating) and anti-inflammatory effects are backed up by several human studies on at least 4 continents.
- *Chanca piedra* (*Phyllanthus niruri*, Euphorbiaceae): Nobel-winning research by Baruch Blumberg demonstrated its potential utility in hepatitis, and its litholytic activities have been clinically confirmed in Brazil.
- *Espinheira santa* (*Maytenus ilicifolia*, Celastraceae): The simple leaf tea was reported to be as efficacious as 2 leading antiulcer drugs, ranitidine (Zantac®) and cimetidine (Tagamet®).
- *Samambaia* (*Polypodium* spp., Polypodiaceae; syn. *Phlebodium decumanum*): Traditionally used for many skin conditions including psoriasis, samambaia has been documented clinically. I remember a sunny hour on an open boat with Leslie on an Amazon oxbow lake. I had a big Mexican *sombrero* shading my face; Leslie had only a small cap. But she took samambaia as an internal sunscreen. I got sunburned. She did not. And her complexion is fairer than mine!
- *Sangre de Grado* (*Croton lechleri*, Euphorbiaceae) Current research has

shown that the whole dragon's blood (the red sap that oozes from the freshly-cut bark of this small tree) speeds healing of skin wounds 4 times faster than any one of the isolated constituents studied and 10-20 times faster than nothing at all. As so often, the whole that nature provided is more efficacious than the isolated, more expensive phytochemical parts.

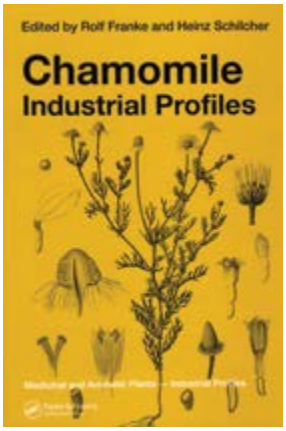
Anyone interested in alternative medicine, herbs and herbalism, medical botany and ethnobotany, naturopathy, pharmacognosy, and yes, even Latin American anthropology and biology, will find something of value in this inexpensive book, more than worth its price of $23.95. The black and white line drawings are small but adequate and useful. For some nice photographs and further information, one can visit the author's Web site: www.rain-tree.com.

—James A. Duke, PhD
Green Farmacy Garden
Fulton, MD

Chamomile: Industrial Profiles by Rolf Franke and Heinz Schilcher, eds. Boca Raton, FL: Taylor & Francis; 2005. 288 pp. ISBN: 0-415-33463-2. $129.95.

This book is the 42nd volume in a series that compiles technical, chemical, pharmacological, clinical, and manufacturing information on many popular medicinal and aromatic plants. German or Hungarian chamomile (*Matricaria recutita*, Asteraceae) is one of the most popular herbs in the world, with an estimated million cups of chamomile tea consumed daily worldwide.

The 12 chapters of this book, written by 22 experts primarily from Eastern Europe, cover a wide range of chamomile science and commercial production. Chapter topics include the following: chamomile's legal situation in Germany, botany, chemistry, cultivation, raw plant material and post-harvest technology, processing raw material, storage, pharmacology and toxicology, and traditional uses and therapeutic indications. As with all the volumes in this series, a benefit of the book's organization is that each chapter has an extensive table of contents, facilitating the reader's ability to locate specific information in each chapter. Each chapter also contains extensive referencing to sources.



Curiously, some organization anomalies appear: Chapter 4 deals with "Active Chemical Constituents of *Matricaria chamomilla* L., syn. *Chamomilla recutita* (L.) Rauschert," while Chapter 10, written by the same authors as Chapter 4, deals with "Chemical Analysis of the Active Principles of Chamomile." It would appear more logical for the information in Chapter 10 to follow Chapter 4.

Chapter 2, co-authored by the book's co-editor Heinz Schilcher, focuses on the German Commission E monograph and other official monographs on chamomile, with what are probably exhaustive listings of all official monographs on the 2 chamomiles (*M. recutita* and the Roman [aka English] chamomile, *Chamaemelum nobile*, Asteraceae). Schilcher is truly an expert on this subject, having served as the vice-president of the German Commission E for about 16 years. Schilcher, intimately familiar with chamomile's pharmacology and toxicology, also wrote the entire chapter on traditional use and modern medical indications.

The chapter on cultivation, written by Dr. Franke with contributions from 13 co-authors, constitutes almost one-third of the entire book, ca. 90 pages. Anyone interested in the possibility of growing chamomile commercially can derive great benefit from this chapter alone. Curiously, this chapter contains an 11-page table, "Composition of Chamomile Oil," which probably would be more appropriately located in either of the chapters dealing with chemistry or perhaps in the chapter dealing with processing of raw material (#8), which contains several small tables on basic chamomile oil composition.

The book is replete with drawings, graphs, tables, photographs and references. Anyone wanting both wide and deep views on this wonderful beverage and medicinal herb will find significant value from this book.

— Mark Blumenthal

Medicinal Spices: A Handbook of Culinary Herbs, Spices, Spice Mixtures and Their Essential Oils by Eberhard Teuscher, with contributions from Ulrike Bauermann and Monika Werner; Josef A. Brinckmann and Michael P. Lindenmaier, Translators. Boca Raton, Florida: Medpharm Scientific Publishers, Stuttgart, CRC Press, Taylor and Francis Group, LLC; 2006. Hardcover, 457 pages. ISBN: 0-8493-1962-5. $159.95. ABC Item # B538

In his Foreword to the book, James A. Duke reminds the reader ". . . that herbs and spices can work magic on drab entrees, converting them into exciting culinary experiences," and that the very same aromatic plants "are also among the most important anti-inflammatory, antioxidant (hence anti-aging), and immune-boosting foods that we have, with the power to improve and even extend our lives." In fact, the ultimate form of herbs as dietary supplements may sit on the spice rack, rather than inside a gelatin capsule.

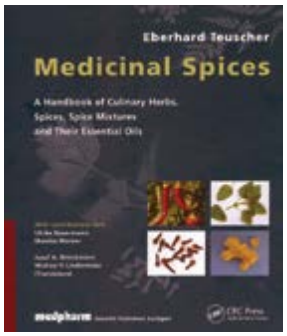
Originally published in German in 2003, *Medicinal Spices* is made accessible to English-language readers through the always incisive and readable translations by Josef A. Brinckmann and Michael P. Lindenmaier, whose knowledge of the subject matter ensures a more coherent translation for those of us limited to English. (This same team translated and edited the most recent edition of Max Wichtl's classic tome, *Herbal Drugs and Phytopharmaceuticals,* 3rd ed., which was produced by the same publishers.)

When interpreting and relating to the plant world and human uses of plants, people tend to categorize plants as weeds or wildflowers, herbs or medicinal plants, spices or condiments. Within the 457 pages of this richly illustrated tome, nearly 100 monographs cover 300 plant species, which are generally regarded as culinary herbs or spices. They owe their primary flavor and fragrance to essentials oils. Hidden within the piquant flavor is the underlying biological activity which brings traditional medicinal value or newly recognized health benefits from the flurry of scientific research of the past 30 years in particular. Amidst this flood of information that has become unmanageable even for the specialist, Professor Teuscher provides a synthesis of scientific understanding of all aspects of spices melding with the delight of human

experience to enhance the daily culinary experience.

The book is divided into two parts: (1) General Part, and (2) Monographs of spice plants and culinary herbs. Part 1 is an excellent overview of the basic principles of flavor and fragrance, a veritable bouquet garni of science with a zest for practical applications. The author begins with brief definitions of spices, herbs, and seasonings in Chapter 1. It is the language of the food-flavoring technologist made simple.

The second chapter covers "quality-indicating constituents of spices." Although peppered with technical chemical jargon, it is presented with consideration of the non-chemist, covering topics such as the "spectrum of constituents and content ratios," and the role of essential oils—just what they are, where they are in plant structures, their composition and complexity. This is an excellent concise explanation of the subject, essential reading for all interested in the flavor and fragrance of plants. Next, the chapter succinctly explains the role, importance, and formation of various categories of flavorings. Under "pungent constituents" the author discusses the alliaceous oils from various members of the genus *Allium* and how these constituents are formed into flavor components. Yes, it's chemistry, but chemistry made readable. Next, the mustard oils are revealed followed by gingerols, carboxylic acid amides (producing the heat of red peppers and the bite of black pepper), and a brief discussion of the irritating protoanemonine from *Ranunculus* species. An explanation of bitter principles follows, along with a brief discussion of coloring matters. I have been studying this type of data for over 30 years, but I find no other single source that places the information in such a clear, succinct explanation. Here instead of just writing for the chemist, anyone with a basic scientific background can get a clear understanding of the role of these major component aspects of spices.



"Sensory effects of culinary herbs and spices" is the subject of Chapter 3, which again in a few pages synthesizes the basic concepts of the human sensory perception of foods through excellent short essays on the physiology of smell and taste. One comes away with the sense that the author is not motivated just by science, but by engaging passion for enhancing the human experience with knowledge.

The next two chapters briefly introduce the pharmacology of culinary herbs and spices, and general information on their medicinal use. Teuscher discusses the value of specific types of studies, and what types of conclusions can really be drawn from them.

Chapter 6 broaches the subject of toxicology, with particular emphasis on acute toxic affects, allergic reactions, carcinogenic, and hepatotoxic effects. A one-page chapter follows, explaining the preservative potential of herbs and spices. Chapter 8 covers breeding, cultivation, and harvest. Chapter 9 explains the processing of spice plants. Chapter 10 deals with contamination issues. Storage and shelf life are covered in Chapter 11. Chapter 12 is a primer to the subject of analysis of herbs and spices. Chapter 14 (yes, skipping one;

New Book Profiles

Ayurvedic Herbs: A Clinical Guide to the Healing Plants of Traditional Indian Medicine. M.S. Premila, PhD. New York: Haworth Press; 2006. 368 pages, softcover, color illustrations, references, appendix, index. $34.95. ISBN 0-7890-1768-7.

Provides a brief historical overview of Ayurveda and examines modern research and scientific evidence supporting the use of more than 60 herbs. Herbs are grouped according to body systems, and each entry includes a description, plant sources, traditional uses, relevant pharmacology, safety information, and clinical studies.

Obesity: Why Are Men Getting Pregnant? Alexander G. Schauss, PhD. Laguna Beach, CA: Basic Health Publications; 2006. 264 pages, softcover, references, index. $18.95. ISBN 1-59120-025-3.

Addresses reasons why men are prone to central obesity, and the serious health consequences of having a potbelly. Discusses which remedies work and which don't in the fight to trim the belly and achieve long-lasting health and wellness. Topics include diet, exercise, dietary supplements, surgery, and a special section, "Quick Tips to Start Losing Your Potbelly."

The Health Professional's Guide to Dietary Supplements. Shawn M. Talbott, PhD and Kerry Hughes. Baltimore, MD: Lippincott Williams & Wilkins; 2007. 444 pages, softcover, references, additional resources, appendices, index. $45.95. ISBN 0-7817-4672-8.

Quick reference guide to more than 120 of the most popular dietary supplements organized into chapters according to their primary intended use (e.g., weight loss, heart health, etc.). Each supplement is rated based on the level of scientific evidence to substantiate its claimed effects. A brief summary, any clinical studies or safety issues, the recommended dosage, and references are provided for each supplement.

The Health Detective's 456 Most Powerful Healing Secrets. Nan Kathryn Fuchs, PhD. Laguna Beach, CA: Basic Health Publications; 2006. 426 pages, softcover, appendix, resources, references, index. $18.95. ISBN 1-59120-187-X.

Presents natural healing secrets to help consumers take a more active role in their healthcare. After years of reviewing scientific studies and interviewing researchers and doctors, the author has combined her findings in an easy-to-use manual covering subjects such as how to fight and reverse chronic illnesses, how to really lose weight, how to control pain, stress, and depression, how to fight cancer, how to prevent heart disease and osteoporosis, and more.

The Complete Homeopathic Resource for Common Illnesses. Dennis Chernin, MD. Berkeley, CA: North Atlantic Book and Homeopathic Educational Resources; 2006. 431 pages, softcover, interactive CD (Windows compatible), resources. $29.95. ISBN 1-55643-608-4.

Defines homeopathy and its historical significance before discussing the best homeopathic remedies for common conditions such as allergies, asthma, back pain, morning sickness, headache, and more. Also includes a section on homeopathic research and clinical studies as well as resources available for further information.

Handbook of Herbs and Spices. Vol 3. K.V. Peter. Boca Raton, FL: CRC Press;

see below) covers food and drug regulations for the trade of spices, with a decidedly German flavor.

The Use of Herbs and Spices in the Kitchen, the topic of Chapter 13, covers practical details of understanding how to best handle and use fresh and dried culinary herbs in the kitchen. Presented here are practical details garnered from a deep understanding of what the laboratory reveals to the dynamic process of turning the kitchen into a laboratory of culinary creation to delight the senses. It's applied science for the next meal. What a rare treat to combine the science of herbs, spices, and medicinal plants with real information to follow for practical results. This chapter is enhanced by an excellent essay by Monika Werner on how to use essential oils in the kitchen.

So far, we've reviewed only 10% of the pages in the book. The rest of the book is devoted to monographs on individual herbs and spices in all of their glorious detail, much in the style and format of Professor Max Witchel's modern classic, *Herbal Drugs and Phytopharmaceuticals*, with details on the names (common and scientific), description, origins, cultivation areas, producing countries, cultivation, commercial forms, production, storage, description, odor, and history of the culinary spice ingredient. This is followed by details on constituents and analysis, such as identity tests, quantitative and qualitative assays, and adulterants. A section on Actions and Uses follows with pharmacological activities, toxicology, general and often very specific culinary uses, what combines well with what, and what kind of spice mixtures the ingredient is found in. A section on the medicinal uses, describing the herbal drug and its indications follows. Similar or related species are also described. Peppered throughout the monographs, offset as sidebars, are some of Professor Teucher's favorite recipes, which are not limited to central European fare, but provide international diversity, such as a recipe for jerk pork in the allspice chapter. Color photographs, chemical structures, and figures for identification are provided throughout the book.

There is such a tremendous amount of information packed into this one volume that I can't decide whether to put it on the reference shelf at my office or take it home to the cookbook shelf to try out some of the recipes. In his Preface to the English Edition, Professor Teuscher explains, "This book is intended primarily for pharmacists, physicians, biologists, and interested students and laypersons, but also for food scientists who are interested in the chemical and pharmacological-toxicological aspects of culinary herbs and spices." I believe, however, he left a major audience out of the list—every student in food services and culinary arts—for whom this book should serve as the basis for a required course in creating a broad cultural understanding that food really is medicine.

Alas, the book will never have the audience it deserves, as its $159.95 price tag will ensure the book's undeserved obscurity.

ABC is pleased to announce that Professor Teucher's *Medicinal Spices: A Handbook of Culinary Herbs, Spices, Spice Mixtures and Their Essential Oils* received the 2006 James A. Duke Book Award, selected as the most outstanding book published in the herbal field in 2006.

—Steven Foster
President, Steven Foster Group, Inc.
Eureka Springs, AR

2006. 537 pages, hardcover, tables, chemical structures, references, index. $259.95. ISBN 0-8493-9155-5.

The final volume of this 3-volume set discusses methods to improve safety of herbs and spices used in food processing, including topics such as detecting and controlling mycotoxin contamination, packaging and storage issues, and decontamination techniques. The author also explores the health benefits of herbs and spices, and highlights 20 of them.

High-Performance Thin-Layer Chromatography for the Analysis of Medicinal Plants. Eike Reich and Anne Schibli. New York: Thieme Medical Publishers; 2007. 264 pages, hardcover, colored illustrations, list of abbreviations, glossary, appendices, index. $149.95. ISBN 1-58890-490-1.

Presents information necessary to perform reliable high-performance thin-layer chromatography (HPTLC) to establish the identity, purity, quality, and stability of botanical products. Provides examples by renowned experts and over 300 full-color illustrations to aid in the understanding of complex concepts related to HPTLC in herbal analysis.

Practical Guide to Clinical Data Management, 2nd Ed. Susanne Prokscha. Boca Raton, FL: CRC Press; 2007. 238 pages, hardcover, appendices, index. $149.95. ISBN 0-8493-7615-7.

Provides an introduction to the key elements of clinical data management, e.g., standard operating procedures and guidelines, data management, implementation and validation plans, requirements for clinical data management systems, summary of modifications made under 21 CFR 11, and electronic data capture (EDC)-based studies. This edition has been reorganized and offers specific references to regulations and other FDA documents.

Handbook of Poisonous and Injurious Plants, 2nd Ed**.** Lewis S. Nelson, Richard D. Shih, and Michael J Balick. New York: The New York Botanical Garden; 2007. 340 pages, softcover, full-color photographs, b&w illustrations, references, index. $39.95. ISBN 0-387-31268-4.

This second edition illuminates the dark side of plants, and it is rich in visual images, emergency medical information, botanical descriptions, and scientific references. It also includes common names, species distribution, and information on the toxic part of each plant. Physicians, naturalists, horticulturists, parents of small children, pet owners, and all those who interact with plants and various landscapes, both indoors and outdoors, would find this book of great value.

Veterinary Herbal Medicine. Susan G. Wynn and Barbara J. Fougère. St. Louis, MO: Mosby Elsevier; 2007. 714 pages, hardcover, full-color photographs and illustrations, references, index. $99.00. ISBN 0-323-02998-1.

This practical, full-color clinical reference provides comprehensive coverage of the safe and effective use of more than 120 herbal remedies for both large and small animals. It offers in-depth information on the clinical uses of medicinal plants and provides guidelines for formulating herbal remedies. It also offers a body systems-based review of plant-based medicine that explores herbal medicine in context, offering information on toxicology, drug interactions, quality control, and other key topics. Species-specific information is provided for dogs, cats, horses, and poultry.

Anne Ophelia Todd Dowden 1907–2007

Renowned botanical artist Anne Ophelia Todd Dowden passed away on January 11, 2007, at the age of 99.[1] Ms. Dowden's paintings of flowers, herbs, and other plants have been displayed in various museums and botanical gardens and published in numerous books, many of which she also authored.

Ms. Dowden was born in Denver, CO, on September 17, 1907. She began honing her artistic talents at a young age, often using nature as her subject. Her first professional artistic work was published at age 16 when she illustrated the book *Clinical Diagnosis by Laboratory Methods*, written by her father James Campbell Todd, then head of the Department of Pathology at the University of Colorado Medical School.[2] After earning a degree in art at Carnegie Institute of Technology in Pittsburgh (now Carnegie-Mellon University) in 1930, she moved to New York. She soon took a job teaching art classes at the Pratt Institute in Brooklyn and worked simultaneously as a freelance designer of wallpapers and drapery fabrics. She later taught at Manhattanville College, where she founded the Art Department and served as its chairman for over 20 years.

During a sabbatical from Manhattanville College, Ms. Dowden began to pursue botanical illustration, and her work was soon featured in such magazines as *Life*, *House Beautiful*, and *Natural History*. When she was in her 50s, Ms. Dowden began illustrating, authoring, and publishing books.[1] Her earliest books described floral anatomy and pollination, and many of them were oriented toward children. Some of the books that Ms. Dowden either illustrated or illustrated and wrote include: *Shakespeare's Flowers* (1969), *This Noble Harvest: A Chronicle of Herbs* (1979), *The Lore and Legends of Flowers* (1982), and *Poisons in Our Path: Plants that Harm and Heal* (1994).

"Considering Anne Ophelia's outstanding career and distinguished work, she must be recognized as one of, if not *the*, country's leading botanical artists of the last century," said James J. White, curator of art at the Hunt Institute for Botanical Documentation at Carnegie-Mellon University (e-mail, February 5, 2007). "She has taken great joy in her career, learning about nature and using her art to teach, especially young people. She has been eager to advise other artists and to recommend their work."

Lotte Blaustein, Ms. Dowden's life-long friend, wrote the following for Ms. Dowden's memorial service in Boulder, CO: "I remember you sitting at your work table, which was always in the perfect spot to catch every minute of daylight. What a treat for a city girl like me to experience not only so much natural beauty around us, but also to know someone who could capture and transform it into exquisite paintings." Ms. Blaustein further recalled Ms. Dowden's habit of preserving flowers and other plants to use as models by filling her bathtub with floating specimens (L. Blaustein, written communication, February 9, 2007). Ms. Dowden insisted on using living plants as models, which sometimes required her to travel to the countryside or to request the living specimens from various collectors or botanical gardens throughout the United States. She would also painstakingly complete research drawings and paintings in preparation for final illustrations.[2]

Ms. Dowden bequeathed nearly 500 botanical drawings and paintings to the Hunt Institute for Botanical Documentation, as well as her numerous awards and her correspondence.

—Courtney Cavaliere

References

1. Genocchio B. Anne Ophelia Todd Dowden, 99, artist. *New York Times*. January 16, 2007;A29.
2. Dowden AO. Autobiographical sketch of Anne Ophelia Dowden. *Herbarist*. 1999;65:46-49.

Dowden illustration of Iris. Image courtesy of Hunt Institute for Botanical Documentation

William A. Mitchell, Jr. 1947–2007

William A. Mitchell, Jr., ND, co-founder of Bastyr University, died of a myocardial infarction (heart attack) on January 23, 2007, just hours after hearing of the death of his youngest son, Noah Mitchell, also of a myocardial infarction. This tragic loss brought together people young and old, from many facets of life, from all across the country and the world, to embrace who these men were and how they touched many in their respective networks of friends, particularly, in the case of Bill, in the natural healing community.

"There is a ripple in the force." These were the words that resounded so strongly from those far and near who heard the news of the passing over of Bill Mitchell. As his family, the naturopathic community, the Bastyr community, the herbal community, and everyone else whose heart and soul have been touched by Dr. Mitchell grieve this loss, we pause now to remember who he was to all of us.

William Mitchell was a doctor, teacher, father, grandfather, brother, son, uncle, author, philosopher, herbalist, yoga teacher, colleague, mentor, and friend. He was the embodiment of love, exuding heart felt energy wherever he was to whoever was near him. He was a precious being who graced many of our lives.

Dr. Mitchell taught with love, whether he was teaching about naturopathic philosophy, biochemical pathways, plant medicine, yoga, or life. Always a student himself, he was humble, open and compassionate, yet on task. Bill asked students to seek a deeper understanding of connectedness to medicine, to the plants, and to all sentient beings. Dirk Powell, ND, a colleague and friend said, "Bill was first and foremost a teacher. His venue was that place where the eye twinkles and the heart resides."

Born in Chicago on March 15, 1947, Dr. Mitchell grew up in the Midwest and began his undergraduate work at Marquette University on a Naval ROTC scholarship. He then transferred to the University of Washington, where he received a bachelor's degree in history. He served as an active naval reservist in Vietnam for two years before returning to the Northwest to get an education at the National College of Naturopathic Medicine (NCNM) in Seattle, WA (relocated to Portland, OR, in 1977).

Since his youth, Dr. Mitchell was a gifted guitarist. "He was an incredible guitar teacher. I took private guitar lessons from him. He was just incredible," said Bob Nelson. In the mid-1970s, Nelson, Mitchell, and several other musicians ran a folk guitar program at Everett Community College. Their evening classes attracted guitarists of all ages. "Bill Mitchell probably taught hundreds of students here," Nelson said.

After graduating as a naturopathic physician, Dr. Mitchell went into private practice in the office of Joe Pizzorno, ND. In 1978, Dr. Mitchell, Dr. Pizzorno, Les Griffith, ND, and Sheila Quinn co-founded what is today Bastyr University. The original name was The John Bastyr College of Naturopathic Medicine, after Bill, Joe, and Les' mentor in naturopathic medicine, Dr. John Bastyr. There are many stories about the history of this endeavor, which are being collected and archived at Bastyr. It was through the dedication and sacrifice of time and resources from these four individuals that Bastyr University had its inception. Dr. Mitchell continued to serve on the faculty of the School of Naturopathic Medicine and the Board of Trustees until his death.

A number of people remember stories of hiking in the mountains with Bill. He was a very fast hiker, often challenging to keep up with as he climbed higher and higher toward the peaks. Along the way he would pause, harvest a plant, identify it, discuss its medicinal uses, and then continue on his ascent. Bill was one with the plants, in intimate relationship, in deep knowing, and always in awe and wonder at the healing powers held within the plants. Joan Southon, a close companion of Bill's, said that his true love was for the "plant people," his best friends. She told a story about Bill and one of his plant friends, cascara sagrada (*Frangula purshiana*, Rhamnaceae; syn. *Rhamnus purshiana*). Bill had bottles of herbal extract everywhere, inside, outside, in the car, in his briefcase. For cascara sagrada, one of his favorite herbs, he had a bottle of extract made from the bark of the tree 75 years ago, and he would pass this around the room for taste comparison with extracts of this plant made more recently. He would say, "You're not going to find cascara sagrada tasting like this older extract does. It is thick, like molasses, rich and nourishing." Joan is planning on doing a planting this spring of cascara trees at Creekside, a place in North Bend where they spent time together.

In the past few years, Dr. Mitchell spoke at many herbal gatherings across the country, as well as always speaking at the American Association of Naturopathic Physicians (AANP). More recently, he came to a decision that he was going to teach primarily though sharing case studies from his 25-plus years in practice. "These stories are the truths of our medicine," he would say, "and I want to spread the word about these truths." These stories can be found recorded from the Medicines from the Earth Conference, The Southwest Botanical Conference, Herb Fest 2006, the AANP Conventions, and numerous other venues.

Bill was a scientist, had a very keen understanding of biochemical pathways, and at the same time, he was the embodiment of spirit. It was not uncommon to sit with Bill in the middle of a very detailed, intense conversation, look into his eyes, and see that he was off in some other dimension. He walked between the worlds, and sometimes he had to be invited to return to this one and finish the conversation. At this time, he decided he was going to just keep on walking. And even though he is not with us in body on the planet any longer, many have felt his presence even

stronger. Bill Mitchell will keep on healing, keep on teaching, and keep on being. He is choosing to work from another dimension. As Dr. Molly Linton so eloquently stated, "He is the heart and soul of our medicine."

A celebration of Dr. Mitchell's life was held at Bastyr University on February 23 and 24, 2007. Colleagues, students, friends, family members, and patients gathered in the Bastyr Chapel, where stories were told, songs were sung, and tears mixed with laughter. Bill was remembered by the founders of Bastyr University, Dr. Les Griffith, Dr. Joe Pizzorno, and Sheila Quinn. Members of Bill's family spoke of their deep loss, but reminded everyone of Bill's huge capacity to love. Dr. Ed Madison, a classmate of Bill's from NCNM, spoke of his brotherly interactions with Bill. He quoted the singer Johnny Mathis, "It's not what we were…it's what we were when we were with him." Bastyr University president Daniel Church, PhD, closed the ceremony by saying, "His legacy was not just big, but rare and qualitatively big in its impact." Students and faculty of the Southwest College of Naturopathic Medicine held a memorial service at their school in Scottsdale, AZ, simultaneously on Saturday.

People spoke of Bill's love for food, how much he could eat, and especially for his love of pie—particularly apple pie. During many occasions, baking pies, seeking out pies, and eating pies were included in the journeys of his days. Bill baked an apple pie on the Sunday before his passing. When his family arrived from Connecticut and Michigan to grieve his passing and celebrate his life, they sat together and ate the remnants of that pie.

Bill's yoga class became fondly known as "Tuesday Evenings with Bill." Many people spoke of how profoundly they were touched through their presence in Bill's yoga class. One student said that Bill's yoga was *Paramukta yoga*, the yoga of supreme freedom. Bill was quoted as saying, "You shouldn't live to serve the yoga, yoga is there to serve you."

Patients of Bill's from the past 27 years spoke, one saying, "When you were in the room with Bill, you knew for that time that there was no one else in the world but you."

"Bill had a remarkable way of helping people feel better about themselves. Patients loved him. Students loved him," his friend and colleague Dr. Joe Pizzorno said. "He had a warmth and sincerity that came through to all who knew him."

American Botanical Council Founder and Executive Director Mark Blumenthal wrote, "Dr. Mitchell was a wise and generous man, with a deep sense of spirit. His contributions to natural medicine, particularly in co-creating Bastyr University, will have a positive, long-term and indelible impact on the course of American health care. He deserves the respect and gratitude of all of us in the natural healing community and the millions of health consumers who will benefit from his vision and commitment."

Dr. Mitchell is survived by his parents, Rachel and William Mitchell, Sr. of Trumbull, CT, brothers Thomas of Flint, MI and Michael of Bridgeport, CT, sister Laurell Macura of Trumbull, CT, daughters Rachel Colburn of Redmond, WA and Leah Mitchell, ND, of Seattle, son Saul of Seattle, and two grandchildren.

Donations to the William A. Mitchell Jr., ND Fund can be made at any Bank of America, account # 31165251, or by sending a check to the Fund at 518 First Ave. N., Suite 28, Seattle, WA 98109.

—Robin DiPasquale, ND,
Botanical Medicine Department Chair, Bastyr University

Zakir Ramazanov
1955–2006

Zakir Ramazanov, PhD, DS, president and owner of National Bioscience Corp., a company that develops and supplies value-added botanical ingredients and phytotherapeutics, passed away suddenly on November 30, 2006.[1] Dr. Ramazanov was a tireless investigator of herbs and natural products, and he was particularly known for his work in space biology, his development of marine natural products from sea vegetables, and his research into *Rhodiola rosea* (Crassulaceae).

Dr. Ramazanov was born on February 25, 1955, in Dagistan in the former Soviet Union. He completed his undergraduate studies at Caucasian State University in 1978, earning a double major in biochemistry and plant physiology.[1] In 1981, he earned his PhD in plant physiology and biochemistry from the Soviet Academy of Sciences.[2]

In his early career, he served as head engineer at the Institute of Solar Energy of the Soviet Union.[1] He later became senior scientist and chief of the Department of Biotechnology of the Soviet Academy of Sciences and deputy chairman of Biotechnological Programs for the Development of Aquatic Biotechnology for Medicine and Food in East European and Asian Countries. During this time, he worked to develop new methods of cultivating algae for human consumption.

In 1990, he became research professor of plant biochemistry at the Universidad de Cordoba in Spain. A year later he joined the Institute of Technology and Marine Sciences, based in the Canary Islands, becoming its director of science. Over the next four years, he developed 8 plant-based dietary ingredients and authored 2 books concerning the health benefits of the herb *Rhodiola rosea.* He co-authored an article on this herb, titled "*Rhodiola rosea*: A Phytomedicinal Overview," in *HerbalGram* 56.[2] At the time of his death, Dr. Ramazanov was president and CEO of National Bioscience Corp. (Chester, NY, which was acquired in January 2007 by its sister company Polifenoles Naturales in Gran Canarias, Spain).

"The premature death of Zakir Ramazanov is a tremendous loss that few can appreciate," said Lawrence Switzer, owner and CEO of ANF, Inc. (e-mail to M. Blumenthal, March 3, 2007). "He was a prolific, inventive genius who was in his creative prime. He inspired me and many, many others with his fierce dedication to rigorous science. He worked constantly, completely dedicated to improving the lives of others. Few knew the true depth of his personal sacrifices and the heavy burdens he carried. His father died when he was 16, and he became the head of an extended family in his native Dagistan, one of the former Soviet Republics. He took care of his extended family all his life, in addition to supporting his loving wife and son here in America and his step-daughter in Moscow.

"Zakir encouraged and helped many, many others, asking nothing for himself," continued Switzer. "He challenged all of us to do and be our best. His mind was a cornucopia of insights and discoveries and he had the singular discipline and determination to realize many of them into safe, effective new products that have literally improved the well being of millions of people. He was just getting started when death unexpectedly took him. Zakir always urged me not to be complacent with the gift of intelligence but to use it now by applying it to produce concrete results that had the greatest possible value to human welfare. He was a true scientist and one of the finest human beings I have ever known."

"Dr. Zakir Ramazanov was a friend, a mentor, and a remarkable human being," said Leonid Ber, MD, director of medical research and scientific review at Garden of Life, Inc. (e-mail to M. Blumenthal, March 5, 2007). "His unexpected death left us with the feeling of a deep void. He was a compass of scientific integrity for his colleagues from all over the world. His hunger for knowledge was insatiable, his enthusiasm was infectious, and his work was inspirational. A natural born scientist, an outstanding collaborator, he taught us a striking lesson of truthfulness, reliability and devotion to his profession."

"It was less than a year ago that he and I traveled around Moscow on the subway, and one night we stayed up until 4:00 am drinking cognac and smoking cigars while we looked at classified documents on the *rhodiola* experiments and cosmonauts," wrote Andrew Miller, a 25-year veteran of the herb and medicinal fungi business and close personal friend of Dr. Ramazanov (e-mail to M. Blumenthal, December 4, 2006). "*Rhodiola* basically facilitated a love fest in outer space. He was so proud of his work. He was one of my biggest heroes in the herbal products industry. He will be hugely missed."

Dr. Ramazanov is survived by his wife Svetlana and son Arthur of New York and his step-daughter Larissa in Moscow.

A group of Dr. Ramazanov's friends and colleagues have formed the Ramazanov Award Foundation, which is meant to commemorate his life and work by encouraging scientific research into food sciences to contribute to the improvement of the dietary supplement industry and promote communication among scientists. More information about this newly developed foundation is available at www.ramazanovaward.org.

—Courtney Cavaliere

References

1. Dr. Zakir Ramazanov, president of National Bioscience and beloved husband and father, died suddenly in November [press release]. Las Palmas, Canary Islands, Spain: Polifenoles Naturales; January 26, 2007.
2. Brown RP, Gerbarg PL, Ramazanov Z. *Rhodiola rosea:* a phytomedicinal overview. *HerbalGram.* 2002;No. 56:40-52.

2007

May 3: BRIT Distinguished Lecturer Series. Fort Worth, TX. "Saving the Wild Places of Earth for the Unicorn and the Tiger: Assuring the Future for Young Explorers." This lecture will be delivered by Eric Dinerstein, PhD, chief scientist and vice president for science, World Wildlife Fund, Washington, DC. Dr. Dinerstein will relate stories of his work in some of the most remote, beautiful, and threatened places on the planet, emphasizing the need for conservation and restoration of threatened species. For more information visit the Web site: www.brit.org.

May 3: The Council for Responsible Nutrition's (CRN) Symposium. Washington, DC. This one-day scientific symposium on dietary supplements and dietary supplement ingredients, "The Workshop: CRN's Day of Science," will feature distinguished scientist Godfrey Oakley, MD, along with other provocative speakers throughout the day, to explore the field of dietary supplements and the evidence-based medicine paradigm. This event is geared toward executive and director level research and development/discovery scientists from industry, universities, and government agencies. For more information visit the Web site: http://www.crnusa.org/TheWorkshop/index.html.

May 8-10: Vitafoods International 2007. Geneva, Switzerland. This event will showcase the latest developments in the nutraceuticals, cosmeceuticals, functional foods and functional drinks industries. This will be the 10th annual event and promises to be the biggest yet. For more information please contact Nicola Mason at +44 (0)20 7915 5656; Fax: +44 (0)20 7915 5021; E-mail: nmason@iirx.co.uk or Vicky Coope at +44 (0)20 7915 5133; Fax: +44 (0)20 7915 5021; E-mail: vcoope@iirx.co.uk. Web site: http://www.vitafoods.eu.com.

May 10-13: Tradition to Technology. Saskatchewan, Canada. The Natural Health Products Research Society of Canada and the Canadian Herb, Spice and Natural Health Products Coalition invite you to attend their joint international conference. The conference will feature topics on non timber forest products and natural health products, including issues of processing, research and technology. For more information contact Alister Muir at muira@agr.gc.ca or Connie Kehler at shsa@imagewireless.ca. Web site: www.saskherbspice.org.

May 11-13: International Congress on Complementary Medicine Research. Munich, Germany. This Congress was co-organized by the International Society for Complementary Medicine Research (ISCMR) and the Centre for Complementary Medicine Research at the Technici University Munich. The Congress will give attendees the opportunity to hear the latest results of leading researchers from 26 countries, and it will feature 70 oral presentations and 110 poster presentations. For more information visit the Web site: http://www.cmr-muc2007.de/.

May 14-16: Nutrition & Health Conference: State of the Science and Clinical Applications. San Diego, CA. This 4th annual conference, sponsored by the University of Arizona Program in Integrative Medicine and Columbia University's Rosenthal Center, and directed by health expert and best-selling author Dr. Andrew Weil, will again assemble an outstanding faculty of internationally known scientific researchers, skilled clinicians, innovative chefs, and best-selling authors, to discuss the interface between nutrition and healthful living. The conference also includes a public forum, which allows members of the public to pose questions directly to Dr. Weil and other experts in nutrition and health. For more information visit the Web site: www.integrativemedicine.arizona.edu.

May 30—June 1: ifia Japan 2007 & Healthy Foods Expo. Tokyo, Japan. This is Asia's largest food ingredients and additives event. The 12th edition of the show will bring together the business community from the food ingredients and additives industries in Japan. Meet with professionals in the areas of healthy foods, nutraceuticals, fine and specialty foods, ingredients, natural foods, dietetic foods, supplements, functional foods, and organic foods. For more information visit the Web site: www.ejkrause.com/ifiajapan.

June 2-4: Medicines from the Earth 2007. Black Mountain, NC. This annual symposium at Blue Ridge Assembly near Asheville, NC, will feature over 40 presentations on botanical medicine by practitioners and researchers. Workshops include estrogen metabolism and managing breast cancer; Ayurvedic principles of pulse reading diagnosis, botanical and natural treatment for prostate cancer, and many more. CE credits available for health professionals. More informa-

tion available by calling 800-252-0688 or at the Web site: http://www.botanicalmedicine.org/conferences/me2007/me2007genl.htm.

June 4-7: Society for Economic Botany 48th Annual Meeting. Chicago, IL. This meeting will feature a symposium titled "The Search for New Plant-based Therapies." Keynote Speaker: Dr. Norman Farnsworth. The event is hosted by Lake Forest College, Chicago Botanic Garden, Northwestern University, University of Illinois at Chicago and The Field Museum. For more information, visit the Web site: www.seb2007.com.

June 5-9: Annual Meeting of the Council on Botanical and Horticultural Librarians. Cincinnati, OH. This meeting will be hosted by the Lloyd Library and Museum, the Cincinnati Museum Center, and the Civic Garden Center of Greater Cincinnati. It will feature keynote speakers, presentations, and tours. ABC's Mark Blumenthal will be one of the guest speakers. For more details visit the Web site: www.lloydlibrary.org.

June 8-9: Mayo Clinic's Topics in Complementary and Alternative Medicine: Evidence-Based Information for the Practicing Physician. Rochester, MN. This course is intended to provide a general working knowledge of CAM and a familiarity with some of the most common CAM therapies, including the evidence for or against their use. This conference will provide an evidence-based approach to CAM that allows physicians and other health care providers to counsel and partner with patients most effectively. Submit online registration at http://www.mayo.edu/cme/jun2007.html , E-mail: cme@mayo.edu or Phone: 800-323-2688 For more information visit Web Site: www.mayo.edu/cme

June 9-11: World Tea Expo. Atlanta, GA. This expo is the largest trade-only conference in the world showcasing tea and tea-related products. The goal of the expo is to add value to the rapidly growing tea industry by providing a true marketplace for commerce and education. This event will feature the most comprehensive products and resources necessary to serve the tea industry and facilitate its growth. ABC's Mark Blumenthal will be one of the guest speakers. For more details visit the Web site: www.worldteaexpo.com.

June 23-29: Integrating Nutrition into Clinical Practice, Medical Education and Community Health. Baltimore, MD. This training program for physicians and health professionals offers the equivalent of a semester's worth of nutrition curriculum in one week. Topics will include the evolution of the human diet, the role of the GI tract in health and illness, the science of detoxification, children's nutrition, obesity and weight management, patient-centered counseling, and more. For more information visit the Web site: http://www.cmbm.org/holistic_medicine_PROFESSIONAL_TRAINING_EDUCATION/food_as_medicine_description.php.

July 14: United Plant Savers (UpS) Planting the Future Conference. Williams, OR. This event is a celebratory conference on the cultivation, preservation and uses of native medicinal plants. Presenters include Cascade-Anderson Geller, Steven Foster, Robin Dipasquale, ND, Tori Hudson, ND, Ed Smith, Deborah Frances, ND, Mindy Green, Richo Cech, Jonathan Treasure, and others. For more information call Betzy at 802-479-9825; E-mail: plants@unitedplantsavers.org; or visit the Web site: www.unitedplantsavers.org or www.herb-pharm.com.

September 14-17: Sixth Annual Intensive Seminar on Botanical Medicine. Laurel and Fulton, MD. The University of Maryland School of Medicine, Center for Integrative Medicine and the Botanical Medicine Academy jointly sponsor this intensive seminar on botanical medicine. Speakers at the event will include Kathy Abascal, RH, AHG, James Duke, PhD, Sharon Montes, MD, Holly Shull, Agatha Thrash, MD, and Eric Yarnell, RH, ND. In this seminar, experienced teachers will present specific, detailed information on how they use botanicals in a variety of common clinical ailments. The seminar spans four days over a weekend, and registration will be limited to encourage substantive interaction as well as a meaningful opportunity to network with the teachers and the participants. CME credits are available. Phone: 301-854-3951. E-mail: greenfarmacygarden@yahoo.com. Web site: www.herbalseminars.com.

More calendar listings at
www.HerbalGram.org

In this department of *HerbalGram*, we list resources such as publications, organizations, seminars, and networking for our readers.
A listing in this section does not constitute any endorsement or approval by *HerbalGram*, ABC, or its Advisory Board.

Goodsearch is a charitable Internet search engine that contributes 50% of its ad revenue to web users' favorite causes, nonprofits, and schools. The search engine, powered by Yahoo!, is free to use and does not solicit donations. Web users designate their favorite charitable organizations from the site's database, and Goodsearch donates a percentage of its ad revenue to charities based on how many searches are conducted on those organizations' behalf. More than 30,000 charities are in the database, with more joining each week. More information at: www.goodsearch.com.

Journal of Industrial Hemp, the official peer-reviewed journal of the International Hemp Association. Publishes articles on hemp (*Cannabis sativa*) taxonomy, cultivation and harvesting, new and traditional hemp products, marketing analyses and methods, regulatory issues, and environmental concerns, as well as the latest research results for scientists interested in the industrial uses of cannabis. The journal does not cover medicinal uses of cannabis. Authors may submit articles for the journal to editor Hayo M.G. van der Werf, PhD, at hayo.vanderwerf@rennes.inra.fr. For more information about the journal, to view article abstracts, or to subscribe to the journal, visit http://www.internationalhempassociation.org/.

NBJ's Supplement Business Report 2006—This 996-page report by the Nutrition Business Journal (NBJ) gives a comprehensive analysis of the US dietary supplement industry based on more than 11 years of research. Includes 550 market data charts, a list of top firms and their market shares in each supplement category from 2003 to the present, and over 160 supplement company profiles. Chapters focus on vitamins, herbs and botanicals, sports supplements, meal supplements, specialty supplements, consumer trends and spending, raw material supply, various marketing channels, and other topics. Costs $2995 and is available in pdf form only. More information at http://nbj.stores.yahoo.net/nbsubure20pr.html.

Pycnogenol.com—Horphag Research (Geneva, Switzerland), exclusive supplier of Pycnogenol® brand of patented French maritime pine (*Pinus pinaster*) bark extract, launched a new Web site interface for the clinically researched ingredient in January. Completely redesigned Web site now features 4 sections targeted to particular audiences: consumers, health professionals, industry professionals, and media. Users can access published research on Pycnogenol's various health uses, the company's corporate history, product details, and educational resources.

Southwest School of Botanical Medicine in Bisbee, AZ, now offers a distance learning program on "Herbal Therapeutics and Constitutional Evaluation." Program consists of 12 lessons, communicated through DVDs, CDs, and printed material. Lessons focus on the organ systems and the tonic herbs that treat each organ system or stress type. A second distance learning course on "Herbal Materia Medica" is scheduled to begin in the spring of 2007 and will focus on the botanical nature of plants, their habitats, distribution, constituents, harvesting, therapeutic uses, and more. Both courses, organized and directed by renowned herbalist Michael Moore, cost around $1200 and may be initiated by a student at any time. More information and applications are available at: http://www.swsbm.com/homepage/Distance_Learning.html.

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Publications

American Herb Association Quarterly Newsletter: $20/yr. AHA, P.O. Box 1673, Nevada City, CA 95959.

Australian Journal of Medical Herbalism: quarterly publication of the National Herbalists Association of Australia (founded in 1920). Deals with all aspects of Medical Herbalism, including latest medicinal plant research findings. Regular features include Australian medicinal plants, conferences, conference reports, book reviews, rare books, case studies, and medicinal plant reviews. AUD/$95 plus AUD/$15 if required by airmail. National Herbalists Association of Australia, 33 Reserve Street, Annandale, NSW 2038, Australia.

HerbalGram: Quarterly journal published by the American Botanical Council. A benefit at all levels of membership in ABC. See page 2 for membership information or join online at www.herbalgram.org. P.O. Box 144345, Austin, TX 78714. 800-373-7105 or fax 512-926-2345. E-mail abc@herbalgram.org.

Medical Herbalism: Subtitled "A Clinical Newsletter for the Herbal Practitioner." Edited by Paul Bergner. $36/yr, $60/2 yrs. Canada $39/yr. Overseas $45/yr. Sample/$6. Medical Herbalism, P. O. Box 20512, Boulder, CO 80308.

Other

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