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Thyme

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Thyme

Thymus vulgaris

Family: Lamiaceae

INTRODUCTION

Thyme (*Thymus vulgaris*) is a perennial subshrub with small gray or green leaves that grows up to 12 inches in height.^{1,2} It produces white, pink, or light purple flowers from late spring through summer. Native to the Mediterranean region, thyme is commercially cultivated in the European countries of Austria, the Balkans, England, France, Germany, Greece, Hungary, Italy, Poland, Portugal, and Spain, as well as Morocco and the United States.^{3,4,5} A significant amount of thyme herb is also wild collected in European countries, including Albania, Bosnia & Herzegovina, and Bulgaria,⁶ of which some is now wild harvested under organic certification.⁷ Spanish thyme (*T. zygis*), native to the Iberian Peninsula, is used interchangeably with *T. vulgaris* for medicinal purposes.⁸

HISTORY AND CULTURAL SIGNIFICANCE

There are several theories about the origins of the name for the genus. *Thymus* may derive from the Greek word *thyo* meaning “perfume” or the Greek *thumus*, signifying courage and strength.^{8,9} In ancient Greece the phrase “to smell of thyme” was used to praise those with admirable style. In medieval times thyme was believed to instill bravery. Ladies would adorn their knights with a scarf sporting an embroidered bee hovering over a twig of thyme. The ancient Romans were some of the first to use thyme in cooking, using it to give flavor to cheeses and liqueurs.²

The fresh or dried herb of thyme and the essential oil produced by the steam distillation of the fresh flowering aerial parts are both employed for their therapeutic properties.^{1,2} European pharmacopoeial-quality thyme is the whole leaves and flowers separated from the previously dried stems of *T. vulgaris* or *T. zygis* or a mixture of both species, containing at least 12 ml/kg essential oil, of which at least 40% must be the sum of thymol and carvacrol.¹⁰ Thyme, used in its crude herb form, particularly in warm infusions (teas), relieves intestinal gas, expels intestinal parasites, relieves cough, and it is expectorant, antimicrobial, and astringent.⁸ Traditionally, thyme has been used to treat heartburn, gastritis, asthma, laryngitis, pertussis, and bronchitis, as well as to stimulate menstrual flow and to aid in resolving occasional childhood diarrhea and bedwetting.^{1,8,11}

Red and white thyme essential oil are produced commercially from *T. vulgaris* or *T. zygis* for use in cough drops, mouthwashes, liniments, toothpastes, detergents, and perfumes.³ Red thyme oil is preferred as white thyme oil is distilled from the red. The two main ingredients in thyme oil are thymol and carvacrol, but thymol is believed to be responsible for most of the therapeutic aspects.^{3,12} Internally, thyme oil is used for cough, bronchitis, and indigestion.^{1,2,8}

Externally, the whole plant and the oil distilled from it have been used to treat fungal infections, minor arthritis, gum disease, and tonsillitis.¹

Thyme herb (i.e., oral: tea infusion or fluidextract; topical: tea infusion for compresses) was approved by the German Commission E in 1984 for symptoms of bronchitis and whooping cough and for mucous-producing inflammations (catarrhs) of the upper respiratory tracts.¹³ In 2007, the European Medicines Evaluation Agency (EMA) published a final thyme monograph, which will be relevant for medicinal herbal product registrations in all EU-27 Member States including Germany. EMA approved thyme herb (i.e., dry extract, fluidextract, tea and tincture) as a traditional herbal medicinal product (THMP) used as an expectorant in cough associated with cold.¹⁴ Also, in 2008, Health Canada published its final monograph for thyme natural health product (NHP) compendial license applications. Health Canada approved traditional uses of thyme for gargle and/or buccal (pertaining to the mouth or cheek) use to help relieve laryngitis, tonsillitis, and mucous membrane inflammations of the mouth and/or throat; topical use as an antiseptic and/or antimicrobial to help treat minor wounds and sores; and oral use as an expectorant to help relieve the symptoms of bronchitis and catarrhs of the upper respiratory tract, to help relieve coughs, and to help relieve flatulent dyspepsia and colic.¹⁵ Thyme has also been used to treat pertussis (an acute, highly contagious infection of the respiratory tract, usually in children), stomatitis (inflammation of the oral mucosa), and halitosis.^{4,16}

MODERN RESEARCH

Fluid extracts of thyme in combination with other herbs have been found to be effective in treating bronchitis.^{17,18,19} In a double-blind, placebo-controlled trial, treatment of acute bronchitis with a syrup composed of thyme herb fluidextract (1:2–2.5) and English ivy leaf (*Hedera helix*, Araliaceae) fluidextract (1:1) (Bronchipret® Saft; Bionorica AG, Neumarkt, Germany) was found to be safe, well tolerated, and superior to placebo in efficacy.¹⁸ Treatment with a cough syrup composed of dry ivy leaf extract, decoction of thyme and aniseed (*Pimpinella anisum*, Apiaceae), and mucilage of marshmallow (*Althaea officinalis*, Malvaceae) root (manufactured by Weleda Hustenelixier, Weleda AG, Arlesheim, Switzerland) alleviated cough caused by common cold, bronchitis, or respiratory tract diseases with formation of mucus.²⁰ Thyme oil and its constituent, thymol, have been studied for their antimicrobial properties. Two recent in vitro studies and one human clinical trial show that thyme oil and extracts (both acetone and water), as well as the constituent



Thyme *Thymus vulgaris* ©2008 Stevenfoster.com

Continues on page 2

thymol, may be effective against a variety of bacteria.^{21,22,23} Thymol is one of 4 active ingredients in the popular antimicrobial Listerine® mouthwash (Johnson and Johnson, a division of McNeil-PPC, Inc, New Jersey),* but it has not been adequately studied as a single active ingredient in mouthwashes.²⁴ The US Food and Drug Administration (FDA) permits the combination (thymol with eucalyptol, menthol and methyl salicylate) in Listerine as an antigingivitis/anti-plaque active ingredient for use in over-the-counter (OTC) drug products.²⁵ Of interesting note, thyme oil has been studied in combination with oils of rosemary (*Rosmarinus officinalis*, Lamiaceae), lavender (*Lavandula* spp., Lamiaceae), and cedarwood (*Cedrus atlantica*, Pinaceae) as rubbing oils for stimulating hair growth.²⁶

FUTURE OUTLOOK

Thyme has a small market worldwide. The demand is increasing modestly with the growth of the human population and will continue with the broadening research of its pharmacological properties.²⁷ Spain is by far the largest producer of thyme oil as it refines 35 to 45 tons yearly, with one to three tons being *T. vulgaris*. The rising costs of harvesting and distilling may keep production low as less expensive, synthetic thymol becomes more readily available.²⁸ HG

—Gayle Engels

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*The characteristic taste and efficacy of Listerine® mouthwash derives from the presence of thymol in combination with eucalyptol from eucalyptus (*Eucalyptus globulus*, Myrtaceae), menthol from diverse mint oils or prepared synthetically, and methyl salicylate which is produced synthetically or is obtained by maceration and subsequent distillation with steam from wintergreen leaf (*Gaultheria procumbens*, Ericaceae) or from sweet birch bark (*Betula lenta*, Betulaceae).²⁹

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dear reader

FDA Should Rescind Outdated Import Alert on Stevia

The US Food and Drug Administration (FDA) should rescind its 1991 Import Alert on the South American herb stevia (*Stevia rebaudiana*, Asteraceae). The agency has held that stevia is an “unsafe food additive” and has banned its importation for use as a food sweetener. There are now 2 exceptions: If stevia is labeled for use as a dietary supplement or if the safety of herb or an extract has been established per the criteria of the GRAS (generally recognized as safe) self-affirmation process.

In light of increasing evidence of the safety of several types of stevia extracts, FDA’s policy appears unreasonable and illogical; it does not reflect the current scientific and medical information supporting the safety of stevia when consumed in relatively small amounts in foods to give them a sweet taste.

Since 1995 FDA has allowed stevia to be imported into the United States only if it is labeled for use in dietary supplements because the Dietary Supplement Health and Education Act of 1994 specifically stipulates that dietary ingredients (DI) are not food additives. After passage of DSHEA, the SunRider Corporation petitioned the FDA to allow stevia imports if they were intended for sale in DIs. FDA agreed.

In 2007 a tectonic shift occurred in the stevia market which may be viewed by historians as the beginning of a new era for stevia, and the sweetener industry—Coca Cola and agribusiness giant Cargill announced a joint venture to produce a proprietary stevia extract. In May 2008 Coke and Cargill announced the results of numerous animal studies and human clinical trials on its proprietary stevia extract, demonstrating its safety.

A month prior, stevia pioneer Wisdom Natural Brands completed its GRAS self-affirmation, conducted by GRAS Associates and confirmed by the Life Sciences Research Organization. Wisdom began marketing SweetLeaf® stevia as a sweetener, foregoing the “dietary supplement” labeling under which stevia has been subject for 13 years.

Other big companies are getting into stevia, including coke’s chief rival Pepsi. Corn Products International has purchased a South American stevia extraction plant.

After several years of intensive research on stevia safety, in June 2008 the Joint Expert Committee on Food Additives of the United Nations Food and Agriculture Organization and the World Health Organization concluded that stevia extract containing 95% stevia glycosides was safe for human use in the range of 4mg/kg body weight per day. This paves the way for more regulatory approvals around the world.

A scientific book on stevia published in 2000, edited by plant-sweetener expert Dr. Doug Kinghorn, reviewed the scientific evidence until then, concluding that stevia is safe for human

use. Kinghorn believes that additional research during the intervening decade continues to support stevia safety.

The FDA’s import alert is an outdated policy, based on the market and regulatory conditions prevalent in the late 1980s. FDA could take refuge under the provisions of its food additive laws, in which a new food additive must be proven safe before FDA will allow it onto the market. An ingredient without demonstrated toxicity must undergo pre-market approval, which presumes that it is unsafe before safety is demonstrated *unless* the ingredient was known to be commonly used in foods prior to 1958.

The common use in food exemption is precisely the tactic that the American Herbal Products Association (AHPA), the leading trade association dealing with issues related to herbs, employed in a petition it filed with FDA in 1992. AHPA stated that stevia was commonly used in foods before 1958 (elsewhere, not in the US) and thus should be exempt from FDA’s regulation as a food additive requiring premarket approval. FDA responded by saying that if the industry believed that stevia was so safe, it should file a petition to affirm the GRAS status.

AHPA did so, but FDA refused to accept the petition, so it was never posted for public comment. FDA said it needed more information to accept the petition, and AHPA supplied such information, but FDA still refused to publish it. In 1994 tea maker Thomas J. Lipton Co. filed its own GRAS petition with FDA, presumably based on basically the same data included in the AHPA petition. Again, FDA refused to accept the petition.

If FDA were to rescind its stevia Import Alert, importers of stevia would still have the burden of confirming safety for use in conventional foods by conducting a GRAS review.

There is currently a compelling public health imperative for safe, low-cost, non-caloric sweeteners. The current rates of obesity and associated medical problems of diabetes and cardiovascular disease suggest a bright future for stevia. In the public’s interest, FDA should rescind its outdated Import Alert. HG



Mark Blumenthal

American Botanical Council

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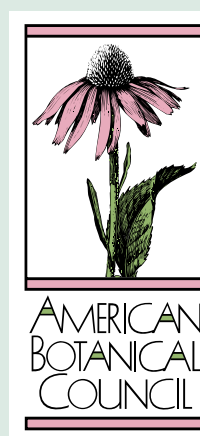
Perry Sauls
Customer Service Coordinator

Kelly E. Saxton
Writer-Editor

George Solis
HerbClip Production Assistant

Cecelia Thompson
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HERBALGRAM

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features

34 African Blackwood Conservation Project Conserves Trees Used to Make Musical Instruments

By Kelly E. Saxton

The African blackwood is often used by woodworkers when creating woodwind instruments, such as clarinets, oboes, flutes, and bagpipes. However, African blackwoods, which are also well-known throughout Africa for their medicinal properties, may be in danger of overharvest and eventual economic extinction. This article features the efforts of the African Blackwood Conservation Project, an organization that has been replanting and promoting sustainable harvest of African blackwoods since 1996.

38 The Pharmacologically Active Constituents of White and Red Ginseng Root

By Dennis V.C. Awang, PhD, FCIC and Michael Z.C. Li, MD, MSc

This article provides detailed information on the ginsenoside levels and profiles of both Asian and American ginseng, noting how these and other pharmacologically active constituents of the plants may be able to impact human health. The authors also summarize some clinical study data on the anti-diabetic and immunological effects of ginseng or ginseng constituents, as well as other recent research into the possible health benefits of ginseng.

50 Natural Doctors International: Innovative Nonprofit Enables Natural Medicine Practitioners to Participate in Global Relief Efforts

By Courtney Cavaliere

In 2005, the nonprofit organization Natural Doctors International (NDI) established a clinic on the Nicaraguan island of Ometepe to provide naturopathic physicians and other alternative healthcare providers with the opportunity of participating in global relief efforts. NDI has now established a permanent presence on Ometepe and is involved in multiple sustainable services and programs for the local community. A second NDI site is in the process of being established in Mexico, and additional sites may be established in the future. This article details the development of NDI, the medical and service work performed by NDI volunteers, the use of herbal medicine by NDI, and future plans and goals of the organization.

60 The Content and Quality of Human Clinical Trials on Herbs and Phytomedicines Published in Russian Medical Journals in the 21st Century

By Lena Bezman, MD

The Russian herbal medicine research community has been conducting an increasing amount of new and interesting pharmacological and clinical research studies, but many of these studies remain unavailable to peers or practitioners of other nations due to the language-barrier. The author analyzed recent human clinical trials of herbal preparations that have been published in the Russian language, assessing the trials' design and reporting qualities. She further reviewed a sample of recent trials testing non-herbal preparations, which have been published in the Russian language. Through these analyses and comparisons, the author assesses the quality of Russian herbal trials in the contexts of both global trial quality standards and Russian conventional pharmaceutical trial quality protocols.



Illustration of American Ginseng *Panax quinquefolius* from *American Medicinal Plants: An Illustrated and Descriptive Guide to the American Plants Used as Homeopathic Remedies; Their History, Preparation, Chemistry and Physiological Effects* by Charles F. Millspaugh (1887).

Image courtesy of Steven Foster

departments

10 ABC News

ABC Releases Monograph on Scientific Research of POM Wonderful® Pomegranate Juice

Employee Profile: Jeremy Pigg

HerbalGram Celebrates 25 Years

Meet ABC Board Member Steven Foster: Noted Herbal Expert, Photographer, Author

ABC Announces "Adopt-an-Herb" Program

HerbMedPro Update

18 Organization News

Olivia Newton-John Performs for ACEER: Voices for the Rainforest Benefit a Huge Success!

Sara Katz Appointed President of United Plant Savers' Board

Society for Economic Botany Celebrates 50th Year

22 World News

New Film Examines the Meaning of Tea

24 Conservation

New Sanctuary Established in Colombian Amazon to Protect Medicinal Plants

27 Research Reviews

Small Pilot Study Finds Rhodiola Extract May Be Beneficial for General Anxiety Disorder

Bilberry (Mirtoselect®) and French Maritime Pine Extract (Pycnogenol®) Combination May Have Beneficial Effects in Glaucoma Prevention

Cranberry Effective in Treating UTIs during Pregnancy and Lactation

Tea Consumption May Be Associated with Lowering Cognitive Impairment Risk

68 Legal & Regulatory

CRN-NAD Program Increasing Reviews of Dietary Supplement Advertising

Native Essence Herb Company Sues FTC Over "Traditional Use" Claims

72 Book Reviews

Ginseng Dreams

Herb-A-Day

Bioactive Natural Products

British Herbal Compendium

New Book Profiles

77 In Memoriam

James R. Thrower

Rand Skolnick

79 Calendar & Access

80 Classifieds



On the Cover

Thyme (*Thymus vulgaris*)

Photo ©2008 Steven Foster

Corrections

Two photographs in *HerbalGram* 79 on pages 29 and 30 were incorrectly credited to Steven Foster. The photographs are copyright 2008 American Botanical Council.

Contributing Writers

Kathy Abascal
Dennis V.C. Awang
Robert Beyfuss
Lena Bezman
Steven Foster
Marguerite Gould
Michael Z.C. Li
Heather S. Oliff
Marissa Oppel
Mark C. Roman
Jillian Stansbury

HerbalGram Staff

Mark Blumenthal
Editor / Publisher

Michael Finney
Managing Editor

Matthew Magruder
Art Director

Courtney Cavaliere
Assistant Editor

Kelly E. Saxton
Writer-Editor

Steven Foster
Associate Editor

Rakesh Amin
Legal & Regulatory Editor

Maureen Jablinske
Proofreader

Lance Lawhon
Advertising Sales
877-832-1881
lance@herbalgram.org



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ABC Releases Monograph on Scientific Research of POM Wonderful® Pomegranate Juice

The nonprofit American Botanical Council (ABC) has recently released a monograph on the published scientific and clinical studies relating to POM Wonderful® Pomegranate Juice.

The monograph includes summaries of 6 clinical trials, in which POM Wonderful Pomegranate Juice was evaluated for its effects on cardiovascular disease, prostate cancer, and erectile dysfunction. The authors of the monograph further provide information on the active constituents and safety of pomegranate juice, as well as distinguishing characteristics particular to POM Wonderful Pomegranate Juice.

“When ABC approached POM Wonderful about doing a monograph, we thought this was an excellent opportunity to have a well-respected organization conduct a third-party review of our research,” said Mark Dreher, PhD, vice president of scientific and regulatory affairs for POM Wonderful. “Having a monograph summarize and evaluate our growing body of research is an important part of our ongoing scientific process.”

Pomegranates have been traditionally used as a food, medicine, and cultural icon by various civilizations for thousands of years. Its popularity among US consumers, however, is relatively recent.

“In 2002, when we launched POM Wonderful, only 12% of the population even knew what a pomegranate was,” said Dr. Dreher. “In 6 years, sales of POM have gone from zero to over \$150 million.”

Previous publications and monographs from ABC have covered the pharmacological and clinical literature on numerous medicinal herbs. “So far as we can determine, this may be the first monograph ever published that covers the clinical research on a conventional food product,” said Mark Blumenthal, founder and executive director of ABC, noting that although historically pomegranate has been used as both a food and as a medicinal plant, most people today consider it a conventional food.

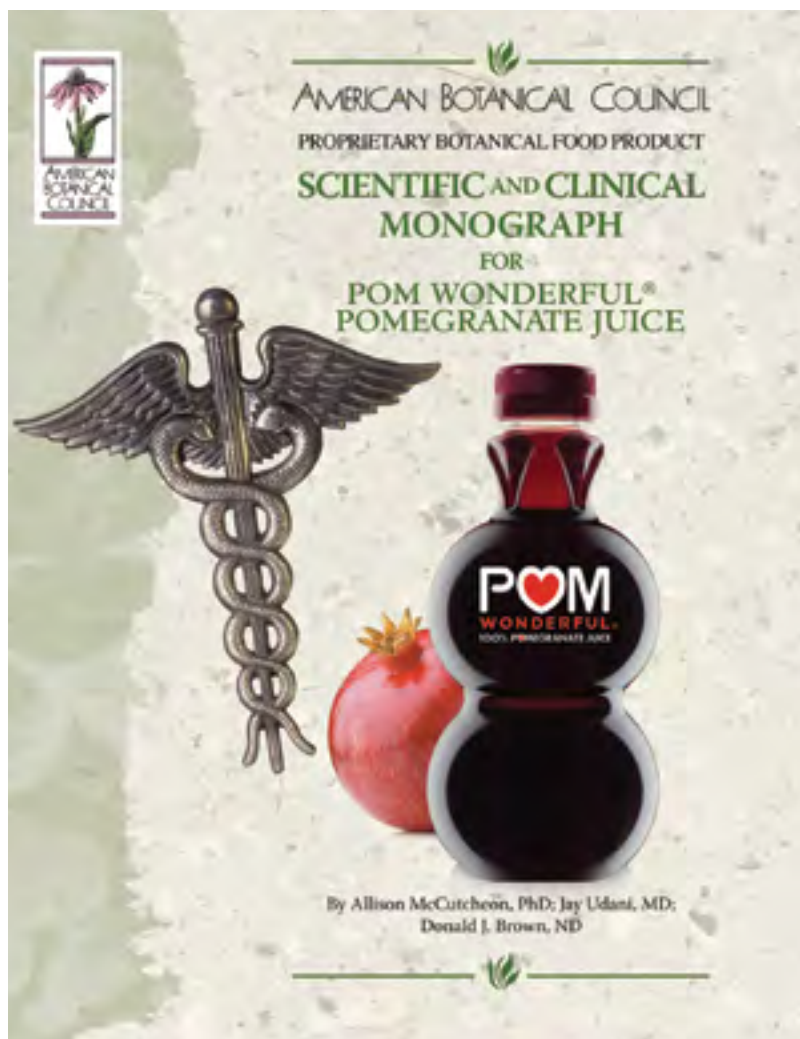
“Six years ago, POM Wonderful created the category for pomegranate juice, and since then it has continued to build consumer demand largely based on the health benefits associated with ‘Wonderful’ variety pomegranates—the only variety whose juice has been clinically tested,” said Dr. Dreher. “POM Wonderful 100% Pomegranate Juice stands alone as the only pomegranate juice to undergo rigorous clinical testing to determine its health benefits.”

POM Wonderful currently has an additional 12 clinical studies that are either in progress or have been submitted for publication. The subjects of those studies range from prostate health to protection against the common cold. Six of those studies expand upon studies included in the ABC monograph.

Funding for the monograph on POM Wonderful Pomegranate Juice was provided by POM Wonderful. As with other product-specific monographs produced by ABC, this monograph was written for ABC by independent experts familiar with the scientific literature on natural health products and was formally peer reviewed by various scientific experts for its accuracy.

ABC’s monograph on POM Wonderful Pomegranate Juice is the second in a series of product specific monographs that the organization recently initiated. The first product specific monograph developed by ABC, released in March 2007, provided scientific and clinical trial data regarding the health benefits of CVT-E002®, the active ingredient in the ginseng-based dietary supplement COLD-fX®. COLD-fX is marketed as a treatment for reducing the frequency, severity, and duration of cold and flu symptoms. Additional monographs concerning specific researched commercial products and ingredients are being developed by ABC.

ABC’s POM Wonderful® Pomegranate Juice monograph is available on the ABC Web site. HG



Employee Profile: Jeremy Pigg

In the past years, as more people seek information via the Internet, ABC has made an increasing level of investment in its on-line educational content as well as how ABC communicates with its many members and other stakeholders. In May 2007 ABC started its relationship with Convio, the leading Internet platform for nonprofit organizations, to conduct online fundraising and marketing, provide member benefits, and much more. The member of Convio's strategy team assigned to ABC and tasked with devising a comprehensive online marketing plan to utilize the Convio platform was Jeremy Pigg. We were so impressed with his

skills that when he told us he was leaving Convio, we offered him the opportunity to create a new position here at ABC—Marketing Director. Jeremy has had extensive prior experience in the computer and Internet profession, with experience at such large companies as Gateway computers.

At ABC Jeremy's job covers a wide range of responsibilities in the areas of marketing and public relations. His scope includes "big picture" marketing and educational activities as well as some of the smaller, nuts-and-bolts

communications to ABC members and the public.

Jeremy "builds" various e-mail campaigns to ABC members, as well as to the thousands of registered users who have visited the ABC Web site but not yet become ABC members. He created an e-newsletter that is sent to these non-member registered Web site users to inform them of recent news regarding ABC as well as herbal information of possible interest. Jeremy also created ABC's HerbEClip, a twice-monthly communication notifying all ABC members when the latest group of 15 HerbClips is posted to the ABC Web site, making access to the latest HerbClips more convenient.

In addition, Jeremy has many other Internet-based marketing functions, including tracking the results of ABC's e-newsletters (HerbalEgram and HerbEClip), press releases, member advisories, and special fund-raising campaigns. He is also in charge of ABC's Content Licensing program, in which ABC licenses various databases that comprise ABC's vast scope of electronic educational information to various government, nonprofit, and commercial Web sites.

As ABC positions itself to provide expanded educational services on herbs and other beneficial plants in the next 20 years, the extensive marketing skills and keen insights that Jeremy offers will become an even more important part of how ABC delivers its educational information to the many different stakeholder groups that benefit from ABC's nonprofit educational mission. HG

—Mark Blumenthal



Pigg
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HerbalGram

Celebrates 25 Years

The American Botanical Council's (ABC) flagship publication *HerbalGram* has reached the 25 year mark. *HerbalGram* was first published in the summer of 1983 as a one-color 8-page newsletter called "Herb News" with "Herbalgram" as a smallish subtitle (printed on recycled paper). Over the last 25 years the publication has grown in style, size, and areas of coverage, reflecting the growth, diversity, and sophistication of the herbal movement.

The original staff listing consisted of two people: Mark Blumenthal, editor, and Rob McCaleb, associate editor. The first issue contained a variety of topics: Recent News, Obituaries (this particular issue had one for John R. Christopher, the famous herbalist), Media Watch, Recent Books, and Herb Blurbs. In a section called Rob's Research Reviews, an early form of today's research reviews, co-editor Rob McCaleb summarized 6 herbal research articles into less than a page.

"Back then," said Blumenthal, "there was little coverage of herbal issues in the natural foods and vitamin industry trade publications—the term dietary supplement had not come into use—and there was no Internet availability for individuals and small businesses. Faxes started becoming prevalent shortly thereafter, but there was not the widespread availability of news on herbal research, regulation, and media coverage that is so widely available today."

HerbalGram issue 18/19 contained the first traces of color. It was also the first *HerbalGram* to be published jointly by ABC (founded in 1988) and the Herb Research Foundation (HRF). The previous issues had been published by the American Herbal Products Association (AHPA) and HRF. The total page count also jumped from 24 to 48 (including the cover). ABC was created by Mark Blumenthal to help fund *HerbalGram*'s transition from newsletter to magazine. Though *HerbalGram* had started as a project he worked on during nights and weekends, he dreamed of making it a full-time project. The creation of ABC helped Blumenthal take *HerbalGram* to the next level.

HerbalGram 27 featured a mural called "The People Demanding Health" by the artist Diego Rivera, as well as an article about the Health Freedom Act of 1992 that would label herbs as dietary supplements.¹ (In 1993 this was reintroduced as the Dietary Supplement Health and Education Act.) *HerbalGram* 28 was the first full-glossy issue, as well as the first to have a photograph of a plant on its cover and a scan-able barcode for the growing level of sales in retail stores.

The content in the earlier issues of *HerbalGram* featured extensive literature reviews on specific herbs written by Chris-



#1



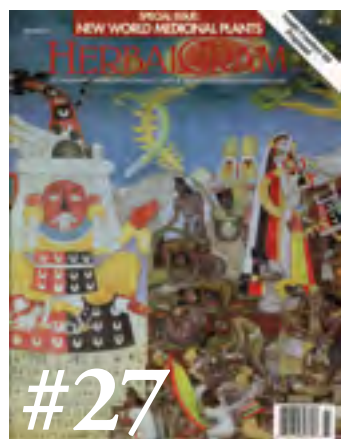
#18

topher Hobbs, e.g., sarsaparilla (#17), St. John's wort (#18/19) feverfew (#20), valerian (#21), and hawthorn (#22). There were also articles written by herbal legends like Jim Duke, PhD. A special issue on traditional medicines (#31) contained articles on herbal medicine traditions from different regions (from Asia to the Amazon), as well as a special feature on "Tibetan Medicinal Paintings."² Another colorful feature was the "Medicinal Plant Stamps of Yugoslavia" by Ira Kennedy, with photos of postal stamps issued from 1955 to 1965 representing major medicinal plants and reflecting the importance of herbs in European countries.³

Barbara Johnston, past *HerbalGram* managing editor, said that one story in particular, "The Booming US Botanical Market: A New Overview" by Peggy Brevoort, was the most interesting article she edited.⁴ "It contains pages and pages of graphs and interesting text and it was very well-researched," said Johnston. This article painted a full picture of the herbal medicine market at that time. In fact, *HerbalGram* now does a yearly Herbal Market Report, which includes tables with herbal product sales statistics.⁵ "The *HerbalGram* herb market report is one of the most often-cited articles ABC publishes each year," said Blumenthal in an ABC Press release.⁵ "It is referenced in medical, pharmacy, and nutrition journals, as well as in many other professional, trade, and consumer publications. It is usually difficult to estimate the size of the total herb market in the United States and the ABC report is considered by many as one of the most accurate and inclusive."

Issue 45 was the first to be perfect-bound, an idea of Steven Foster's, who thought it heightened the professionalism of the magazine and made it easier to find on a library's shelf since the title and issue number could be printed on the spine. Issue 45 also jumped to 100 pages to include a 32-page Herbal Education Catalog, containing a large selection of books and other educational materials, some of which are still available in ABC's online bookstore.

Norman R. Farnsworth, PhD, cofounding Trustee of ABC, said that this 4-color catalog was one of the most valuable



#27



#28

aspects of ABC at that time. He noted that even someone who did not read the articles in *HerbalGram* could derive educational value by just viewing the catalog. It demonstrated that high-quality technical books on herbal medicine were available in many subject categories (e.g., ethnobotany, pharmacognosy, phytochemistry, quality control, monographs, etc.). The ABC catalog showed people the depth and breadth of the information on herbal medicine as well as demonstrated that selling medicinal herb books could be lucrative. This helped to pave the way for other publishers to produce herbal reference books as well as for numerous other professional organizations and trade groups to include them in their own publications catalogs.

It was the 50th issue that marked the beginning of the journal's current size (84 pages), and it was the first issue published in the name of the American Botanical Council alone.

The content also grew and deepened to more accurately reflect what Blumenthal initially imagined: "My initial goal in founding ABC was to take the newsletter *HerbalGram* and evolve it into the *Scientific American* of herbs," said Blumenthal. With content produced and edited like a scientific or medical journal, all feature articles and most of the shorter articles are subject to a fairly intense peer-review process. "This requires that each article be reviewed and possibly edited by various experts in North America and around the world," said Blumenthal. "The process is extremely time-consuming but it is necessary to ensure the accuracy and reliability of *HerbalGram*'s content."

Michael Finney, the current managing editor of *HerbalGram*, said one of his favorite issues was 66, featuring the cover article "The Lost Amazon: The Photographic Journey of Richard Evans Schultes."⁶ This article contains photographs and excerpts from Wade Davis' book capturing the photographic journal of the late Harvard botanist, widely recognized as the father of modern ethnobotany.

Courtney Cavaliere, assistant editor of *HerbalGram*, pointed to "Native American Herbal Prescription Sticks: Indigenous 19th Century Pharmacopeias" by Daniel Moerman, PhD, as a unique

article from issue 77.⁷ This pictorial feature shows the Native American carvings of stylized herbal remedies onto wooden sticks in an attempt to preserve ethnobotanical knowledge, although today the actual identities of the plants are unknown.

A possibly controversial cover article for *HerbalGram* 75 was "Peruvian Maca and Allegations of Biopiracy" by Josef Brinckmann.⁸ With a cover photo showing 3 generations of Andean Indian women, this article explored Peru's efforts to protect its herbal knowledge and resources, which generated discussions in subsequent *HerbalGram*s.

HerbalGram continually receives positive feedback from its readers as well as recognition outside of the herbal community. In 1997, *Utne Reader* nominated *HerbalGram* for the best alternative magazine in the "Personal Life Coverage" category, and in 1999 *Utne* nominated it for the "Science and the Environment" category.⁹ "To many of our supporters, we may have reached our goal," said Blumenthal. "But we will always look for ways to improve *HerbalGram*."

Over the years, *HerbalGram* has evolved. Coupled with its high production values, such as 4-color photography and beautiful artistic layouts, *HerbalGram* aspires to be a hybrid between a medical or scientific journal, a trade publication, and a visually-engaging consumer magazine. *HerbalGram* will continue striving to bring this high quality to its readers. HG

—Kelly E. Saxton

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Meet ABC Board Member Steven Foster: Noted Herbal Expert, Photographer, Author

With 35 years of experience in herbs, Steven Foster is one of the most recognized photographers of herbs and medicinal plants in North America, if not internationally. But he's more than just a man who likes plants and cameras. He's an author with 15 herb-related books published (the first when he was 25), an associate editor for *HerbalGram* and other botanically-oriented publications, a board member, a consultant, and a self proclaimed "life-long student of medicinal and aromatic plants" (e-mail, July 25, 2008).

Now with over 150,000 stock images within his photo collection, Foster has become an icon in the herbal community. Foster resides in Eureka Springs, Arkansas, which is also the location of his company Steven Foster Group Inc. A prolific author, Foster won first place in the 1999 Independent Publisher Book Awards in the Health/Medicine category for his book *101 Medicinal Herbs: An Illustrated Guide*.¹ In 1999 this book also won a silver medal from the Benjamin Franklin Awards in the Health category. The New York Public Library also designated his co-authored *Desk Reference to Nature's Medicine*, published by National Geographic, as a "best of reference" work for 2007,² and this past year he was awarded the Herbal Insight Award from the American Herbal Products Association (AHPA) for his "significant impact" on herbal knowledge.³ Foster's newly-released collaboration *Herbal Pearls: Traditional Chinese Folk Wisdom* (Boian Books, 2008) is a compelling collection of 53 Chinese folk stories on the origin of the use or name of traditional Chinese herbal remedies.

Foster is also active in herb-related organizations. He has been a member of the Board of Trustees of the American Botanical Council since 1999 and was formerly on the Board of United Plant Savers (2000–2003). He's also served on various editorial boards and had many editorial positions at several organizations and journals such as *Well Being*; *Herb News*; *Business of Herbs*; *Journal of Herbs, Spices, and Medicinal Plants*; *Herbs for Health*; *The Herb Companion*; *Healthy Living*; *Food & Wine's Edible Garden Newsletter*; *Natural Home*; *Pharmaceutical Biology*; and ABC's *HerbClips*.

"Steven Foster is one of the most knowledgeable experts in North America in many areas of herbal medicine," said long-time friend and ABC Founder and Executive Director Mark Blumenthal. "His deep knowledge of classic herbal literature is astonishing—perhaps, with no pun intended, photographic."

"I remember when many of us in the herbal medicine community first met Steven," recounts Blumenthal. "Back in 1978 the National Nutritional Foods Association (now the Natural Products Association), was holding its annual convention and trade show in Boston. At that time the Food and Drug Administration had declared sassafras (*Sassafras albidum*, Lauraceae) unsafe for use in beverages (e.g., root beer and herbal tea) based on what many of us thought was inadequate and flimsy evidence. Paul



Above: Steven Foster in La Boca District, Buenos Aires, Argentina.

Below: Steven Foster with students at Ajara State University, Batumi, Republic of Georgia.
Photos ©2008 Steven Foster



Lee, then director of the Herb Trade Association, decided that some guerilla theatre was in order and he was able to rent an evening on the Boston Tea Party ship in Boston Harbor. Steven had shown up the night before the planned herb demonstration and drove from Boston to Maine and back in the same night, toting a large bag of sassafras root bark, which we all threw overboard into the harbor, in our feeble attempt to recreate the political imperative of the original Boston Tea Party."

"What a wonderful young guy he was," recounts Lee (oral communication to M. Blumenthal, September 7, 2008). "He was a shining light in the early years of the herbal renaissance and he brought some of the Shaker sensibility to the herbal community."

According to Foster, his epiphany took place when he was 17, in his native Maine, on a walk in the woods with a friend. He noticed a trillium (*Trillium erectum*, Liliaceae), and his friend told him that it was used as an aid in childbirth (hence the plant's common names, bethroot and birthroot). This struck his interest and it was then that he knew he wanted to learn the names and uses of all plants.

He began his herbal education in 1974 at the Sabbathday Lake Shaker Community, in New Gloucester, Maine (America's oldest continuous religious community) as part of a work-study program.^{4,5} This community also happens to contain one of the oldest herb businesses in the country, dating back to 1799. He intended to work in the Shaker Museum, but on his first day on the job, one of the Shaker sisters asked him to dig for burdock (*Arctium lappa*, Asteraceae) root, which she intended to decoct to treat a skin condition.

"That was the start of my herbal career," said Foster. "Soon after, I was working full time in the Community's Herb Department, where I spent the next four years."

The Shaker Community Herb Department had 3 acres of herb gardens within its 1,700 acres. The Shaker Library also had an excellent collection of herbal books, something Foster began collecting when he was 17. "That combination provided my educational foundation for everything I've done since," said Foster. "In the herb field, the more you learn, the more you discover how little you know. There's something new to learn each and every day."

"I've enjoyed sharing the forests, meadows, and lecterns with Steve, from the Amazon to Arkansas, and from California to Maryland," said noted ethnobotanist and long-time Foster mentor and friend, James A. Duke, PhD (e-mail, August 4, 2008). "I think he, like me, enjoyed the Amazon more than any of our many fruitful trips. I still treasure a picture he shot in Sunny Santa Cruz three decades ago (at the second Herb Trade Association Herb Symposium in 1978). And I look forward to joining him in Arkansas and the Amazon again next year."

Foster originally learned photography by shadowing photographers who came to take photos for stories or books on the Shaker Community.^{4,5} These photographers included some that were on assignment for *Smithsonian*, *National Geographic*, and various European magazines.

"My first photos were published in Thomas Moser's *How to Build Shaker Furniture* (Drake Publishing, Inc., 1977). I didn't

have a clue what to charge for the photos so I licensed 14 images for the book for \$40.00," said Foster. "As I recall, the author almost had to keep from laughing at the low price. But what he didn't know is that those images were from my first two rolls of film from my first camera."

Sunrise is Foster's favorite time of day to photograph and it seems this herbal enthusiast can be found pursuing his passions from then until sunset. "Who has time for hobbies?" Foster said. "I am fortunate in that my work is my life. I love plants, books on plants, photographing plants, learning about plants, and the people associated with them. It is what I eat, sleep, and drink." HG

—Kelly E. Saxton

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ABC Announces “Adopt-an-Herb” Program

The American Botanical Council (ABC) invites companies across the world to help keep its herbal database HerbMedPro supplied with the most up-to-date research by participating in a new program called “Adopt-an-Herb.”

The Adopt-an-Herb program supports ABC’s ongoing efforts to collect, protect, and disseminate information on herbs and herbal medicine. Through this program, companies provide funding to “adopt” one or more specific herbs. These adoptions will help ensure that abstracts of the latest published scientific and clinical research on those sponsored herbs are made available within the ABC-administered HerbMedPro, one of the most robust and powerful herbal databases and research tools on the Internet.

By adopting herbs, companies help prioritize which of the 216 herbs currently in HerbMedPro will get updated regularly and also determine which new herbs are added to the database. The result is that through ABC membership, consumers, researchers, educators, media, health practitioners, government agencies, members of industry, and others can use HerbMedPro via ABC’s Web site to access the latest scientific and clinical publications on the adopted herbs.

HerbMedPro is now operated through a partnership between the Alternative Medicine Foundation and ABC. It is an interactive, impartial, and evidence-based herbal database that provides hyperlinked access to freely-available abstracts of scientific and clinical publications on 216 commonly used medicinal herbs and phytomedicines. Herb records in HerbMedPro vary in size from those with a very large amount of published data, such as ginkgo (*Ginkgo biloba*, Ginkgoaceae), with over 1,000 summarized entries and links, to *Acacia catechu* (cutch tree or black catechu in the family Fabaceae), with fewer than 50.

HerbMedPro has a free “sister” site, HerbMed, which features 20-30 herbs from HerbMedPro that are rotated onto this site on a regular basis. This site is available at no cost to the public, thereby increasing the number of people

benefitting from updated information on adopted herbs.

ABC is pleased to announce that Tea Dragon Films is the first official participant of the new Adopt-an-Herb program. In honor of its new documentary film, *The Meaning of Tea* (see article on page 22 for details), Tea Dragon Films has adopted tea (*Camellia sinensis*, Theaceae) for the next 3 years.

All adopters will be recognized by ABC for helping to promote ABC’s nonprofit educational mission and for helping to ensure that up-to-date herbal information on their adopted herb is readily accessible to the general public. This recognition will take place on ABC’s Web site and in its publications, including ABC’s quarterly journal *HerbalGram*.

Future plans for disseminating information on herbs include enhancing HerbMedPro into HerbMedProPlus™. This upgraded version of the database will include all of the power and access currently available in HerbMedPro, plus the ability to search and pull all related information available on ABC’s Web site, including *HerbalGram* articles, HerbClips, Commission E Monographs, Expanded Commission E Monographs, monographs from *The ABC Clinical Guide to Herbs*, and much more. It will also pull information in the form of links to other reputable sources, e.g., the American Herbal Pharmacopoeia, and other respected and authoritative sources of herb information. This increased functionality will make the sophisticated HerbMedPro database even more useful.

More information on the benefits of ABC’s Adopt-an-Herb program is available from Denise Meikel, ABC’s development director, at development@herbalgram.org or by calling 512-926-4900, extension 120. HG

—Denise Meikel

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HerbMedPro™ Update

HerbMedPro™ is a benefit of membership for all American Botanical Council (ABC) members at the Academic Level and up. It is also available for subscription and licensing exclusively through ABC. For information on how to set up a subscription, license the content, or use the Pay-Per-Day feature, go to www.herbmed.org. The table below shows the latest additions to HerbMedPro's repertoire. These updates are provided by Jackie Wootton, MEd, director of HerbMedPro and president of the Alternative Medicine Foundation, Potomac, Maryland.

New Herb Records

Common Name	Latin Binomial
Ethiopian pepper	<i>Xylopia aromatica/aethiopica</i>
Nigella, Black cummin	<i>Nigella sativa</i>
Mojave yucca	<i>Yucca schidigera, Y. filamentosa</i>

Updated Herb Records

Common Name	Latin Binomial
African plum, pygeum	<i>Pygeum africanum</i>
Arjuna, myrobalan	<i>Terminalia arjuna</i>
Banana, plantain	<i>Musa spp.</i>
Black currant	<i>Ribes nigrum</i>
Garlic	<i>Allium sativum</i>
Milk thistle	<i>Silybum marianum</i>
Mullein	<i>Verbascum thapsus</i>
Rosemary	<i>Rosmarinus officinalis</i>
Sarsaparilla, Chinese smilax	<i>Smilax glabra</i>
Sassafras	<i>Sassafras albidum</i>
Schisandra, wu wei zi	<i>Schisandra chinensis</i>
Stevia, sweetleaf	<i>Stevia rebaudiana</i>
Stinging nettle	<i>Urtica dioica</i>
Valerian	<i>Valeriana officinalis</i>

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Olivia Newton-John Performs for ACEER Voices for the Rainforest Benefit a Huge Success!

On May 7, 2008, friends and supporters of the Amazon Center for Environmental Education and Research (ACEER) descended on the National Geographic Society in Washington, DC, for a benefit event that included a concert for almost 400 people by Olivia Newton-John. The evening began with a blessing by Amazonian Shaman Don Antonio Montero, who traveled all the way from Cahuide, Peru, for the event. Also in attendance was his good friend, noted ethnobotanist, James Duke, PhD.

Returning just a few days earlier from her walk on the Great Wall of China to support breast cancer research, the celebrated singer and actress delighted all in attendance with a deeply personal concert that highlighted the purpose of the evening—the need to care for ourselves, our planet, and in particular, the Amazon Rainforest. Newton-John's song choice included the title track from her *Grace and Gratitude* CD as well as "Instrument of Peace" from the same CD. She also sang "Gaia" for the first time in public, a song reflecting Olivia's own experiences with cancer.

The evening concluded with a reception, where a special rainforest tea was served, donated by John Easterling of the Amazon Herb Company. The evening was a huge success. Thanks to the generosity of many, ACEER raised over \$340,000, which included meeting a second challenge grant of \$100,000 from the Windhover Foundation.

ACEER is a 501(c)(3) nonprofit organization dedicated to increasing education and conservation for the Amazon rainforest. ACEER was founded in 1991 and carries on numerous educational programs and projects in the Peruvian Amazon area. ACEER programs include teacher training and environmental education for schools in Iquitos, Pucallpa, and Puerto Maldonado, Peru, as well as academic workshops in Peru through the University Outreach Program that focus on experiential learning and field-based academic experiences for universities and individual students in a variety of disciplines related to the neotropics.

One of ACEER's most long-standing educational projects includes its annual "Pharmacy from the Rainforest Ethnobotany Ecotour," which has been co-sponsored with the American Botanical Council since 1994. More about ACEER's programs is available at its Web site: www.aceer.org. HG

—Marguerite Gould



John Easterling, Peggy Duke, Olivia Newton-John, Antonio Montero, and Jim Duke at the ACEER benefit event in Washington, DC.
Photo courtesy of Mary Ann Robinson

Sara Katz Appointed President of United Plant Savers' Board

Sara Katz, co-founder and co-owner of the herb extract company Herb Pharm, was named president of United Plant Savers' (UpS) Board of Directors in June 2008.¹ UpS is a nonprofit organization based in Vermont that is devoted to conserving and restoring native medicinals of the United States and Canada.

"Sara is remarkably well suited for UpS presidency in all ways herbal, professional, and in her life-values," said UpS Executive Director Lynda LeMole (e-mail, July 28, 2008). "She has been close to the center of the herbal renaissance in the United States since the late 1970s and has been an active green environmentalist as well. Her role at Herb Pharm for the past 30 years, besides successful business work, has included education, industry relations, and networking with NGOs [non-governmental organizations, i.e., nonprofits] whose missions are connected to the health of the planet. These are the exact skills and experience needed to guide UpS in its mission to protect native medicinal plants. Staying close to nature as she does, she not only brings us her business acumen but also her holistic and humanistic leadership style."

Katz stated that she is honored to have been selected as UpS Board president. "I have been an active executive board member of UpS for over 10 years now," she said (e-mail, July 28, 2008). "Being asked to be president feels like a 'call to action' for me to take a more active role than ever in helping UpS to realize its mission and mature as an organization."

Before becoming the president of the UpS Board, Katz served as the organization's treasurer and secretary.¹ Herb Pharm's organic farm in Oregon is a designated UpS Botanical Sanctuary and has hosted several UpS "Planting the Future" educational conferences.

"For such a small organization, UpS has had a big voice and has garnered a tremendous amount of clout from the herbal community," said Katz. "We are supported by and offer support for herbal enthusiasts at all levels, from consumers to wildcrafters to practitioners to herb companies. Our planet has seen many 'useful' plants and animals brought nearly to extinction by over-harvesting and environmental impact. United Plant Savers is the organization that is on the front lines for bringing attention to the vulnerable status of many of our most long-treasured native medicinal plants."

Katz added that UpS has established a very strong foundation under the directorship of LeMole. "What is in front of UpS in the near future is to fully launch our 'At Risk Herb Assessment Tool' in order to strengthen the substance and validity of the 'At Risk List;' to heartily expand participation in our Botanical Sanctuary Network; to grow our grassroots membership; and to attract a sustainable funding model."

For the past 14 years, noted herbalist and author Rosemary Gladstar has served as the founding president of UpS. According to LeMole, Gladstar will retain her role as founding president, working alongside Katz rather than retiring from her position on the UpS Board. "I am so pleased that Rosemary and the UpS Board made the decision that there is 'room at the top'

of our organization so that there need not be retirement of long-serving officers. Rather than step down in leadership, Rosemary stepped up into a visionary guidance role, creating a place for Sara as the active president. It is important for organizations to change leadership, but it is also important not to lose leadership. How wonderful to create an organizational model that shares the many ways leadership can serve!"

LeMole noted that Gladstar's passionate work and leadership have been instrumental in drawing attention to UpS' mission of preserving, conserving, and restoring native medicinal plants. "Her deep-rooted passion for the plants, her intuitive and native knowledge of plants and nature, and foremost, her loving heart and generous nature have been an inspiration and guiding light for many, many plant-loving people," said LeMole. "Rosemary will always be in leadership with UpS, as it is part of her life's work." HG

—Courtney Cavaliere

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1. Herb Pharm co-owner Sara Katz named president of United Plant Savers [press release]. Williams, OR: *Natural Newswire*; June 16, 2008.



Sara Katz

Society for Economic Botany Celebrates 50th Year

In 1959, staff members of The New York Botanical Garden (NYBG) and other plant utilization enthusiasts established the Society for Economic Botany (SEB), an organization dedicated to fostering and promoting scientific research and education into the uses of plants and the nature of plant-people relationships.¹ Now in its 50th year, the Society has evolved into a stronger and more stable organization, while maintaining its original mission.

"It's a wonderful time to be involved in the Society," said James Miller, PhD, dean and vice president for science at NYBG and current president of SEB (oral communication, August 5, 2008). Dr. Miller explained that SEB has recently undergone several important transitions and developments that have enhanced the continuity and professional image of the organization. "We've also been planning a spectacular 50th year meeting," he added. That annual meeting will be held in Charleston, South Carolina from May 31 to June 4, 2009.

SEB has over 1000 international members and serves as a leading society for individuals concerned with botanical, phytochemical, and ethnological studies of plants with known or potential uses.¹ Although there are several professional societies that focus on one aspect of plants that are beneficial to humans, SEB is the only professional society that encompasses the entire spectrum

of human-plant interactions. SEB's annual meetings are a highlight for the organization's members, with researchers presenting a broad array of results from their latest work through both paper and poster presentations and symposia on topics of current interest.

The organization also honors important contributors to the field of economic botany research and teaching. The society's most prestigious honor is the Distinguished Economic Botanist Award, bestowed annually to researchers who have made significant contributions to the field of economic botany. Among the recipients are Brent and Elois Ann Berlin (2008), Ghilleen Prance (2002), James Duke (2000), Varro E. Tyler (1995), Norman R. Farnsworth (1983), and R. E. Schultes (1979). Further, SEB publishes, in collaboration with NYBG, the quarterly journal *Economic Botany*, containing original research, historical studies, and other content relevant to the field. Twice a year, the Society



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According to Charles Heiser Jr., PhD, distinguished professor emeritus in the department of botany at Indiana University, SEB is particularly important as an organization because of its educational activities (e-mail, August 6, 2008). “It serves a lot of people—mostly botanists, many anthropologists, archaeologists, people in industry—a very diverse audience,” he said. “I think we have a very readable journal. I usually read half the articles and the book reviews on the day the journal arrives.” Dr. Heiser has been a member of SEB since its founding.

SEB further promotes education by gearing many of its activities and meetings toward students, and some SEB Awards are designed to honor the achievements of students. Dr. Miller noted that SEB also serves as a forum for scientists with shared interests to discuss not only the latest research but also the ethics that govern their professional field.

“The SEB has played a strong and leading role in development of ethical codes of behavior for research in our area of study,” said Will McClatchey, PhD, professor of botany at the University of Hawaii and past president of SEB (e-mail, August 2, 2008). “SEB was the first of the ethnobiological societies to develop a code of ethics, with Dr. Brian Boom leading the committee. Since then that code has served to stimulate much stronger developments in our sister societies that have culminated in the recently adopted code of ethics of the International Society of Ethnobiology. This code is used by SEB members and includes contributions from SEB members as part of the large international consensus that developed it.”

The founding of SEB was actually preceded by the launch of the journal *Economic Botany*, which was initiated in 1947 by Edmund H. Fulling at NYBG. The authors and supporters of this journal helped to form SEB.

In recent years, both *Economic Botany* and SEB have undergone some structural improvements. *Economic Botany* has experienced a redesign and is produced through a new publisher, in addition to other modifications. SEB, meanwhile, recently established its first permanent business office, located in St. Louis at the Missouri Botanical Garden. Dr. Miller explained that SEB has historically been run by elected volunteers and without a base of operations. The Society set up a temporary business office in Hawaii in 2005 before moving into its St. Louis office in 2007. According to Dr. Miller, SEB’s new office and staff have given the organization greater service abilities and continuity of representation.

In addition to these new developments, SEB has witnessed some changes in membership and focus throughout its 50-year history. “In the past SEB was a big ‘history of agriculture’ society, and it had a lot of [US Department of Agriculture] members,” said Dr. McClatchey. “The USDA has moved their research in other directions and there are not very many of their numbers among us now. Probably half of the SEB members call themselves ethnobotanists of some kind or another and most of those are doing research in areas of conservation biology, ecology, resource management, social networks, etc. The other half is quite eclectic with many kinds of anthropologists, geographers, historians, agricultural scientists, botanists, and others interested in the intersection of people and plants. You never quite know who you will meet at one of our meetings but are guaranteed an interesting conversation that will stimulate your thinking.”

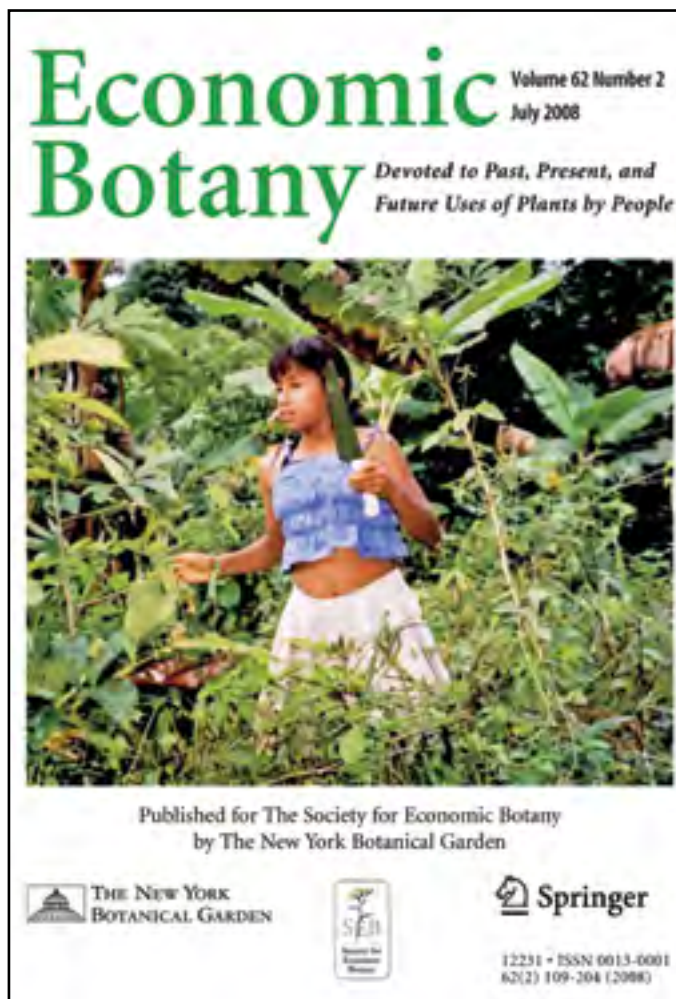
Dr. McClatchey continued that most meeting presentations and journal articles now typically cover traditional healthcare, usually medicinal plants. He stressed that the emphasis is typically not on deriving natural products from these plants but on better understanding the roles they play within the lives of people who use plant medicine. He added that many SEB members are particularly sensitive to issues of biopiracy and bioprospecting.

“The emphasis on how people interact with plants in the past, present and future (looking across the spectrum of time) has not changed since the origin of the organization,” said Dr. McClatchey.

“What the researchers are doing, who the researchers are, where researchers are from (a growing segment of the Society is from outside of North America), the methods being used, the sophistication of tools, etc, has changed a lot.”

The SEB’s upcoming 50th annual meeting will include a symposium on African ethnobotany in the Americas, and the meeting will coincide with Charleston’s Spoleto Festival. More information about the meeting and about SEB is available at the organization’s Web site: www.econbot.org. HG

—Courtney Cavaliere



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July 2008 cover of *Economic Botany*. Image ©2008 Society for Economic Botany

New Film Examines the Meaning of Tea

The Meaning of Tea, directed by Scott Chamberlin Hoyt, is a 74-minute documentary film that investigates the different beliefs, practices, and cultural traditions surrounding tea (*Camellia sinensis*, Theaceae) in 8 countries: India, Japan, Taiwan, England, France, Morocco, Ireland, and the United States.¹ Produced by Tea Dragon Films, the film uses a mix of interviews, music, and stunning visual elements to explore tea on many levels. From tea rituals in various cultures where tea is cherished, to those who mold the very instruments used to carry tea, the film asks a variety of characters around the world about their relationship to tea as a beverage, a means of relaxation, and—in many cases—a way of life.

The film begins its journey in India at various tea farms. Ambootia Tea Estate, Namring Tea Estate, Singell Tea Estate, and Soureni Tea Estate are just a few of the tea farms visited for glimpses of the various stages of tea production. In this segment, tea is revealed to be “a way of life in India.” Shiv Saria, the managing director of Gopaldhara Tea Estate, is pictured standing waist-deep in a field of tea as he explains, “I dream tea. I eat tea. I sleep tea. I meditate on tea.”

Another interesting aspect of tea production portrayed in India is tea tasting. Tea tasters can sample an average of 1,500-2,000 cups of tea per week. Tea Expert Mridul Tiwari explains that she must rely upon her senses when assessing each tea, since it is the human senses that will eventually enjoy the tea: “There is no machine to evaluate a cup of tea,” explains Tiwari.

But what is the meaning of tea? As we travel from country to country, we learn that tea has different meanings for different people. London Cabaret Artist Earl Okin jokes that tea is a “safe” drink, describing it as “namby-pamby” and “sort of nothing-y.” He muses, “It’s like drinking warm tepid water with something in it that you can’t quite identify.”

For others, however, drinking tea represents an extremely profound experience. In Japan, green tea is incorporated into elaborate ceremonies that serve to create a time and space in which to enjoy the company of others. Tea

Sensei Yuriko Arai summarizes the mindset of tea with the phrase *Ichigo Inchie*, which means “In this lifetime perhaps you and I will meet only once.” Similarly, Tea Sensei Hayashizaki Noriko says that drinking tea is a way to escape her busy life and relax, describing her experience as “a meditation for my emotions.”

Many people even link tea drinking to spiritual enlightenment. One particularly engaging character, Lu-Feng Lu, director of Wu-Ling Tea Farm in Taiwan, explains the deep relationship he shares with tea. “When I drink a good tea, I use my heart to smell the aroma. When I inhale, it goes right into my soul.” It seems that people from many different cultures share the opinion that drinking a cup of tea can allow a person the time to let their mind settle and to think clearly about the next step in their life’s journey. In essence, it can become a practice that can help to connect people with their spiritual path.

A major theme that *The Meaning of Tea* brings up is whether there is room for tea in a world that is becoming more and more fast-paced as it becomes more technologically advanced. Inoue Rokuhei of Irokuen KK expresses



Meaning of Tea DVD cover. Image ©2008 Scott Chamberlin Hoyt



Scott Chamberlin Hoyt

“When I drink a good tea, I use my heart to smell the aroma. When I inhale, it goes right into my soul.”

concern that Japanese culture is evolving in such a way that it no longer requires tea, lamenting, "We've ceased to enjoy the spirit of tea." President of Irokuen KK concurs, "We in the tea industry didn't do enough to prevent the replacement of the tea ceremony with the coffee culture from the west."

The Meaning of Tea has achieved a great deal of initial success, premiering at film festivals all over the world. But perhaps one of its greatest achievements was at the Wisconsin Film Festival in April of this year, where the film sold out within just a few days of being posted on the festival's Web site. In an unprecedented act, festival organizers set up a last-minute viewing to accommodate the considerable audience demand.² The second screening was only a few tickets short of a sell-out.

The film also received an enthusiastic reception at The World Tea Expo in Las Vegas in May 2008, screening to a sold-out theater of over 300 people. "When I was first told that I was to attend the screening for *The Meaning of Tea*, at the World Tea Expo in Las Vegas, I have to admit I was a bit skeptical about an entire film dedicated to 'tea' as the primary focus of a film," said Jeremy Pigg, marketing director at the American Botanical Council (ABC). "But not only did I thoroughly enjoy the film and it's beautiful cinematography, but at times I found myself moved by the importance of tea in the lives of people in different

**"I dream tea. I eat tea.
I sleep tea. I meditate
on tea."**

cultures around the world. It's obvious that Mr. Hoyt shares a deep passion for tea with his subjects and it comes across on the screen with grace, poignancy, and humor."

The Meaning of Tea screened in Houston, Texas, at the Bayou City Inspirational Film Festival on August 7-9, 2008. The film will have its New York

City premiere at the Asia Society in the spring of 2009. The film is available now on DVD, along with *The Music of Tea*, a CD soundtrack containing original music from the film. Both can be purchased through the Web site at www.themeaningoftea.com. A companion book to the film by Scott Chamberlin Hoyt and Phil Cousineau will be available in March 2009. For more information, please visit www.themeaningoftea.com and www.teadragonfilms.com. HG

—Kelly E. Saxton

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New Sanctuary Established in Colombian Amazon to Protect Medicinal Plants

By Courtney Cavaliere

The Colombian government established a protected area of the Amazon rainforest in June 2008 for the primary purpose of preserving medicinal plants.^{1,2} This new protected area, the Orito Ingi-Ande Medicinal Flora Sanctuary, was created largely at the request of local indigenous communities, who utilize the area's medicinal plants for their cultural and healing traditions.

The 10,626-hectare sanctuary (1 hectare = 2.5 acres) is located in the municipality of Orito, in the department (or state) of Putumayo. The term "Ingi-Ande" in the sanctuary's name means "our territory" in the language of Colombia's indigenous Kofan people, and this reflects the participation of the Kofan people in creating the sanctuary and acknowledges that Kofan ancestral land comprises part of the sanctuary.

The indigenous communities and traditional healers of the Putumayo region first proposed the creation of the sanctuary in December of 2003.¹ According to ethnobotanist Mark Plotkin, PhD, president of the Amazon Conservation Team (ACT), the indigenous communities expressed concerns about peasants moving into the area and of deforestation of their sacred lands (oral communication, July 1, 2008). They insisted that the area was a key ancestral site in need of protection.

The process of designing and declaring the sanctuary became a collaborative effort of the Ministry of the Environment, Housing and Territorial Development of Colombia, the Special Administrative Unit of the Colombian National Park System, ACT, Rosario University, and the Union of Traditional Yagé Healers of the Colombian Amazon.¹

"The site will be used by the Kofan and those members of the Union of Yagé Healers of the Colombian Amazon as a place where apprentices, both men and women, will be able to go and learn about the plants, collect seeds to grow them in their medicinal

plant gardens, and simply be a sacred place for them to conduct ceremonies and continue the transmission of knowledge," said Liliana Madrigal, ACT's vice president of programs (e-mail, July 3, 2008).

According to Dr. Plotkin, the new Orito Ingi-Ande Medicinal Flora Sanctuary is distinguished from other protected sites in that it involves conservation of both the rainforest and the culture of local indigenous people—an approach known as "biocultural conservation." Dr. Plotkin explained that the idea of protecting a peoples' sacred space can stir human emotions in a way that protecting biodiversity alone is sometimes incapable of doing. "We're hoping that this biocultural aspect provides an added incentive for protection," said Dr. Plotkin.

Madrigal added that there have been other efforts to protect lands for the preservation of medicinal plants, but this particular site is unique in that it features co-management of the land by indigenous peoples and that the medicinal plants are acknowledged for their spiritual significance and properties beyond material value. "For the first time, certainly in Latin American protected sites, an area is created by and for indigenous people and with the explicit acknowledgement of the importance of the 'non-material' or invisible aspects of plants for indigenous people," she said.

"This is a most profound advance in the protected areas movement," said Kenton Miller, senior advisor for the International

Union of Conservation of Nature's (IUCN) World Commission on Protected Areas (e-mail to L. Madrigal, June 14, 2008). "Clearly, it is only through the direct leadership of indigenous medicinal workers that such sites can be identified and defined for protection. And given Colombia's long track record of creative approaches to protecting nature, we can be assured that these unique resources will be conserved. Critical in this Colombian approach, of course, is the central role of the



Map showing the different municipalities in Colombia. The new 10,626-hectare sanctuary located in the Orito municipality is outlined in black. Image ©2008 ACT



Yoco plant (*Paullinia yoco*). Photo ©2008 ACT

resident indigenous communities. Once again, Colombia demonstrates its innovatory capacity to conserve nature and culture.”

Of the many medicinal plants available within the sanctuary and used by the area’s traditional healers, the yoco (*Paullinia yoco*, Sapindaceae) plant has been identified as one of the region’s most highly regarded medicinal plants. It is being considered a keystone conservation species of the area (meaning that it will serve as a symbol of the area’s biodiversity, and efforts to protect that particular plant should ensure the preservation of the surrounding ecosystem as well).¹

“Yoco is a sister plant to yagé, which they use primarily for *fuerza* or strength,” said Madrigal. “This, of course, can be interpreted as strength given with the purging/cleansing it produces, the energy it gives, the clarity, and it also guards against disease.”

According to Dr. Plotkin, the yoco was first introduced into Western medicinal knowledge by famous ethnobotanist Richard Schultes. Dr. Plotkin noted that yoco is second in importance in the region only to yagé (*Banisteriopsis caapi*, Malpighiaceae; aka *ayahuasca* in Peru and other areas of Amazonia), a plant with hallucinogenic properties that has been used in spiritual ceremonies.

Madrigal attended the inauguration of the sanctuary on June 12, 2008, which she described as a beautiful event featuring a ceremony performed by shamans and leaders of the Kofan. “They are very proud because they know that their wisdom is providing indigenous people around the world with another important reference for the protection of their territories,” she said. “It was a lovely celebration with a lot of wonderful speeches and happiness. Now it is time to get to work on the management plan, which is really critical to ensure that the precedent and challenge it represents is viable.” HG

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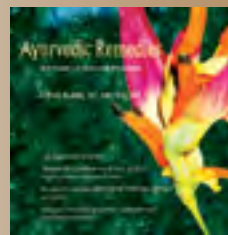
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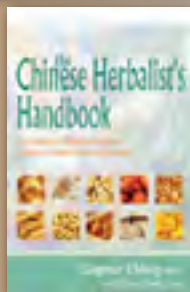


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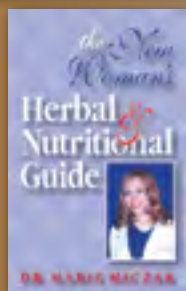
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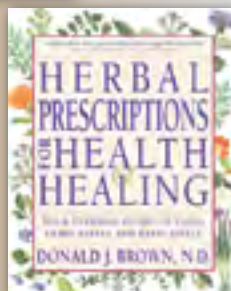
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Small Pilot Study Finds Rhodiola Extract May Be Beneficial for General Anxiety Disorder

Reviewed: Bystritsky A, Kerwin L, Feusner JD. A pilot study of *Rhodiola rosea* (Rhodax®) for generalized anxiety disorder (GAD). *J Altern Complement Med.* 2008; 14(2):175-180.

Rhodiola (*Rhodiola rosea*, Crassulaceae) is a plant that is traditionally consumed as a tea. Rhodiola root is considered an adaptogen—an herb that purportedly conveys resistance to multiple kinds of stressors as well as enhances adaptation to stress.¹ More than 100 scientific and clinical articles on rhodiola root preparations have been published and many report improvements in stress, fatigue, and irritability. Considering that these symptoms are often associated with generalized anxiety disorder (GAD), the authors conducted a preliminary study to assess the effect of rhodiola on GAD.

Ten outpatients (mean age: 44 years) living in Los Angeles, with a current diagnosis of GAD (≥ 16 on the Hamilton Anxiety Rating Scale [HARS] and < 17 on the 21-item Hamilton Depression Rating Scale [HDRS]), participated in this 10-week open-label study. Patients on stable pharmaceutical medication with residual GAD symptoms could continue on the medication. Patients took 170 mg standardized rhodiola root extract as a tablet (Rhodax®, Phoenix Laboratories, Bodyonics Ltd., Farmingdale, NY*) twice daily for 10 weeks. Psychological assessments included the HARS, HDRS, Clinical Global Impressions of Improvement (CGI-I), and Four Dimensional Anxiety and Depression Scale (FDADS).

Compared with baseline, at 10 weeks there was a significant decrease in HARS ($P = 0.001$), HDRS ($P = 0.001$), and FDADS anxiety subscale scores ($P = 0.043$). At endpoint, 50% (5/10) of the patients had at least a 50% decrease on the HARS and were considered to be responders to treatment. Four of 10 subjects (40%) met the criteria for having reached remission. Two patients were considered to have “minimally improved” according to the CGI-I. Adverse events (AEs) were mild to moderate. The most common were dry mouth (4/10) and dizziness (2/10). No patient discontinued participation due to AEs.

This is the first report that rhodiola exerts anxiolytic effects. The authors compared rhodiola’s effect size with the effect size reported in placebo-controlled studies on conventional pharmaceutical drugs to get a crude estimate of whether rhodiola’s effects were due to a placebo effect. They concluded that the anxiolytic effect could not be assured on the basis of data from this study.

The primary value of this study is that it may suggest a new potential area for further research and potential clinical use for rhodiola preparations. However, no clinical recommendations can be made on the basis of this small, uncontrolled pilot trial as it is severely limited by numerous factors: the small sample size, the open-label (unblinded) design, and the fixed dosing schedule. The fixed dosing schedule is a potential drawback because pharmaceu-

tics to treat anxiety are normally dosed in practice and in clinical trials as a daily dose that is adjusted upward or downward by each physician or site investigator based on what dose is deemed clinically indicated. Thus, it is possible that in this trial that more patients might have experienced an improvement if the dose had been adjusted to meet specific conditions. In sum, this rhodiola preparation should be tested for a potential anti-GAD effect in a randomized, placebo-controlled, double-blind study with more patients to provide sufficient statistical power. HG

—Heather S. Oliff, PhD

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*Rhodax rhodiola root extract is standardized to contain 30 mg of “all 8 essential biomers”: rosavin, rosarin, salidroside, rosin, rhodalin, acetylrothalgin, rosarinidin and rosarinidol, according to the www.rhodax.net Web site [accessed Aug. 23, 2008].

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Bilberry (Mirtoselect®) and French Maritime Pine Extract (Pycnogenol®) Combination May Have Beneficial Effects in Glaucoma Prevention

Reviewed: Steigerwalt RD, Gianni B, Paolo M, et al. Effects of Mirtogenol® on ocular blood flow and intraocular hypertension in asymptomatic subjects. *Molecular Vision*. 2008; 14:1288-1292.

The etiology of glaucoma is not fully understood; however, an elevated intraocular pressure (IOP) is known to increase the risk for developing this disorder. IOP is regulated by secretion and drainage of aqueous humor in the eye. Vascular function may also play a role. Primary open-angle glaucoma is one of the most common forms of glaucoma and can cause blindness if left untreated. Nutritional intervention can significantly reduce the risk for developing other eye diseases (cataract, diabetic retinopathy, and age-related macular degeneration). An effective dietary prevention for reducing the risk of primary open-angle glaucoma has not been identified. A standardized extract of bilberry (*Vaccinium myrtillus*, Ericaceae; Mirtoselect®, Indena, Milan, Italy), a type of European blueberry, has been shown to counteract the hyperpermeability of eye capillaries, which could decrease the fluid released into the eye. A patented, standardized extract of French maritime pine bark (*Pinus pinaster*, Pinaceae; Pycnogenol®, Horphag Research, London, UK) can increase endothelial nitric oxide production and relax ocular arteries, which helps regulate fluid outflow into the eye. The purpose of this study was to evaluate a proprietary compound that combines both bilberry and French maritime pine bark in patients with elevated IOP without glaucoma.

Patients (n = 38, mean age 45 years) with an elevated IOP (22-26 mmHg), but no signs of glaucoma and who were not treated for elevated IOP, participated in this controlled unblinded study. The study was conducted at the University of Chieti-Pescara in San Valentino, Italy. Patients with cardiovascular diseases that require medical intervention were excluded. Twenty patients were treated with 1 tablet of Mirtogenol (a trademark of Indena S.p.A and Horphag Research Ltd) twice daily for 6 months. Mirtogenol tablets contain 40 mg of Pycnogenol and 80 mg of Mirtoselect. The control group (n = 18) was untreated. IOP and ocular blood flow were measured.

At the beginning of the trial, baseline IOP was comparable between the groups. The IOP after 3 months of treatment with Mirtogenol was 22.0 ± 2.6 mmHg, which was statistically significantly less than baseline and the control group (24.5 ± 2.3 mmHg, $p < 0.05$). The values were maintained at the 6-month visit. Nineteen out of 20 patients in the Mirtogenol group had a reduced IOP whereas only 1 of the 18 patients in the control group had a lowered IOP at the 6-month visit. None of the patients in either group had an increased IOP. Visual acuity was unchanged. Systolic and diastolic blood flow significantly improved from baseline in the ocular arteries of patients treated with Mirtogenol ($p < 0.05$). There was no change in the blood flow of patients in the control group. No adverse side effects were reported.

The authors state that the improvement in ocular blood flow suggests that fluid release from ocular arteries into the eye is normalized to yield a healthier IOP. The study did not further investigate whether Mirtogenol affects outflow pathways or aqueous humor inflow or both. The study demonstrated that dietary intervention can help to control IOP and increase ocular blood flow in asymptomatic subjects. The authors speculate that if taken for a longer duration, Mirtogenol may prevent an evolution to higher pressure and symptomatic glaucoma. These preliminary findings are noteworthy. A clinical trial with a larger number of subjects is necessary to confirm the findings and an even longer trial would be of value, particularly since the long-term safety of both ingredients has been established. It would also be interesting to follow the patients after treatment has ended to determine if their IOP returned to baseline values. A return to baseline IOP would provide strong evidence of a Mirtogenol-induced benefit. HG

—Heather S. Oliff, PhD



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Cranberry Effective in Treating UTIs during Pregnancy and Lactation

Reviewed: Dugoua JJ, Seely D, Perri D, Mills E, Koren G. Safety and efficacy of cranberry (*Vaccinium macrocarpon*) during pregnancy and lactation. *Can J Clin Pharmacol*. 2008;15(1):e80-e86. Epub Jan 18, 2008.

Cranberry (*Vaccinium macrocarpon*, Ericaceae) is used for the treatment and prevention of urinary tract infections (UTIs), reflecting a traditional medicinal use by Native Americans. Proanthocyanidins (condensed tannins) in cranberry fruit prevent UTIs by preventing *Escherichia coli* from adhering to the wall of the urethra; the condensed tannins have been shown to be responsible for preventing uropathogenic phenotypes of P-fimbriated (mannose-resistant) *E. coli* from adhering to the urinary tract.¹ Fructose in cranberry also has antibacterial effects. Pregnant women frequently use cranberry to prevent UTIs, which are more common among pregnant women. This review examines the safety and efficacy of cranberry in the prevention of UTIs among pregnant and lactating women.

The following databases were searched for literature on the safety, efficacy, and pharmacology of cranberry in pregnant and lactating women (inception to June 2006): AMED, CINAHL, Cochrane CENTRAL, Cochrane Library, Medline, Natural Medicines Comprehensive Database, and Natural Standard. The authors also searched the *Complete German Commission E Monographs*; no cranberry monograph was produced by the Commission E.²

The authors of this review have given cranberry fruit an evidence grade of “A” for prevention of UTIs, indicating “Very Strong Evidence.” Prevention of stomach ulcers, periodontal disease, and flu were given an evidence grade of “E” indicating “Indirect Evidence” from expert opinion or laboratory studies. For use and safety during pregnancy, cranberry fruit was labeled “3a” for “Weak Scientific Evidence” from one or more case series for common use and “5” for “Theoretical Evidence” based on theory or opinion for minimal risk when taken as food. For use during lactation, cranberry fruit was given a rating of “6” or unknown for “no available information” on potential for harm.

A survey of 400 Norwegian women has found that cranberry was the most commonly used herb during pregnancy.³ According to the authors, currently no published clinical studies have shown that cranberry is either safe or contraindicated during pregnancy and lactation. Cranberry does have a track record of safety as a food item. However, this does not mean “that the fruit (processed or not) is entirely safe in all populations or at high levels of consumption.” Consumption of cranberry tablets has been shown to increase urinary oxalates in healthy volunteers⁴ and consumption of up to 4 liters per day of cranberry juice may increase the risk of kidney stone formation (nephrolithiasis) in at-risk patients. It has also been demonstrated that infants and children who take over 3 liters per day of cranberry juice can develop gastrointestinal distress. It should be noted that 3 to 4 liters per day is an unusually large quantity of cranberry juice to consume.

Although cranberry has been shown to prevent UTIs through inhibiting

bacterial adherence to the urinary tract, research has shown that it does not dislodge bacteria that have already adhered and started to colonize. Researchers have shown that cranberry juice has antibacterial effects against *Escherichia coli*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, and *Proteus mirabilis*. Cranberry has also been shown to inhibit the adherence of *Helicobacter pylori* to the stomach and to inhibit the adherence of plaque bacteria that cause periodontal disease. Other biological activities that have been attributed to cranberry include antiviral, antioxidant, and anticarcinogenic activities. There have been reports of interactions with warfarin, but a clinical trial has shown no alteration of the CYP2C9 enzyme that metabolizes the drug. An in vitro laboratory study has found that cranberry juice may inhibit CYP3A4, an enzyme that metabolizes the drug cyclosporine. However, a subsequent human clinical trial designed to test this possibility has found no interaction between cranberry juice and cyclosporine.

The authors of this review conclude that cranberry is effective in preventing UTIs in pregnant and breastfeeding women, except for those at risk of developing kidney stones. There is no direct clinical trial evidence of safety or harm in pregnant and lactating women, but a survey of 400 pregnant women has found no adverse effects with regular consumption.³ More research is needed on the anti-infective effects of cranberry “including improved oral hygiene, stomach ulceration, and the prevention of influenza.” HG

—Marissa Oppel, MS

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Tea Consumption May Be Associated with Lowering Cognitive Impairment Risk

Reviewed: Ng TP, Feng L, Niti M, Kua EH, Yap KB. Tea consumption and cognitive impairment and decline in older Chinese adults. *Am J Clin Nutr*. July 2008;88(1):224-231.

Tea (*Camellia sinensis*, Theaceae) is associated with many beneficial effects, including cardioprotective, anti-cancer, and neuroprotective properties. In this study the authors have analyzed data on the consumption of various types of tea and cognitive decline and impairment in older Chinese adults. Cognitive impairment is an early warning sign of dementia, including Alzheimer's disease. The three main types of tea are black tea (from Chinese grown tea or from British tea cultivated in India, Sri Lanka, and Africa; full fermented/oxidized), oolong tea (partially fermented), and green tea (non-fermented) which is picked and quickly heated by steaming or pan frying. Black tea accounts for roughly 72% of the world's total tea production.

The researchers analyzed cross-sectional and longitudinal data concerning a cohort of Chinese adults over the age of 55 participating in the Singapore Longitudinal Aging Studies (SLAS). The subjects completed a Chinese language version of the Mini-Mental State Examination (MMSE) at baseline and 1-2 years later (median: 16 months). Information on the subjects' consumption of Ceylon or English black tea (consumed with milk), Chinese black or oolong tea (consumed without milk), and green tea, and data on diet, health status, and other risk factors were gathered. The frequency of tea consumption was coded on a scale of 0-6, from "never to rarely" to "10 cups or more per day." Coffee (*Coffea* spp., Rubiaceae) intake and cognitive decline was also analyzed for comparison.

There were 2,501 subjects in the baseline survey, and 1,438 subjects without cognitive impairment at baseline participated in the follow-up survey. The majority of the participants drank oolong or black tea, while fewer participants drank green tea. In the univariate analysis, there was a significantly lower incidence of cognitive impairment in high-frequency drinkers of all types of tea ($P < 0.001$). In the multivariate cross-sectional analysis, a higher level of tea consumption was linked to a lower risk of cognitive impairment in 4 hierarchical logistic regression models that adjusted for confounding factors including age, body mass index, and physical activities. The full model showed a significant ($P < 0.001$) trend of lower adjusted odds ratio (OR) of association (0.56, 0.45 and 0.37 for low, medium, and high levels of tea intake, respectively).

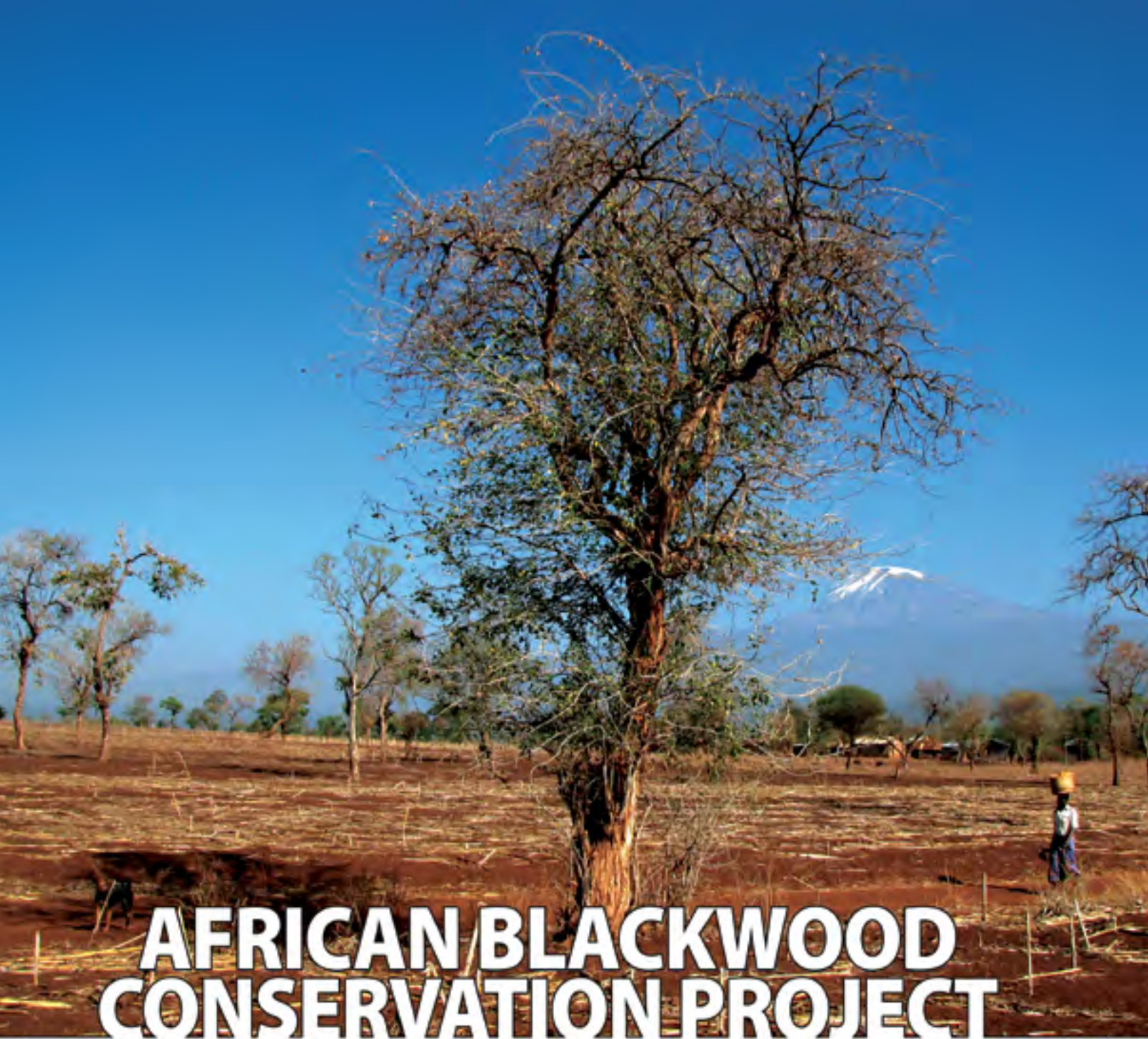
Consumption of black tea or oolong tea only was associated with significantly lower OR of cognitive impairment in the cross-sectional analysis (OR: 0.55, $P < 0.001$) and cognitive decline in the longitudinal analysis (OR: 0.69, $P < 0.02$). There were very few green tea drinkers; nevertheless green tea consumption was significantly associated with a lower risk of cognitive impairment (OR: 0.42, $P = 0.001$), but not cognitive decline, when compared to non-tea drinkers. Daily consumption of black or oolong tea was linked to lower risk of cognitive impairment (OR: 0.46, $P < 0.001$) and decline (OR: 0.68, $P = 0.017$) compared to non-tea drinkers. There were no associations between coffee intake and cognitive impairment or decline.

The authors conclude that regularly drinking tea is associated with a lower risk of cognitive impairment and decline. Effects of green tea could not be determined due to the small number of green tea drinkers in this survey. There are many chemical constituents in both green and black tea that could contribute to this effect, and "it is possible that the cognitive-protective effect of tea is not due to a single compound but rather to the synergistic effects of several or many of its chemical components." The researchers comment that, because there was no association between coffee intake and cognitive impairment or decline in this study, it is less likely that caffeine contributes to the cognitive-protective effects. They also state that more research is needed to determine if there is a link between tea consumption and a lower risk of vascular dementia and/or Alzheimer's disease. HG

—Marissa Oppel, MS



Tea *Camellia sinensis*.
Photo ©2008 Steven Foster



AFRICAN BLACKWOOD CONSERVATION PROJECT

Conserves Trees Used to Make Musical Instruments

By Kelly E. Saxton

The African Blackwood Conservation Project (ABCP) is an organization focused on the re-planting of African blackwood (*Dalbergia melanoxylon*, Fabaceae), or *mpingo* as it is locally known in Tanzania in the Kiswahili language.¹ The organization was co-founded in 1996 by James Harris, a Texas woodworker, and Sebastian Chuwa, a botanist from Tanzania.² The wood of these trees is regularly used to create woodwind instruments such as clarinets, oboes, flutes, and bagpipes.³ Though the tree is currently included on the International Union for Conservation of Nature's (IUCN) *Red List of Endangered Species* as “lower risk/near threatened,”⁴ blackwood is in danger of being over-harvested, which could lead to its eventual economic extinction.



Above photo: Wild Mpingo tree on farmlands in the plains below Mt. Kilimanjaro.
Photo ©2008 African Blackwood Conservation Project

ABCP's concerns regarding the future of African blackwood stem from previous experience. Around the year 1900, another tree used to make woodwind instruments became "economically extinct," or no longer accessible in the quantity or quality to fulfill commercial demand. Cocoswood (*Brya ebenus*, Fabaceae) used to be the "wood of choice"³ for woodwinds, and though it still grows in the Caribbean islands, it is rare and no longer a useable source for instruments, according to Harris, who serves as ABCP director (e-mail April 4, 2008).

Mpingo is a highly dense wood and oily in nature. These properties make it ideal for instruments that are subject to moisture generated by human breath, according to Harris. Also, "the best players seem to prefer an all natural-wood instrument. The 'feel' and warmth of wood in the hands of the player is an important component of the music produced and cannot be scientifically quantified," said Harris. However, while harvesting the mpingo, there tends to be a 90% loss of wood during milling. Instruments require a perfect piece of wood, and mpingo has numerous small defects that can cause problems in the manufacturing process. The ingrown bark, knots, and natural voids in the wood may cause problems during the stress of milling, according to Harris. Some woodworkers like Harris will purchase the piles of rejected mpingo wood, but there is still a large amount of wood that goes to waste. Harris practices ornamental turning, a kind of woodworking for creating products such as boxes, perfume bottles, etc. He uses excess blackwood for an ornamental effect, since it takes a brilliant polish

and produces a brilliant surface. Examples of his use of mpingo can be found at www.ornamental-turner.com.

Overall Harris uses very little wood for his company, but through ABCP he has helped fund the replanting of over 200,000 mpingo trees since 1996. The organization also celebrated a milestone in 2004 when it reached 1 million trees replanted, including several species besides mpingo.²

Some musical instrument makers have experimented with other African woods to see how they would fare as replacements for mpingo. According to Harris, mopane or mopani (*Colophospermum mopane*, Fabaceae) is almost as dense as mpingo, though it lacks mpingo's special oiliness.

"The results seem adequate," said Harris, "but as far as we know, mopane trees do not exist in overly large numbers. And if they were to replace mpingo, they would likely have a limited duration of commercial utility. Mopane, or any hardwood species that are slow-growing and take generations to mature, will begin to decrease in availability if used commercially without sustainable harvesting methods or replanting programs for its continuation." In addition, a mopane instrument would have a different intonation than an mpingo instrument to a musician's trained ear and might not be as well received.

Below photo: Members of the Kilimanjaro Environmental Education Group prepare to receive new tree seedlings in their nursery, which is near Sungu Village on Mt. Kilimanjaro.
Photo ©2008 African Blackwood Conservation Project





Fonga Women's Group member and members' children planting Mpingo tree grown in the ABCP Moshi Mpingo Plot Nursery.
Photo ©2008 African Blackwood Conservation Project

"Were it not so, all woodwinds could be made of plastic, as it is a durable material and much less expensive than wood as the raw material for woodwind instruments," said Harris. "But only beginner's instruments are so made."

An oboe player named Brenda Schuman-Post of San Francisco, California, has also taken great interest in mpingo. She performs a 2-hour slide-show presentation called "Mpingo's Fruit" at college campuses and music players' conventions around the United States to spread the word about the importance of this tree. More information is available on her Web site: www.oboesoftheworld.com/perf3mpingo.htm.

Sebastian Chuwa, ABCP co-founder, leads the conservation efforts for mpingo in Africa. A conservationist in Tanzania for over 30 years, Chuwa was a consultant and interviewee for the 1992 PBS documentary "Tree of Music" highlighting the loss of this resource, which was possibly the first time this issue received international attention and how Harris learned of the issue.² In 1996 Harris contacted Chuwa about a joint effort to conserve mpingo (i.e., ABCP). He would

Mpingo is a highly dense wood and oily in nature. These properties make it ideal for instruments that are subject to moisture generated by human breath.

spread the word to musicians, woodworkers, and other conservationists with the help of his wife Bette Stockbauer-Harris, who is also a wood-working artist. Chuwa would organize people in his community, as well as educate chil-

dren, grade-school age and older, about this resource. Chuwa is currently a professional safari guide, and he organizes field trips for students to learn about the need for conservation efforts. Chuwa works in congruence with his wife, Elizabeth Chuwa, a teacher of pre-school through middle-school-aged children in the Village of Sungu, to educate the young about conservation issues. Sebastian Chuwa has also created over 100 youth clubs to foster environmental awareness and work to conserve various Tanzania resources. A recipient of the 2007 J. Sterling Morton Award from the National Arbor Day Foundation, Chuwa has steered ABCP in planting almost 2 million trees (of various species) to date.

Mpingo is well known throughout Africa for the many medicinal remedies made from its bark, leaves, and roots. According to Chuwa, the roots are used to treat abdominal



Mpingo seedlings in Chuwa's greenhouse on Mt. Kilimanjaro.
Photo ©2008 African Blackwood Conservation Project

pain, hernia, intestinal parasites, gonorrhea, headache, rhinitis, and bronchitis. The bark is used as an antidiarrheic or antibacterial. The leaves may treat throat inflammations, fever, syphilis, gonorrhea, and dysentery. The shavings of the heartwood mixed with lotions can also be used to create a topical cream used to treat skin diseases and certain fungi, said Chuwa. These medicinal benefits would likewise be a great loss without the replanting of the tree.

More information about conserving African blackwood and supporting conservation efforts is available at the ABCP Web site (www.blackwoodconservation.org) and the Mpingo Conservation Project (MCP), another organization concerned with preserving this valuable resource (www.mpingoconservation.org). HG

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Sebastian Chuwa with wild Mpingo tree in the farmlands west of Moshi, Tanzania.
Photo ©2008 African Blackwood Conservation Project



The Pharmacologically Active Constituents of White and Red Ginseng Root

by Dennis V.C. Awang, PhD, FCIC
and Michael Z.C. Li, MD, MSc



Illustration of American Ginseng *Panax quinquefolius* from *American Medicinal Plants: An Illustrated and Descriptive Guide to the American Plants Used as Homeopathic Remedies; Their History, Preparation, Chemistry and Physiological Effects* by Charles F. Millspaugh (1887).
Image courtesy of Steven Foster

This paper is dedicated to the memory of Professor Ying-jie Chen (1936-2003) of Shenyang Pharmaceutical University, PRC, who died during preparation of a book extensively covering the chemistry and pharmacology of ginsenosides.

Summary

Numerous studies of a much varied nature have been conducted on the roots of Asian (Chinese or Korean) ginseng (*Panax ginseng* C.A. Meyer, Araliaceae). Steamed and dried (red) Asian ginseng has been recognized as being appreciably more biologically active than the raw unprocessed (often scraped or peeled) and dried (white) ginseng root in some notable respects. For example: free-radical scavenging, antioxidant, “anxiolytic-like,” and anti-tumor promoting activities. Much less investigation has been directed towards American ginseng (*P. quinquefolius* L.). However, in recent years Canadian researchers have demonstrated its activity in treating Type 2 diabetes and developed a special patented polysaccharide fraction that has shown effectiveness in the prevention and treatment of upper respiratory tract infection.

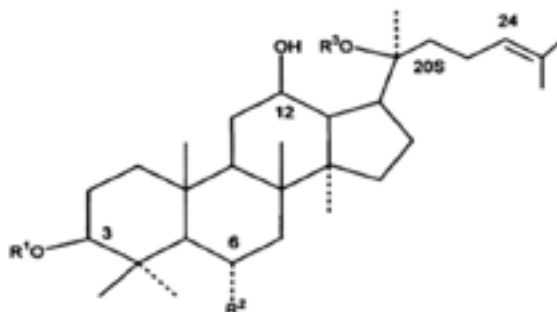
Ginsenosides, the dammarane-type triterpene saponin constituents of *Panax* species, are generally considered the main active components of the plant roots used for medicinal purposes. The normally analyzed neutral ginsenosides vary in level and ratio among the different *Panax* species, and they are accompanied in unprocessed root by acid derivatives of malonic acid. These derivatives are readily hydrolyzed by the steaming process, which converts “white” ginseng to “red” ginseng (actually caramel-colored). The steaming process also converts original ginsenosides to partially deglycosylated derivatives that have enhanced anti-cancer activity (e.g., ginsenosides Rg3, Rg5, and Rh2). The other main pharmacological activities claimed for ginseng extracts, as well as for individual ginsenosides, have been antioxidant (Rb1), calcium channel inhibition (Rf), immunomodulation (Rg1), neuroprotection (Rb1), and platelet inhibition. Diacetylene constituents (usually referred to incorrectly as “polyacetylenes”) have also been implicated in platelet inhibition and in tumor inhibition activities, while polysaccharides have been claimed to be involved in cytoprotection, immunomodulation, and tumor inhibition actions.

American ginseng is native to eastern North America and is mostly cultivated today in the provinces of British Columbia and Ontario in Canada and in the state of Wisconsin in the United States. Commercial cultivation of American ginseng in China was started in 1980. Sanchi or tienchi ginseng (*P. notoginseng* [Burkill] F.H. Chen ex C.Y. Wu & K.M. Feng) is popular in Asia where it is used as a hemostatic agent for blood-regulating purposes and also as a cardiostonic treatment.

American vs. Asian Ginseng: Ginsenoside Levels and Profiles

Neutral Ginsenosides

The root of these 2 most commercially prominent *Panax* species have been found to contain more than 30 triterpene dammarane-type saponins (mostly neutral ginsenosides) to which are attributed most of ginseng’s pharmacological activities. Quantitative analysis for ginsenosides characterized as Rx—according to their mobility on thin-layer chromatographic (TLC) plates, with polarity decreasing from index “a” to “h”—has focused on the neutral ginsenosides Rb1, Rb2, Rc, Rd (derivatives of protopanaxadiol), and Re, Rf, Rg1, and Rg2 (derivatives of protopanaxatriol) (see Figure 1). Earlier methods of analysis, such as colorimetry and gas chromatography, are non-specific and led to exaggerated and incorrect results, as compared to high-performance liquid chromatog-



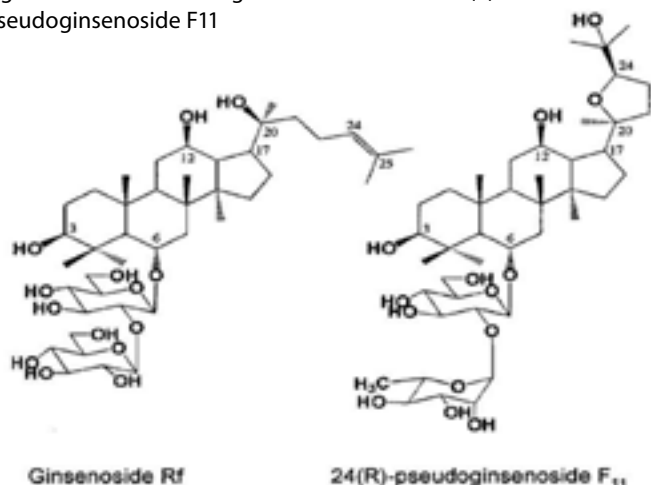
Introduction

Of the 3 prominent commercial ginsengs, Asian ginseng (*Panax ginseng*) is perhaps the most revered of traditional Chinese medicines. It is native to China, Russia, and Korea, and most of the commercially exported supply comes from China and Korea. While the use of Asian ginseng is widely believed to span at least 2000 years, Chinese use of American ginseng (*P. quinquefolius*) began only about 300 years ago.

Ginsenoside	R ¹	R ²	R ³	Molecular formula	Molecular weight
-R _{b1}	Glc- ² Glc-	H	Glc- ³ Glc-	C ₅₂ H ₉₂ O ₂₂	1109
-R _{b2}	Glc- ³ Glc-	H	Ara(p)- ⁶ Glc-	C ₅₂ H ₉₀ O ₂₂	1079
-R _c	Glc- ² Glc-	H	Ara(f)- ⁶ Glc-	C ₅₂ H ₉₀ O ₂₂	1079
-R _d	Glc- ² Glc-	H	Glc-	C ₄₈ H ₈₂ O ₁₈	947
-R _e	H	Rha- ³ Glc-O-	Glc-	C ₄₈ H ₈₂ O ₁₈	947
-R _f	H	Glc- ³ Glc-O-	H	C ₄₇ H ₇₇ O ₁₈	801
-R _{g1}	H	Glc-O-	Glc-	C ₄₇ H ₇₇ O ₁₈	801

Figure 1. Prominent protopanaxadiol and protopanaxatriol glycosides from *P. ginseng* and *P. quinquefolius*

Figure 2. Structures of ginsenoside Rf and 24(R)-pseudoginsenoside F11



raphy (HPLC) values. HPLC has been employed since 1980¹ and was later refined using a programmed elution technique with photodiode array detection to allow separation of all 8 major ginsenosides in one analytical run.²

In view of the historical variation in analytical techniques employed, the published analytical data for ginsenoside content of ginseng roots are inconsistent and cannot be pooled. In addition, earlier data apply not only to reliably identified raw material but also to commercial material of questionable species and plant part identities. This situation

makes it difficult to accurately establish the superiority of ginsenoside content within *P. quinquefolius* root over the root of *P. ginseng*, as is widely appreciated.³

However, analysis of dried 4-year-old roots of American ginseng taken from cultivated commercial fields in 9 different locations in British Columbia, Canada, in 1994 revealed an average of 3.00% (2.44-3.88) total for the 6 major ginsenosides (i.e., Rb1, Rb2, Rc, Rd, Re, and Rg1).⁴ Rf is absent from *P. quinquefolius* and Rg2 is present at such low levels in both *P. quinquefolius* and *P. ginseng* that ginsenosides Rb1 and Re together accounted for better than 75% of the total ginsenoside complement. Another study reported an average of 4.04% from a total of the 8 main ginsenosides in 3 cultivated American ginseng roots.⁵ However, Court et al indicate approximately 8% total ginsenosides in 4-year-old American ginseng roots when taking into consideration the content of malonyl ginsenosides (see later under **Acidic Ginsenosides**). The ratio of Rb1 to Rg1, often used as one basis for distinguishing between the two *Panax* species, ranged from 2.91 to 13.28, with an average of 7.54. In yet another study, 23 purported American ginseng root samples exhibited a ratio of 7.69, while the ratio found for 20 Asian ginseng samples was 1.30; the ratio for *P. ginseng* usually falls between 3 and 1.¹

The data from analysis of *P. ginseng* roots are more sparse, with only two publications standing out, one dealing with commercial products and the other with cultivated 5-year-old



Asian Ginseng *Panax ginseng*. Photo ©2008 Steven Foster

Figure 3. Ginsenoside Ro

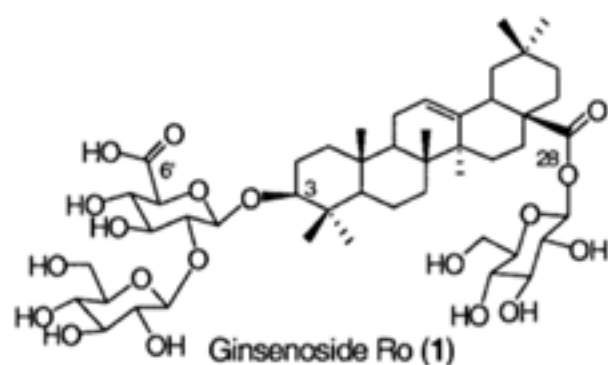
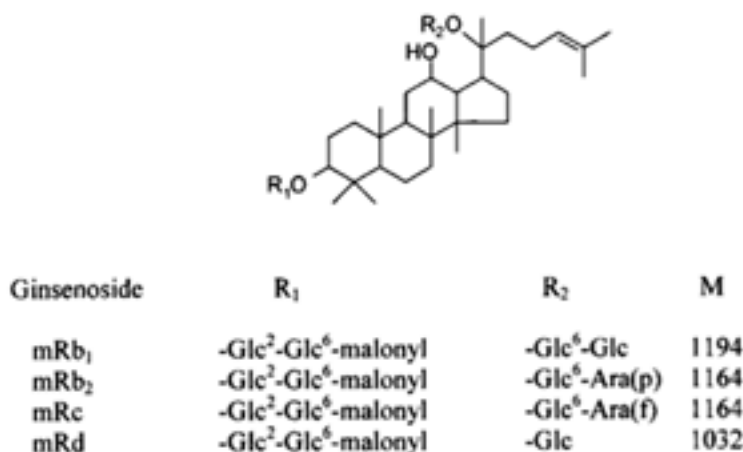


Figure 4. Malonyl ginsenosides



roots from China.⁵ The latter publication reported an average of 1.49% from a total of the 8 main ginsenosides plus the oleanolic ginsenoside Ro in 7 samples (1.27% without Ro), while the former publication reported an average of 1.47% of the 8 main ginsenosides from 8 purported *P. ginseng* root samples in hard gelatine capsules (1 sample was totally devoid of ginsenosides). It should be noted that one has no assurance of what part of the root/rhizome is employed in preparation of commercial root products. Further, the average values found from 20 4-year-old *P. ginseng* plants from Korea were 1.348, 3.532, and 6.148% from the main root, lateral roots, and “root hairs” (rootlets).¹ However, neither an average for the total root content nor ratios of the respective root parts were determined. In 1995, HPLC was used to evaluate the ginsenoside content of more than 60 commercial products, purportedly from various *Panax* species, as well as from a variety of roots and tissue culture samples derived from *P. ginseng* root.⁶ Widely differing levels and proportions of ginsenosides were observed. The results from this analysis of commercial products emphasize the need for careful attention to quality control.⁶

Distinguishing American and Asian Ginsengs

The pure root of American ginseng can be really distinguished from the pure root of Asian ginseng by HPLC analysis. American ginseng is devoid of ginsenosides Rf and Rg₂, while Asian ginseng contains relatively low concentrations of Rf and Rg₂. A not uncommon problem involves either substitution or adulteration of the more expensive American ginseng with sun-dried Asian ginseng.⁷ Scientists at Shenyang Pharmaceutical University in the People's Republic of China developed a TLC method by which, at 4° C, ginsenoside Rf was revealed in Asian ginseng and the ocotillol-Type 24(R)-pseudoginsenoside F11 was revealed in American ginseng⁸ (see Figure 2). Scientists at the University of Illinois in Chicago subsequently developed an HPLC procedure with evaporative light scattering detection for determination of 24(R)-pseudoginsenoside F11.⁹ Gas chromatographic-mass spectrometric (GC/MS) analysis has revealed that American ginseng contains more than 0.1% of 24(R)-pseudoginsenoside F11, which is over 1000 times the content found in Asian ginseng

(less than 0.0001%).¹⁰

Application of the TLC procedure to 43 samples of purported “*Radix quinquefolium* and its preparations” purchased in China showed that 18 samples (44.3%) were either *P. ginseng* or mixtures of *P. ginseng* and *P. quinquefolius*.⁸

Acidic Ginsenosides

Of the more than 30 ginsenosides so far identified in *Panax* spp., 5 are acidic, bearing carboxylic acid functions. Four of these are mono-esters of the dicarboxylic acid, malonic acid (one carboxylic acid function condensing with the primary alcoholic group at C-6 of the terminal glucosyl ring attached to C-3 of the triterpene skeleton); malonyl (m) Rb₁, mRb₂, mRc and mRd occur in both American and Asian ginseng, as does the 5th acidic ginsenoside, Ro, an oleanolic acid derivative. Originally identified as chikusetsu saponin V in the rhizome of Japanese ginseng (*P. japonicus* [T. Nees] C.A. Meyer), Ro bears a carboxylic acid function at C-6 of the proximal glucose function at C-3 of the triterpene ring system¹¹ (see Figure 3).

The malonyl ginsenosides (see Figure 4) are more polar and water soluble than the neutral ginsenosides to which they are readily converted by hydrolysis, accelerated by heat, and catalyzed by both acid and base. As such, no malonyl ginsenosides have been detected in steam-processed ginseng root (red ginseng) or cooked Chinese *shihchu* ginseng.³ HPLC protocols normally employed in the estimation of ginsenoside content do not measure the acidic malonyl ginsenosides and therefore underestimate total ginsenoside values.¹²

HPLC procedures using reversed-phase C18 columns and gradient elution systems, such as those published by Samukawa et al,¹³ allow separation and estimation of 22 major and minor, both neutral and acidic ginsenosides. Kitagawa et al¹⁴ compared white and red ginseng prepared from the same *P. ginseng* roots and noted appreciable concentrations of the 4 malonyl ginsenosides in white, but not in red ginseng. Chuang et al³ analyzed 10 samples of white Asian ginseng collected from herb shops throughout Taiwan and characterized the samples by comparing features of external appearance and histological anatomy. The levels of the 4 malonyl ginsenosides and their ratios to their neutral progenitors were considerably

lower than those found in the 2 samples of American ginseng examined. For example, an average of 3.0 was found for the ratio of Rb1 to mRb1 in the Asian samples, while values of 0.90 and 0.80 were found for the two 4-year-old American roots grown in Ontario, Canada. Between completion of the 1st and 4th years of growth, the total content of 6 of the main ginsenosides (minus Rf and Rg2) increased from approximately 3% to almost 8%, of which over 50% was due to combined Rb1 and mRb1 ginsenosides.¹⁵

Court et al¹⁶ estimated the malonyl ginsenosides indirectly by first determining the neutral ginsenosides, hydrolysing the acidic ginsenosides with 5% potassium hydroxide, and then re-analyzing for neutral ginsenosides. A more recent study determined that extraction of ginseng roots with liquid ammonia was about twice as efficient as extraction with methanol/water (60:40; v/v) and effected efficient conversion of mRb1, mRb2, mRc, and mRd to their corresponding neutral ginsenosides.¹⁷

It is worth noting that considerable variability of ginsenoside content occurs in ginseng raw roots, as well as root products. As Court has observed, considering the established differences in content of main root, lateral roots, and rootlets, it is essentially important to carefully mix powdered whole root "prior to filling non-assayed capsules with measured amounts of powdered root."^{1,18,19} Even with carefully standardized extraction methods and estimation of total ginsenosides, Soldati and Sticher found up to 3-fold variation in individual ginsenoside levels within 3 lots of extract standardized to roughly 4% total ginsenosides and within 4 lots of extract standardized to 7.2-7.5% total ginsenosides (extracts were in soft gelatin capsules).¹ Such variation could conceivably have an impact on pharmacological activity.

Other Pharmacologically Active Ginseng Constituents

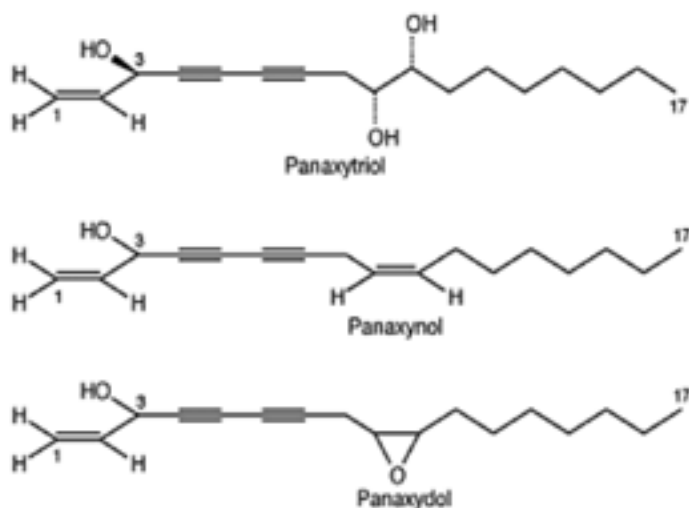
While it is widely believed that ginsenosides are the main active constituents of ginseng roots, responsible for a wide range of biological activities,⁷ other constituents, notably polysaccharides, polypeptides, diacetylenes (erroneously referred to as "polyacetylenes"), and alkaloids, have also been implicated in a variety of activities.

The isolated diacetylenes—mainly panaxytriol, panaxynol, and panaxydol (see Figure 5)—show cytotoxic, antiplatelet, and anti-inflammatory effects, respectively.² The ginsenos PA, PB, S-IA, S-IIA and some other polysaccharides exhibit immunological activity such as reticuloendothelial system potentiation, effects on the body's unspecific immune system, and alkaline phosphatase-inducing activity.² Lee et al found that ginsan, a purified lectin-free acidic polysaccharide from *P. ginseng* (molecular weight about 150,000), stimulated the proliferation of B-cells and T-cells and the cytotoxicity of spleen cells to a wide range of tumor cells *in vitro*. The ginsan also activated macrophages to generate nitrogenous intermediates and become *in vivo* active against B16 melanoma cell lines found in the benzo[a]pyrene-induced autochthonous lung tumor model.²⁰ Recently, pre-treatment with ginsan (25µg/kg) was shown to protect mice from lethality induced by *Staphylococcus aureus* challenge.²¹ Panaxans have been identified in 2 series from *P. ginseng*, namely, A-E from Chinese or Korean roots²² and Q-V from Japanese roots.²³ (Note: Panaxans are peptidoglycans, i.e., polymers composed of polysaccharide and peptide [condensed amino acid] chains.) All these panaxans showed dose-dependent hypoglycemic activity in normal and alloxan-induced diabetic mice when administered by intraperitoneal injection, but were ineffective when given orally. Presumably this occurred because the high polymer glycans are unlikely to be absorbed from the gastrointestinal tract, probably due to degradation by peptidase and glycosidase enzymes secreted by the gut and by colonic microflora in the large bowel. Quinquefolans A-C from American ginseng have also shown marked blood-glucose-lowering effects when administered to both normal and alloxan-induced hyperglycemic mice.²⁴ Wang et al have also noted a hypoglycemic effect of ginseng polypeptides.^{25, 26}

Anti-carcinogenic Activity

Shibata et al demonstrated that partially deglycosylated ginsenosides produced during the steaming process, but also by metabolic transformation through the agency of human intestinal bacteria, have enhanced biological activity, particularly anti-carcinogenic. This is likely the result of increased bioavailability of the degraded original ginsenosides.²⁷ Prominent among such ginsenosides detected in Korean red ginseng are Rh1, Rh2, Rg3, and Rg5; Rh1 is derived from protopanaxatriol (PPT) ginsenosides, such as Rg1, while Rh2, Rg3, and Rg5 are derived from protopanaxadiol (PPD) ginsenosides (see Figure 6). Other degraded raw ginseng ginsenosides, produced by hydrolysis, isomerization at C-20, and dehydration, are present in relatively minute quantities. Shibata cites other researchers as establishing that Rg3 inhibits *in vitro* cancer cell invasion and metastasis; Rh2 inhibited human cancer cell growth in nude mice. Yun identified Rh1, Rh2, Rg3, and Rg5 as the major saponin components in Korean red ginseng; Rg3 and Rg5 showed statistically significant reduction of lung tumor incidence, while Rh2 had a tendency to prevent non-organ-specific cancer in humans.²⁸

Figure 5. Ginseng diacetylenes



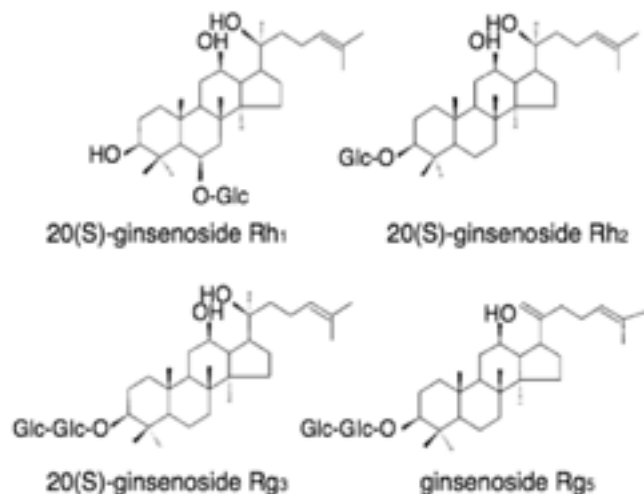
Park et al demonstrated the cytotoxicity of dammarane-type glycosides from steam-processed *P. ginseng*—namely Rg3, Rg5, Rk1, Rs4, and Rs5, having 50% growth inhibition concentrations of 41, 11, 13, 37, and 13 microM, respectively²⁹—against SK-HeP-1 hepatoma cancer cells.³⁰ A recent double-blind placebo-controlled trial of so-called “Sun Ginseng” (high-pressure steam-processed *P. ginseng*) claimed the treatment to be beneficial in improving quality of life in cancer patients, mainly those suffering from gynecologic or hepatobiliary cancer.³¹ However, the authors of the study report neither the details of preparation of the tested item nor the vehicle of administration. Regarding chemical composition, the publication states that Sun Ginseng contains different types of ginsenosides, such as Rs4, Rs5, Rs6, and Rs7 (structures not presented), which were not mentioned in the previously cited publication. The latter study claimed that the levels of ginsenosides F4, Rg3, and Rg5 (absent from raw ginseng) are progressively elevated with increasing steam temperature. Rg3 and Rg5 attained values of 39% and 19%, respectively, of total ginsenosides at 120° C under autoclaving for 2 hours.³² Of the 3 products, when steamed at 100, 110, and 120° C, the last was most potent in the ability to induce endothelium-dependent relaxation.

Steam-processed North American ginseng has not been subjected to chemical or biological evaluation, but an *in vitro* study with MCF-7 breast cancer cells showed that a standardized extract of unprocessed *P. quinquefolius* root synergistically inhibited cell growth when combined with standard chemotherapeutic agents.³³

Anti-diabetic Clinical Trials

In 1995, the late E.A. Sotaniemi and coworkers reported that treatment with an unspecified ginseng extract—presumably from *P. ginseng* root—improved fasting glycemia and long-term glycemic control, as assessed by glycosylated hemoglobin (HbA_{1c}) in 36 Type 2 diabetic subjects.³⁴ However, the results of that study were ambiguous because of significant weight loss differences between treatment groups, as well as poorly described statistics. In 2000, Tetsutani and coworkers reported that treatment with a Korean red ginseng extract decreased HbA_{1c} in 34 patients with Type 2 diabetes, as compared to controls.³⁵ However, subject selection, allocation to treatment, statistics, and follow-up of the study were poorly described. In the years 2000 and 2001, Vuksan, Sievenpiper, and coworkers published the results of 5 randomized, placebo-controlled clinical trials with American ginseng whole root for glycemic control, summarized and discussed in a 2005 publication.³⁶ American ginseng reduced post-prandial glycemia from 9.1% to 38.5%, doses of 1 to 9 g being equally efficacious from 0 to 120 minutes before the glucose challenge in diabetic subjects—without interaction with background antihyperglycemic medication—but glycemia only being reduced in nondiabetic subjects if the treatment was administered at least 40 minutes before the glucose challenge. A subsequent trial with a different batch of American ginseng from the same supplier was unsuccessful to reproduce the post-prandial effects observed with the original batch, an outcome attributed to “a depressed ginsenoside profile.”³⁷ Further-

Figure 6. Main ginsenoside products of steamed *P. ginseng* root



American Ginseng *Panax quinquefolius*. Photo ©2008 Steven Foster



cated earlier, a reservation remains regarding the potential activity of peptidopolysaccharides by oral administration because peptidase and glycosidase enzymes secreted by gut and colonic microflora in the large bowel would likely degrade peptidoglycans to their base sugar and amino acid units. It should also be noted that analysis for glycans and peptidoglycans has not been applied to the various ginseng root samples tested for antihyperglycemic activity. However, it is interesting to note that Han et al used an alcan blue dye complex formation to confirm that the polysaccharide yield from Korean red ginseng was 3 times greater than from fresh root, which is likely due to hydrolysis of lignin-bound polysaccharides.⁴³ Furthermore, main roots yielded more polysaccharide than rootlets, polysaccharides being located mainly in the cortex and cambium.

Variability and Standardization

Vuksan and coworkers have stated that “In the absence of adequate standardization to support therapeutic indications, one cannot be assured of reproducible results with other [than tested] sources.”³⁷ Vuksan also warns against “standardization that is without basis”³⁸ and emphasizes the “need to develop a basis for standardization that ties the composition of herbs to efficacy.”³⁶

Ginsenoside Metabolism

Towards the end of the last century, research on ginsenosides focused on their metabolism by intestinal bacterial flora. Notably, Korean and Japanese researchers demonstrated that ginsenosides containing two (bisdesmosides) or more glycoside moieties (e.g., the PPT ginsenoside Re) are not appreciably absorbed from the gastrointestinal tract.^{12,44} Both PPD and PPT ginsenosides, such as the dominant Rb1 and Rg1, are largely eliminated unchanged. Only deglycosylated derivatives attain appreciable levels in plasma, following intestinal bacterial metabolism (IBM): Rb1 to compound K (IBM I) via Rd (see Figure 7) and Re to Rh1 via Rg1 (see Figure 8). So, while Re from *P. ginseng* berry is an effective anti-diabetic agent when injected in mice,⁴² it is highly likely that its effectiveness would be considerably reduced by oral administration. If an effective oral human dose of Asian ginseng berry extract could be achieved, the true active principle would likely be ginsenoside Rh1, which incidentally is produced from steamed (red) ginseng root. The earlier observed antihyperglycemic ineffectiveness of white Asian and Asian red ginseng root³⁸ may have been largely due to reduced ginsenoside content (as compared to Asian ginseng rootlets).

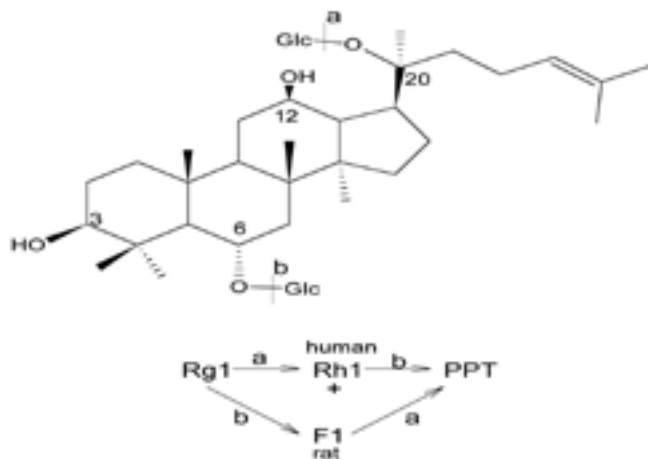
A thorough examination of the composition and antihyperglycemic activity of American red ginseng is sorely needed.

Immunomodulatory Effects

In vitro

A variety of immunological effects have been demonstrated *in vitro* for ginseng root extracts, fractions, and

Figure 8. Intestinal bacterial metabolism of ginsenoside Rg1



American Ginseng *Panax quinquefolius*. Photo ©2008 Steven Foster

isolated principles.⁴⁵ Alcohol-insoluble fractions are composed almost exclusively of polysaccharides and oligosaccharides and are much more potent than alcohol-soluble fractions composed of ginsenosides.⁴⁶ Most of the *in vitro* studies have been conducted with polysaccharide-rich extracts or isolated polysaccharides from *P. ginseng* root.^{46,47} Only 2 studies have been conducted from isolated polysaccharides⁴⁸ and active polysaccharide fractions from *P. notoginseng*.⁴⁹ One study has been conducted from a proprietary aqueous extract (CVT-E002) of *P. quinquefolius*.⁴⁶

The ethanol-insoluble fraction of an aqueous extract of *P. ginseng* was found to induce proliferation of splenocytes and to generate activated killer cells.⁵⁰ The activated killer cells neutralized both NK cell-sensitive and insensitive tumor target cells without MHC-restriction. Two extracts of *P. ginseng* have also been found to activate components of cell-mediated immunity, increasing the phagocytosis index along with phagocytosis fraction.⁵¹

Two acid polysaccharides isolated from *P. ginseng* root extract, named ginsenan PA and ginsenan PB, exhibited similar reticuloendothelial system (RES), anti-complementary, and alkaline-

phosphatase-inducing activity.⁵² Pectic polysaccharides from the root of *P. ginseng* have been found to exert potent gastric cytoprotective and anti-ulcer effects.⁵³

Immunostimulating activity of *Panax* has also been observed in polysaccharide-containing material extracted from the leaves of *P. ginseng*.⁵² Rhamnogalactouronan II isolated from the leaves enhanced macrophage Fc receptor expression.⁵⁴ An anti-ulcer pectic polysaccharide has also been characterized from leaves of *P. ginseng*.⁵⁵

In one study, immunomodulating polysaccharides were isolated from *P. notoginseng*. In another study, a RES-active polysaccharide, sachinan A,⁴⁸ and 4 distinct homogeneous active polysaccharide fractions⁴⁹ were isolated from the roots of *P. notoginseng*. In the latter study, one fraction showed strong anti-complementary activity, two fractions significantly induced the production of interferon- γ in the presence of concanavalin-A, and all fractions induced the production of TNF- α , using human serum and antibody-sensitized sheep red blood cells.

One *in vitro* study with a *P. quinquefolius* extract (the aforementioned proprietary product CVT-E002) found stimulation of the proliferation of normal mouse spleen cells, of which the



Left Photo: Author Dr. Dennis Awang inspecting American Ginseng (*Panax quinquefolius*).

Right photo: Author Dr. Michael Li holding an American Ginseng (*Panax quinquefolius*).

Photos ©2008 Steven Foster

major responding subpopulation was identified as B lymphocytes. CVT-E002 also activated peritoneal exudates macrophages, which lead to enhanced interleukin-1 (IL-1), interleukin-6 (IL-6), tumor necrosis factor- α (TNF- α), and nitric oxide (NO) production. In addition, CVT-E002 stimulated *in vivo* immunoglobulin G (IgG) production in treated mice.⁴⁶ A subsequent *ex vivo* study using C57 BL/6 mice demonstrated that CVT-E002 could significantly increase Con-A-induced IL-2 and IFN- γ productions in spleen cells in a dose-dependent manner.⁵⁶

Ginsenoside Rg1 has been tested for stimulatory effect on immune function of lymphocytes in the elderly.⁵⁷ Rg1 was found to stimulate proliferation of lymphocytes and to increase the fluidity of lymphocyte membrane in the aged.

Clinical Studies

During the cold and flu seasons of 2000 and 2001, CV Technologies, Inc. (Edmonton, Alberta, Canada) conducted 2 Phase II randomized, double-blind, placebo-controlled clinical trials (RCT) with their proprietary American ginseng root aqueous extract, CVT-E002.^{56,58} The trials compared CVT-E002 with placebo in preventing acute respiratory illness (ARI) in institutionalized older adults (> 60 yrs). The preparation was described as containing 80% poly-furanosyl-pyranosyl-saccharides and 10% protein in a 2004 publication of the results of the combined Phase II trials.⁵⁹ The primary endpoint was clinically confirmed ARI, which is defined as the onset of respiratory symptoms (cough, sore throat, nasal or sinus congestion, runny nose) plus one additional respiratory or constitutional symptom (fever, headache, fatigue, myalgia, etc.). The secondary endpoints included severity and duration of respiratory illness, laboratory confirmed respiratory illness or influenza, and severity and duration of influenza. Although the odds for developing ARI defined by symptoms alone were not significantly reduced in the treatment group, the odds ratio for laboratory-confirmed ARI was statistically significant. Secondary endpoint analysis also revealed a statistically significant increase in laboratory-confirmed influenza illness and laboratory-confirmed ARI due to influenza and respiratory syncytial virus, amounting to an 89% lower relative risk for ARI in the CVT-E002 group as compared to the placebo group.

A later study using an extract standardized to contain 90% poly-furanosyl-pyranosyl-saccharides, commercially termed COLD-fx[®], was conducted with institutionalized adults aged 65 years or older.⁵⁹ The frequency and duration of ARI during the first 2 months of the study was similar in the 2 groups, but during the following 2 months significantly fewer subjects in the COLD-fx group (32%) reported ARI compared to the placebo group (62%). The duration of symptoms during these latter 2 months was significantly shorter in the COLD-fx group than the placebo group (5.6 days in the COLD-fx group vs. 12.6 days in the placebo group). The authors of these studies concluded that COLD-fx supplementation to immunocompetent seniors during an early “cold and flu” season could help to reduce the frequency and duration of respiratory symptoms related to ARI: “a safe natural therapeutic means for the prevention of ARI in healthy seniors.”

In the year intervening between the two above publications, an RCT was conducted at the onset of the influenza season with 323 healthy adults aged 18-65 years who had a history of at least two colds in the previous year.⁴⁷ Results from the RCT showed a 13% reduction in the absolute risk of getting recurrent colds that meet

the Jackson criteria. The mean number of Jackson-verified colds per person was significantly less in the ginseng-derived saccharide-treated group than in the placebo group.⁶⁰ Fewer subjects in the saccharide group than in the placebo group reported contracting at least 1 cold during the study, but the difference was not statistically significant. However, there was a significant difference in the recurrence of colds, with 10% in the saccharide group having more than one cold compared with 23% in the placebo group. Ginseng-treated subjects had less severe symptoms and were sick for fewer days. However, while this study was of excellent methodological quality and reported a 13% reduction in the risk of contracting a cold, it does not seem particularly clinically valuable. More promising perhaps is that “the total symptom score was 31% lower and the total number of days on which symptoms were reported was 34% less in the COLD-fx group than in the placebo group over the 4-month intervention period.”

Presumably, based on the evaluation of clinical data (i.e., 10 years of research, including 7 clinical trials submitted by CV Technologies), Health Canada ruled that the company can continue to market the COLD-fx product as “helping to reduce the frequency, severity and duration of cold and flu symptoms by boosting the immune system.”⁶¹

Conclusion

While there is ample clinical evidence in support of the beneficial influence of American ginseng in treating Type 2 diabetes and preventing cold and flu attacks, comparable data on behalf of Asian ginseng are wanting. *In vitro* and animal studies also support an anti-cancer potential for steam-processed (red) *P. ginseng* root and an extract of *P. quinquefolius* root has been shown synergistically to inhibit the growth of MCF-7 human breast cancer cells. Overall, much more effort needs to be expended toward standardization of ginseng preparations so as to ensure reliable repeatable therapeutic effect. HG

Dennis V.C. Awang is president of MediPlant Consulting Services, Surrey, BC, Canada, a natural products consulting group. For more than 20 years he was head of the Natural Products Section in the Bureau of Drug Research at the Canadian Health Protection Branch. Dr. Awang is also an Advisory Board member of the American Botanical Council (ABC) and a consulting editor of ABC's HerbClip publication. He is a former director of Chai-Na-Ta Corp., the world's largest American ginseng grower, and former co-scientific director of ABC's Ginseng Evaluation Program. He is a member of the American Chemical Society and a Fellow of the Chemical Institute of Canada. Dr. Awang is a renowned expert in the field of medicinal natural products, with over 30 years of leadership in academia, government, and industry.

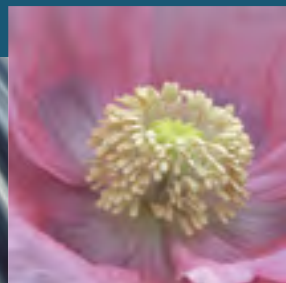
Michael Z.C. Li is managing director of Wellgenex Sciences, Inc. Dr. Li has over 20 years of experience in healthcare, nutrition, and natural health in Asia Pacific and North America. He has worked as a general physician and held other professional positions, including product development at H.J. Heinz, R&D director at Chai-Na-Ta Corp., and most recently, new product director and chief scientific officer at Zuellig Group North America. Dr. Li earned his medical degree with honors from the Jinan University. He also holds an MSc in human nutrition from the University of British Columbia and an MBA from Sauder School of Business.

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NATURAL DOCTORS INTERNATIONAL



Introduction

The island of Ometepe within southern Nicaragua is inhabited by approximately 35,000 people—and it is equipped with one 24-hour hospital. The island's hospital, the Moyogalpa Health Center, contains 25 beds and is attended by a total of 5 doctors, only one of whom is available for 24-hour in-patient care. Poverty is so extreme on the island that citizens often have trouble affording bus fare to the hospital, where they are offered free medical services through Nicaragua's Ministry of Health.

It is here that a new kind of relief organization, Natural Doctors International (NDI), developed its successful pilot program. NDI established a site in Ometepe in 2005, and for the past few years the organization has encouraged naturopathic physicians (NDs) and other alternative healthcare practitioners and students to volunteer their services for the island's underserved population.¹



Innovative Nonprofit Enables Natural Medicine Practitioners to Participate in Global Relief Efforts

By Courtney Cavaliere

The Development of NDI

NDI was established with the goal of enabling NDs and other alternative healthcare providers to participate in international relief medicine—much as the program Doctors Without Borders provides for conventional medicine practitioners. NDI has established a permanent presence on Ometepe and is involved in multiple sustainable services and programs for the local community, serving as a model for other volunteer networks interested in global justice and medical assistance.

The organization was co-founded in 2003 by Tabatha Parker, ND, Laurent Chaix, ND, and Michael Owen, ND.² These 3 co-founders established NDI after discovering that there were few opportunities for the naturopathic profession to participate in international relief efforts. The founders were passionately committed to developing and implementing NDI within the legal framework of any foreign country hosting an NDI site. Further, they wanted participants of NDI to live and work closely within the local community, rather than stay in resort areas or fancy hotels

and have limited outside engagement with citizens, as is the case with some international relief programs.

The founders chose Nicaragua as the location for the first NDI site based on their previous travels to the country and the pre-established contacts they had made in the area. Nicaragua was also selected due to its extreme poverty and deficits of healthcare.

“Nicaragua is the second poorest country in the Western hemisphere,” explained Dr. Parker, who continues to live in Nicaragua and serves as NDI's executive director (oral communication, May 15, 2008). “There's a lot of need there.”

According to the World Bank, Haiti is the only country in Latin America with an economy worse than Nicaragua's.³ Although some economic progress has been attained in recent years, including a reduction in the scale and severity of poverty in Nicaragua, it is still estimated that 46% of the population lives below the poverty line. The World Health Organization (WHO) indicates that communicable diseases such as malaria, tuberculosis, and HIV/AIDS are prevalent or increasing in some areas of Nicaragua, while noncommunicable diseases such as cardiovascular disease, cancer, and diabetes result in high morbidity and mortality.⁴ Nearly 22% of children from the most disadvantaged quartile of urban Nicaragua suffer from malnutrition.

Top left photo: NDI global health course participants work to clean corn and beans with Valeriano, a 104-year-old Nicaraguan campesino (farmer). Photo ©2008 Tabatha Parker

Bottom left photo: Dr. Tabatha Parker attends a young girl in the NDI clinic in Nicaragua. Photo ©2008 Tony Trujillo



Dr. Tabatha Parker conducts a home visit for a patient and her piglet.
Photo ©2008 Pauline Baumann

Dr. Parker and her colleagues collaborated with Nicaragua's Ministry of Health in developing NDI.¹ They set up a 3-year contract with Nicaragua's government, which recognizes NDs as licensed practitioners and allows them to legally work within the country through NDI.

Volunteering with NDI

NDI offers 1-year volunteer opportunities for state licensed NDs. These long-term volunteers treat patients through a clinic NDI has established within the hospital, generally averaging between 15 to 20 free patient consults each day. (Between 50 and 150 people typically visit the hospital every day.) These volunteers further assist the hospital staff when needed. They also take part in community projects, consult with some patients outside the hospital, and occasionally produce and package herbal therapies for NDI's pharmacy. Three NDs have completed long-term rotations on the island, and a fourth ND is currently volunteering long-term with NDI.

Tania Neubauer, ND, worked with NDI as a long-term volunteer from January of 2007 through March of 2008. "My practice was full to bursting—from the minute I arrived, I had to struggle between trying to help more people, faster, and how many people

"My practice was full to bursting—from the minute I arrived, I had to struggle between trying to help more people, faster, and how many people I would turn away."

I would turn away," she said (e-mail, May 5, 2008). "I'd see a lot of what you see in primary care in the United States—lots of respiratory infections, lots of skin conditions, lots of urinary tract infections, digestive problems, diabetes, hypertension—and of course, things that you don't see quite as commonly here, like parasites and malnourished children."

According to Dr. Parker, the organization is attempting to initiate an additional long-term NDI volunteer opportunity, which might allow year-long rotations for acupuncturists in the near future.

NDI also provides short-term volunteer opportunities by hosting a global service learning course titled "Natural Medicine in Global Health." Affectionately referred to as "medical brigades," these courses offer a unique combination of cultural immersion and global health training—both in the clinic and the classroom. These brigades typically consist of 10 participants, who spend 10 days in Nicaragua. Participants live with Nicaraguan families during their stay, and they pay these families a fee for room and board, which provides enormous financial assistance for those families. Brigade members assist NDI's long-term ND volunteers by providing services in the hospital and community clinics and by assisting in community projects. They participate in farming activities to gain a better understanding of the lifestyle and environmental conditions faced by local citizens. They also attend classes taught by NDI personnel regarding global justice issues, such as the effects of trade agreements and various international policies on the citizens of developing nations, the economic, educational and health disparities between poor and prosperous countries, etc.

"These brigades are a combination of activism and medical education," said Benjamin Woodard, one of the brigade facilitators and faculty members of NDI, as well as director of StillRiver Health LLC in Boulder, Colorado (oral communication, April 29, 2008). "They're exhausting but profoundly inspiring for everyone involved." Woodard makes arrangements for the brigades and also accompanies brigades to Ometepe to teach in NDI's clinic facilities and classes.

Former National College of Natural Medicine (NCCNM) student Missy Pannone participated in a brigade in August of 2006 and was so inspired by her experience that she remained with NDI for 6 more months after the brigade ended. "We in the United States are blessed with great education and so many resources. More people in the United States need to do what [Dr. Parker] is doing," said Pannone (oral communication, May 1, 2008). "The work she is doing down there is just awe-inspiring. She is on the front line, making amazing things happen."

Since its inception, NDI has hosted 12 medical brigades.

Woodard stated that he has begun booking brigades nearly a year in advance, due to steadily growing interest in NDI participation. Several naturopathic schools have organized student groups as brigades. Alternative and conventional medicine practitioners have also participated in brigades, and persons with no medical background are also welcome.

“Everyone comes with something they can offer,” Woodard stated, explaining that this could include administrative skills, language skills, medical expertise, etc. “We try to find a place for anyone who has an interest.”

Funding and Support of NDI

The tuition of the global health course participants helps to fund NDI’s programs and services.⁵ Many groups conduct fund-raising to help cover costs, as well as to bring donated herbal and nutraceutical products to the island. Donated botanical, supplement, and pharmaceutical products are widely used by NDI volunteers and staff in their clinical practice.

“A lot of donations come from the students just going out and talking to people,” said Dr. Parker. “When groups come down, we never quite know what we’re going to get. We have to be pretty flexible.”

Companies and individuals have also contributed greatly to NDI’s mission through donations. Dr. Parker mentioned that the

dietary supplement manufacturer Standard Process (Palmyra, WI), for instance, once donated \$22,000-worth of products. NDI has also received important donations of homeopathic medicines and mother tinctures (solutions of botanicals in alcohol and/or distilled water for use in homeopathic remedies) from various companies via charitable donation.

“About halfway through my time [volunteering with NDI] we got a tremendous donation of many gallons of bulk tinctures from Oregon’s Wild Harvest and Heron Botanicals, which really improved my ability to practice herbal medicine,” said Dr. Neubauer. “We also had a very extensive homeopathic pharmacy, and last year we got a donation of hundreds of homeopathic mother tinctures, which is great—the clinic will be able to replenish its stock permanently without being reliant on future purchases or donations. We could never keep enough vitamins in stock—there is an immense need.”

The Use of Herbal Medicine by NDI

In addition to donated supplies, NDI also purchases some tinctures, salves, bulk teas, and other ingredients from 2 organic Nicaraguan farms—Isnaya and Cecalli. NDI volunteers and staff occasionally make some of their own medicines, and they use some local Nicaraguan botanicals as well. According to Woodard, one of the latest brigades harvested turmeric (*Curcuma longa*, Zingiberaceae)

The main street in Moyogalpa Ometepe, where the NDI Nicaragua clinic is located. Photo ©2008 Tabatha Parker





Patient receiving Reiki and bodywork from team NDI. Photo ©2008 Tabatha Parker

from an organic farm as part of its educational experience. This turmeric was then tinctured for patients' use, since NDI did not have the processing equipment available to encapsulate it.

"We use a tremendous amount of herbs," said Woodard. "This is a paradigm in which patients often prefer natural medicine to allopathy. Not once have I had a patient who was uneasy or tentative about taking herbs."

Dr. Neubauer, likewise, noted that she prescribed natural medicine for probably 80% of her patients. "One of the biggest differences [between working as an ND in the United States and Nicaragua] is that natural medicine is part of everyday life in Nicaragua," she explained. "Most people still grow up knowing some of the plants around them and how to use them as medicine. It's not an exotic, strange thing as it still is in the United States. The vast majority of people are very interested in natural medicine and very happy to use it . . . Also, there's a significant percentage of people—it seems to be much higher than in the United States—that only want natural medicine and that never want to use another pharmaceutical again, so they are completely thrilled to have access to an ND."

A graduate student at Virginia Polytechnic Institute and State University conducted a survey in 2007 of 100 Ometepe inhabitants, as well as 20 semi-structured interviews, to determine the community's perceptions of NDI and its use of naturopathic

medicine.⁶ The student, Andrew Allen Duncan, found that all surveyed Nicaraguans considered natural and herbal medicine to be a legitimate form of therapy, and responses to the interviews indicated that natural medicine was generally viewed more positively than conventional pharmaceuticals. Moreover, 99% of all respondents claimed to believe that natural medicines were a part of their culture.

According to Woodard, many local Nicaraguans traditionally use botanical therapies that NDI physicians have incorporated into their own practice. Locally used medicinal plants include *Cassia grandis* (Fabaceae) for anemia; guava (*Psidium guajava*, Myrtaceae) for dysentery, diarrhea, and parasites; calendula (*Calendula officinalis*, Asteraceae) and *Tecoma stans* (Bignoniaceae) for skin disorders; eucalyptus (*Eucalyptus globulus*, Myrtaceae), mint (*Mentha* spp., Lamiaceae), and aloe (*Aloe* spp., Liliaceae) for respiratory complaints or skin conditions; and *Artemisia vulgaris* (Asteraceae) for parasites or scabies. Dr. Neubauer would sometimes prescribe a cough syrup made from the local plant juanislama (*Lippia* spp., Verbenaceae), and she said that she frequently used a plant called jiñocuabo (*Bursera simaruba*, Burseraceae) to treat urinary tract infections, skin disorders, and respiratory infections.

"One challenge we often encounter is incorporating folk use of botanicals sustainably into clinical use," said Woodard. "We have

to ensure that the herbs, their use, and delivery all truly work. When herbal medicine is one of your first lines, you better have faith in it!”

In addition to their widespread acceptability and general sustainability, herbal medicines are also typically a first choice among NDI physicians because they are considered more effective than many available pharmaceuticals. Woodard explained that drug resistance is a huge problem of “social justice medicine.” Whereas citizens of economically developed countries generally have access to a multitude of pharmaceuticals, communities in developing countries usually only have access to a few. These few pharmaceuticals are then overused for a variety of conditions, and patients are often placed on previously ineffective treatment protocols when alternatives are not available.

“We now are seeing more than 80% resistance to amoxicillin, a first-line broad-spectrum antibiotic, in uncomplicated urinary tract infections, simply because of overuse,” Woodard explained, noting that this and other drugs cease to be effective, as patients’ bodies grow accustomed to the medications.

Dr. Parker noted that many patients in developing countries also present with multiple complaints during consults. “One of the great things about herbal medicine is that you can really tailor and customize a treatment for someone,” she said. “It allows us to be more flexible in our treatments.”

Challenges of Providing Medical Aid in a Developing Country

Working in a foreign culture and developing country does present various challenges. Woodard pointed out that Nicaraguan citizens often have deeply-seated cultural beliefs that must be taken into account when prescribing treatments. For instance, many Nicaraguans believe in the concept of *aire*—the belief that illness can result from abrupt temperature changes.

Dr. Parker explained that a Nicaraguan who has returned from working in the hot fields will often not cool off by taking a cold shower (it is believed that this abrupt temperature change could result in sickness), but he or she might instead drink hot coffee. Similarly, certain medicines are considered “hot” and “cold.” Pills, for instance, are considered “hot.” A person with symptoms of a cold might therefore scoff at the idea of taking a pill as a treatment, as humoral medicine theory suggests that a pill could cause their symptoms to worsen. For this reason, teas and tinctures are sometimes considered better treatment options than conventional pharmaceuticals.

“You have to be respectful of that and learn how to speak their language,” said Dr. Parker. “Having this conversation and being open is very important, because otherwise you could be giving all of this advice that isn’t going to be followed.”

Witnessing the poverty and suffering of patients is also a huge challenge for volunteers of NDI. For this reason, members of brigades attend group processing sessions, which are designed to help participants understand and cope with what they observe in the clinic and in the community.

“Nicaragua is the second poorest country in the Western hemisphere ... There’s a lot of need there.”

Typical home on the island of Ometepe in Nicaragua.
Photo ©2008 Tabatha Parker



Walking barefoot puts young children at risk for ground parasites, as with these two young children in Ometepe, Nicaragua. Photo ©2008 Tabatha Parker



“About halfway through my time [volunteering with NDI] we got a tremendous donation of many gallons of bulk tinctures from Oregon’s Wild Harvest and Heron Botanicals, which really improved my ability to practice herbal medicine.”

“Bearing witness to this much suffering is really a lot to handle,” explained Woodard. “We try to provide as much emotional support as we can.”

Woodard described one of his own experiences on the island, in which he was introduced to a woman with Parkinson’s disease who had not eaten for 4 days due to the seeming hopelessness of her condition. Another patient was diagnosed with kidney stones but could not afford a trip to the mainland for necessary treatment.

NDI’s Community Projects

Because health is connected with so many environmental, economic, educational and other factors, NDI has implemented and is leading several community projects in addition to its medical services.⁷ For instance, NDI has been developing a program to educate local farmers about safety measures to use when harvesting tobacco. Over 15 women and children were admitted to the hospital with nicotine poisoning in 2007 from picking wet tobacco, an illness known as “green tobacco sickness” that can resemble intoxication from organophosphate pesticides.

As one of her community projects, Dr. Neubauer worked with a

group of community health workers (CHWs) on Ometepe: “The best way to multiply your work is to train CHWs to take care of their communities. The CHWs in many cases are more culturally appropriate and better aware of what the most important needs are than any visiting foreign doctor can ever be, no matter how long the doctor stays in the community. The CHWs on Ometepe were particularly interested in natural medicine.” Woodard noted that many CHWs and traditional healers of Ometepe are women and that midwives, in particular, typically hold much of the botanical medicinal knowledge within the community.

Dr. Neubauer explained that the education of CHWs is particularly important since local communities have begun to lose this knowledge. “Nicaragua, like many places in the world, is experiencing a cultural rupture—many elder healers are not training anyone new to take on their work because it is too hard to make a living taking care of your impoverished neighbors in exchange for a few eggs or vegetables. On the island where I lived, almost every family had members abroad sending money home from their job as a dishwasher, construction worker, etc. Which does the world need more—an intact healing tradition or another dishwasher?”

Duncan’s 2007 survey results also indicate that herbal traditions in Ometepe have been declining in recent years.⁶ Although the vast majority of respondents claimed that herbal medicine was part of their culture, some interviewees qualified that herbal use was primarily a part of their cultural past. Some explained that the influx of pharmaceuticals into Nicaragua and their use by local doctors has helped to facilitate this decline in herbal knowledge and practice. Twenty-one survey respondents claimed that pharmaceuticals had replaced the use of natural medicine, although many more (67) indicated that this had not yet occurred. NDI’s education of CHWs, in addition to the organization’s own naturopathic services, could assist in reviving or reinforcing widespread use and popularity of natural medicine in Ometepe.

Dr. Parker noted that NDI also sponsored a baseball team on the island as another community project, at the suggestion of local community members. According to Dr. Parker, this receptivity to community input and constant interaction within the community, in addition to NDI’s medical assistance, has encouraged citizens of Ometepe to embrace the organization.



Dr. Parker examines a foot of a diabetic patient.
Photo ©2008 Amy Johnson



Dr. Tania Neubauer examines this newborn with his mom. Photo ©2008 Tabatha Parker

“We’ve been really welcomed by the community, and part of the reason, I believe, is that we really work with the community and deal with the needs that they bring up,” said Dr. Parker. “We really try to bring the community into being active participants in the growth of NDI.”

All respondents to Duncan’s survey who had previously received treatment from NDI claimed to consider NDI staff as part of the community.⁶ The vast majority claimed that NDI often or always includes the community in making decisions and defining local problems, and they further professed a belief that NDI would be open to suggestions or criticisms. Almost every respondent of the survey indicated that foreign assistance is necessary to good healthcare in their community. Duncan concluded—based upon NDI’s services, its sensitivity to global justice issues, and its overwhelming support within the Nicaraguan community—that NDI represents a model organization for providing such aid.

NDI Efforts in Mexico

Although the site in Ometepe is the only currently active NDI site, the organization hopes to have a second site operational by the end of 2008 or early 2009. Jacqui McGrath, ND, has been working with the Mexican Ministry of Health to establish an NDI site in Bacalar, Mexico. Whereas the NDI site in Nicaragua functions within Ometepe’s Moyogalpa Health Center, Dr. McGrath plans to establish an autonomous clinic in a rural location of Bacalar

among some of the area’s poorest citizens, many of whom have difficulties traveling to currently available health centers.

Dr. McGrath decided to initiate her own NDI site after participating in the “Natural Medicine in Global Health” course in Ometepe. “I love NDI’s philosophy of mutual respect and consideration for the culture and for the government, in addition to providing long-term health for people and communities,” she said (oral communication, May 30, 2008). “It’s not just about giving consults. There is a respect for the governments’ laws and the traditions of the local people to create projects and programs to help community health as well as individual health.”

Dr. McGrath has been laying the groundwork for the NDI site in Mexico for the past few years. She has been working with a local foundation to get the NDI site registered as a Mexican nonprofit, and she recently performed a year of social service work in order to obtain a license to practice medicine in Mexico. During this time, she has begun to familiarize herself with the needs of the local community, so that she can develop NDI projects particular to this region.

The anticipated NDI site in Mexico will follow the same basic model as the site in Nicaragua, offering courses in global health/medical brigades and relying to some extent on donated supplies. The educational component of the site will be complementary to the classes and teachings given in Nicaragua, although much of the information will focus on Mexico. Certain differences between the

two locations and cultures, however, may impact the way that the Mexican site is developed. For instance, farming is not a common practice in Bacalar, so brigade participants might spend a day with building crews or concrete workers to better understand the local living conditions, instead of the Nicaraguan NDI experience of working in the fields for a day. It is also possible that patients in the Mexican NDI clinic might pay a small fee for consultations, when they can, since this might be considered more appropriate within the local culture than the free services of the Nicaraguan clinic.

Dr. McGrath expressed that she hopes to use a great deal of herbal medicine in her practice, particularly since many local patients prefer natural therapies. However, she said that Bacalar currently seems to lack some of the herbal resources of Nicaragua. While the NDI site in Nicaragua is able to rely on 2 local suppliers of quality herbal tinctures and creams to help supplement the clinic's donated herbal products, Dr. McGrath noted that there are currently no similar suppliers in her area of Mexico. Dr. McGrath said that she has only just begun to learn about the area's medicinal flora, and she hopes to begin communicating with local herbalists and traditional healers to increase her own knowledge of local medicinal plants.

Like the site in Ometepe, the site in Mexico will take part in various community projects. "I would like to work on rescuing the traditional knowledge in this area," said Dr. McGrath. "Traditional Mayan knowledge is still here, but it's tenuous. There aren't a lot of midwives or bonesetters in training."

Other projects that Dr. McGrath hopes to pursue include a garden project, an educational program on nutrition, and a project concerning garbage disposal. She would also like for the site to participate in local efforts for creating jobs, as poverty is the root cause of many local health, environmental, and other problems in the area.

Future Goals of NDI

NDI may eventually open additional sites in more countries. "We're looking for people who are passionate about doing this and interested in following this model," said Dr. Parker. Since countries have different regulations and licensing requirements for medical practitioners, the ability to open new NDI sites and the speed at which such sites could be developed may depend largely on the types of opportunities available through foreign governments.

Dr. Parker has also been working to obtain non-governmental organization (NGO) status for NDI with the United Nations. According to Dr. Parker, NGO status would give NDI access to large organizations involved in global policy work, which she argued is important since few natural medicine organizations and associations are presently involved in this arena. The WHO has stated that more NGOs, as well as national and international professional organizations, should take on the mission of expanding the appropriate role of and access to traditional natural medicine in developing countries.⁸

While the organization continues to expand its reach through new sites and networking opportunities, its mission has been spreading even more rapidly through the enhanced knowledge and perspectives of volunteers and brigade participants. According to Dr. Parker, the living conditions and poverty that students and volunteers witness during their time with NDI may be difficult to observe, but the experience as a whole can be extremely uplifting and motivating.

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"The developing world is an extreme," she said. "It can be very empowering if you learn how to incorporate your experience there in a positive way." She stressed that participants are encouraged to integrate their experiences with NDI into their own lives and communities at home.

"I'm more committed than ever to being a doctor working for global justice," said Dr. Neubauer of her own experience with NDI. "More doctors need to be speaking out about the health effects of international policies that are condemning many people to lives of poverty and suffering . . . Doctors have a unique and respected voice—we should be using some of the authority vested in our profession to push for the big changes at the global level, in addition to 'being the change we wish to see' in our daily practice with our patients." HG

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View from Finca Magdalena on the island of Ometepe. Photo ©2008 Tabatha Parker

Funding NDI as Free Clinics for Underserved Populations

By Jillian Stansbury, ND

In April of 2007, I flew from Portland, Oregon, down to Nicaragua to find out how the young dynamo Dr. Tabatha Parker and her colleagues were able to set up a successful, free alternative medicine clinic for the Nicaraguan people in a remarkably short amount of time. I had been in clinical practice for 20 years and found it hard enough to stay afloat financially with *paying* patients—how could one offer naturopathic medical services at no cost and still eat? Now that my children were grown, I too had aspirations to turn my attention to the world and all its ills. I had flown down to volunteer with Natural Doctors International (NDI), as well as to learn from these young doctors. And learn I did—way more than I had anticipated.

I learned about global medicine, social justice, structured poverty, and much more. I was impressed by the knowledge of Dr. Parker, and of her recent National College of Natural Medicine graduate intern Dr. Tania Neubauer, regarding the international political issues that continue to keep multitudes of people in impoverished circumstances. They knew the presidents, the years, the trade agreements, and the foreign policies that contributed to the plight of the Nicaraguans and many others. I grew to fully realize the deep goal of NDI and the difference between NDI and those organizations doing “medical tourism” (i.e., sending doctors to hand out band-aids, stay at the nicest hotel in town, and then fly home, after which the drugs they brought with them quickly run out, the underlying issues are left largely unaddressed, and the diagnosed conditions receive no follow-up treatment or management).

NDI was operating on a whole different level—just like alternative medicine—establishing a permanent presence within the community and dealing directly with the underlying causes of ailments, including the environment, the poverty, and the politics, to do more than just treat the symptoms. As the creation of better health requires better quality water, foods, wages, and workload, NDI also is sponsoring water, agriculture, sustainability, and living wage efforts.

The heat body-slammed us as I exited the airport with Dr. Parker, and it never lightened from then on. We took a taxi to the ferry and a ferry to the island of Ometepe, and we walked from there in search of a hotel. The hospital on the island is small and basic. NDI operates independently in one wing alongside the conventional medical services that include small obstetrical, pediatric, and in-patient suites. NDI’s waiting room was filled with women fanning themselves or wiping sweat from their faces with handkerchiefs. The elderly often exhibit complaints related to lifetimes of fairly brutal labor out in the fields under the blazing sun, such as various forms of arthritis and aches and pains. Fungal infections related to the unrelenting heat and humidity are common, as are cystitis and renal stones from lack of access to clean water and adequate

hydration. Numerous children were scattered about, and babes in arm, and the occasional neighborhood chicken wandered in the open door to be quickly shooed out again. Fans run in the tiny consult rooms, though they certainly don’t make them comfortable, and patients file in and out all day long. Treatments include donated nutritional and herbal supplements, a few herbal tinctures that the doctors make themselves, as well as practical dietary and hygienic support and advice. As medicine supplies are extremely limited, individual supplement and herb bottles are opened and only half dispensed, with the intent of saving the remainder for the next patient. Patients are asked to bring back empty plastic bottles and containers for re-use and as a preventive measure against littering. As not everyone can afford the 10 cents to take the public bus to the hospital, the doctors also make rounds in outlying villages and provide patients with bus fare for follow-up visits when needed. Malaria is a public health issue in this region, so NDI also works with governmental agencies, farmers, and villagers on environmental issues that impact the spread of malaria.

The funding to provide these services is garnished largely from “brigades.” Students of alternative medicine rotate through the clinic paying a fee to NDI for their accommodations and training. Naturopathic, chiropractic, acupuncture and Tai Sophia Institute’s herbal medicine master’s degree students may travel as student brigades to Nicaragua, their tuition sustaining NDI and providing for its basic operating expenses. In addition to clinical experience, NDI provides classwork and facilitates discussions on global health politics, environment factors, and structural poverty that contribute to people’s health and healthcare resources. Students stay in private homes and work alongside the community in the agricultural fields to fully comprehend peoples’ lives, resources, work, and the living conditions that contribute to their health issues.

Future NDI sites expect to continue this method of funding to be able to offer free services to additional communities around the world. Although hosting brigades is successful and is keeping the Nicaraguan clinic afloat, finances are a continual challenge and struggle (as is the case for most nonprofit organizations). The all-volunteer board throws in its own money, is actively engaged in grant-seeking, and is presently developing other fundraising venues. Tax-deductible donations can be mailed to Natural Doctors International, 1168 Butler Creek Road, Ashland, OR 97520. HG

Dr. Jillian Stansbury is a naturopathic physician and chair of the botanical medicine department at the National College of Natural Medicine in Portland, Oregon. She serves on NDI’s Board of Directors.

The Content and Quality of Human Clinical Trials on Herbs and Phytomedicines Published in RUSSIAN MEDICAL JOURNALS in the 21st Century

By Lena Bezman, MD

Introduction

About 80% of the world's population in developing countries relies on herbal medicine for some aspect of its health needs.¹ Russian herbal traditions are old and fairly well documented in classic textbooks.² In modern Russia, herbs are regarded as drugs and are used by patients under a physician's supervision. Physicians themselves usually do not have a preference between herbal and Western conventional pharmaceutical medicines. They also tend to base their recommendations on previous experience as well as the economic status of patients (herbal remedies are often less expensive than pharmaceutical ones that require a prescription). In Russia the practice of herbal medicine (phytotherapy) requires a medical degree from an accredited medical school.

Goal of this Study

General interest in new and traditional uses of herbal medicine in Russia has led to a need for quality assessment of clinical trials published in the Russian language and not yet translated to English. Some published trials include English abstracts and some do not. Not every abstract reflects the study and its results completely and correctly.

This review of human clinical studies recently published in the Russian language was motivated by the general interest of the international traditional medicine community in the quality of clinical studies conducted in Russia and in other countries where research is published in Russian. (The author of this article completed her medical training in Russia and can read and speak Russian fluently.)

Identification and Selection of Studies

A search was conducted on MEDLINE by setting the following parameters: "complementary medicine, clinical trials, human, Russian language, published after 2000." The decision to select only those studies published after the year 2000 was made in order to limit the number of studies to a manageable size and to analyze only those that are most recent. The search produced 151 articles. Out of these, 49 were studies on herbal preparations. They included 3 review articles, 4 animal studies, 5 homeopathic preparation trials, and 1 non-clinical study, all of which were excluded for the sample. Thus, the final sample of publications satisfying the above criteria contained 36 articles (see Appendix I). Full text copies of all articles were obtained.

Inclusion Criteria

Every journal publication available on MEDLINE and falling under the following criteria was included: Russian-language, original (non-review), clinical studies on herbal remedies in humans.

Extraction and Analysis of Data

For every article, the Medline ID number, name of the journal, date of publication, and city where the study was performed were recorded. Also recorded were specific herb and preparation

Table 1. Study Duration

Duration	# of herbal studies	# of non-herbal studies
<30 days	15 (42%)	7 (37%)
30-59 days	7 (19%)	5 (26%)
60+ days*	9* (25%)	4 (21%)
unknown	5 (14%)	3 (16%)
Total	36 (100%)	19 (100%)

* One study of Allicor® has a 10-year follow-up.

Table 2. Inclusion/Exclusion Criteria

Inclusion/exclusion	# of herbal studies	# of non-herbal studies
Criteria defined	34	19
Criteria not defined	2	0
Total	36	19

form, dose, regimen, number of study participants, inclusion and exclusion criteria, length of the study, and parameters of study design. Data were analyzed with Microsoft Excel 2002.

Translation of the names of Russian herbal preparations was conducted using Latin as a common botanical language. When not provided by the authors of the publication, names were cross-referenced through the multilingual *Dictionary of Medical Plants*.³

Results

The 36 analyzed studies were published in 18 different Russian medical and scientific journals. All of the journals are known to the author of this paper as reputable. The studies were performed in medical centers in 17 different cities. Sixty-four percent of the studies were conducted on patented herbal phytomedicines, with only 36% on herbs and essential oils.

In most of the analyzed studies, study duration and inclusion and exclusion criteria were defined and described (Tables 1 and 2). Institutional review board (IRB) approval or its equivalent was obtained in only 1 of 36 studies (Table 3). None of the studies included the power calculation (p-value) (Table 4). Informed consent was obtained in only 2 studies (Table 5). Placebo control was implemented in 11% of the studies while 28% of the studies were uncontrolled (Table 6). Standard treatment was used for comparison in the rest of the studies (61%). Only 1 trial was double-blind, with almost all studies lacking a blinding procedure entirely (Table 7). Eighty percent of the studies had no randomization performed, while none of the remaining 6 studies described the randomization processes in any detail (Table 8). Most studies had quantitative outcome measures (Table 9). None of the studies described any adverse event reporting system, and only 1 mentioned adverse events experienced or their absence (Table 10). In the cases where study participants stopped their participation before the end of the study, no reasons were provided in any of the studies analyzed. Statistical analysis was done in 75% of the studies (Table 11). Some basic analysis in these trials includes mean and standard deviation percentages, but no p-value for statistical significance. Very few trials list their funding sources and none disclosed authors' conflict of interests. There is a correlation between geographical location and study quality: all of the best quality studies were conducted in Moscow (Table 12).

It is evident from these tables that many human clinical trials involving herbs and phytomedicines are being conducted in multiple clinical and research centers in Russia and other former republics of the Soviet Union. This reflects the growing interest of the global medical and scientific communities in traditional and new applications of phytotherapy. The treatments examined in these studies reflect the range of conditions that cause significant morbidity in today's society,

Table 3. IRB (or equivalent) Approval

IRB approval	# of herbal studies	# of non-herbal studies
Approval obtained	1 (3%)	2 (11%)
No mention of approval	35	17
Total	36	19

Table 4. Power Calculation

Power calculation	# of herbal studies	# of non-herbal studies
Provided	0	0
Not provided	36	19
Total	36	19

Table 5. Informed Consent

Informed consent	# of herbal studies	# of non-herbal studies
Obtained	2 (6%)	3 (16%)
No info	34 (94%)	16 (84%)
Total	36 (100%)	19 (100%)

Table 6. Control

Control	# of herbal studies	# of non-herbal studies
Placebo controlled	4 (11%)	3 (16%)
Non-placebo controlled	22 (61%)	7 (37%)
Uncontrolled	10 (28%)	9 (47%)
Total	36 (100%)	19 (100%)

Table 7. Blinding Procedure

Procedure	# of herbal studies	# of non-herbal studies
Single-blind	3 (8%)	1 (5%)
Double-blind	1 (3%)	0
No blinding	32 (89%)	18 (95%)
Total	36 (100%)	19 (100%)

Table 8. Randomization Procedure

Randomization	# of herbal studies	# of non-herbal studies
Randomization performed	6 (17%)	5 (26%)
No randomization	29 (80%)	14 (74%)
No information	1 (3%)	0
Total	36 (100%)	19 (100%)

Table 9. Outcome Measure

Measure	# of herbal studies	# of non-herbal studies
Quantitative	23 (64%)	15 (79%)
Quantitative and Qualitative	10 (28%)	3 (16%)
Qualitative	3 (8%)	1 (5%)
Total	36 (100%)	19 (100%)

Table 10. Adverse Events Reporting

Adverse events	# of herbal studies	# of non-herbal studies
Reported	1 (3%)	6 (32%)
Not reported	35 (97%)	13 (68%)
Total	36 (100%)	19 (100%)

Table 11. Statistical Analysis

Statistical analysis	# of herbal studies	# of non-herbal studies
Present	27 (75%)	17 (89%)
Absent	9 (25%)	2 (11%)
Total	36 (100%)	19 (100%)

Table 12. Study Location (City)

City	# of herbal studies	# of non-herbal studies
Moscow	16 (43%)	8 (42%)
Tashkent	4	1
St. Petersburg	1	1
Barnaul	1	0
Tbilisi	1	1
Izevsk	1	0
Kharkov	0	1
Niznii Novgorod	1	1
Novosibirsk	1	0
Orenburg	1	0
Penza	0	1
Piatigorsk	1	0
Samara	1	1
Sochi	1	0
Stavropol	1	0
Sverdlovsk	0	1
Ufa	1	0
Vladivostok	1	0
Volgograd	1	0
Yalta	1	0
Yaroslavl	0	2
Unknown (Military)/Multicenter	1	1
Total	36	19

not only in Russia but around the world. Cardiovascular diseases and liver problems constitute one third of the health problems studied (Table 13). In total over 100 different herbs and medicinal plant ingredients were included in the 36 trials (Table 14). Some of them—e.g., broomcorn millet (*Panicum miliaceum*, Poaceae), European white birch (*Betula pendula*, Betulaceae), and Siberian larch (*Larix sibirica*, Pinaceae)—are not very well known or studied in the West.

As noted above, almost all studies (based on the sample that this paper reviews) have deficiencies in the design, quality, and reporting of necessary data in most clinical trials published in Russian medical journals. Various aspects of what is generally considered the gold standard of clinical research—the randomized controlled clinical trial—are frequently lacking in the published studies reviewed in this paper. For example, the concept of IRB approval or some other equivalent seems to still be missing from Russian medical science (Table 3). It is possible that IRB approval has been implemented but is not mentioned in the publication. Even in the studies where masking and randomization were implemented, their method and description was not detailed (Tables 7 & 8). Studies that mentioned and described adverse events never specified the procedure of adverse event reporting (Table 10).

Herbal versus Non-Herbal Studies

All of these design imperfections led to the hypothesis that it may be only herbal medicine studies that are conducted without great attention to study design. This led to the comparative study of publications on clinical trials on non-herbal (pharmaceutical) preparations and other treatment techniques. To accomplish this, a search similar to the original search for herbal studies was performed. Medline was searched with the following parameters: “published after year 2000, in Russian language, human studies, clinical trials, not complementary medicine.” This search produced 1493 publications. Nineteen studies were selected using a table of random numbers (see Appendix II). All the same data as for herbal studies were extracted. Analysis of the non-herbal studies in comparison with herbal studies showed similarities in the samples

of both. Almost all non-herbal studies were published in the same academic journals as the herbal studies (Table 15). Their distribution by the year of publication was also similar (Table 16). The hypothesis about differences in study design between the 2 groups found mixed support in this comparison. There were only 2 significant differences: (1) greater attention paid to adverse events (over 30% of non-herbal studies registered them, as opposed to only 3% of herbal studies) (Table 10) and (2) higher rate for implementation of randomization procedure (26% in non-herbal versus 17% in herbal studies) (Table 8). There was a slight increase in IRB implementation in non-herbal studies as compared to herbal (11% versus 3%) (Table 3). The proportion of studies where informed consent was obtained from participants was also slightly higher in non-herbal studies than in herbal studies (16% versus 6%) (Table 5).

Definitions of inclusion and exclusion criteria were provided in all non-herbal studies and the majority (94%) of herbal studies (Table 2). Power calculation was not provided in any of the herbal or non-herbal studies (Table 4). Use of control in general, and of placebo control in particular, was similar across both groups (Table 6). The same was true of blinding (masking) (Table 7) and randomization procedures (Table 8). In both groups, quantitative outcome measures were the most common (Table 9). Statistical

It is evident from these tables that many human clinical trials involving herbs and phytomedicines are being conducted in multiple clinical and research centers in Russia and other former republics of the Soviet Union.

analysis was performed in the majority of both groups (Table 11). Reasons for participants leaving the study before it was complete (dropouts) were not provided in either group.

Conclusion

Studies published in Russian-language academic journals remain beyond reach for most researchers and practitioners without fluency in the language. The absence and/or poor quality of English language abstracts makes it almost impossible to know even the subject matter studied in these trials. Formerly isolated

Table 13. Health Conditions Addressed

Health conditions	# of herbal studies	# of non-herbal studies
Inflammation and metabolic changes in liver cells and biliary tract; Lipid metabolism; Bile secretion and gallbladder contractility; Cholelithiasis; Childhood lambliosis	4	3
Arterial hypertension; Ischemic heart disease; Cerebral atherosclerosis; Coronary bypass	5	7
Chronic leg venous insufficiency; leg wounds of trophic origin	3	0
Tuberculosis	4	1
Chronic prostatitis and Benign Prostatic Hyperplasia (BPH)	3	0
Nephrolithiasis / urolithiasis	3	0
Immunity and acute respiratory infection in children	3	1
Physical stress	2	0
Cancer and precancerous conditions: Leukoplakia; Bladder cancer	2	1
Ophthalmologic conditions: retinal detachment, color and light perception	2	0
Genital herpes	1	0
Coagulation	1	0
Chronic obstructive bronchitis	1	0
Anxiety	1	1
Stomach and duodenum ulcers, H-pylori, GERD (gastro-esophageal reflux disorder)	1	2
Vertigo	0	1
Alopecia areata	0	1
Metabolic syndrome	0	1
Total	36	19

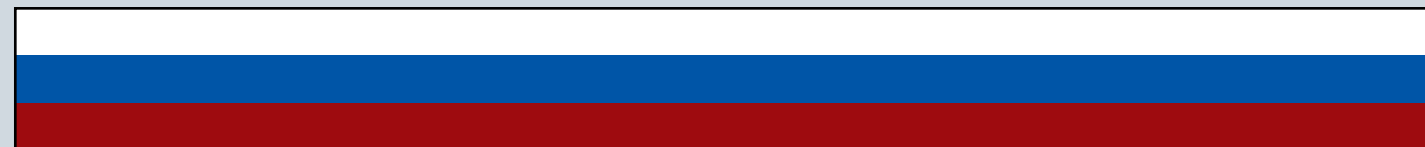


Table 14. Herbs and Phytomedicines Included in the Studies

Herb Material*	# of herbal studies
Herbs (simple and combinations): St. John's wort. Corn silk. Oregano. Motherwort. Yarrow. Horsetail. Agrimony. Eleutherococcus. Licorice. Plantain. Chamomile. Nettle. Eucalyptus. <i>Rhodiola rosea</i> . Peony. Amaranth (oil)	9 (25%)
Essential Oils: Lavender. Rose. Neroli. Geranium. Rosemary. Peppermint. Sage. Eucalyptus. Dill. Cloves. Vanilla. Thyme	4 (11%)
Proprietary Phytomedicinals: Ginkor-Fort —(troxerutin 0.3g, heptaminole chloride 0.3g, <i>Ginkgo biloba</i> extract 0.014g) Plaferon LB and Phenowine red grape (Saperavi)—phenol skin extract Miliacil — <i>Panicum miliaceum</i> oil Diuress —cranberry extract, uva ursi leaf, beech leaf, dandelion, watermelon seed, corn silk, vitamin B6 and potassium Allicor —(made by Inat-Pharma, Moscow, Russia) long-acting garlic Tykveol —Pumpkin seed oil Vilarin —(by "Vilar" Russia) dry extract of <i>Rhaponticum carthamoides</i> root (Leuzea root) = 10%, eleuthero root = 15%, <i>Echinacea purpurea</i> herb = 25%, licorice root = 10%, uva ursi leaf 10%, rose hips = 30% Phytomix-40 (Ph-40) —combination of 40 herbs, vitamins (mostly adaptogens). Prostanorm —(by "Vilar" Moscow, Russia) goldenrod, St. John's wort, <i>Echinacea purpurea</i> , licorice, etc. Prostaplant —(by Willmar Schwabe, Karlsruhe, Germany) standardized extract of saw palmetto berry Gentos —(by Richard Bittner) Poplar bud, saw palmetto Prolit —(by PT Industry, Djamu Borobudur, Indonesia) <i>Strobilanthes crispalea</i> leaf, papaya leaf, <i>Sonchus arvensis</i> leaf, <i>Phyllanthus urinaria</i> leaf, <i>Piper cubeba</i> fruit, <i>Imperata cylindrica</i> root, <i>Orthosiphon stamineus</i> herb Dikvertin —(by "Vilar" Moscow) from wood of <i>Larix sibirica</i> , <i>L. daurica</i> Kan-Yang —(by Swedish Herbal Institute, Goteborg, Sweden) extracts of <i>Andrographis paniculata</i> leaf and <i>Eleutherococcus senticosus</i> root Poliphepan —Russian-made lignin-based enterosorbent Hepabene —(by Ratiopharm, Germany) Milk thistle fruit, <i>Fumaria officinalis</i> Somaton and Auron —Russian-made external stimulating phytobalsams developed by V.V.Karavaev Poliol — (Russian patent) mix of lavender, rose, coriander, sage essential oils Natursil —Russian-made lipid fraction of milk thistle fruit. Syrup of Laminal —(Russian-made seaweed product), Extract of wild: St. John's wort herb, <i>Rosa cinnamomea</i> fruit, <i>Ribes nigrum</i> leaf, <i>Petroselinum crispum</i> herb, <i>Glycyrrhiza uralensis</i> root, <i>Urtica dioica</i> leaf, <i>Phellodendron amurense</i> fruit, <i>Matricaria recutita</i> flowers	23 (64%)
Total	36 (100%)

* For space purposes, Latin binomials for many of the common herbs listed in this table, noted by their generally accepted standardized common names in the U.S. market, are not included

Table 15. Distribution of Publications by Academic Journal

Name of Journal	# of herbal studies	# of non-herbal studies
<i>Angiologiya i Sosudistaia Khirurgiya (Angiology and Vascular Surgery)</i>	2	0
<i>Aviakosm Ekolog Med (Aerospace and Environmental Medicine)</i>	1	0
<i>Eksp Klin Gastroenterol (Experimental and Clinical Gastroenterology)</i>	1	1
<i>Experimental'naia i klinicheskaia farmakologiya (Experimental and Clinical Pharmacology)</i>	1	3
<i>Medicinskie Novosti Gruzii (Georgian Medical News)</i>	1	1
<i>Kardiologia (Cardiology)</i>	0	2
<i>Khirurgiya (Surgery)</i>	1	0
<i>Klinicheskaya Medicina (Clinical Medicine)</i>	4	2
<i>Likars'ka Sprava (Physician's Craft)</i>	0	1
<i>Meditsinskaya Parazitologiya (Medical Parasitology)</i>	1	0
<i>Problemy Tuberkuleza (Tuberculosis Problems)</i>	3	1
<i>Stomatologia (Stomatology)</i>	1	0
<i>Terapevticheskiy arkhiv (Therapeutic Archives)</i>	3	4
<i>Urologiya (Urology)</i>	5	1
<i>Vestnik Oftalmologii (Ophthalmology News)</i>	1	0
<i>Vestnik Otolaringologii (Otolaryngology News)</i>	1	1
<i>Vestnik Rossiiskoi akademii meditsinskikh nauk (News of Russian Academy of Medical Science)</i>	1	0
<i>Voenno-Meditsinskiy zhurnal (Journal of Military Medicine)</i>	1	1
<i>Voprosy kurortologii, fizioterapii (Issues in Rehabilitation and Physiotherapy)</i>	5	1
<i>Voprosy pitaniya (Issues in Nutrition)</i>	3	0
Total	36	19

Table 16. Year of Publication

Year	# of herbal studies	# of non-herbal studies
2001	4	5
2002	6	2
2003	7	3
2004	8	3
2005	7	1
2006	4	5
Total	36	19

from the rest of the international research community, the Russian herbal medicine research community is moving at a fast pace and is conducting many new and interesting pharmacological and clinical research studies. This review attempts to assess the proximity or lack thereof to the gold standard—randomized controlled clinical trials—with regard to the design and reporting of Russian-language studies on herbal preparations in comparison to non-herbal (conventional pharmaceutical) studies. The results clearly show more refinement in the design and reporting of conventional pharmaceutical studies than of herbal studies.

The results of this review appear to contrast greatly with those of a recent review published by Swiss university researchers in which the trial design and quality of 89 randomly-selected clinical trials conducted on herbal preparations, conducted mainly in Western Europe, were compared to an equal number of randomly-

selected clinical trials conducted on conventional pharmaceutical drugs.⁴ These trials were found on MEDLINE and were in various languages (60% of the herbal trials were in English). The results suggest that the quality of trials conducted on the herb and phytomedicinal preparations were equal or superior to the quality of conventional pharmaceutical drug trials. HG

Lena Bezman, MS, MD, MPH, served as a practicing pediatrician and a researcher in St. Petersburg, Russia, for 12 years. She immigrated to the United States in 1988, and after receiving her master's degree in public health from Johns Hopkins University (JHU), she continued her research in epidemiology. She continued to pursue her life-long interest in herbal medicine and in 2007 graduated from the Tai Sophia Institute with a master's degree in herbal medicine. She is currently holding joint appointment at the Neurology Department of JHU School of Medicine and Kennedy Krieger Institute and practicing herbal medicine at the Heart's Gates Wellness Center in Towson, MD.

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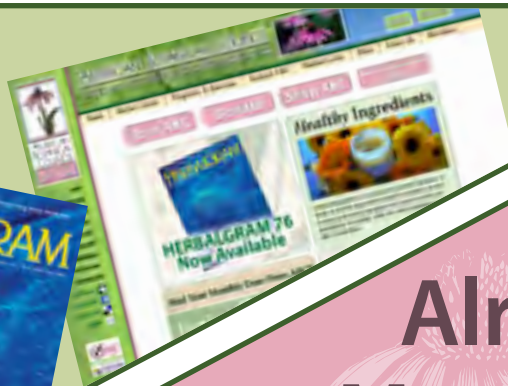
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CRN-NAD Program Increasing Reviews of Dietary Supplement Advertising

Dietary supplement advertising in the United States has come under increased scrutiny due to an initiative between the Council for Responsible Nutrition (CRN) and the National Advertising Division (NAD), a department of the Council for Better Business Bureaus. A series of grants supplied by CRN has enabled NAD to increase its staff and devote a significant amount of energy into reviewing and settling challenges of dietary supplement ads. In 2007, NAD reviewed a total of 25 dietary supplement advertising challenges, more than tripling the organization's previous annual average of 8 (L. Bean, e-mail, January 11, 2008).

CRN, a leading trade association of the dietary supplement industry, announced in 2006 that it had allocated a series of grants totaling nearly \$500,000 to NAD over a 3-year period.¹ These grants enabled NAD to hire an attorney devoted specifically to monitoring dietary supplement advertising and resolving challenges brought against such ads.

According to CRN President and CEO Steve Mister, CRN primarily chose to fund the initiative with NAD because advertisements can impact the way the entire American public perceives the dietary supplement industry. "The advertising is seen by everybody, not just the people who use the product," said Mister (oral communication, November 13, 2007). Mister argued that this program should help to quietly and effectively rectify or remove incorrect and misleading advertisements, while also sending a message to the entire industry that such ads are now the subject of increased monitoring.

"The vast majority of supplement advertisers are walking the straight and narrow," he said, noting that most advertisers are familiar with Federal Trade Commission (FTC) guidelines and are producing accurate ads. "There's only a small minority of ads that are really causing us heartburn."

The initiative with NAD officially went into effect in November of 2006, and the NAD handed down its first decision regarding a dietary supplement advertising challenge under the new program in January of 2007 (L. Bean, e-mail, November 28, 2007). The NAD gave its attorney Mark Levine the job of exclusively reviewing dietary supplement advertising and hired a new attorney to replace Levine as a general attorney. In addition to Levine, all other NAD attorneys may be assigned dietary supplement advertising challenges as part of their regular case loads.

An NAD review is initiated when a company or organization submits a challenge to NAD regarding the claims made by a particular advertiser. Such challenges are typically submitted by a competing company or an industry organization, although NAD also occasionally raises its own challenges based on its monitoring of national advertising and its investigations of consumer complaints or referrals. The NAD informs the challenged advertiser about the inquiry and gives the advertiser 15 business days to provide substantiation for the advertising claims at issue. NAD later forwards the advertiser's submission to the challenger (with any proprietary or confidential information redacted), giving the challenger 10 business days to file its response. That response is then sent to the advertiser for additional comments. Following the conclusion of this communication process, the NAD produces a final decision, of which the advertiser may submit a statement. Copies of NAD's final decision are ultimately posted on the agency's Web site and summarized in a press release.

"It is a user-friendly process to encourage participation,"

explained Andrea Levine, director of the NAD (e-mail, November 28, 2007). "Advertisers who decline to participate, or who decline to modify or discontinue advertising as recommended by NAD, may be referred to the appropriate federal agency for law enforcement action."

According to Mister, CRN imposed certain goals on NAD when funding the initiative. Chief among these objectives is for NAD to try to review 30 or more dietary supplement advertising challenges each year. Although NAD has stated that 25 cases were reviewed in 2007, Mister added that additional cases were also filed that year. "CRN is very pleased with the quantity and the quality of the decisions by NAD during the first year of this program," said Mister (e-mail, February 8, 2008).

In April of 2007, CRN launched an advertising campaign in support of its initiative with NAD, encouraging companies to assist in the industry's self-regulation efforts by filing challenges with NAD over false or misleading ads of competitors.² According to Mister, CRN immediately recognized that one of the program's biggest hurdles would be to convince the dietary supplement industry that the NAD process is a safe and effective forum for challenging one another's advertising (oral communication, November 13, 2007).

"If you look back at NAD's history, many companies [outside the dietary supplement industry] have been very comfortable using the NAD," Mister explained. "We haven't had that kind of history with NAD as an industry. There's been some reluctance among companies to call each other out."

Andrea Levine commented that NAD did witness some increased activity from dietary supplement companies following CRN's advertising campaign. "We are seeing increased interest, and we are always pleased to see company challenges," said Levine.

According to Mister, some legislators in Washington have commended the initiative for contributing to the industry's efforts at self-regulation. "This program has been very well received by both industry and some of our critics," he said.

However, there has been some criticism leveled against the program. The herbal supplement company Bioforce USA (Ghent, NY) issued a letter in October of 2007 initially refusing to participate in an NAD review regarding the company's advertising of Sanhelios® Curbita Bladder Caps because the challenge was filed by CRN.³ The company primarily noted that it was concerned about what it termed a "lack of transparency" regarding CRN's selection process for initiating the advertising challenge. Bioforce ultimately agreed to participate in the NAD review, which began in January of 2008 and was concluded in June 2008.⁴

Sanhelios Curbita Bladder Caps contain pumpkinseed oil from the European-grown pumpkin (*Cucurbita pepo*, Cucurbitaceae). The NAD review of the Bioforce advertising covered 3 different

areas of product claims: that Curbita Bladder Caps can “support the entire system of bladder muscles and normal emptying of the bladder,” “enhance bladder function,” and “strengthen” the bladder and/or urinary tract. While NAD found that the evidence and testing on the benefits of pumpkinseed oil support the advertiser’s claims that the product can support and enhance bladder function, NAD asked that some advertising claims associated with “strengthening” of the bladder or urinary tract be discontinued and asked that others be further qualified and limited in language. In particular, the company was asked to include the word “may” before some claims relating to strengthening of the bladder.

According to Pierce Sioussat, president of Bioforce USA, the company was happy with both the NAD’s decision and the process that the NAD used when conducting its review. “We were very impressed with how thorough NAD was in their review process, and if you were to examine their report in its entirety, you would see they put a great deal of effort into understanding the science we provided and making a determination regarding our claims, all of which were deemed to be substantiated with the caveat that we qualify the claim regarding strengthening of the bladder,” said Sioussat (e-mail, June 13, 2008).

Sioussat noted that Bioforce strongly supports efforts to enhance self-regulation of the dietary supplement industry and is glad that CRN has developed an initiative to help strengthen self-regulation. However, he added that Bioforce still has some concerns regarding the process by which CRN initiates challenges.

“We believe there is quite a bit CRN could do to improve their process, primarily with regard to the criteria used for bringing a challenge and the amount of due diligence they do before burdening companies with full participation in an NAD review,” he said.

Sioussat explained that there should be greater transparency as to how or why a company’s advertising has been selected for an NAD challenge and if there is a reasonable basis for such a challenge. Further, there should be some evidence that the individuals initiating the challenge are qualified to assess the advertising claims of a product and that those individuals have done some extent of research into publicly available information that might support the product’s claims before initiating the challenge.

According to Sioussat, these measures are particularly warranted in light of the fees a company can incur when participating in an NAD review and because a company cannot submit a counter challenge to a trade organization such as CRN, as it would be able to do to a competing company that issues a challenge.

Press statements issued following the conclusion of NAD reviews indicate that many companies have expressed appreciation of the NAD review process and that many have altered their advertising when recommended to do so by NAD^{5,6,7,8}—although some companies have noted their disagreement with NAD decisions.^{6,7,8}

“We are pleased to hear that Bioforce, as well as other companies, are appreciative of the NAD review process,” said CRN’s Mister. “The entire process by which ads are challenged has been very clear and transparent from the beginning.”

Mister added that a person or company may initiate an NAD advertising challenge not only through directly filing complaints

or competitive challenges to the NAD, but also by submitting questionable ads to CRN. CRN’s advertising review task force prioritizes ads based on their claims in an effort to submit the highest priority ads for NAD review.

“Generally speaking, the NAD process is a good one,” said Marc Ullman, an attorney specializing in the natural products and dietary supplement industry (oral communication, December 17, 2007). “It’s very fair and very impartial. Supplement companies, however, have been somewhat reluctant to participate because there have been some questions raised as to whether they set standards more appropriate for pharmaceuticals.” Ullman initially represented Bioforce in the CRN-NAD challenge. He noted that there appears to be some reluctance within the NAD to accept ingredient-based substantiation for claims, which is often the standard in the dietary supplement industry. (An ingredient-based substantiation of a claim stems from research concerning a product’s ingredient(s), as opposed to a product-based substantiation of a claim, which involves clinical testing of a particular finished product.)

Although CRN has committed to only 3 years of funding for the program, the association’s board may choose to provide additional grants after that time, pending an evaluation of the success of the initiative. “In addition, we hope that after the initial 3 years, dietary supplement companies would see the benefits of self-regulating the industry and would continue to submit challenges to the NAD on their own that will help to fund the program,” said Mister. “This program can only be successful if companies are willing to participate in the process, and we hope that it will be able to continue long after the initial grants have run out.” HG

—Courtney Cavaliere

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Native Essence Herb Company Sues FTC Over “Traditional Use” Claims

The herb company Native Essence of El Prado, New Mexico, filed a lawsuit in June 2008 against the Federal Trade Commission (FTC) over the right to provide information on the historical/traditional uses of herbs on the company’s Web site.¹ Native Essence owners Mark and Marianne Hershiser say that the First Amendment of the US Constitution gives them the right to say that certain herbs have a history of effective use.²

“This is a precedent-setting case,” said Richard Jaffe, the Houston-based attorney who filed the complaint against the FTC on behalf of Native Essence.² “The issue has never been litigated; it not only affects the Hershisers, but all companies which sell herbal products.”

The FTC’s position since 1998 has been that making historical claims about an herb’s use is against its advertising guidelines.³ The FTC sent a package to Mark Hershiser in April of 2008, notifying him that the FTC was penalizing Native Essence for publishing traditional use claims for herbs on its Web site.

Within the FTC packet, Hershiser was offered the option of signing a settlement in which he would have to send out a letter explaining that his company Web site contained “false, misleading” and “unsubstantiated”^{2,4} historical/traditional use claims for herbal products sold by the company.⁴ In addition, the settlement would require that Native Essence pay the FTC all the money from sales of the herbs that the agency deemed as having unsubstantiated claims. (The business has been in operation for 15 years). As an alternative, Hershiser could provide detailed personal and

corporate financial disclosure to the FTC so that the agency could assess his current financial worth, and he could pay that instead. If Hershiser decided against the settlement, the matter would go to court, and the FTC would reserve the right to freeze his assets during that time.

According to Hershiser, the FTC later informed him that it had previously sent him a warning letter in August of 2007 in e-mail form. Hershiser said that he receives large amounts of junk mail daily and never saw the first warning; it wasn’t until April 2008—when he was informed of his choice of penalties—that he learned of the FTC’s complaints against his company.

Hershiser said that he felt unable to accept the terms of the FTC settlement offer. Although the FTC letter contained a disclaimer specifying that acceptance of the settlement would not constitute an admission of having violated the law, Hershiser believed that signing the document would be tantamount to signing a confession.

“They say it is not an admission of guilt, but it sure appears to be that to me. If I am not guilty of anything then why would I have to send letters to my customers and why would I have to pay any money?” said Hershiser (e-mail, August 13, 2008). “I can’t confess to something when I don’t feel I’ve done anything wrong,” he added (oral communication, August 4, 2008). “I believe in herbs and I don’t think there’s anything wrong with passing on what my ancestors used them for.”

Rather than agree to the settlement and pay penalties, Native Essence decided to challenge the constitutionality of the FTC’s advertising guidelines for dietary supplements that prevent historical use claims. Native Essence, however, has currently removed information about traditional uses from its Web site, as a sign of good faith until the matter can be resolved.⁵

“Herb sellers should be able to tell consumers that an herb has a long historical use to treat a disease,” said Jaffe.² “The FTC’s prohibition of this kind of truthful information is unreasonable and unconstitutional.” Jaffe has a long history of activity in promoting “health freedom” issues and defending various alternative medicine practitioners whose practices have been deemed inappropriate or illegal by regulatory agencies.

Native Essence is specifically challenging pages 20-22 of the FTC’s guidelines for the advertising of dietary supplements—a section called “Claims Based on Traditional Use” (section II-C-2).³

“Specifically, it is the first sentence of that section that the plaintiffs are attacking, along with the FTC’s application of the section to implied claims based on historical use,” wrote Jim Prochnow, an attorney based in Colorado who specializes in food and drug issues (e-mail to M. Blumenthal, June 30, 2008). “In addition, the plaintiffs ask the Court to enjoin the FTC from using the section of the Advertising Guide when assessing substantiation of claims [for dietary supplements].”

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The Native Essence complaint also compares the FTC restriction of posting traditional uses of herbal medicine to a commercial Web site as a violation of the privacy rights of citizens. "Consumers have the right to receive this information so that they can make decisions about their health," said Jaffe (e-mail, July 30, 2008). "If herb sellers are disallowed from providing such information, the regulation adversely affects the right of privacy."

The FTC has even taken the stance that linking to Web sites that contain information about traditional uses is illegal, even if the pages link to government Web sites containing the same information about herbs. "According to the FTC it is just as illegal for a company to link to historical-use information from a nonprofit entity which doesn't sell herbs," said Jaffe.

"If we lose our freedom to pass on information, what have we got?" Hershiser added (oral communication, August 4, 2008). "If we lose that right, we might as well close up shop and go home."

The FTC filed a motion to dismiss the lawsuit in July of 2008, maintaining that the federal court cannot enjoin an agency enforcement action, especially one that has not yet been filed. Since the matter has not gone to court, the FTC points out that "further proceedings could result in an administrative complaint, a federal court complaint, or nothing at all."⁶

The plaintiffs responded to the motion in late August. "The FTC is wrong that the federal court can't hear the case now," said Jaffe, explaining Native Essence's response. "After threatening to file a federal action against them based in part on their historical use claims, which the FTC claims violates its guidelines, and after insist-

ing that the Hershisers sign a permanent injunction which would be filed in the New Mexico district court, it's surprising that the FTC claims that the very same court does not have the power to decide whether the guidelines are legal" (e-mail, August 28, 2008).

"In my opinion, the point that Native Essence raises about the use of federal government information about the traditional or historical use of ingredients is a worthy issue," said Prochnow (e-mail to M. Blumenthal, August 13, 2008). Prochnow added that the industry will surely learn more about the legal ramifications of this lawsuit as the situation unfolds. HG

—Kelly E. Saxton

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"If we lose our freedom to pass on information, what have we got?" ...
 "If we lose that right, we might as well close up shop and go home."



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Ginseng Dreams: The Secret World of America's Most Valuable Plant by Kristin Johannsen. Lexington, KY: The University Press of Kentucky; 2006. Hardcover; 244 pages. ISBN 13: 978-0813123844. \$24.95.

This is the second book to come out within the last two years, along with David Taylor's *Ginseng: The Divine Root* (Algonquin Books 2006), that focuses on the fascinating history and culture of ginseng (*Panax* spp., Araliaceae) and not on the cultivation of ginseng as a cash crop. Very much like Taylor's book, this one focuses on the individual perspectives of a small group of people with diverse backgrounds—such as a cancer researcher, a farmer, and a criminal investigator—each with his or her own story of this mysterious plant. Johannsen also follows ginseng from the hills of rural Appalachia to the shimmering, modern glass buildings of Hong Kong. The marriage of ancient culture, tradition, and modern medicine rarely succeeds, but this herb transcends time and distance. The book flows smoothly from chapter to chapter as the author skips over continents to weave the stories together.

In telling the fascinating history of the American ginseng trade dating back from the early 1700s, she apparently corrects one or two mistakes published in other books. The story of how Daniel Boone lost “12 tons” of dried ginseng roots when a barge overturned on the Ohio River is more realistically retold when “tons” is re-translated as “tuns” meaning “barrels.” As common as ginseng once was in the early 1800s, a single shipment of 24,000 dry pounds by someone even as famous as Daniel Boone seems unlikely.

However, the author does make a few mistakes of her own. Just about everyone who writes about ginseng botany makes mistakes or confuses field-cultivated ginseng with woodland grown ginseng. Johannsen repeats some of the misinformation that has appeared, unfortunately, even in some peer-reviewed scientific journals. She describes ginseng's growth from seed to maturity as if it occurs in a predictable linear fashion as it might under controlled

laboratory conditions, but not as it grows in woodlands. Woodland ginseng-growing habits from Canada to Georgia are so diverse that they defy hard and fast characterizations. Ginseng plants do not necessarily produce berries in 3 years nor do they reach a maximum height of about 20 inches. They're also not limited to a total of 5 compound leaves (prongs) regardless of

age. The age of ginseng roots may be roughly estimated by counting the stalk abscission scars on the rhizome (not on the side of the root as she writes), but it is far from “precise,” as anyone who has examined dry ginseng roots can attest. Ginseng does not necessarily produce a new stalk each year with a signature scar on the ever-lengthening rhizome to show its age after the top senesces (reaches maturity). Ginseng plants growing in the wild may fail to produce any new

top growth at all for years at a time when environmental conditions are unfavorable (e.g., drought). This seeming ability to “hide” for extended periods of time may contribute to the continued existence of ginseng populations thought to have been completely harvested.

The section of this book that I found most interesting was the one dealing with ginseng's medicinal properties. Ancient folklore proclaims ginseng as a powerful aphrodisiac. One of Johannsen's main sources, Laura Murphy, PhD, researcher for the Laura Murphy Laboratory of Southern Illinois University Carbondale and a teacher in the Department of Physiology, decided to test the effects of American ginseng on rats and was astonished to learn that it really was a powerful aphrodisiac! Rats fed ginseng powder in sesame oil had a much higher libido and performance rate than the control group. No other substance tested, not even marijuana (*Cannabis sativa*, Cannabinaceae), cocaine, or prescription drugs used for libido enhancement were as strong as the effects she saw from ginseng. Dr. Murphy's work with American ginseng on breast and prostate cancer is ongoing and so far has yielded very promising results.

Despite the dearth of published Western (i.e., US) research, Asian ginseng is currently listed in the national pharmacopias of Austria, China, France, Germany, Japan, Switzerland, and Russia. The extreme difficulties of getting grant money and publishing research results for non-patented herbal medicines is well known by many medical researchers, and ginseng is no exception to this problem.

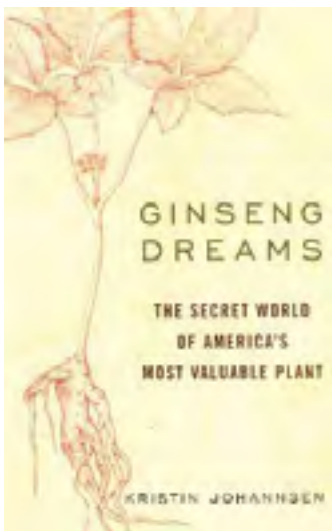
In conclusion, *Ginseng Dreams* is a delightful book for anyone who enjoys light reading about such a fascinating plant/medicine/folklore icon. Kristin Johannsen is a good writer, using her real-life characters skillfully to tell an interesting and easy-to-read story. However, it is not intended to be any sort of grower's guide or reference book. If one wants to learn how to grow ginseng or some other woodland medicinal herbs, read Scott Persons and Jeanine Davis' excellent textbook *Growing and Marketing Ginseng and Other Woodland Medicinals* (Bright Mountain Books 2005). *Ginseng Dreams* is well researched and appeals to both professional and lay persons who are interested in both herbs and the unlikely merging of cultures from Appalachia to Asia.

—Robert Beyfuss
Agriculture and Natural
Resources Issue Leader
Cornell University
Cooperative Extension
Agroforestry Resource Center
Acra, NY

Herb-A-Day by James A. Duke. Virginia Beach, VA: Eco Images; 2007. Paperback; 468 pages. ISBN 13: 978-0938423188. \$12.89.

Herb-A-Day is a 460 page-long book of articles by James Duke, PhD, on over 135 medicinal plants from around the world, divided into sections by country of origin. Most are articles written years ago for *The Wild Foods Forum* and *The Business of Herbs*, but some are previously unpublished and many of the articles have been updated with new information.

Herb books typically fall into one of two categories: books for the layman that often are lovely to look at but only skim the surface of available information, and books for the professional that are often dense with statistical data and study details. The latter are necessary for an evidence-based



approach to the use of herbs but typically make for dry reading. Jim Duke's recent book offers a different approach. This book certainly discusses scientific studies, plant constituents, and their actions—indeed such information abounds—but the information is always enveloped in stories of the plants' traditional uses and liberally spiced with comments on the politics of medicine, botany, and Jim's general life experiences.

The book captures the wit of its author, his curiosity, and his story-telling skills. It evokes the joy that plants should provide us while competently discussing the scientific facts about those plants and their constituents. It is a tasty mix, complete with recipes, song lyrics, data tables, and lovely botanical illustrations by Peggy Duke. The book meanders like a brook in the forest, one minute deep and still, the next minute light and bubbly, occasionally muddy, but usually flowing swiftly from topic to topic. Jim Duke is, as Mark Blumenthal has been known to comment, a national treasure—and this book is uncensored James Duke. Overall, it reminds us that we should eat our herbs, play with our herbs, study them, enjoy them, and use them.

I like to read something pleasant as I drink my morning coffee before heading off into the day. This book worked really well for those moments. I could pick it up, chuckle at Jim's wry sense of humor, learn a few facts, and be encouraged to contemplate a few ideas that otherwise would not have occurred to me. I think anyone, whether a lay or a professional plant person, will find the book equally enjoyable.

For the herb-savvy reader, this book contains information on the science supporting the medicinal qualities of plants (along with references to the studies discussed) while also noting that we should honor the value of traditional knowledge when assessing how to use plants. For those newer

to the study of plants, it provides accessible, reliable information on the nature and botany of particular plants and their uses in folk medicine. And, should you have a friend or rela-

tive who is a bit afraid of using plants, the book provides a persuasive analysis of why we all should be much more comfortable using medicinal plants.

—Kathy Abascal
Executive Director,
Botanical Medicine Academy
Vashon, WA

Bioactive Natural Products: Detection, Isolation, and Structural Determination, 2nd edition, by Steven M. Colegate and Russell J. Molyneux, eds. Boca Raton, FL: CRC Press; 2008. Hardcover; 605 pages. ISBN-13: 978-0849372582. \$199.95.

Botanists estimate that only about half of the estimated 500,000 flowering plants have been botanically described, and of these, only about 10% have been chemically described, many in only a rudimentary way. While we often think of natural products as those derived from plants, there are a multitude of other organisms that are potential sources of bioactive compounds, such as yeasts, spider venom, and corals, to name only a few. These bioactive compounds include therapeutics (such as the penicillins), compounds toxic to humans or animals, and compounds useful for pest control. Considering the large number of biologically active chemical compounds discovered so far in the limited number of species investigated, there exists a vast opportunity to discover and develop new natural products.

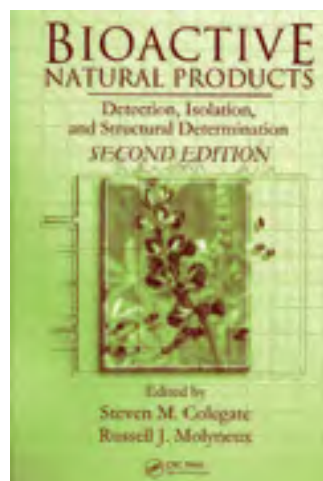
Steven M. Colegate and Russell J. Molyneux address this opportunity in their book *Bioactive Natural Products: Detection, Isolation and Structural Determination*, a 600-page handbook covering all aspects of detecting, isolating, and determining structures of chemical compounds in natural products. The book is divided into 21 chapters, each written by a different research group, and promotes a multidisciplinary approach, involving fields such as chemistry, biology, herbal medicine, toxicology, etc. It is geared towards those with a strong qualitative analytical chemistry background; those without such a

background will probably find their eyes glaze over quickly at the multitude of 2-D NMR (2 dimensional nuclear magnetic resonance) spectra, chromatograms, and chemical structures. For those of us who are analytical chemistry geeks, however, the book provides a wealth of information on the identification and characterization of bioactive natural products.

The editors did a fine job of organizing the chapters into a cohesive book. The first chapter starts with techniques to identify bioactivity in plant extracts or individual compounds, as this is the starting point in any search for potentially useful compounds. Techniques for the detection of general bioactivity, such as the brine shrimp test, and starfish/sea urchin assay are described, as well as more specific tests for characteristics such as antibiotic activity, insecticidal activity, allelopathy (the action of a plant to secrete toxic compounds that impede the growth of nearby plants competing for water, sunlight, etc.), and others. Once biologically active fractions are identified, techniques for the isolation, separation, and purification of individual compounds from these extracts are described.

The remaining chapters are broken into 2 different categories. There are 9 chapters dedicated to individual analytical techniques, including NMR spectroscopy (3 chapters), high-speed counter current chromatography, and liquid chromatography-mass spectrometry. Several of these chapters describe cutting-edge analytical technology, such as the chapters on LC (liquid chromatography)-NMR and biosensors. As a result, some of these techniques may not be easily accessible to many natural product laboratories, but it is always good to know what can be done, and the direction technology is going.

In addition to chapters dedicated to analytical techniques, there are 10 chapters on the identification and/or screening of compounds, either with specific biological activity, or from particular species. Some of these chapters are general, such as chapter 12, "Anticancer Drug Discovery and Development from Natural Prod-



ucts,” and chapter 21, “Plant-Associated Toxins: Bioactivity-Guided Isolation, ELISA (Enzyme-Linked ImmunoSorbent Assay), and LC-MS (Liquid chromatography-mass spectrometry) Detection.” Others are quite specific, such as chapter 16, “Bioassay-Directed Isolation and Identification of Antiaflatoxigenic Constituents of Walnuts,” and chapter 17 “Bioactive Peptides in Hen Eggs.”

The main strength of the book is the combination of general principles with very specific real-world examples. This enables natural products chemists to apply the principles outlined in the book to their own specific applications. Even for those analytical chemists not involved with the isolation and structural determination of natural products, the wealth of chemical struc-

tures, separation conditions, biochemical pathways, chemical degradation pathways, and NMR, MS, and UV (Ultraviolet-visible) spectra are a valuable resource. Want to know what the oxidative decomposition products of hyperforin are in St. John’s wort (*Hypericum perforatum*, Clusiaceae) and chromatographic conditions to separate them? It’s in there. Or the coumarins in the highly toxic *Cicuta monnieri* (Apiaceae) and a method of analysis for them? It’s in there. The detailed (21 page) index is also very helpful. The references at the end of each chapter are also extensive, with some chapters having over 300 references, mostly from peer-reviewed scientific journals.

Taken as a whole, *Bioactive Natural Products: Detection, Isolation, and Structural Determination*, would be an invaluable

resource for those researchers involved with natural product chemistry, and it would also be very useful for those analytical chemists involved in the characterization of botanicals.

—Mark C. Roman, PhD
President, Tampa Bay Analytical
Research, Inc.
Largo, FL

British Herbal Compendium: A Handbook of Scientific Information on Widely Used Plant Drugs, volume 2, by Peter Bradley (editor). Esher, Surrey, United Kingdom: British Herbal Medicine Association; 2006. Hardcover; ISBN 13: 978-0903032124. \$145.

New Book Profiles

Stevia: The Genus Stevia. A. Douglas Kinghorn, ed. New York, NY: Taylor & Francis; 2002. 211 pages, hardcover, tables, figures, references, index. \$129.95. ISBN 0-415-26830-3.

This book offers an in-depth examination of the increasingly popular *Stevia rebaudiana* (Asteraceae), an herb from South America that is used as a sweetening agent and dietary supplement. An overview of the uses and history of the herb is provided, as well as the botany, ethnobotany, and phytochemistry of *Stevia*. Additional chapters investigate methods to improve the taste of the sweet principles of *S. rebaudiana*, as well as the chemical synthesis, pharmacology, and toxicology of compounds such as steviol, stevioside, and rebaudioside A. Information regarding the cultivation and use of *Stevia* in other countries such as Japan and Korea is also provided.

Spirulina in Human Nutrition and Health. M.E. Gershwin and Amha Belay, eds. Boca Raton, FL: CRC Press; 2008. 312 pages, hardcover, tables, figures, references, index. \$89.95. ISBN 978-1-4200-5256-5.

Spirulina, one of the most-researched functional unicellular foods in widespread usage, is a valuable source of readily bioavailable protein, carotenoids, essential fatty acids, vitamins and minerals. This book compiles the wealth of

experimental data on Spirulina into a single accessible resource. It provides extensive information regarding Spirulina’s therapeutic applications, including its antioxidant profile, its use as an antibacterial and antiviral agent, and its role in aging and neurobiology.

Dietary Supplements (ACS Symposium Series). Chi-Tang Ho, James E. Simon, Fereidoon Shahidi, and Yu Shao, eds. Washington, DC: American Chemical Society; 2008. 335 pages, hardcover, tables, figures, references, index. \$175.00. ISBN 978-0-8412-3992-0.

There has been a significant increase in the use of dietary and botanical supplements in the United States, as well as a strong push for additional research that investigates the activity, safety, and efficacy of these products. This book provides some of the most recent findings and perspectives related to the phytochemistry of botanical dietary supplements, the bioactive compounds in teas and fruits, and the safety and bioactivity of selected dietary supplements, among other topics.

Vegetables and Fruits: Nutritional and Therapeutic Values. Thomas S.C. Li. Boca Raton, FL: Taylor and Francis Group; 2008. 286 pages, hardcover, tables, references, appendices, index. \$129.95. ISBN 1-4200-6871-7.

Vegetables and Fruits focuses on the importance of eating plant foods as a large part of dietary intake to improve human health and protect against

chronic disease. This book discusses over 200 fruits and vegetables available in North American markets and how the vitamins and minerals of these foods can provide optimal nutrition. Chapters include information on the major constituents and therapeutic compounds of fruits and vegetables. This is a good tool for learning about healthy eating, and it provides enlightening information on why many of the modern mass-marketed conventional foods produce an over-fed and under-nourished population.

Trick or Treatment?: Alternative Medicine on Trial. Simon Singh and Edzard Ernst. London: Bantam Press Publications; 2008. 352 pages, hardcover, appendix, index. \$16.99. ISBN 978-0-59306-129-9.

In this book, Singh and Ernst examine much of the published scientific research conducted on commonly-used alternative medicine practices. Detailed chapters discuss the history and evidence available for acupuncture, homeopathy, chiropractic therapy and herbal medicine. The appendix offers shorter comprehensive overviews of additional alternative therapies.

Tomorrow’s Table: Organic Farming, Genetics, and the Future of Food. Pamela C. Ronald and Raoul W. Adamchak. New York, NY: Oxford University Press; 2008. 232 pages, hardcover, tables, recipes, b&w photos, glossary, references, index. \$29.95. ISBN 978-0-

After receiving volume 1 of the *British Herbal Compendium* in 1992, one would have to be patient in waiting for volume 2, published 14 years later. The second volume of this useful reference was worth the wait. The *British Herbal Compendium* serves as a companion volume to the *British Herbal Pharmacopoeia* (BHP). The BHP was first published in parts, and then in a consolidated edition in 1983, followed by revised editions in 1990 and 1996. Like other works of its genre it provides information on identification and specifications for herbal material. It was



clear to the British Herbal Medicine Association (BHMA) that a companion volume was necessary to give modern herbal practitioners a scientific basis for the therapeutic activities of the herbs used in their practice.

In response to the Medicines Bill passed by the British Parliament in the early 1960s, which threatened the existence of herbal practice in the UK, in 1965 the BHMA set up a Scientific Committee that eventually led to the publication of the BHP. The BHMA has also been a leading member of the European Scientific Cooperative on

Phytotherapy (ESCOPE), which, under one umbrella, brought together 15 national herbal practice and phytomedicine-related societies from all over Western Europe. The *ESCOPE Monographs: The Scientific Foundation for Herbal Medicinal Products* was a major contribution from that organization. Peter R. Bradley, the author of the present volume, formerly served as chairman of the ESCOP Scientific Committee. His work and commitment to that organization slowed progress on BHC2 to spare moments over the ensuing years. While the first volume was a collective effort, volume 2 is solely the work of Bradley. His expertise, intimate knowledge of ESCOP's monographs and other compendia, and a thorough understanding of the breadth and diversity of the exploding literature

19530175-5.

This book, written by a geneticist at the University of California and her husband, an organic farmer, offers a unique perspective on current concerns in agricultural practices. The authors help distinguish between fact and fiction in the debate about the use of organic practices and genetically engineered (GE) plants in sustainable farming and in feeding an expanding human population. Also included are recipes used by the authors as well as an inside look on how they determine what to feed their family. This book will help answer questions for anyone concerned about how the food they eat is grown and how they can make informed food choices.

The New Book of Salvia: Sages for Every Garden. Betsy Clebsch. Portland, OR: Timber Press; 2003. 344 pages, softcover or hardcover, color photos, b&w illustrations, appendices, bibliography, index. \$19.95 (softcover); ISBN 978-0-88192-913-3. \$29.95 (hardcover); ISBN 978-0-88192-369-8.

The New Book of Salvia expands upon the first edition with entries for over 50 new species and cultivars. The descriptions offer detailed information about the origins, habitat, botany, and cultivation for each plant. Listings for where to see and buy salvias are also provided, as well as a flowering guide and lists of salvias suited for various climates. The book also includes beautiful photos of

salvias across the world.

Traveling Cultures and Plants: The Ethnobiology and Ethnopharmacy of Human Migrations. Andrea Pieroni and Ina Vandebroek, eds. New York, NY: Berga Books Inc; 2007. 256 pages, hardcover, tables, bibliography, index. \$80.00. ISBN 978-1-84545-373-2.

Rapid globalization and urbanization has brought about a significant increase in human migration, creating new transnational communities and diasporas. Traditional knowledge, beliefs, and practices related to the use of plants is evolving as these migrating communities come into contact with other cultures, modalities, and plant species in their new environment. The contributors to this volume—all internationally recognized scholars in the field of ethnobiology, transcultural pharmacy, and medical anthropology—analyze these dynamics of traditional knowledge in 12 selected case studies.

Western Herbs According to Traditional Chinese Medicine: A Practitioner's Guide. Thomas Avery Garra. Rochester, VT: Healing Arts Press; 2008. 272 pages, hardcover, color photos, appendices, glossary, bibliography, indexes. \$50.00. ISBN 978-1-59477-191-0.

Contains 58 monographs of herbs commonly used by Western herbalists, each accompanied by full-color photographs. Herbs are grouped by the basic categorization for medicinals in Chinese

medicine, such as Herbs that Resolve the Exterior and Herbs that Regulate Blood. The monographs detail the energetics, function and indication, channels entered, dosage and preparation, and contraindications of each plant. Garra also explains how to combine herbs to increase their effectiveness and how to use Western herbs to modify standard Chinese formulas. The Western Analogs for Chinese Herbs appendix further highlights 40 Chinese medicinals that have related species growing in the West.

The Most Effective Natural Cures on Earth: The Surprising, Unbiased Truth about What Treatments Work and Why. Jonny Bowden. Beverly, MA: Fair Winds Press; 2008. 360 pages, softcover, color photos, glossary, index. \$24.99. ISBN 978-1-59233-291-5.

Jonny Bowden takes his practical, knowledgeable, and open-minded approach, and focuses it on natural cures, revealing the best of alternative medicine for a mainstream audience. Through his personal use, extensive research, and wide-ranging expertise in nutrition and health, Jonny sorts through the myriad home remedies from many disciplines and traditions to show which ones work and how best to use these healing techniques. He also explains through approachable and articulate descriptions why they work and on what basis he selected these cures.

on medicinal plants, certainly makes the publication of BHC2 a welcome event.

Herbal medicine has come a long way in the UK over the past 40 years, from an obscure relic of the by-gone days, to a vibrant modern primary healthcare modality. Former trade schools are now universities through the efforts of Prince Charles (e.g., Westminster University in London and Middlesex University on London's outskirts). Now, the products of these 4-year education programs are degree-holding, licensed herbalists. Today leading British research institutes such as Reading University, Exeter University, and London University, among others, have highly visible international research programs in clinical aspects of phytotherapy. The BHMA has helped to lead the way to promote the cultural, as well as scientific, acceptance of herbal medicine in the UK.

The BHC2 includes 80 monographs on ingredients found in the BHP that are not covered in the 1992 volume 1 of BHC. Together the two volumes represent detailed information on 166 of the 232 phytomedicines included in the 1983 BHP. BHC2 reflects the scientific literature up to 2004.

Arranged alphabetically by common name, the monographs include nomenclatural details, a brief definition of the botanical ingredient, and quick reference information on constituents with components found in major chemical groups within the plant. Chemical structures of a handful of major constituents are the only graphic elements in the book. The constituent section ends with reference to "published assay methods" for relevant components.

A pharmacology section follows, with paragraphs on major activities, and cited references. General pharmacological effects are often followed by brief reviews of *in vivo* studies, and pharmacological studies in humans, if available. A section on "Clinical Studies" follows. In over half the monographs, one finds the phrase "None published on mono-preparations of . . ." under the clinical studies heading. However, occasional case reports, or clinical studies relative to combination products, are included here. In the cases of relatively widely used phytomedicines such as Agnus Castus (Chaste tree *Vitex agnus-castus*, Verbenaceae), Arnica flower, Calendula flowers, Capsicum, Echinacea, Ginkgo leaf, Kava-Kava, and others, excellent brief reviews of clinical studies are

included. If a significant number of clinical studies are reviewed, results are also presented in tabular form.

A section on therapeutics follows, which for practitioners provides the practical details for use of the ingredient in the clinic. This section includes actions, indications, uses based on experience or tradition, contraindications, side effects, interactions with other drugs, and dosage information. It is instructive to follow the information to the source reference. Much of the dosage information cites the 1983 BHP, the German Commission E Monograph, or secondary works such as the second edition of *Herbal Medicines* by Joanne Barnes, Linda A. Anderson, and J. David Phillipson (Pharmaceutical Press 2002), along with relevant human studies, and sometimes a popular book as well.

Each monograph includes an excellent review of safety of the ingredient with relevant references to animal studies, human toxicological reports, and *in vitro* studies. For those who wish quick reference information on the controversial potential hepatotoxicity of Kava-Kava, for example, a balanced assessment of the basis of the concerns and regulatory response is provided, along with an assessment of safety data based on clinical studies. In light of reports of hepatotoxicity and what some consider a knee-jerk regulatory response in Germany, France, the UK, and elsewhere, a harried practitioner advising a patient will find a rationale and well-reasoned assessment of safety by Bradley. Clinical studies reviewed in the book reveal that "Kava-kava extracts are well tolerated by most users and, in general, adverse events are rare, mild, and reversible."

A regulatory status section follows with reference to the ingredient's status as medicine or food in the UK, France, Germany, US, or the Council of Europe, among others. Next, a reference section enumerates cited literature with complete facts of publication. This includes the full title of foreign-language periodical articles (or an English title if supplied in the original publication) and language of the original publication. If neither are available, an English-translation of the title is provided. In the case of books, ISBN numbers are included. The thorough referencing is a particularly valuable aspect of the book for those readers seeking further information.

Following the reference list is the heading "Regulatory Guidelines from other

EU Countries" which, in the vast majority of cases, includes the text of French and German regulatory monographs.

The subtitle "A Handbook of Scientific Information on Widely Used Plant Drugs" might have read "widely used and obscure plant drugs," as herbs such as bayberry bark (*Myrica cerifera*, now *Morella cerifera*, Myricaceae), birch leaf (*Betula pendula*, Betulaceae), grindelia (*Grindelia* spp., Asteraceae), hydrangea (*Hydrangea arborescens*, Hydrangeaceae), and white deadnettle (*Lamium album*, Lamiaceae), among others, may not be on everyone's list of "widely used drugs." However, the book does provide limited information on a handful of relatively obscure herbs. Of the more obscure items, 14 herbs are not covered in official pharmacopeias, though 11 are covered in the BHP (the 1983, 1990, and 1996 editions). Most of the herbs in the book are monographed in *Pharmacopoeia Europea*, and 20 additional items are covered in national pharmacopeias. The book does include major phytomedicines such as ginkgo leaf, saw palmetto berry, and other important herbal drugs not included in early versions of BHP.

British Herbal Compendium, volume 2, although limited in the number of herbal medicines covered, is an excellent companion volume to complement other British Herbal Medicine Association publications such as the 1983 BHP, the 1996 BHP, and the BHC volume 1 (1992), and the 2003 edition of *A Guide to Traditional Herbal Medicines*. All of these useful publications, poorly distributed in the United States, are available from the BHMA. *British Herbal Compendium*, volume 2, is also an excellent complement to the ESCOP Monographs, German Commission E Monographs, and other standard works. This valuable compilation is an important addition to any professional herbal library. It is assumed a volume 3 will appear in due time and perhaps new editions of BHC volumes 1 and 2. In the meantime, this book reflects important scientific information on herbal medicine presented in a detailed, user-friendly presentation, valuable for practitioners, and for anyone interested in a scientific approach to herbal medicines.

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



James R. Thrower 1948-2008

James R. Thrower, founder of Whole Herb Company in Sonoma, California, and a well-respected member of the herbal community, passed away on August 9, 2008, at the age of 59.¹ He had suffered from multiple system atrophy for more than 7 years.

"Jim was one of those rare people who just pulled you to him," said his wife Billie Thrower (oral communication, September 4, 2008).

"He had tremendous charisma. Jim could relate to anyone: cab drivers, 2-year-olds, [people of different nationalities], employees and presidents of international corporations—all on equal footing. Everyone found him accessible."

Jim Thrower was born in St. Louis, Missouri, in 1948.¹ Prior to his work in the herbal and spice industries, he became involved in various cultural and political movements. During his early 20s, he served as a member of a media/documentary team that captured aspects of America's "counter-culture." He photographed many rock stars and bands, including the Rolling Stones and the Grateful Dead. He also served time in prison over his principle-based refusal to be drafted into the Vietnam War. He ultimately took his case to the Supreme Court to clear his name, and in 1976 he received a full pardon signed by President Gerald Ford.

Thrower founded Whole Herb Company in 1975. His interest in herbs was inspired largely by his family's background in farming, as well as a desire to contribute to the availability of natural health options and quality culinary ingredients.² Thrower was passionately committed to sourcing quality botanicals for his business. In the company's early years, he would often travel to Western Europe, Mexico, and the Pacific Islands to source medicinal and culinary herbs and spices. In later years, he was known to travel regularly around the globe visiting and qualifying growers, wild crafters, processors, and exporters in nearly every continent.

"Jim loved the people and the products. He loved traveling all over the world and making contacts with the growers, harvesters, and suppliers," said Billie Thrower. "For Jim, the business was all about relationships. He really liked to have personal contacts with everyone he did business with, whether they were on the supply end or the purchasing end."

David Black, president of Meridian Trading Company and a friend of Thrower's for nearly 30 years, claimed that Thrower's willingness to travel extensively and establish personal relationships with suppliers and foreign colleagues made him a great ambassador for the herbal industry (oral communication, August 27, 2008). According to Black, many businesses within the herbal and spice industry still operate through handshake and friendship-based partnerships. "In this era of computers and the Internet, [Jim Thrower] helped to develop a business style from the old days," he said.

Black added that Thrower's well-attended funeral included some friends and colleagues from foreign countries, such as China and Thailand.

Thrower retired from Whole Herb Company in 2006, due to his failing health.³ Rather than sell the company to a competitor, he chose

to hand leadership of the company over to a team of employees, each representing a key component of the business. The management team continues to run the company through a system of shared leadership and cooperation. Although Billie Thrower took a 2-year hiatus from her role at Whole Herb Company to care for her husband, she recently resumed her role in the company in September. "Our management team has done a tremendous job over the past 2 years, and together we're looking forward to taking Whole Herb to the next level," she said. "I'm thrilled to be back."

"Jim was one of those rare individuals who always seemed to have a smile on his face and a twinkle in his eye, as if he knew some rare secret about life," said ABC Founder and Executive Director Mark Blumenthal. "No matter how serious things seemed—and he became confronted with a truly serious challenge, a life-threatening illness—he seemed to be able to understand that beneath all of this veneer of personality and civilization there was something reminding him not to take himself, and his condition, too seriously. He was a true gentleman, and a gentle man."

Peter Landes of KHL Flavors, Inc. and a friend of Thrower's for more than 20 years, said that many people can give stories of Thrower's courage, humor, and wit (e-mail, August 21, 2008). "What stood out for me about Jim was his self-deprecating sense of humor and the gentle tone of his inevitable zingers," Landes said. "I sat in many, many meetings with Jim both at [American Herbal Products Association] and at [American Spice Trade Association] conventions, and nobody could mock a boring or uninformed or generally bad speaker better than Jim. Yet he retained a boyish enthusiasm for business and relationships, and after all those years still reminded me of the high school quarterback he'd been in his optimistic outlook."

"Jim's legacy is passion," said Billie Thrower. "He was passionate about what he did for a living. He was passionate about his products and his people. Jim had a wide range of interests and experiences, and he was intellectually and emotionally fearless in pursuit of them." She added that his enthusiasm with his job led him to create a work environment that promoted both fun and respect. "He would routinely remind us that our suppliers are every bit as important as our largest customers, and that our business is a three-way partnership. He really ran his company with the bottom line of respect for everyone."

Thrower is survived by his wife Billie, his 3 daughters Alli, Jamie, and Lulu, and his new granddaughter Chloe James.

A fund has been established in Jim Thrower's name, which is intended to offer financial assistance to college graduates (or life graduates) with visionary goals related to agriculture. The "Jim Thrower Dreamer's Grant" will provide \$5,000 in "seed" or start-up funds to a selected recipient. Contributors to the grant will be invited to participate in the recipient submissions and awards process. Donations can be made to the "Jim Thrower Dreamer's Grant" and sent to Whole Herb Company, P.O. Box 1203, Sonoma, CA 95476. HG

—Courtney Cavaliere

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Rand Skolnick 1958-2008

Rand Skolnick, a leader in the dietary supplement industry, died on July 4, 2008 at the age of 50.¹ Rand Skolnick was well known for his work within his family business, Solgar Vitamin & Herb Company, of which he was president and chief executive officer.

Skolnick was born in Long Island, New York, in 1958. He began training for his eventual CEO role in his family's company when he was five, according to an anecdote in *Whole Foods Magazine*.² "At the age of 5," the article quoted him, "I can remember being at the dinner table, and Dad trying to convince my brothers and me how much fun we would have after dinner, counting out tablets and putting them into bottles. One of my most unforgettable moments came when I had just washed my hands, which were still a little wet, and had begun counting the tablets. My father scolded me, pointing out that water could be the most reactive substance when it comes to vitamins. All I could say in my own defense was 'Dad, I didn't know that; I'm only 5!'"

This set the trend in Skolnick's life for an unwavering amount of accuracy in his business dealings. Though his parents Allen and Connie Skolnick began the business in 1947 and had tremendous success, the business was even more successful after Rand became the CEO.³ Skolnick began work at the company immediately after graduating high school in 1975, but not as the CEO initially. In fact, he spent his early years there doing odd jobs like paint-

ing floors, unloading trucks, and stocking shelves.² According to *Whole Foods Magazine*, his father referred to this as his "executive training," since "a true executive understands his company from every aspect."² Skolnick joined Solgar full-time in 1979 and became the CEO five years later after successfully expanding the business nationally; this made him one of the youngest CEOs in the natural products industry at that time.³

Skolnick had great passion for the dietary supplement industry, and passion for perfection and quality in the finished products manufactured for the consumer, according to Carl Germano, RD, CNS, CDN (Certified Nutritionist/Dietitian). Germano is executive vice president of research & product development for Millennium Biotechnologies, and he worked with Skolnick for 8 years as Solgar's vice president of research (oral communication, August 26, 2008). Germano added that from the onset, Skolnick adopted and followed the belief that research in product development should drive sales. "He worked to follow in his father's footsteps, who was also tremendously successful, to uphold the standards set for Solgar that eventually became the gold standard by which many others followed," said Germano. "He breathed the business. It was his life."

According to Michael Shuck, Solgar Vitamin & Herb Company's vice president of sales, Skolnick was the main force behind the internationalization of the Solgar® Brand (e-mail, August 22, 2008). Because of his work in this area, Solgar is currently distributed in over 40 countries. Shuck met Skolnick in 1983 and joined Solgar in 1988. "He was the most passionate person I ever met both in business and in life," said Shuck. "He was also a natural born leader with tremendous charisma."

Skolnick was this year's recipient of the President's Award from the Natural Products Association (NPA), one of the association's highest honors for those who have contributed greatly to the natural products industry.⁴ The award was presented posthumously at the NPA Natural MarketPlace 2008, on July 17–19 in Las Vegas, Nevada. Shuck accepted this award in his stead.

"The moving tribute he received when his colleagues and staff accepted the award on his behalf spoke volumes about the respect and affection those who had the opportunity to work closely with him felt," said David R. Seckman, executive director and CEO of NPA (e-mail, September 10, 2008). "Clearly, he will be missed."

Rand Skolnick is survived by his parents Allen and Connie, his brothers Mitchell and Barry, and his partner Terrence Meck.¹ Skolnick was also a philanthropist. His own personal foundation, Palette Fund, is currently accepting donations in his memory at PO Box 865, Lynbrook, NY 11563. HG

—Kelly E. Saxton

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4. Saxton KE. NPA Announces 2008 Award Recipients. *HerbalGram*. 2008;78:16–17.

November 4–6: Health Ingredients Europe 2008. Paris, France. Taking place at the Paris-Nord Villepinte Exhibition Centre, Hall 1 & 2, Hi Europe 2008 is a place for the health ingredients industry to exhibit before an international collection of food professionals. This 3-day event is intended for those who work with health ingredients such as nutraceuticals, cosmeceuticals, supplements, functional foods, etc. Over 400 international health ingredients companies, buyers, sellers, industry leaders, and innovators are expected to attend. Those who register will get a chance to network, examine current business issues, and discover new health ingredients, products, and services. For more information, visit the Web site: www.hi-events.com.

November 5–7: 2008 CMDD Symposium on Marine Natural Products and Drug Discovery. Seoul, Korea. Held at the Ritz-Carlton Seoul, this symposium will cover novel drug targets, natural products, total synthesis, mechanism of action, genomics, etc. An extensive program including a plenary lecture, keynotes, and oral and poster presentations will provide one with an excellent opportunity to gain better insight to recent research on marine natural products. This conference will offer both comprehensive academic sessions and valuable cultural experiences. For more information, please visit the Web site: www.cmdds.or.kr.

November 6–7: AICR Annual Research Conference on Food, Nutrition, Physical Activity & Cancer. Washington, DC. Held at the Capital Hilton Hotel, this conference will be a scientific forum on how cancer is influenced by food, nutrition, weight management, and physical activity. In the opening plenary session, speakers will present the latest research on topics related to supplement use. The following sessions will explore new technologies that are allowing researchers a more comprehensive understanding of how nutrition relates to genes. Another session will focus on the use of antioxidants to increase cancer survival and the role of dietary factors that may influence the recurrence of certain cancers. Other topics include vitamin D and cancer, personalized genomics, and the importance of probiotics and intestinal flora. For more information, please visit the Web site: www.aicr.org/conference.

November 7–8: Ethnobotany: Integrating Biology and Ethnobotany. St. Louis, Missouri.

This is the second William L. Brown Symposium and first International Union of Biological Sciences (IUBS) Symposium on Biology and Traditional Knowledge. This two-day symposium is presented by the Wm. L. Brown Center for Plant Genetic Resources and the International Union of Biological Sciences. Taking place at the Missouri Botanical Garden, this event will consist of a series of lectures and workshops. During the meeting, Nancy Turner, PhD, of the University of Victoria in British Columbia will be honored for her work on traditional land and resource management systems of indigenous peoples in western Canada. Dr. Turner is this year's recipient of the Wm. L. Brown Award for Excellence in Genetic Resource Conservation. For more information please visit the Web site: www.wlbcenter.org/drawer/Symposium/website/homepage.htm.

November 9–14: 4th WOCMAP. Cape Town, South Africa. The 4th World Congress on Medicinal and Aromatic Plants (WOCMAP)—titled “Using Plants to Benefit People”—will be held by the non-governmental body, the International Council for Medicinal and Aromatic Plants. This organization strives to encourage international understanding and cooperation between national and international organizations on the role of medicinal and aromatic plants in science, medicine, and industry. The conference will be held in Cape Town, once called heaven on earth by Carl Linnaeus because of its floral diversity, at the Cape Town International Convention Centre (CTICC). The CTICC is situated near high-quality accommodations, and tourist attractions such as the Kirstenbosch Botanical Garden and the famous Victoria and Alfred Waterfront, which is tucked between Robben Island and Table Mountain.

The conference will include presentations by leading scientists on the developments in medicinal and aromatic plant knowledge, and all abstracts will be published in the *South African Journal of Botany*. For more information visit the Web site: www.ahpa.org/portals/0/pdfs/08_1100_WOCMAPiv.pdf.

November 16–18: The 6th Middle East Natural & Organic Products (MENOP) Expo 2008. Dubai, UAE, Dubai World Trade Centre (Hall 1 & 2). This expo will help those in the natural and organic product industry explore new products and recent trends. Also included are informative seminars, conferences, demonstrations, and other business opportunities. Industry leaders from all over the world will speak. This is intended for those interested in business opportunities in the Middle East. This is the 6th edition of this expo and it is the largest trade show for natural and organic products in the Middle East. For more information, please visit the Web site: www.globallinksdubai.com.

November 16: Bringing Integrative Medicine to Your Practice 2008. San Diego, CA. Located at the Paradise Point Resort, this all-day symposium is intended for healthcare providers and administrators who'd like to integrate alternative medicine into their healthcare program or improve and deepen their current integrative healthcare program. Philanthropy and strategic planning will also be addressed. The integrative medicine team at Scripps will share their real-world experiences and knowledge on issues related to integration. For more information or to register, e-mail med.edu@scrippshealth.org, call 858-652-5400, or visit the Web site: www.scripps.org/events/bringing-integrative-medicine-to-your-practice-2008.

More calendar listings at
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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.

Tea Ingredients Annual 2008 is a recently released, comprehensive source-book for companies manufacturing products containing tea-based ingredients. The book contains information relevant to product developers, research scientists, food technologists, and purchasing agents in such companies. It lists hard-to-find ingredient suppliers of specialty and herbal teas and showcases tea products, tea product constituents, and analytical laboratories offering complex analyses of tea. The source-book costs \$395. More information at www.teareport.com.

IntegrativePractitioner.com is a recently launched online community for integrative healthcare professionals. The Web site includes an extensive database of articles, research, and case studies on integrative medicine, plus access to audio and video recordings of Integrative Healthcare Symposium presentations. The site

offers tools and resources for learning about products and services supporting integrative medicine, plus forums and networking opportunities for practitioners. Membership is free.

AHPA 2006-2007 Tonnage Survey Questionnaire, a tool for collecting information on the harvest of certain North American medicinal plants and herbs, is now available online. The American Herbal Products Association's biannual tonnage survey is conducted to quantify the current industry-wide harvest of selected medicinal plants that have been the subject of conservation or agricultural concerns. Primary raw material producers of the selected plants and herbs are encouraged to participate. Submitted information will be kept confidential and used to prepare aggregate data for the tonnage survey report. More information is available at AHPA's Web site: www.ahpa.org.

NBJ's Nutritional Raw Material & Ingredient Supply Report 2008 provides new data on the 2007 markets for ingredients and raw materials in supplements, functional foods, personal care products, and other specialty applications. This recently released publication of the *Nutrition Business Journal* includes in-depth analysis of the dietary supplement supply chain, 1-page business profiles of more than 150 ingredient supply and contract manufacturing companies serving the US market, a regulatory analysis that includes information on ingredients being sourced from China, a section devoted to supplier strategies, and sales figures for the entire nutrition industry value chain for 2007. \$2,995. Information available at www.nutritionbusinessjournal.com.

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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