

American Botanical Council's English translation of
The Complete German Commission E Monographs
Therapeutic Guide to Herbal Medicines

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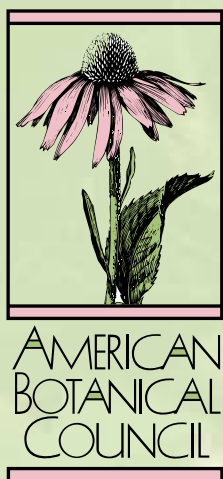
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Dear Reader



At ABC, we consider each issue of *HerbalGram* special. After all, months of work go into each issue, with some of the feature articles being planned, written and/or edited over a period of up to a year or more. But this issue is really special as we begin publishing the results of our Ginseng Evaluation Program (GEP), a project we started back in 1993!

Here we present the first of three GEP reports, the Standardized Phase report. Future issues will feature results from our testing of eleuthero (a.k.a. Siberian ginseng) products and then our finale, the results of our tests on American and Asian ginseng products.

Along with the GEP Standardized Phase report, we also include additional articles on various subjects surrounding this fabled herb. We have included an editorial on the meaning and extent of the word *standardization*. Of particular interest is Steven Foster's article and photographs on Vietnamese ginseng, a relatively new member of the genus *Panax*. Future issues will also contain numerous ancillary articles to elaborate on various points made in the GEP reports and to consider the state of the species themselves.

This issue is also special because we launch a new section, Clinical Update, written by our good friend Don Brown, N.D. Don is well known as one of America's foremost reporters on and interpreters of phytomedicine research, having written hundreds of clinical research reviews. Here, he summarizes three recent clinical trials on ginkgo, peppermint oil and vitex, offering his unique commentary regarding their clinical significance.

We also include an article from Kathy Abascal and Eric Yarnell on the efforts by the American Herbalists Guild and the Botanical Medicine Academy to establish competency exams in the practice of Western herbal medicine.

And, finally, a sad but inspiring note. We have always tried to honor our colleagues, mentors, and friends whose pioneering work has helped to create the modern botanical, ethnobotanical, herbal, and phytomedicinal fields. The world of ethnobotany lost a true giant in April with the passing of Harvard professor and renowned botanist Richard Evans Schultes. Veteran *HerbalGram* readers will recall our cover story on professor Schultes in issue #38, with excerpts from *One River*, the book about his amazing Amazon exploits by Wade Davis, one of his former students. Schultes inspired a whole generation of ethnobotanists and scientists in related disciplines, some of whom offer their insights and anecdotes in a special tribute. Their words make it clear that with his passing the world of medicinal and psychoactive plants will never be the same, but will nevertheless continue through the excellent works of the many people whose lives he stimulated.

Mark Blumenthal

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On the cover:

American ginseng
(*Panax quinquefolius*)
roots

Courtesy of R.J. Coor
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Dr. Nguyen Thi Nga with herbarium sheet of *Panax vietnamensis*.
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Ginseng *Panax ginseng*. Illustration by Yue-ming Chen; courtesy of World Life Research Institute, Colton, California.

ABC Press Release Clarifies St. John's Wort Confusion

ABC continues its media education efforts with press releases and letters to the editor. In April, ABC responded to a clinical trial¹ regarding St. John's wort (SJW) published in the *Journal of the American Medical Association* with a press release and several letters to the editors of publications that covered this study.

The study reported that a standardized SJW preparation was ineffective in treating patients with severe depression. ABC and others in the herbal community were concerned about the confusion generated by misleading headlines and inaccurate coverage of the significance of the new study. The ABC release included statements by Jerry Cott, Ph.D., former Chief of the Psychopharmacology Research Program at the National Institute of Mental Health, that

this study does not invalidate the use of SJW in clinical depression.

Dr. Cott, a member of ABC's Advisory Board and an expert on SJW clinical research, raised some questions about the design and implications of the study. ABC's founder and executive director, Mark Blumenthal, stressed the fact that a significant number of previously published clinical trials document the safe and effective use of SJW to treat mild to moderate depression. ABC's release and some of the points made by Cott and Blumenthal were picked up by the *New York Times*, *Washington Post*, *Time* magazine (who referred to ABC's "stinging press release"), and the *CBS Evening News* (in an interview with Hyla Cass, M.D., a Los Angeles-based psychiatrist experienced with the use of SJW in her clinical practice), among other media outlets.

As ever, ABC continues to help reporters who request information on herbs—from market statistics to information on traditional and contemporary uses of herbal medicines, and perspectives on research and regulation. The Media Education Campaign (MEC) is a program to fulfill ABC's mission to provide quality herbal education. Meeting the demand for reliable herbal information, ABC supplies interviews, and updated phytomedicine research to the media. Further information on ABC's MEC is available at <<http://www.HerbalGram.org>>, or by calling 512/926-4900, ext. 119.

—Kim West, ABC 🐾

1. Shelton RC, Keller MB, Gelenberg A, Dunner DL, Hirschfeld R, Thase ME, et al. Effectiveness of St. John's Wort in Major Depression: A Randomized Controlled Trial. *JAMA*. 2001;285(15):1978-86.

ABC Educates Media and Public on Herbal Medicines

This past spring, ABC released three "Spotlight on Herbs" profiles for ginkgo (*Ginkgo biloba*), saw palmetto (*Serenoa repens*), and St. John's wort (*Hypericum perforatum*), the first of an on-going series. Distributed to electronic and print media (including 10,000 newspapers), these consumer-oriented releases profile individual herbs, herb topics, and controversial items in the media. The releases appear as 400-word articles in newspapers across the U.S., with a possible readership estimated at more than one million for each release. The profiles also offer four-color photographs of the

herbs from noted botanical photographer Steven Foster.

Each article concludes with an invitation to readers to visit ABC's website for free access to a scientific monograph. The monographs include the most current information, including updated safety and herb/drug interaction information. ABC intends to release future "Spotlight on Herbs" profiles on a regular basis.

"Updated, accurate information is the key to this program," said Mark Blumenthal, ABC's founder and executive director.

"Eventually, ABC will release a different profile every several weeks."

—Kim West, ABC 🐾



Two groups of visitors crossed paths at ABC's Case Mill Homestead. Mark Blumenthal (second from left) points out mullein in the Human Systems medicinal plant demonstration gardens. Two physicians visiting that day were (1-r) Don Counts, M.D., member of the Texas Medical Association's Alternative Medicine Committee, and Victor Sierpina, M.D., assistant professor of Family Medicine and Medical Acupuncture at the University of Texas Medical Branch at Galveston. Three scientists visiting from Texas A&M University's Food Protein Research and Development Center were Sefa Koseoglu, Ph.D., head of the Separation Sciences Program and associate research professor, Farzaneh Jebrail, Ph.D., research associate, and Carl J. Vavra, senior engineering research associate. Photo © 2001 ABC.



Case Mill Garden Redesign

Since ABC moved to the Case Mill Homestead in July, 1998, garden staff has designed and installed 15 medicinal theme gardens. Unusually torrential rains this past winter, and the resulting weeds and erosion, have caused us to redesign some of the gardens so's to minimize future maintenance. Garden staff is currently working on the Human Systems Garden redesign; the Fragrance Garden will follow. Volunteers to help with this project are welcome, as is financial support. To find out more about how you can help, or to tour the gardens, call 512/926-4900.

Internship Program Continues to Grow at ABC

In 1998, ABC established its first formal Internship program with the dietetic program at Southwest Texas State University (SWT). The SWT dietetic internship program is a four-day, on-site rotation program that introduces undergraduate students to the health benefits of herbs in order to incorporate this knowledge into their future professional practice. In 1999, this program expanded to incorporate dietetic Ph.D. candidates from Texas A&M University (TAMU). During 2000, ABC hosted a medical elective internship, fourth-year pharmacy student rotations, and two undergraduate independent study students learning about medicinal plants.

This year, in addition to continuing its relationships with TAMU and SWT dietetic programs, ABC hosted its first intern from the Presbyterian Hospital of Dallas

post-baccalaureate dietetic internship program. ABC also continues to host pharmacy student rotations from the University of Texas at Austin (UT), and the University of Houston (UH).

These interns provide crucial assistance in the Education Department. Two pharmacy doctoral interns contributed to ABC's pending CME book, the *Healthcare Professionals Guide to Commonly Used Herbs*. Lan Liu (UT) incorporated peer reviewer comments to draft text, and Chelsea Tran (UH) initiated cross-reference tables for European and American phytomedicine products and started a medical and pharmacological glossary.

Dietetic interns Katherine Griffin (Presbyterian Hospital); Sarah Harper Becker, Sarah Davis, Angie Fiscus, Brady McConnell,



ABC staff member Gayle Engels (right) conducts an herbwalk with registered dietician students from Texas A&M University, some of whom will participate in clinical rotation internships at ABC. Photo © 2001 ABC.

Maggie Meyer, Patti Moody and Jill Ostendorf (SWT); Erin Strieff, Alicia Currado,

Continues on page 11



Contributors to ABC's Capital Campaign

The following companies and individuals have made and pledged contributions toward the Case Mill Capital Campaign:

Visionaries – \$500,000 and Greater

Architects – \$100,000 to \$499,999

Global Health Sciences

Supporters – \$5,000 to \$9,999

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Highlights of Presentations by ABC's Founder and Executive Director, Mark Blumenthal

Apr 23–24 ABC/CRN Expert Review Panel, Washington, DC, participating in a process to assess the safety and benefits of botanicals.

Apr 28–29 Lady Bird Johnson Wildflower Center Ethnobotany Festival, Austin, Texas, *Myths and Misconceptions in the Herbal Market*

May 7–9 Supply Side East Conference and Trade Show, Secaucus, New Jersey, *Myths and Misconceptions in the Herbal Market*

May 21–24 Botanical Medicine in Modern Clinical Practice conference, Columbia University, New York, NY, *History of Herbs in Medicine and Pharmacy*, and *The Most Researched Brands of Herbal Products*.

May 27–Jun 2 Building Bridges with Traditional Knowledge summit, Honolulu, Hawaii, European plenary session, *Traditional Medicine and Modern Science: The Most Clinically Researched Herb Products*.

Jun 21–28 Speeches for Maitake Products in Tokyo, Japan, and presentation at NNFA-Japan, *Mythos and Misconceptions in the U.S. Media about Herbs: Might There Be Parallels in Japan?* 🐾



ABC's Executive Director Mark Blumenthal (left) with Victor Sierpina, M.D., assistant professor of Family Medicine and Medical Acupuncture at the University of Texas Medical Branch at Galveston (center), and Don Counts, M.D., an Austin physician who also serves on the Alternative Medicine Committee of the Texas Medical Association (TMA). Sierpina and Counts visited ABC to discuss the upcoming publication, *Healthcare Professionals Guide to Commonly Used Herbs*. Counts was instrumental in convincing TMA to adopt this book for continuing education credit for physicians. Photo © 2001 ABC.

Ethnobotanical Tour Update

“Do I have to be a doctor or pharmacist to go on your rainforest trips?” people frequently ask, and the answer is an emphatic “No!” While physicians and pharmacists can earn continuing medical education credit by attending the seminars



on the trips, people in many other professions go on the tours. Past attendees include authors, herbalists, naturopaths, science teachers, health food storeowners, students of all ages, and many others who tell us their exposure to the rainforest and the seminars held there were life changing events.

Pharmacy from the Rainforest participants view the Amazon jungle from the canopy walkway, 11-12 stories above ground. Photo ©2001 International Expeditions

ABC will take a group to Germany for the first time, September 1–9, for a program called *Traditions in Medicine and Pharmacy* that will include herbs and wine on the River Rhine in the country that is considered by many to be the leader in herbs and phytochemistry.

This trip to Germany filled up quickly, but some openings remain for ABC's annual expedition to the Peruvian Amazon, scheduled for October 27–November 4. This great opportunity to learn about herbal medicine from some of the leaders in the movement includes experiencing the amazing canopy walkway that soars 110 feet above the ground, the ReNuPeRu Ethnobotanical Education and Research Garden, and the diverse flora and fauna of the incomparable Amazon rainforest. If that isn't enough, treat yourself to the 5-day extension (November 3–9) to Lima, Cusco, the sacred Urubamba Valley and the magnificent lost city of the Inca, Machu Picchu.

Call Kim at 512/926-4900, ext. 101 or email <kwest@HerbalGram.org> and reference the three-digit number in parentheses (below) to find out more about the Amazon or other expeditions and voyages.

Oct 27–Nov 4, 2001	Amazon (355)	Pharmacy from the Rainforest
Jan 26–Feb 3, 2002	Andes (421)	Spirituality and Healing
Feb 8–21, 2002	Tanzania & Kenya (468)	International Healthcare Issues
April 6–19, 2002	Bali and Komodo (469)	Perspectives in Healthcare
Sept 27–Oct 6, 2002	Nepal & Katmandu (470)	Traditions in Medicine & Pharmacy

Corrections

The article “New Anti-viral Compounds in Mushrooms” in *HerbalGram* 51 provided inaccurate taxonomy information on reishi, a species of medicinal mushroom. The correct information is reishi (*Ganoderma lucidum* (Curtis: Fr.) P. Karst., Ganodermataceae).

A photo caption on page 27 in the same issue, accompanying “The Ancient Noble Polypore: A Mushroom of Many Mysteries” was imprecise. It should have read, “Paul Stamets sits near a noble polypore

mother colony at the base of a noble fir. ...”

And the photo caption in the upper right corner of page 51, accompanying “Medicinal Plant Remedies and Nutraceuticals from Ukraine and Georgia” was incorrect. While the information about black chokeberry was correct, the image was of sea buckthorn (*Hippophae rhamnoides*), and the photo credit should have gone to L.A. Sirenko.

HerbalGram regrets these errors.



INTERNS

Continued from page 9

Amanda Scott, and Cindy Warren (TAMU) all helped to gather and organize additional research material. Several dietetic interns worked on additional projects during their time at ABC, beginning research for the next guides in the "Herbs and Health Series" of educational pamphlets. (The first in the series, *Common Herbs*, is a popular ABC publication, with more than four million in print.)

During this summer ABC expects at least two undergraduate independent study interns, and plans varied experiences for these students, including time with a Chinese herbalist and a Western herbalist. ABC arranged for one intern to spend five weeks with Gary P. Nabhan, Ph.D., and Laurie Monti, Ph.D., both of Northern Arizona University in Tucson. Tim Lowery, a pharmacy undergraduate student from the University of North Carolina in Chapel Hill, will assist with their ethnobotanical research

among the Seri Indians of Mexico, before spending a few weeks working at ABC.

The major objective in the Internship Program is to expand students' awareness of the breadth and depth of reliable sources of scientific information about herbs and phyto-medicines. Of course, they also gain greater confidence in the benefits of herbal medicine generally, and in their ability to find information on their proper use. Another objective is to help the interns develop and become familiar with a list of reference books and journals that will prove useful during their careers. Most interns admit that they had no idea that there is so much published research in this field.

"This certainly is a valuable experience for our interns," said B.J. Friedman, Ph.D., R.D., L.D., director of the SWT dietetic internship. "It exposes them to information they typically wouldn't get in their academic programs. And it's fun. They enjoy it."

Thirty-eight dietetic educators who visited ABC in March as part of a multi-state regional conference were very excited to

learn of ABC internship opportunities. As a result of this visit, several more schools are now considering adding an ABC rotation to their students' internship options.

The students generally express enthusiasm for the relaxed but stimulating environment at ABC. They are also pleasantly surprised by the unique experience of horticultural work with medicinal plants as a feature of the internship.

ABC has received inquiries from students in Israel, India, Brazil, Pakistan, Wisconsin, Tennessee and across Texas for summer internships. Hopefully, in years to come ABC will locate funding sources for summer stipends to help some of the more distant students.

To develop an internship program or rotation at ABC, please email <continuinged@HerbalGram.org> or call 512/926-4900, ext. 112, to speak with the Education Director.

— Christina Allday-Bondy, ABC 🌿

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Complete application on page 3 of this issue or join online at www.herbalgram.org

Yellow Creek Botanical Institute Looks to a Sustainable Future

Home to more than 2,300 vascular plant species, the Southern Appalachian region is a land of rich biological diversity and spectacular beauty. It is also one of the nation's most economically disadvantaged regions, and one with a long history of human dependence on the land for livelihood. Today, in an isolated corner of western North Carolina, a unique sustainable herb development project has taken root. The nonprofit Yellow Creek Botanical Institute (YCBI) of Robbinsville, NC is working with the community to develop medicinal and other plants native to the area into viable commercial crops.



Passionflower *Passiflora incarnata* Photo © 2001 stevenfoster.com

YCBI is located in Graham County, NC, a rugged, mountainous region with a population of about 7,100 and an unemployment rate of up to 25 percent. Wild medicinal plants flourish here, and many rural residents earn at least part of their livelihood by harvesting them for commercial use. Sustainable agricultural development in Graham County has the potential not only to reduce the demand on these wild plant populations, but also to provide rural residents with better long-term opportunities, income, and quality of life.

"We are essentially looking at recreating agriculture in our region," said Robin Suggs, YCBI founder and executive director. The county's steep, heavily forested terrain provides ideal growing conditions for many popular wild medicinal plants, including American ginseng (*Panax quinquefolius* L., Araliaceae), goldenseal (*Hydrastis canadensis* L., Ranunculaceae), and black cohosh (*Actaea cimufuga* L., Ranunculaceae syn. *Cimicifuga racemosa* [L] Nutt.)—all herbs for which worldwide demand remains strong. Successful cultivation and marketing of these plants would protect local ecosystems from damage from non-sustainable wild harvesting practices, provide new economic opportunities for the county's rural population, and preserve its cultural identity and local agricultural traditions.

By focusing on native botanicals, growers working with YCBI have the opportunity to produce high-quality botanicals naturally adapted to the terrain—satisfying market demand in a sustainable manner and setting Graham County apart from other agricultural communities. Suggs, who has a strong background in both agriculture and economic development, hopes that YCBI's work can ultimately be applied as a model for sustainable agricultural and community development in other regions, with plants indigenous to those areas.

Through collaborations with various other organizations, YCBI is working to develop sustainable production systems, conduct cultivation trials and market studies, and foster the development of partner organizations that will work independently to further the institute's goals. The Herb Research Foundation (HRF) is helping YCBI assess the market potential for selected plants and secure continued funding for the next



Boneset *Eupatorium perfoliatum* Photo © 2001 stevenfoster.com

phases of the project. YCBI also collaborates with the Center for Participatory Change (a local citizen's group), North Carolina State University, the Graham County Department of Planning and Economic Development, the North Carolina

Cooperative Extension Service, the U.S. Forest Service, and others. Recently, YCBI helped organize the Smoky Mountain Native Plants Association, a group committed to sustainable production of native plants through cultivation and ethical wild harvesting. "This is the kind of growers' network we envisioned when we started the project," said Suggs. "On a very basic

level, some of our original ideas are coming to fruition."

For more information about the mission and work of YCBI, visit the organization's website at <www.yellowcreek.org>.

— Evelyn Leigh, HRF



Wake robin *Trillium erectum* Photo © 2001 stevenfoster.com



International Symposium at Expo West 2001

The Herb Research Foundation (HRF) and its A-SNAPP partners presented an educational workshop for international botanical entrepreneurs March 7–11, 2001 at Natural Products Expo West 2001 in Anaheim, CA. “International Intensive: A Short Course on the U.S. Natural Products Industry” was custom-designed for international visitors striving to succeed in the American botanicals market. The five-day program gave participants a solid introduction to the U.S. industry, improved their marketing savvy, and paved the way for more and better trade relations between international suppliers and the U.S. marketplace.

The symposium was sponsored by the Agribusiness in Sustainable Natural African Plant Products (A-SNAPP) project and included private lectures and workshops, selected Expo seminars, field trips and tours, networking events, and other assistance to help international newcomers get the most from Expo West. A similar program conducted by HRF at Natural

Products Expo East 1998 in Baltimore, Maryland was well received by U.S. industry members and African delegates from nine different nations (see *HerbalGram* 44 for story). This most recent workshop focused on high-level attendees from non-governmental programs and A-SNAPP partners, who will serve as emissaries to pass on the information to entrepreneurs in their home countries of South Africa and Ghana, as well as new A-SNAPP countries slated to be added to the program this year.

A-SNAPP also took advantage of the opportunity to exhibit some African natural products at the HRF booth at Expo. Jacky Goliath of the University of Stellenbosch fielded questions from the many Expo attendees who took an interest in the exhibited herbs and other possibilities for supply from the African continent. A-SNAPP is a joint undertaking of HRF, Rutgers University, and the University of Stellenbosch in the Republic of South Africa. Funded by the U.S. Agency for

International Development (USAID), the overall aim of the project is to support and promote socially and environmentally responsible African business in the natural products sector by providing technical expertise and market development assistance. In the past two years, A-SNAPP has made sound progress at several levels of the supply chain with 15 South African and Malagasy (Madagascar) botanical products, including devil’s claw (*Harpagophytum procumbens* DC. ex Meisn., Pedaliaceae), buchu (*Agathosma betulina* (Bergius) Pillans, Rutaceae), cinnamon leaf (*Cinnamomum zeylanicum* Blume, Lauraceae) essential oil, and rooibos tea (*Aspalathus linearis* (Burm. f.) R. Dahlgren, Fabaceae). Working in tandem on production issues and market development, the A-SNAPP partners are helping to improve the supply chain for international commerce and provide long-term benefits for African growers, harvesters, and other natural products entrepreneurs.

—Maureen DeCoursey, HRF 🐾



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C O M E T O T H E S O U R C E
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Grants & Awards

United Plant Savers Receives \$42,000 for Botanical Sanctuary

United Plant Savers (UpS) recently received two grants totaling to \$42,000. One grant for \$22,000 was from the Outagamie Charitable Foundation of Appleton, Wisconsin for building a self-guided medicine trail at UpS' 378-acre botanical sanctuary near Rutland, Ohio. The second grant for \$20,000 in matching funds from the National Fish and Wildlife Foundation will be used for the Native Plant Harvest and Regeneration Project, also located at the botanical sanctuary in Ohio. Three native plants will be studied in terms of population dynamics and sustainable wild harvesting.



The Medicine Trail Project will enhance the value of a unique educational and extension resource to promote the preservation and cultivation of native medicinal plants of the Appalachian region. The project will improve the accessibility and the educational utility of The Medicine Trail: a system of trails and footpaths located on a privately-managed research and educational preserve

that incorporates both natural woodlands and reclaimed mining lands. The trails are demarcated to provide access to extensive populations of at-risk native medicinal plants that have played a vital role in the traditional and modern North American materia medica. The principal value of the Medicine Trail is that it pro-

vides visitors and researchers access to these plants as they exist in nature, as part of vital, dynamic, and often threatened, ecosystems. The principal beneficiaries of the project will be school and university groups, scientific researchers, herbalists, healthcare providers, civic organizations, public policy decision-makers, representatives of the natural products industry, and the public-at-large, according to UpS.

The UpS Native Plant Harvest and Regeneration Project will generate crucial management data for three species of at-risk plants for which there is significant commercial demand: goldenseal (*Hydrastis canadensis* L., Ranunculaceae), black cohosh (*Actaea racemosa* L., Ranunculaceae), and bloodroot (*Sanguinaria canadensis* L., Papaveraceae). Data and guidelines produced by this project will provide practical value for conservation and management of public and private lands, with particular applicability for most of the Appalachian range.

The mission of UpS is to preserve, conserve and restore native medicinal plants and their habitats of the U.S. and Canada, while ensuring their abundant, renewable supply for future generations. For additional information and membership details, visit their website, <www.plantsavers.org>, or call 802/496-7053.

—Kim West, ABC 🐾

[UpS Press Release, April 3, 2001]

BRIT Honors Panama City Mayor, Navarro

The Botanical Research Institute of Texas (BRIT) presented its 2001 International Award of Excellence to Juan Carlos Navarro, mayor of Panama City, Panama, for his achievements in and commitment to conservation and ecological restoration.



Mayor Navarro is the founding director of the Association for the Conservation of Nature (ANCON), the leading independent nonprofit, environmental organization in Panama. ANCON is dedicated to conservation and educating the public about the value of protecting unique natural resources for future generations. ANCON's conservation and community development projects include litter-removal, park ranger training,

agroforestry, reforestation, breeding of threatened species, and environmental education.

Navarro also served as the first secretary of the board of directors for Panama's National Institute of Renewable Natural Resources (INRENARE), where he successfully led efforts to establish new national parks. In addition, Navarro served two terms as the elected regional councilor to Latin America for the International Union for the Conservation of Nature (IUCN).

BRIT's International Award of Excellence was created in 1995. It is presented annually to an individual or organization that best personifies the ideals expressed in BRIT's mission. Previous award-winners include Texas Parks & Wildlife Commission (2000), Jane

Goodall (1999), Sir Ghilleen Prance, Ph.D. (1998), and Mrs. Lyndon Baines (Lady Bird) Johnson (1997). It made its most recent award on March 7, 2001.

Founded in 1991, BRIT is a non-profit international botanical resource center open to the public. Its mission is to conserve natural heritage by deepening knowledge of the plant world and achieving public understanding of the value that plants bring to life. Housing a highly respected library and one of the largest herbaria in the U.S., BRIT provides educational programs, workshops, and scientific research projects.

BRIT's invaluable collection of approximately one million dried plant specimens represents most of the earth's plant families. In April, BRIT received a \$300,000 grant from the National Science Foundation and \$17,000 from Ruth Andersson May, of Dallas, Texas, for the purchase of 400 custom-designed steel herbarium cases. These new cases will provide better housing for BRIT's crowded collection and will protect them from pests and other hazards such as fire and water damage. —Kim West, ABC 🐾

[BRIT press release, February 23, 2001, <www.brit.org>.

BRIT press release, April 19, 2001]

Flannery Receives Kremer's Award for Lloyd Biography

Michael A. Flannery earned the 2001 Edward Kremers Award for his biography of John Uri Lloyd, M.D. (1849–1936). Flannery wrote this biography of the pharmaceutical and Eclectic medical pioneer while serving as director of the Lloyd Library and Museum in Cincinnati, Ohio.



Michael Flannery

The first full-length biography of Lloyd, *John Uri Lloyd: The Great American Eclectic*,¹ outlines the advantages and disadvantages of his close association with Eclectic medicine. In particular, Flannery focuses on how Lloyd's relationship with Eclectics brought him success and scorn at the same time.

According to Varro E. Tyler, Ph.D., Sc.D., Dean and Distinguished Professor of Pharmacognosy Emeritus, Purdue University, Flannery "rendered a great service to pharmacy and medicine by presenting the life of this complicated man in such an understandable fashion."²

The Kremers Award is analogous to a Pulitzer or Nobel prize for pharmacy historians. Presented by the American Institute of the History of Pharmacy (AIHP), the award recognizes a specific original publication or series of related articles. The award is named for Edward Kremers, professor of Pharmacy History at the University of Wisconsin and co-author of *Kremers and Urdang's History of Pharmacy*, 4th ed. (1976; Madison, WI: AIHP, 1986).

AIHP is a non-profit national organization devoted to advancing knowledge and understanding of the place of pharmacy in history. Its primary aim is to document and preserve pharmacy's heritage. Their website is <<http://www.pharmacy.wisc.edu/aihp>>.

Michael Flannery is now the Associate Director of Historical Collections for Lister Hill Library of the Health Sciences at the University of Alabama in Birmingham. —Kim West, ABC 

[Lloyd Library press release, Feb. 22, 2001.]

Reference:

1. Flannery, MA. *John Uri Lloyd: The Great American Eclectic*. Carbondale, IL: Southern Illinois University Press; 1998.
2. Tyler V. John Uri Lloyd: the Great American Eclectic [book review]. *HerbalGram*. 1998;44:66-7.

Largest Ginseng Root Listed in Guinness World Record

What may be the largest cultivated seven-year-old American ginseng (*Panax quinquefolius* L., Araliaceae) root ever grown weighs 2.35 pounds (37 ounces), according to Don Hoogesteger, a Ridgefield, Washington, ginseng grower, and founder and past president of the Northwest Ginseng Growers' Association. Regally displayed in its custom case, suspended in 11 gallons of vodka, the hefty root resembles a human with head, arms, and crossed legs. The "armspread" measures 28 inches. The main body is 16 inches tall with a circumference of 8.5 inches. Organically grown from seed planted in 1990, the king-sized root was harvested in October 1997 by Hoogesteger of Pacific Rim Ginseng.



The world's largest American ginseng root (above) shows how ginseng gets its name from the Chinese words *jen shen*, which translates most simply as "man root," evoking its shape as well as its therapeutic benefits.

Preserved in vodka for two years, it was weighed after a request from editors of the *Guinness Book of World Records* and found to weigh 2.04 pounds, a loss of 0.31 pounds. The alcohol, acting as a solvent, draws out compounds in the root and replaces the original juice in the root with itself, hence the loss in weight over the two years of preservation. A March 2000 letter from the Guinness World Records Research Services informed the Hoogestegers that the root is

officially a record holder and would be considered for entry into the *Guinness Book of World Records*.

The average weight of a fresh mature cultivated American ginseng root is 1 to 1.5 ounces at harvest. In Washington and Oregon, it is common to find many four-year roots weighing up to six ounces—larger than that is rare, however, even in the Northwest. Experts in the industry believe it would take 10–20 years to grow a one-pound root.

Wild ginseng is substantially smaller. In 1994, a wild root believed to be 25 years old, weighing 17 ounces, was harvested in the Midwest. In 1995, a wild root estimated to be 600 years old, weighing 14 ounces, was harvested in China.

"Large roots are not unusual in the Northwest," said Hoogesteger. "We have ideal growing conditions and a long growing season. There's no doubt the area is destined to become a source of high-quality ginseng." Hoogesteger learned that before World War II, the Northwest area was a significant producer of American ginseng, although the root is not native to this region.

—Barbara A. Johnston, ABC 

[Hoogesteger, D. Press release. May 8, 1998.

Hoogesteger, D. Personal communication. July 9, 1999.

Collins A. Communication to Hoogesteger. Guinness World Records. March 6, 2000.]





Grants & Awards

Halperin Receives Remington Honor Medal

Jerome A. Halperin received the American Pharmaceutical Association's 2001 Remington Honor Medal on March 18, 2001. He was honored for his accomplishments and contributions to the profession of pharmacy in practice, government, uniformed services, and industry.



Jerome A. Halperin

Halperin was appointed U.S. Pharmacopeia (USP) Executive Director in March 1990, then named Executive Vice President and Chief Executive Officer from March 1995 to April 2000. As USP's CEO, he served as Chairman of the Committee of Revision (now Council of Experts), Secretary of the Board of Trustees, and Secretary of the USP Convention. Halperin also served six years as Vice President—Technology for CIBA Consumer Pharmaceuticals, responsible for product development, clinical development, regulatory affairs, and quality assurance. Previous to his industry experience, he served as a commissioned officer in the U.S. Public Health Service (PHS), over a 25-year career in a number of assignments in pharmacy, radiological and environmental health, and the U.S. Food and Drug Administration where, as a Rear Admiral, he was the highest ranking career pharmacy officer. Halperin was the third pharmacist to achieve that rank in the history of the PHS.

Throughout his career, Halperin has been directly involved in and dedicated to international harmonization of regulatory and compendial standards for pharmaceuticals. Called a visionary by many of his colleagues, he also conceived and chaired in 1984 the first "Conference on Pharmacy in the 21st Century," which brought together a wide cross section of groups to debate potential scenarios for pharmacy's future. Also, under Halperin's leadership, USP returned to the field of developing monographs for herbs and botanical dietary supplements standards—an area that USP pioneered in the 19th and early 20th centuries with its herbal drug standards.

The Remington Honor Medal was established in 1918 to recognize distinguished service on behalf of American pharmacy. It was created in honor of Joseph P. Remington (1847–1918), an eminent community pharmacist, manufacturer, and educator. Remington, who also served as Chairman of the Committee of Revision, was a renowned USP scientist, leader, and innovator.

In addition to receiving the Remington Medal, Halperin also received the 2001 Distinguished Service Award of the Drug Information Association. Halperin was recently selected to be the President of the non-profit Food and Drug Law Institute (FDLI) effective July 1, 2001. He has been a FDLI board member since 1991.

— Kim West, ABC 📞

[USP press release, March 20, 2001, <<http://www.usp.org>>.]

FDLI press release, March 28, 2001, <<http://www.fdpi.org>>.]

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Americans Take Health Care into Their Own Hands

The Consumer Healthcare Products Association (CHPA) recently released the results of a study on the self-medication trends of Americans. According to survey results, Americans are increasingly comfortable managing their own health.



The study found that 59 percent of Americans say they are more likely to treat their own health condition now than they were a year ago. In addition, 96 percent, an overwhelming majority, say they are generally confident about the healthcare decisions they make for themselves.

The survey also revealed that Americans rely more on themselves than on physicians when feeling under the weather. Of the 1,505 respondents, 73 percent would rather treat themselves at home than see a doctor, and 62 percent say they would like to do more of this in the future. "While there is no substitute for a physician," said Michael Maves, M.D., M.B.A., president of CHPA, "Americans are taking control of minor medical problems with safe, reliable

over-the-counter medications."

In fact, according to the survey results, 77 percent of Americans are more likely to take an over-the-counter (OTC) medication to treat common ailments rather than wait to see if the problems go away on their own (69 percent). Nearly 80 percent of Americans report using an OTC medication in the past year to treat at least one of the ailments they suffer from. This is almost twice the number that either consulted a physician or took a prescription medication. While relying heavily on OTC medications, consumers understand that these products must be used properly. According to the study, a large majority say they take the necessary precautions, such as reading directions before using a product for the first time (95 percent), examining labels to help choose medications (89 percent) and reviewing possible side effects and interactions (91 percent).

Americans also rely on nutritional supplements to maintain good health. The survey showed that 57 percent say they are either actively using dietary supplements or researching information about them. More than eight in 10 Americans who take

dietary supplements say they are satisfied with the results.

With regards to alternative medicines, mature Americans and women are more likely to be currently familiar with alternative medicines, and African Americans and Hispanic Americans show the highest level of interest in becoming more familiar with alternative medicines in the future.

The findings in this study are based on 1,505 interviews conducted via telephone by Roper Starch Worldwide from January 8–24, 2001. The results of the survey may be projected to the entire U.S. population with a margin of error of +/-2.6 percent. Hispanic Americans and African Americans were oversampled in the research to ensure that findings for these groups are projectable. Based in Washington D.C., CHPA is a 120-year-old trade association representing U.S. manufacturers and distributors of nonprescription, OTC medicines and dietary supplement products. More information on this survey is available at <<http://www.chpa-info.org>>.

— Kim West, ABC 

[CHPA press release, March 21, 2001]

Bastyr Clinic Announces Expanded Services

The Bastyr University Natural Health Clinic, serving patients in the Seattle area since 1980, has expanded its services and changed its name to the Bastyr Center for Natural Health. Bastyr University is a leading center of natural health education and research, and will add a B.S. degree program in herbal science this fall.

According to Jane Guiltinan, N.D., the university's Dean of Clinical Affairs, "The Bastyr Center for Natural Health more accurately reflects the wide range of services we now offer to the community."



The Center provides acupuncture, Oriental medicine, nutritional and lifestyle counseling, and naturopathic medicine through its Team Care service. With this service, a team consisting of an experienced, licensed health professional and two advanced student clinicians work with each patient. In another expansion move, the Center has also

opened its Practitioner Care service, a group private practice of leading physicians and practitioners from the Bastyr University faculty. With this service, patients consult with individual practitioners. The Bastyr Dispensary (a full-service natural product dispensary), a Chinese herbal medicine dispensary and a medical laboratory are also housed at the facility.

Both Team and Practitioner Care practi-

tioners collaborate with conventional medicine providers on coordinated treatment plans as indicated by the patient's situation. Many of the clinic's services are covered by participating insurance plans.

—Kim West, ABC 

[Bastyr University press release, January 19, 2001, <<http://www.bastyr.edu>>.]

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Certifying Skill in Medicinal Plant Use

by Kathy Abascal, B.S., J.D., Herbalist, and Eric Yarnell, N.D., Herbalist AHG

As the use of herbal medicine grows, there is an ever-increasing need for highly trained professional medical herbalists to be recognized as an integral part of the American healthcare delivery system. The Botanical Medicine Academy (BMA), and the American Herbalists Guild (AHG), have risen to the challenge of addressing these concerns, and are well on the way to offering voluntary, national exams to ensure competency among practitioners of Western herbal medicine.

Voluntary Exams Are Key

The use of herbs goes back as far as humanity, and until quite recently was the major form of medicine available to maintain health and treat illness. Many consumers today feel quite comfortable—and rightly so—relying on their own knowledge to maintain their health, and to treat minor illnesses and conditions like colds, flu, bruises, etc. Many consumers also are very comfortable turning to

practitioners who have an extensive knowledge of medicinal plants for more complicated conditions. However, others, particularly people new to the use of herbs, only feel comfortable using medicinal plants if they can be assured that the practitioners prescribing and dispensing these herbs have a proven knowledge of botanical medicine.

In addition, many consumers today wish to use herbs for more complex medical problems that are also being treated with prescription medicines. These consumers need to locate practitioners well versed in potential interactions between herbs and over-the-counter and prescription medications in order to avoid potential adverse reactions. They also need practitioners who can advise them on when herbs are helpful and appropriate, and when other treatment options would be more fruitful.

After long deliberation, the BMA and AHG concluded that voluntary practitioner

certification best answers the diverse needs of the public and practitioners, and will ultimately help government regulators and the media as well. The BMA and AHG believe that the public should retain both the right to use herbs on their own as well as the right to seek advice from traditional healers ranging from “wise women” like Juliette de Bairacli Levy, to Native American healers, shamans, and *curanderas*. The BMA and AHG also believe that the public should be ensured access to practitioners well-trained in a science-based, Western system of botanical medicine in addition to the many already-existing models such as Ayurveda, Chinese and traditional folkloric practices. By making certification exams voluntary, practitioners can choose to become certified or not. Traditional practi-

BMA and AHG are jointly designing examinations to create an independent standard of clinical excellence in Western botanical medicine

tioners will be able to continue offering their services as they have done for hundreds of years, while certified practitioners can advertise their particular western science-based skills to the segments of the population that prefer that form of treatment.

National Certification

The public seeks herbal advice from a broad range of practitioners. These practitioners may be conventional medical doctors, doctors of osteopathy, chiropractors, licensed naturopathic physicians, pharmacists, nurse practitioners, herbalists, dieticians, midwives, and others. Each of these practitioner groups has their own training programs, and the amount of botanical medicine taught in those programs varies widely. Some are taught a great deal, others are taught only a little, and some are taught nothing. Thus, each group has practitioners that are skilled in herbal medicine as well as practitioners who have limited or no knowledge of how botanical medicine works, and its potential clinical benefits.

Each of the 50 United States has the right to set the practice standards for each of these practitioner groups. If each state were to set different certification standards for the herbal practice of each of the practitioner groups, the result could easily be a confusing, unworkable maze of widely varying standards. A consumer

getting herbal advice from a pharmacist might get significantly superior or inferior advice than a consumer getting advice from a naturopath. States might also try to relegate herbal medicine to the simple dispensing of herbal drugs, thereby losing the vitalistic integrity of true herbal healing. Therefore the BMA and AHG are jointly designing

examinations to create an independent standard of clinical excellence in Western botanical medicine, elevating herbalism both as a science and as an art.

Because herbal medicine has always first and foremost been people's medicine, both organizations are generally opposed to state regulation of the practice of herbal medicine, and feel that state regulation in this area would cause substantial problems and should be avoided.

National certification would provide consumers with an objective, reliable way of finding practitioners skilled in medicinal plant usage or give government regulators and media a way to find experts in the practice of Western botanical medicine.* Other herbal professions — such as practitioners of traditional Ayurvedic and Chinese medicine, traditional Native American herbalists and community healers — have their own standards. The AHG maintains an admissions review process for all professional herbalists, regardless of orientation, that will not be affected by this certification.

Once in place, national certification of Western botanical medicine practitioners would permit those who want to use medical doctors for their care to find a physician



who is board-certified in botanical medicine, and know the practitioner has a verifiable knowledge of herbs. Another patient, preferring a chiropractor, could similarly find a provider with excellent skills in clinical botanical medicine. This scheme will also allow healthcare providers who are not themselves expert in herb use to refer their patients to other professionals who are expert and whom they trust. Ultimately, national certification will create a more holistic and integrated healthcare system that will benefit consumers.

The Exams

The certification exams will be offered at two levels. The first certification level (entry-level certification) will ensure the practitioner has a solid knowledge of the most common botanical medicines and their clinical use, as well as a basic awareness of the other herbs that make up the *materia medica* of a skilled practitioner. The second certification level (board certification) will ensure the practitioner has an advanced understanding of how to use a wide variety of plants skillfully in a wide variety of settings. Successful completion of the advanced examination will confer national certification by the AHG. Both groups will have to participate in continuing education to maintain their certification. Thus, practitioners with a basic certification will continue to progress and eventually attain the advanced level certification while advanced practitioners will maintain a knowledge of the growing body of scientific information on plants and their many uses.

The AHG and the BMA are preparing the advanced level exam first. Given the large number of people already using botanical medicines in practice, it was felt to be more important to offer the equivalent of board certification to this group prior to offering an entry-level examination.

The process of creating the board certification examination began with a survey sent to hundreds of renowned practitioners asking them to identify the herbs they considered most important in their practice, areas they considered most important to know, and the reference texts they considered most helpful. The survey results were analyzed to identify what plants and topics should be tested, and which reference texts should be used in the exam process. An exam guideline, that identifies what will be

on the exam and provides a list of references practitioners can use to prepare for the exam, is now available from AHG, 1931 Gaddis Road, Canton, GA 30115, (770) 751-6021 or at <http://www.american-herbalist.com>.

A guideline for the writing of exam questions, which will include both multiple choice and essay questions, was compiled and distributed to a group of carefully selected expert practitioners. Their exam questions will be edited and peer reviewed, and then stored in a secure database ensuring that no candidate taking the exam has previously seen any of the questions on the exam. Once this process is complete, a group of practitioners will be invited to take a "cut test" to ensure that the exam is neither too easy nor too difficult but, instead, consistently measures skill in plant use. After the cut exam process is complete, the exam will be offered on a regular basis to practitioners.

The AHG and the BMA are also beginning to create the fundamental exam intended primarily for practitioners just beginning to use botanical medicines in their practice. This exam will be prepared in a similar fashion based on survey information from teachers identifying what knowledge beginning practitioners should have.

Continuing Education

Continuing education is needed to maintain good skills, and the AHG and BMA will jointly offer continuing education courses. Both organizations actively encourage other schools and groups to offer educational programs. They will develop a system that will approve any well-designed program for continuing education credits. This will allow practitioners to find interesting programs in their community or offered by their own professional organizations that will satisfy continuing education requirements.

How You Can Help

Practitioner certification is valuable to the public, to practitioners, the media, and to the herbal community at large. Presently, the media often attacks the use of herbal medicine, arguing that little is known about herbs—even though plants have been used safely for millennia and a large body of scientific research exists about them—and that it is impossible to know whether persons

speaking about herb use know what they are talking about. Once the public is able to select a practitioner with a level and type of knowledge that they are looking for, many of these fears will be put to rest. Consumers will be able to decide whether a practitioner has the type of skill that they desire. The media will be able to contact skilled practitioners for information on plants or uses that are in the news. Government regulators will be able to identify knowledgeable practitioners for inclusion in panels and research groups related to botanical medicine. Industry will be able to more readily select expert clinical advisors. Addressing these concerns should allow herbal medicine to remain available to the public in all of its traditional forms while allowing new, and perhaps more skeptical, users of botanical medicines to find a comfort level that allows them to explore all the benefits that plants can offer.

The certification process is moving forward at a good pace, but extensive resources are needed to make the exam a reality and to make the public and practitioners aware of the certification process. The public can help by joining the AHG and spreading the word about certification; practitioners can join AHG in order to eventually sit for exam; businesses can sponsor the exams through the BMA or AHG. Additionally, comments, questions, and ideas about the certification process are warmly welcomed. The BMA may be reached at P.O. Box 1528, Vashon, Washington 98070 or 206/567-5986. 🌿

Kathy Abascal is executive director of BMA. Eric Yarnell is president of BMA and also a professional member of AHG. This article was made possible by a grant from Thorne Research to the Botanical Medicine Academy.

**A small number of practitioners in the United States are members or fellows of the National Institute of Medical Herbalists (NIMH) of the United Kingdom (U.K.). This credential requires completion of an accredited herbal medicine course (offered only in the U.K.). Consumers, media, health care providers, and others can be fairly certain that herbalists with this credential are qualified practitioners. However, most practitioners in the U.S. are not trained in the U.K. and cannot be identified through this credentialing system.*

Researchers Claim Ginseng Lacks “Compelling Evidence”

After reviewing existing clinical research on ginseng, British researchers concluded, “... there is compelling evidence for none of the claimed indications.”¹ The authors made this claim despite the fact that nine of the 16 papers reviewed reported a significantly positive effect. They reportedly weighed these positive results against contradictory findings in other studies, and also cited small study populations and the shortage of rigorously controlled and randomized trials for ginseng as reasons for their conclusion. On the other hand, it might be argued that the studies combined in this paper are too diverse to allow for meaningful conclusions.

Scientific literature for the review was culled from randomized, controlled clinical trials utilizing any species of ginseng for any indication. Species studied included Korean (*Panax ginseng* C.A. Meyer, Araliaceae); Japanese (*P. japonicus* C.A. Meyer); American (*P. quinquefolius* L.); sanchi (*P. notoginseng* (Burk.) F.H. Chen.); Vietnamese (*P. vietnamensis* Ha et Grushv.); and eleuthero, a.k.a. Siberian ginseng (*Eleutherococcus senticosus* Rupr. ex Maxim.) Maxim, Araliaceae). Published and unpublished research in any language was considered. Only double-blind trials using single-ingredient root extract preparations were included. Sixteen studies utilizing *P. ginseng*, *P. quinquefolius*, or *E. senticosus* met the specified criteria and were reviewed.

The reviewers chose to lump different species of *Panax* and even *Eleutherococcus* together in their review, as if the plants' popular nomenclature carried more weight than their individual characteristics. They were clearly aware of the dissimilarities between *Panax* and *Eleutherococcus*, stating, “... their respective active constituents are different.” The reviewed studies utilized a wide range of different standardized and unstandardized extracts of different ginseng species at various dosages.

Although the quality of each study was quantified using the Jadad scale (which evaluates trial methodology such as randomization, double-blinding, and other criteria), all seem to have been given comparable weight in the analysis, regardless of design, methodology, population size, extract used, treatment dose, or duration of treatment. A positive result for ginseng was reported in five of the six studies to which the authors assigned a Jadad score of 4. (Five is the highest possible Jadad score, which none of these studies achieved.) Studies that reported no significant effect were also the ones with the smallest ginseng treatment groups (generally eight to 10 participants). In every one of the larger studies (24 or more participants receiving any dose of ginseng), a positive effect was reported.



American ginseng *Panax quinquefolius* Photo © 2001 stevenfoster.com

Seven of the 16 trials reviewed evaluated the effect of 200 to 400 mg/day *P. ginseng* extract or 618 to 1,235 mg/day *P. quinquefolius* extract or 3.4 ml/day *E. senticosus* extract on physical performance in young, healthy volunteers. The studies were one to nine weeks in duration, and study groups consisted of nine to 14 participants per treatment. Three trials noted a significant ginseng effect during exercise (e.g., increased oxygen absorption, decreased heart rate, decreased levels of lactate in the blood) or after completing an exercise program (e.g., decreased body fat and resting heart rate, and increased muscle strength and maximal oxygen uptake). The

four trials that reported no effect assessed similar, but not identical, outcome measures. Four of the seven trials also investigated ginseng's ability to increase tolerance to exercise-induced stress (“perceived exertion”), with no significant effect reported.

Of four studies that assessed cognitive function in young, healthy volunteers and one in elderly volunteers, three concluded that *P. ginseng* or *E. senticosus* significantly improved performance on tests of mental arithmetic, abstract thinking, inverted counting, association, or selective memory. The authors state, “Ginseng may have beneficial

effects on psychomotor performance and cognitive behaviour.” Two studies that investigated ginseng's ability to enhance immune function in healthy volunteers yielded contradictory findings — but again, different outcome measures were used. In one placebo-controlled study, there was a significantly greater increase in the number and activity of leukocytes (white blood cells) in people who took ginseng. A second, smaller trial detected no difference between treatment groups.

Positive effects were also reported in the final two of the 16 trials reviewed. In volunteers with type II diabetes mellitus, treatment with 200 mg/day ginseng (presumably *P. ginseng*) for eight weeks significantly improved participants' mood, vigor, psychophysical activity, and fasting blood glucose levels. A study of 93 people with herpes showed that after six months' treatment with an *E. senticosus* preparation, 75 percent of volunteers in the ginseng group reported improvement in the frequency, severity, and duration of their symptoms, compared with 34 percent in the placebo group.

The reviewers devote a number of paragraphs to market data on ginseng, expressing concern that marketers make such a wide variety of claims for the herb. They conclude, “The widespread use of ginseng as a herbal remedy warrants more rigorous investigations to assess its efficacy and safety.” —Nancy Hoegler, HRF

1. Vogler BK, Pittler MH, Ernst E. The efficacy of ginseng: a systematic review of randomised clinical trials. *Eur J Clin Pharmacol* 1999;55:567-75.

Review Questions Ginseng's Role in Exercise

A review of 35 recent *in vivo* studies of ginseng concluded that the quality of research is too low to serve as convincing evidence of ginseng's efficacy in improving human physical performance.¹ The papers reviewed were animal and clinical studies utilizing a variety of ginseng species (including Korean [*Panax ginseng* C.A. Mey.]; American [*P. quinquefolius* L.]; Vietnamese [*P. vietnamensis* Ha et Grushv]; and eleuthero, a.k.a. Siberian ginseng [*Eleutherococcus senticosus* (Rupr. ex Maxim.) Maxim.] Araliaceae) published between 1994 and 1999.

The recent animal studies bolstered earlier findings that ginseng significantly increases aerobic endurance in rats and mice, apparently by altering the way the body uses fuel. One new finding indicates that ginseng also may boost animals' exercise performance by increasing muscle mass. Treatment with *P. ginseng* was associated with a positive effect on cognitive function in older rats and reduced signs of anxiety in rats and mice. However, human trials of ginseng often fail to confirm the positive effects observed in animal studies. The reviewers speculate that poor compliance rates, lower doses, or the failure of animal researchers to employ double-blind designs may explain this pattern.

The review focused on 16 clinical trials of ginseng's effect on exercise performance, mostly by athletes or fit, healthy participants. Eleven studies of various ginseng species reported that no significant effect on any measures of psychological or physiological response to exertion. One study reported improved endurance, recovery time, and reaction time, but failed to present a statistical analysis of significance. Four studies (two of which used a ginseng/fenugreek [*Trigonella foenum-graecum* L., Fabaceae] combination and two of which used *E. senticosus*) reported significant increases in aerobic performance, muscular strength, and endurance. Ginseng did not reduce blood lactate levels during exercise in any of the studies.

According to the review authors, these mixed results might be attributable to variations among ginseng species as well as the quality of ginseng preparations used, which may be affected by the plant's age and growing environment, season of harvest, and post-harvest processing. In the studies reviewed, researchers failed to use standardized preparations, failed to report these data, or relied on manufacturers' standardization claims instead of their own chemical analyses. The reviewers stressed that these and other problems are significant limitations to the credibility and repeatability of these studies. The authors also claim that recent analysis has suggested that methylxanthines such as caffeine, theophylline, and theobromine are present in ginseng in widely varying amounts and may influence study results. Ginseng does not contain caffeine. The research cited actually shows that some commercial ginseng supplements tested positive for caffeine, presumably because the product was formulated to contain caffeine. The authors of the review studies conducted no assays to determine levels of methylxanthine compounds in the test formulations they used.

In summary, the authors were highly critical of the current body of ginseng research, citing "numerous statistical and design problems" and "various methodological problems such as inadequate sample size and lack of double-blind, control and placebo paradigms." A number of trials used ginseng in combination with other



Clockwise from left: American Ginseng *Panax quinquefolius*, Eleuthero *Eleutherococcus senticosus* and Korean Ginseng *Panax ginseng* Photo © 2001 stevenfoster.com

ingredients (for example, herbs, vitamins, or high levels of alcohol) and/or did not specify the treatment dose, duration, or preparation. The reviewers assert that future research must address these issues before any conclusions may be drawn about ginseng's effects on human physical performance.

—Nancy Hoegler, HRF

1. Bahrke MS, Morgan WP. Evaluation of the ergogenic properties of ginseng. *Sports Medicine* 2000; 29(2): 113-133.

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HerbalGram Adds More Clinical Research



Donald J. Brown, N.D.

HerbalGram is pleased to add the insight of Donald J. Brown, N.D., in a new Clinical Update section.

A naturopathic physician, Brown is one of the leading authorities in the U.S. on evidence-based herbal medicine. An associate professor at the Bastyr University of Natural Health Sciences in Seattle, he is the founder and director of Natural Product Research Consultants, Inc. and serves on ABC's Advisory Board as well as the President's Advisory Board of Bastyr University. He has also served as an advisor to the Office of Dietary Supplements at the National Institutes of Health.

Dr. Brown was the editor-in-chief of the *Healthnotes Review of Complementary and Integrative Medicine* (formerly the *Quarterly Review of Natural Medicine*) from 1994 to 2000. He is the author of *Herbal Prescriptions for Health and Healing* (Prima Publishing, 2000) and co-author of the *Natural Pharmacy* (Prima Publishing, 1999) and the *A-Z Guide to Drug-Herb-Vitamin Interactions* (Prima Publishing, 1999).



Peppermint *Mentha x piperita* Photo © 2001 stevenfoster.com

Treatment of Pediatric IBS with Enteric-Coated Peppermint Oil

by Donald J. Brown, N.D.

Reference: Kline RM, Kline JJ, Di Palma J, Barbero GJ. Enteric-coated, pH-dependent peppermint oil capsules for the treatment of irritable bowel syndrome in children. *J Pediatr* 2001;138:125–8.

Summary: In a double-blind clinical trial, 42 children (ages 8 to 17 years) with a diagnosis of irritable bowel syndrome (IBS) were randomized to receive either enteric-coated peppermint oil capsules or placebo for two weeks. The pH-dependent, enteric-coated capsules (Colpermin™, Tillotts Pharma, Ziefen Switzerland) contained 0.1 mL (187 mg) of peppermint oil each. Children weighing greater than 45 kg (99 lbs.) received two capsules three times per day, while those between 30 and 45 kg (66–99 lbs.) received one capsule three times per day. Pre-trial and post-trial evaluations were completed on days 1 and 14 of the trial. The measure included a 15-item Gastrointestinal Symptom Rating Scale (GSRS) as

well as a severity of symptoms scale, and a change of symptom scale. Symptoms included on the GSRS include heartburn, nausea, vomiting, and urgency for defecation. Additionally, patients were asked to report changes in the severity of their symptoms (this was often done with the assistance of their parents).

At the end of the two-week trial, the peppermint oil group showed significant overall improvement compared to those taking placebo. On the severity of symptoms scale, 76% of the children taking peppermint oil reported improvement compared with only 19% taking placebo ($p < 0.001$). Improvements in the change of symptom scale were reported in 71% of the patients taking peppermint oil compared with 43% taking placebo ($p < 0.002$). When summed across all 15 items, the GSRS showed no significant differences between groups. The daily diary entries recorded by the patients showed a significant difference in the severity of pain symptoms reported with a more notable decrease in those patients taking peppermint oil ($p < 0.03$). No side effects were reported for either group by the investigators.

Comments/Opinions: IBS is a common gastrointestinal condition that is characterized by altered bowel habits with specific symptoms of diarrhea, constipation, abdominal distention, bloating, and urgency to defecate. Symptoms can be sporadically severe or experienced on a daily basis. Although more commonly diagnosed in adults, there has been a growing awareness that children with recurrent abdominal pain may sometimes have IBS as well.

This is the first clinical trial to determine the efficacy of enteric-coated peppermint oil for the treatment of pediatric IBS. Although the trial must be considered preliminary due to the relatively small sample size of subjects used in this study, it suggests that enteric-coated peppermint oil capsules safely and effectively reduce the pain older children and adolescents experienced during acute phases of IBS. As reflected in the overall GSRS scores, peppermint oil was not as effective in treating other symptoms of IBS. Due to the complexity of studying IBS, the outcome of the trial sets the stage for a larger and longer placebo-controlled trial.

Peppermint oil consists of the volatile oil of *Mentha x piperita* L., Lamiaceae, obtained by steam distillation of the fresh aerial parts of the flowering plant.¹ The volatile oil is composed primarily of menthol (29–48%) and menthone (20–31%).² Peppermint leaf and peppermint oil are classified as carminatives — substances that prevent and relieve intestinal gas.³ Animal studies⁴ as well as studies with humans during colonoscopy and barium enema examinations^{5,6} have suggested that peppermint oil reduces intestinal spasms. It appears to relax intestinal smooth muscle by reducing calcium availability in the muscle membrane.⁷

Earlier clinical trials with small numbers of adult patients have found that 0.2 to 0.4 mL of peppermint oil in enteric-coated capsules taken for 2 to 4 weeks effectively relieves IBS symptoms.^{8–10} However, other trials found no effect for enteric-coated peppermint oil.^{11,12} A critical meta-analysis of five placebo-controlled clinical trials found that the data suggests efficacy of enteric-coated peppermint oil for treatment of IBS symptoms but, due to methodological shortcomings of most of the trials, concludes that efficacy has “not been established beyond reasonable doubt.”¹³

The pH-dependent, enteric-coated products used in these clinical trials are designed to bypass the stomach and release their contents into the distal small intestine and proximal large intestine.¹⁴ Besides

allowing more direct effect on the bowel, these capsules also reduce the risk of heartburn due to a relaxation of the lower esophageal sphincter by peppermint oil.

Although side effects are rare with use of enteric-coated peppermint oil, it may lead to complaints of rectal burning in some people. The German Commission E Monograph suggests that persons with obstructions of the bile ducts, gallbladder inflammation, and severe liver damage avoid use of peppermint oil.¹⁵ External use of peppermint oil near the face is contraindicated in infants and young children due to the potential risk of spasms of the tongue or respiratory arrest.¹⁶ This same caution may extend to internal use of non-enteric coated products also, although the Commission E does not note this.

Practice Implications: Although larger and longer clinical trials are needed, the results of this study suggest that 0.1 to 0.2 mL of peppermint oil in enteric-coated capsules three times per day is a safe and effective treatment for pain associated with acute phases of IBS in older children and adolescents. Based on previous clinical trials, the dosage of adult IBS patients ranges from 0.2 to 0.4 mL three times per day. 🐾

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Chasteberry Extract Successfully Treats PMS in Placebo-Controlled Trial

by Donald J. Brown, ND

Reference: Schellenberg R. Treatment of the premenstrual syndrome with agnus castus fruit extract: prospective, randomized, placebo controlled study. *BMJ* 2001;322:134–7.

Summary: In this study 170 women (mean age 36 years) with a diagnosis of premenstrual syndrome (PMS) entered a prospective, randomized, placebo-controlled clinical trial of the efficacy of chasteberry extract, from chaste tree (*Vitex agnus-castus* L., Verbenaceae). Study participants were randomized to receive either 20 mg of the chasteberry extract ZE 440 (Zeller AG, Romanshorn, Switzerland) or placebo once daily for three menstrual cycles. The ZE 440 chasteberry product used in the trial is an ethanolic extract (6–12:1 extract ratio) and standardized for casticin. The casticin content in the dry extract was at least 0.3%, in the native extract 0.6%. The primary efficacy variable was the change from baseline to the end of the study (end of the third cycle) on the total score of a subjective questionnaire measuring irritability, headache, breast fullness, and other PMS symptoms. Secondary efficacy variables included change in the clinical global impressions (CGI) and responder rate (50% reduction in symptoms). Twenty-three women took oral contraceptives (11 in the chasteberry group and 12 in the placebo group).



Chaste tree *Vitex agnus-castus* Photo © 2001 stevenfoster.com

At the end of the treatment period, women taking the chasteberry extract had a significantly greater reduction in overall PMS symptom score compared to those taking placebo ($p < 0.001$). Five of the six self-assessment items indicated a significantly greater reduction for the chasteberry group with the exception of the item listed “others and bloating” which was measured as unaffected by treatment with chasteberry. The CGI also showed a significantly greater reduction of PMS symptoms compared to placebo ($p < 0.001$). The overall responder rate was 52% for the chasteberry group compared to 24% for the placebo group. Adverse events were few in both groups and included acne, intermenstrual bleeding, and skin rash in the chasteberry group.

Comments/Opinions: Surprisingly, this is the first placebo-controlled clinical trial designed to measure the efficacy of chasteberry for the treatment of PMS. A previous 3-month double-blind trial found comparable efficacy for chasteberry and vitamin B6 (200 mg/day) for treating PMS,¹ but did not include a placebo group.

Other trials of chasteberry to treat PMS were primarily uncontrolled, clinical monitoring studies.²⁻⁴

Coordinated by researchers at the Institute for Health Care and Science in Hüttenberg, Germany, this new trial provides an important step toward the acceptance of chasteberry extract as a safe and efficacious treatment for PMS. The product, sold in tablet form, is not currently available in North America.

Native to valleys and riverbanks of the Mediterranean and central Asia, chaste tree produces dark brown to black fruit the size of a peppercorn. Preparations of the fruit have been approved by German health authorities (Commission E) for the treatment of menstrual irregularities such as PMS and cyclical breast pain (mastalgia).⁵ Clinical trials supporting the use of chasteberry for mastalgia have primarily been completed with a product that combines 32.4 mg of a chasteberry extract with various homeopathic ingredients (Mastodynon®, Bionorica Arzneimittel, Neumarkt, Germany).⁶

While earlier research suggested that chasteberry may increase the release of luteinizing hormone (LH), the pituitary hormone responsible for the development of the corpus luteum and subsequent release of progesterone during the luteal phase of a woman's menstrual cycle,⁷ more recent research has focused on the ability of chasteberry to reduce elevated levels of prolactin late in a woman's menstrual cycle.⁸ Apparently due to a dopaminergic action of chasteberry leading to a reduction in prolactin,⁹ this action may directly relate to the lengthening of the luteal phase and reduction in breast tenderness seen with chasteberry treatment. It may also partially explain the preliminary success found in clinical trials using chasteberry in the treatment of infertility and secondary amenorrhea.^{10,11}

Clinical trials have reported that adverse events are rare, but include urticaria (skin rash with itching), mild gastrointestinal upset, and intermenstrual bleeding. Chasteberry is not recommended for use during pregnancy¹² and use during lactation is questioned due to the possible dopaminergic actions mentioned above, leading to a suppression of lactation. Due to theoretical interactions, some authors suggest that chasteberry be avoided by women taking oral contraceptives or on hormone therapy.¹³ However, 20 patients in the current study used oral contraceptives concurrently with no reported adverse interactions. The lack of interaction between the two medicines was also noted in another recent trial.¹⁴ The potential dopaminergic action of chasteberry also suggests that it should not be used concomitantly with dopamine antagonist drugs such as haloperidol or metoclopramide.

Practice Implications: These new results support the safety and efficacy of chasteberry extract as a viable tool to manage PMS symptoms. Chasteberry is typically taken once in the morning before breakfast and should be taken for at least three menstrual cycles to determine efficacy. Further clinical trials are needed to determine the optimal dosage and amount of time that chasteberry should be used to treat PMS. 🍀

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What is Herb Standardization?

by Mark Blumenthal and Tara Hall

Standardization is a complex and controversial topic. For some, *standardized* means a product is manufactured to ensure that a given marker compound(s) meets a specified level. To others, it is a consistent manufacturing process. For still others, it is a specified ratio of herb material to solvent or a specified amount of herb in a dosage unit. In its broadest (and increasingly popular) sense, standardization refers to the control and manipulation of every aspect of the agricultural and manufacturing process, and beyond, to ensure a consistent product.¹ [For more on this broad interpretation, please refer to the American Herbal Product Association's (AHPA) industry guidelines on standardization on page 48 of this issue.] Beyond an individual company's agricultural and/or manufacturing processes, standardization extends to industry-wide acceptance of standardized:

- Common names of herbs sold in the marketplace.² (Federal regulations³ now require use of standardized common names as listed in the 1992 edition of *Herbs of Commerce*.⁴)
- Safety labeling for commercial herb products.⁵
- Validated analytical methods to test products.⁶

Members of the herb community debate the use of the term "standardized" in relation to the labeling of herbal products. Some recognized authorities have suggested that consumers and health professionals should use only standardized herbal preparations.⁷ Media stories frequently recommend that consumers look for "standardized herbs" to ensure proper quality.

Yet, many traditional herbalists decry standardized herbal products for allegedly lacking essential components that affect the biological activity of the herb. Some worry that standardization is tantamount to the "chemicalization" or "pharmaceuticalization" of the herbal tradition. They argue that herbs have been effective for millennia without chemical standardization.^{8,9}

Because standardization is such a complex, controversial, and vital topic, *HerbalGram* will discuss it further in future issues.

GEP Standardized Phase Report Limitations

In the Standardized Phase of the Ginseng Evaluation Program (GEP), we focus on 13 commercial ginseng products that in some way utilized the term "standardized" on their label or claimed to contain a specified level of ginsenosides. We recognize that some readers may construe the publication of the Standardized Phase report to mean that the American Botanical Council is promoting the use of standardized herb products over, or to the exclusion of, raw herb or non-standardized herb products. This simply is not the case, and in this regard, we concur with Francis Brinker, N.D.:

"Each different type or form of plant product has its own advantages and limitations in the context of therapeutic effects, and in individual use and acceptance. The value in variety is that it allows practitioners and consumers to accommodate their needs best. Such variety should not be construed as a problem, since variations offer practical advantages for individuals with different needs."¹⁰

Products in the Standardized Phase of the GEP were purchased from 1993 through 1998. These products may or may not be available in the marketplace at this time. If they are available, their contents and/or label claims may or may not have changed. The Stan-

dardized Phase report is different from the so-called "test and tell" studies that have garnered considerable media attention in the past few years. Those reports usually test a relatively small range of products (about one or two dozen, at most) and usually are based on a single sample of each brand, although some may employ more than one sample. The Standardized Phase report covers 13 brands of standardized Asian ginseng products, and tested five lots of each. Thus, one of the unique aspects and strengths of this paper is that it reports on the consistency of five lots of the same product over an extended period of time.

Recommendations

The GEP scientific team has made several recommendations to members of the herb industry regarding the labeling of standardized products. One primary recommendation is that ginsenoside content of ginseng products be labeled in milligrams per dosage unit rather than as a percentage of the extract or root powder. In making this recommendation, the GEP team recognizes that this may appear to support a situation in the marketplace where manufacturers and consumers inappropriately focus on marker compounds. The authors also recognize that the primary active ingredients of many herbs have not been identified and, consequently, focusing on the known active and/or marker compounds as standardization targets may result in a "reductionistic" view that the herb's activity and benefits depend solely on that compound(s). While we recognize that standardization, in its broadest sense, is a process that has, and should, become firmly entrenched in the development and manufacture of modern herbal preparations, we also realize that the activity of many herbs depends upon the multiple chemical components and their synergistic and/or antagonistic interplay. Therefore, we see the various types of standardization, defined in the broadest terms, as necessary and useful tools for ensuring the quality and safety of standardized as well as raw and non-standardized herbal products. 🍀

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Collage by Sean Barnes for *HerbalGram*; original images courtesy of the Botanical Research Institute of Texas, Fort Worth, Texas



ginseng

evaluation program
Part One: Standardized Phase

An Introduction to the Ginseng Evaluation Program

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Authors' note: This article explains the basics of the Ginseng Evaluation Program (GEP) and provides background information to support the Standardized Phase report of the GEP found on page 31 of this issue. An in-depth explanation of the GEP will be provided in Part 2 of the report in a forthcoming issue of HerbalGram.

Introduction

Ginseng comprises one of the largest sales categories of commercial herbal products in North America, ranking first, second, or third in retail sales in the mainstream market in each of the last five years.¹⁻⁴ For the past 25 years or more, numerous advanced⁵ ginseng products have been sold in capsule, liquid extract, softgel, tablet, and tea forms in North America.⁶ Consumers purchase ginseng in its various forms because they seek the presumed health benefits of the fabled root. The so-called tonic⁷ and adaptogenic⁸ properties, the apparent basis of much tradition and mythology, have been subjected to extensive scientific studies in both Asia and Europe. The primary plants designated as ginseng on the United States market are Asian ginseng (*Panax ginseng* C.A. Mey.), American ginseng (*P. quinquefolius* L.), and eleuthero (aka Siberian ginseng) (*Eleutherococcus senticosus* (Rupr. & Maxim.) Maxim., formerly known as *Acanthopanax senticosus* (Rupr. & Maxim.) Harms). All are members of the plant family Araliaceae. Eleuthero is not a true ginseng, which, by definition, must belong to the *Panax* species.

Veteran observers of ginseng commerce and the herbal movement, as well as research scientists, have long suspected that some of the products claiming to contain ginseng may be misbranded, mislabeled, and/or adulterated. Prompted by this concern, in 1993 the American Botanical Council (ABC) initiated a comprehensive study of more than 500 commercial ginseng products sold throughout North America: the Ginseng Evaluation Program (GEP). The GEP is an analytical evaluation that measures product content and consistency, and compares these to the label claims. The GEP does not, in any way, evaluate the efficacy of ginseng or effective dosage levels. This is the first study of this magnitude or longevity to be conducted on ginseng or, indeed, any herbal product. Through the GEP, ABC seeks to set a standard for future studies, increase healthcare professional and consumer confidence in properly manufactured and labeled brands, and increase awareness of quality control and labeling issues and responsibility for the sale of ethically produced herb products on the part of the growers, harvesters, manufacturers, and marketers of dietary supplements.

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Overview of GEP

Two leading universities joined with ABC to work on the GEP: the College of Pharmacy at the University of Illinois at Chicago (UIC) and the Biology Department at the University of Ottawa (UO) in Canada. The two laboratories developed and validated testing methodologies⁹ for consumer products, and analyzed more than 500 Asian, American, and eleuthero (aka Siberian) ginseng products using high performance liquid chromatography (HPLC) to profile and assay ginsenosides and/or eleutherosides, the primary marker compounds in the genera *Panax* and *Eleutherococcus*, respectively.

The GEP is composed of two main testing phases: the Regular Phase and the Standardized Phase (see Figure 1). In the Regular Phase, products were analyzed to determine the validity of manufacturer claims regarding ginseng identity and claimed levels of key chemical constituents. The GEP team met to review the test results and determine the Pass/Fail status for each product. A product passed if it met the following criteria:

1. Product meets label claim for identity and has a normal profile of key constituents; and
2. Product meets or exceeds label claim for level of key constituents (i.e., ginsenosides and/or eleutherosides); and
3. For root powder products only, product meets or exceeds the lowest historically reported levels of key constituents.¹⁰

The Regular Phase has two “sub-phases”—the Original Lot Phase and the New Lot Phase. The Original Lot Phase includes those products purchased from 1993 to 1997. Both laboratories participated in the Original Lot Phase. All products that appeared to fail in the first analysis were analyzed at least twice (once in each of the two labs), and as many as four times total to confirm the final status. Upon completion of the analyses of the products in the Original Lot Phase in 1997, ABC notified manufacturers of the results for products that had failed. Some of those manufacturers expressed concern that the products analyzed in the GEP were older products that had since been improved or had been discontinued.

In some cases manufacturers explained that they had previously discovered quality control/quality assurance problems and had corrected them prior to receiving ABC's notification of product failure in the GEP. Many manufacturers urged ABC to test the new version of their product that was on the market at that time (1997–1998).

Early in 1998, after assessing all the feedback from manufacturers of failed products, and based on the fact that many of the orig-

inal products were manufactured prior to passage of the Dietary Supplement Health and Education Act of 1994 (DSHEA) (passed in October 1994), the GEP team decided to initiate the New Lot Testing Phase. For each product that had failed in the Original Lot Phase, the GEP team attempted to purchase a new lot. Each new lot was analyzed once at UIC and received a Pass or Fail designation. The results for the Regular Phase, including both the Original Lot and New Lot Phases, will be published in forthcoming issues of *HerbalGram*.



Original image from *Die natürlichen Pflanzenfamilien*, 1898, courtesy of the Botanical Research Institute of Texas, Fort Worth, Texas

In the process of acquiring products for the Regular Testing Phase, it became evident that many products claimed to be “standardized”; some claimed to be standardized to a specific level of ginsenosides. Seeing widespread use and significant variation in the use of the term standardized, early in 1996 ABC decided to expand the GEP to review a small group of “standardized” Asian ginseng products, thus initiating the Standardized Phase of the program. Thirteen products were selected and a total of five different lots (including the one lot in the Regular Phase) of each product were purchased and analyzed. These products did not receive a Pass/Fail designation. Instead, each product was evaluated for lot-to-lot consistency as demonstrated by three factors:

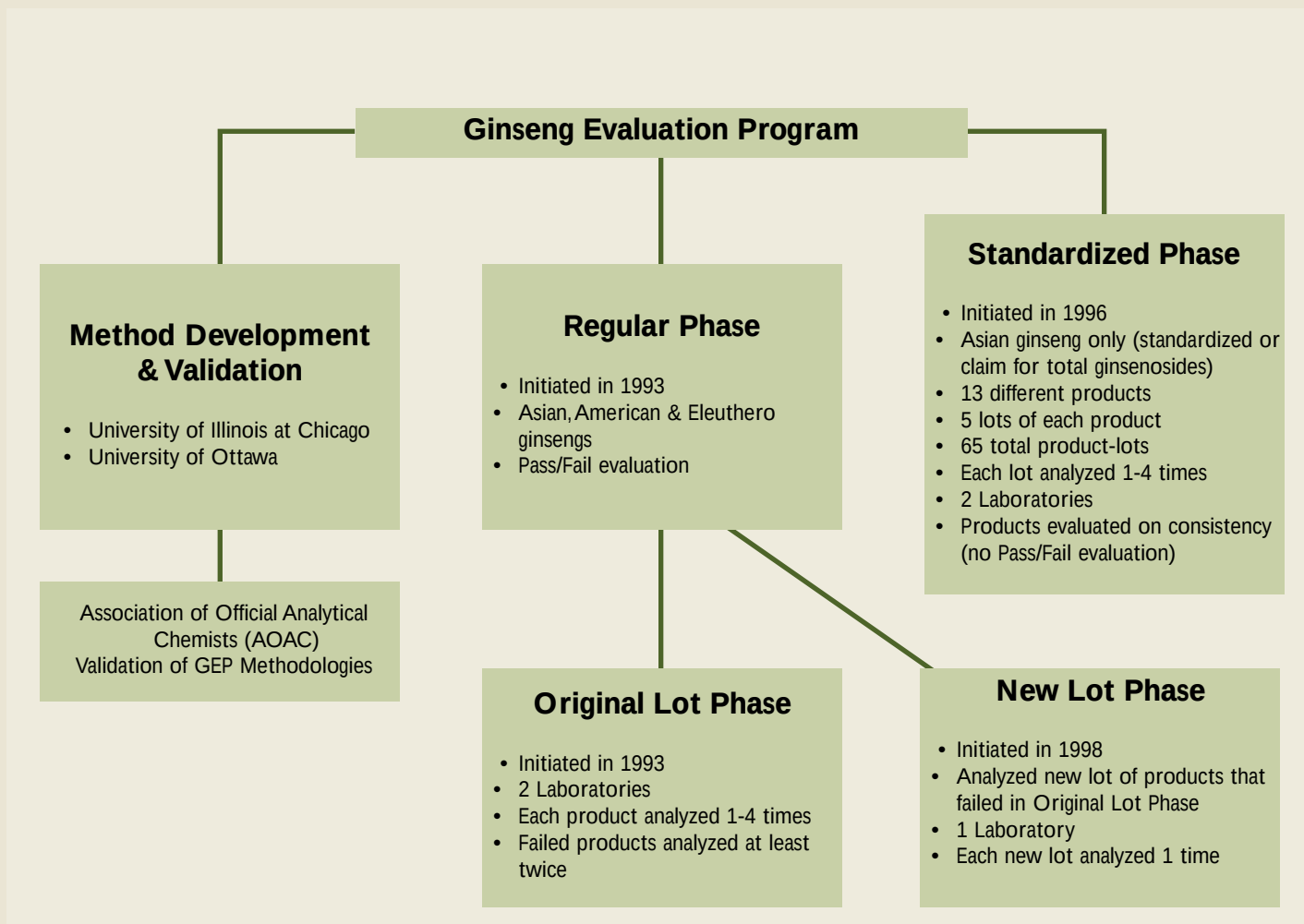
1. Percent of lots with an R_{b1}/R_{g1} ginsenoside value within an acceptable range for Asian ginseng;
2. Percent of lots that met claim for total ginsenoside content; and
3. Percent relative standard deviation (%RSD) of the lot-to-lot total ginsenoside content.

For results of the Standardized Phase please refer to Evaluation of Consistency of Standardized Ginseng Products on pages 31–45.

Laboratories and Methodologies

The GEP employed HPLC to test the ginseng products. HPLC has evolved as the preferred method to test for total and/or individual ginsenosides and eleutherosides as it allows the analyst to evaluate qualitatively and quantitatively the chemical constituents of botanical materials. From an analytical perspective, one of the major challenges for the GEP team was to modify the HPLC analytical method designed for raw plant material (i.e., roots and leaves) to analyze a variety of product dosage forms, including softgels, teas, tablets, etc. UIC and UO worked together to develop and validate the methodologies for analysis of ginsenosides and eleutherosides. In addition, UIC isolated many of the necessary reference compounds used in the analyses because at the time they were not available commercially. (They are now generally available.) The identities of the reference ginsenosides and eleutherosides were determined by spectroscopic means (nuclear magnetic

Figure 1. Ginseng Evaluation Program



resonance, mass spectroscopy, liquid chromatography-mass spectroscopy), and their purity was established by HPLC analysis.

Both testing methodologies are available, in full, on the ABC website <<http://www.herbalgram.org/gep/index.html>>. In addition, the ginsenosides analytical method has undergone the full multi-laboratory validation process for submission to the Association of Official Analytical Chemists (AOAC). According to the AOAC manual, a minimum of eight laboratories must submit valid data for this full validation process; the GEP application contains data from 12 laboratories around the world. The AOAC is currently reviewing the GEP ginsenosides methodology application.

Both laboratories analyzed products in the Original Lot and Standardized Phases, while UIC analyzed all products in the New Lot Phase. All results were reviewed by the GEP team to determine Pass/Fail status.

Project Scope

Products included in the GEP. While the Standardized Phase of the GEP focuses solely on Asian ginseng products, the Regular Phase is much broader. The Regular Phase includes mono-ginseng products (containing only one type, i.e., species, of ginseng) claiming to contain any of the following types of ginseng or using com-

mon names for the following types of ginseng: Asian ginseng, American ginseng, and eleuthero (aka Siberian ginseng).

Regular Phase testing also included mono-ginseng products that did not specify the type of ginseng they contained, but were marketed under the name “ginseng.” GEP testing did not include any other type of ginseng (e.g., Tienchi ginseng [*P. pseudoginseng* Wall. var. *notoginseng* (Burkill) G. Hoo & C.J. Tseng, syn: *P. notoginseng* (Burkill) F.H. Chen ex C.Y. Wu & K.M. Feng]).

In addition, the GEP included those multiple ingredient products meeting one of the following criteria:

1. Multi-ginseng products, i.e., products containing more than one of the ginseng types listed above.
2. Mono- or multi-ginseng products containing only those additional ingredients necessary for manufacturing purposes, i.e., fillers, binders, excipients, or other inert materials used for manufacturing purposes.

Characteristics evaluated. Products in the Regular Phase were evaluated for identity and level of key constituents and assigned a

part one
standardized phase

Pass/Fail designation accordingly. Asian and American ginseng products were tested for the presence and amount of the seven major ginsenosides (R_{b1} , R_{b2} , R_c , R_d , R_e , R_f , and R_{g1}). Ginsenosides are chemically classified as saponins or triterpene glycosides and are characteristic of plants in the genus *Panax*. They are biologically active¹¹ and serve as marker compounds to identify members of the genus *Panax*. They also can be used to distinguish among various species of *Panax*, owing to their presence and/or absence, ratios, etc. There are other biologically active compounds in these two species of *Panax* (e.g., polysaccharides, acetylenes, panaxynol, etc.); however, the primary activity is associated with ginsenosides.¹¹



The logo for the Ginseng Evaluation Program, featuring the word "ginseng" in a stylized font with "evaluation program" written below it.

Eleuthero products were tested for the presence and amount of eleutherosides B and E (phenylpropanoid and lignan glucosides, respectively), which are chemically distinct from the ginsenosides found in *Panax* species. Although a number of so-called eleutherosides (glucosides from eleuthero) have been characterized, they are not uniformly structurally related as are the ginsenosides. Eleutherosides B and E, generally regarded as the most pharmacologically important, are the only ones for which assays usually are conducted. Therefore, for the purposes of GEP, the team assayed eleutherosides B and E and refer to the sum of the levels of these two eleutherosides as "total eleutherosides."

Products that contained both eleuthero and either Asian or American ginseng were tested for the presence and content of the seven major ginsenosides and eleutherosides B and E. Products that did not specify the type of ginseng they contained were also tested for the presence and content of the seven ginsenosides and these two eleutherosides.

Agricultural chemicals. The GEP team was aware of the issue of agricultural chemicals such as the fungicide quintozene (pentachloronitrobenzene or PCNB) being used by commercial ginseng growers in North America and Asia. The GEP team deemed that testing for these compounds was outside the scope of the GEP.

Study design. The GEP is an "encoded blind study," i.e., all products were given a GEP control number, logged into the GEP's records, and blinded samples identified only by the GEP control number were sent to the labs for analysis.

In order to ensure fairness and objectivity, the GEP team developed strict protocols for acquiring and storing products, preparing samples and shipping them to the testing laboratories, and for reviewing results. All products analyzed were purchased from retail establishments (including health food stores, grocery stores, pharmacies, and ethnic grocery stores), mail order, multilevel marketing distributors, and/or healthcare professionals. ABC did not accept in this program any ginseng products that were sent directly by the manufacturer, in order to preclude the possibility that unrepresentative products might be evaluated.

Security. Throughout the seven-plus years of the GEP, strict protocols were followed to ensure the confidentiality, security, fairness, and appropriate handling and storage of all products and information associated with the project.

GEP Parts 2 and 3

The American Botanical Council will publish the results of the Regular Phase of the Ginseng Evaluation Program in forthcoming issues of *HerbalGram*. These reports will provide detailed results of all products in the Regular Phase including the Pass/Fail status of each.

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5. Advanced. In any form other than raw ginseng material.
6. Capsule refers to powdered material in a two-piece hard-shell enclosure made of gelatin or sometimes vegetable material. Liquid extracts are usually water-alcohol (ethanol) extracts in ratios of 1:10 in which one unit of ginseng root material produces ten units of tincture. Thus, liquid extracts are usually relatively dilute preparations. Softgel refers to a formulation encased in a one-piece gelatin capsule. Tablet refers to powdered materials compressed into a solid dosage form, usually containing excipients (an inert substance that forms a vehicle, as for a drug) and binding agents. Tablets may be coated to mask flavor, maintain integrity, increase ease of swallowing, or to control dissolution time, e.g., enteric coating. Tea is a general term usually referring to infusions but also including decoctions. An infusion is a liquid made by pouring boiling water over chopped herbs and steeping the mixture for several minutes. A decoction is a liquid made by adding herbs to boiling water and continuing to heat the mixture for a period of time. For the purposes of the GEP, tea also includes instant ginseng tea, i.e., granules (ginseng extract in a glucose base) that dissolve when boiling water is added.
7. Tonic. A remedy utilized to restore strength and vigor; typically taken for an extended period of time.
8. Adaptogenic. That which increases the nonspecific resistance of an organism to adverse influences, while generating a normalizing action on bodily systems.
9. Refer to <<http://www.herbalgram.org/gep/index.html>> for the full text of the methodologies used in the GEP.
10. The GEP team reviewed scientific literature to determine the lowest reported levels of ginsenosides in American and Asian ginseng roots and eleutheroside E in eleuthero roots. Each low level was then adjusted to factor in the appropriate coefficient of variation, the representative amount of ginsenosides tested, and the appropriate level of compliance. This value became the minimum level of ginsenosides or eleutherosides a root powder product had to meet in order to Pass. The results of this literature review and the resulting Root Powder Minimums can be found at <<http://www.herbalgram.org/gep/index.html>>.
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Evaluation of Consistency of Standardized Asian Ginseng Products in the Ginseng Evaluation Program

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Abstract

Significant variation in use of the term “standardized” was found among the *Panax ginseng* products in the American Botanical Council’s Ginseng Evaluation Program (GEP). Thirteen of these products were selected for an encoded blind study of lot-to-lot consistency. Five different lots of each product were qualitatively and quantitatively analyzed by HPLC. Lot-to-lot consistency for each product was measured in three ways: (1) frequency of acceptable R_{b1}/R_{g1} value; (2) percentage of lots (within a product) that met claim for total ginsenoside content; and (3) percent relative standard deviation (%RSD) of total ginsenoside content. Most products were reasonably consistent. However, the term “standardized,” as used on product labels, frequently was found to be inappropriate, confusing or misleading. The GEP team recommends that members of the herb and dietary supplement industries establish guidelines for use of the term “standardized” as specified in this report.

Introduction

In the process of acquiring products for the Regular Testing Phase¹ of the American Botanical Council’s Ginseng Evaluation Program (GEP), it became evident that many Asian ginseng (*Panax ginseng* C.A. Mey., Araliaceae) products claim to be “standardized.” Specifically, 34 (18%) of the 191 Asian ginseng products in the Original Lot Phase¹ of the GEP claim to be standardized. Seventeen (50%) of these standardized products claim standardization to a specific level of ginsenosides, and of these 17 products, three also claim to be standardized to a specific ratio of the ginsenosides R_{b1}^2 and R_{g1}^3 . The other 17 (50%) products claiming to be standardized make no additional label claims and give no indication as to how the term “standardized” applies to the product.

The GEP is an analytical evaluation that measured product content and consistency and compared these to the label claims. The GEP did not in any way evaluate the efficacy of the products or determine their effective dosage levels.

Note to Reader:

A glossary of technical terms and acronyms used in this report can be found on pages 32–33

When used in relation to dietary supplements such as ginseng, the term “standardized” is generally understood to mean that one or more specific marker compounds⁴ are present at a specified level, or range, from batch to batch. Noting the wide variation in and misuse of the term “standardized,” in contrast to its generally understood meaning, and the impact this may have on the consumer and/or healthcare professional, the GEP team decided in 1996 to expand the project to examine the lot-to-lot consistency of a small group of “standardized” Asian ginseng products. The GEP did not evaluate the efficacy of ginseng or effective dosage levels.

Standardized Testing Phase Description

Products had to meet all of the following selection criteria to be included in the Standardized Phase of the GEP:

1. The product must have been included in the Regular Testing Phase of the GEP.
2. The product must be a mono-ginseng (i.e., only one species) product claiming to contain *Panax ginseng*.
3. The product label must use the word “standardized” or claim a specific level of total ginsenosides.
4. A total of four different lots of the product had to be purchased within a designated time frame. (A fifth lot was subsequently added during the New Lot Phase.¹)

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part one
standardized phase



ginseng
evaluation program

Thirteen ginseng products met all the criteria and were selected for the Standardized Phase of the GEP. Of these 13 products, five use the term “standardized” and make a claim for level of total ginsenosides, another five make no claim for total ginsenoside levels but use the term “standardized” on the label, and the remaining three products do not use the term “standardized,” but do claim a specified level of total ginsenosides.⁵ Of the eight products making claims for total ginsenosides, three also make a claim regarding the relative levels of R_{b1} and R_{g1} .

Nine products claim to contain ginseng root extract, three claim to contain ginseng root powder, while the remaining one claims to combine ginseng root extract and root powder. In this combination product, only the ginseng extract is listed as standardized. Therefore, for the purposes of this report, this product has been listed with the extract products.

In 1998, when the GEP team initiated the New Lot Testing Phase, it decided to expand simultaneously the Standardized Phase to include a fifth lot of each product. This allowed the GEP team to look at product consistency over a longer period of time (1993–1998). The addition of the fifth lot resulted in a total of 65 product-lots (13 different products x 5 lots each).⁶

All 65 product-lots were analyzed by the university laboratories on the GEP team (the College of Pharmacy at the University of

Illinois at Chicago [UIC] and the Biology Department at the University of Ottawa [UO]). The materials and methods⁷ used to analyze these product-lots were the same as those used in the Regular Phase of the GEP.

In the Regular Testing Phase, the GEP team assigned a “Pass” or “Fail” designation to products. However, the team decided not to use Pass/Fail designations in the Standardized Phase, and instead, evaluated products on the frequency of meeting label claims and on the lot-to-lot consistency of two values: the level of total ginsenosides, and the relative levels of two key ginsenosides (R_{b1}/R_{g1} value⁸).

Thus, the GEP team chose to look at the lot-to-lot content of total ginsenosides as an indication of the consistency of the product’s concentration. “Although a number of plant constituents are generally recognized as possible contributors to the bioactivity of ginseng root preparations, the so-called ginsenosides ... are widely regarded as those most responsible for the medicinal properties of the plant.”⁹ Of the more than 30 ginsenosides that have been identified from *Panax* species,¹⁰ R_{b1} , R_{b2} , R_c , R_d , R_e , and R_{g1} constitute the six major ginsenosides, and represent more than 90% of the saponin content of ginseng root.¹¹ The GEP team tested for all six of these ginsenosides plus R_f , which served as a species identifier as it is present in Asian ginseng, but absent from American ginseng (*P. quinquefolius* L.).^{12–15}

Scientists commonly look at the relative levels of ginsenosides R_{b1} and R_{g1} as an indicator of species identity.^{14, 15} In Asian ginseng

Terms and Abbreviations Used in the Ginseng Evaluation Program Standardized Phase Report

ACE (adjusted claim equivalent). The minimum level of total ginsenosides (mg/unit) the product must contain in order to meet the claim made by the manufacturer on the product label. ACE is calculated by converting the manufacturer’s claim to mg/unit and adjusting it for the coefficient of variation of the GEP analytical method; the representative amount of ginsenosides assayed; and the class of compliance required for the product under review. Two products making the same claim would have different ACEs, if they each contained different amounts of ginseng per unit or fell into different compliance classes.

AHPA. American Herbal Products Association.

AOAC. Association of Official Analytical Chemists.

Batch. Generally considered synonymous with “lot.” Currently, supplements are regulated as foods (with certain statutory and regulatory differences) and, therefore, must conform to the good manufacturing practices (GMPs) for foods. Current food GMPs define lot as “food produced during a period of time indicated by a specific code” [21 C.F.R. §§ 110.3(h)]. An Industry Draft for Dietary Supplement GMPs submitted to FDA in 1995 defines batch and lot as “a specific quantity of a finished product or other material that is intended to have uniform character and quality, within specified limits, and is produced according to a single manufacturing order during the same cycle of manufacture” [FR 62: 5699–5709]. Food GMPs do not require use of lot numbers on the label of the finished product. Similarly, food GMPs do not establish requirements for records retention. The proposed dietary supplement GMPs would require lot numbering and records retention. Both lot numbering and records retention are standard practices of the dietary supplement industry, even though they are not required by current regulations. In the context of the GEP, “batch” is defined as proposed in the Industry Draft for Dietary Supplement GMPs.

Category 1. Within the context of the GEP, use of the term

“standardized” indicates the quantity of extract is standardized—not the ginseng extract itself.

Category 2. Within the context of the GEP, use of the term “standardized” specifies that the ginseng is standardized, but does not indicate the specific characteristics which have been standardized, nor the reference points against which these characteristics have been standardized.

Category 3. Within the context of the GEP, use of the term “standardized” clearly states what characteristic has been standardized and by what criteria.

Class I. Per federal regulations, Class I refers to manipulated products (e.g., standardized ginseng extract) or products containing added ingredients (e.g., softgels containing standardized ginseng extract). These products must contain at least 100% of the claim throughout the shelf life of the product. Thus, an Asian ginseng product standardized to 4% ginsenosides must contain at least 4% ginsenosides throughout the shelf life of the product [21 C.F.R. §§ 101.9(g)(3) – (6) and 21 C.F.R. §§ 101.36(f)(1)].

Class II. Per federal regulations, Class II refers to naturally occurring, non-manipulated ingredients (e.g., Asian ginseng root powder). These products must contain at least 80% of the claimed amount of the specified ingredient over the shelf life of the product. So, if an Asian ginseng root powder product claims 4% ginsenosides, that product must contain at least 80% of 4% (i.e., 3.2%) for the shelf life of the product [21 C.F.R. §§ 101.9(g)(3) – (6) and 21 C.F.R. §§ 101.36(f)(1)].

Coefficient of variation (CV). The CV of the analytical method is a measure of the variation in repeat analyses of a single material. The CV is calculated in the same manner as the percent relative standard deviation (%RSD) (see below). The GEP team uses CV when referring to the variation within an analytical method and %RSD when referring to the lot-to-lot variation of a product. The

roots, the R_{b1} and R_{g1} levels are generally comparable, yielding R_{b1}/R_{g1} values usually between 1 and 3.⁹ The level of R_{g1} in American ginseng roots is generally extremely low, resulting in R_{b1}/R_{g1} values usually in the vicinity of 10 or greater.⁹ Therefore, the GEP team decided to use the R_{b1}/R_{g1} value as an indicator of species identity and as a more general indicator of product consistency. Those products claiming a specific R_{b1}/R_{g1} value also were evaluated on the frequency of meeting that label claim.

Results and Discussion

The GEP is an analytical evaluation that measured product content and consistency and compared these to the label claims. The GEP did not in any way evaluate the efficacy of the products or determine their effective dosage¹⁶ levels. The presence of lot-to-lot variations may or may not significantly alter the biological effects of the ginseng product as this depends on many factors:

1. Degree of chemical variation;
2. Which compounds vary significantly;
3. Dosage form (i.e., capsule, tablet, liquid extract, etc.);
4. Amount of finished product ingested; and
5. The effective dosage range (i.e., the dosage range in which ginseng is likely to have a biological effect on the body).

The GEP scientists conclude that most products in the Standardized Phase are reasonably consistent. Some had excellent con-

sistency, as indicated by the high frequency of meeting label claims and by the low percent relative standard deviation (%RSD). %RSD is a measure of how widely dispersed values are from the average of those values, expressed as a percentage of that average. The GEP team uses %RSD to measure the variation in multiple lots of a single product. The lower the %RSD, the closer together all the values are and thus the more consistent a product is from one lot to the next. The higher the %RSD, the more widely dispersed the values are from the average indicating greater variation among the lots and a less consistent product.

All products in the Standardized Phase had ginsenoside profiles consistent with *Panax ginseng*, including the presence of ginsenoside R_f and acceptable R_{b1}/R_{g1} values. Table 1 details the results for the 13 products in the Standardized Phase. Ginsenoside content is listed as mg/unit where “unit” is one softgel, or one two-piece hardshell capsule.^{17, 18} Table 1 indicates which products used the word “standardized” on their labels and how the word was used. It also lists claims for levels of ginsenosides and the adjusted claim equivalent (ACE), which is the minimum level of total ginsenosides (mg/unit) the product must contain in order to meet the label claim. The ACE is calculated by converting the label claim to mg/unit and adjusting it for: the coefficient of variation for the GEP analytical method;¹⁹ the representative amount of ginsenosides assayed; and the level of compliance²⁰ required for the

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coefficient of variation of the GEP analytical method is 5.13% for Asian ginseng.

G115®. The ginseng extract produced by Pharmaton and standardized to 4% ginsenosides. It has been the subject of much research for more than 20 years. It is the extract found in Ginsana®.

Ginsenosides. Constituents of ginseng (*Panax* species) that are used as marker compounds and are widely regarded as the constituents most responsible for the reputed medicinal properties of ginseng.

GMPs. Good manufacturing practices.

HPLC. High performance liquid chromatography.

Lot. Generally considered synonymous with batch. Currently, supplements are regulated as foods (with certain statutory and regulatory differences) and, therefore, must conform to the good manufacturing practices (GMPs) for foods. Current food GMPs define lot as “food produced during a period of time indicated by a specific code” [21C.F.R. §§ 110.3(h)]. An Industry Draft for Dietary Supplement GMPs submitted to FDA in 1995 defines batch and lot as “a specific quantity of a finished product or other material that is intended to have uniform character and quality, within specified limits, and is produced according to a single manufacturing order during the same cycle of manufacture” [FR 62: 5699–5709]. Food GMPs do not require use of lot numbers on the label of the finished product. Similarly, food GMPs do not establish requirements for records retention. The proposed dietary supplement GMPs would require lot numbering and records retention. Both lot numbering and records retention are standard practices of the dietary supplement industry, even though they are not required by current regulations. In the context of the GEP, “lot” is defined as proposed in the Industry Draft for Dietary Supplement GMPs.

Marker compound. A compound whose presence and level are used as an indicator of consistency and quality of a botanical material. A marker compound also may be (but does not need to be)

an indicator of identity. Marker compounds may or may not be recognized as having pharmacological activity.

Percent relative standard deviation (%RSD). A measure of how widely dispersed values are from the average of those values, expressed as a percentage of that average. The GEP team uses %RSD to measure the variation in multiple lots of a single product. The lower the %RSD, the closer together all the values are and thus the more consistent a product is from one lot to the next. The higher the %RSD, the more widely dispersed the values are from the average indicating greater variation among the lots and a less consistent product.

R_{b1}/R_{g1} . R_{b1} and R_{g1} are two ginsenosides found in species of the genus *Panax*. Relative levels of R_{b1} and R_{g1} are often represented in one of two ways: as a ratio $R_{b1}:R_{g1}$ (e.g., 3:1) or as a value $[R_{b1} \div R_{g1}]$ (e.g., 3). When the GEP team uses the term “ratio” or “ R_{b1}/R_{g1} ratio,” it is referring to $R_{b1}:R_{g1}$. When the team uses the term “ R_{b1}/R_{g1} value,” it is referring to $[R_{b1} \div R_{g1}]$. All results for the relative levels of R_{b1} and R_{g1} in the Standardized Phase will be listed as R_{b1}/R_{g1} values.

RDD. Recommended daily dosages or servings, as listed on product labels. Dose and dosage are normally used as pharmacy or drug terms. Technically dose and dosage do not apply to dietary supplements, but the GEP team chose to use these terms as they are more readily recognized than other synonyms such as serving or amount.

UIC. University of Illinois at Chicago, College of Pharmacy.

Undetermined. A lot was listed as undetermined if the nature of the claim did not allow determination, or if analysis confirming the results could not be performed due to time or funding constraints.

Unit. Dosage unit, i.e., one capsule, tablet, softgel, etc.

UO. University of Ottawa, Department of Biology.

Table 1. Detailed Results for Products in Standardized Phase of Ginseng Evaluation Program

Brand Name (in alphabetical order) Product Name Manufacturer Name				Uses term Stdzd(a) Cat(b)	Mfr Claim [ACE](c) Rb1/Rg1 claim (weight of ginseng per unit)	Lot 1	Lot 2	Lot 3	Lot 4	Lot 5	Avg	SD(d)	%RSD(e)	% of lots meeting claim
Extract Products														
Eckerd® Ginseng Concentrate with Chlorophyll Eckerd	Yes Cat 1&2	None None (100mg)	n:(f) mg/softgel:(g) Rb1/Rg1:(h) Meets claim:(i)	1 4.44 1.7 N/C	1 4.60 3.1 N/C	1 6.86 1.4 N/C	1 4.75 2.2 N/C	1 7.00 1.0 N/C	5.53 1.9	1.28 0.81	23.1% 42.6%		N/C(j)	
Enzymatic Therapy® Panax Ginseng Extract Enzymatic Therapy	Yes Cat 3	Lots 1–3: 17% [16.1](k) Lots 4–5: 7% [6.6] None (100mg)	n: mg/capsule: Rb1/Rg1: Meets claim:	4 6.69 2.2 No(k)	3 9.79 2.0 No(k)	2 7.44 1.7 No(k)	3 10.8 1.7 Yes	1 9.76 2.1 Yes	8.90 1.9	1.74 0.23	19.6% 12.1%		40%(k)	
Ginsai™ Standardized Ginseng Extract Lichtwer Pharma	Yes Cat 3	7% [6.6] Rb1/Rg1 = 2(l) (100mg)	n: mg/softgel: Rb1/Rg1: Meets claim:	2 7.29 1.8 Yes	1 7.13 2.3 Yes	2 7.30 1.8 Yes	2 6.31 2.1 Undet(m)	1 6.59 2.4 Yes	6.92 2.1	0.449 0.28	6.5% 13.3%		80–100%(n)	
Ginsana® Concentrated Herbal Extract Pharmaton Natural Health Products	Yes Cat 2&3	4% [3.8](o) None (100mg)	n: mg/softgel: Rb1/Rg1: Meets claim:	1 3.24 3.4 Undet(m)	1 4.93 3.7 Yes	1 3.72 3.1 Undet(m)	1 3.89 5.0 Yes	(p)	3.95 3.8	0.712 0.84	18.0% 22.1%		50–100%(q)	
Nature's Herbs® Power-Herbs® Korean Ginseng Power-Herb® Nature's Herbs	Yes(r) Cat 3	7% [6.6] None(s) (100mg)	n: mg/capsule: Rb1/Rg1: Meets claim:	1 5.20 4.1 Undet(m)	1 6.65 2.1 Yes	3 15.1 2.8 Yes	3 15.5 2.4 Yes	1 10.1 3.4 Yes	10.5 3.0	4.72 0.80	45.0% 26.7%		80–100%(n)	
Nature's Way® or Medicine From Nature™ Ginsun® Standardized Ginseng Extract Nature's Way Products	Yes Cat 3	5% [7.1] Rb1/Rg1 = 2(t) (150mg)	n: mg/softgel: Rb1/Rg1: Meets claim:	1 9.88 1.4 Yes	1 6.95 1.8 Undet(m)	1 8.53 1.7 Yes	1 9.23 1.7 Yes	1 8.94 2.3 Yes	8.71 1.8	1.10 0.33	12.6% 18.3%		80–100%(n)	
Spring Valley® (Wal-Mart, Sam's) Ginseng with Chlorophyll Leiner Health Products	Yes Cat 2	None None (100mg)	n: mg/softgel: Rb1/Rg1: Meets claim:	1 7.44 1.8 N/C	1 4.96 3.9 N/C	1 5.01 2.6 N/C	1 4.81 2.4 N/C	1 8.98 1.0 N/C	6.24 2.3	1.88 1.1	30.1% 47.8%		N/C(j)	
Target® Ginseng Target	Yes Cat 1	None None (100mg)	n: mg/softgel: Rb1/Rg1: Meets claim:	1 5.70 3.0 N/C	1 5.74 2.8 N/C	1 6.95 0.90 N/C	4 10.2 3.4 N/C	1 10.5 1.2 N/C	7.82 2.3	2.37 1.1	30.3% 47.8%		N/C(j)	
Walgreens Finest Gin-Zing® Concentrate Walgreen Co.	Yes Cat 2	None None (100mg)	n: mg/softgel: Rb1/Rg1: Meets claim:	1 2.58 0.61 N/C	1 3.12 0.37 N/C	1 2.23 3.0 N/C	1 2.66 3.2 N/C	1 4.05 0.91 N/C	2.93 1.6	0.703 1.4	24.0% 87.5%		N/C(j)	
YourLife® Ginseng Concentrate with Chlorophyll Leiner Health Products	Yes Cat 2	None None (100mg)	n: mg/softgel: Rb1/Rg1: Meets claim:	1 8.42 1.7 N/C	1 7.31 1.5 N/C	1 5.46 2.4 N/C	1 5.91 2.8 N/C	1 7.45 0.93 N/C	6.91 1.9	1.21 0.74	17.5% 38.9%		N/C(j)	

Table 1. Detailed Results for Products in Standardized Phase of Ginseng Evaluation Program

Brand Name (in alphabetical order) Product Name Manufacturer Name	Uses term Stdzd(a) Cat(b)	Mfr Claim [ACE](c) Rb1/Rg1 claim (weight of ginseng per unit)		Lot 1	Lot 2	Lot 3	Lot 4	Lot 5	Avg	SD(d)	%RSD(e)	% of lots meeting claim
Root Powder Products												
Ginseng Gold™ Korean White Ginseng Root General Nutrition Corporation	NO	4% [15.3] Rb1/Rg1 - 0.5(u) (500mg)	n: mg/capsule: Rb1/Rg1: Meets claim:	2 16.7 0.96 Yes	1 17.2 2.5 Yes	1 19.0 2.7 Yes	1 18.8 1.6 Yes	1 16.6 1.8 Yes	17.7 1.9	1.16 0.70	6.6% 36.8%	100%
Nature's Life® Korean Ginseng Root Nature's Life	NO	Lots 1-4: 5% [30.7] Lot 5: Avg 5% [24.9] None (650mg)	n: mg/capsule: Rb1/Rg1: Meets claim:	4 8.14 2.4 No	2 6.47 1.4 No	2 6.48 1.6 No	1 11.9 2.6 Undet(m)	1 13.2 2.7 Undet(m)	9.24 2.1	3.13 0.60	33.9% 28.6%	0–40%(v)
Nature's Resource® Premium Herb Ginseng Root Korean White Pharmavite	Yes(w) Cat 3	2% [10.6] None (560mg)	n: mg/capsule: Rb1/Rg1: Meets claim:	1 15.9 3.6 Yes	2 8.31 1.7 No	1 11.5 1.9 Yes	1 12.5 2.9 Yes	1 12.9 2.5 Yes	12.2 2.5	2.73 0.77	22.4% 30.8%	80%

Explanatory Notes

- (a) Does product use term “standardized” (stdzd) on product label: yes or no? If term “standardized” is used, then the category of usage [as described in (b) below] is also listed.
- (b) Cat refers to the category of usage of the term “standardized” by this product as determined by the GEP team. Category 1 is “standardized to deliver Xmg of ginseng extract” (dosage amount is standardized). Category 2 is “Xmg of standardized ginseng extract” (extract is standardized, but characteristic that has been standardized and level to which it has been standardized are not indicated). Category 3 is “Xmg of ginseng extract standardized to Y% ginsenosides” (extract is standardized to a specified level of an indicated characteristic).
- (c) Adjusted Claim Equivalent [ACE] is the minimum level of total ginsenosides the product must contain in order to meet the claim. The ACE is calculated by converting the label claim to mg/unit then adjusting it to factor in the coefficient of variation and the representative amount of ginsenosides assayed, and the appropriate compliance level. Note: Two products making the same claim would have different ACEs if they each contained different amounts of ginseng per unit or fell into different compliance classes.
- (d) Standard Deviation (SD) is an absolute measure of how widely dispersed values are from the average of those values.
- (e) Percent Relative Standard Deviation (%RSD) is a measure of how widely dispersed values are from the average of those values, expressed as a percentage of that average. The %RSD is used to compare the consistency of different products. A lower %RSD indicates less variation (i.e., a more consistent product); a higher %RSD indicates greater variation (a less consistent product).
- (f) n = number of analyses for the indicated lot.
- (g) Average mg total ginsenosides per softgel (or capsule).
- (h) Relative levels of Rb1 and Rg1 are often represented in one of two ways: as a ratio Rb1:Rg1 (e.g., 3:1) or as a value [Rb1÷Rg1] (e.g., 3). When the GEP team uses the term “ratio” or “Rb1/Rg1 ratio” it is referring to Rb1:Rg1. When the team uses the term “Rb1/Rg1 value,” it is referring to

- [Rb1÷Rg1]. All results for the relative levels of Rb1 and Rg1 in the Standardized Phase will be listed as values, i.e., [Rb1÷Rg1].
- (i) Meets claim: “N/C” means the product did not make a claim for level of ginsenosides. “Undet” means undetermined. A lot is listed as Undetermined if the nature of the claim did not allow determination, or if analysis confirming the results could not be performed due to time or funding constraints.
- (j) Product does not make a claim.
- (k) Lots 1–3 claim 17% ginsenosides; Lots 4 and 5 claim 7%. The product met the label claim for Lots 4 and 5. The manufacturer states that the 17% claim for Lots 1–3 was based on a UV spectrophotometric testing method and when the manufacturer changed to an HPLC testing method, it changed the claim from 17% to 7% (which the manufacturer states is the HPLC equivalent of the 17% UV claim). The manufacturer also states the product did not otherwise change when the claim and testing method changed. If these statements are accurate, Lots 1–3 meet the 7% claim, and the product meets its label claim in 100% of the lots tested (rather than 40%). However, the manufacturer was unable to supply documentation to support these statements, therefore, the GEP team had no alternative but to list Lots 1–3 as not meeting their label claim. Refer to page 47 for the manufacturer's full response to the GEP findings for this product.
- (l) The actual label claim is “...Rg1 and Rb1 maintained at optimum ratio of 1.2.” The authors converted the claim to an Rb1/Rg1 value so that it may be directly compared with the results as presented in this table.
- (m) A lot is listed as Undetermined (Undet) if the nature of the claim did not allow determination, or if analysis confirming the results could not be performed due to time or funding constraints.
- (n) Product met or exceeded label claim for total ginsenosides in 4 lots tested; one lot was undetermined. Therefore, the product was listed as meeting its claim in at least 80% of the lots tested and possibly in as many as 100% of the lots tested.
- (o) Ginsana® Lots 1-4 do not list a claim for ginsenoside content on the packaging. However, over the past 20 years a preponderance of research and

- company literature has reported G115® (the extract used in Ginsana®) to contain 4% total ginsenosides. Therefore, the GEP team treated all lots as making a claim for 4% ginsenosides.
- (p) Lot 5 results were dropped because of an interfering peak in the chromatogram. Lot 5 could not be analyzed again due to time and funding constraints.
- (q) Product met the label claim for total ginsenosides in 2 of the 4 lots tested [the results for the 5th lot were dropped—see (p) above]. 2 lots were undetermined. Therefore, the product was listed as meeting its claim in at least 50% of the lots tested and possibly in as many as 100% of the lots tested.
- (r) Nature's Herbs® Korean Ginseng Power-Herb® contains extract and root powder. Only the extract is listed as standardized.
- (s) While product does not claim a specific Rb1/Rg1 value, it does claim: “Also provides proper balanced ratios of the different ginsenoside groups Rg and Rb.”
- (t) The actual label claim is “Standardized to contain 5% Ginsenosides with an Rg1:Rb1 ratio of 0.5.” The authors converted the claim to an Rb1/Rg1 value so that it may be directly compared with the results as presented in this table.
- (u) The actual label claim is “2:1 ratio Rg1:Rb1.” The authors converted the claim to an Rb1/Rg1 value so that it may be directly compared with the results presented in this table.
- (v) Product did not meet label claims for total ginsenosides in 3 of the 5 lots tested; 2 lots were undetermined. Therefore, the product was listed as meeting its claim in as few as 0% of the lots tested and possibly in as many as 40% of the lots tested. Refer to page 47 for the manufacturer's response to the GEP findings for this product.
- (w) Only Lot 5 uses the term “standardized.” Lots 1–4 use the phrase “...produced to guarantee a consistent ginsenoside potency of 2% in each capsule.”

product under review (Table 2 lists the Standardized Phase products by class of compliance). Two products making the same claim would have different ACEs if they each contained different amounts of ginseng per unit or fell into different compliance classes.

To evaluate consistency of each product, the GEP team looked at three factors:

1. Frequency at which the R_{b1}/R_{g1} value fell within an acceptable range for Asian ginseng;
2. Percentage of lots (within each product) that met claim for total ginsenoside content; and
3. %RSD of the lot-to-lot total ginsenoside content.

As previously stated, the R_{b1}/R_{g1} value is one of the factors used to determine the species of ginseng in the product. All lots of each product in the Standardized Phase had acceptable R_{b1}/R_{g1} values.

The most important measure of consistency for products claiming a specific level of ginsenosides, is the percentage of lots that met their label claims.²¹ Eight products in the Standardized Phase

claimed a specific level of ginsenosides.²² Table 3 shows that five of the eight products met their label claims at least 80% of the time, with one of them—Ginseng Gold™ Korean White Ginseng Root (General Nutrition Corporation, GNC, Pittsburgh, PA)—meeting its claim in 100% of the lots tested. The three remaining products met label claims in 50–100%,²³ 40%,²⁴ and 0–40%²⁵ of lots tested.

Five products (all extracts) did not make specific claims for total ginsenoside levels. The GEP team chose to compare these products with what has come to be regarded widely as one standard for ginseng extract products: 4% total ginsenosides. This standard has come about due to the preponderance of published research on Pharmaton's (Pharmaton Natural Health Products, Richfield, CT) G115® ginseng extract over the last 20+ years.^{26, 27} G115® extract is used in Pharmaton's Ginsana® and is standardized to 4% ginsenosides.

It is important to emphasize that these five products do *not* make claims for levels of ginsenosides and therefore are *not* required by any law, regulation, or industry policy or guidelines to meet the 4% level of ginsenosides discussed in this report.

The GEP team found that four of the five products exceeded the 4% level in 100% of the lots tested (refer to Table 4).

Once a product's identity had been confirmed and the percentage of lots meeting the label claim determined, the GEP team looked at the %RSD as an additional indicator of consistency above and beyond meeting label claims. While pharmaceutical drugs are relatively simple to isolate or synthesize, measure, and standardize, botanicals are more complex and thus much more difficult to standardize. By their very nature herbal products are found to have significantly more variation than pharmaceutical drugs. The main reason for this is that the content and relative levels of the chemical constituents in herbs are dependent on several factors subject to variation:

1. Growing conditions, e.g., soil conditions, sunlight, rainfall, temperature, etc.;
2. Time of harvest, i.e., age and life cycle stage of plant at harvest, time of year plant is harvested;
3. Method of drying (if dried);
4. Storage conditions and duration of storage; and
5. Processing procedures.

Thus the %RSD for botanicals will generally be much higher than the %RSD for pharmaceuticals. Table 5 compares the %RSD for each product with the percentage of lots that met label claims (or 4% level if no claim was made). Nine products had a %RSD less than 25%. Four products met or exceeded their claim (or 4% level) in at least 80% of the lots analyzed and had a %RSD less than 20%. One of these (Ginseng Gold™ Korean White Ginseng Root) met or exceeded its label claim in 100% of the lots analyzed and had a %RSD less than 10%. This is especially notable since this is a root powder product that does not claim to be standardized. One would expect this product to have greater lot-to-lot variation than a standardized extract that has been chemically manipulated to produce a desired total ginsenoside level.

The product with the highest %RSD (Nature's Herbs® Power-

Table 2. Products by Class (for compliance purposes)(a,b)

Class I (100% compliance level)(c)

Enzymatic Therapy® Panax Ginseng Extract
Ginsai™ Standardized Ginseng Extract
Nature's Herbs® Power-Herbs® Korean Ginseng Power-Herb®
Nature's Life® Korean Ginseng Root (Lots 1-4)(d)
Nature's Resource® Premium Herb Ginseng Root Korean White(e)
Nature's Way® Ginsun® Standardized Ginseng Extract

Class II (80% compliance level)(f)

Ginseng Gold™ Korean White Ginseng Root(g)
Nature's Life® Korean Ginseng Root (Lot 5)(d,g)

No Claim

Eckerd® Ginseng Concentrate with Chlorophyll
Ginsana® Concentrated Herbal Extract(h)
Spring Valley® Ginseng with Chlorophyll
Target® Ginseng
Walgreens Finest Gin-Zing® Concentrate
YourLife® Ginseng Concentrate with Chlorophyll

Explanatory Notes

- (a) According to federal regulations, a dietary supplement with a label declaration for a dietary ingredient must comply with that declaration according to the regulations for the class into which the product falls: Class I or Class II as detailed below. [21 C.F.R. §§ 101.9 (g)(3)–(6) and 21 C.F.R. §§ 101.36(f)(1)].
- (b) See Table 1 for manufacturers' names.
- (c) Class I refers to manipulated products (e.g., standardized ginseng extract) or products containing added ingredients (e.g., softgels containing standardized ginseng extract). These products must contain at least 100% of the claimed level throughout the shelf life of the product.
- (d) Claim for Lots 1–4 is "Minimum 5% ginsenosides" (Class I).
Claim for Lot 5 is "Average 5% ginsenosides" (Class II).
- (e) Only Lot 5 uses the term "standardized." Lots 1–4 use the phrase "...produced to guarantee a consistent ginsenoside potency of 2% in each capsule."
- (f) Class II refers to naturally occurring, non-manipulated ingredients (e.g., Asian ginseng root powder) which are subject to greater variability. These products must contain at least 80% of the claimed level throughout the shelf life of the product.
- (g) Product does not use term "standardized," but does claim a specific level of ginsenosides.
- (h) Ginsana® Lots 1–4 do not list a claim for ginsenoside content on the packaging, so Ginsana® is listed under "No Claim." However, over the past 20 years a preponderance of research and company literature has reported G115® (the extract used in Ginsana®) to be standardized to 4% total ginsenosides. Therefore, for the purposes of this study, the GEP team treated Lots 1–4 as making a Class I claim for 4% ginsenosides. Lot 5 does make a claim for 4% ginsenosides, however, Lot 5 results were dropped because of an interfering peak in the chromatogram. Lot 5 could not be analyzed again due to time and funding constraints.

Table 3. Frequency at which Standardized Products Met Label Claim for Level of Total Ginsenosides(a)

Brand Name & Product Name(b)	% of lots meeting claim	%RSD(c)
100% of lots tested		
Ginseng Gold™ Korean White Ginseng Root(d)	100%	6.6%
80%–100% of lots tested		
Ginsai™ Standardized ginseng extract	80–100%(e)	6.5%
Nature's Way® Ginsun® Standardized Ginseng Extract	80–100%(e)	12.6%
Nature's Herbs® Power-Herbs® Korean Ginseng Power-Herb®	80–100%(e)	45.0%
80% of lots tested		
Nature's Resource® Premium Herb Ginseng Root Korean White(f)	80%	22.4%
50%–100% of lots tested		
Ginsana® Concentrated Herbal Extract	50–100%(g)	18.0%
40% of lots tested		
Enzymatic Therapy® Panax Ginseng Extract	40%(h)	19.6%
0%–40% of lots tested		
Nature's Life® Korean Ginseng Root(d)	0–40%(i)	33.9%

Explanatory Notes

- (a) All data in this table have been extracted from Table 1. Products are listed first in order of the frequency at which they met their label claim. Then within each frequency, products are listed in order of the %RSD, from lowest %RSD (most consistent) to highest %RSD (least consistent).
- (b) See Table 1 for manufacturers' names.
- (c) Percent Relative Standard Deviation (%RSD) is a measure of how widely dispersed values are from the average of those values, expressed as a percentage of that average. The %RSD is used to compare the consistency of different products. A lower %RSD indicates less variation (i.e., a more consistent product); a higher %RSD indicates greater variation (a less consistent product).
- (d) Product does not use term "standardized," but does claim a specific level of ginsenosides.
- (e) Product met or exceeded label claim for total ginsenosides in 4 lots tested; one lot was undetermined.* Therefore, the product was listed as meeting its claim in at least 80% of lots tested and possibly in as many as 100% of lots tested.
- (f) Only Lot 5 uses the term "standardized." Lots 1–4 use the phrase "...produced to guarantee a consistent ginsenoside potency of 2% in each capsule."
- (g) Product met the label claim for total ginsenosides in 2 of the 4 lots tested. [Lot 5 results were dropped because of an interfering peak in the chromatogram. Lot 5 could not be analyzed again due to time and funding constraints.] 2 lots were undetermined.* Therefore, the product was listed as meeting its claim in at least 50% of lots tested and possibly in as many as 100% of lots tested.
- (h) Lots 1–3 claim 17% ginsenosides; Lots 4 and 5 claim 7%. The product met the label claim for Lots 4 and 5. The manufacturer states that the 17% claim for Lots 1–3 was based on a UV spectrophotometric testing method and when the manufacturer changed to an HPLC testing method, it changed the claim from 17% to 7% (which the manufacturer states is the HPLC equivalent of the 17% UV claim). The manufacturer also states the product did not otherwise change when the claim and testing method changed. If these statements are accurate, Lots 1–3 meet the 7% claim, and the product meets its label claim in 100% of the lots tested (rather than 40%). However, the manufacturer was unable to supply documentation to support these statements, therefore, the GEP team had no alternative but to list Lots 1–3 as not meeting their label claim. Refer to page 47 for the manufacturer's full response to the GEP findings for this product.
- (i) Product did not meet label claims for total ginsenosides in 3 of the 5 lots tested; 2 lots were undetermined.* Therefore, the product was listed as meeting its claim in as few as 0% of the lots tested and possibly in as many as 40% of the lots tested. Refer to page 47 for the manufacturer's response to the GEP findings for this product.
- * Undetermined: either the nature of the claim did not allow determination, or analysis confirming the results could not be performed due to time or funding constraints.

**Table 4. For Standardized Products that do not Make Claims,(a)
Frequency at which They Met 4% Level of Total Ginsenosides**

Brand Name & Product Name(b) (in alphabetical order)	ACE(c)	Average mg/unit(d)	% of lots meeting 4% level	%RSD(e)
Eckerd® Ginseng Concentrate with Chlorophyll	3.8	5.53	100%	23.1%
Spring Valley® Ginseng with Chlorophyll(f)	3.8	6.24	100%	30.1%
Target® Ginseng(f)	3.8	7.82	100%	30.3%
YourLife® Ginseng Concentrate with Chlorophyll(f)	3.8	6.91	100%	17.5%
Walgreens Finest Gin-Zing® Concentrate	3.8	2.93	20–100%(g)	24.0%

Explanatory Notes

- (a) **None of the products listed in this table make a claim for level of ginsenosides and therefore, are not required by any law, regulation, or industry policy or guidelines to meet the level of ginsenoside content used in this table.** However, as a possible means for comparing products, the GEP team chose to compare the products against what has come to be widely regarded as one standard for ginseng extract products: 4% total ginsenosides. This standard has come about due to the preponderance of published research on Pharmaton's G115® ginseng extract over the last 20 years. G115® is the extract used in Ginsana® and is standardized to contain 4% ginsenosides.
- (b) Refer to Table 1 for manufacturers' names.
- (c) Adjusted Claim Equivalent (ACE) is the minimum amount of total ginsenosides the product must contain in order to meet the 4% level. In this case, the ACE is calculated by converting the 4% level to mg/unit then adjusting it to factor in the coefficient of variation, the representative amount of ginsenosides assayed, and the appropriate compliance level.
- (d) Average total ginsenosides reported as mg per unit where unit is one softgel or capsule.
- (e) Percent Relative Standard Deviation (%RSD) is a measure of how widely dispersed values are from the average of those values, expressed as a percentage of that average. The %RSD is used to compare the consistency of different products. A lower %RSD indicates less variation (i.e., a more consistent product); a higher %RSD indicates greater variation (a less consistent product).
- (f) Product label claims: "Compare to Ginsana".
- (g) Product met or exceeded 4% level for total ginsenosides in 1 lot tested. 4 lots were undetermined* for meeting the 4% level. Therefore, the product was listed as meeting the 4% level in at least 20% of the lots tested and possibly in as many as 100% of lots tested.
- * Undetermined: either the nature of the claim did not allow determination, or analysis confirming the results could not be performed due to time or funding constraints.

Table. 5 Lot-to-lot Consistency of Standardized Phase Products (as measured by percent relative standard deviation(a))

Brand Name & Product Name(b)	%RSD	% of lots meeting claim or 4% level
0-10% RSD		
Ginsai™ Standardized Ginseng Extract	6.5%	80-100%(c)
Ginseng Gold™ Korean White Ginseng Root(d)	6.6%	100%
10.1%–20% RSD		
Nature's Way® Ginsun® Standardized Ginseng Extract	12.6%	80-100%(c)
YourLife® Ginseng Concentrate with Chlorophyll	17.5%	N/C 100%(e)
Ginsana® Concentrated Herbal Extract	18.0%	50-100%(f)
Enzymatic Therapy® Panax Ginseng Extract	19.6%	40%(g)
20.1%–30% RSD		
Nature's Resource® Premium Herb Ginseng Root Korean White(h)	22.4%	80%
Eckerd® Ginseng Concentrate with Chlorophyll	23.1%	N/C 100%(e)
Walgreens Finest Gin-Zing® Concentrate	24.0%	N/C 20–100%(e,i)
30.1%–40% RSD		
Spring Valley® Ginseng with Chlorophyll	30.1%	N/C 100%(e)
Target® Ginseng	30.3%	N/C 100%(e)
Nature's Life® Korean Ginseng Root(d)	33.9%	0-40%(j)
40.1%–50% RSD		
Nature's Herbs® Power-Herbs® Korean Ginseng Power-Herb®	45.0%	80-100%(c,k)

Explanatory Notes

- (a) Percent Relative Standard Deviation (%RSD) is a measure of how widely dispersed values are from the average of those values, expressed as a percentage of that average. The %RSD is used to compare the consistency of different products. A lower %RSD indicates less variation (i.e., a more consistent product); a higher %RSD indicates greater variation (a less consistent product).
- (b) See Table 1 for manufacturers' names.
- (c) Product met or exceeded label claim for total ginsenosides in 4 lots tested; one lot was undetermined.* Therefore, the product was listed as meeting its claim in at least 80% of the lots tested and possibly in as many as 100% of the lots tested.
- (d) Product does not use term "standardized," but does claim a specific level of ginsenosides.
- (e) **N/C indicates product does not make a claim for level of ginsenosides and therefore, is not required by any law, regulation, or industry policy or guidelines to meet the 4% level of ginsenoside content used in this report.** However, as a possible means for comparing products, the GEP team chose to compare those products that do not make a claim for ginsenoside content against what has come to be widely regarded as one standard for ginseng extract products: 4% total ginsenosides. This standard has come about due to the preponderance of published research on Pharmaton's G115® ginseng extract over the last 20 years. G115® is the extract used in Ginsana® and is standardized to contain 4% ginsenosides.
- (f) Product met the label claim for total ginsenosides in 2 of the 4 lots tested. [Lot 5 results were dropped because of an interfering peak in the chromatogram. Lot 5 could not be analyzed again due to time and funding constraints.] 2 lots were undetermined.* Therefore, the product was listed as meeting its claim in at least 50% of lots tested and possibly in as many as 100% of lots tested.
- (g) Lots 1–3 claim 17% ginsenosides; Lots 4 and 5 claim 7%. The product met the label claim for Lots 4 and 5. The manufacturer states that the 17% claim for Lots 1–3 was based on a UV spectrophotometric testing method and when the manufacturer changed to an HPLC testing method, it changed the claim from 17% to 7% (which the manufacturer states is the HPLC equivalent of the 17% UV claim). The manufacturer also states the product did not otherwise change when the claim and testing method changed. If these statements are accurate, Lots 1–3 meet the 7% claim, and the product meets its label claim in 100% of the lots tested (rather than 40%). However, the manufacturer was unable to supply documentation to support these statements, therefore, the GEP team had no alternative but to list Lots 1–3 as not meeting their label claim. Refer to page 47 for the manufacturer's full response to the GEP findings for this product.
- (h) Only Lot 5 uses the term "standardized." Lots 1–4 use the phrase "...produced to guarantee a consistent ginsenoside potency of 2% in each capsule."
- (i) Product met or exceeded 4% level for total ginsenosides in 1 lot tested. 4 lots were undetermined* for meeting the 4% level. Therefore, the product was listed as meeting the 4% level in at least 20% of the lots tested and possibly in as many as 100% of lots tested.
- (j) Product did not meet label claims for total ginsenosides in 3 of the 5 lots tested; 2 lots were undetermined.* Therefore, the product was listed as meeting its claim in as few as 0% of the lots tested and possibly in as many as 40% of the lots tested. Refer to page 47 for the manufacturer's response to the GEP findings for this product.
- (k) While this product has a relatively high %RSD, it met the label claim in 80-100% of the lots tested, indicating that most of the variation occurs above the claim level. This is to be distinguished from a product with a relatively high %RSD and a low frequency of meeting its claim.
- * Undetermined: either the nature of the claim did not allow determination, or analysis confirming the results could not be performed due to time or funding constraints.

Table 6. Review of Standardized Products Making a Label Claim for Rb1/Rg1 Value(a)

Brand Name & Product Name(b) (in alphabetical order)	Claim(c)	Range	Average	%RSD(d) of Rb1/Rg1 value
Ginsai™ Standardized Ginseng Extract	2(e)	1.8-2.4	2.1	13.3%
Ginseng Gold™ Korean White Ginseng Root(f)	0.5(g)	0.96-2.7	1.9	36.8%
Nature's Way® Ginsun® Standardized Ginseng Extract	2(h)	1.4-2.3	1.8	18.3%

Explanatory Notes

- (a) All values in this table are taken from Table 1.
- (b) See Table 1 for manufacturers' names.
- (c) The authors converted each claim to an Rb1/Rg1 value so that it could be directly compared with the results as calculated in the GEP.
- (d) Percent Relative Standard Deviation (%RSD) is a measure of how widely dispersed values are from the average of those values, expressed as a percentage of that average. The %RSD is used to compare the consistency of different products. A lower %RSD indicates less variation (i.e., a more consistent product); a higher %RSD indicates greater variation (a less consistent product). NOTE: The %RSD of a value composed of two variables (such as the Rb1/Rg1 value) is subject to greater variation than a %RSD of a value composed of only one variable.
- (e) The actual label claim is "...Rg1 and Rb1 maintained at optimum ratio of 1:2."
- (f) Product does not use term "standardized," but does claim a specific level of ginsenosides.
- (g) The actual label claim is "2:1 ratio Rg1:Rb1." The authors are aware of no scientific literature supporting an Rg1:Rb1 ratio of 2:1 (Rb1/Rg1 value of 0.5). Therefore, it would appear that the manufacturer of the Ginseng Gold™ product made an error in writing the claim and possibly reversed the numbers. If this is the case, the corrected claim should be 2. For the consumer who is not knowledgeable, this potentially creates confusion.
- (h) The actual label claim is "...with an Rg1:Rb1 ratio of 0.5."

Herbs® Korean Ginseng Power-Herb®: 45%RSD. Nature's Herbs, American Fork, UT) also had a high frequency of meeting the label claim (80-100%). This indicates that while there is high variation, most of this variation is above the claim level. By contrast, Nature's Life® Korean Ginseng Root (Nature's Life, Garden Grove, CA) showed the second highest %RSD (33.9%) and the lowest frequency of meeting the label claim (0-40%). This indicates that much of the variation is below the claim level. (Refer to page 47 of this issue for manufacturers' responses to these results.)

Three products, which made claims for content of total ginsenosides, also made claims for the R_{b1}/R_{g1} value of the product, indicating an even greater degree of quality control on the part of the manufacturer. As stated previously, the R_{b1}/R_{g1} value is useful primarily as a species indicator and for that purpose simply must fall within the generally recognized acceptable range. Because the R_{b1}/R_{g1} value is an expression of the relationship between two individual ginsenosides, it is subject to significantly more variation than the content of either of the individual ginsenosides alone. A claim for the R_{b1}/R_{g1} value would be more difficult to meet than a claim for total ginsenoside content as it requires manipulation of the two individual ginsenosides, plus manipulating them while maintaining the total ginsenoside content at the desired level. The GEP team is unclear as to how regulators would enforce such a claim given that it is a specific ratio rather than a minimum value.

Table 6 shows the results for these products compared with the claims made. Given that in Asian ginseng roots, the R_{b1} and R_{g1} levels are generally comparable, usually yielding R_{b1}/R_{g1} values between 1 and 3, the GEP team questioned the claim of 0.5 made by Ginseng Gold™ Korean White Ginseng Root. The remaining two products — Ginsai™ Standardized Ginseng Extract (Lichtwer Pharma, Eatontown, NJ) and Nature's Way® Ginsun® Standardized Ginseng Extract (Nature's Way, Springville, UT)—had R_{b1}/R_{g1} values ranging from 1.8–2.4 and 1.4–2.3, respectively. Both products had %RSDs (for the R_{b1} and R_{g1} value) below 20% which is excellent for a natural product value dependent on two variables.

Table 7 looks at the average total ginsenoside content of each product and compares that value with the product's consistency as measured by the percentage of lots meeting claims and by %RSD. The GEP team did not evaluate effective dosage levels, and, therefore, cannot state that a higher level of ginsenosides is necessarily better. The GEP team found that consistency apparently bears no relationship to the level of total ginsenosides. A product may be highly consistent from one lot to another, and yet contain a lower level of ginsenosides than a product that is less consistent. Likewise, a product with a high level of average total ginsenosides could have a high %RSD, showing high lot-to-lot variation.

Root powder products generally were found to contain higher levels of ginsenosides per unit than extracts. The average ginsenoside content for extracts ranged from 2.9–8.9 mg/unit, and 9.2–17.7 mg/unit for root powder products, which suggests considerable variation in the formulation of these products, manufacturing practices, and/or the quantity of ginsenosides in the crude or processed botanicals used in the products. For example, most of the extract products in the Standardized Phase contained 100 mg of extract and claimed 4–7% ginsenosides, whereas all of the root powder products contained at least 500 mg of root powder and claimed 2–5% ginsenosides. This variation among different prod-

ucts should be expected, however, and simply reflects the wide diversity of products available in the marketplace.

The GEP team did not evaluate effective dosages of these ginseng products. However, the team did review the recommended daily dosages (RDDs) as listed on the product labels. This allowed the team to determine the level of total ginsenosides in the RDDs based on the manufacturers' claims (when applicable) and to compare these with the range of total ginsenosides in the RDDs based on the actual GEP findings (refer to Table 8). The variation in the amount of ginsenosides in the RDD is a result of three factors:

1. Lot-to-lot variation in ginsenoside content (%RSD);
2. Number of units recommended per day; and
3. Amount of ginsenosides in each unit.

Therefore, a product with a %RSD of 30% and an RDD of 4 capsules, with each capsule containing 20 mg of ginsenosides, will have a much wider range of ginsenosides in an RDD than a product with a %RSD of 30% and an RDD of 2 capsules, with each capsule containing 4 mg of ginsenosides.

Based on the manufacturer RDDs and the product claims, the total ginsenosides in the various RDDs ranged from 7–15 mg for extract products and from 20–98 mg for root powder products. Based on the GEP findings and the manufacturers' RDDs (using the highest number of units recommended), those products with the largest variation in the amount of ginsenosides in an RDD were generally the root powder products, and they varied by as much as 20 or 30 mg from one lot to the next. Those products with the least variation were, for the most part, extract products, which varied by as little as 2–4 mg in an RDD from one lot to the next.

To provide a context for the values in Table 8, the GEP team compiled a list of the daily dosages recommended by various sources (e.g., official pharmacopeias), and the minimum level of total ginsenosides one should expect to find in those daily dosages (see Table 9).

Conclusions & Recommendations

According to Webster, to standardize means “to bring into conformity with a standard.”²⁸ The American Herbal Products Association (AHPA), the leading herb industry trade group, defines the term as follows in its guidance document which is expected to be published this year:

Standardization refers to the body of information and controls necessary to produce material of reasonable consistency. This is achieved through minimizing the inherent variation of natural product composition through quality assurance practices applied to agricultural and manufacturing processes.

Some crude extracts and most semi-purified extracts, especially those in powdered form, are manufactured to contain a defined amount of a particular constituent or group(s) of constituents. Constituents whose content is thus controlled are called “marker compounds.” Batch-to-batch reproducibility of marker compound content is an important aspect of standard-

part one
standardized phase

Table 7. Average Total Ginsenoside Content (mg/unit) of Standardized Phase Products

Brand Name & Product Name(a)	Average mg/unit(b)	% of lots meeting claim or 4% level	%RSD(c)	Ginseng Form(d)
Ginseng Gold™ Korean White Ginseng Root(e)	17.7	100%	6.6%	RP
Nature's Resource® Ginseng Root(f)	12.2	80%	22.4%	RP
Nature's Herbs® Korean Ginseng Power-Herb®	10.5	80-100%(g)	45.0%	RP&Ext
Nature's Life® Korean Ginseng Root(e)	9.24	0-40%(h)	33.9%	RP
Enzymatic Therapy® Panax Ginseng Extract	8.90	40%(i)	19.6%	Ext
Nature's Way® Ginsun®	8.71	80-100%(g)	12.6%	Ext
Target® Ginseng	7.82	N/C 100%(j)	30.3%	Ext
Ginsai™ Standardized Ginseng Extract	6.92	80-100%(g)	6.5%	Ext
YourLife® Ginseng with Chlorophyll	6.91	N/C 100%(j)	17.5%	Ext
Spring Valley® Ginseng with Chlorophyll	6.24	N/C 100%(j)	30.1%	Ext
Eckerd® Ginseng Concentrate with Chlorophyll	5.53	N/C 100%(j)	23.1%	Ext
Ginsana® Concentrated Herbal Extract	3.95	50-100%(k)	18.0%	Ext
Walgreens Finest Gin-Zing® Concentrate	2.93	N/C 20-100%(j,l)	24.0%	Ext

Explanatory Notes

- (a) See Table 1 for manufacturers' names.
- (b) Average total ginsenosides reported as mg/unit where unit is one softgel or capsule.
- (c) Percent Relative Standard Deviation (%RSD) is a measure of how widely dispersed values are from the average of those values, expressed as a percentage of that average. The %RSD is used to compare the consistency of different products. A lower %RSD indicates less variation (i.e., a more consistent product); a higher %RSD indicates greater variation (a less consistent product).
- (d) RP = Root Powder. Ext = Root Powder Extract.
- (e) Product does not use term "standardized," but does claim a specific level of ginsenosides.
- (f) Only Lot 5 uses the term "standardized." Lots 1-4 use the phrase "...produced to guarantee a consistent ginsenoside potency of 2% in each capsule."
- (g) Product met or exceeded label claim for total ginsenosides in 4 lots tested; one lot was undetermined*. Therefore, the product was listed as meeting its claim in at least 80% of the lots tested and possibly in as many as 100% of the lots tested.
- (h) Product did not meet label claims for total ginsenosides in 3 of the 5 lots tested; 2 lots were undetermined.* Therefore, the product was listed as meeting its claim in as few as 0% of the lots tested and possibly in as many as 40% of the lots tested. Refer to page 47 for the manufacturer's response to the GEP findings for this product.
- (i) Lots 1-3 claim 17% ginsenosides; Lots 4 and 5 claim 7%. The product met the label claim for Lots 4 and 5. The manufacturer states that the 17% claim for Lots 1-3 was based on a UV spectrophotometric testing method and when the manufacturer changed to an HPLC testing method, it changed the claim from 17% to 7% (which the manufacturer states is the HPLC equivalent of the 17% UV claim). The manufacturer also states the product did not otherwise change when the claim and testing method changed. If these statements are accurate, Lots 1-3 meet the 7% claim, and the product meets its label claim in 100% of the lots tested (rather than 40%). However, the manufacturer was unable to supply documentation to support these statements, therefore, the GEP team had no alternative but to list Lots 1-3 as not meeting their label claim. Refer to page 47 for the manufacturer's full response to the GEP findings for this product.
- (j) **NC indicates product does not make a claim for level of ginsenosides and therefore, is not required by any law, regulation, or industry policy or guidelines to meet the 4% level of ginsenoside content used in this report.** However, as a possible means for comparing products, the GEP team chose to compare those products that do not make a claim for ginsenoside content against what has come to be widely regarded as one standard for ginseng extract products: 4% total ginsenosides. This standard has come about due to the preponderance of published research on Pharmaton's G115® ginseng extract over the last 20 years. G115® is the extract used in Ginsana® and is standardized to contain 4% ginsenosides.
- (k) Product met the label claim for total ginsenosides in 2 of the 4 lots tested. [Lot 5 results were dropped because of an interfering peak in the chromatogram. Lot 5 could not be analyzed again due to time and funding constraints.]. 2 lots were undetermined.* Therefore, the product was listed as meeting its claim in at least 50% of lots tested and possibly in as many as 100% of lots tested.
- (l) Product met or exceeded 4% level for total ginsenosides in 1 lot tested. 4 lots were undetermined* for meeting the 4% level. Therefore, the product was listed as meeting the 4% level in at least 20% of the lots tested and possibly in as many as 100% of lots tested.
- * Undetermined: either the nature of the claim did not allow determination, or analysis confirming the results could not be performed due to time or funding constraints.

ization. However, contrary to popular use, the identification of the concentration of a marker compound(s) in and of itself does not equate to a standardized product.

Standardization [also] requires careful control of raw material quality and manufacturing processes.²⁹ (For a more complete summary of AHPA's policy on standardization, please see article on page 48).

As an example of similar standardization of natural compounds "in pharmacy, standardized official crude drugs are always adjusted to a specific concentration range of a particular constituent. For example, powdered opium must contain not less than 10.0% nor more than 10.5% of anhydrous morphine."³⁰

In reviewing the products in the Standardized Phase of the GEP and products currently on the market,³¹ it is apparent that use of the term "standardized" in commercial ginseng products currently falls into one of three distinct categories as represented by the following claims:

Category 1: "Standardized to deliver 100 mg of Ginseng extract."

Category 2: "Delivers 100 mg of standardized Panax ginseng extract."

Category 3: "Standardized to contain a minimum of 7% ginsenosides." (Note: Standardization to a specified R_{b1}/R_{g1} value may be included in some cases.)

Although there are no federally mandated or published industry guidelines for use of the term "standardized," the GEP team believes that Categories 1 and 2 could, and often would, mislead dietary supplement consumers and healthcare professionals. Category 1 indicates that the *quantity* of extract is standardized—not the ginseng extract itself. This is no different than saying that a 500 mg capsule is "standardized" to contain 500 mg. Although this use of the term technically meets Webster's definition of "standardize," it does not meet the AHPA or pharmacy definitions; the GEP team believes this first category to be an inappropriate use of the term. Good manufacturing practices (GMPs) and federal labeling laws require that the amount of product in each dosage unit matches the amount indicated on the label.³² The use of the term "standardized" in this case is redundant and could very well mislead consumers into believing the ginseng extract itself is somehow standardized.

Category 2 specifies that the ginseng is standardized, but does not indicate the specific characteristics which have been standardized, nor the reference points against which these characteristics have been standardized. This raises the question: Is the level of total ginsenosides standardized, or is some other feature of the ginseng extract (e.g., color, viscosity, etc.) standardized? There is no way for consumers to know. In this case, use of the term “standardized” provides no useful or meaningful information, and, as is the case with Category 1, appears to be a marketing tool to enhance product appeal.

Category 3 fits Webster’s definition of standardized in that the claim clearly states what characteristic has been standardized and



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by what criteria. However, the GEP team found that, in most cases, a claim for standardization to a specific level of ginsenosides referred to the bulk ginseng extract used to make the product and not to the finished product itself (i.e., the capsule or tablet). That is, while the manufacturer may claim the bulk ginseng extract used to make a product is standardized, that claim is no guarantee that the finished product containing this bulk extract material will meet the same level of standardization *when analyzed as a finished product*, as there are numerous manufacturing processes and added ingredients that may affect the results of an analysis.

For example, the label of a ginseng product claims in large letters, “Standardized to a minimum of 7% ginsenosides.” Reading this, consumers might readily assume that each softgel contains 7% ginsenosides (i.e., 7% of the total net weight of ingredients in the softgel). However, if consumers carefully read the contents, they will find this is not the case. The capsule contains 100 mg of ginseng extract plus several other ingredients such as oil and lecithin. The 7% claim applies only to the 100 mg of ginseng extract in each capsule, not the entire capsule contents. This can be confusing and/or misleading.

Manufacturers should be concerned with the quality of ingredi-

ents used in their products. Since a supplier’s standardization claims for the bulk ginseng materials (root powders and/or extracts) that he or she offers are one means for the manufacturer to assess the quality of the ginseng, the manufacturer will consider these claims important. However, claims regarding standardization level of the ginseng extract used *in* the finished product can be confusing and potentially misleading for consumers and healthcare professionals. These groups are considering the finished product, not the bulk material used to make it. Thus, they are more interested in a measure that represents the finished product—a measure that can be used to determine an appropriate dosage level and/or to compare products. A more meaningful and useful measure for consumers and healthcare professionals (and one that can be verified by chemical analysis) is the level of total ginsenosides in the finished product, measured in mg/unit (where a unit is one capsule, tablet or softgel).

The GEP team compared past and present usage of the term “standardized” on products that are in the GEP (refer to Table 10). Six of the thirteen products tested in the Standardized Phase of the GEP fell into either Category 1 (dosage amount is standardized) or Category 2 (product is standardized but characteristic that has been standardized and level to which it has been standardized are not indicated) usage of the term “standardized.” The GEP team checked the current (April 2001) package labels for these products³¹ and found that the two products previously in Category 1, now fall into Category 3 (product is standardized to a specified level of an indicated marker compound). Five products previously fell into Category 2; four of these now fall into Category 3 and one no longer uses the term “standardized.” However, of the products that now fall into Category 3, most still report ginsenoside content as a percentage, rather than in mg of total ginsenosides per unit.

In reviewing the use of the term “standardized” for herbal dietary supplement products currently on the market,³¹ it is clear that while some products still fall into Category 1 or 2 usage, those numbers are dwindling, and the majority now fall into Category 3. In addition, it is apparent that many manufacturers have begun to use the term “standardized” or are using the term on a wider range of herbal dietary supplements. Most of these new applications of the term fall into Category 3. Thus, not only is the frequency of the use of the term “standardized” increasing, but the term is also more often being used in a manner more consistent with the generally understood meaning of standardized as explained in this report.

As demonstrated by the results of this study, most products in the Standardized Phase are reasonably, or very, consistent for levels of total ginsenoside content. However, significant variation in the use of the term “standardized” leads to confusion and misunderstanding on the part of consumers. This ambiguity and misuse of the term “standardized” is a market reality that potentially lowers the perceived credibility and integrity of the herb and dietary supplement industries overall.

The GEP team believes that the herb and dietary supplement industries should establish clearly defined guidelines for the use of the term “standardized,” and thus bring the use of this term into alignment with the quality of many of the products that already

part one
standardized phase

Table 8. Range of Total Ginsenosides Consumed Daily Based on Manufacturers' Recommended Daily Doses(a) and the GEP Findings

Brand Name & Product Name(b)	Claim	Claim converted to mg/unit	RDD in units/day(c)	Amount of total ginsenosides in RDD based on mfr's claim	Range of total ginsenosides in RDD based on GEP findings	
					Low Number of Units/Day	High Number of Units/Day
Eckerd® Ginseng Concentrate with Chlorophyll	N/C(d)	N/C	1-2	N/C	4.44–7.00	8.88–14.00
Enzymatic Therapy® Panax Ginseng Extract	7%	7 mg/unit	1-2	7 – 14 mg/day	6.69–10.80	13.38–21.60
Ginsai™ Standardized Ginseng Extract	7%	7 mg/unit	2	14 mg/day	—	12.62–14.60
Ginsana® Concentrated Herbal Extract	4%	4 mg/unit	2	8 mg/day	—	6.48–9.86
Ginseng Gold™ Korean White Ginseng Root(e)	4%	20 mg/unit	1-2	20 – 40 mg/day	16.60–19.00	33.20–38.00
Nature's Herbs® Korean Ginseng Power-Herb®	7%	7 mg/unit	2	14 mg/day	—	10.40–31.00
Nature's Life® Korean Ginseng Root(e)	5%	32.5 mg/unit	1-3	32.5 – 97.5 mg/day	6.47–13.20	19.41–39.60
Nature's Resource® Ginseng Root(f)	2%	11.2 mg/unit	2-4	22 – 45 mg/day	16.62–31.80	33.24–63.60
Nature's Way® Ginsun®	5%	7.5 mg/unit	1-2	7.5 – 15 mg/day	6.95–9.88	13.90–19.76
Spring Valley® Ginseng with Chlorophyll	N/C	N/C	2	N/C	—	9.62–17.96
Target® Ginseng	N/C	N/C	1-2	N/C	5.70–10.50	11.40–21.00
Walgreens Finest Gin-Zing® Concentrate	N/C	N/C	1-2	N/C	2.23–4.05	4.46–8.10
YourLife® Ginseng with Chlorophyll	N/C	N/C	1-2	N/C	5.46–8.42	10.92–16.84

Explanatory Notes

- (a) Dose and dosage are normally used as pharmacy or drug terms. Technically dose and dosage do not apply to dietary supplements, but the GEP team has chosen to use these terms as they are more readily recognized than other synonyms such as serving or amount.
- (b) Products listed in alphabetical order by brand name. See Table 1 for manufacturers' names.

- (c) RDD = Manufacturer's Recommended Daily Dosage. Unit is one softgel or capsule.
- (d) N/C = no claim for level of ginsenosides.
- (e) Product does not use term "standardized," but does claim a specific level of ginsenosides.
- (f) Only Lot 5 uses the term "standardized." Lots 1–4 use the phrase "...produced to guarantee a consistent ginsenoside potency of 2% in each capsule."

use it. Indeed, efforts to this end are seen at present. With this in mind, the GEP team recommends the following:

1. The product label should clearly indicate which marker compound(s) has (have) been standardized and the level(s) to which this has (these have) been standardized in the finished product.
2. Claims for standardization of a specific marker compound(s) should be based on the finished product and not the raw material used to make the product.
3. Claims should be listed in terms of mg/unit (where unit is one capsule, tablet, softgel, etc.) rather than a percentage.
4. The analytical method (e.g., Ultraviolet spectrophotometric, HPLC, etc.) used to measure the marker compound content should be noted on the product label.
5. Lot-to-lot variation of products that claim to be standardized should fall within an acceptable range to be established by the industry, FDA and/or the U.S. Pharmacopeia.

Manufacturers who follow these guidelines will make claims that can be scientifically verified and that provide useful information to consumers and healthcare professionals. By establishing these clear guidelines, the GEP team believes the herb and dietary supplement industries will increase their credibility and reputation through enhanced accountability, better (or more consistent) product quality, and responsible self-regulation. This, in turn, will increase confidence in the industry on the part of consumers, healthcare professionals, the media, and regulators.

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References and Notes

1. Refer to An Introduction to the Ginseng Evaluation Program on page 27 of this issue of *HerbalGram*.
2. 20(S)-protopanaxadiol-3-[O-β-D-glucopyranosyl(1Æ2)-β-D-glucopyranoside]-20-O-β-D-glucopyranosyl(1Æ6)-β-D-glucopyranoside.
3. 20(S)-protopanaxatriol-6,20-di-O-β-D-glucoside.
4. A marker compound is a compound whose presence and level are used as an indicator of consistency and quality. A marker compound also may be (but does not need to be) an indicator of identity. Marker compounds may or may not be recognized as having pharmacological activity.
5. Ginseng Gold™ Korean White Ginseng Root (General Nutrition Corporation, GNC, Pittsburgh, PA), Nature's Life® Korean Ginseng Root (Nature's Life, Garden Grove, CA), Nature's Resource™ Ginseng Root Korean White (Pharmavite, Mission Hills, CA).
6. Even though products from the same manufacturer in this phase had different lot numbers, they may have been processed using the same batch of raw material. That is, it is possible that a manufacturer purchased two containers of the same standardized ginseng extract from a supplier. One container may have been processed into capsules on one date, generating one lot number. Some time later, the other container of presumably identical material could have been processed in a second manufacturing run, thereby generating a different lot number. Thus, it is possible that two or more lot numbers might contain identical raw material.

Table 9. Daily Dosages for Asian Ginseng as Recommended by Various Sources(a)

Source	Recommended Daily Dosage	mg ginsenosides/day in Recommended Daily Dosage (b)
<i>Advanced Textbook on Traditional Chinese Medicine and Pharmacology</i> (1)	Root powder: 3–4.5 g	Root powder: 45–68 mg
<i>British Herbal Compendium</i> (2)	Decoction: 3–10 g	Decoction (c): 35–116 mg
	Dried root: 0.6–2 g or by decoction equivalent preparations	Root powder: 9–30 mg
		Decoction (c): 7–23 mg
German Commission E Monographs (3)	1–2 g of root, equivalent preparations	Root powder: 15–30 mg
		Decoction (c): 12–23 mg
<i>Ginseng—The Regal Herb</i> Parts 1–3 (4)	Root powder: 0.5–3 g	Root powder: 8–45 mg
	Fluidextract 1:2 (g/ml): 1–6 ml daily	Fluidextract (d): 6–38mg
<i>Herbal Medicine: Expanded Commission E Monographs</i> (5)	Root powder: 1–2 g root per day	Root powder: 15–30 mg
	Decoction: 1–2 g in 150 ml of water	Decoction (c): 12–23 mg
	Fluidextract 1:1 (g/ml): 1–2 ml	Fluidextract (d): 13–26 mg
	Tincture 1:5 (g/ml): 5–10 ml	Tincture (d): 13–26 mg
	Standardized extract (4% total ginsenosides): 100 mg twice daily	Standardized extract: 8 mg
<i>Herbal Prescriptions for Health & Healing</i> (6)	Extracts (5–7% ginsenosides): 100 mg 1–2 times daily	Extracts (5–7% ginsenosides): 5–14 mg
<i>The Illustrated Chinese Materia Medica</i> (7)	1.5–10 g	Root powder: 23–150 mg
		Decoction (c): 17–116 mg
<i>Oriental Materia Medica: A Concise Guide</i> (8)	Root powder: 1–9 g	Root powder: 15–135 mg
	Decoction: 1–9 g	Decoction (c): 12–104 mg
<i>Pharmacopoeia of the People's Republic of China</i> (9)	3–9 g	Root powder: 45–135 mg
		Decoction (c): 35–104 mg
<i>Rare Chinese Materia Medica</i> (10)	Root powder: 2–6 g	Root powder: 30–90 mg
	Decoction: 5–10 g	Decoction (c): 58–116 mg
<i>Recent Advances in Chinese Herbal Drugs—Actions and Uses</i> (11)	Root powder: 1–3 g, 3 times daily	Root powder: 45–135 mg
		Decoction (c): 35–104 mg
<i>Textbook of Natural Medicine</i> (12)	General use: Root powder: 4.5–6 g Standardized preparation: at least 5–15 mg ginsenosides/day	General use: Root powder: 68–90 mg Standardized preparation: at least 5–15 mg
	Sports nutrition: Root powder: 8–12 g Standardized preparation: at least 25 mg ginsenosides/day	Sports nutrition: Root powder: 120–180 mg Standardized preparation: at least 25 mg
<i>Thousand Formulas and Thousand Herbs of Traditional Chinese Medicine</i> (13)	Decoction: 5–10 g	Decoction (c): 58–116 mg

Explanatory Notes

- (a) This table represents a sampling of sources and is not intended to be an exhaustive review of the literature.
- (b) Calculations for "mg ginsenosides in the recommended daily dosage" are based on a minimum of 1.5% ginsenosides in the root (5, 14). This is a minimum based on pharmacopoeial standards; other sources indicate 3–4% total ginsenosides as common for Asian ginseng root (10, 15, 16).
- (c) Calculations for decoctions are based on a yield of 77% of potentially available ginsenosides (17).
- (d) Calculations for tinctures and fluidextracts are based on a yield of 85% of potentially available ginsenosides (18).

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- Refer to <<http://www.herbalgram.org/gep/index.html>> for the full text of the methodologies used in the GEP.
- Relative levels of R_{b1} and R_{g1} are often represented in one of two ways: as a ratio $R_{b1}:R_{g1}$ (e.g., 3:1) or as a value $[R_{b1} \div R_{g1}]$ (e.g., 3). When the GEP team uses the term "ratio" or " R_{b1}/R_{g1} ratio," it is referring to $R_{b1}:R_{g1}$. When the team uses the term " R_{b1}/R_{g1} value," it is referring to $[R_{b1} \div R_{g1}]$. All results for the relative levels of R_{b1} and R_{g1} in the Standardized Phase will be listed as R_{b1}/R_{g1} values.
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Table 10. Past and Present Use of Term “Standardized”

Brand Name & Product Name(a)	Use of Term “Standardized”	
	GEP Products (1993–1998)	Products Currently on Market
Eckerd® Ginseng Concentrate with Chlorophyll	Cat 1&2(b,c)	Cat 3: 4%
Enzymatic Therapy® Panax Ginseng Extract	Cat 3: 7%	Cat 3: 7%
Ginsai™ Standardized Ginseng Extract	Cat 3: 7%	Product discontinued by manufacturer
Ginsana® Concentrated Herbal Extract	Cat 2&3: 4%(d)	Cat 3: 4%
Ginseng Gold™ Korean White Ginseng Root	N/A(e)	N/A
Nature's Herbs® Korean Ginseng Power-Herb®	Cat 3: 7%	Cat 3: 7%
Nature's Life® Korean Ginseng Root	N/A(e)	Product discontinued by manufacturer
Nature's Resource® Ginseng Root	Cat 3: 2%(f)	Cat 3: 22.4 mg ginsenosides in 2 capsules one capsule = 560 mg (equivalent of 2%)
Nature's Way® Ginsun®	Cat 3: 5%	Product discontinued by manufacturer
Spring Valley® Ginseng with Chlorophyll	Cat 2	Cat 3: 4%
Target® Ginseng	Cat 1	Cat 3: 4%
Walgreens Finest Gin-Zing® Concentrate	Cat 2	N/A, does not make claim for ginsenoside content
YourLife® Ginseng with Chlorophyll	Cat 2	Cat 3: 4%

Explanatory Notes

- (a) Products listed in alphabetical order by brand name. See Table 1 for manufacturers' names.
- (b) Cat refers to the category of usage for the term “standardized” for this product as determined by the GEP team. Category 1 is “standardized to deliver Xmg of ginseng extract” (dosage amount is standardized). Category 2 is “Xmg of standardized ginseng extract” (extract is standardized, but characteristic that has been standardized and level to which is has been standardized are not indicated). Category 3 is “Xmg of ginseng extract standardized to Y% ginsenosides” (extract is standardized to a specified level of an indicated characteristic). The label claim is listed for those products that fall into Category 3. N/A means product does not use term “standardized.”
- (c) Lots 1 and 2 fall into Category 1, while Lots 3–5 fall into Category 2.
- (d) Ginsana® Lots 1–4 use the term “standardized” but do not list a claim for ginsenoside content on the packaging (Cat 2). Lot 5 claims 4% ginsenosides (Cat 3). However, the results for the 5th lot were dropped because of an interfering peak in the chromatogram. Lot 5 could not be analyzed again due to time and funding constraints.
- (e) Product does not use term “standardized,” but does claim a specific level of ginsenosides.
- (f) Only Lot 5 uses the term “standardized.” Lots 1–4 use the phrase “...produced to guarantee a consistent ginsenoside potency of 2% in each capsule.”
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 - Dose* and *dosage* are normally used as pharmacy or drug terms. Technically dose and dosage do not apply to dietary supplements, but the GEP team chose to use these terms as they are more readily recognized than other synonyms such as *serving* or *amount*.
 - Softgel* refers to a formulation encased in a one-piece gelatin capsule. *Capsule* refers to powdered material in a two-piece hard-shell enclosure made of gelatin or sometimes vegetable material.
 - The Standardized Phase contains no products of the following formulations as none met all of the inclusion criteria: tablet, liquid extract, tea, concentrated extract (syrup/paste), liquid with whole root.
 - The coefficient of variation (CV) of the analytical method is a measure of the variation in repeat analyses of a single material. The CV is calculated in the same manner as the %RSD. The GEP team uses CV when referring to the variation within an analytical method and %RSD when referring to the lot-to-lot variation of a product. The coefficient of variation of the GEP analytical method is 5.13% for Asian ginseng.
 - According to federal regulations, products making claims fall into two classes. Class I refers to manipulated products (e.g., standardized ginseng extract) or products containing added ingredients (e.g., softgels containing standardized ginseng extract). These products must contain at least 100% of the claim throughout the shelf life of the product. Thus, an Asian ginseng product standardized to 4% ginsenosides must contain at least 4% ginsenosides throughout the shelf life of the product. Class II refers to naturally occurring, non-manipulated ingredients (e.g., Asian ginseng root powder). These products must contain at least 80% of the claimed amount of the specified ingredient over the shelf life of the product. [21 C.F.R. §§ 101.9(g)(3) – (6)] and [21 C.F.R. §§ 101.36(f)(1)] So, if an Asian ginseng root powder product claims 4% ginsenosides, that product must contain at least 80% of 4% (i.e., 3.2%) for the shelf life of the product. Table 2 lists the applicable class for each product in the Standardized Phase of the GEP.
 - In some cases a lot was classified as “Undetermined.” This happened if the nature of the claim did not allow determination, or if analysis confirming the results could not be performed due to time or funding constraints. For products with one or more “undetermined” lots, the percentage of lots meeting label claim is listed as a range. For example if a product met or exceeded its claim in 4 of the 5 lots tested and one lot was undetermined, the product was listed as meeting its claim in at least 80% of the lots tested and possibly in as many as 100% of the lots tested (80–100%).
 - Labels and package inserts for Ginsana® Lots 1–4 indicate the products contain ginseng extract G115®, but do not list claims for total ginsenoside content. Lot 5 claims the G115® ginseng extract in the

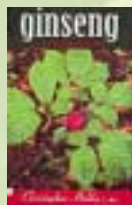
product contains 4% ginsenosides. Over the past 20 years a preponderance of research and company literature has reported G115® to contain 4% total ginsenosides. Therefore, the GEP team chose to treat all 5 lots (not just the 5th lot) as making the 4% claim.

23. Ginsana® Concentrated Herbal Extract (Pharmaton Natural Health Products, Richfield, CT). Results for Lots 1–4 are presented in this report. The results for Lot 5 were dropped because of an interfering peak in the chromatogram. (Lot 5 could not be analyzed again due to time and funding constraints.) The product met the label claim in 2 of the 4 lots tested; 2 lots were undetermined. Therefore, the product was listed as meeting its claim in at least 50% of the lots tested and possibly in as many as 100% of the lots tested.
24. Enzymatic Therapy® Panax Ginseng Extract (Enzymatic Therapy, Green Bay, WI). Lots 1–3 claim 17% ginsenosides; Lots 4 and 5 claim 7%. The product met the label claim for Lots 4 and 5. The manufacturer states that the 17% claim for Lots 1–3 was based on a UV spectrophotometric testing method and when the manufacturer changed to an HPLC testing method, it changed the claim from 17% to 7% (which the manufacturer states is the HPLC equivalent of the 17% UV claim). The manufacturer also states the product did not change when the claim and testing method changed. If these statements are accurate, Lots 1–3 meet the 7% claim, and the product meets its label claim in 100% of the lots tested (rather than 40%). However, the manufacturer was unable to supply documentation to support these statements; therefore, the GEP team had no alternative but to list Lots 1–3 as not meeting their label claim. Refer to page 47 for the manufacturer's full response to the GEP findings

for this product.

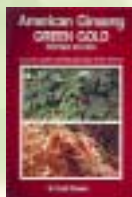
25. Nature's Life Korean Ginseng Root (Nature's Life, Garden Grove, CA). The product did not meet label claims for total ginsenosides in 3 of the 5 lots tested; 2 lots were undetermined. Therefore, the product was listed as meeting its claim in as few as 0% of the lots tested and possibly in as many as 40% of the lots tested. Refer to page 47 for the manufacturer's response to the GEP findings for this product.
26. Ginsana® Bibliographic index (selection). April 1993. GPL Ginsana Products Lugano SA, P.O. Box, CH6903 Lugano, Switzerland.
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28. Merriam-Webster's Collegiate Dictionary. 10th ed. Springfield, MA: Merriam-Webster, Incorporated; 1997. Standardize; p. 1146.
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30. U.S.P. XXI. 1985:757.
31. Hall T. Report on current use of term "standardized" for herbal dietary supplements. An informal survey of retail outlets and manufacturer websites performed by a member of the GEP team. April 2001.
32. 21 U.S.C. §343(a)(1) & (s)(A)(ii)(II) and 21 C.F.R. §101.36.

Ginseng Resources from ABC's Herbal Education Catalog



Order any Ginseng title from ABC's catalog and receive Christopher Hobbs' Ginseng: The Energy Herb FREE

Ginseng: The Energy Herb by Christopher Hobbs. 1996. Small but packed with information, this book will tell you the benefits and proper use of 10 kinds of ginseng, how to choose and use the most potent and cost-effective products, and summaries of human clinical studies that support the health claims of ginseng. Softcover, 103 pp. #B214 **\$7.95 value!**



American Ginseng, Green Gold Revised edition by W. Scott Persons. 1994. A growers' guide, including history and use. Information on life cycle, range, government regulation, medicinal properties, trade, growing methods, harvesting and stratifying, and economics. Photos, illus., tables. Softcover, 203 pp. \$17.95. #B111



The Ginseng Book: Nature's Ancient Healer by Stephen Fulder. 1996. Practical, sound advice on choosing the most appropriate form of ginseng and on selecting the right dosage. Covers legends and history, scientific studies, and cultivation and processing. Softcover, 109 pp. \$8.95. #B268



American Ginseng: The Root of North America's Medicinal Herb Trade by Christopher S. Robbins. 1998 report from TRAFFIC North America, a program of WWF (World Wildlife Fund) and IUCN (The World Conservation Union) on *Panax quinquefolius*. This study reviews harvest and trade levels to determine whether management of American ginseng in the United States and

Canada is adequately protecting wild populations from intensive collection and increasingly pervasive habitat loss. Softcover, \$20. #B347



Ginseng A Concise Handbook by James Duke. 1989. Examines history, taxonomy, chemistry, and pharmacology, and surveys the economics of ginseng cultivation. B/W illus., Hardcover, 273 pp. \$45. #B047



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Supporters of the Ginseng Evaluation Program

The Ginseng Evaluation Program (GEP) is the single most ambitious project ever undertaken by the American Botanical Council (ABC). As a result of its comprehensiveness and longevity, significant funding has been required. In the beginning, ABC Founder and Executive Director Mark Blumenthal had a vision to create a model for evaluating the quality of products that would eventually increase consumer confidence in herbal medicine and at the same time increase manufacturer awareness of the need for heightened quality control. That vision was shared by the late Robert Sohn founder, of Sunsource, an early marketer of Ginsana®, who, along with his wife Tina, via the Sohn Foundation, provided analytical equipment and seed funding. In addition, the Swiss company Pharmaton (now a division of Boehringer Ingelheim), an innovator in introducing G115® standardized ginseng extract to the world market, provided significant funding. As an executive in this company, the late Tom Peterson strongly supported the GEP. Another major funder and one of the largest retailers of dietary supplements in the United States, General Nutrition Corporation (GNC) saw that it was important to provide funding for a project of this nature and magnitude. The National Nutritional Foods Association (NNFA) also provided funding as part of its TruLabel program to test and confirm the identity and claims of dietary supplements. These entities and the others listed below provided \$734,000 of the \$1.3 million that has been necessary to accomplish this project. ABC provided the remainder of funding through its own general operating revenues. For this reason, thanks are due to all of those who support ABC, including the staff. Were it not for the support and energy of all listed here and many others, this project would not have been possible. The following is a list of those foundations, organizations, and companies that have supported the GEP at the Friend level or higher. For a complete list of those who have financially supported the GEP, please refer to < <http://www.herbalgram.org/gep/index.html> >.

Major Underwriters: \$100,000+	Sponsors: \$10,000 – \$99,999	Supporters: \$5,000 – \$9,999	Friends: \$1,000 – \$4,999
American Botanical Council	Indena	Capsugel	Bioforce USA
General Nutrition	Marconi Foundation for Kids	Chai-Na-Ta Corp.	Botanicals International
Pharmaton Natural Health Products	National Nutritional Foods Association (NNFA)	Enzymatic Therapy	C.E. Jamison & Co. Ltd.
Sohn Foundation	Nature's Way	Frontier Natural Products Co-Op	East Earth Herb Inc
	Pharmavite	Ginseng Board of Wisconsin	Ginco International /Ginseng Company
	Rexall Sundown	The Hain Celestial Group	Ginseng Growers Association of Canada
		Herb Pharm	Hsu's Ginseng Enterprises, Inc.
		M.W. International	Lichtwer Pharma U.S., Inc
		Nature's Bounty / Good N Natural	Martin Bauer / Finzelberg
		Nutriline, a Division of Amway Corporation	Prince of Peace Enterprises
			Progenix Corporation
			RP Scherer North America
			Unique Formulations / Panacorp
			Weinstein Nutritional Products

Forthcoming in *HerbalGram*

Ginseng Evaluation Program Reports

Part 2: Regular Phase Report on approximately 100 products containing eluthero ginseng (*Elutherococcus senticosus*)

Part 3: Regular Phase Report on approximately 350 products containing Asian ginseng (*Panax ginseng*) and/or American ginseng (*Panax quinquefolius*)

Species conservation

History of the use of ginseng

and more

Manufacturer Responses to the Ginseng Evaluation Program's Evaluation of Consistency of Standardized Asian Ginseng Products

Editor's Note: The Ginseng Evaluation Program (GEP) team notified all manufacturers with products in the Standardized Phase of the findings for their products and gave them the opportunity to respond to the findings. The following are the responses from those manufacturers who chose to respond. The GEP team has not verified the statements and/or information in these responses. For more information on the manufacturers' responses or on the individual products, please contact the manufacturer directly. Manufacturer contact information can be found at the end of each response.

Enzymatic Therapy

Enzymatic Therapy was the first company in North America to market standardized botanical products. Our commitment to these standardized botanicals goes back to 1984. We did not invent this technology; we learned about it from very reputable European suppliers and brought the products of this technology to the United States. We continue to work with those same European suppliers today. In fact, the supplier for the ginseng extract that we use today has been used since the beginning of our introduction of our standardized ginseng product and is the same supplier of the same extract throughout the course of the product sampled in your study. This supplier is a registered producer of pharmaceutical products, including herbal extracts, that in many cases are used as approved pharmaceuticals in other markets in the world.

The ginseng extract first supplied to us was a ginseng extract standardized according to a UV (ultraviolet) spectrophotometric test method. The vendor supplied us that test method and the standardization claim was based upon that UV test. Therefore, the labeling that Enzymatic Therapy made on its standardized ginseng products until 1996 was based on that UV methodology, which was based on the methods given to us by our supplier.

In 1996, being notified by the American Botanical Council's Ginseng Evaluation Program, we modified our label claim to 7% ginsenosides from the prior 17% ginsenoside claim that we had been making, according to the UV method. We made this change based on our belief that the work that the GEP was doing to establish an HPLC method as a preferred testing method was indeed the correct way to go. Consequently, we made this change in the labeling of our product from 17% ginsenosides to 7% ginsenosides even though we made no change to the extract used in our product, nor [to] the amount of extract that we used per capsule. Even today, that product remains the same as it was in 1993 when the first lots of product that the GEP tested [were] produced. The only change in regard to the product is the testing method that was used to determine the level of ginsenosides. Prior to 1996 all products were tested and label claims were based upon a UV method, yielding a value of 17% ginsenosides. Since 1996 all tests and label claims have been based on the HPLC method, yielding 7% ginsenosides. And to this day, as is apparent in the data reported on the five lots of products that GEP tested, those products all did meet 7% ginsenosides when analyzed by a consistent HPLC testing method.

Throughout the time we have marketed this standardized ginseng product, the capsules have always been manufactured in facilities that were registered with the FDA for pharmaceutical manufacturing. That continues with our current product today. It is made in our own facility, which is registered with the FDA for the production of pharmaceutical products, following GMPs (good manufacturing practices) required for such products.

Unfortunately, I regret that we are unable to provide the documentation that [shows that 17% ginsenosides with the UV method is equivalent to 7% ginsenosides with the HPLC method]. We keep a significant amount of documentation on the dietary supplements that we make, but under current GMPs there are actually no standards for the [length] of time companies must retain the documentation for dietary supplements that they produce. Therefore, we regret to inform you that Enzymatic Therapy does not have the documentation for products that were produced as long ago as 1993 and up through 1995.

It is important to understand that we have consistently purchased the same standardized ginseng raw material throughout the range of years upon which GEP tested products, which was 1993 to the current time. We have used the same ginseng extract and we plan to continue to use that same ginseng extract.

It is also important for readers of *HerbalGram* to understand that the Enzymatic Therapy product that American Botanical Council has tested consistently through the years 1993 to the present time have tested at a level greater than the 7% ginsenoside level that we have claimed on the product label since 1996. It may be unfortunate that prior to 1996, we were using a UV spectrophotometric method; however, that was a method supplied to us by our vendor and considered to be appropriate at that time. Upon understanding that the GEP would utilize an HPLC method, our company promptly and voluntarily switched our label claim to levels based on that method (i.e., 7%). We are one of the first companies in the industry to initiate such a change, even though there was a potentially significant risk to our business, because it may have appeared to our customers that the product extract had actually changed. We went to a lot of work and effort to help our customers understand that the extract itself did not change, that it was only the testing method that had changed.

Matt Schueller, Sr. VP Business Development and Bob Doster, VP Scientific Affairs. Enzymatic Therapy, Green Bay, WI. Tel: 1-800-558-7372. <<http://www.enzy.com/>>.

Nature's Life

The ginsenoside content was overstated [in Nature's Life® Korean Ginseng Root] because Nature's Life trusted in falsified Certificates of Assay from the ingredient supplier—Korean Ginseng Products Co. Nature's Life erroneously overstated the ginsenoside content of valid Korean Ginseng. We apologize for that error, and have changed our S.O.P.s [standard operating procedures] to HPLC test each and every Ginseng lot to verify that ginsenoside content meets the label claim.

Since then we have been independently certified as "A+" compliant with NNFA's [National Nutritional Foods Association] dietary supplement GMPs [good manufacturing practices]. Although Nature's Life still continues to sell American Ginseng (*Panax quinquefolium*), Korean Ginseng (*Panax ginseng*) has been discontinued due to unreliable suppliers. Nature's Life still endorses, and supports, the American Botanical Council's Ginseng Evaluation Program.

Karl Riedel, Chief Executive Officer, Nature's Life, 7180 Lampson Ave., Garden Grove, CA 92841. Email: info@natlife.com.

part one
standardized phase

AHPA Publishes Guidelines for Botanical Extracts

This year the American Herbal Products Association (AHPA), the leading herb industry trade association, has published "Guidance for Manufacture and Sale of Bulk Botanical Extracts" as developed by its Botanical Extracts Committee, and authorized by its Board of Directors.¹ HerbalGram is grateful for AHPA's permission to publish from the working guidelines the following excerpt on Standardization:

Standardization. Standardization refers to the body of information and controls necessary to produce material of reasonable consistency. This is achieved through minimizing the inherent variation of natural product composition through quality assurance practices applied to agricultural and manufacturing processes.

Some crude extracts and most semi-purified extracts, especially those in powdered form, are manufactured to contain a defined amount of a particular constituent or group(s) of constituents. Constituents whose content is thus controlled are called "marker compounds." Batch-to-batch reproducibility of marker compound content is an important aspect of standardization. However, contrary to popular use, the identification of the concentration of a marker compound(s) in and of itself does not equate to a standardized product. Standardization requires careful control of raw material quality and manufacturing processes.

Standardization can serve a number of important purposes:

- a. Provide material of reasonably consistent composition for the conduction of reliable clinical trials.
- b. Allow dosage-form manufacturers to confirm that the dose contains the correct amount of extract by quantitatively and qualitatively analyzing the content of marker substances in a tablet or capsule.
- c. Act as a positive control for the manufacturing process. Loss or degradation of marker components may indicate possible problems in manufacturing processes. For this purpose relatively labile marker compounds should be chosen, as their continued presence is likely to indicate that the more stable compounds are also preserved.

In general, the presence of predetermined amount(s) of marker

compound(s) does not guarantee the potency of an extract. The term potency, as used herein, requires a biological assessment of an extract and cannot be determined solely by marker or active compound measurement for incompletely chemically defined mixtures. Biological activity of any compound, even a marker compound with demonstrated bioactivity, depends on the composition of the rest of the extract. Other components of the extract, even those with no direct phys-



Horse chestnut *Aesculus hippocastanum* Photo © 2001 stevenfoster.com

iological effect, may influence the uptake, distribution, metabolism, and excretion of other components. Furthermore, this background matrix may affect the solubility, stability, and bioavailability of any given compound. For these reasons, and by pharmaceutical definition, potency should not be confused with mere chemical measurement of marker or active substances in an extract. Batch-to-batch standardization is achieved primarily through careful control of raw materials and manufacturing processes; however, marker compound content may still vary. Furthermore, marker constituent levels may vary independently of other constituent levels. Therefore, the addition of fillers to adjust the content of marker constituents in the finished extract is acceptable only within narrow limits. Large adjustments are appropriate only in select cases where it has been established that the marker is primarily responsible for the physiological effect (e.g. ephedrine in *Ephedra* spp., aescin in *Aesculus hippocastanum*). A better post-production method of achieving marker compound consistency is through the mixing of extract lots. The combining of similar lots of different strengths minimizes the dilution of other important components. The addition of marker constituent(s) to an extract is not an acceptable method to achieve chemical standardization. In fact, if an added constituent is not disclosed as a separate ingredient, this practice would result in the creation of an adulterated product. 🐾

1. Eisner S, managing editor. *Guidance for Manufacture and Sale of Bulk Botanical Extracts*. Silver Spring, MD: Botanical Extracts Committee, American Herbal Products Association; 2001.



Saw palmetto *Serenoa repens* Photo © 2001 stevenfoster.com



Devil's Claw *Harpagophytum procumbens* Photo © 2001 stevenfoster.com

ABC Needs Your Help to Complete the Ginseng Evaluation Program

Dear *HerbalGram* Reader,

We at the American Botanical Council (ABC) are pleased to present to you the first in a three-part series on the findings of the Ginseng Evaluation Program (GEP). Never before has a study of this magnitude and longevity been performed on ginseng or any other herb. We initiated the GEP in order to increase consumer confidence in properly manufactured and labeled herbal dietary supplements, and raise manufacturer awareness of the need for heightened quality controls. We believe so strongly in the mission of the GEP and its importance to the herbal movement that we have invested \$1.3 million, more than 40% of which has come from ABC's own general operating fund. (For a list of companies and organizations that support the GEP see page 46.)

We are excited by our results so far. ABC has conducted groundbreaking research and developed new analytical tools for the scientific assessment of more than 500 ginseng and eleuthero products. We believe that the work of the GEP represents a crucial, precedent-setting contribution to the future of herbal medicine.

The most difficult and laborious part of the research and analysis is behind us. In this current issue of *HerbalGram* we present the results on the consistency of standardized Asian ginseng products. The second and third reports will focus on eleuthero (aka Siberian ginseng) products, and Asian and American ginseng products and whether or not they meet their label claims.

GEP is nearing the finish line, and we need your help now in order to publish the remaining two reports. We are seeking \$200,000 to help cover the many administrative, editorial, and printing costs involved in completing our mission.

Please help us make a difference on an important issue we all care about. Every contribution, no matter what size, brings us that much closer to our goal. By contributing to the Ginseng Evaluation Program you will:

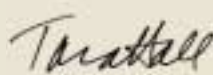
- Greatly assist our efforts to identify quality products in the marketplace;
- Make it possible to release the results of a groundbreaking study on one of the most important herbal consumer products on the market;
- Receive acknowledgment from the American Botanical Council on our website;
- Receive acknowledgement in the future issues of *HerbalGram* that include the remaining two reports (for contributions at the Friends level and higher).

Please join us in supporting the Ginseng Evaluation Program now. You may use the form below or contact Wayne Silverman (512-926-4900 ext. 120) to select a level of support. We thank you in advance for your support of this vital project and of ABC's nonprofit mission.

Cordially,



Mark Blumenthal
Founder and Executive Director



Tara Hall
GEP Project Manager



Yes! I want to help ABC complete the Ginseng Evaluation Program. Here is my contribution or pledge of support.

Name: _____

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to be used in the Ginseng Evaluation Program (code GEP-HG52).

Please select method of payment: ☐ Check enclosed ☐ Credit Card ☐ Invoice me
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Your name will be listed in the appropriate donor acknowledgment category unless you indicate your preference to remain anonymous: ☐ Please do not list my (our) name as a supporter.

Fax or Mail completed form to ABC: American Botanical Council, PO Box 144345, Austin, TX 78714-4345. Fax: 512-926-2345

Vietnamese Ginseng



A Rare Species of *Panax*

by Steven Foster

Above: Vietnamese ginseng (*Panax vietnamensis*) root Photo ©2001 stevenfoster.com

Right: Dr. Nguyen Thi Nga with herbarium sheet of *Panax vietnamensis* Photo ©2001 stevenfoster.com

In June of 1997 and January of 1998, I traveled to Vietnam on behalf of the herb company previously known as Murdock Madaus Schwabe (the parent company of Nature's Way) to assess the possible commercial development of a rare species of ginseng—Vietnamese ginseng (*Panax vietnamensis* Ha & Grushv., Araliaceae). My travels took me to meet with researchers and officials in Ho Chi Minh City (Saigon) and Kontum Province. On the second trip in 1998 I observed cultivation of this medicinal plant in a remote mountain village near the Laotian and Cambodian borders with Vietnam.

Vietnamese ginseng was discovered on March 19, 1973 at Ngoc Lay, Gia Lai-Kontum, in the central highlands of Vietnam. The plant was found at an elevation of 1,800 meters, in a dense broadleaf evergreen and coniferous forest. A follow-up survey discovered 108 populations from 13 mountainous villages in three districts in two Vietnamese provinces. In 1978, the Science-Production Centre of Vietnamese Ginseng was established in Ho Chi Minh City to conduct further population and demographic studies. In 1980, the Vietnamese government established a national reserve for the conservation of the plant and to develop large-scale cultivation. However, to date, commercial cultivation has yet to begin, primarily due to economic and political complexities. *Panax vietnamensis* is included in the *Red Book of Plants for Vietnam*, as one of 250 rare, threatened or endangered species.^{1,2}

Vietnamese ginseng is similar in morphological appearance to other species of *Panax*. The rhizome has numerous nodes, bearing the scars of the previous year's aerial stem. The primary root is globular (top-like in shape) or a taproot (carrot-like). Most roots are relatively small, though one 62-year-old wild root collected in 1978 weighed 710 grams (dry weight) and was 90 cm in length. A 72-year-old root collected in 1983 weighed 780 g.² I met a Laotian foreign official in Vietnam, who claimed to have dug an 80-year-old root while on an excavation expedition looking for the remains of American MIAs in mountains near the Laotian border. He claimed the herb occurred in Laos as well.

Known in Vietnam as *Cu Ngai Rom Con*, Vietnamese ginseng was a secret medicine of the Sedang ethnic minority in the Annamitic Mountain Range. The root and rhizome were used as a folk remedy for numerous diseases and for enhancing physical strength. It was first studied in 1978, with a botanical description as a new species published by Ha and Grushvitzky in 1985, twelve years after its discovery.^{2,3} During the past two decades, the Science-Production Centre of Vietnamese Ginseng (under the direction by Nguyen Thoi Nham) along with other government agencies in Vietnam, have studied the botany, production, chemistry, pharmacology and clinical aspects of Vietnamese ginseng. Research has been carried out in conjunction with Japanese, Polish and Russian scientists.⁴

Lutomski and Nham first published on its chemistry in 1976. Two main polyacetylenes have been identified from the root (falcarinol and heptadeca-1,8(E)-diene-4,6-diyne-3,10-



dial) to which cytotoxicity, local anesthetic, anti-inflammatory, antiplatelet, antibacterial and antifungal activities have been attributed.⁵⁻⁸ At least 23 known ginsenosides have been found in the root in addition to the isolation and structural elucidation of 14 new dammarene saponins deemed vina-ginsenosides R_1 – R_{14} . The major dammarene saponins reported are the ginsenosides R_{b1} (2.0%), R_{b3} (0.11%), R_d (0.87%), R_{g1} (1.37%), R_c (0.2%), along with ocotillol-type saponins including notoginsenoside R_1 (0.36%), majonosides R_1 (0.1%) and R_2 (5.29%). Majonoside R_2 is reported at very high levels (5.29%), representing over half of the total saponin yield.⁹⁻¹¹

The pharmacological effects of *P. vietnamensis* root extract have been described as “general stimulation of the body in case of physical, mental and sexual asthenia, enhancement of physical strength and immunity, reduction of fatigue after hard working, treatment for hypotension which causes fatigue, vertigo and syncope, and strengthening the effect of

majonoside R_2 . Vietnamese and Japanese scientists reported that a crude extract of the root, along with an extract of total active constituents (saponins), both orally and when injected into the body cavity of mice, produced a significant increase in the ability of immune cells to identify and attack invading bacteria. The immunostimulant effect was compared to that of echinacea.¹³ A dose-dependent cholesterol and total lipid-lowering effect has been described in triton-induced arteriosclerotic models for both extract and tablets.¹⁴ Studies on antioxidant activity of Vietnamese ginseng—its saponins fractions, and isolated saponins—showed a significant inhibitory activity on free radical-mediated lipid peroxidation for the whole root and total saponin fraction. However, the major saponins majonoside R_2 , ginsenoside R_{g1} and ginsenoside R_{b1} showed little antioxidant activity, suggesting components other than the ¹⁵major saponins were responsible for the observed activity.



Vietnamese ginseng under bamboo shade, Kontum Province Photo ©2001 stevenfoster.com



Enclosed production beds of Vietnamese ginseng Photo ©2001 stevenfoster.com

antidiabetic drugs.” It also has been found to be a local anesthetic, anti-inflammatory, anti-platelet, antibacterial and antifungal. The activity is described as similar to that of Asian ginseng (*Panax ginseng*, C.A. Mey., Araliaceae), but with much stronger antibacterial activity.¹²

In recent years, most published reports have focused on the pharmacological activity of isolated saponins, particularly

Majonoside R_2 has been found to reverse the psychological stress-induced decrease in pentobarbital sleep to normal levels in mice; to attenuate the antinociception (anti-pain) effect caused by opioid agonists and conditioned fear stress, and that benzodiazepine receptors are partly implicated in the effects. Additional antinarcotic and antistress effects have also been reported.^{*16-18} According to Huong,¹⁹ accumulating evidence strongly suggests the involvement of the central opioid,

GABA_A receptor, and corticotropin-releasing factor mechanisms in the effect of majonoside R₂. Chemopreventative activity has also been attributed to majonoside R₂.²⁰⁻²¹

Products from Vietnamese ginseng—including tablets, liquid extract, liquor, tea, and creams—are available in limited quantities in Vietnam. Researchers and managers I met in Vietnam were already reporting a decline in wild populations of the plant. Chain link fences were placed around some wild populations in an attempt to protect the plants. However, in the extremely remote areas where the plant occurs, the action instead served to draw attention to them, facilitating their extirpation. While Vietnamese researchers have studied the botany, population ecology, cultural aspects, chemistry, pharmacology and possible clinical application of Vietnamese ginseng, future utilization is hampered by a serious lack of raw material. Commercial development of this rare, threatened, and fascinating medicinal plant is still years into the future. 🙏

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6. Lutomski J, Luan TC. Polyacetylenes in the araliaceae family. Part I. The isolation and identification of acetylenic compounds from rhizomes and roots of vietnamese ginseng (*Panax vietna-*



Scientists and workers examine Vietnamese ginseng roots Photo ©2001 stevenfoster.com



Fresh root sample of Vietnamese ginseng Photo ©2001 stevenfoster.com

* A Medline search for references on "Vietnamese ginseng" located 15 references, five of which were erroneously attributed to "T. T. Nguyen" as the primary author. The author is Nguyen Thi Thu Huong (N.T.T. Huong).

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Dried root of Vietnamese ginseng Photo ©2001 stevenfoster.com

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House Committee on Government Reform Holds Hearings on Dietary Supplements

by Mark Blumenthal

The U.S. House of Representatives Committee on Government Reform, chaired by Rep. Dan Burton, R-Ind., held a half-day hearing, "Six Years After the Enactment of DSHEA: The Status of National and International Dietary Supplement Regulation and Research," on March 22, 2001. DSHEA is the acronym of the Dietary Supplement Health and Education Act of 1994. This committee has held previous hearings related to dietary supplements and alternative medicine.

Representatives from Congress, industry, non-profit groups, the Food and Drug Administration (FDA), and others were invited to testify. Chairman Burton, a strong proponent of dietary supplements and complementary medicine, opened the hearing with a summary of the historical resistance by the FDA to dietary supplements. He also emphasized the importance of dietary supplements to American healthcare. "My colleagues in Congress and I will continue to protect Americans' rights to access dietary supplements," he concluded.

The ranking minority member, Rep. Henry Waxman, D-Calif., acknowledged that supplements may have value, but strongly criticized the dietary supplement industry. He recognized the importance of nutrients such as calcium and folic acid, but expressed serious concern about the potential dangers of ephedra (*Ephedra sinica*) and St. John's wort (*Hypericum perforatum*). Waxman also said that he believes Americans need access to safe and effective dietary supplements, but that these products are "largely unregulated."

The first witness to testify was Rep. Frank Pallone (D-N.J.), who announced that he would join the newly formed Complementary and Alternative Healthcare and Natural Foods Congressional Caucus. Pallone stated his support of DSHEA, and also criticized the growing sentiment among some members of Congress that DSHEA should be modified or repealed. "We need to be moving away from a disease-care-only system and start promoting more wellness and optimal healthcare policies that include dietary supplements and functional foods," he said. Rep. Pallone had introduced a bill in the previous session of Congress, the Nutraceutical Research and Education Act of 1999, to increase research into nutraceuticals and dietary supplements.

A panel of industry and non-profit representatives followed. Loren Israelsen, executive director of the Utah Natural Products Alliance (UNPA), reviewed DSHEA and stated that the top two priorities should be Good Manufacturing Practices (GMPs) and an improved Adverse Event Reporting (AER) system. David Seckman, executive director of the National Nutritional Foods Association (NNFA), discussed the NNFA's GMP certification program and Tru-Label program. Mark Blumenthal, founder and executive director of the American Botanical Council (ABC), focused on herbal medicines, stating that the government should establish a system similar to that of the German Commission E to assess therapeutic benefits for herbs according to reasonable and appropriate criteria. Karl Riedel, CEO of Nature's Life and a member of the U.S. Delegation to the Codex Alimentarius Commission on Nutrition and Foods for Special Dietary Uses, reviewed the Codex process and stated that fears related to Codex are unfounded. He

called for greater advocacy of DSHEA by the U.S. delegation to Codex.

Samuel Benjamin, M.D., chairman of Invite Health and a practicing pediatrician, discussed the role of nutrition in addressing growing healthcare costs and cited several case reports in which dietary supplements led to a successful patient outcome. Sidney Wolfe, M.D., director of the health research group at Public Citizen, a non-profit advocacy organization, expressed concern about the dangers of ephedra and herb-drug interactions, and stated that DSHEA should be repealed. Bruce Silverglade, director of legal affairs at Center for Science in the Public Interest (CSPI), a consumer nutrition advocacy organization, stated that some dietary supplements can contribute to health, but that pre-market approval of safety and efficacy are needed.

All seemed to agree on at least one point: FDA should publish the new rules for GMPs as soon as possible, as called for by DSHEA. These GMPs were produced by FDA with considerable help from the Council for Responsible Nutrition, American Herbal Products Association, and NNFA. Although sent to the U.S. Office of Management and Budget prior to publication (as required by federal procedure), they were not released before the end of President Clinton's administration and are delayed while President Bush's administration reviews all pending regulations.

Burton and other committee members asked questions of the witnesses, primarily focusing on ephedra and the issue of industry quality and responsibility. Israelsen, Seckman and Blumenthal supported FDA action in line with recent industry proposals calling for more research on ephedra safety and potential benefits; Riedel said that many current uses of ephedra conflict with historical uses; Benjamin said that he could not support the use of ephedra; and Wolfe stated that it should be removed from the market. Following the answers, Burton referred to a study at Harvard and Columbia Universities that concluded ephedra is safe when properly used.

The final speakers were Joseph Levitt, director of the FDA's Center for Food Safety and Applied Nutrition, and Elizabeth Yetley, Ph.D., U.S. delegate to the Codex Alimentarius Commission. Levitt acknowledged that FDA's implementation of DSHEA had been too slow, but suggested that this had changed. He referred to the development of a 10-year plan and reviewed its goals. Levitt emphasized that FDA needs additional funding to deal properly with dietary supplements, and stated that the agency's \$6 million budget to regulate dietary supplements is one the agency's smallest programs. FDA's total budget of more than \$1 billion allocates \$28 million to pre-market review of food additives, \$198 million on pre-market review of new drugs, and \$217 million for its food safety initiative.

Burton questioned Levitt on the progress of improving the AER system for dietary supplements, to which Levitt responded that companies could now have better access to AERs involving their products, but that further improvements will require additional funding. Burton also was critical of the lack of dialogue between FDA and the dietary supplement industry and strongly suggested

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New FDA Advisory and AHPA Trade Recommendation on Aristolochia

by Karen Robin

The Food and Drug Administration (FDA) released a Consumer Advisory, a Letter to Health Professionals, and a letter to various industry trade groups in April to reinforce its concerns regarding products containing aristolochic acid (AA).¹ These communications follow FDA's actions in May 2000 when the agency expressed its concern about plants containing AA to health professionals and industry, and imposed an Import Alert on certain plants of the family Aristolochiaceae and a number of other species that might be confused with these.¹

The FDA's actions follow concerns about potential adulteration of various Chinese herbal products with plants containing AA, known for its potential nephrotoxicity² and carcinogenicity.³

FDA's restatement of its Aristolochia policy includes a report of two cases in the U.S. of serious kidney disease associated with products containing AA. FDA also noted that 18 products tested positive for presence of AA in their analysis of 38 samples of herbs or products containing herbs labeled as Aristolochia or other species that might contain AA. Based on this new information, FDA has made the following recommendations:

- that consumers "immediately discontinue use of any botanical products containing aristolochic acid ...[and] inform their health care provider about which products they took ..."
- that health professionals "review ... cases of unexplained renal disease ..."
- that manufacturers "review their current manufacturing practices ... [so] that manufacturers who produce products that contain ingredients that may be contaminated with aristolochic acid test their products to confirm the absence of aristolochic acids," and "take adequate steps to identify and report adverse events ... that may include renal system disorders ... [and] promptly notify FDA's MEDWATCH program ..." of any such reports associated with the use of the herbs that FDA has identified as of concern.

FDA has prepared two separate lists of herbs that are the subject of its concern. These can be viewed on the agency's website:

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that this be improved. Questions for Yetley focused on the Codex process and the U.S. delegation's commitment to stating support for DSHEA in this process. Yetley stated that "we support access to dietary supplements that are safe and truthfully labeled."

The event was taped for cablecast by C-SPAN which cablecast it several times over the following weeks. Details on the hearing, including testimonies, are available at <<http://www.house.gov/reform/healthcare/cam.htm>>. 🐾

[This article includes information from *Natural Products Industry Insider*. 2001 April 2;6(4):front cover, 2. It also appeared online on 2001 March 21, <www.naturalproductsinsider.com>.

<<http://www.cfsan.fda.gov/~dms/ds-bot2.html>>. The "Attachment A" consists of plants known to contain AA, and includes several species of *Asarum*, or "wild ginger," as well as the entire genus *Aristolochia*. Plants listed in "Attachment B" are described by FDA as "Botanicals which may be adulterated with AA," and consist of those plants that may have been used interchangeably with species of *Aristolochia*, most importantly species of *Akebia*, *Clematis*, and *Stephania* and also *Cocculus*, *Diplocisia*, *Menispermum*, *Sinomenium* and *Saussurea lappa*.

The American Herbal Products Association (AHPA) recommended that manufacturers take appropriate steps to ensure that plants labeled as, for example, akebia, clematis or stephania, are not inadvertently replaced with species of *Aristolochia*. In 1997, AHPA issued a trade recommendation that appropriate quality control steps be taken by manufacturers to ensure that *Stephania* roots are not adulterated with *A. fangchi* root.⁴ In addition, AHPA's Executive Committee adopted a trade recommendation on March 26, 2001 that includes a policy that herbal supplements should not contain AA:

No herbal dietary supplement product shall include any herbal ingredient that contains aristolochic acid; bulk-packaged raw material containing aristolochic acid (e.g., all species of the genus *Aristolochia* which contain aristolochic acid; *Asarum canadense*; *Asarum europaeum*; *Asarum himalaicum*; etc.) shall be labeled for external use only. If scientific evidence establishes an acceptable safe tolerance level for aristolochic acid, the AHPA Board will reconsider this trade recommendation upon receipt of such evidence, and AHPA will support the development of such scientific evidence within its financial means.⁵

All AHPA members who trade in any of the species listed on FDA's lists are urged to make themselves fully acquainted with this issue. The entire list of FDA's activities and actions related to aristolochic acid can be viewed online: <<http://www.cfsan.fda.gov/~dms/ds-bot.html>>.

In addition, AHPA's Chinese Herbal Products Committee is polling members to determine the extent of use of the herbal ingredients that are the subject of FDA's actions. Any AHPA member whose product line includes any of the ingredients on either of the FDA Attachments are requested to contact Joe Betz, Ph.D., AHPA's Director of Scientific & Technical Affairs at <jbetz@ahpa.org>. 🐾

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Ginseng Sales Down 27% in Mainstream Markets; Sales Follow Decreasing Trend for Total Herb Category

by Mark Blumenthal

Following a trend for many of the top-selling herbs in the mainstream market, sales of ginseng are down 26.54% to \$56,277,876 in food stores, drug stores and mass market retail outlets (FDM).¹ These data reflect the 52-week period ending April 29, 2001. The sales figures on ginseng indicate that some of the largest selling brands declined while some recently-introduced products increased (partly due to the increased distribution for a recent entry in its second or third year). The drop in ginseng sales for this 52-week period represents a slight increase of about 12.5% in the rate of decline in ginseng sales; the overall drop for the 52-week period ending almost six months earlier, on November 12, 2000, was about 24%. The decline in ginseng is about twice the estimated decline of 12% in total herb sales for the same 52-week period² and 15% for the 52-week period ending January 7, 2001.³ These statistics represent only the FDM channel of distribution and do not include sales generated through high-volume warehouse buying clubs, convenience stores, the natural foods market, multi-level market companies, health professionals, mail order, or the internet. Although the FDM sales data label the category generically as "ginseng," without specifying the type of ginseng, a review of the products supports the notion that all or at least most of these products are made from Asian ginseng (*Panax ginseng* C.A. Mey., Araliaceae), although it is possible that some other types may also be included. The data were compiled by Information Resources Inc. (IRI).

Sales in the natural foods channel for ginseng supplements are also declining. According to SPINS, a San Francisco-based market research firm that tracks sales trends in the natural foods markets, total sales for the entire ginseng category for 12 months ending November 2000 in natural foods supermarkets (smaller stores are not included) reflected a reduction of 16.5% from the previous year.⁴ For all classes of trade, total consumer sales of all types of ginseng is about \$170 million, according to surveys conducted by *Nutrition Business Journal* (NBJ),⁵ a leading publication tracking business statistics in the natural products field. NBJ compiles data from IRI, businesses and direct sellers in the MLM (multi-level mar-

Brand	Retail Sales (\$)	% change from year ago	Unit Sales	% change from year ago
Ginsana	\$11,162,956	-41.7	1,011,289	-38.8
Sundown Herbals	10,185,172	-17.9	1,771,106	-18.3
Private Label	7,790,940	-33.2	1,272,972	-36.2
One-A-Day	4,737,517	-32.4	578,065	-31.7
Centrum Focused Formula	4,574,350	+447.4	546,298	+493.6
Nature's Resource	2,905,254	-26.9	530,886	-22.5
Hi EnerG	2,325,432	-17.2	301,012	-11.2
Sundown Herbals Xtra	2,025,969	-16.9	285,721	-14.1
Your Life Body Benefits	1,304,562	-3.2	259,556	+0.2
Centrum Herbals	939,479	-58.7	124,559	-50.1
Pharmassure	896,839	+12.5	120,036	+54.0
Ginsana Sport	878,432	-56.2	71,223	-48.3
Nature Made	751,689	-53.1	85,217	-47.4
Veromax	628,566	+1,745.4	24,334	+1,927.8
Ginkgoba® ME	655,295	+372.6	40,414	+424.3
Total Ginseng	\$56,277,876	-26.5	7,735,873	-24.5

Source: Information Resources International, Chicago, IL. Used with permission.

keting), mail order and practitioner channels to come up with overall sales figures. Interestingly, a new report from NBJ published in its May/June issue concludes that sales for *all herbal supplements* (single category and combinations) in all classes of trade rose by 1% over 1999, reflecting increased sales in high-discount warehouse buying clubs and modest increases in higher-volume natural food, MLM and other channels.⁵ Several recent reports have suggested that many consumers have switched from their traditional buying patterns for herbal dietary supplements to more price-competitive sources.

In the FDM channel, the combined sales for private label brands (those made by a third party for a particular retailer, who sells ginseng under its own brand) rank third, after market leader Ginsana® (with \$11,162,956 sales in total dollars) and Sundown® Herbals (selling \$10,185,172). The

sales decline for Ginsana for the period was 41.7% in total dollar sales (38.8% in unit sales) compared to Sundown's 17.9% drop in dollar sales (18.3% unit sales). Sundown sold more units (1,771,106) than Ginsana (1,011,289), a difference of 759,817 units. This disparity is a result of the significant price differential between the two lines (avg. \$11.30 for Ginsana and \$5.74 for Sundown). The probable interpretation is a larger drop in sales for the higher priced Ginsana product, despite the company's promotional advertising and clinical studies and the increased tendency in the market for consumers to view herbal products as generic, despite formulation differences, backup of claims by clinical studies, etc.

Table 1 shows the top 15 ginseng products in FDM. Several recently-introduced line extensions show positive growth, a result of their not having previous market history, specifically Centrum® Focused For-

Market Report

mula Ginseng and Veromax® Ginseng. Three companies have two products each in the listing: Sundown (Herbals®, and Herbals Xtra), Centrum (Focused Formula, and Herbals), and Pharmavite (Nature's Resource® and Nature Made®); and one company has three: Pharmaton Natural Health Care Products (Ginsana, Ginsana Sport, and Ginkgoba® ME). Curiously, a combination product, Ginkoba® ME, has emerged as number 15 in the *ginseng* category. Introduced recently by Pharmaton Natural Health Care Products, this product combines Ginkoba®, a market leading standardized ginkgo (*Ginkgo biloba* L., Ginkgoaceae) extract, with Ginsana® ginseng extract. The introduction of a line extension by a company with a product already generating high sales has a tendency to cut into the sales of the previous product as well as (at least in the hopes of the company) sales of competing brands. Thus, the introduction of Centrum Focused Formula has moved to 5th place, replacing some of the sales formerly generated by Centrum Herbals, down in 10th place, reflecting an almost 59% decline from the previous year. 🐾

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Market Position of Asian Ginseng Supplements in Food, Drug & Mass Market Retail 1996 – 2000

Year	Position	Retail Sales	Reference
1996 – 1997 (52 wks 5/18/97)	1st	\$76,485,744	1.
1997 (52 wks 12/28/97)	2nd	86,048,080	2.
1998	3rd	97,616,064	3.
1999	3rd	84,322,760	3.
2000 (52 wks 1/7/01)	2nd	62,516,120	4.

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Market Position of Asian Ginseng Supplements in Natural Food Market 1995 – 2000

Year	Position	Retail Sales	Reference
1995	4th	N/A	1.
1996	3rd	6.4%	1.
1997	6th	5%	2.
1998	6th	4.1%	2.
1999	11th	3.7%	3.
2000	6th	2.6%	4.

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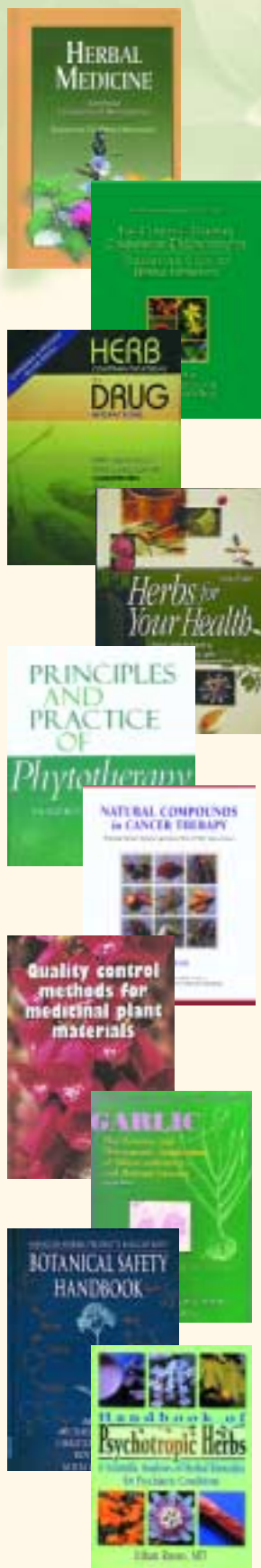
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Richard Evans Schultes 1915–2001

The Father of Ethnobotany, Richard Evans Schultes, died on April 10, 2001, in Boston. He was 86. Widely considered the preeminent authority on hallucinogenic and medicinal plants, Schultes was a Harvard University professor who inspired a generation of botanists, teaching by personal example. His classroom brought the Amazon to his students with artifacts collected during his decades in the rainforests. Further, he is considered one of the founders of the international conservation movement.

More than 120 species bear his name, as does a 2.2 million-acre tract of protected rainforest in Colombia. During the course of his career, he documented the use of more than 2,000 medicinal plants used by Indians of a dozen tribes, and collected more than 24,000 plant specimens. Often consulting local shamans about the properties of the plants he collected, Dr. Schultes won their respect and trust by offering his own. But “time is running out,” he warned in a 1994 article in *The Sciences*. “The Indians’ botanical knowledge is disappearing even faster than the plants themselves.” In the introduction to his *Where The Gods Reign* (1988), he wrote, “A number of years ago, I heard a high ranking South American diplomat describe the Amazon as a ‘desert of trees that had to be cleared for the benefit of mankind.’ Yet, investigations by Colombian and foreign botanists have recognised an unbelievably rich flora, and the detailed knowledge of it possessed by its native inhabitants. Advancing acculturation and civilisation everywhere spell the doom of extinction of this knowledge faster even than the extinction of species themselves as a result of forest devastation.”

Excerpts from his 1992 speech to Biosphere 2 “The importance of ethnobotany in environmental conservation” may be found online at <http://www.melt2000.com/loudtruth/ethnosphere/articles/0009.html>

The son of a Boston plumbing engineer, his fascination with the rainforest began when he was a bedridden 5-year-old, and his parents read excerpts from *Notes of a Botanist on the Amazon and the Andes* (1908). This travel diary of 19th century British naturalist Richard Spruce inspired the boy to follow in his footsteps, as he did indeed, quite literally on some of his travels.

Attending Harvard on a full scholarship, Schultes wrote an undergraduate paper on the mind-altering properties of peyote (*Lophophora williamsii*). His doctoral thesis, also at Harvard, was on the plants used by the Indians of Oaxaca, Mexico. Dr. Schultes unintentionally contributed to the psychedelic era of the 1960s with his ethnobotanical discoveries of hallucinogenic plants; he loathed the recreational use of these sacred plants.

In 1941, Dr. Schultes traveled to an area Spruce had studied in the Colombian Amazon and where he would spend most of his years of field research, first concentrating on plants that produced curare, an arrow poison also used as a muscle-relaxant during major surgery. He identified more than 70 plant species from which the Indians extracted curare.

At the outbreak of World War II, the U.S. government assigned him botanical research into natural rubber; to find alternative sources to the Japanese-occupied Malayan plantations that produced most of the world’s rubber supplies. Soon the leading expert, Schultes collected more than 3,500 specimens of the genus *Hevea*, which produces the latex from which rubber is made. Throughout the 1940s and until the early 1950s, Dr. Schultes lived almost continuously in the South American rainforests, visiting the U.S. only briefly.

In 1953, he returned to the U.S. and his beloved Harvard University, where he directed the botanical museum and taught until retirement in 1985. He published 10 books, more than 450 scientific articles, and was active in the scientific journals *Economic Botany*, *Journal of Ethnopharmacology*, *Journal of Latin American Folklore*, *Social Pharmacology*, among others.

His numerous awards include the Gold Medal of the World Wildlife Fund, the 1987 Tyler Prize for Environmental Achievement (notice of which is located at the website <http://www.usc.edu/admin/provost/tylerprize/schultes>), the Lindbergh Award, the Harvard Medal, and the Gold Medal of the Linnean Society. The Schultes Award was established in his honor by The Healing Forest Conservancy, a foundation of Shaman Pharmaceuticals, Inc., to honor a scientist, practitioner, or organization that has made an outstanding contribution to ethnobotany or to indigenous peoples issues related to ethnobotany.

In 1959, he married Dorothy Crawford McNeil, an opera soprano who performed in Europe and the U.S. His wife and their three children, Richard Evans Schultes II, who works with United Parcel Service; Alexandra Ames Schultes Wilson, a physician; and her twin, Neil Parker Schultes, a molecular geneticist, survive him.

A memorial service was held April 29 at King’s Chapel, Boston, followed by a reception hosted by the Schultes family. Several mourners offered speeches recalling their experiences with Dr. Schultes.

— Karen Robin, ABC 

[Kandell, J. Richard E. Schultes, 86, dies; trailblazing authority on hallucinogenic plants. *New York Times*. 2001, April 13:C11 (available on line at <http://www.nytimes.com/2001/04/13/obituaries/13SCHU.html>), http://www.econbot.org/schultes_r.html or <http://www.phcog.org/obits/Schultes.html>], among other sites.)

Richard Schultes, medicinal plant expert, dead at 86. *Harvard Gazette*. <http://www.news.harvard.edu/gazette/2001/04.19/08-schultes.html>

Giradet H. Richard Schultes. *The Guardian*. 2001 April 26. <http://www.guardian.co.uk/obituaries/story/0,3604,478503,00.html>

Richard Schultes: Botanist, explorer and expert on hallucinogenic plants. *The Daily Telegraph*. 2001 April 16. http://www.lineone.net/telegraph/2001/04/16/obituary/richard_16.html

Richard Evans Schultes: The Father of Ethnobotany 1915-2001 <http://www.ethnobotany.org/actnew/news-schultes.htm>]

Davis W. *One River: Explorations and discoveries in the Amazon Rain Forest*. New York: Simon & Schuster; 1996. Excerpted in *HerbalGram* 1996;38:32-9, 63.]



In Memoriam

While it is nigh impossible to capture the essence of a person as engaging as Dr. Schultes, HerbalGram invited several of those who knew him to share their impressions. While books could be, and have been, written about Schultes' impact, we are limited here to these few pages. The tributes that follow have been edited for space, but may be found in their entirety on the American Botanical Council's website <<http://www.HerbalGram.org/schultes/index.html>>. —Editors

In Gratitude

In 1980, I left a small mountaintop village in Costa Rica, where I had lived for the better part of a year, to study botany and ethnobotany in Cambridge with Professor Richard Evans Schultes. The move from complete isolation to such an intense center of global activity was somewhat intimidating. I will never forget when I first climbed the Botanical Museum stairs, past a hundred years of botanical history—dried plant specimens, traditional artifacts and crafts, and piles of scientific reprints—and knocked on Professor Schultes' door. Hoping for a moment with this great man, I was immediately ushered into his office where he spent the next hour, along with another student, discussing his work in the Amazon Valley of Columbia. I was most impressed and surprised that he would drop all of his day's work to speak with a young student, to listen to ideas, and help shape my future plans in his gentle, fatherly way, much like the tribal elders he was so dedicated to.

To his students he offered one of the greatest gifts that a teacher can give: opportunity. He was not the kind of professor who would hold his students' hands, except to navigate some of the complex political waters of Harvard. As a result, his students were independent, took initiative, and could face successfully the multitude of problems that would develop during their fieldwork, mostly in remote tropical regions. These were essential survival skills for coping with life, I was to discover. My fieldwork followed in the Professor's footsteps through Columbia, where I was to hear time and time again legends of this great man from the (now) elders who had worked with him 40 years prior. Richard Evans Schultes: scientist, teacher, mentor, father and friend, has left an extraordinary legacy. I offer his family my gratitude for allowing him to share his life with us.

Michael J. Balick, Ph.D.

F.L.S., Philecology Curator and Director,
Institute of Economic Botany
Vice President for Research and Training,
New York Botanical Garden,
Bronx, New York

While doing my undergraduate studies in forestry, I wrote to Dr. Schultes about ethnobotany. Not only did he respond enthusiastically but he also came to Syracuse, New York, to lecture passionately about the topic and invited me to visit him at the Botanical Museum. His dedicated attitude during these initial experiences was repeated throughout our association. He provided personal attention and offered opportunities to those interested in pursuing ethnobotany and economic botany.

Also, he instilled in us the appreciation of the importance of plants to people across time and culture. Not only did he draw on contemporary knowledge about plants, but he encouraged us to know the explorers who blazed the trails ahead of us, to consult historical documents and codices as well as to interpret the archaeological plant remains.

Dr. Schultes felt that the significance of plant-people relationships could only be appreciated through interdisciplinary studies—a concept that he not only promoted among students but also defended despite the specialization trends of Harvard University's educational program. Ethnobotanists continue to benefit from his example of collaborating with anthropologists, linguists, historians, geographers, chemists, pharmacognosists, pharmacologists, medical doctors, plant taxonomists, to name but a few.

Perhaps the most significant contribution Dick provided us is what has been labeled today as bioprospecting (despite its erroneous association with biopiracy). He was a fervent promoter of the concept that the knowledge of plant-human relationships should not only benefit humankind, in general, but also the guardians of that knowledge (in many cases, indigenous peoples), in particular. The employment of plants goes hand in hand with the conservation of plants and human culture as well as sharing the benefits.

Robert A. Bye Jr., Ph.D.

Director of the Botanical Garden,
Institute of Biology,
National University of Mexico, Mexico City

I think the great contribution of Professor Schultes to the numerous students he inspired was his deep respect for indigenous peoples. He deeply believed in the dignity of all people, and had a special respect for the wisdom and humanity of indigenous peoples.

Professor Schultes' respect for others also included students, for whom he had a special affection. At Harvard, I was studying the breeding system evolution of tropical trees and lianas. While Professor Schultes was not on my committee, I had a deep respect—almost an awe—for him. You can't imagine what it is like to be just another little graduate student, hiding in the bowels of the bio-labs, and receiving, by special courier, a summons to Professor Schultes' office. When I arrived, he said he had heard that I spoke several Polynesian languages, and encouraged me to do ethnobotany as well. How could I turn down such a request? Later in my career, when it looked like no one in the world was interested in plant-derived medicines, it was Professor Schultes who encouraged me to go to Europe to meet Laurent Rivier, the famous forensic toxicologist who went with Schultes on the *Alpha Helix* up the Amazon, and Bo Holmsted, the world authority on arrow poisons. These contacts led to life-long work with many collaborators in Europe, particularly Sweden.

Like so many, I owe much of my career as an ethnobotanist to this wonderful man who always had time to encourage a student. I shall miss him greatly, and know that this world is a much better place for his being here.

Paul Alan Cox, Ph.D.

Director, National Tropical Botanical
Garden, Kauai, Hawaii

In the late '60s and early '70s, a time of few heroes, one man stood out on the Harvard campus—a kindly professor who shot blowguns in class and kept a bucket of peyote buttons outside his door, available to his students as an optional laboratory

Richard Evans Schultes on the summit of Cerro de la Campana, Rio Agjaju, June 1943.
All photos by R.E. Schultes, reprinted with permission.

In Memoriam

experiment. In time Prince Philip would call him the Father of Ethnobotany. In South America, mountains would bear his name, as would national parks. Students knew him as the world's authority on medicinal and hallucinogenic plants, the plant explorer who sparked the psychedelic era with his discoveries.

The key to his success as a teacher was the faith that he placed in every individual. He took for granted the capacity of anyone to achieve anything. In this sense, he was a true mentor, a catalyst of dreams. Whereas other professors awakened the soul through the sheer power of their intellect, the wonder of their words and ideas, Schultes inspired by the example of his deeds. In all the years that I was formally his student, I can't recall ever having had an intellectual conversation; it was not his style.

"There is one river that I would very much like you to see," he would say, knowing full well that the process of getting to that river would involve experiences guaranteed to assure that, were you able to reach the confluence alive, you would emerge from the forest a wiser and more knowledgeable human being. Men like him will not be seen again.

Wade Davis, Ph.D.
Explorer-in-Residence,
National Geographic Society,
Washington, D.C.

Professor Schultes had been with the USDA early in his career. When I was with the USDA, I, among other things, monitored a USDA grant to Dr. Schultes, supporting Amazonian explorations of Wade Davis, the late Timothy Plowman, Phil Rury, and the like.

Unfortunately, I was never a student of Dr. Schultes, but I have enjoyed many hours with him, hearing him recount some of the highlights of his own Amazon adventures, some also sponsored by the USDA. For years, we would get together at least once a year as two of about a dozen scientific advisers to Shaman Pharmaceuticals. What fascinating tales he'd recount!

His legacy: a whole school of ethnobotany, including many, if not most, of the greatest ethnobotanists in the US. What a heritage! Thank you, Dr. Schultes, for promoting, if not actually creating, the most exciting and interesting field in botany, and producing so many prodigious progeny. Life goes on. Eth-

nobotany goes on. And the dean emeritus of the whole field of Ethnobotany lives on, in his students and now, in his students' students.

James A. ("Jim") Duke, Ph.D.
Botanical Consultant, Herbal Vineyard, Inc.,
Fulton, MD



Schultes taking a tobacco snuff with a Makuna Indian in Columbia in the mid-1940s.

Dr. Schultes changed my life forever. I met him at the Harvard Botanical Museum shortly after living nine months with the Secoya Indians in Peru. Dr. Schultes, in his white lab coat, treated me like a distinguished scientific colleague and he spent several hours showing me around the Museum and introducing me to his prize students. From that day forward I followed the work, words and mission of Dr. Schultes while discovering my own path.

Dr. Schultes was highly accomplished as an ethnobotanist, botanist, explorer, scholar of hallucinogenic plants, conservationist, humanist, and, as I learned at his memorial service, a devoted father who raised three wonderful children with his wife Dorothy whom he deeply loved. The respect and admiration that he constantly displayed for the indigenous people of the Amazon basin influenced me and an entire generation of young scientists. He described the dangerous loss of indigenous knowledge and tropical forests long before these issues hit the mainstream scientific, conservation NGOs [non-governmental organizations], and public awareness. He was, truly, an extraordinary person and his vision, enormous discipline, and productivity will remain a lega-

cy achievement for generations to come.

I am truly grateful to have known him, to have created Shaman Pharmaceuticals with his guidance, to have had the pleasure to share his passions. I share his love for the country and people of his beloved Colombia and I thank him for sharing so much with so many people around the world. Thank you, Dr. Schultes. You will be with me forever.

Steven S. King, Ph.D.
Senior Vice-President,
Ethnobotany and Conservation,
Shaman Botanicals.com

Ethnobotany in the field, the way Richard Schultes did it, is a dirty business. You have to go to remote places and eat strange food (or sometimes little food at all), expose yourself to malaria, insects, parasites, and sundry diseases, hang out with strange and not always friendly people; you have to put up with a lot, in order to do ethnobotany Schultes-style. I doubt that he ever thought of himself as particularly adventurous. If you wanted to collect plants, you went where the plants were; simple as that. The inconvenience and dangers of getting there were for him a side issue.

Besides plants, which he knew well, Schultes was also a keen observer of how humans use plants. He understood people as well as plants. Because of this perspective, he understood all of the economic and cultural implications of humanity's relationship with plants.

Schultes was keenly aware of the medicinal potential of the plants he collected, and tirelessly documented numerous uses for everything from new fruit species to arrow poisons. I believe that Schultes' interest in the hallucinogens sprang from the same altruistic roots as his interest in the healing power of plants for all of the ills that afflict humanity.

Now R.E. Schultes has left the stage of the world. This great man, whom so many of us loved, admired, and sought to emulate, has gone to a better place, a place, to use his own phrase, "where the gods reign." Let us hope that he is enjoying himself there, and that he looks back with satisfaction on a life well-lived. The memory and the legacy of Richard Evans Schultes will always abide in the hearts and minds of those he inspired.

Dennis McKenna, Ph.D.
Consulting Ethnopharmacologist,
Institute for Natural Product Research,
Marine on St. Croix, Minnesota



In Memoriam

Of the hundreds of new species Dr. Schultes discovered, more than 120 were named after him, proof of the high regard in which he was held by botanical colleagues. And he was enormously fond of pointing out to fellow faculty members that more than 10 Harvard professors had received Nobel Prizes, but only one had a genus of Amazonian cockroach named after him, *Schultesia amazonica*!

In the Amazon, he survived plane crashes, boat sinkings, bandits, civil unrest, hunger, dysentery, beriberi, and repeated bouts of malaria, but he insisted that he never had any adventures in the jungle. He lived and traveled with Indians for years, sometimes among tribes that had never before seen a white man. At one point, he was gone for such an extended period that friends in the Colombian capital of Bogota had given him up for dead. They were in the process of arranging a memorial service in his honor when he reappeared at the National Herbarium, frightening more than a few fellow botanists.

Perhaps his greatest legacy is environmental. There was a historic event in Colombia just six days before Dr. Schultes passed away. Ancient shamans from three different tribes studied by Schultes left their jungle home and traveled to the capital city of Bogota. There they presented representatives of the national government with a Shamanic Code of Ethics and Conservation that they had designed and developed to protect their medical wisdom, their culture, and their ecosystems. Perhaps these healers and their rain forests still harbor the magic that attracted Richard Evans Schultes so many years ago.

Mark Plotkin, Ph.D.

President, Amazon Conservation Team,
Arlington, Virginia

Student and professor often share hard physical exertions, frustrations and sufferings, as well as feelings of excitement and joy when discovering something new during stretches of fieldwork together in forest locations remote from civilizations. On such occasions, I learned more about Dr. Schultes. It was a rewarding experience to receive his teachings in the jungles of Vaupes and Amazonas of Colombia; not only were these about botany and ethnobotany, but also culture, humanity, problem-solving, and persistence.

Schultes generally traveled alone or with one native companion, carried only the essentials in his aluminum canoe, and lived off the land.

Aside from his standing as the Father of Ethnobotany, Dr. Schultes was also an ethnopharmacologist. He was a staunch proponent of multidisciplinary, collaborative scientific research, in particular, studies in the search for biodynamic compounds as candidates for pharmaceutical development. His belief was strong that in our search for new drugs from plants, we must take lessons from the medicinal plant knowledge of indigenous cultures, and must respect and preserve their knowledge. This scientific view is preserved in the pages of learned journals, and became the foundation of the science "ethnobotanical conservation" and the widely practiced interdisciplinary scientific endeavor in the search for new drugs from plants today.



Schultes and Makuna boys taking shelter from the rain at the falls of Yayacopi, Río Apaporis.

If Dr. Schultes were here today, I would say to him "Dick, thank you for the teachings you gave me during my graduate student years. I feel privileged to be able to implement these teachings in my research endeavor today, involving not only researchers of diverse scientific expertise, but of individuals from four different nationalities, the United States, Vietnam, Laos, and the United Kingdom. I and many others will be forever grateful to you for your great teachings and humanity."

Djaja Djendoel Soejarto, Ph.D.,

Professor of Pharmacognosy and Biology,
College of Pharmacy, University of Illinois
at Chicago

I first met Dick Schultes more than 40 years ago in Berlin when we both participated in a meeting of the society then named *Deutsche Gesellschaft für Arzneipflanzenforschung* [German Society for Medicinal Plant Research]. At the time, I admired his presentation, but it wasn't long before I came to admire the man as well. His dedication in spending so many years in the South American rainforests, his work in ferreting out the sources of so many interesting plants with psychotropic effects, his pioneering efforts to develop the specialty field of ethnobotany, his vast knowledge of that field, and his gentlemanly manner which was expressed in the form of a warm and caring person, all endeared him to me, his students, other colleagues, and everyone who knew him as well.

All of us regret the physical passing of this giant in his field. At first we think like Hamlet that we "shall not look upon his like again." But then we remember his significant scientific work as recorded in numerous books and papers. That legacy will be with us always and will certainly continue to encourage others to follow in his footsteps. We are grateful that he once passed this way, accomplished so much of lasting value, and that it was a privilege to know him as a friend and colleague.

Varro E. Tyler, Ph.D.

Sc.D., Dean and Distinguished Professor
Emeritus, Purdue University,
West Lafayette, Indiana

I had the good fortune to do my undergraduate botanical studies under the direction of Dick Schultes. He was my thesis adviser and, more importantly, my mentor and friend. I kept in close touch with him while I went to medical school, then joined the staff of the Harvard Botanical Museum as a Research Associate in Ethnopharmacology and worked with him for fourteen years. Dick inspired a whole generation of researchers to explore the role of plants and human affairs. It was his example that led me to pursue medical botany as a career interest and kindled my desire to reconnect medicine with nature—one of the fundamental aims of the new field of Integrative Medicine.

Andrew Weil, M.D.

Director of the Program in Integrative
Medicine, University of Arizona, Tucson

In Memoriam



George Macdonald Hocking 1908–2001

George Macdonald Hocking passed away at the age of 92 in Auburn, Alabama on February 13, 2001. An emeritus professor at the College of Pharmacy, Auburn University, Auburn, Alabama, he was best known for his encyclopedic *A Dictionary of Natural Products* published in 1997. This was the second edition of a work originally published in 1955 entitled *Dictionary of Terms in Pharmacognosy and Other Divisions of Economic Botany*. The second edition was vastly enlarged over the first, running almost 1,000 pages and 18,000 entries. An inveterate collector and reader of scientific books related to pharmacognosy, Prof. Hocking amassed a large collection which was perhaps surpassed in its field only by the Lloyd Library and Harvard Botanical Library. He donated thousands of the floristic books in his collection to the University of Texas library in 1993.

Serving as editor, in 1976 Hocking revived the *Quarterly Journal of Crude Drug Research*, a small journal purchased by the Dutch publisher Swets & Zeitlinger from the estate of its founder, crude drug importer E.F. Steinmetz. He served as editor-in-chief until 1991, by which time the journal had been renamed the *International Journal of Pharmacognosy*. He also abstracted numerous articles for *Chemical Abstracts*, *Excerpta Botanica*, and *Excerpta Medica* in the days when such tasks were performed by volunteers.

Born in Newquay, Cornwall, England, on March 21, 1908, he came to the United States in 1924 to attend Reed College. He earned a B.S. in pharmacy in 1931 from the University of Washington, then both mas-

ters (1932) and doctoral (1942) degrees from the University of Florida. His thesis topic concerned the pharmacognosy of *Liatris* root. He became a naturalized U.S. citizen in 1935. He worked during World War II for S.B. Penick, a large importer of crude botanical drugs based in New York.

Hocking taught pharmacognosy at George Washington University, Ohio Northern University, the University of Buffalo, and the University of New Mexico, finally settling in 1951 at Auburn Polytechnic Institute (Auburn University), where he taught until his retirement in 1976. He continued to work actively in retirement, editing the journal and working on the second edition of his dictionary until its publication.

He held a number of committee assignments, including chairing the subcommittee on pharmacognosy for the *National Formulary* (1947–1960), and served as an adviser to the Pakistani and Brazilian governments on medicinal plants.

His wife Betty passed away in 1994. He is survived by one daughter, Joan Anderson, of Long Valley, NJ.

—John A. Beutler, Ph.D. 🐾



Shyam S. Singha 1920–2000

Dr. Shyam S. Singha, D.O., N.D. (London, 1961) Acu. (Hong Kong, 1964) was a true master of Acupuncture, Osteopathy, Naturopathy, and Food as Medicine.

Born in 1920 and raised in a spiritual community in the Himalayas of Kashmir, he was immersed in a variety of traditional healing practices including Ayurvedic and Tibetan Medicine. His deeply compassionate nature and zest for life took him to China, Japan and Europe to pursue his studies.

He founded the first School of Acupuncture in Great Britain in 1964 and was both Founder and Chairman of the Natural Therapeutics Research Trust Ltd. of London England, a Registered Charity since 1969. The object of the charity was and still is:

- To further education in Natural Therapeutics.
- To undertake and encourage research, investigation and other activities which further public education relating to naturopathy, nature cure and agriculture and production of all types of human nourishment.
- To establish and carry on hospitals, nursing homes and institutions for the treatment of disease and for pathological and eugenical consultation in accordance with the recognised and accepted principles of naturopathy.

Dr. Singha lectured at Harvard, George Washington and Miami University Medical Schools, also at the American Holistic Medical Association and the National Institute of Mental Health. His book, *The Secrets of Natural Health*, his BBC Radio broadcasts, and his video, *Food is Medicine—Medicine is Food* have all brought his unique and challenging perspective to a hungry public.

During the course of his life, he became mentor to many. One of these was James Gordon, M.D., Director of the Center for Mind-Body Medicine in Washington, D.C. and Chairman of the White House Commission on Complementary and Alternative Medicine Policy. Dr. Gordon acted as a principal consultant to the Natural Therapeutic Research Trust in England for a period of time. In the August 1996 edition of *Self* magazine, he recounts how he learned to value and love alternative medicine. When Western Medicine failed him, he turned in desperation to Dr. Singha for help with major back pain. Dr. Singha told him to stop his medication, to take hot baths with Epsom salts followed by cold showers, and to eat three pineapples a day for a week and nothing else! At the end of seven days his back was 80 to 90 percent better, he was 12 pounds lighter and had a far clearer mind. As he said, “Neither my back, nor my medical practice, nor indeed my view of the world, has been the same since.”

Dr. Singha emphasized strengthening the body's natural defenses through detoxifica-



In Memoriam

tion, nourishment, and true Ayurvedic balancing, and he inspired the desire for better health in an atmosphere of trust and celebration. He taught about the Ayurvedic Eight Tastes and their importance in our day-to-day food preparation. His love of cooking and feeding people is unparalleled. Wherever he went, he prepared unforgettable meals with and for everybody. He taught that our total participation in the creation and enjoyment of our food is essential to our true well-being. He always stressed the importance of the skin as an organ of elimination and absorption. With this in mind he developed his unique formula, Dr. Singha's Mustard Bath. His formulas, known as "The Seven Jewels of Dr. Singha" are distributed by Dr. Singha's Natural Therapeutics, Austin, Texas <<http://www.drsingha.com>>.

Dr. Singha was a practicing Holistic Physician for 39 years and director of four clinics in England and others throughout Europe and the U.S., including The Natural Therapeutics Centre, Inc., Martha's Vineyard and The Natural Therapeutics Centre, Austin, Texas. He was one of the most sought-out healers ever to walk this earth and many well-known entities came to him: Krishnamurti, Alan Watts, Yehudi Menuhin to name but a few. A treatment from this highly skilled man was a blessing. He was a man of few words in the treatment room but he rarely failed to infuse his patients with great enthusiasm and joy for their own healing process. His knack of granting so much beingness to others enabled them to drop self-judgement and rediscover native self-acceptance.

Shyam Singha was a man who lived life totally, encouraging and supporting others to do the same. He brought this quality to everything he did. Dr. Singha devoted his life to the well-being of everyone around him. Hence he was given the name 'Bodhisattva' (one who assists others on their path to self-realisation) independently by three great teachers, Kirpal Singh, Aurobindo and Osho.

He was treating patients up to two days before the stroke that ultimately proved fatal to the 79-year-old doctor. He died April 30, 2000. Dr. Singha is survived by his mother, Savitri Devi; brother, Madan Mohan Singha; children Michael and Mary by his late wife Ruth Mary Elizabeth; and

his wife Pauline and their three children, Shyam Jr., Rebecca and Natasha.

— Anna Mangala Searles 🌿

*If your heart yearns for the height
If your Soul hungers for the light
And if your dream is to be free
Come fly with me.*

*But should you wonder who am I
To bid you come with me and fly
To away beyond and far above
My name is love.*

*For only love your heart will heed
And love is all your soul does need
To make your dream reality
Come fly with me.*

from Shyam's book of poetry
Songs of Two Decades



Darrell Posey 1947–2001

Darrell Posey, an anthropologist who rose above scholarly detachment to advocate intellectual property rights for indigenous peoples' traditions, died March 6, 2001, at the age of 53.

Born and raised in rural Kentucky, he earned degrees in entomology, geography, and anthropology. His doctoral thesis fieldwork carried him to central Brazil to study ethnoentomology of the Kayapó Indians. Immersed in their rich culture, Posey ultimately joined their fight to protect their homes and environment. In 1987, he and two Kayapó leaders traveled to New York City to convince the World Bank not to fund a Xingu River hydroelectric project, which would have flooded a large area of indigenous villages and surrounding lands. Posey carried this successful effort further

by hosting the First International Congress of Ethnobiology in July 1988 at Belém, Brazil. Thanks to his efforts, the congress resulted in the Declaration of Belém, which called for protection of native knowledge, use, and management of biological resources, as well as the human rights of native peoples. In 1989, he founded the International Society for Ethnobiology; and in 1992, became Special Advisor to the Brazilian Special Secretary on Internal Affairs and Indigenous Peoples, the same year he was Convenor and President of the Earth Parliament during the Earth Summit in Rio de Janeiro.

While criticized by colleagues who disapproved of his advocacy efforts, Posey simply could not stand aside to watch the world of the rainforest peoples destroyed by logging, dams, and fire. He proposed that the biodiversity of the rainforests has been augmented over the millennia by the indigenous peoples' management, a controversial proposal that remains unresolved.

He authored or co-authored three books (two more in press at the time of his death), edited or co-edited four others (three more in press when he died), wrote 120 articles, chapters and book reviews, assisted in 15 documentary films and videos. Among many awards, he received the Chico Mendes Award from the International Sierra Club and the Global 500 Award from the United Nations, and was elected Fellow of the Linnean Society. He became associated with Oxford University, among others, where he was coordinating a program at its Institute for Social and Cultural Anthropology.

He did not marry, and is survived by his parents and brother.

—Karen Robin, ABC 🌿

[Anon. Darrell Posey: Anthropologist who gave up scholarly detachment to fight for the rights of native peoples *The Times* <<http://www.thetimes.co.uk/article/0,,60-107647,00.html>>

Girardet H. Darrell Posey: Anthropologist who championed the rights of Amazonian tribes. *The Guardian*. <<http://www.guardian.co.uk/Archive/Article/0,4273,4162085,00.html>>

Note: another tribute to Dr. Posey may be found in the *Journal of Ethnobiology*. 2000 Winter; 20(2).]

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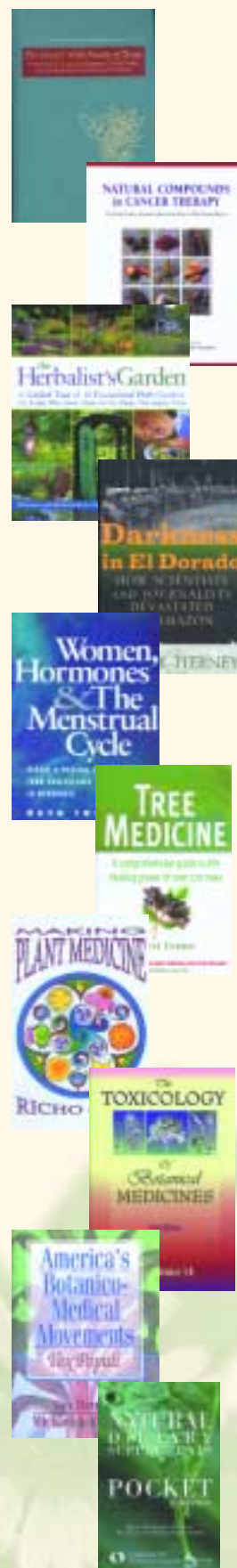
TREE MEDICINE: A COMPREHENSIVE GUIDE TO THE HEALING POWER OF OVER 170 TREES by Peter Conway. 2001. How trees are used in various medical systems, the history of trees in medicine and the future of healing substances from trees, such as the role of volatile oils as alternatives to conventional antibiotics. Plus a directory of healing trees that includes common name, plant family, related species, range, parts used, overview, phytochemicals, actions, indications, preparations, and cautions. Hardcover, 313 pp. \$29.95. #B489

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Journal Reviews

Planta Medica, Georg Thieme Verlag (Stuttgart and New York)

Planta Medica is published by Georg Thieme Verlag, a highly-respected medical publishing house of over 120 years, with offices in Stuttgart and New York. The journal is the official journal of the Society for Medicinal Plant Research, an international organization based in Germany whose stated purpose is to promote the advancement of research and science in the field of medicinal plants. Membership information may be found at <<http://www.thieme.de/plantamedica>>.



Planta Medica is a high-quality international journal that focuses on the chemistry and pharmacology of medicinal plants anywhere in the world. The journal began in 1953, and was initially published in German, until the early 1980s, with some articles published in English during the 1960s, and 1970s. English abstracts were often available for articles published in German. *Planta Medica* has remained one of the most widely-read and respected journals of medicinal plant research in the world.

Looking through the last 45 years of *Planta Medica* is an interesting review of the development and increasing sophistication of the science of botanical medicines. Articles from the 1960s and '70s tend to focus more on the practical details of pharmacognosy, especially the microscopic examination of common drug plants. Many of these articles focus on the identification of active compounds from medicinal plants, as today, although the scientific methods and instrumentation were more rudimentary. These older issues are an interesting source of clinically relevant articles, or at least articles suggesting clinically relevant effects of some common herbs. Older issues also included many more articles on herbal drug identification by microscopic and thin-layer chromatography (TLC) methods. Examples in the volume from 1963 include articles on the pharmacognosy of *Piper longum* L., Piperaceae; *Xanthium strumarium* L., Aster-

aceae; *Nardostachys jatamansi* (D. Don) DC., Valerianaceae; and *Terminalia bellerica* (Gaertn.) Roxb., Combretaceae, all popular herbs in Chinese or East Indian herbal medicine. Review articles on the medicinal plants of various regions, such as "Drug Plants of Egypt" were also common during this period.

By the mid-late '80s, the journal increasingly published articles reporting on the chemistry and biological effects of medicinal plants from many cultures from research labs using highly-sophisticated instrumentation, such as high performance liquid chromatography (HPLC) and gas chromatography/mass spectrometry (GC/MS). The journal's back cover lists these main subject areas:

- Pharmacology, toxicology of plants, plant-derived drugs, and active principles;
- Phytochemistry and phytochemical analysis;
- Chemistry of active compounds;
- Biochemistry, physiology, cell cultures; and
- In vitro biotechnology.

Planta Medica also includes useful cumulative indices of all the plants covered during the year, subjects, and biological and pharmacological effects.

Besides the short and medium-length articles, one extended review article (usually on groups of active constituents), and a number of short letters, phytochemical notes, and posters are published in each issue (often less than one page), mostly on the chemistry and biological effects of plants, with some involving research of interest to herbalists and herb companies regarding herb quality. For instance, in issue 1, February 1989, the article "Qualitative aspects of Valeriana preparations" reports that a menstruum of 50% water and 50% ethanol is effective for extracting important active constituents from valerian roots, whereas pure ethanol misses hydroxylvaleric acid.

The value of *Planta Medica* for natural plant chemists, pharmacologists, and medical researchers with a natural bent is quite clear: it is arguably the most important journal published anywhere in the world. For herbalists, clinicians, and educators,

Phytomedicine

International Journal of Phytotherapy and Phytopharmacology

Founded in 1994
 by N.R. Farnsworth and H. Wagner

ISSN 0944-7113



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Aims & Scope

Phytomedicine is published to attract and disseminate innovative and expert findings in the fields of phytopharmacology, phytotherapy and phytotoxicology, as a reference source for researchers in these fields, and with the aim to set international standards in their methodology. The journal publishes research results on phytotherapy, phytopharmacology, standardization and phytotoxicology, obtained with plant extracts as well as isolated compounds from these extracts and phytopharmaceuticals. Phytomedicine is targeted towards papers of a practical nature. The papers published in this journal are also useful to drug regulation authorities in deciding whether to approve certain phytomedicines or not.

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the journal seems less pertinent at first glance than *Phytomedicine* (reviewed in *HerbalGram* 51), because it publishes almost no human clinical trials. However, one could make a case for a subscription even among these types of readers. I usually find useful and exciting tidbits in each issue. For instance, in issue 2 (April), 1989, I found these articles useful: "Anti-hepatotoxic activity of extracts and constituents of *Buddleja* species" (Buddlejas are common garden shrubs and are also used in Chinese medicine), "Antimicrobial principles of xian he cao (*Agrimonia pilosa*)," "Antifertility principle of *Ruta graveolens*," "New alkaloids from *Ptelea trifoliata*" (this is the hop tree of the eastern U.S.—a native medicinal plant which may be useful clinically), plus such interesting posters as, "May achene analyses serve for species diagnosis in *Echinacea*?" "Comparative phytochemical investigations of *Hypericum* species" (which reviews the chemistry of seven different species from this important genus, pointing out other wild *Hypericum* that might have the active compounds), and "Investigations on the essential leaf oil of [lemon] balm" (which reports that the chemical composition of the essential oil of the new growth is completely different from the second-growth side shoots that come up after the first cutting. I find this fascinating and quite useful. This article also includes a great scanning electron micrograph of the essential oil-bearing hairs with the essential oil droplet ... really amazing!

Each year, *Planta Medica* publishes an extra volume of abstracts, short lectures, and poster presentations from the Annual Congress on Medicinal Plant Research. I have found these to be gold mines of new information on many medicinal plants I regularly use in my clinical practice, write, and lecture about.

Overall, the journal publishes roughly 40% of the articles on analyses of plant constituents and about 60% on the biological activity of whole plant extracts, single plant constituents, and groups of related constituents.

The table of contents and abstracts for the journal during the last two years can be found at <<http://www.thieme.de/plantamedica>>. Current subscribers can access full-text articles as a pdf file or as an html file. This is useful for two reasons. My journal room is away from my desk, and from my desktop I can quickly access a recent article. If you are like me, you don't want to pay foreign postage charges, and, further, the current issue often takes weeks to get to my office. With online access, I can review the current issue much sooner, and even a list of articles upcoming in the next issue. This helps me keep on top of new published research.

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— Christopher Hobbs, L.Ac., A.H.G. 



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Book Reviews

Sixty Medicinal Plants from the Peruvian Amazon: Ecology, Ethnomedicine, and Bioactivity, (*Sesenta Plantas Medicinales de la Amazonia Peruana*), Cristian Desmarchelier, Fernando Witting Schaus. 2000. 270 pp., color illustrations, softcover. ISBN 9972-9186-0-2. \$21.90. ABC Catalog #B465.



Late in 2000, I heard *National Geographic's* Joel Swerdlow repeat at the National Zoo in Washington, D.C., what he had said in a *Washington Post* excerpt of his attractive new book,¹ also featured in *HerbalGram*.² "Since the early 1960s, the Food and Drug Administration has approved more than 5,000 prescription drugs, yet fewer than a dozen have been based on plants or chemical formulae found in plants." And, he added, none came from previously unknown species of the Amazon rainforest. That contrasts with what chemist A. Douglas Kinghorn says: "As many as 50% of the most widely prescribed drugs in the U.S. are either small-molecule natural products or synthetic molecules that were synthesized using natural products as templates in their design."³ So Swerdlow's estimate is pretty close to 0.02% natural or copycat (synthetic patterned after the natural), while Kinghorn estimates up to 50% natural or copycat.

These disparities seem to accrue to what politicians now call "parsing" or "spinning." Different researchers come up with different statistics. By careful choice of words, we could defend Kinghorn's or Swerdlow's very different figures.

When I asked Swerdlow about his comment that no new FDA-approved drugs had recently been developed from the Amazon rainforest, he qualified that his researchers said something like "no pharmaceutical drug has come out of the Amazon rainforest beyond those based on plants encountered by the *conquistadors* and their successors more than 300 years ago."

However, I have other firsthand sources. Back in 1991, despite my having a slipped disk, I boldly went to Iquitos, Peru on my

first ecotour, which presaged the ABC Pharmacy Ecotours to the Amazon. I dedicated my week there to the Amazonian papaya (*Carica papaya* L., Caricaceae), source of the proteolytic enzyme, chymopapain. Chymopapain had only recently been approved for treating the slipped disk and I had a very personal, pragmatic interest. This surely constitutes one Amazonian medicine, derived from a strictly Latin American species, recently approved by the FDA. But, then, Swerdlow's researchers may well be right after all. Clearly the conquistadors knew papaya as a fruit, even if not as a source of a drug for slipped disk.

In reviewing the importance of this compact new bilingual illustrated book on Amazonian plants, I'd like to list four different billion-dollar drug plants (all of which are growing in my garden): mayapple (*Podophyllum peltatum* L., Berberidaceae), source of the etoposide used to treat testicular cancer; madagascar periwinkle (*Catharanthus roseus* (L.) G. Don, Apocynaceae), source of vincristine and vinblastine to treat leukemia and lymphoma; wild yam (*Dioscorea villosa* L., Dioscoreaceae), the original starter material for the steroid industry, which gave us contraceptives and hormones; and finally, the Pacific yew (*Taxus brevifolia* Nutt., Taxaceae), source of taxol, used to treat uterine cancer, first approved as a drug in 1992, and selling for over a billion dollars last year alone. If we can find four billion-dollar drug plants in my humble and domesticated backyard, how many are lost as we cut and burn that irreplaceable Amazonian forest?

True, more of our plant drugs are sourced in the Temperate Zone, which has fewer, if better studied, species. But most of our phytochemical drugs could be sourced in the tropics. For its area, the Amazon has the world's greatest species diversity. Perhaps the Amazon contains a quarter (i.e., 75,000 of 300,000) of the world's higher plant species, yet is the least studied area in the world. With more species in the tropics, and assuming each tropical species is as well endowed with unique phytochemicals as each temperate species, it's simply an order of magnitude: more phytomedicines await discovery in the tropics.

This potential is one of the reasons why

the American Botanical Council sponsors its annual Pharmacy in the Rainforest tours to Amazonian Peru. We have introduced hundreds of North Americans—many of them healthcare professionals—to the stunning diversity of the rainforest near Iquitos, Peru. Our trilingual guides there point out many of the important medicinal plants to these visitors, while Mark Blumenthal discusses the markets for them and their regulation in the U.S. and elsewhere in the world, and I discuss, where feasible, the scientific rationale behind their use. This new *Sixty Medicinal Plants* is now on the recommended reading list for our Amazonian ecotourists.

Of the three main books pertinent to the area, this new one is outstanding. It is bilingual; the other two are only in English. The bilingual feature of *Sixty Medicinal Plants* is its greatest asset, enabling Peruvian guides to learn their botanical English, and the gringos to learn some Spanish at the same time. The illustrations vary in quality (and make one mistake), but along with local names, will help the traveler elsewhere in Amazonian Peru.

Following a two-page introduction, the 60 species (some, like *Cinchona* and *Juglans*, are not really Amazonian) are covered in some 210 pages, an average of three and a half pages per species. In both languages the authors give the Common Name, Family, a terse Description, notes on Ecology, more extensive notes on Ethnomedicine, and then a section on Bioactivity, and source lists of References. To sample an entry, cat's claw (*Uncaria tomentosa* (Willd.) DC., Rubiaceae) fills two pages with text, though the *uña de gato*, as it is called in Spanish, is the most likely of the 60 herbs to be encountered in a North American herb store. In the Bioactivity section on cat's claw, we read that extracts show antiinflammatory, antiviral, contraceptive, and cytostatic activities and the mix of six oxyindole alkaloid increases phagocytosis. Extracts can also inhibit synthesis of DNA in sarcoma 180. Antimutagenic properties have been demonstrated *in vitro*. The procyanidins in the bark have well known antioxidant properties. "Aqueous extracts shows no signs of toxicity," according to the compilers. A third page shows the molecular structure of two of its constituents, a fourth contains eight

references pertaining to cat's claw, and a fifth has a color photo.

On my last trip to the Amazon, I gave copies to the botanically inclined guides, and left one at the one-room schoolhouse in the Ma'Huna village in Sucasari. Peruvians are hungry for bilingual publications, with pictures, and folk uses, and common names. Come join us in Peru sometime soon. You'll love it. And bring this book, it will help you remember 60 of the thousands of interesting plants you'll encounter. The numbers of species are overwhelming and, perchance, forgettable, but the experience is even more overwhelming, and unforgettable.

— James A. Duke, Ph.D. 🐾

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1. Swerdlow JL. The promise of plants. *Washington Post/Health*. 2000 Sept 19:12-4, 17.
2. Swerdlow, JL. Nature's medicine: Plants that heal. *HerbalGram* 2000;49:44-51.
3. Kinghorn, AD. 2000. Exploring nature's pharmacy. Review of *Medicine Quest: In Search of Nature's Healing Secrets*, by Mark Plotkin. *C&E News*, 2000 Sept 11:32-3.

The Complete Guide to Herbal Medicines. Charles W. Fetrow, Juan R. Avila. Springhouse Corporation, 2000, 638 pp. illustrated softcover, ISBN 1-58255-062-X \$39.95 (plus S/H) Also available from Pocket Books, a division of Simon & Schuster, 2000, 716 pp., softcover, ISBN 0-7434-0070-4 \$6.99 (Not offered in the ABC Catalog).



We need to clean up the pollution in herbal information, much of which is industrial, though a sizable amount is also generated by academia. I refer to *The Complete Guide to Herbal Medicines*, a reference guide compiled by two

Pharm.D.s with the help of 73 contributors and consultants, 50 of whom are also Pharm.D.s, the remainder being M.D.s, Ph.D.s, R.Ph.s, and R.N.s. Despite these credentials, misinformation and false statements jump out at you! They have done their own professions, related professions, and the general public a huge disservice.

For example, under "Wild Yam" is this outrageous statement: "Wild yam also contains a steroid hormone called dihydroepiandrosterone (DHEA, which is actually dehydroepiandrosterone), which may be useful in treating various diseases." Wild yam does *not* contain DHEA. It *does*, however, contain steroids such as diosgenin and others, which can be converted to steroid hormones (e.g., DHEA) by microbial transformation and/or chemical modification. If yams contained DHEA, progesterone, or other steroid hormones, Syntex (the company that practically revolutionized the steroid hormone industry) would not exist. The upsetting question is, why would a major publisher produce such a guide without having it reviewed by qualified experts?

Despite the authors' intention "*to give you the scientific facts about herbs—not to confuse or distract you with the myths or folklore that surround them*," they have done just the opposite: by indiscriminately listing diseases for which each herb is allegedly used to treat.

For example, according to their "Aloe" entry, people use "aloe" for the following conditions: acne, AIDS, arthritis, asthma, bleeding, blindness, bursitis, cancer, common cold, colitis (inflammation of the large intestine), constipation, depression, diabetes, glaucoma, hemorrhoids, lack of menstruation, seizures, skin conditions (abrasions, cuts, irritations, minor burns, frostbite, sunburn, and wounds), stomach ulcers, and varicose veins. The authors do not indicate which are legitimate uses and which are not. Without this information, we may as well add another score from various outrageous marketing publications.

And what is "aloe" anyway? The authors seem clueless, writing, "*It comes from the aloe vera plant (also called Aloe barbadensis, A. vulgaris hybrids, A. africana, A. ferox, A. perryi, and A. spicata).* The plant's large, bladelike leaves are the source of aloe vera gel. Aloe preparations for oral use contain either the colorless juice that comes from plant's top layer or a solid yellow latex obtained by evaporating the juice." First of all, what is the "It" they refer to? The gel or the drug aloe? What is the plant's "top layer"? Is it the tallest part of the plant, like the tip of the flower stalk? Also, how does one obtain a "solid yellow latex" by "evaporating the

juice"? And what juice? Clearly, the authors are confused. If they had been even half diligent, they would have readily found (and read) numerous reputable publications, including a review by Grindlay and Reynolds,¹ which clearly distinguishes the two kinds of "aloe": (1) aloe vera gel, the mucilaginous bland-tasting liquid from the center of the aloe vera leaf; and (2) the drug aloe, the dried bitter yellow latex from specialized (pericyclic) cells just beneath the skin of the leaf. The two are completely different products. The gel is an emollient and its healing properties have made "aloe vera" practically a household word over the past two decades. It is *not* the drug aloe. The latter, simply called "aloe" in the USP, is the dried bitter yellow latex that has cathartic properties. It is normally used in laxative preparations, though sometimes also in sunscreen preparations, and (erroneously) in place of aloe vera gel in certain cosmetics. This is why it's so important for a "complete guide" to provide a clear distinction.

The sad thing about this work is that you don't have to make an effort to find misinformation, false conclusions, illogical thinking, and plain expressions of ignorance. They are in *every single entry* I have scanned so far, ranging from a few minor ones to numerous major blunders!

On page 1, under "Common drugs made from plants," the first drug described is aspirin as from white willow bark and meadowsweet plant. The fact: aspirin is the *acetate* of salicylic acid (or *acetylsalicylic acid*); it does not occur in those plants. Salicylic acid is used in the synthesis of aspirin.

Then, comes this: "*Indian herbal tonics can lead to lead poisoning.*" How can such a statement be made at all, especially by professionals supposedly trained to be nonbiased in disseminating information? I am sure they wouldn't publish statements such as "Synthetic analgesics can lead to kidney damage" or "Synthetic analgesics can lead to heart failure," even though these latter statements have as much truth or falsehood (depending on your view) as the first.

Immediately following the "Potentially Dangerous Herbs" list, the authors state, *Some herbs and plants have value not just for their active ingredients but for other substances they contain, such as:*

Book Reviews

minerals
vitamins
volatile oils (used in aromatherapy)
glycosides (sugar derivatives)
alkaloids (bitter organic bases containing nitrogen)
bioflavonoids (colorless substances that help maintain collagen and blood vessels).

What were they thinking when they wrote this? How do they define “active ingredients”? Do they mean none of the above compounds are biologically active? The fact is, many of the above classes of compounds have strong pharmacological effects, especially the last four categories—volatile oil components (eugenol, methylsalicylate, thymol, eucalyptol, etc.); glycosides (ginsenosides, aloins, cascarosides, sennosides, rutin, glycyrrhizin, etc.); alkaloids (caffeine, cocaine, morphine, codeine, berberine, ephedrine, etc.); and bioflavonoids (countless, like those in ginkgo, licorice, hawthorn, green tea, etc.). And, where do they get the notion that bioflavonoids are colorless substances? In fact, many are colored like rutin (a yellow flavonoid glycoside), which appears to be the one they had in mind (“help maintain collagen and blood vessels”).

On page 7, under “Tinctures and extracts” the authors again show their ignorance regarding a major aspect of herbal medicine. Here they write, “*An herb placed in alcohol or liquid glycerin (to distinguish it from solid glycerin?) is called a tincture or an extract. (Tinctures contain more alcohol than extracts.) Alcohol draws out the herb's active properties, concentrating them and helping to preserve them. Alcohol is cheap, is easily absorbed by the body, and allows the herb's full taste to come through. Alcohol-based tinctures and extracts have an indefinite shelf life ...*.” The first sentence is a typical example of their muddy, illogical thinking and ignorance. By this definition, a piece of dandelion root in my hand is “dandelion root,” but after I have placed it in alcohol or glycerin, this same piece of herb now becomes either “dandelion root tincture” or “dandelion root extract”! And tinctures are not distinguished from extracts by the amount of alcohol!

Here is the technical truth: a tincture is simply one type of extract, of many, includ-

ing fluid extract, solid (pillular) extract, powdered extract, and native extract. Extracts can be prepared by using various solvents (or menstrua) including alcohol, aqueous alcohol, water, and glycerin, and they can be any strength from weak (e.g., infusion) to highly concentrated (native extract). Tinctures, specifically, are alcoholic or hydro-alcoholic extracts containing normally 10% and sometimes 20% of the crude herb's equivalence, which means 10g or 20g of herb are used to make 100mL of the finished tincture.

This *Complete Guide* is the worst publication by alleged professionals I have ever come across. If there were such a thing as a “book recall” (as in “drug recall”), this one would fit the bill. Sadly, it will take many years of hard work for knowledgeable professionals to correct the damage done.

—Albert Y. Leung, Ph.D. 🐼

This review is condensed from a three-part review published in Leung's Chinese Herb News, July/August, Sept/Oct, Nov/Dec, 2000; Issues 27–29.

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1. Grindlay D, Reynolds T. The *Aloe vera* phenomenon: A review of the properties and modern uses of the leaf parenchyma gel. *J Ethnopharmacol* 1986;16:117-51.

Medicine Quest: In Search of Nature's Healing Secrets. Mark J. Plotkin. Viking, 2000, hardcover, 240 pp. ISBN 0-670-86937-6. \$22.95 ABC Catalog #B481.



Ethnobotany is a romantic science. Its practitioners such as Mark Plotkin vanish for long periods into remote jungles to make contact with tribes as arcane as the Tirios, Akuriyos, or Yanomani. They emerge clutching strange plants and uttering tales of powerful cures, species on the brink of extinction and vanishing cultures. It all seems a long way from our commonplace urban existences. Yet in ways we cannot fully understand, our weather, atmospheric composition, the plants we eat and drink, the diseases we suffer from, and

the drugs with which we treat them are all connected to geographically remote ecosystems.

In describing his activities in the Amazon jungle, Plotkin occasionally reports cures, such as in the opening story about diabetes, which remind one of the Italian proverb, *si non è vero, è ben trovato* (loosely translatable as “if it isn't true, it should be”). However, the potential rewards of ethnobotanical research, and the threat to ethnobotanic knowledge and the ecosystems from which it derives, are both so great that exaggeration is excusable.

Species tend to come to human attention because of their toxicity. However, in Shakespeare's phrase, in poison there is physic (i.e., medicine). Profoundly toxic substances can be tamed to become powerful pharmacological agents. The deadly curare poisons of South America gave rise to the muscle relaxants used in surgical procedures. The toxins from cone shells, a group of slow-moving marine snails, are so potent that they almost instantaneously immobilize fish. A whole host of drugs are being developed from these toxins, with application to neurodegenerative and cardiovascular diseases. ACE inhibitors such as captopril (Capoten), standard treatment for high blood pressure, were derived from venom components of deadly pit vipers. A small frog from the rain forests of Ecuador yields the toxin, epibatidine, a pain killer 200 times more potent than morphine. As Plotkin says in this book, the forest where the frog was found has now been cleared for banana plantations. Other specimens were located elsewhere, but only enough to collect less than one milligram of the poison. Further, when bred in laboratories, these frogs contain no epibatidine.

When people think about threatened ecosystems, however, it is typically the large, most obvious species they think of: the whales, grizzly bears and sequoia trees. It is not in these species that new pharmacological agents are to be found. Such agents are elaborated for purposes of defense or offense. Large species, with their teeth, thorns and talons, are not reliant on chemical weapons. Plotkin's book celebrates the small, the slow, the soft and the unconsidered. He points out that drugs such as cyclosporin (used to prevent tissue rejection in transplant operations), mevacor (choles-

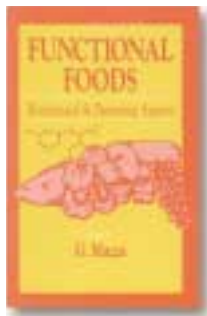
terol-lowering drug), and the antibiotics vancomycin and chloramphenicol were discovered in fungi, microorganisms residing in soil. Such discoveries are of incomparably greater economic value than the banana plantations, two-by-fours, and beef for hamburgers for which so many unexamined species are heedlessly bulldozed to oblivion. Here, the undiscovered vanishes forever into the undiscoverable.

Mark Plotkin studied under the late Richard Evans Schultes at Harvard, and has spent 25 years researching the ethnobotany of the Amazon. *Medicine Quest* describes some of his experiences, mixed with general discussion of issues surrounding ethnobotany. The book is an easy read, and a significant contribution to public education. A pathologist stopped me in the corridor of my medical center to say that he had not been able to put the book down until he had finished it. What better recommendation can a book have?

—Ryan J. Huxtable, Ph.D. 🐼

Functional Foods: Biochemical and Processing Aspects. Edited by G. Mazza. Technomic Publishing Co., Inc., 1998, 460 pp., hardcover. ISBN 1-56676-487-4. \$99.00 (not available through ABC).

Asian Foods: Science and Technology. Edited by C.Y.W. Ang et al. Technomic Publishing Co., Inc., 1999, 546 pp., hardcover. ISBN 1-56676-736-9. \$99.00 (not available through ABC)



Hippocrates is credited with saying words to the effect, “Food should be your medicine; your medicine should be your food.” While other cultures have long recognized the functional health benefits of foods, this concept is only now becoming popular in the United States and other developed countries.

Functional foods are foods that have some other beneficial effects or uses besides their gustatory delights and nutritional value. For example, a functional food in the news recently is oats, reported to prevent the

sluggish bloodflow brought on by fatty meals that can increase the risk of heart attack and stroke.

About 30 scientists and researchers from around the world contributed 13 chapters for *Functional Foods: Biochemical and Processing Aspects*. It provides a fairly up-to-date review of the available science and health benefits on popular medicinal foods such as oats, wheat bran, rice, grape and citrus products, cruciferous vegetables, onions and garlic, mustard, a variety of vegetable oils, some “exotic” foods from Latin America (e.g., amaranth and quinoa), beans, milk and dairy products, and seafood lipids. A few herbs are also covered such as echinacea, ginseng, sea buckthorn, some South American herbs, flaxseed, and, again, garlic.

The herbal reviews are, for the most part, cursory, and rather dated. The work on garlic, flax, and other dietary supplements derived from foods are more complete, especially that for garlic.

A chapter on the regulatory aspects of functional food products is useful for companies or individuals who have little knowledge of the subject. The chapter reviews current regulations in North America, Japan, and Europe, along with what categories of foods and what claims are allowed in each country.

Functional Foods is a good overview of the fascinating and economically important world of medicinal foods and common derivative products. Most of the functional foods reviews are referenced with primary literature that is fairly recent and complete, but not exhaustive. Much better books exist for recent reviews for the few herbs in the book that are not also foods (e.g., echinacea and ginseng) such as *Herbal Medicine—Expanded Commission E Monographs* (M. Blumenthal et al, 2000).

You can buy this book online. If you are interested in food science, peruse the publisher’s website, <<http://www.techpub.com>>, where numerous books in this category are listed alphabetically. I found many interesting books, especially *Asian Foods: Science & Technology*.

Asian Foods provides detailed information on the history, manufacture, home preparation of all kinds of foods and food products used in some traditional Asian diets. Instructions are given on how to make tofu,

and a variety of fermented and non-fermented dairy and bread products, meat products, fruit, and vegetable products prepared and consumed in China, Korea, Japan, Malaysia, Nepal, India, Pakistan, and other countries (though the focus is decidedly on Chinese cuisine and culture). The book reviews cultural and nutritional differences between a number of traditional Asian diets with a chapter on the health implications and nutritional analyses of these Asian diets and supplements. A bibliography of detailed nutritional analyses for 16 different Asian diets is included.

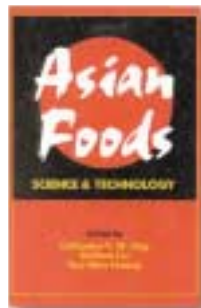
I found the section on seaweeds particularly interesting, though it was too brief.

The best section for herb lovers is on Chinese foods with medicinal qualities. This section covers dozens of foods arranged both by their effects (such as expectorants, laxatives, and digestion-promoting, and cholesterol-lowering effects) and in a *materia medica* style arranged by botanical family. This section provides a good overview of these herbs that are often added to foods for their healing properties,

but the sources of information are mostly from secondary sources like Bensky and Gamble’s 1986 edition of *Chinese Herbal Materia Medica* and Huang’s *Pharmacology of Chinese Herbs*. Newer editions of both works have been out for some time.

Buy this book if you are interested in Asian foods and their traditional preparation, or if you want a brief overview of some of the most commonly-used Chinese herbs added to food dishes. If you want a more up-to-date or complete review of the latter, go to the newer editions of Bensky and Gamble and Huang. I will review books on Chinese medicinal herbal foods in a later issue of *HerbalGram*, as a number of good ones are in print.

— Christopher Hobbs, L.Ac., A.H.G. 🐼





Letters



Firstly, congratulations on your 50th issue. It looks superb and is also full of first-rate material.

Secondly, I have also reviewed *Herbal Medicine* by Weiss and Fintelmann in the *British Naturopathic Journal*

and have commented on [Blumenthal's] foreword. Nothing personal! But it's frustrating that the U.S. somehow has larger than life visions of herbal medicine in Germany. They may have thousands of *Heilpraktiker*s, but really very few herbalists on the same lines that we have in the U.K. We have the oldest organised body of practising herbalists in the world—the National Institute of Medical Herbalists, founded in 1864. You can find them at <www.naturopaths.org.uk> and then clicking on the link. Incidentally, the *British Herbal Pharmacopoeia*, a scientific publication, was published in 1983.

David Potterton, ND, MRN, MNIMH.
Editor, British Naturopathic Journal
Reading, Berkshire, England (UK)



SAW PALMETTO UPDATE

I read with great interest the article "Saw Palmetto Gets Strong Public Boost" by Mark Blumenthal that appeared in the 50th issue of *HerbalGram*.¹ It may interest your readers to know that additional positive developments have recently occurred for this important native North American botanical. I will briefly report on two of such developments.

The *Pharmacopeial Forum* reported in the May-June 2000 issue that saw palmetto (*Serenoa repens*, (Bartr.) Small, Arecaceae) is the first botanical dietary supplement to be admitted into the United States Pharmacopoeia (USP).² Prior to this development, a priority list of important botanical dietary supplements were, and continue to be, in various stages of monograph development for consideration for inclusion in the *National Formulary* (referred to as USP-NF in the *HerbalGram* article). In fact, it is correct that a NF monograph for saw palmetto based on identity and quality characteristics has become official January 1, 2000; however, this latest announcement effectively moves saw palmetto from NF to USP status. A primary distinction between USP and NF status is

that the USP is a compendium of official pharmaceutical active ingredients while the NF is an official compendium of pharmaceutical excipients. The inclusion in USP requires the ingredient to have FDA approval, NDA approval, or presence in an OTC monograph. Substances that are not FDA approved but are listed in the USP-DI (Drug Information) monographs (saw palmetto) can be considered for USP adoption if supported by expert advisory panels and higher levels of clinical evidence. This is a significant new step that may lead to USP recognition for other important botanicals. The USP inclusion of saw palmetto provides a strong incentive for industry to develop and manufacture pharmacopeial grade botanicals.

A research investigation "Quality Management of Saw Palmetto Products," authored by Tang-Sheng Peng, William F. Popin, and Marlin Huffman, was presented at the American Chemical Society "Quality Management of Nutraceuticals" Symposium in Washington DC in August 2000.³ This presentation systematically describes the quality management of different saw palmetto products including fruits, powders, extracts, and finished products. The presentation is in the process of publication as a general chapter in an ACS proceedings edited by Dr. Chi-Tang Ho (Rutgers, The State University of New Jersey) and Dr. Qunyi Zheng (Pure World Botanicals). I look forward to further developments for this and other important botanical dietary supplements.

William ("Bill") Popin, M.S.
American Fork, Utah

References:

1. Blumenthal M. Saw Palmetto Gets Strong Public Boost: USP Publishes Monograph and Consumer Reports Gives Thumbs Up. *HerbalGram* 50:32-37.
2. Saw Palmetto and Other Dosage Forms Derived from It Moved from NF to USP. Headquarters Column, *Pharmacopeial Forum* 2000; 26(3):580.
3. Peng T-S, Popin WF, Huffman M. Quality Management of Saw Palmetto Product. In *Quality Management of Nutraceuticals*, Ho C-T, Zheng Q, editors. ACS Symposium Series; American Chemical Society: Washington, DC, in publication.

Bill Popin is currently the Regulatory Director for TwinLab Utah Division. He is also a member of the United States Pharmacopoeia Dietary Supplements-Botanicals Expert Committee.

BIAS IN CANCER PRODUCT USE PATTERNS ARTICLE?

I was excited to see *HerbalGram*'s premier of Original research (*HerbalGram* 50). Unfortunately, the study design introduced significant bias into the results. The objectives listed cannot be accomplished with the methods used and the conclusions drawn are likewise invalid.

In order to accomplish the objectives using a

volunteer survey, the authors would have needed a much higher response rate. A response rate of 6.4% was reported, but in order to profile consumers, a response rate closer to 100% is needed. This low rate of response introduces what is commonly referred to as non-response bias. Jessica Utts, Ph.D., professor of statistics at the University of California, Davis, suggested to me that the researchers would have been better taking a random sample of the 85,245 purchasers, if they could, and trying hard to contact them. As it was, the researchers invalidated the results by not completely polling the sample. Non-response bias wasn't the only bias introduced by the methods they used.



Typically, people who respond to volunteer surveys are those that feel strongly about an issue: either in favor or opposed. Therefore, to use such a method to profile consumers (or characterize cancer patients) is inappropriate. In fact, the data reported suggests that the respondents may be pro-product because many were long-time users. I can think of a dozen reasons why someone might not send in the survey postcard: too busy, too sick, not interested, didn't read the packaging material, the survey was in a language they didn't understand, etc. This method of sampling could easily lead to selection bias. For example, the method used may have resulted in only the healthiest users responding. This means that they most likely did not get the fraction of their sample that truly represented the population of consumers.

If the initial sample was biased, then the subsequent study (phase 2) would carry the same bias. In addition, the second survey introduced additional bias. Again the survey relied on volunteer response. Selection bias may have been introduced because, for example, participants initially had to phone in (so it was biased towards people that felt comfortable using the phone) or product was given as an incentive (perhaps only those that intended to continue using the product would have been motivated to complete phase 2). Also, the non-response rate was quite high (57.6%).

I am very concerned that reported research be accurate and not misleading. How does your journal intend to ensure that the research you report can be trusted by people that may not be specialists in scientific methods?

Dorena Rode
Doctoral Candidate, Physiology

Authors' response:

We are pleased to see the level of interest that this research article generated and appreciate the opportunity to present our results and respond to the letter written by Dorena Rode. We recognize that a 100% response rate or close to it would be preferred in any study. However, most studies do not achieve this rate, and instead, use the response rates that they actually achieve to describe their population to the best of their ability. We agree that individuals who purchased Flor-Essence® and did not respond might differ from those who purchased the product and responded to the survey. However, we had no method of identifying all (or any!) of these consumers since people do not register their name and address when purchasing herbal products. Thus, it would be impossible to take a random sample of the purchasers of the 85,245 units that were distributed (into which products we inserted our initial request for respondents). This study was quite different from a clinical trial, for example, where information is available about all subjects who are entered into the study.

Similarly, even studies that recruit subjects by newspaper ads, telemarketers who phone consumers, or cancer centers that conduct clinical trials may be biasing their results. Each type of study has its own entry criteria, and few studies include all possible subjects. Therefore, every research report must carefully describe the method by which the subjects in the study were selected. Our research study clearly described how we received responses from 5,051 consumers of the product. Although this number was a small percentage of the total number of units shipped, the results of our study were based on quite a large number of responses. We agree with you that more representative samples are needed and clearly discuss this in the section titled limitations:

"As with all self-selected populations, this sample may be representative of more enthusiastic and committed consumers and thus, may be biased and not representative of the Flor-Essence™ consumer in general. However, these interesting results suggest the need for more representative samples. The response rate among eligible cancer patients was 42.4% and lower than rates for mailed surveys of [complementary and alternative medicine] CAM use among cancer patients in Italy (51.2%) and the United Kingdom (69%).^{15,23} No study that we are aware of has attempted to conduct a pattern of use survey of CAM users by targeting consumers of an herbal product. Thus, we are unable to compare our response rate that from similar studies."

A point that we did not address, however, is that we do not know if all 85,245 units were purchased or available on the shelves for sale during the study period. In fact, we extended the study period but established a cut off point after which postcards continued to trickle in from purchasers but were not eligible. Furthermore, we do not know the number of persons who purchased more than one unit over the 15-month study period. Thus, the true number of unique consumers is

most likely to have been much less than 85,245 if many consumers purchased more than one unit of the product over 15 months. This highly likely occurrence would have had the effect of decreasing the denominator. If the study period were extended to allow more bottles of tonic to be sold and thus, consumers to respond, our actual response rate would have been higher also.

The fact is that we have no comparison for standard response rates in market surveys and thus, took the epidemiologic approach by describing the data and clearly discussing the limitations. We thank Ms. Rode for her interest in this study and hope it will stimulate further interest in rigorous research of the efficacy and safety of this and other herbal tonics. We clearly demonstrated that this particular product is widely used by cancer patients in North America.

J. Lynn Palmer, Ph.D.
Associate Professor of Biostatistics
The University of Texas
M.D. Anderson Cancer Center
Mary Ann Richardson, Dr.P.H.
Program Officer, National Center for
Complementary and Alternative Medicine,
The National Institutes of Health

HerbalGram response:

HerbalGram published this article because, in our opinion, it was original and ground-breaking: never before had anyone compiled this kind of data on the demographics, expectations, use patterns, etc. of people using an herbal formula for the prevention and/or treatment of cancer. Thus, we believe we are helping to make a contribution to the herbal and medical literature. We also considered the potential limitations to the survey's methods as forthrightly acknowledged by the authors in the article, and repeated above in their response to Ms. Rode's letter. —Editors

LICORICE AND ARTICHOKE DETAILS

Linda Woolven and I are professional members of ABC. Amongst other things, we write a natural health newsletter in Canada. We were interested in the Conference Report in HerbalGram 50 and had two questions we hope you could answer.

Firstly, the licorice summary discusses glycyrrhizin as a protector against acetaminophen-induced liver damage. Did the presenters discuss whether licorice root would have this effect if taken with acetaminophen or were they not able to extrapolate this from the research on the isolated component?

Secondly, and similarly, several phytochemicals present in artichoke are discussed for reducing the side effects of benzodiazepines. Can artichoke be used for this purpose, according to the authors' research, or are we unable to extrapolate this?

Ted Snider
Linda Woolven, M.H., C.Ac.
Toronto, Ontario, Canada

Author's response:

Thanks for raising these finer points. First, regarding licorice root and acetaminophen toxicity, the authors did directly attribute hepatoprotection from acetaminophen to the glycyrrhizin content in licorice root (*Glycyrrhiza glabra*) taken concurrently. Licorice is a well known hepatoprotectant, acting in an antioxidant capacity.

Here are some other references on licorice root and liver protection against acetaminophen:

Moon A, Kim SH. Effect of Glycyrrhiza glabra roots and glycyrrhizin on the glucuronidation in rats. *Planta Med.* 1997 Apr;63(2):115-9.

Liu J, Liu Y, Mao Q, Klaassen CD. The effects of 10 triterpenoid compounds on experimental liver injury in mice. *Fundam Appl Toxicol.* 1994 Jan;22(1):34-40.

The section regarding protection against potential benzodiazepine toxicity was performed on isolated constituents only, so the results were extrapolated in the article to include artichoke (based on artichoke having three of the top constituents studied having the protective ability). Artichoke products are usually standardized to caffeoylquinic acid and cynarin content, which were the first and third top protectors respectively.

Ernie Hawkins, R.Ph., M.S.
Marshall, NC

CLARIFYING RESEARCH

I appreciate the opportunity to respond to the article published in HerbalGram 51 entitled "Mina Jao: A Village Green Pharmacy in Amazonia," in which results of my research studying the use of plants among three rural villages in Amazonia were misconstrued, taken out of context, and used to support claims that do not agree with my research findings.



The article states that the average number of medicinal plants used by rural families in Amazonia ranges from 11–18 species. These data were taken from my research on homegardens (Lamont SR, Eshbaugh WH, Greenberg AM).

Species composition, diversity, and use of homegardens among three Amazonian villages. *Economic Botany* 1999;53(3):312-26) and represent the average number of medicinal species cultivated in homegardens. This number does not represent the total of number of species used medicinally by rural villagers, who rely mainly on uncultivated forest species harvested in the wild for medicinals.

The article also states that "most villages within the ACEER service area no longer have resident shamans." I am not sure what is included in the ACEER service area, but two out of the three villages I studied (all located



Letters

within 20 miles of the ACEER) had more than one resident shaman.

My research also did not support the claim that most villagers will choose a restricted diet in order to sell produce in Iquitos; on the contrary, interviews with more than 75% of households in each of the villages indicated that most families grow crops mainly for consumption and few crops (mainly jute and rice) exclusively for market.

I agree that traditional knowledge of medicinal species is being lost as village elders pass on and the youth migrate to urban areas. However, there is still a wealth of knowledge that rural villagers have to offer about the use of rainforest plants for medicinal, as well as a plethora of other uses.

Susan Lamont, Ph.D.



Exton, PA

Authors' response:

The ACEER Foundation welcomed the opportunity by HerbalGram to describe our community service project in the Amazon. In the article we cited some data from Dr. Susan Lamont's research; we also expressed observations and experiences of other professionals, some of whom work for or with the ACEER.

Dr. Lamont interpreted our citation and some statements related to her data as incorrect or inconsistent with her research. I assure Dr. Lamont and HerbalGram readers that any such errors or inconsistencies were unintentional. The ACEER respects her research; and we appreciate her efforts to strengthen the article by clarifying aspects and conclusions of her research. We encour-

age those interested in ethnobotanical field research to consult her excellent work in *Economic Botany*. We also respect the dedicated efforts and viewpoints of our staff, Peruvian advisors, and others who work on such community service projects as the one we described. Since misinterpretations about our Amazonian extension work serves no one's purpose, especially ACEER and our associates, the ACEER sincerely invites researchers in the region to become actively involved with the ACEER, and to share their results and experiences with us so that our community service efforts can be the very best they can be. We thank Dr. Lamont for her desire to clarify her research, and to HerbalGram for this opportunity to respond.

Roger W. Mustalish, Ph.D.

KUDOS AND SUGGESTIONS

Thanks for all your hard work. After years of searching for good information, I feel I have found it in *HerbalGram*. I know it has been difficult and I wish you the very best.

I think a little advertising isn't a bad thing, especially if you are careful. We do need reliable sources and finding them in your magazine would give me more faith in the company!!

I particularly like the herbal reviews, especially when dosages and cautions are included. I've enjoyed every book I've ever gotten from you. I have a field guide by Foster & Duke that is on the table year around. It is excellent!

Suggestions — I'd like to see more information on growing wild herbal plants, their companions, and locations. I feel individuals will need to take part in growing things so they do not disappear. Too often land is bought and sold and bulldozed with no idea of the precious plants lost. We need knowledgeable peo-

ple to protect our natural medicines. Also please stock books by Juliette de Bairacli Levy. Her knowledge is priceless and needs protecting too.

Gay Meyer
Stone Lake, WI



ECLECTIC DISPENSATORY

Please advise where we can purchase the *Eclectic Dispensatory of the United States* by King J. Newton RS as referenced in your article "From Rudbeckia to Echinacea" in your *HerbalGram* 51.

Lynda Mullen
Lawrencetown, Nova Scotia, Canada

That original source is now known as King's American Dispensatory, by HW Felter and JU Lloyd, and is the 1898 classic revision of Prof. John King's earlier work. This two-volume encyclopedia encompasses the entire materia medica of 19th century Eclectic physicians; covers botany, history, chemistry, uses and dosage; and has become the standard reference for any serious practitioner of botanical therapeutics. It may be purchased through ABC (item #B022). See ad on page 67 for contact information.—Editors



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Visit ABC's website <www.HerbalGram.org> to see additional calendar items, updated continuously.

August 4–8: 2001 Annual Meeting of the Phytochemical Society of North America, "Phytochemistry in the Genomics and Post-Genomics Eras," Westin Hotel, Oklahoma City, OK. Information at PSNA website: <<http://www.pdna-online.org>>.

August 6–16: International Training Program in Essential Oils: Advanced Studies, New Brunswick, NJ, sponsored by the New Use and Natural Products Program at Rutgers University. This 2-part program, formerly at Purdue University, is an intensive university course on the history, botany, ecology, chemistry, distillation, commercial production and marketing of a variety of commercially valuable essential oils. Also, individual profiles of flower, spice, wood, citrus, and herb oils; their uses in foods, flavors, fragrances, and aromatherapy; and standards of oil quality. Course info contact Prof. James E. Simon by ph: 732/932-9711 or email: <jesimon@aesop.rutgers.edu>.

August 10–12: Communing with Plants: Finding Your Allies Among North Carolina's Edible and Medicinal Plants, Southern Dharma Retreat Center, Hot Springs, NC. Learn to develop a relationship with plants, allowing healing and knowledge to come to you directly and intuitively. Herbalists Suki Roth and Joyce Stahmann will facilitate. Contact: Joyce, 919/968-6403. Email: <stahmann@yahoo.com> or <bruki@peoplepc.com>.

August 17–19: Frontier HerbFest 2001, Norway, IA. Topics include herbal dentistry, traditional protocols, herbal pharmacology, medicine making, medical plants of the prairie, herbs for children, aromatherapy, and more. Contact: Frontier Natural Products Co-op. Ph: 800/669-3275, website: <<http://www.frontiercoop.com>>.

August 19–25: Medical Botany for Pharmacists and the Medical Community, Humboldt Institute, ME. Five-day seminar led by James Duke. Comprehensive introduction to phytochemicals, activities, combinations. Contact: Joerg-Henner Lotze, ph: 207/546-2821, fax: 207/546-3042, email: <humboldt@nemaine.com>, website: <<http://maine.edu/~eaghill>>.

August 24–26: 14th Annual Women's Herbal Conference: "Honoring the Wisdom of Our Ancestors," Sargent Camp in Peterborough, NH. Includes workshops, herbal crafts, medicine making, herb walks, herbal marketplace, and more, with focus on women's health concerns and a variety of natural healing modalities and choices for women's health programs. Contact: Katie Pickens, c/o WHC, 2984 Elmore Pond Rd., Wolcott, VT 05680. Ph: 802/888-3736.

September 2–6: Gesellschaft für Arzneipflanzenforschung's International Congress and 49th Annual Meeting, Erlangen, Germany. For details, contact Prof. Dr. Wolfgang Kreis, Universität Erlangen-Nürnberg, Germany. Ph: +49-9131-8528241, fax: +49-9131-8528243, email: <wkreis@biologie.uni-erlangen.de>.

September 12–14: Perspectives of Medicinal Mushrooms in Health Care and Nutrition in the 21st Century, Kiev, Ukraine. Organized by M.G. Kholdny Institute of Botany, Ukraine National Academy of Sciences, and Ukraine Ministry of Education and Science. Topics include commercially useful medicinal mushrooms, physiology and biochemistry, and culture collections. Official conference language is English. Contact: Dr. Elvira F. Solomko, General Secretary of Conference, M.G. Kholdny Institute of Botany NASU, 2 Tereshchenkivska St., Kiev 01601, Ukraine. Phone/fax: +380 (44) 235 2034, email: <e_solomko@yahoo.com> or <solomko@mail.valtek.kiev.ua>, website: <<http://www.icmm.kiev.ua>>.

September 13–14: International Aloe Science Council's (IASC) 20th Annual Scientific Seminar, at the Coex Inter-Continental Hotel in Seoul, Korea. Contact: IASC, 415 East Airport Freeway, Ste. 260, Irving, TX 75062. Ph: 972/258-8772, fax: 972/258-8777. Email: <iasc1@msn.com>, website: <<http://www.iasc.org>>.

September 13–16: SANA The Fair of Qualities 13th International Exhibition of Natural Nutrition, Health, and the Environment, Bologna, Italy. Open to the public, working days (Thu/Fri) only for professionals. Contact: Fiere e Comunicazioni, via S. Vittore 14, I-20123 Milano. Ph: +39 02 86451078, fax: +39 02 86453506, website: <<http://www.sana.it>>.

September 14–15: Arizona Ethnobotanical Research Association's 4th Annual Ethnobotany Symposium, "Issues Without Borders: A Bioregional Ethnobotanical Perspective," Flagstaff, AZ. Keynote speaker will be Vernon Masayeva, educator, political activist, and former tribal chairman of the Hopi Tribe. Other speakers include Felipe Molina, Barney T. Burns, Enrique Salmon, and more. Contact: Phyllis Hogan, ph: 520/774-2884. Email: <aera@primenet.com>, website:

<<http://www.infomagic.net/~fdedera/symposium>>.

September 14–16: Green Nations Gathering, Catskill Mountains of New York. Includes herbal emporium, sweat lodges and workshops by leading herbalists. Contact: Pam Montgomery, 1525 Danby Mtn. Rd., Danby, VT 05739. Ph: 802/293-5996, website: <<http://www.partnereartheducationcenter.com>>.

September 14–18: International Symposium Ethnobotany Follow-Up Seminar: Medicinal Plants, Folk Traditions, History, Ethnomedicine, and Pharmacology, Antigua, Guatemala. Call for participation: papers, communications and poster sessions are welcome. Medicinal plants and technology, the legacy of ancient cultures, the contribution to modern science, and more. Contact: Ronald Chaves. Fax: (+00506) 283 02 63, email: <simposio@racsa.co.cr>.

September 17–18: Medicinal Compounds from Plants: Age-Related Disorders, University of York, England. Addressing how plants can be used to address such conditions as dementia, osteoporosis, Alzheimer's disease and arthritis. Oral and poster presentations welcome. Information: website: <<http://www.york.ac.uk/org/ppc/events.htm#latest>> or email: <ppc@york.ac.uk>.

September 19–29: Traditional Tibetan Medicine Course, in English at the Tibetan Medical & Astrological Institute in Dharamsala, India. 10-day intensive course covering: Tibetan Medicine history, the body's three energies, herbal teachings, diet and behavior, meditation, more. Contact: Dr. Namgyal Tenzin, 1911 Kalaniana'ole St., #505, Hilo, HI 96720. Ph: 808/326-3711. Email: <tenzinz@msn.com> or <namgyalt@hotmail.com>, website: <<http://www.traditionaltibetanmedicine.com>>.

September 21–22: 3rd Annual Symposium on the "Clinical Use of Herbal and Nutritional Supplements," in Chapel Hill, NC. Clinically-based educational content is directed to a mixed audience of primary care providers including physicians, pharmacists, physician assistants, nurses, nurse practitioners, and dietitians. Contact: Deirdre Boyer, Office of Continuing Medication Education, 241 Chase Hall, CB# 7321, UNC-CH, Chapel Hill, NC 27599-7321. Ph: 919/843-6382.

September 26–28: Biologically Active Phytochemicals in Food: Analysis, Metabolism, Bioavailability and Function (EUROFOODCHEM XI), Norwich Research Park, UK. Further info from Nicola Durkan, Royal Society of Chemistry, London. Ph: +44-20-7437-8656, fax: +44-20-7734-1227, email: <conferences@rsc.org>, website: <<http://www.rsc.org/conferences>>.

September 26–28: Health Ingredients Japan, Tokyo Big Sight Exhibition Centre. Showcase for health, functional and organic foods, and food additives. Contact: Ms. Yoko Ishii, Miller Freeman Japan Co. Ltd (HIJ2001 Secretariat International), 4F Asahi Bldg, 7-17 Nihonbashi-Kodenma-cho, Chuo-ku, Tokyo 103-0001 Japan. Ph: +81-3-3669-5811, fax: +81-3-3669-5830. Email: <iyoko@ma.kcom.ne.jp>.

September 30–October 3: Council for Responsible Nutrition Annual Conference, Westin La Paloma, Tucson, AZ. Includes marketing, science, and regulatory sessions, as well as dietary supplement industry representatives. Contact: CRN, 1875 Eye Street N.W., Suite 400, Washington D.C. 20006-5409. Ph: 202/872-1488. Website: <<http://www.crnusa.org>>.

October 11–14: Natural Products Expo East 2001, Washington D.C. Convention Center, Washington D.C. Contact: New Hope Natural Media, ph: 303/939-8440, fax: 303/939-9559, website: <<http://www.naturalproductsexpo.com>>.

October 19–21: Art and Science of Healing II: Integration of Conventional & Complementary Medicine, in Vancouver, BC. Hosted by Tzu Chi Institute for Complementary & Alternative Medicine. Conference will facilitate a deeper exploration of "integration" from personal, clinical, educational, research, and administrative perspectives. Contact: Gina Blank, Conference Coordinator. Ph: 604/875-4769, fax: 604/875-4776. Email: <gblank@tzu-chi.bc.ca>, website: <<http://www.tzu-chi.bc.ca/events.htm>>.

October 27–November 4: 8th annual Pharmacy from the Rainforest International Healthcare Expedition, Iquitos, Peru. Nine days in three locations studying the vital role the Amazon rainforest plays in present and future global healthcare. 12 hours ACPE credits for pharmacists, 10 hours in Category 1 credit toward AMA Physicians Recognition Award. Five day optional Andes/Machu Picchu extension. Contact Kim West, American Botanical Council, 512/926-4900, 800/373-7105, <kwest@herbalgram.org>.



Calendar

October 29–November 3: Clinical Herbal Medicine Training for Health Care Professionals, Ashland, Oregon. Master Herbalists Donald Yance, CN, AHG and Chanchal Cabrera, MNIMH, AHG, teach case-taking, examination techniques, differential analysis, etc. Contact: Andrea Weil at Centre for Natural Healing, ph: 541/488-3133, fax: 541/488-6949, email: <centrehealing@rvi.net>.

November 3–4: Alternative, Holistic & Natural Health Medicine Exhibition, Civic Center, Saint Cloud, MN. Promoting wellness technology, alternative medicine practitioners, and organizations. Email Mark Meldrum <Mel-drumRanch@aol.com> or ph: 866/221-4406.

November 8–11: 2001 Interim Meeting on Botanical Dietary Supplements: "Natural Products at a Crossroads," Asilomar Conference Center, Monterey Peninsula, California, co-sponsored by the American Society of Pharmacognosy and the Council for Responsible Nutrition. This meeting on the science supporting botanicals and bioactive natural products will include such topics as herb-drug interactions, standardization/quality control, new botanical products, clinical trials/results, and much more. For details, visit the ASP website <<http://www.phcog.org>> or the CRN website <<http://www.crnusa.org>>.

November 8–11: Pro Sanita, Stuttgart, Denmark. Biennial international exhibition on health and nature. Theme areas include bio-architecture, spas, nutrition, the herbal industry, body care, and homeopathy. Contact: Messe Stuttgart, Am Kochenhof 16, D – 70028 Stuttgart. Ph: +49 711 2589584, fax: +49 711 2589305, website: <<http://www.messe-stuttgart.de>>.

November 9–11: American Herbalists Guild Symposium 2001: "From Plants to Medicines: Honoring Our Relationship to Nature's Pharmacy," Unicoi State Park Lodge & Conference Center, Helen, GA. Over 40 workshops by leading herbalists. Tracks for both students and advanced clinicians, CME credit for nurses, pharmacists, and naturopathic physicians. Pre-conf intensives Nov. 8. Contact: AHG, 1931 Gaddis Rd, Canton, GA 30115. Ph: 770/751-6021. Fax: 770/751-7472, email: <ahgoffice@earthlink.net>, website: <<http://www.americanherbalist.com>>.

November 11–15: IFEAT International Conference: The Essential Oils of South and Central America, Buenos Aires, Argentina. Presentations will review the current status of the industry in South and Central America and the expected future trends. Contact: Julie Young, Executive Secretary, IFEAT, 6 Catherine Street, London WC2B 5JJ, UK. Ph: +44 (0)20 7836 2460, fax: +44 (0)20 7836 0580. Email: <julie.young@fdf.org.uk>, <ifeatadministrator@fdf.org.uk>. Website: <<http://www.ifeat.org>>.

November 11–16: Global Holistic Health Summit, Bangalore, India. An international forum of holistically oriented organizations, institutions, professionals, individuals, and practitioners working to create an awareness of integrative medical policies. Contact: International Holistic Health Association, 2020 Parvathi Plaza, Richmond Circle, Bangalore 560 025, India. Ph: 91-80-227 2758, fax: 91-80-221 8252. Email: <holisticmedicine@vsnl.com>, website: <<http://www.holisticmedic.org>>.

November 16–18: International Conference on Indigenous Medical Traditions of the Americas: Past, Present, Future, in Washington, D.C. Three-day conference to explore the uniqueness, wealth and complexity of the healing traditions indigenous to the American continent. Emphasis will be on culturally sensitive and effective healthcare, protection and revitalization. Contact: Pro-Cultura, Inc., 301 Old Sleepy Hollow Rd., Pleasantville, NY 10570. Ph: 914/741-2781, fax: 914/741-1932. Email: <mail@procultura.org>, website: <<http://www.procultura.org>>.

November 28–30: SupplySide West International Trade Show and Conference, Las Vegas. Contact: Virgo Publishing, ph: 480/990-1101 (ext. 1037 for attendees, ext. 1171 for exhibits/sponsorships), website: <<http://www.supplysideshow.com>>.

December 6–8: 8th Annual Symposium on Complementary Health Care, Exeter, UK. Contact: Barbara Wider, Department of Complementary Medicine, University of Exeter, 25 Victoria Park Road, Exeter, Devon EX2 4NT, UK. Phone: +44 (0)1392-424872. Fax: +44 (0)1392-424989. Email: <B.Wilder@exeter.ac.uk>. Website: <<http://www.exeter.ac.uk/FACT>>.

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Keynote Speaker:
Michael Balick, Ph.D.,
Ethnobotanist, Vice-President
New York Botanical Garden

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Chanchal Cabrera · Doug Elliot ·
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AMERICAN HERBALISTS GUILD

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, HRF, or their Advisory Boards.

Andean Botanical Information System (ABIS) is a website and collection of databases for investigating Andean plants. Includes information for those who want to grow, study, or write on Andean flora. Links page available for related sites and specialized books. Website: <http://www.sacha.org>; <http://www.sacha.org/datab/intro.htm>.

Australasian College of Herbal Studies offers home study and residential courses in aromatherapy, nutrition, herbal medicine, flower essences, and other natural disciplines. State licensed. CE credits available to nurses, pharmacists, veterinarians, and LMTs. Sallie Mae student loans. Veterans funding for on-campus programs. Free Program Catalog. Ph: 800/487-8839. Email: achs@herbed.com, website: <http://www.herbed.com>.

Centre for Indigenous Peoples Nutrition & Environment (CINE) is an independent, multi-disciplinary research and education resource for indigenous peoples, created by Canada's Aboriginal Leaders. Located on McGill University's MacDonald Campus in Ste-Anne-de-Bellevue, Quebec, the Centre undertakes community-based research and courses related to traditional food systems, incorporating the empirical knowledge of the environment inherent in indigenous societies. Contact: CINE, ph: 514/398-7544, fax: 514/398-1020. Email: cine@cine.mcgill.ca, website: <http://www.cine.mcgill.ca>.

Desert Canyon Farm & Learning Center offers organic herb gardening and herbal traditions apprenticeship programs and correspondence courses. In-depth and hands-on study programs by Tammi Hartung, medical herbalist and certified organic grower. Topics include soil prep and composting, integrated pest management, growing at-risk herbs, herb gardener's materia medica, and more. Contact: Tammi Hartung, 1270 Field Ave., Canon City, CO 81212, ph: 719/275-0651, fax: 719/275-0815.

The Entheogen Review is a quarterly journal that serves as a clearinghouse for current data about the use of visionary plants and drugs. Offers information on cultivation, extraction, and ritual use of entheogens. Contact: Entheogen Review, PO Box 19820 (Dept. W), Sacramento, CA 95819-0820. Website: <http://www.entheogenreview.com>.

Ethical Wildcrafter and Organic Grower Spring 2001 Registry 13th Edition, compiled by the Rocky Mountain Herbalist Coalition, is intended as a guide for buying herbs from ecologically conscious harvesters. Available for \$10, including postage. Contact: RMHC, PO Box 165, Lyons, CO 80540.

Frontier Organic Research Farm offers education programs, workshops, tours, and materials. The Farmworks Series education outreach program includes Herb Grower's Day workshop series, presentations at national conferences, and on-going research updates. Also offers the Grower's Crop Monograph series, which features growing characteristics and methods for medicinal and culinary herbs. Contact: Frontier Natural Products Co-op, 3021 78th St., PO Box 299, Norway, IA, 52318. Ph: 319/227-7996, fax: 319/227-7966. Website: <http://www.frontiercoop.com>.

Healthcalls.net is a website for herbal education and protocols for today's most challenging health issues. Topics include porphyria, Lyme, detoxing, balancing Th1 and Th2 cytokines, antibiotic alternatives using essential oils, and training videos. Contact: Hart Brent, HealthCalls, 4287 Bayley Hazen Rd., West Danville, VT 05873. Ph: 802/684-2570. Email: hart@vtlink.net.

The Herb Growing and Marketing Network is an information service for herb businesses and serious hobbyists. Includes The Business of Herbs, a 40-page trade journal; The Herbal Green Pages, an annual resource guide with 6000+ listings; free classified advertising and other benefits. Entire package \$95/yr. Sample journal \$6. Contact: HGMN, PO Box 245, Silver Spring, PA 17575-0245. Ph: 717/393-3295. Email: herbworld@aol.com, website: <http://www.herbworld.com> and <http://www.herbnet.com>.

Herbal Educational Services and Catalog lists quality educational events and conference proceedings on herbal medicine. Events include Southwest Conference on Botanical Medicine, Medicines from the Earth. Catalog includes proceedings, books, audio cassettes, and herbalist training tapes. Contact: Herbal Educational Services, PO Box 3427, Ashland, OR 97520, ph: 800/252-0688. Website: <http://www.botanicalmedicine.org>.

Holistic Primary Care is a newspaper for physicians that covers holistic and complementary/alternative medicine. Bimonthly. Free to practicing primary-care doctors. Contact: ph: 212/406-8958. Website: <http://www.holisticprimarycare.net>.

HortIdeas CD-ROM includes 60 issues published from January 1996 through December 2000. Available for \$40 plus shipping in two file formats: Adobe® Acrobat® and Envoy. Contact: HortIdeas, 750 Black Lick Rd., Gravel Switch, KY 40328. Email: gwill@mis.net.

Northeast School of Botanical Medicine provides comprehensive, practical training in clinical herbalism. Four programs offered; lead instructor is 7Song. Classes focus on constitutional diagnosis, plant identification, materia medica, first aid skills, student clinic, field trips, medicine preparation and formulation, anatomy and physiology, and community-centered herbalism. Contact: PO Box 6626, Ithaca, NY 14851. Ph: 607/539-7172. Website: <http://www.7song.com>.

On-line European Phytojournal provides free information relating to herbal medicine products in Europe. Set up by the European Scientific Cooperative on Phytotherapy (ESCOP), topics include adverse drug reaction, progress on the ESCOP Monographs on the Medicinal Uses of Plant Drugs, and other authoritative information on herbal medicines. Website: <http://www.escop.com>.

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CORRESPONDENCE COURSES AND SEMINARS

Aromatherapy Studies Course/Jeanne Rose. Correspondence, certification, in-person intensives. 160 CEU provided, California Board of RN Provider #CEP11659. Info: 219 Carl St., San Francisco, CA 94117 or FAX 415/564-6799.

Institute of Chinese Herbology – Home Study Training Programs in Chinese Herbal Medicine (since 1986). A complete, in depth and integrated approach to mastering Chinese herbology. Courses include audio tapes, extensive notes and herb samples and leads to Herbalist Certification. Free Brochure - Admissions 2HG 5459 Shafter Ave., Oakland, CA 94618. 800/736-0182. Website: <www.ich-herbschool.com>.

Wild Rose College of Natural Healing — established 1975, offering correspondence, classroom and Internet-based courses in Herbology, Pharmacognosy, Iridology, Nutrition, Phytopharmacy (for healthcare professionals), and more. Earn a Master Herbalist or Wholistic Therapist diploma, and new in Fall 2001 the Clinical Herbalist diploma. Visit our website: <www.wildrosecollege.com>. Call or write for more details: 1-888-WLD-ROSE. #400, 1228 Kensington Rd. NW, Calgary, Alberta, CANADA T2N 3P7. E-Mail: <coordinators@wrc.net>.

Elemental Herbalism — correspondence course w/Clinical Herbalist Susan Perri. 10 lessons include physiology, medicinal preparations, and ancient healing traditions. Learn about beneficial plants and how to use them. More at <www.bcbotanica.com> or call for catalog 716/442-6629.

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

study and medicinal plant review. 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 and the Herb Research Foundation. 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. Email <abc@herbalgram.org>.

The Herb Quarterly — When the world wearies and ceases to satisfy, there's always The Herb Quarterly, a beautiful magazine dedicated to all things herbal—gardening, medicinal, crafts, folklore, alternative uses of herbs, and more. Rates: Sample issue \$5; introductory subscription (5 issues) \$19.95. P.O. Box 689, San Anselmo, CA 94979. 800/371-HERB.

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.

Wildflower — North America's only popular magazine devoted solely to the study, conservation, cultivation, and restoration of our continent's native flora. Offering an appealing blend of art and science, this 52-page quarterly examines all aspects of popular botany in North America, from the rain forests of Panama to the mosses of the Arctic tundra; from gardening with native trees, shrubs, wildflowers, and ferns to the latest projects in habitat and native plant conservation. The green revolution begins in our own backyard. Subscriptions and membership are \$35/1 yr., \$70/2 yrs. Sample copy \$9. To subscribe order from website: <www.wildflowermag.com> or by mail: Wildflower Subscriptions, Box 335 Station F, Toronto, ON Canada M4Y 2L7.

Revista de Fitoterapia — A biannual Journal (printed in Spanish) directed to professionals interested in medicinal plants and their therapeutic uses. Information and subscriptions <www.fitoterapia.net>.

SCHOOLS

The Institute of Dynamic Aromatherapy — Correspondence, certification, in-class training programs. Contact: IDA 800/260-7401 or write 2000 2nd Ave., #206, Seattle, WA 98121.

Western Herbalism – Education for Life Rocky Mountain Center for Botanical Studies, offering a diverse curriculum with over 20 herbal mentors. Comprehensive one-, two- and three-year programs, starting in March and October. Recommended by leading herbalists. Colorado State Certified. Call 303-442-6861 for brochure. RMCBS, P.O. Box 19254, Boulder, CO 80308, www.herbschool.com.

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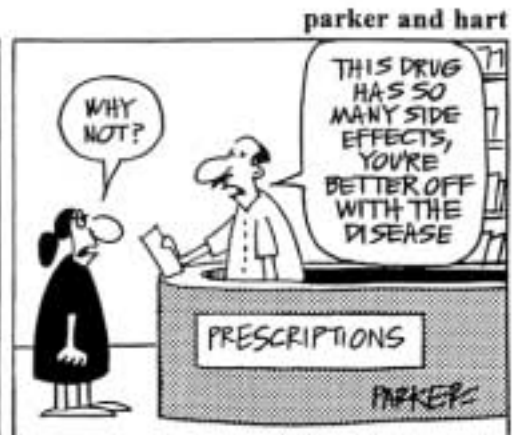
Goldenseal – Live goldenseal root: \$1.50 per live root (available Autumn, Spring). Live plant: \$5.00 (Summer). Birch Grove Nursery, Ponderay, Idaho 83852. 208/263-8407.

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Green Nations Gathering – September 14-16, Catskill Mountains of New York. This long weekend includes an herbal emporium, sweat lodges and workshops by several leading herbalists including Ryan Drum, Susan Weed, David Winston, Christopher Hobbs, Anne McIntyre, Stephen Buhner, Greg Tilford and more. Special guest is curandera and registered nurse, Elena Avila, author of *Woman Who Glows in the Dark*. Considered by many to be their "favorite" herbal conference, join us for a fun weekend of learning, networking and honoring the earth. Contact: Pam Montgomery, 1525 Danby Mtn Rd, Danby, VT 05739 802/293-5996 or <www.partnereartheducationcenter.com>.

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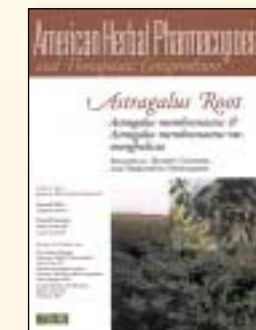
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