HerbalGram 138 Summer 2023

HerbalGram: A 40-Year Retrospective • 2023 ABC Celebration & Awards • Echinacea Herb Profile
Regenerative Herb Farming • Sustainability Toolkit 2.0 • First 10 Years of *HerbalGram*: Timeline • Nigella & Diabetes

HERBALGRAM

CELEBRATING 40 YEARS

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Number 138 Summer 2023



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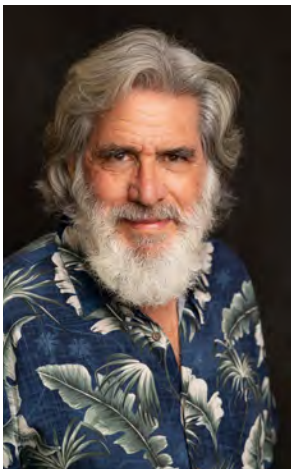


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dear *reader*

Reflecting on 40 Years of *HerbalGram*

Journal's evolution mirrors growth of the modern herbal medicine movement in the United States and beyond

By Mark Blumenthal

At the American Botanical Council (ABC), we consider every issue of *HerbalGram* special, but this issue is particularly meaningful to us. *HerbalGram* is observing its 40th anniversary in the summer of 2023, and we want to share our 40-year history with ABC members and other friends and colleagues in the global medicinal plant community. In this and the next three issues, we will provide annotated timelines that highlight some of the key articles we've published in *HerbalGram*: four decades in four issues. We also will be doing much more to honor this important milestone.

It was 40 years ago this summer that Rob McCaleb and I created the first issue in 1983. The name of the publication was "Herbalgram" (the "G" was not capitalized until issue 7 in Fall 1985). The first three issues were eight pages, printed with black ink on beige paper — a newsletter that we initiated for the members of the American Herbal Products Association (AHPA) and Herb Research Foundation (HRF), which were founded in 1982 and 1983, respectively.

Forty years ago, *HerbalGram* was one of the few sources of accurate, reliable information on herbs and medicinal plants, the emerging market, and related topics, such as research, conservation, and quality control. As herbs have become more mainstream, and information has become more decentralized, people now have access to large amounts of herbal information of varying degrees of quality and reliability and from a variety of sources.



Masthead of issue 1 (Summer 1983)

Two front-page articles in *HerbalGram*'s first issue — "Herb Trade Association Defunct" and "American Herbal Products Association" — deal with changes in the organizational landscape of the nascent herb industry at that time in the United States. The Herb Trade Association (HTA) was founded in 1976 as the first industry organization for the fledgling herb movement. I was a founding board member of HTA and was elected its third president in 1979. During my tenure and afterward, under the aegis of HTA, I started writing and editing a newsletter called "Herb News" for HTA members. That eventually evolved into a small magazine of the same name until the demise of HTA in 1981. As the article in "Herbalgram" issue 1 explains, that publication, "Herb News," went into "hibernation" after the closing of HTA.

In 1982, many of us from the defunct HTA coalesced again, this time to create AHPA, which has grown into a modern and effective organization and voice for the US herb industry. (*HerbalGram* contributor Karen Raterman explored AHPA's 40th anniversary and many self-regulatory initiatives in issue 135 in 2022.) Rob McCaleb and I were founding board members of AHPA, and he and I also started HRF in 1983 as a separate nonprofit research and education organization. Rob was the research director at Celestial Seasonings, which, at the time, was one of the major industry and cultural forces of the emerging herbal movement, or what the late Paul Lee, PhD (1931–2022), would term the "Herbal Renaissance."

To try to keep a sense of continuity among the members of the former HTA and the new AHPA, we decided to name the new publication "Herb News/Herbalgram." That name was shortened to "Herbalgram" in issue 4 (Fall 1984), and the "g" was capitalized in the redesigned masthead (thanks to Austin-based graphic designer Diane Perwien Saltus) in issue 7 in Fall 1985. I retained the name Herb News for the small proprietorship that I owned, which published the newsletter for the two organizations; I closed that business when I formally donated *HerbalGram* and its assets to the nonprofit American Botanical Council, the incorporation papers for which I filed at the Texas Secretary of State's office on November 1, 1988, and which I founded with ethnobotanist James A. Duke, PhD (1929–2017), and pharmacognosy professor Norman R. Farnsworth, PhD (1930–2011).

"My wife and I recycle all our magazines, except for two:
National Geographic *and* HerbalGram."

—ABC Member

dear *reader*

In the early to mid-1980s, we didn't have the internet, email, or even access to a facsimile (fax) machine. To distribute news about herb market conditions, scientific research (there wasn't much back then), or regulations (a tempest was brewing), we had to print newsletters, address them by hand or affix mailing labels, and mail them via the US Postal Service. Over the past four decades, like so many other publications, *HerbalGram* has become available in digital formats (HTML, PDF, and page-flip), as well as the popular printed version.

Key Figures in *HerbalGram*'s Early Days

Rob McCaleb

Input from Rob McCaleb, the co-creator of *HerbalGram*, was invaluable on numerous levels. Back then, we shared a vision about the need to communicate reliable information to our friends and colleagues in the herb community and industry. What's more, Rob, from his Celestial Seasonings office in Boulder, Colorado, brought a level of computer literacy to *HerbalGram* that we did not have in our Austin office. He provided much-needed computer database knowledge and rudimentary IT assistance that we lacked. But his most impactful legacy for *HerbalGram* is probably the "Rob's Research Reviews" section, in which he would summarize key articles from the growing body of scientific literature — information that was unknown to many herbal enthusiasts in the United States in the 1980s and 1990s.

Barbara 'BJ' Johnston


Barbara 'BJ' Johnston

There are not enough words to express my profound gratitude, appreciation, and love for Barbara "BJ" Johnston (1932–2018), *HerbalGram*'s first managing editor. BJ started as *HerbalGram*'s assistant editor and then served as managing editor for about 16 years from issue 4 (Fall 1984) through issue 49 (Summer 2000). During this time, we would write and edit articles on her early Macintosh computer, print them, cut them out, and then paste them on layout boards using a glue brush or glue stick — all this in her home office, a converted garage. Until we began to use actual photographs in issue 22 in 1990, we used off-the-shelf clip art, line drawings, and black-and-white photocopies of woodcuts of herbs from classic 17th- and 18th-century herbals in the public domain, such as the 1910 reprint of John Parkinson's herbal *Paradisi in Sole, Paradisus Terrestris* (1629). Adobe's PageMaker® software (the precursor to the industry-standard publication software InDesign®) wasn't introduced until 1985, and we didn't start using it on BJ's Mac until about a year or two later.

After BJ retired as managing editor, the magazine was ably managed by managing editors Karen Robin (issues 50-61), Michael Finney (issues 62-81), Courtney Cavaliere (issues 82-87), and Ashley Lindstrom (issues 88-105) until 2015, when *HerbalGram*'s then-Associate Editor Tyler Smith became managing editor.

James A. Duke, PhD


James A. Duke
Photo ©2023 Steven Foster Group

Jim Duke was one of the most knowledgeable experts on medicinal plants in the US government from the 1960s until his retirement in 1995. Working at the United States Department of Agriculture (USDA), Jim traveled the world collecting medicinal plants with reputed anticancer activity and brought back specimens for analysis by the National Cancer Institute in its quest to find new molecules that might become effective anticancer drugs. Jim was an early ally and contributor to *HerbalGram*, and his popular articles and books struck a positive tone for thousands, possibly millions, of consumers. Starting with an article on alternative approaches to treating gout in *HerbalGram* issue 4 (Fall 1984), Jim wrote more than 25 articles and reviews for us. In issue 8 (Winter 1986), Jim wrote a classic article on why the high cost of pharmaceutical drug approval required, in his view, government-sponsored research on herbs, since plants were usually not patentable, thus providing zero incentive for pharmaceutical company research. Steven Foster (1957–2022) wrote a comprehensive tribute to Jim in *HerbalGram* issue 117 in 2018.

Norman R. Farnsworth, PhD, and Varro E. Tyler, PhD

HerbalGram has been fortunate to have guidance and support from some of the most respected experts in herbal science, clinical herbalism, conservation, and other related fields. In issue 29 (Summer 1993), Norman Farnsworth wrote an article documenting the general safety of herbs and medicinal plants used in systems of traditional medicine and approved as medicines in various European countries and elsewhere. This subject was important, as the

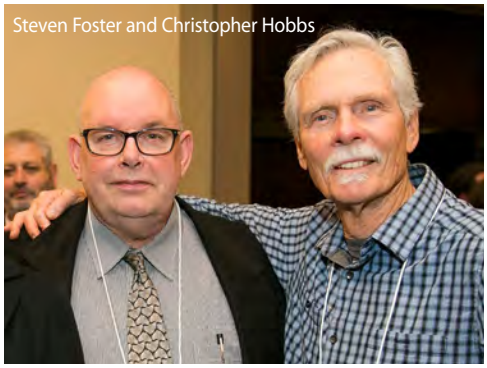

Norman R. Farnsworth and Mark Blumenthal

safety of herbs was being questioned by politicians and journalists during the brewing public discourse about herb regulation in the early 1990s. In issue 28 in 1993, Varro E. Tyler, PhD (1926–2001), dean of the School of Pharmacy at Purdue University and the senior author of a leading pharmacognosy textbook in the United States, wrote an article on natural products (including herbs) in conventional medicine and, in issue 30 in 1994, he discussed phytomedicines in Europe. Tyler would eventually serve on the ABC Board of Trustees from 1996 until his death in 2001.


Varro E. Tyler

Christopher Hobbs, PhD

Chris' literature reviews on emerging and popular herbs helped set the research-oriented tone of *HerbalGram*. Before people could search the internet for scientific and clinical research data, his compilations of historical, traditional, and ethnobotanical information on herbs — as well as modern scientific, chemical, pharmacological, toxicological, and clinical trial-based data — served as an essential resource for members of a young and growing herb movement and included information that they often were unable to access elsewhere. Chris' initial literature review for *HerbalGram* focused on sarsaparilla in issue 17 (Summer 1988), the last issue published for AHPA. Next, under the aegis of the newly formed ABC, Chris reviewed the literature for St. John's wort (issue 18/19), feverfew (issue 20), valerian (issue 21), and hawthorn (issue 22, co-authored with Steven Foster). ABC is and will always be indebted to Chris for these significant early contributions to *HerbalGram*, ABC, and the herb community. Chris is a fourth-generation botanist, licensed acupuncturist, served ABC for decades as a valued member of the ABC Advisory Board, and now is a member of the ABC Board of Trustees.


Steven Foster and Christopher Hobbs

Steven Foster

We have written much about Steven Foster's incalculable contributions to *HerbalGram* and almost every other publication and program of ABC. Steven was a renowned author, medicinal plant photographer, self-taught botanist, consultant, and good friend to many people in the US herbal community. Steven's ideas, articles, and, later, his stunning medicinal plant photography have permeated almost every issue of our journal for more than 30 years. In addition to various short pieces about adulteration (e.g., echinacea adulterated with *Parthenium*) and conservation (including a non-bylined article on lady's slipper export controls in issue 15 in 1988) and some reviews, one of his first major articles for *HerbalGram* was a key piece on conservation and sustainability ("Harvesting Medicinals in the Wild: The Need for Scientific Data on Sustainable Yields") in *HerbalGram* issue 24 in 1991. This article was a precursor of a series on this important subject, on which *HerbalGram* has acted as a thought leader in the herb community for four decades. His last article for *HerbalGram,* in issue 132, is one of the most extensive histories about the native American medicinal plant saw palmetto ("The Historical Interplay of Plant Biology, Trade, and Human Interactions with Saw Palmetto"). The feature, which is roughly 15,000 words (including 110 references), spans 32 pages (including Steven's photos), making it the longest article ever published in *HerbalGram*.

Essential *HerbalGram* Departments

Over the years, we've included trenchant articles, book reviews, and other pieces written by a vast array of researchers, health professionals, herbalists, community and industry leaders, and other experts in various disciplines related to botany and ethnobotany, natural products chemistry, pharmacognosy, traditional herbal medicine, phytotherapy, and related scientific disciplines. These are way too numerous to mention here.

Market Reports

A tip of the hat to our good friend, veteran herb and spice trader Peter Landes, the first board chair of AHPA and the current vice president of his family's herb and spice business, KHL Flavors. Peter's working knowledge of the global supply of many botanical materials made for compelling reading in his series of Market Reports, which dealt with environmental, economic, and political developments that impacted the availability (often the scarcity) of herbs and spices in the global market, their price fluctuations, and other market-related information. Peter wrote Market Reports (occasionally with industry veteran Jim Adelson) from issue 2 in 1983 until his final report in issue 47 in 1999. These reports evolved into *HerbalGram*'s annual Herb Market Reports. The most recent iterations of the reports have been co-authored and compiled by *HerbalGram* Managing Editor Tyler Smith and are among the most-cited articles in *HerbalGram* each year (e.g., in medical journals, trade publications, commercial market reports from other sources, and more). We began publishing annual Herb Market Reports in 2006 and, in *HerbalGram*'s 40-year history, have published more than 100 articles in the Market Report department. We are deeply grateful to our friends at *Nutrition Business Journal* and SPINS (and previously to market research company IRI) for their collaborations on these market reports over the years.

Herb Profiles

Another of *HerbalGram*'s popular article series is our Herb Profiles. ABC Special Projects Director Gayle Engels, who has been with ABC since 1995, initiated this series of literature reviews on specific herbs. Originally, we decided to place them at the beginning of each issue so that readers could delve into herbal information before seeing the table of contents. Eventually, our good friend (and now president of the ABC Board of Trustees) Josef Brinckmann co-authored these profiles with Gayle, until he was aided by another friend and colleague, medicinal plant expert and consultant Thomas Brendler, PhD. Since issue 130 (Summer 2021), the profiles have been written by Marisa Williams, ND, RH (AHG), senior scientist, botanist, and project technical leader at Traditional Medicinals (TM), the largest medicinal tea company in the United States, and Josef, who is also research fellow of medicinal plants and botanical supply chain at TM. ABC is deeply grateful to TM for indirectly underwriting these profiles since Josef, Thomas, and Marisa have produced these profiles on a volunteer basis. (Many or most of the profiled herbs are *not* ingredients in TM's tea blends.) To date, *HerbalGram* has published around 70 of these profiles.

In Memoriam

Probably no department of *HerbalGram* is more important or receives more comments from our readers than the In Memoriam section, where we honor the lives of people who have come and gone: people who have made significant contributions to the study of herbs, medicinal plants, and fungi and the numerous scientific disciplines related to their research, as well as the practice of healing using these natural substances. Over the years, many of our readers have told me that as soon as they receive the latest issue of *HerbalGram* in the mail, they immediately open it up to the back, where tributes honor the lives of these important people. We consider it a responsibility and an honor to publish these biographies and provide information on and insights into their lives and, typically, remembrances from some of their friends and colleagues. We have memorialized more than 300 people whose impacts on the fabric of our modern herbal movement warrant recognition.

A quick acknowledgement to the excellent work of the entire *HerbalGram* editorial team for these tributes. These are written and edited mainly by Associate Editor Hannah Bauman and fellow staff members Tyler Smith and Connor Yearsley. (Hannah is the section editor for the In Memoriam and Book Reviews departments and managing editor of ABC's monthly newsletter, HerbalEGram.)

Key Areas of *HerbalGram* Coverage

Literature Reviews

In addition to our Herb Profile series, *HerbalGram* literature reviews provide extensive information on specific herbs to create more public, academic, professional, and industry awareness about these herbs. These include an extensive 24-page ethnobotanical cover article on kava (issue 39 in 1997), a detailed cover article on rhodiola (issue 56 in 2002), a deep-dive cover article on rooibos (issue 59 in 2003), and many other articles on increasingly popular, beneficial plants, too numerous to list in this space. We also were honored to support our good friend Roy Upton, the founder and president of the American Herbal Pharmacopoeia (AHP), by publishing AHP's first monograph, which was on St. John's wort, as a special insert in issue 40 in 1997.

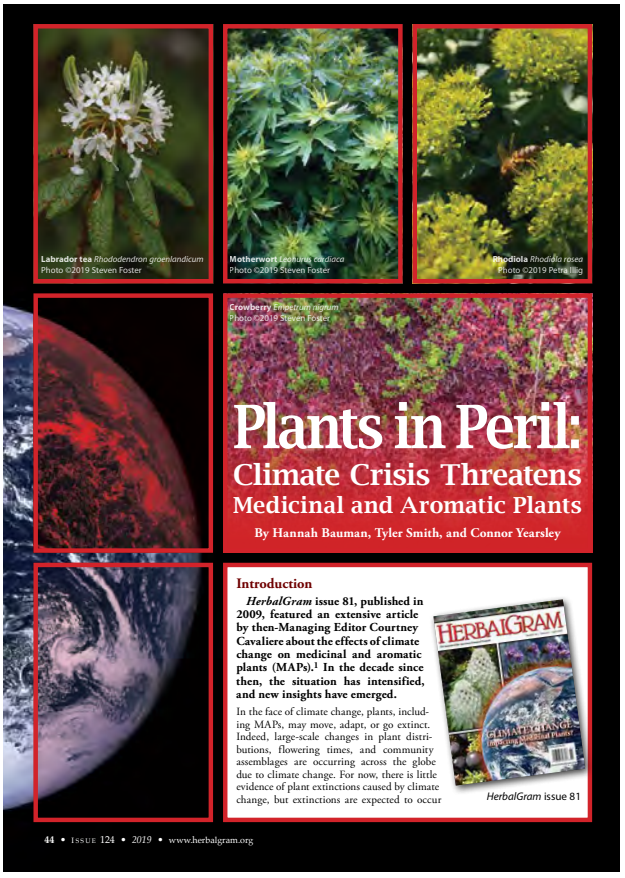
Traditional Medicine

While ABC is a decidedly science-based organization, we have profound respect for traditional medicine systems, including those that are practiced in many Indigenous societies. Over the decades, our articles have described historical and ethnobotanical traditions of herb use in many parts of the world (except, of course, Antarctica). Space limitations do not allow for more elaboration on this intriguing and important area.

Conservation and Climate Change

Our extensive coverage of medicinal plant conservation helped set the stage for ABC's Sustainable Herbs Program. For example, when the international conservation treaty CITES listed goldenseal in Appendix II, which controls goldenseal's global trade, we published Joy Bannerman's cover article ("Goldenseal In World Trade: Pressures and Potentials") in issue 41 in 1997. In issue 119 in 2018, we revisited goldenseal's conservation status in an extensive

Feature article from *HerbalGram* issue 124 (Winter 2019): "Plants in Peril: Climate Crisis Threatens Medicinal and Aromatic Plants"



16-page cover article ("Protecting Goldenseal: How Status Assessments Inform Conservation") by Leah Oliver and Danna Leaman, PhD. The article benefitted from conservation data from two decades of scientific research on the population biology of this highly prized North American medicinal plant.

Issue 81 in 2009 included a cover article ("The Effects of Climate Change on Medicinal and Aromatic Plants") by former Managing Editor Courtney Cavaliere on the effects of climate change on herbs and medicinal plants. As far as we know, this was the first extensive article on this important subject. Ten years later, in issue 124 in 2019, our editorial team (Tyler Smith, Hannah Bauman, and Connor Yearsley) produced a 16-page follow-up to what was becoming and still is an increasingly worrisome concern, but this time "Climate Change" was replaced with "Climate Crisis" in the headline ("Plants in Peril: Climate Crisis Threatens Medicinal and Aromatic Plants"). Much of the issue was devoted to how the incontrovertible climate crisis is affecting and will affect the quality and availability of wild and cultivated medicinal plants.

Legal and Regulatory Updates

Over the years, we devoted a considerable amount of our focus to the legal and regulatory framework for herbs in the United States, especially in the 1980s and 1990s. *HerbalGram* covered the lack of a rational and appropriate policy and inadequate implementation of existing regulations at the US Food and Drug Administration (FDA) at the time. Despite some criticism, the Dietary Supplement Health and Education Act of 1994 (DSHEA) gave herbs a significant degree of "safe harbor" from irrational regulation by an agency that, at the time, had an adversarial view toward botanicals. Since the passage of DSHEA, many media outlets and experts in conventional medicine have continually decried the "unregulated" or "underregulated" herb industry. The FDA and the Federal Trade Commission regulate herbal dietary supplements in numerous ways. We published two seminal articles on this subject: "Regulation in the Herb Market: The Myth of the 'Unregulated Industry,'" by Bill Soller, PhD, in issue 49 in 2000 and "The Regulated Dietary Supplement Industry: Myths of an Unregulated Industry Dispelled," a more extensive follow-up article that Bill co-authored with regulatory attorney Holly Bayne and pharmacy researcher Christopher Shaheen, in issue 93 in 2012.

These are just some examples of the breadth and depth of subjects covered in *HerbalGram* over the past four decades. Space does not allow a fuller discussion, but, as noted above, this issue and the next three issues will continue to explore some of the relevant and in some cases, groundbreaking, articles published in *HerbalGram*.

The *HerbalGram* Editorial Process

Layout and Photography

HerbalGram is not just about information in text and linear format, as important as that is to the central purpose of ABC's nonprofit research and educational mission. When one views an issue of *HerbalGram*, one sees what might be considered a hybrid publication — part scientific journal (due to the extensive referencing, peer review, and topics) and part consumer publication — with significant space devoted to beautiful color photography and graphics. To some extent, we also incorporate elements of a trade magazine, with articles that deal with market conditions, supply, industry issues, as well as legal and regulatory developments, sometimes in significant detail. Since *HerbalGram* morphed from newsletter to magazine under ABC's aegis in issue 18/19, it has included considerable imagery, with thanks to art directors Ira Kennedy, Ginger Hudson-Maffei, Natalie Reittinger, Sean Barnes, and the multi-talented Matt Magruder, who has been with ABC since 2006. Matt covers many bases at ABC. As ABC's current art director, he handles not only the layout of *HerbalGram*, but the art and layout needs of the entire organization, which are extensive. He also handles negotiations with ABC's printer and has now assumed the role of publisher.

Peer Review

HerbalGram has evolved into an extensively peer-reviewed publication, frequently going beyond the requirements for peer review at most medical, pharmacy, nutrition, and science journals. While most of these publications usually require peer review from two expert reviewers, at ABC, depending on the article, we often set a higher bar. Most of our feature articles are reviewed by four, five, or sometimes 8 or more experts in the fields of botany and ethnobotany, medicinal plant history, phytochemistry, pharmacognosy, clinical medicine, or other subjects relevant to the article. Many of these reviewers are valued friends and colleagues who are members of the ABC Advisory Board, while some reviewers are requested based solely on their expertise in a particular subject.

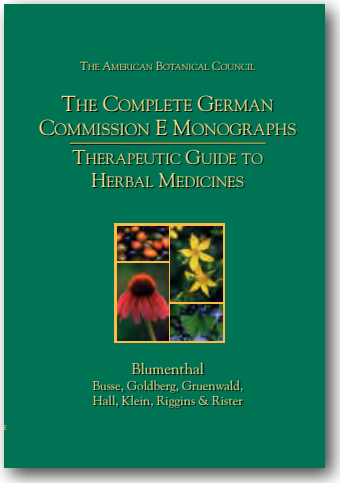
HerbalGram has evolved into an extensively peer-reviewed publication, frequently going beyond the requirements for peer review at most medical, pharmacy, nutrition, and science journals. While most of these publications usually require peer review from two expert reviewers, at ABC, depending on the article, we often set a higher bar. Most of our feature articles are reviewed by four, five, or sometimes 8 or more experts in the fields of botany and ethnobotany, medicinal plant history, phytochemistry, pharmacognosy, clinical medicine, or other subjects relevant to the article.

The reason for this rigor is our educational mission. We knew at the outset that many people in the conventional medical and scientific fields have a low opinion of herbs and herbal medicine and can be dismissive of any suggestion for the use of herbal medicinal products for selfcare or in clinical practice. Much of the herbal literature at the time was based on ethnobotany and folklore, with poorly substantiated statements of therapeutic activity. Often, the literature simply repeated previous publications, with little to no attempt to confirm the information — what Steven Foster (and others) referred to as "bibliographic echo." So, we always have tried to document the source of the information in our articles and have knowledgeable people review draft articles before they are published. We insist that the information we publish, even assertions made in occasional opinion pieces, be accurate and reliable.

HerbalGram as the Genesis of Many ABC Programs and Publications

Over the past four decades, *HerbalGram* articles on some topics have evolved into larger ABC publications or projects. For example, *HerbalGram*'s reporting on growing clinical trial publications and related scientific topics led to ABC's HerbClip summaries and critical reviews, which started in 1992. Now, more than 9,000 HerbClips have been published. Coverage of salient clinical research put ABC in a position to acquire the information-rich HerbMedPro (HMP) database from the Alternative Medicine Foundation in 2008. This stimulated the popular Adopt-an-Herb Program, producing revenue that allows HMP to be curated and maintained.

Concerns over the regulation of herbs in the 1980s and 1990s, particularly their overall safety and activities, benefits, and efficacy, led to ABC's translation and publication of *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines* in 1998. Many people in the field still use this book as an authoritative reference. This also helped generate ABC's pharmacy continuing education courses, one of the first continuing education-accredited courses on the safety and benefits of herbs and medicinal plants for the pharmacy profession in the United States. Articles



The ABC HERBALGRAM40 Project and Fund

In recognition of the 40th anniversary of *HerbalGram* and ABC's 35th anniversary, ABC has established the *HerbalGram*40 Project and Fund. This project will review *HerbalGram* and the organization's other research and educational publications and programs as well as input from our members to best determine how to move forward for more service to the growing community of millions of people worldwide who are interested in botanically based natural medicines. We invite feedback from ABC members and others to inform us of how we are seen by our many varied stakeholders and how they would like to see ABC continue its unique nonprofit mission into the future. Throughout the coming year, we will be issuing more information on this 40th anniversary process in forthcoming issues, emails, social media, and more.

I've had conversations about this anniversary with many friends and colleagues in the herbal community. The responses have been overwhelmingly positive. Some people have said they appreciate that ABC hasn't simply issued an "*HerbalGram* Is Now 40" press release but is using this theme to empower and enhance the organization for continued success in the future.

If you are an ABC member, you are part of a diverse community of people in the United States and approximately 80 other countries worldwide. This includes researchers in academia, industry, and government; educators at universities and other teaching institutions; health professionals (physicians, pharmacists, nutritionists and dietitians, naturopaths, herbalists, acupuncturists, and others); industry members (growers, collectors, processors, importers, distributors, manufacturers, consultants, and others); attorneys and regulatory consultants; government agencies; universities, public and private libraries, and others; nonprofit organizations (medical and research groups, trade associations, and others); and more.

We invite your ideas. Please send them to herbalgram40@herbalgram.org.

To learn more, scan the QR code or visit:
www.herbalgram.org/get-involved/herbalgram-40th-anniversary/

on herbs and plant-based drugs from the Amazon rainforest led ABC to start its "Pharmacy from the Rainforest" ethnobotany ecotours in the Peruvian Amazon in 1994. These were the first continuing education-accredited tours that educated pharmacists and other health professionals on the medicinal flora of the Amazon.

Similarly, articles on the conservation of wild medicinal plants and the need for commercial cultivation put ABC in a position to team up with anthropologist Ann Armbrecht, PhD, to form ABC's Sustainable Herbs Program in 2018.

Articles on adulteration and fraud in the botanical market set the stage for ABC's creating and leading the ABC-AHP-NCNPR Botanical Adulterants Prevention Program (BAPP), which has published more than 80 freely accessible peer-reviewed documents designed to support the global herb industry to properly authenticate botanical ingredients and avoid purchasing, reselling, and using adulterated ingredients. We are most grateful for the leadership of BAPP Director Stefan Gafner, PhD, who is also ABC's chief science officer, for his 10 years of laudable scientific work at ABC and BAPP.

As part of our *HerbalGram*40 celebration (see sidebar on page 6), we plan to provide readers and the extended herb community with a foundation of the history of *HerbalGram*, starting with the editorial timelines in this and the next three issues. These timelines provide an annotated listing of some key articles and milestones. In this issue, the timeline explores the first decade (1983–1993). Our profound thanks to *HerbalGram* Managing Editor Tyler Smith, who reviewed 137 issues of *HerbalGram* to create these detailed timelines.

In Conclusion (for now)

There is so much more to write about. It's a challenge to compress 40 years of publications into a single "Dear Reader" article, even such an expanded one. But I must stop somewhere, with sincere apologies to any friends, colleagues, and other contributors whom I have not mentioned here.

I will always cherish the early days of *HerbalGram*, as it became the springboard for the founding of ABC and the next phase of the unfolding of the *tao* of my herbal journey. I have profound gratitude for those who were instrumental in the creation and early development of this publication. Many knowledgeable and passionate people have shared their experiences and expertise in these pages, and they have made incalculable contributions to the lives of many others at various stages of the herbal path.

And, of course, my gratitude goes to the team who has consistently produced each quarterly issue of *HerbalGram* in the past decade: Art Director and Publisher Matt Magruder, Managing Editor Tyler Smith, Associate Editor Hannah Bauman, and inveterate writer and Assistant Editor Connor Yearsley, whose extensive, deep-dive feature articles have been cover stories in eight issues. Connor has been with ABC since 2015.

On the 40th anniversary of *HerbalGram*, we also note a few other ABC milestones: ABC will observe its 35th anniversary in November 2023, and it has been 25 years this summer since ABC moved into its historic 2.5-acre headquarters at the Case Mill Homestead in East Austin. Finally, on a personal note, this summer marks the beginning of my 50th year of engagement in the herb and medicinal plant community.

As *HerbalGram* and ABC begin their next decades of service to the community of herb, medicinal plant, and fungi enthusiasts, and as ABC and *HerbalGram* continue to grow to serve and support this global group, I invite you to continue this journey of exploring and responsibly employing natural medicine with us. We are committed to making the world more robustly healthy, naturally!

Mark Blumenthal

American Botanical Council

Mark Blumenthal
Founder, Executive Director
HerbalGram Editor-in-Chief

Ann Armbrecht, PhD
Sustainable Herbs Program Director

Hannah Bauman
HerbalGram Associate Editor

Toby Bernal
Head Gardener

Caroline Caswell
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HERBALGRAM
The Journal of the American Botanical Council



Echinacea purpurea
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58 40 Years of *HerbalGram*
Part 1: The First 10 Years (1983–1993)

By ABC Staff

To mark *HerbalGram*'s 40th anniversary, the ABC editorial staff has produced a four-part timeline of the publication's four decades in print. Part 1 of this series looks back at notable articles and milestones from the first 10 years of *HerbalGram* and explores its evolution from an eight-page, black-and-white newsletter in the summer of 1983 (issue 1) to a redesigned, full-color magazine in the summer of 1993 (issue 29). In addition to highlighting *HerbalGram*'s structural and visual changes, Part 1 of the timeline notes the introduction of several departments and article types that remain essential components of the magazine, including Research Reviews in issue 1, herbal literature reviews (the precursor to Herb Profiles) in issue 17, and In Memoriam articles in issue 20. Early articles about medicinal plant research, traditional medicine, conservation, adulteration, and food as medicine reflect the breadth of coverage that *HerbalGram* readers have come to expect from the publication. The first decade of *HerbalGram* also includes regular updates on regulatory developments in the 1980s and early 1990s that hint at growing tension between the herb industry and federal regulators leading up to the historic passage of the Dietary Supplement Health and Education Act of 1994 (DSHEA), which will be discussed in Part 2 of this series.

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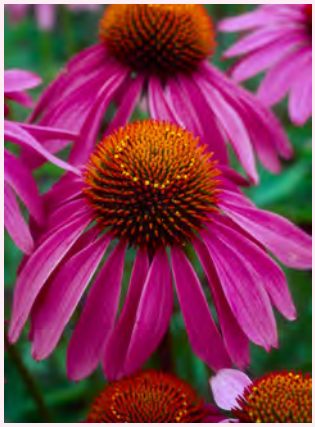
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Echinacea purpurea
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Echinacea purpurea

Family: Asteraceae

By Marisa Williams, ND, RH (AHG), Aaron Jenks, PhD, and Josef Brinckmann

Editor's note: *In observance of* HerbalGram*'s 40th anniversary, ABC has chosen* Echinacea purpurea *as the subject of this issue's Herb Profile. The flower of* E. purpurea *is featured in ABC's logo.*

INTRODUCTION

Echinacea purpurea is a member of the daisy (Asteraceae) family and the genus *Echinacea,* which typically is considered to include nine[1,2] or 10 species.[3] The standardized common name for this species is "*Echinacea purpurea*" according to the American Herbal Products Association's (AHPA's) *Herbs of Commerce*, 2nd ed.[4]; other common names are "eastern purple coneflower"[2,5] or "purple coneflower."[6] The genus *Echinacea* is endemic to North America, and *E. purpurea* is native to the Northeast, Southeast, and Midwest regions of the United States, with populations being most common in the Ozarks and along the Mississippi River and Ohio River valleys.[1]

Like all members of the genus, *E. purpurea* is a long-lived, herbaceous perennial. It has fibrous roots and grows from 60 to 180 cm (24–71 in) tall.[7] Throughout the late summer and fall, *E. purpurea* produces showy, composite "flowers," which actually are not flowers at all but head-type inflorescences composed of many small ray and disc flowers called florets.[1,8,9] The inflorescence resembles a cone, which



Echinacea purpurea
Photo ©2023 Steven Foster Group

explains the common name "coneflower." When Swedish botanist Carl Linnaeus (1707–1778) first described this species in *Species Plantarum* in 1753,[8] he placed it in the genus *Rudbeckia* and gave it the specific epithet *purpurea*, meaning "purple," due to the color of the ray florets of the inflorescence. German botanist Conrad Moench (1744–1805)[9] placed the species in a separate genus, *Echinacea*, due to the spiny nature of the head, specifically the central disc florets. *Echina-* is from the Greek ἐχῖνος, meaning "hedgehog," "sea urchin," or something similarly prickly or spiny.[10]

Echinacea purpurea and other species of the genus are important medicinal plants that Native Americans have used in the treatment of a wide variety of illnesses and health conditions.[11] While *E. angustifolia* has greater documented traditional use[12] and was used as early as the late 19th century by physicians of European descent,[13,14] *E. purpurea* is now the primary species of commerce[15] because it is cultivated more easily.[16] After only three years, roots of cultivated *E. purpurea* can be harvested at 1,200 pounds per acre.[14] Broad awareness of *E. purpurea*'s potent medicinal effects and later commercialization emerged in the mid- to late-20th century.[17] Historically wild-harvested, it now is cultivated widely outside its native range for the international natural products market. It typically is sold as a dietary supplement component in the United States and as an herbal drug for use in medicinal products in other countries. Generally promoted as an immune-supportive botanical, *E. purpurea* is sold in a wide variety of forms (e.g., tinctures, teas, capsules, and tablets).[18,19] While traditional use indicates preparations of *E. purpurea* root, in recent decades the flowers and other aerial parts of *E. purpurea* also have been shown to be pharmacologically active. Products containing only aerial parts or their fresh-pressed juice are available commercially, particularly in Europe, where many clinical trials have been conducted.[19,20]

Unlike other *Echinacea* species, the commercial supply of both *E. purpurea* flowering aerial parts and root is derived almost entirely from cultivation. According to an AHPA survey, during the five-year period from 2013 through 2017, the organization's member farms produced an annual average of about 174,781 lbs. (79,279 kg) of cultivated *E. purpurea* roots (dry weight) and 130,068 lbs. (58,998 kg) of aerial parts. A minor amount also was reported as wild collected in the same five-year period. In 2017, AHPA members also reported harvesting a total of 255,924 lbs. (116,085 kg) of fresh *E. purpurea* aerial parts and a total of 8,044 lbs. (3,649 kg) of fresh roots.[15] In North America, much of the supply originates from certified organic farms in the Pacific Northwest (British Columbia, Oregon, Washington) but also the Midwest (Michigan, Minnesota, Wisconsin) and East Coast region (Maine, New York, North Carolina, Vermont), among other states.[21] The commercial supply in Europe is obtained mainly from farms in Germany, but also France, Italy, the Netherlands, Spain, Switzerland, and Ukraine, among others (J. Brinckmann personal communication with A. Jenks, March 25, 2023).



Echinacea purpurea
Photo ©2023 Steven Foster Group

HISTORY AND CULTURAL SIGNIFICANCE

Many Native American groups have used *Echinacea* species (*E. angustifolia*, *E. pallida*, and *E. purpurea*) medicinally for centuries, predating European awareness of them,[11,12] but the earliest known documentation is by Europeans. Linnaeus first described *E. purpurea* in the mid-18th century,[8] but it had been brought into cultivation in Europe more than 50 years earlier by Virginian naturalist John Banister (1650–1692), according to English botanist William Townsend Aiton (1766–1849),[22] and possibly earlier. The first known record of the medicinal use of *E. purpurea* appears in 1762 and mentions its external use for saddle sores on horses.[18,23] Early European references also mention its reported ability to cure syphilis[24] and describe it as pungent,[25] aromatic, and carminative (flatulence-relieving).[26] However, the identity of the *Echinacea* species in these early references is debated.[18,27-29]

Native Americans are the primary sources of traditional knowledge of the medicinal uses of *Echinacea* species. The documented ethnobotanical history of *E. purpurea* is relatively sparse, and its traditional medicinal use by Native Americans is overshadowed by the greater volume of recorded uses of *E. angustifolia*.[12] The preponderance of literature regarding *E. angustifolia* continued through the mid-20th century.[17] Despite many documented Native American names for *E. angustifolia*,[11,18,30] there appear to be no known Indigenous names for *E. purpurea*. Nevertheless, the cultural significance of *Echinacea*, including *E. purpurea*, should not be underestimated. *Echinacea* is considered the most important and widely used medicinal plant in the Great Plains and Midwestern regions of the United States.[5,31] *Echinacea* roots dated from 1600 to 1800 were excavated from a Pawnee earthen lodge near Guide Rock, Nebraska.[32]

Explorers and settlers of the Great Plains encountered many groups of Native Americans who widely used *Echinacea* species and revered the plants for their ability to aid in the healing of many diseases. US government-sponsored explorers Meriwether Lewis (1774–1809) and William Clark (1770–1838) observed the use of *Echinacea* species in 1804 and 1805 during their travels through the region.[5]

As with most plants traditionally used as medicine by Native Americans, the healing power of *Echinacea* cannot be separated from its spiritual power. In some traditions, the "Spirit" initiates healing and, through the agency of the plant, can promote wellbeing and provide the power to heal. It is thus considered important to attend all harvesting, processing, and ingestion of *Echinacea* with decorum (i.e., ceremony and reverence) to render the plant most efficacious.[5,33]

Besides the relatively well-known *E. angustifolia*, the medicinal use of other *Echinacea* species is far less documented,[11,12] perhaps due to patterns of European settlement. *Echinacea angustifolia* is found from the Mississippi River to the Rocky Mountains, while the range of *E. purpurea* is primarily east of the Mississippi, along the Ohio River valley and Appalachia.[18] Therefore, due to earlier European settlement and displacement of Native Americans and the resultant loss of traditional knowledge, documented traditional medicinal uses of *E. purpurea* are extremely limited.[12]

Traditional use of *E. purpurea* by Native Americans is documented for only three groups: the Delaware, Choctaw, and Yuchi.[12] An elder of the Delaware tribe reported that *E. purpurea* was used medicinally and called "horse-hobble weed."[34,35] An infusion of the root was used to treat gonorrhea, and it was claimed that even difficult cases of venereal disease could be cured in seven days with this infusion. *Echinacea purpurea* also was reported to be taken with staghorn sumac (*Rhus typhina*, Anacardiaceae) for venereal disease, and that the afflicted individual should drink ample water and avoid eating greasy or sour foods. The Delaware elder also reported that the Yuchi used *E. purpurea* for gonorrhea,[34] but it is unclear if this was reported accurately.[5]

One of the earliest records of medicinal use of *E. purpurea* was by American physician and naturalist Gideon Lincecum (1793–1874), who lived in Mississippi and Georgia between 1818 and 1848.[18] He recorded his observations of many medicinal plants and their uses and made herbarium specimens of his collections.[36] One of these was *E. purpurea* root and its use by the Choctaw.[37] After observing the Choctaw chew the root and swallow the resultant saliva over extended periods of time (it is a potent sialagogue, causing profuse salivation) to treat cough and dyspepsia, Lincecum later reported that a tincture of the root was effective for treating those same symptoms.[33,37] Even so, this went widely unnoticed by the settlers and others of European descent in the Great Plains and the Midwest, and because they were largely unaware of *E. purpurea*, they did not begin to use it widely for its medicinal and health benefits until the late 19th century.

Around 1871, a German patent medicine salesman, H.C.F. Meyer, from Pawnee City, Nebraska, began popularizing *Echinacea*.[5,11] In 1885, Meyer reportedly sent samples to Lloyd Brothers, Pharmacists Inc., who identified the samples as *E. angustifolia* in 1886.[18,38] *Echinacea angustifolia* was introduced to the medical profession in 1887,[39] after John Uri Lloyd (1849–1936) sent some preparations of it to the well-known Eclectic physician John King (1813–1893). Although King had previously noted the medicinal value of *E. purpurea* (then called *Rudbeckia purpurea*) for syphilis,[40] it was not until his endorsement of *E. angustifolia*[41] that the Eclectics and other physicians began to use *Echinacea*.[11,18,33]

Through the Eclectics' adoption and medicinal use of *E. angustifolia*, its popularity spread, and it came to be known outside of Native American healing traditions. In 1916, it was included in the fourth edition of the *United States National Formulary* (NF).[42] Homeopathic doctors also had begun using *E. angustifolia* and introduced its medicinal use to Europe.[43,44] German medical journals began reporting on its medicinal value,[45] and due to a scarcity of the herb,

German physician Gerhard Madaus (1890–1942) traveled to the United States to bring back plant material to cultivate. He was unable to obtain cuttings from any botanical gardens and instead purchased seeds from Vaughan's Seed Store in Chicago. Upon his return to Germany and the germination of the seeds, it was discovered that he had brought back *E. purpurea* seeds, not *E. angustifolia* seeds as intended. However, this proved fortuitous because *E. purpurea* was easier to cultivate, and as a result, by the 1930s, studies on *E. purpurea* were being conducted in Germany.[18]

By 1938, the first known commercial *E. purpurea* product was on the market in Germany, produced by the firm Madaus AG and named Echinacin®. Instead of using the roots (the part traditionally used in North America), this product contained only the flowering aerial portions of the plant, expressed as a juice and stabilized with alcohol. A flurry of research on Echinacin and other preparations containing *E. purpurea* aerial parts commenced. These products included injectable and topical preparations, in addition to ingestible products. From the 1930s to the present, research on *E. purpurea* has continued in Germany, and hundreds of studies have been published.[18]

By 1984, Echinacin was sold in the United States, and thereafter products containing *Echinacea* roots and aerial parts were available internationally.[18,29] This use is reflected by the inclusion of both aerial parts and roots of *E. purpurea* in both the *European Pharmacopoeia* (PhEur)[46,47] and the *United States Pharmacopeia* (USP).[48,49] It should be noted that before the late 1980s, the identification of *Echinacea* used in European research should be questioned due to adulteration and frequent misidentification at the species level (i.e., *E. angustifolia* was probably *E. pallida*).[50]

Today, Native Americans continue to use *E. purpurea*, which has also been widely adopted by Western medicine and incorporated into many other traditional systems of healing on a global scale.

CURRENT AUTHORIZED USES IN COSMETICS, FOODS, AND MEDICINES

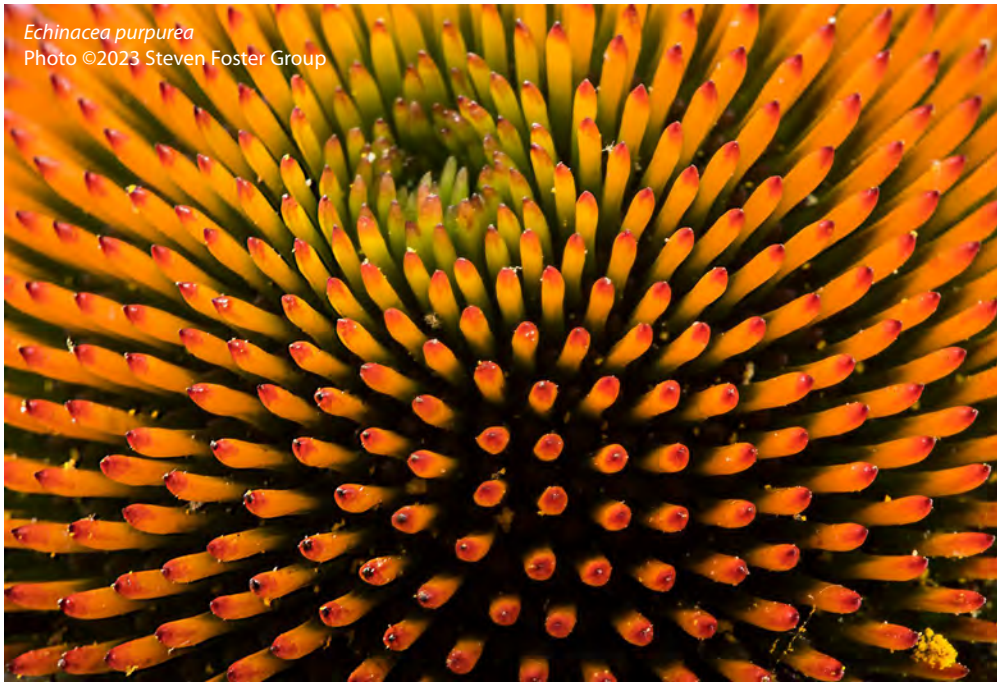
Although *Echinacea* root (rhizome and root of *E. angustifolia* and/or *E. pallida*) was an official drug monographed in the NF of the United States from the fourth edition (NF IV 1916)[42] until its omission from the ninth edition (NF IX 1950),[51] the official compendial history of *E. purpurea* did not begin until the late 20th century.

In March 1989, the Commission E of the German Federal Health Agency (BGA) published a labeling standard monograph for authorized medicines containing preparations of the fresh pressed juice (liquid or dried juice) of the flowering aerial parts of *E. purpurea*. It was indicated for internal use as a "Supportive therapy for colds and chronic infections of the respiratory tract and lower urinary tract, and topical application for treatment of poorly healing wounds and chronic ulcerations."[52]

In June 1997, Canada's Therapeutic Products Directorate (TPD) published an "Echinacea Root" labeling standard monograph, applicable to licensed medicines containing rhizome or root of *E. angustifolia*, *E. pallida*, and/or *E. purpurea* as an active ingredient, in dosage forms of herbal tea infusion or decoction, fluidextract (1:1) or tincture (1:5), powder or extract, in capsules or tablets. The permissible indications were "For relief of sore throat due to cold" or "For the symptomatic relief of mild skin conditions and eruptions."[53]

WHO Monographs on Selected Medicinal Plants, Volume I (World Health Organization, 1999), includes a monograph for *E. purpurea* flowering aerial parts. This monograph could be used as the basis of a quality specification and provides descriptions, tests, and limits for determining the botanical identity, composition and content, and purity of the raw material to be prepared as expressed juice or semi-solid preparations containing at least 15% pressed juice. The WHO's *Echinacea* root monograph, however, did not include *E. purpurea*.[54]

With the passage of Canada's Natural Health Products Regulations of 2003, pre-marketing authorization and labeling of traditional herbal medicinal products (THMPs) transferred from Health Canada's TPD to the new Natural Health Products Directorate (NHPD), which published a revised *Echinacea* labeling standard monograph in 2004.[55] In 2018, the current, revised version of the monograph was published by the Natural and Non-prescription Health



Echinacea purpurea
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Products Directorate (NNHPD), to which the NHPD was renamed. The NNHPD *Echinacea purpurea* monograph is a guide for the preparation of product license applications and labels for market authorization. The monograph includes the flowering tops in dried or juice form, as well as the dried root and/or dried root and herb tops prepared in non-standardized dosage forms, specifically dry extract, fluidextract or tincture, herbal tea decoction or infusion, or powder.

Acceptable indications for use of licensed *E. purpurea* natural health products (NHPs) in Canada include "Traditionally used in Herbal Medicine to help relieve cold symptoms," "Traditionally used in Herbal Medicine to help relieve symptoms of upper respiratory tract infections," "(Traditionally) used in Herbal Medicine to help fight off infections, especially of the upper respiratory tract," "Supportive therapy in the treatment of upper respiratory tract infections (e.g., common colds)," "Helps to relieve the symptoms and shorten the duration of upper respiratory tract infections," and "Traditionally used in Herbal Medicine to help relieve symptoms of colds and upper respiratory tract infections."[56]

A quality standard monograph for *E. purpurea* root entered the 26th revision of the USP (USP 26) in 2003[49] and another for *E. purpurea* aerial parts entered the 29th revision (USP 29) in 2006.[48] Monographs also were developed for processed forms such as powder and dry extract, as well as the dosage forms of capsules and tablets. Also in 2006, quality standard monographs for both "Purple Coneflower Herb" (Echinaceae purpureae herba) and "Purple Coneflower Root" (Echinaceae purpureae radix) entered the sixth supplement to the fifth edition of the PhEur (PhEur 5.6).[57] These monographs served as the basis for quality specifications of *E. purpurea* starting materials that are to be prepared as active ingredients of herbal medicinal products for marketing in the European Union (EU).

In 2008, the European Medicines Agency (EMA) published a labeling standard monograph for "fresh purple coneflower" aerial parts for preparation as expressed juice or dried expressed juice. In 2015, a revised final monograph superseded that monograph. If used as the active ingredient of a licensed well-established-use herbal medicinal product (WEU-HMP), the permitted indication for oral use is "For the short-term prevention and treatment of common cold." If used as an active ingredient of a registered THMP, the permitted indication for topical use is "For treatment of small superficial wounds."[58]

The EMA's first labeling standard monograph for purple coneflower root was published in 2011 and was superseded by a revised final monograph in 2017. The permitted indications are "THMP for the relief of symptoms of the common cold" (for oral use) and "THMP for the relief of spots and pimples due to mild acne" (for topical use).[59] Two new quality standard monographs entered the 11th edition of the PhEur (PhEur 11.0) in 2022: "Purple coneflower herb expressed juice, stabilised with ethanol" and "Purple coneflower herb expressed juice, stabilised without ethanol."[6]

For use in cosmetic products in the EU, both Echinacea Purpurea Root Extract and Echinacea Purpurea (whole plant) Extract are permitted for moisturizing, skin conditioning, and tonic functions. Echinacea Purpurea Leaf and Root Extract is permitted as an ingredient of cosmetic products for skin-conditioning function, and Echinacea Purpurea Root Water (aqueous solution of the steam distillate obtained from the roots) is permitted for both "skin conditioning — humectant" (increasing the water content of the top layers of the skin) and "skin conditioning — miscellaneous" (enhancing the appearance of dry and/or damaged skin by reducing flaking and restoring suppleness) functions. Echinacea Purpurea Flower/Leaf/Stem (expressed) Juice is permitted for oral care (providing cosmetic effects to the oral cavity [e.g., cleansing, deodorizing, protecting]) function, and Echinacea Purpurea Flower/Leaf/Stem Water (aqueous solution of the steam distillate) is permitted for both fragrance and skin-conditioning functions.[60]

MODERN RESEARCH

Constituents and Pharmacological Effects

The phytochemical constituents and pharmacological effects of both the aerial parts and root of *E. purpurea* are well-researched. The aerial parts contain alkylamides (isobutylamides), caffeic acid derivatives (mostly cichoric acid and caftaric acid), flavonoids, and polysaccharides.[61,62] Roots also contain caffeic acid derivatives (cichoric acid and caftaric acid) and alkylamides (isobutylamides), which are found in higher concentration in the roots[63] compared to the aerial parts. Other constituents in the roots are glycoproteins and polysaccharides.[64] Preparations of *E. purpurea* aerial parts and roots have demonstrated anti-inflammatory,[65,66] antimicrobial,[67,68] antiviral,[69-71] and immunomodulatory properties.[63,72,73] Alkylamides have the ability to bind to cannabinoid receptors,[74] which may explain some therapeutic effects of *E. purpurea*, such as its immunomodulatory properties.[62]

In an animal allergic inflammation model, an *E. purpurea* aerial extract complex demonstrated anti-inflammatory activities. A significant decrease was reported in specific airway resistance in vivo and lower histamine concentrations in vitro.[65] An ethanolic *E. purpurea* root extract and high-alkylamide-containing fractions were evaluated and reported to inhibit both mast cell degranulation (inflammatory cellular tissue response) and calcium influx.[66]

A 65% ethanolic extract of freshly harvested aerial parts with 5% of roots of *E. purpurea* (Echinaforce®; A. Vogel AG; Roggwil, Switzerland) was evaluated for antibacterial (bactericidal) and anti-inflammatory activity via cytokine pathway, with a focus on bronchial epithelial cell cultures and cytokine pro-inflammatory infection responses. Echinaforce inactivated the respiratory bacteria *Streptococcus pyogenes*, *Haemophilus influenzae*, and *Legionella pneumophila*. Less sensitive bacteria in the study included both *Staphylococcus aureus* and *Mycobacterium smegmatis*. Echinaforce inhibited pro-inflammatory

cytokine secretion of interleukin-6 (IL-6) and interleukin-8 (IL-8) in the respiratory bacterial models of *S. pyogenes*, *S. aureus*, *H. influenzae*, and *L. pneumophila*.[67] Additionally, Echinaforce had a normalizing effect on the pro-inflammatory cytokine response of IL-6 and IL-8 in a similar cytokine model specific to skin fibroblasts and the bacterium *Propionibacterium acnes*.[68]

Echinaforce also showed antiviral activity against influenza viral strains in cell culture assays[69] and demonstrated antiviral activity against viruses with membranes.[75] More recently, an in vitro study using Echinaforce also showed antiviral activity against four human coronaviruses (HCoV-229E, SARS-CoV-1, SARS-CoV-2, and MERS-CoV).[70,71]

In a stress-induced immunosuppression model in BALB/c mice, *E. purpurea* (pressed juice powder) demonstrated immune supportive properties, with an increase of NK cell activity and regulation of T lymphocyte subsets (CD^{4+} and CD^{8+} lymphocytes) and cytokine levels.[70,73] In a mouse influenza model, an *E. purpurea* aerial (polysaccharide) extract demonstrated immunomodulatory effects through cytokine modulation in echinacea-treated mice, with a decrease in interleukin-10 (IL-10) and IFN-γ cytokines.[72]

Toxicity

Echinacea purpurea preparations generally are considered to be well-tolerated in humans.[76] In clinical studies of mono-preparations of *Echinacea* species (*E. purpurea*, *E. angustifolia*), adverse events have been reported to be typically mild to moderate.[76]

Authoritative references include contraindications, such as that both internal and external uses of *E. purpurea* are cautioned in individuals with hypersensitivity to plants in the Asteraceae family. Individuals with autoimmune or other immune system disorders also are cautioned against *E. purpurea* use,[61,64] and atopic individuals should consult with their health care practitioner before using echinacea-containing products.[61]

Human Clinical Studies

Multiple meta-analyses and reviews have assessed the efficacy and safety profile of *Echinacea* species in the prevention and/or treatment of symptoms related to the common cold and respiratory tract infections (RTIs).[77-81] These reviews primarily evaluated *E. purpurea* and *E. angustifolia*. However, these meta-analyses and clinical studies used products made from various plant parts (e.g., aerial parts and/or roots) and different herbal extract preparation methods, leading to different phytochemical compositions.[82] Despite these limitations, a 2007 meta-analysis concluded that supplementation with *Echinacea* species lowered the onset of the common cold by 58% and decreased the cold duration time by one to four days.[78] A separate meta-analysis published in 2015 found the risk of recurrent common colds and RTIs decreased with the use of *Echinacea* compared to placebo, and ethanolic extracts appeared to demonstrate better effects.[80] *Echinacea* also demonstrated effectiveness in prevention of and supportive treatment for common cold infections, according to a 2021 review article.[70]

Clinical research performed in the past decade specifically with Echinaforce has provided more data on *E. purpurea*'s role in the prevention and treatment of RTIs.[83] Large clinical trials have showed significant benefits, with the reduction of episodes of the common cold and participants reporting less associated co-medication use.[84] Echinaforce in the form of a hot drink in combination with European elder berry (*Sambucus nigra*, Viburnaceae) was reported to be as effective as oseltamivir (Tamiflu®; Roche; Switzerland) with early treatment of influenza symptoms and demonstrated a better safety profile.[85]

Other *Echinacea* studies have focused on inflammatory dermatological conditions such as atopic dermatitis (a type of eczema). A clinical study of people with eczema demonstrated that a topical *E. purpurea* root extract (CO_2-extraction) water-in-oil (W/O) emulsion improved skin symptoms and improved epidermal lipid skin barrier function.[86]



Echinacea purpurea
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ADULTERATION AND SUBSTITUTION

Current quality standard monographs in the USP 45[87] for *E. purpurea* aerial parts and *E. purpurea* roots provide a thin-layer chromatography (TLC) identification method, with the presence of cichoric acid and the absence of echinacoside as indicators. A quality standard monograph in the current PhEur 11.0[6] for "Purple coneflower root" provides identification methods to differentiate *E. purpurea* root from the roots of other *Echinacea* species as well as the known historical adulterant *Parthenium integrifolium*, also in the Asteraceae family. The American Herbal Pharmacopoeia's *E. purpurea* root monograph[28] reviewed macroscopic and microscopic diagnostic differences between commercial *Echinacea* species and *P. integrifolium*. According to Steven Foster's article "A Brief History of Adulteration of Herbs, Spices, and Botanical Drugs," in *HerbalGram* issue 92, the adulteration of *Echinacea* with *P. integrifolium* has been documented since the early 1900s, during the Eclectic medical era.[88]

Today, *E. purpurea* is not a commonly adulterated species,[29] as most of the commercial supply of both *E. purpurea* flowering aerial parts and root is primarily cultivated. However, Gafner et al (2023),[89] in a review article published in the *Journal of Natural Products*, noted that whole extract preparations from both the herb and root may be adulterated by diluting the ingredients with substantial amounts of undisclosed excipients.[89]

SUSTAINABILITY AND FUTURE OUTLOOK

Echinacea purpurea is not subject to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)[90] and not listed in Canada's Species at Risk Act[91] or the US Endangered Species Act.[92] It also has not been assessed according to International Union for Conservation of Nature (IUCN) Red List categories and criteria. At the US state level, *E. purpurea* has a state-protected status of "endangered" in Florida and "probably extirpated" in Michigan.[93] The nonprofit organization NatureServe, a source for North American biodiversity data, assessed and ranked the conservation status of *E. purpurea* in the United States at N4 ("Apparently Secure — At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors"). The NatureServe ranking of *E. purpurea* in Canada is NNA ("Not Applicable — A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities").[94] Another non-profit organization, the United Plant Savers (UpS), lists "Echinacea — *Echinacea* spp." as at-risk. Using its At-Risk Assessment Tool, UpS assigned an overall at-risk score of 44 (out of 80).[95] However, Castle et al (2014) wrote that UpS' score of 44 was limited to only *E. angustifolia* and that the ranking was not meant for all *Echinacea* species collectively.[96]

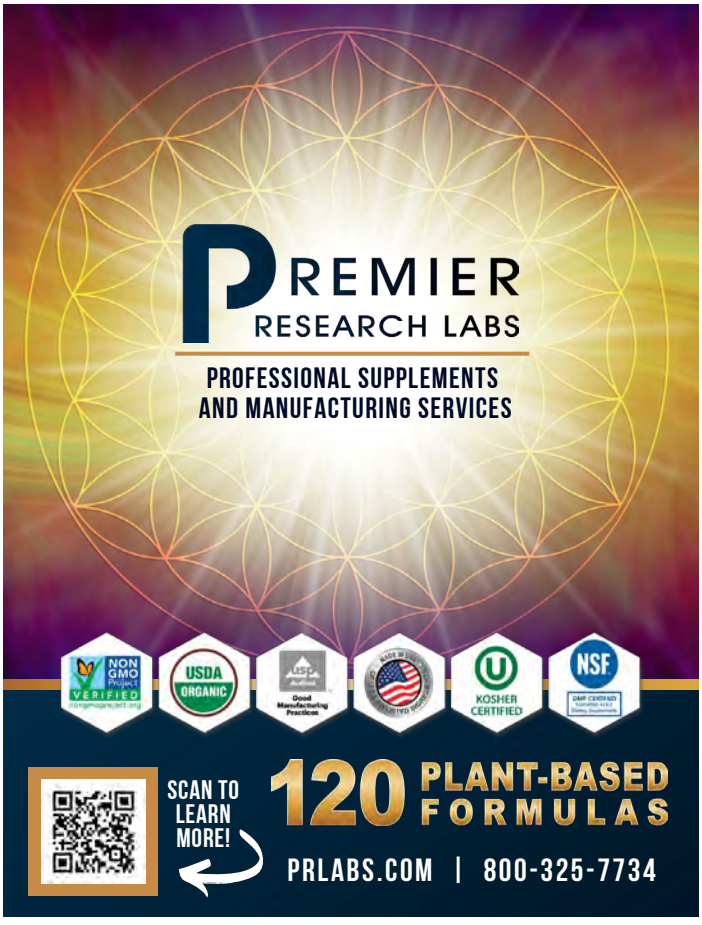
Although *E. purpurea* is a native North American species, commercial cultivation began in Germany in the 1930s.[29] Large-scale commercial cultivation did not begin in the United States until the 1980s. Today, the commercial supply of *E. purpurea* aerial parts and root is almost entirely produced from cultivation, while wild collection of *E. angustifolia* continues to some extent.[15] Commercial cultivation of *E. purpurea* occurs not only in its native Canada and the United States, but also in parts of Latin America (Argentina, Chile, Costa Rica, Mexico), Europe (Bulgaria, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Poland, Portugal, Romania, Russia, Spain, Switzerland, Ukraine), Africa (Egypt, South Africa), and Asia (China, India, Iran, Israel) — much of it produced according to sustainable production methods and organic cultivation.[21,97] There are also Fair for Life (a standard for Fair Trade and responsible supply chains) certified growers of *E. purpurea* in France and South Africa[98] and FLOCERT Fairtrade certified growers in Egypt.[99]

The fact that commercial cultivation of *E. purpurea* has scaled up on nearly every continent coupled with the NatureServe assessment (that its wild populations in the United States are "apparently secure") indicate a relatively low risk for industry to access sufficient raw materials. While the current scenario for access to *E. purpurea* raw materials appears stable, experts have recommended evaluating crop adaptation to climate change, the impact of climate change on secondary metabolites, and genetic diversity status.[100] HG

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HerbMedPro provides online access to abstracts of scientific and clinical publications on more than 250 commonly used medicinal herbs. A free version, HerbMed®, is available to the general public and includes access to adopted herbs. HerbMedPro is available as a member benefit to all ABC members at the Academic Membership level and up.

In addition to ensuring that recently published information on an adopted herb is up to date on HerbMedPro, another benefit adopters enjoy is being included among their peers in each issue of ABC's acclaimed quarterly, peer-reviewed scientific journal, *HerbalGram*, on the ABC website, and at scientific, medical, and other educational conferences. Press releases also are issued on new adoptions, bringing attention to the program, the adopted herb, and the adopting company. Each adopted herb is featured on its own page on the ABC website.

Parties interested in taking part in the Adopt-an-Herb Program are invited to contact ABC Development Director Denise Meikel at 512-926-4900, extension 120, or by email at denise@herbalgram.org.

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Internationally Respected Pharmacognosist Joe Betz Joins ABC Board of Trustees

By ABC Staff

In March 2023, the American Botanical Council (ABC) announced the election of pharmacognosist Joseph M. Betz, PhD, to the ABC Board of Trustees. Betz served for 12 years as a research chemist at the US Food and Drug Administration (FDA) and 21 years at the US National Institutes of Health's Office of Dietary Supplements (ODS).

Betz earned a doctorate in pharmacognosy (the study of medicines of natural origin) at the Philadelphia College of Pharmacy and Science (PCPS), where he studied under Professor Ara Der Marderosian, PhD. During his graduate work, Betz developed laboratory analytical methods for determining the authenticity of commercial ginseng (*Panax* spp., Araliaceae) products and analyzed 54 such products in a PCPS laboratory. This was likely one of the first attempts to scientifically evaluate commercial herb products in the United States.

From June 2018 to December 2022, Betz served as acting director of ODS. Under Betz's oversight, the ODS staff carried out its mission "to strengthen knowledge and understanding of dietary supplements by evaluating scientific information, stimulating and supporting research, disseminating research results, and educating the public to foster an enhanced quality of life and health for the U.S. population."[1]

Before being appointed acting director at ODS, Betz was director of the Analytical Methods and Reference Materials Program at ODS, a congressionally mandated program for the development and validation of laboratory analytical methods for botanical dietary ingredients and dietary supplements. In this capacity, he worked closely with analytical chemistry experts at AOAC International (which establishes standard methods of analysis that ensure the safety and integrity of foods and other products), where he held various committee positions, including chair of the editorial board of the *Journal of AOAC International* and membership on the executive committee of the AOAC Technical Division on Reference Materials. In 2004, he was named a fellow of AOAC International, and, in 2019, he received AOAC's Harvey W. Wiley Award, the organization's most prestigious scientific award.

From 1999 until 2001, between his positions at the FDA and NIH, he was the first vice president for scientific and technical affairs at the American Herbal Products Association (AHPA), the leading herb and medicinal plant industry trade association in the United States.

ABC recognized Betz's scientific research in 2005, when it granted him the first ABC Norman R. Farnsworth Excellence in Botanical Research Award. Betz joined ABC's Advisory Board in 1996, during his tenure as a research scientist at the FDA.

Betz is the author or co-author of 109 articles in peer-reviewed journals and 13 book chapters. He also has received the American Society of Pharmacognosy's Varro E. Tyler Prize in 2013 and AHPA's Herbal Insight Award in 2007 for his "impact on furthering knowledge and understanding of botanicals and their uses."[2]

"I am deeply honored to join the Board of Trustees of the American Botanical Council," said Betz. "ABC's educational vision is sweeping and accessible, artful and rigorous. This is in no small part due to the dedication and excellence of the ABC staff and the efforts of current and past board members. I am humbled to join such an elite group and to stand with them on the shoulders of the giants who preceded us."


Joe Betz

Mark Blumenthal, ABC founder and executive director, said: "I have known Joe as a friend and colleague for more than 45 years, and I have appreciated his support for ABC and our unique nonprofit research and educational mission, as he served actively as a highly valued member of the ABC Advisory Board for more than 25 years. Now that he has retired, after more than 30 years as one of the leading experts on medicinal plant research in the US government, it is a great benefit to the global medicinal plant community that he has joined the ABC Board of Trustees."

Stefan Gafner, PhD, ABC chief science officer and Botanical Adulterants Prevention Program (BAPP) director, said: "It's a great privilege to have someone of Betz's caliber on the ABC Board of Trustees. He has devoted his entire career to the science of medicinal plants, and he is considered one of the foremost experts in medicinal plant analysis. He is one of the most respected scientists in the area of herbal dietary supplements due to his scholarship, extensive knowledge, integrity, and respectful personality. He is someone I have always admired, and I really look forward to working with him more closely."

Josef Brinckmann, research fellow at Traditional Medicinals and president of the ABC Board of Trustees, said: "I have followed Dr. Betz's work in methods development and pharmacognosy since the 1980s and [throughout] his impressive career applying botanical science expertise while at the FDA and later at NIH, as well as his service on numerous expert committees including at the United States Pharmacopeia. ABC is indeed fortunate to have Betz, a world-class pharmacognosist, on the board." HG

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American Botanical Council Presents Botanical Excellence Awards at 18th Annual Celebration Ceremony

By ABC Staff

The American Botanical Council (ABC) presented eight Botanical Excellence Awards during its 18th annual ABC Celebration and Botanical Excellence Awards ceremony on March 8, 2023. The event celebrated ABC's Sponsor Members, other supporters, and some of the organization's accomplishments over the previous year, as well as the recipients of the Botanical Excellence Awards, which ABC started in 2006. Recipients are chosen based on outstanding contributions to the botanical and medicinal plant communities.

The Celebration was held at the Hilton Anaheim during Natural Products Expo West in Anaheim, California. Approximately 300 ABC supporters and friends attended the event. This included Celebration Sponsors and ABC Sponsor Members, as well as supporters of the ABC-AHP-NCNPR Botanical Adulterants Prevention Program (BAPP), ABC's Sustainable Herbs Program (SHP), and ABC's Adopt-an-Herb Program.

"This year's Celebration event was jam-packed with new and old ABC friends, all having a good time laughing, eating, and drinking," said ABC Development Director Denise Meikel. "Plus, there were cartoons and jokes from the podium, the debut of several new ABC videos, and an exciting roster of Botanical Excellence Award recipients, all made possible through the generosity of ABC Celebration Sponsors."

Books on Herbs in Primary Care and American Ginseng Receive ABC Duke Award

ABC presented its 2023 ABC James A. Duke Excellence in Botanical Literature Award to *Medicinal Herbs in Primary Care: An Evidence-Guided Reference for Healthcare Providers* (Elsevier, 2022) by Jean M. Bokelmann, MD, in the reference/technical category and *Ginseng Diggers: A History of Root and Herb Gathering in Appalachia* (University Press of Kentucky, 2022) by Luke Manget, PhD, in the consumer/popular category.

ABC gives the Duke Award annually to books that contribute significantly to the medicinal plant-related literature and the fields of botany, taxonomy, ethnobotany, pharmacognosy, phytomedicine, and other related disciplines. The award was created in 2006 to honor the late economic botanist and author James A. Duke, PhD (1929–2017). Duke's prestigious career achievements in economic botany and ethnobotany include decades of work as the lead medicinal plant expert at the United States Department of Agriculture and the authorship and co-authorship of more than 30 reference and consumer books. Among his many other activities and positions, he was also a co-founder of ABC and served on its Board of Trustees.

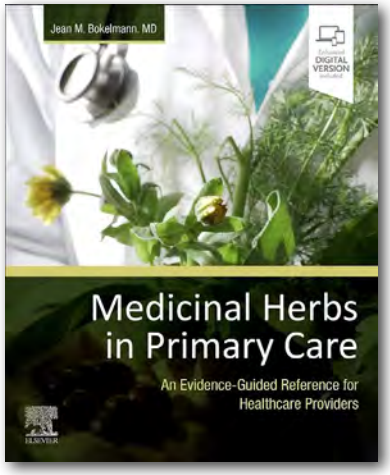


Reference/Technical Category

Medicinal Herbs in Primary Care is a guide for conventional health care providers. Bokelmann drew from her experience as an integrative health specialist in family medicine and organized this practical reference in a provider-friendly way, with important information about herbs, their actions, and their contraindications. The book includes tables, monographs, and clinical evidence and is a basic primer on herbal medicine.

In her review in *HerbalGram* issue 137, Tieraona Low Dog, MD, wrote: "*Medicinal Herbs in Primary Care* is an excellent resource for busy clinicians who feel overwhelmed by the depth and breadth of this topic…. This text is an invaluable reference guide for primary care clinicians, subspecialists, pharmacists, nurses, physician assistants, researchers, naturopathic physicians, and herbalists alike."[1]

Bokelmann is a retired assistant professor of family medicine and geriatrics and current adjunct faculty member of the Idaho State University (ISU) Family Medicine Residency Program in Pocatello, Idaho. She was a founding member of this faculty program and has taught integrative medicine in the residency program since 2004. Bokelmann is a frequent lecturer and has given presentations and workshops on integrative medicine, herbal medicine, and aromatherapy for the ISU Family Medicine Residency Program, ISU Physician Assistant Program, ISU College of Pharmacy, Idaho Academy of Physician Assistants, Alaska Academy of Family Physicians' Annual Scientific Congress, and National Association for Holistic Aromatherapy.



Bokelmann said: "I am both honored and humbled to receive the ABC James A. Duke Award in the reference/technical category. In writing *Medicinal Herbs in Primary Care*, I strove to [strengthen] the bridge between the medical and herbal communities. The American Botanical Council played a critical role in this process through its comprehensive research database and through its promotion of the documented benefits and efficacy of herbs. It is my hope that this reference book will serve as a practical resource for conventional medical providers and that it will stimulate further clinical research in the field of medicinal herbs."

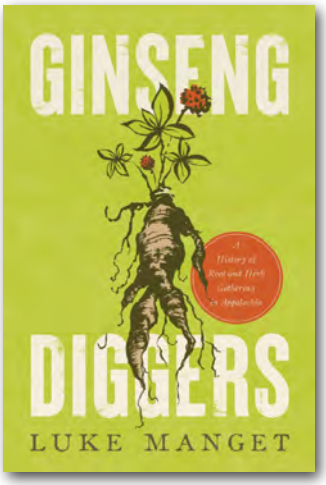
ABC Founder and Executive Director Mark Blumenthal said: "Dr. Bokelmann is a longtime, valued professional member of ABC, and I have admired her keen interest in and passion for herbs, phytomedicines, and essential oils. Along with other members of the ABC Duke Award committee, I, too, was impressed with the amount of detail and extent of coverage of her new book. I am pleased that she was able to derive so much research value from her online benefits as an ABC Professional member."

Consumer/Popular Category

Ginseng Diggers chronicles the history of American ginseng (*Panax quinquefolius*, Araliaceae), from its introduction to European colonists by the Cherokee to its current market status. Manget weaves together storytelling and scholarly research and traces the impacts of the trade of ginseng and other forest commodities, both botanical and animal (e.g., furs), on Native American tribes and European settlers in the Appalachian region. Manget's book also details the gradual commodification of previously common land and the transition from plant-based medicines to modern pharmaceuticals.

According to Edward J. Fletcher's review in *HerbalGram* issue 137: "Herbalists, researchers, students of history, and those who are simply interested in 'sang' will find numerous nuggets of historical gold that Manget includes throughout this very readable and educational book."[2]

Manget is a professor of history at Western Carolina University in Cullowhee, North Carolina. He previously taught as an assistant professor of history at Dalton State College in Dalton, Georgia, and a lecturer at the University of Tennessee at Chattanooga. He has given lectures at many meetings and symposia regarding the status of the herb trade in Appalachia, including with ABC's SHP. He also has authored numerous journal articles and a book chapter. *Ginseng Diggers* is his first book.



Manget said: "I am deeply honored to receive the James A. Duke Award, an award named after such an important figure in ethnobotany. It brings me great joy that the award committee felt *Ginseng Diggers* is worthy of such an award. In fact, it brings great joy to my entire family, as my botanist father, Tom Manget, who studied botany in the 1970s, saw Duke as a hero. I grew up hearing stories of [Duke's] amazing accomplishments. I'd like to thank the American Botanical Council staff and the Board of Trustees not only for this award but also for all their work promoting herbal medicine."

Blumenthal said: "I am certain that if Jim were alive today, he would certainly agree with the award committee's choice of Luke Manget's book about wild ginseng and other wild medicinal plants of the Appalachians. Jim spent much of his early years in North Carolina, which is one of the most botanically diverse areas of North America and replete with native medicinal plants, the trade in which is expertly described in *Ginseng Diggers.* Dr. Manget deserves much recognition and gratitude from not only people in the medicinal plant community, but also anyone who values knowledge about the cultural and economic history of the United States."

ABC James A. Duke Award Recipients*

2023: Reference/technical: *Medicinal Herbs in Primary Care: An Evidence-Guided Reference for Healthcare Providers*
Consumer/popular: *Ginseng Diggers: A History of Root and Herb Gathering in Appalachia*
2022: Reference/technical: *A History of the Korean Ginseng Industry*
Consumer/popular: *The Plant Hunter: A Scientist's Quest for Nature's Next Medicines*
2021: *Christopher Hobbs's Medicinal Mushrooms*
2019: *Flora of the Voynich Codex: An Exploration of Aztec Plants*
2018: *Ethnopharmacologic Search for Psychoactive Drugs*, Vols. I and II
2017: Reference/technical: *Chinese Medicinal Plants, Herbal Drugs and Substitutes*
Consumer/popular: *Joseph Banks' Florilegium*
2016: *Handbook of Essential Oils*, 2nd edition
2015: *Clinical Aromatherapy*, 3rd edition
2014: *Ancient Pathways, Ancestral Knowledge*
2013: *Principles and Practice of Phytotherapy*, 2nd edition
2012: Reference/technical: *Medicinal Plants and the Legacy of Richard E. Schultes*
Consumer/popular: *Smoke Signals*
2011: Reference/technical: *American Herbal Pharmacopoeia: Botanical Pharmacognosy*
Consumer/popular: *Healing Spices*
2010: *Botanical Medicine for Women's Health*
2009: *An Oak Spring Herbaria*
2008: *Mabberley's Plant Book*, 3rd edition
2007: Google Book Search
2006: *Medicinal Spices*
2005: *The Essential Guide to Herbal Safety*

* In some years, ABC presents the Duke Award to two books, one in the reference/technical category and the other in the consumer/popular category.

Professor Michael Heinrich Receives ABC Farnsworth Award

Michael Heinrich, PhD, a professor of ethnopharmacology and pharmacognosy in the University College London (UCL) School of Pharmacy, received the 2023 ABC Norman R. Farnsworth Excellence in Botanical Research Award.


Michael Heinrich

ABC presents the annual award, named in honor of the internationally respected professor Norman R. Farnsworth, PhD (1930–2011), to an individual who has made significant research contributions in the fields of pharmacognosy (the study of drugs of natural origin, usually from plants), ethnobotany, ethnopharmacology, or other scientific disciplines related to medicinal plants. Farnsworth was a widely published and internationally renowned research professor of pharmacognosy, a senior university scholar in the University of Illinois at Chicago's College of Pharmacy, and one of the founding members of ABC's Board of Trustees.

"Thank you very much to ABC … for [the] Norman Farnsworth Award," Heinrich said in his pre-recorded acceptance speech at the ABC Celebration. "It is a great recognition of … what we have done as a team in the context of ethnopharmacology and specifically focusing on the needs of Indigenous populations all over the world."

Heinrich has a research background in pharmaceutical biology, pharmacognosy, and anthropology. He received his Dr. rer. nat. degree (equivalent to a PhD) in pharmaceutical biology in 1989, and he was awarded his Habilitation (the qualification to conduct research and teach independently in Germany) in 1997, both from the University of Freiburg in Freiburg im Breisgau, Germany. He also has a Dipl. Biol. degree (equivalent to a Master of Science) in biology from the University of Freiburg (1985) and a Master of Arts in anthropology from Wayne State University (1982) in Detroit, Michigan.

In 1999, Heinrich was appointed chair professor at the Centre for Pharmacognosy and Phytotherapy, which was then part of the University of London's School of Pharmacy. In 2012, the School of Pharmacy merged into UCL. From 2012 to 2018, he was head of the Biodiversity and Medicines research cluster, and, since 2017, he has served as the co-chair of the UCL Research Ethics Committee. At UCL, he teaches undergraduate and postgraduate courses on aspects of medicinal plant and natural product research, with a focus on practical applications related to community pharmacy and patients' use of herbal medicinal products. In 2022, he was named a Yushan Fellow at China Medical University in Taichung, Taiwan, for having made an "outstanding contribution in [his] area of academic expertise."[3]

In 2011 and 2012, while on leave from UCL, Heinrich became the first director of the newly founded Southern Cross Plant Science (SCPS) program at Southern Cross University in Lismore, New South Wales, Australia. The mission of this research program is to carry out "internationally competitive research that adds value to the conservation, cultivation and utilisation of plants and other natural products," according to its website.[4]

Earlier in his career, Heinrich worked at the University of Freiburg's Department of Pharmaceutical Biology and Biotechnology. He held different positions there from 1993 to 1999, including researcher, lecturer, and associate professor (Privatdozent) and spent six months at the Swiss Federal Institute of Technology in Zürich, Switzerland, working with the late Professor Otto Sticher, PhD (1936–2022), the recipient of the 2018 ABC Farnsworth Award.

"ABC is grateful for the dynamic scholarly contributions that Professor Heinrich has made to the global knowledge of herbs and medicinal plants," said Blumenthal. "His scope of vision and activity is quite varied. We particularly appreciate his research on authenticity and adulteration of popular botanical food supplements and traditional herbal medicines sold in the EU and beyond."

Heinrich's team's research covers a range of scientific fields, including both biomedical and social sciences (e.g., anthropology, ethnobotany, ethnopharmacology, pharmacy, and public health). The research group uses this transdisciplinary approach to investigate potential solutions to "fast-changing global health needs, focusing on the use of plant-derived products."[5] The group's varied research subjects include metabolomic approaches in medicinal plant research, quality and safety of herbal medicinal products, access and benefit sharing, medicinal plant value chains, global biodiversity, and food and medicinal plant use in the Mediterranean, Mexico, Central America, and urban Great Britain, among others.

"It is wonderful to see [our] contributions acknowledged, and it also is another call to consider where the field of medicinal plant/botanicals research needs to move to in the next years and decades," Heinrich noted. "Biocultural diversity and sustainable sourcing remain central elements. The new challenge is how can this field of research

ABC Norman R. Farnsworth Award Recipients

2023: Michael Heinrich, PhD
2022: Guido Pauli, PhD
2021: Paula N. Brown, PhD
2019: Rachel Mata, PhD
2018: Otto Sticher, PhD
2017: Raphael Mechoulam, PhD
2016: Ameenah Gurib-Fakim, PhD
2015: John T. Arnason, PhD
2014: Harry Fong, PhD
2013: Gordon Cragg, PhD
2012: De-An Guo, PhD
2011: Djaja Soejarto, PhD
2010: A. Douglas Kinghorn, PhD
2009: Rudolf Bauer, PhD
2008: Ikhlas Khan, PhD
2007: Hildebert Wagner, PhD
2006: Edzard Ernst, MD, PhD
2005: Joseph Betz, PhD

be developed [while] addressing the impact of climate change? We need to develop new methods, using approaches from other fields to lay the foundations for new collaborative and transdisciplinary answers to these challenges. So, as [with] every award, it is a call for action."

Heinrich has contributed to more than 450 scientific publications, including journal articles, reference texts, reports, and more. In 2019, he co-authored the journal article "St. John's wort (*Hypericum perforatum*) products: How variable is the primary material?" which was published in *Frontiers in Plant Science*.[6] He is also the co-author of a 2022 article that reviewed evidence of herbal medicines as adjuvant symptomatic treatments for COVID-19.[7] The article, which was published in *Frontiers in Pharmacology*, has been viewed more than 365,000 times and cited by more than 150 other publications as of July 2023.

Heinrich is the lead author of the reference books *Phytopharmacy: An Evidence-Based Guide to Herbal Medicinal Products* (Wiley-Blackwell, 2015) and *Ethnopharmazie und Ethnobotanik: Eine Einführung* ("Ethnopharmacy and Ethnobotany: An Introduction"; Wissenschaftliche Verlagsgesellschaft, 2001). He also co-wrote or co-edited several textbooks, including *Ethnopharmacology* (Wiley-Blackwell, 2015), *Local Mediterranean Food Plants and Nutraceuticals* (Karger, 2006), and *Fundamentals of Pharmacognosy and Phytotherapy* (Churchill Livingstone, 2004), which is now in its fourth edition (2023), among others. Additionally, Heinrich wrote the forewords of two reference books: *Underexplored Medicinal Plants from Sub-Saharan Africa* (Academic Press, 2019) and *Medicinal Plants: Biodiversity and Drugs* (CRC Press, 2012).

"One strength of Professor Heinrich is that he challenges established thinking by asking difficult but important questions," said ABC Chief Science Officer Stefan Gafner, PhD. "His interest in various facets of medicinal plant research has led to the breadth of topics covered in his publications, making him one of the most prominent scientists in the field."

Heinrich is the vice president of the Society for Medicinal Plant and Natural Product Research (GA), a member of the ABC Advisory Board (since 2015), previous president of the International Society for Ethnopharmacology (twice), and the recipient of the Society for Ethnopharmacology-India's 2014 Outstanding International Ethnopharmacologist Award. He also has contributed to *HerbalGram* as an author and peer reviewer. In 2016, Heinrich co-authored an extensive feature titled "Value Chains of Botanical and Herbal Medicinal Products: A European Perspective" in *HerbalGram* issue 112.[8] He currently is editor-in-chief of the "Ethnopharmacology" section of *Frontiers in Pharmacology*, which has become one of the leading journals of pharmacology since it was launched in 2010.

ABC Varro E. Tyler Award Recipients

2023: Sabinsa Corporation
2022: Max Zeller Söhne AG
2021: Swedish Herbal Institute
2019: Jaguar Health/Napo Pharmaceuticals
2018: GW Pharmaceuticals
2017: Pharmatoka
2016: Brassica Protection Products
2015: MediHerb/Integria Healthcare
2014: SFI Flordis International
2013: Wakunaga Pharmaceutical Company
2012: Horphag Research
2011: Bioforce AG (now A. Vogel AG)
2010: New Chapter
2009: Bionorica AG
2008: Indena SpA
2007: Dr. Willmar Schwabe Pharmaceuticals

Sabinsa Receives ABC Tyler Award

The 2023 ABC Varro E. Tyler Commercial Investment in Phytomedicinal Research Award was presented to the Sabinsa Corporation, a leading producer of nutraceuticals, "cosmeceuticals," standardized botanical extracts, and other products for the nutritional, cosmetic, pharmaceutical, and food industries.

"All of us at Sabinsa consider being chosen to receive the ABC Varro E. Tyler Award a great honor," said Kalyanam Nagabhushanam, PhD, the president of research and development at Sabinsa. "This is a meaningful tribute to Sabinsa's 35-year history of using modern scientific research methods to expand upon traditional Ayurvedic knowledge…. We realize that along with this honor comes the responsibility to maintain that position by continued fruitful research into phytomedicines."

The ABC Tyler Award was named in honor of one of the most respected US scientists in late-20th century herbal medicine and pharmacognosy. Professor Varro E. Tyler, PhD (1926–2001), was an early ABC Board of Trustees member and vice president of academic affairs and dean of the College of Pharmacy and Pharmaceutical Sciences at Purdue University. He was the senior author of six editions of a leading pharmacognosy textbook in the United States and numerous other professional and popular books and academic articles. Tyler encouraged scientific and product integrity and envisioned a rational phytomedicinal health care sector that valued the proper evaluation of a phytomedicinal products' quality, safety, and efficacy.

Sabinsa was founded in New Jersey in 1988 by Muhammed Majeed, PhD. The company's mission is "to provide evidence-based natural products for human functional nutrition and well-being," according to its website. As part of its commitment to research-based products, Sabinsa employs more than 120 full-time scientists working in India and the United States.

The company's primary research and development center is in Peenya, Bengaluru, India. Its research departments cover a range of topics, including phytochemistry, synthetic chemistry, tissue culture, agri-biotechnology, analytical research and development, microbiology, and supercritical fluid extraction, among others.

In its 35-year history, the company has produced more than 100 standardized botanical extracts and funded more than 100 clinical studies on its products. Sabinsa also is considered a leader in intellectual property. As of February 2023, the company has been granted more than 400 patents. Among its flagship brands are BioPerine®, Curcumin C3 Complex®, LivLonga®, LactoSpore®, Sabroxy®, and Curcumin C3 Reduct®.

"Sabinsa firmly believes that immutable customer confidence in a nutritional product can be secured on a long-term basis [only] by demonstrating safety, quality, and scientific support," Nagabhushanam said. "Sabinsa continuously invests in new research on all its products to ensure a preeminent position in the market.

"Our researchers delve deeply into [many] aspects of a botanical, as demonstrated by our multiple variations on turmeric [*Curcuma longa*, Zingiberaceae]," Nagabhushanam added. "Sabinsa's Curcumin C3 Complex, the subject of nearly 100 human clinical trials, was followed by the introduction of other variations, such as CurCousin® and C3 Reduct with its main active [ingredient] tetrahydrocurcumin. Other well-researched products Sabinsa has developed include BioPerine, LactoSpore, and Saberry®, among others."

Sabinsa also has demonstrated commitment to sustainability. For example, in 2018, it announced that it would fund a 10-year reforestation project to oversee the planting of more than 166,600 Indian kino (*Pterocarpus marsupium*, Fabaceae) trees on 250 acres in the large central Indian state of Madhya Pradesh.[9] The company expected to spend about $500,000 on the project, which it claimed to be the first initiative to conserve this high-value, multipurpose, threatened species in India. The project earned the NutraIngredients-USA Editors Award for Industry Initiative of the Year for 2018.[10] Extracts of the heartwood of the Indian kino tree have demonstrated antidiabetic properties, and Sabinsa produces two proprietary standardized ingredients from the heartwood: Silbinol® and pTeroSol®.

Sabinsa and its founder have been recognized with numerous other awards. In 2016, Majeed was named to the New Hope Network's Hall of Legends. In 2022, Sabinsa received the Federation of Karnataka Chambers of Commerce and Industry's (FKCCI's) Best Manufacturer Export Award, and the company was ranked among the Top 10 Pharma Laboratories by business magazine *India Pharma Outlook*. Majeed received a lifetime achievement award at the 1st Kerala Pharmaceutical Congress in 2023 and has been named a "Legend of the Millennium in Nutraceutical Industry" and the "Father of Indian Nutraceuticals Industry" by the Associated Chambers of Commerce and Industry of India.

"ABC salutes Dr. Majeed and his associates for their strong commitment to scientific and clinical research on their various botanical ingredients," said Blumenthal. "This is the first time that ABC has chosen a recipient of the Tyler award from India. A significant level of modern botanical research is occurring in India, as is warranted since this country has a long history of empirical use of herbs and medicinal plants in the extensive tradition of Ayurveda and other traditional systems of medicine. Sabinsa deserves recognition for its extensive commitment and contributions to botanical science."

Gafner said: "Sabinsa has one of the largest numbers of clinical trials of any company that has received the ABC Tyler award so far. What is rather unusual for a botanical ingredient manufacturer is that some of their clinical studies were in patients that suffered from severe diseases such as multiple myeloma and pancreatic cancer. Based on regulatory restrictions, results from those investigations cannot be used to support any benefit claims for the ingredients or products, and still the company supported such studies to further the [research] on the ingredients."

Leanna Standish Receives ABC Kronenberg Award

Leanna Standish, PhD, ND, LAc, FABNO (fellow of the American Board of Naturopathic Oncology), a Seattle-based neuroscientist and naturopathic physician who is board certified in naturopathic oncology, received the 2023 ABC Fredi Kronenberg Excellence in Research and Education in Botanicals for Women's Health Award. She is the co-founder and co-director of the Seattle-based Advanced Integrative Medical Science (AIMS) Institute, a clinic and research and training facility that provides care to people with chronic illnesses, with an emphasis on integrative oncology and psychiatry.


Leanna Standish

Standish is a senior research scientist at Bastyr University's School of Naturopathic Medicine in Kenmore, Washington, the former medical director of the Bastyr Integrative Oncology Research Center (BIORC), and a former affiliate research professor at the University of Washington's Integrated Brain Imaging Center. She is also an affiliate faculty member at Sonoran University of Health Sciences in Tempe, Arizona, and the founder and CEO of Sacred Medicines PBC, a botanical drug company that focuses on the development and clinical testing of standardized psychoactive plant medicines.

ABC Fredi Kronenberg Award Recipients
2023: Leanna Standish, PhD, ND, LAc, FABNO
2022: Gail Mahady, PhD
2021: Tori Hudson, ND
2019: Mary Hardy, MD
2018: Aviva Romm, MD
2017: Tieraona Low Dog, MD

The ABC Fredi Kronenberg Award was created in 2018 and named in honor of distinguished researcher, educator, and longtime ABC Board of Trustees member Fredi Kronenberg, PhD, who died in April 2017. Kronenberg dedicated her professional life to the study of medicinal plants and phytomedicines for women's health conditions. She particularly was interested in botanicals, such as black cohosh (*Actaea racemosa*, Ranunculaceae), for the treatment of menopausal symptoms.

Kronenberg was a champion of integrative medicine and co-founded the Richard and Hinda Rosenthal Center for Complementary and Alternative Medicine at Columbia University — the first complementary and alternative medicine (CAM) program at an Ivy League school and the first government-funded CAM research and educational center. For 10 years, she also co-directed an onsite five-day continuing education course in botanical medicine for physicians and other health care providers.

"I feel very proud to have been named this year's awardee," Standish wrote. "What an honor to be placed in the same ranks as Dr. Fredi Kronenberg. Thank you, ABC, and thank you to all the manufacturers of the botanical and nutrient medicines that we use in taking care of our patients."

Standish received a PhD in neuroscience/biopsychology from the University of Massachusetts in 1978, a doctorate in naturopathic medicine (ND) from Bastyr University in 1991, a Master of Science in acupuncture and Oriental medicine from Bastyr University in 1994, and board certification in naturopathic oncology in 2006.

Her research has focused on HIV/AIDS, cancer, and hepatitis C. She has collaborated with the Fred Hutchinson Cancer Center in Seattle and Children's Hospital to study CAM use among cancer patients in Washington State and has conducted research at Bastyr University to identify and describe treatments that naturopathic physicians in North America use for breast cancer.

Standish has been a principal investigator for the Bastyr/University of Washington Oncomycology Translational Research Center, which studied the potential of Asian medicinal mushrooms to treat breast and prostate cancer, and a principal investigator for several studies, including a study of polysaccharide-K (PSK) as a neoadjuvant therapy for locally advanced breast cancer; the Breast Cancer Integrative Oncology: Prospective Matched Controlled Outcomes Study; and a randomized clinical trial of meditation or massage in end-of-life cancer patients.

Her current research focuses on the use of the medicinal mushroom turkey tail (*Trametes versicolor*, Polyporaceae) for the treatment of breast and prostate cancer and the use of functional brain imaging to assess the treatment of brain cancer. She is involved with integrative oncology outcome studies, including the Canadian/US Integrative Oncology Study (CUSIOS), which describes survival outcomes for people with advanced-stage breast, colorectal, ovarian, and pancreatic cancer and who have received advanced integrative oncology treatment at participating North American integrative oncology clinics. Standish also is developing projects on intravenous resveratrol (a polyphenol from plants including grapes [*Vitis vinifera*, Vitaceae]) and intravenous curcumin (a phenolic compound from turmeric) to treat cancer.

The AIMS Institute, which Standish co-directs, provides ketamine-assisted psychotherapy for people with chronic illnesses, including cancer, and will be the site of a phase I safety and dose-finding trial of a standardized ayahuasca tea, the Amazonian psychoactive ritual brew.

Standish has provided adjunctive naturopathic medical care to hundreds of people with cancer and worked with Seattle-area oncologists to provide integrated conventional/CAM care. She is a founding board member of the Oncology Association of Naturopathic Physicians and was voted one of Seattle's best physicians in *Seattle Met* magazine in 2002, 2004, and 2008.

She has been a member of both the US National Institutes of Health (NIH) and Department of Defense study sections for scientific review of CAM research in cancer and has served as a CAM oncology advisor at MD Anderson Cancer Center. She also conducts basic neurophysiological research on mind/body interactions and has mentored postdoctoral fellows in the areas of CAM and integrated cancer treatment and prevention.

Aviva Romm, MD, a midwife, herbalist, author, and Yale-trained physician who received the Kronenberg Award in 2018, wrote: "Dr. Standish has been a longstanding pillar in the world of botanical medicine and the integration of science and traditional wisdom this award represents. Her work bridging the worlds of neuroscience with consciousness and plants and her contributions to the advancement of science in naturopathy are powerful and exemplary. It is my pleasure to welcome Leanna into the lineage and sisterhood of those of us who have received the ABC Fredi Kronenberg Award and who are honoring the memory of Fredi in our commitment, as women, to botanical science."

FairWild Foundation Receives ABC Foster Award

The 2023 ABC Steven Foster Botanical Conservation and Sustainability Award was given to the FairWild Foundation, a Swiss nonprofit organization that, since its founding in 2008, has promoted the sustainable, traceable, and ethical trade of wild plant ingredients and products.

The ABC Steven Foster Award was created in 2022 and recognizes excellence in conservation and sustainability efforts related to medicinal and aromatic plants. It is named in honor of botanist, author, and photographer Steven Foster (1957–2022) and commemorates his many years of professional interest, writing, and advocacy work in this field.

Each year, the Foster Award recognizes an individual, nonprofit organi-

ABC Steven Foster Award Recipients
2023: FairWild Foundation
2022: United Plant Savers

zation, or commercial herb company that is committed to sustainable and/or regenerative practices in the botanical industry or wider community. Recipients of this award take action to address botanical conservation and sustainability issues and contribute to a broader understanding of cultural and biological diversity, soil health, climate change, economic justice, and more. They also demonstrate appreciation for the beauty of the natural world.

Foster had more than 40 years of experience with sustainability and conservation of herbs and medicinal plants. He served on ABC's Board of Trustees for more than two decades (including 10 years as chair), was a consultant and content contributor for ABC's SHP, advocated for botanical industry trade resolutions to protect threatened botanicals, and was a founding member of the advisory board of the United Plant Savers (UpS), a nonprofit plant conservation organization, which was the inaugural recipient of the Foster Award in 2022.

"Steven Foster was an enormous figure in the herbal community, inspiring us all with the beauty he captured from medicinal plants and his interest in the people who harvest and work with those plants," wrote Deborah Vorhies, CEO of the FairWild Foundation. "His reputation and legacy of knowledge and dedication live on, and to receive this prize in his name is an honour and an inspiration. At FairWild, we share Steven's passion for botanicals. Like him, we believe that protecting wild plants and ensuring their future are also about respecting, honouring, and being fair to those who live alongside and collect those plants.

"At a higher level," Vorhies added, "we know that humanity faces urgent and bigger problems, and we believe that a positive relationship between humanity and plants (through sustainable and respectful harvesting) provides a model of mutual nurturing, which can help us address these problems. FairWild is proud to be able to play a role in helping us be better stewards of planet Earth through our standard and certification process, ensuring a sustainable future for landscapes across the globe and for the more than 5,000 collectors who are paid, respected, and ensured decent working conditions through the FairWild Standard."

The FairWild Standard is a rigorous, voluntary standard for the sustainable wild collection of medicinal and aromatic plants, gums and resins, fruits, nuts and seeds, and mushrooms. It applies a whole-ecosystem approach and includes relevant criteria for environmental, economic, and social sustainability.

The standard's implementation supports sustainable production and trade, quality assurance, biodiversity conservation, and resilient rural economies, while rewarding wild-collection communities for acting as stewards of sensitive ecosystems. FairWild certification depends on annual onsite audits by accredited third-party bodies and means that buyers, from traders to consumers, can be confident that products are harvested legally, ethically, and sustainably.

Published in 2006, the FairWild Standard 1.0 was developed based on fair trade principles and the United Nations' International Labour Organization (ILO) standards and was intended to be implemented with other organic or ecological standards. In 2008, the FairWild Foundation was registered to promote sustainable, eco-friendly, and socially responsible use of habitats around the world. In 2010, the FairWild Standard 2.0, which drew from experiences and lessons learned from implementing the standard in the field, was published.

According to the FairWild Foundation, it has protected ecosystems across four continents and helped thousands of wild collectors, who are paid premiums that can be used to improve their quality of life. Now, more than 400 metric tons of FairWild-certified wild plant resources are traded globally every year, more than 25 wild plant species are FairWild-certified and sustainably sourced from more than 10 countries, and more than 35 companies are engaged with FairWild.

FairWild projects are protecting belleric myrobalan (*Terminalia bellirica*, Combretaceae) and chebulic myrobalan (*T. chebula*) trees in the Western Ghats of India, baobab (*Adansonia digitata*, Malvaceae) trees in Zimbabwe, jatamansi (*Nardostachys jatamansi*, Caprifoliaceae), also called spikenard, in Nepal, and more. Because the FairWild Standard involves protecting entire resource areas, FairWild projects also conserve habitats of other, sometimes rare, plant and animal species.

Implementing the FairWild Standard and using its tools, like the resource assessment and management plan guidance, can also give stakeholders in the value network (also called the supply chain, including wild harvesters, processors/suppliers, and finished product brands) information that is useful for long-term planning, quality assurance/control, and supply chain risk mitigation.

Ann Armbrecht, PhD, director of SHP, wrote: "We applaud the FairWild Foundation's work to consistently bring attention not only to the wild plants in international trade, but also to the wild harvesters whose livelihoods depend in part on continued access to markets for these wild-harvested plants."

Josef Brinckmann, president of ABC's Board of Trustees and former member of the FairWild Foundation's Board of Trustees, endorsed the foundation for the award.

"The foundation's efforts to expand the global reach of its standard are critical, because demand for wild medicinal plants is increasing while areas of biodiversity (where the plants naturally occur) are rapidly decreasing," he wrote. "This innovative standard recognizes the links between biodiversity conservation, the value of traditional ecological knowledge, fair compensation for sustainable resource management, rural livelihoods, and the ethical and social responsibilities of finished product brands that need access to wild plants for their products. The FairWild Foundation deserves recognition, and any brands that use wild plants should consider supporting the foundation in any way they can."

Christine Burdick-Bell Receives ABC Champion Award

The 2023 ABC Champion Award was presented to Christine Burdick-Bell, Executive Vice President, General Counsel, and Corporate Secretary at Pharmavite, a West Hills, California-based manufacturer of nutritional products and dietary supplements. The ABC Champion Award, which was first presented in 2015, is given to individuals who have devoted significant time or funds to support ABC's nonprofit research and educational mission, publications, and programs.

Beginning in 2018, Burdick-Bell generously donated her time, legal experience, and expertise to support ABC Regulatory Consultant Michael D. Levin, Blumenthal, and others with the development and refinement of the final drafts of BAPP's "Best Practices Standard Operating Procedure (SOP) for the Disposal/Destruction of Irreparably Defective Articles."

Burdick-Bell was one of the first leaders from a major dietary supplement company to publicly endorse the BAPP SOP, and, even before the SOP was finalized and announced for industry adoption in October 2022, she pledged that Pharmavite would implement aspects of the SOP and seller-buyer contract language into the company's quality systems and SOPs.

The BAPP Best Practices SOP, which is now available for download on ABC's website, is a voluntary, self-regulatory consumer-protection initiative designed to assist buyers in the herb, dietary supplement, food, cosmetic, and over-the-counter (OTC) drug industries to remove ingredients from the supply chain if those ingredients ("articles") are deemed by scientifically valid, mutually-agreed-upon, third-party analytical laboratory testing to be "irreparably defective." That is, they cannot be lawfully reconditioned for use in foods, dietary supplements, cosmetics, etc.

The new SOP contains contract language templates for the seller and buyer; a three-way confidentiality agreement among the buyer, seller, and contract analytical laboratory; and frequently asked questions that arose during two public comment periods.

"Pharmavite has long been a strong supporter of the Botanical Adulterants Prevention Program, which is a program of ABC, the American Herbal Pharmacopoeia, and the University of Mississippi's National Center for Natural Products Research," said Burdick-Bell. "The program's excellent work to educate the industry about and uncover ingredient and product adulteration cannot be overstated. I was privileged to play a very small role in furthering the program's efforts and am deeply honored by this award."

Burdick-Bell has been with Pharmavite since 2005 and is responsible for the company's legal and government affairs. Pharmavite, which Burdick-Bell's brother Henry Burdick founded with pharmacist Barry Pressman in 1971, is an early pioneer in the manufacturing and marketing of dietary supplements and sells supplements under the Nature Made® brand, one of the top-selling brands in the mainstream retail channel. Pharmavite was the first national supplement company to have key products verified by the United States Pharmacopeia (USP), a leading arbiter of dietary supplement quality, and Burdick-Bell was an important part of that process.

Burdick-Bell has been a practicing attorney for more than 35 years and is a member of the State Bar of California, the American Bar Association, and the Association of Corporate Counsel. She has been a partner at a leading law firm and has handled significant mergers and acquisitions, major securities filings, private placements, and general business matters. She is also on the Board of Directors of the Council for Responsible Nutrition (CRN), a leading dietary supplement industry trade association.

Burdick-Bell received a Bachelor of Science in biology and Bachelor of

ABC Champion Award Recipients
2023: Christine Burdick-Bell
2022: Steven Foster
2021: Jerry Cott, PhD
2019: Thomas Brendler, PhD
2018: Jim Emme
2017: Dick Griffin
2016: Josef Brinckmann
2015: Ed Smith
2014: Terry Lemerond


Christine Burdick-Bell

Arts in chemistry from the University of California, Irvine and a Juris Doctor degree from Stanford University Law School.

Levin, the founder of Health Business Strategies and primary consultant on and author of the BAPP SOP, wrote: "These BAPP Best Practices are better because of Christine's contributions, and our entire industry is in her debt. Though she is a general counsel for a leading vitamin and supplement company, she was focused when it came to our work together on the BAPP SOP. With the linguistic precision of an experienced lawyer and the eagle eye of an expert peer reviewer, Christine never hesitated to speak her mind and fight for what she thought was best, and what she thought was best was always about protecting the consumer. She continues to epitomize Pharmavite's first core value: 'Do the Right Thing.'"

Blumenthal said: "ABC and BAPP are deeply grateful to Christine for her key role in editing and finalizing the BAPP SOP. While we appreciate the time and assistance provided by several attorneys and regulatory experts who served as ad hoc advisors on the legal-regulatory aspects of this vital document, Christine stood out due to the large amount of her valuable time and expertise that she freely dedicated. She has made a significant contribution to the herb and dietary supplement industry."

Mimi Hernandez Receives ABC Community Builder Award

Mimi Hernandez, RH (AHG), the executive director of the American Herbalists Guild (AHG), received the 2023 ABC Mark Blumenthal Herbal Community Builder Award. This annual award is given to individuals who have played a significant role in creating a sense of connection and community among herbalists, botanical researchers, members of the herb and natural products communities and industries, and others who work with medicinal and aromatic plants.

Hernandez is an herbalist and ethnobotanist with a master's degree in herbalism from the Tai Sophia Institute (now the Maryland University of Integrative Health). Mentored by Jim Duke, as well as acclaimed herbalists including Kevin Spelman, PhD, James Snow, DCN, RH, and Simon Mills, FCPP, FNIMH, Hernandez also draws on the tradition of *curanderismo*, the holistic system of Latin American folk herbalism, and her Colombian and Mexican heritage.

Currently, she facilitates AHG's Sanctuary Dreamers Meet-ups, which are events designed to offer support and tools for those who want to become members of UpS' Botanical Sanctuary Network, and stewards the PonderLand native plant sanctuary in Polk County, North Carolina, in the foothills of the Blue Ridge Mountains. She is the author of the upcoming *National Geographic Herbal* (National Geographic, 2023), which will highlight herbal medicine traditions from traditional Chinese medicine and India's Ayurvedic system of medicine to Latin American curanderismo and Gullah/Geechee practices. (The Gullah/Geechee are descended from enslaved people from different African tribal groups who, after emancipation, formed a distinct and unique cultural group along the waterways of the American South.)


Mimi Hernandez

For Hernandez, building healthy relationships with people is inextricably linked with building and preserving the natural environment. "As I contemplate the idea of community building and the role of an herbal community builder, I stand in awe of the herbalists who quietly tend to the connections between people and plants," she said. "I am inspired by those wise folks who cultivate a sense of belonging amongst herbalists.

"I am grateful to be recognized by the American Botanical Council as a recipient of the Mark Blumenthal Herbal Community Builder Award," she continued. "When I was first informed of this honor, I had to let it sink in. It baffled me because I am just one individual, a thread in the vast fabric of the herbal community. As the concept of 'community' implies more than one person, a network of living beings, I humbly share this award on behalf of the many communities I find myself woven into."

Hernandez has been the executive director of AHG since 2013. She promotes understanding among people with different backgrounds and experiences, with the goal of maintaining and stewarding native plants in the United States. AHG was founded in 1989 to promote clinical herbalism as a viable profession rooted in ethics, competency, diversity, and freedom of practice. According to the organization's website, AHG envisions "a culture of vocational empowerment for aspiring and practicing clinical herbalists, as well as other members of the herbal profession including educators, herbal product makers, herbal business owners, growers, wildcrafters, and formulators."

AHG's diverse membership inspires Hernandez's goal of building bridges. "We have much work to do in shifting community ideology, especially for those of us involved in longstanding organizations," she said. "What are we doing to showcase the tapestry of voices of plant lovers? How are

ABC Mark Blumenthal Herbal Community Builder Award Recipients
2023: Mimi Hernandez, RH (AHG)
2022: Emily Ruff
2021: Michael McGuffin
2019: Mary Blue, Katheryn Langelier, and Nicole Telkes
2018: Larry and Linnea Wardwell
2017: Jon Benninger
2016: Ikhlas Khan, PhD
2015: Michael Tierra
2014: Loren Israelsen
2013: Sara Katz
2012: Rosemary Gladstar

we building communities that foster trust and amplify reverence for the ethnosphere [the cultural web of unique customs around the world] of plant traditions? How are we engaging our communities to practice awareness and ethics toward healthy plant communities? I hope these questions remain at the forefront in the hearts of today's community builders to better seed the bountiful fiber of community for generations to come."

Blumenthal said: "Mimi is a quintessential community builder. She has an innate sense of respect for and connection with many people on the plants-for-people path. The humility with which she accepted this recognition speaks to her sense of seeing herself as simply being a servant to her botanical education and activist calling. She is most deserving of ABC's recognition for her energetic and positive role in the American herbal community."

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The ABC Celebration and Botanical Excellence Awards were generously underwritten by Alkemist Labs, Amin Talati Wasserman, Applied Food Sciences, Brassica Protection Products, Eurofins, Euromed, EuroPharma, Herb Pharm, Indena, MegaFood, Natural Factors, New Chapter, NOW Foods, RFI, RT Specialty, and the United Natural Products Alliance. HG

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The 2023 ABC Botanical Excellence Awards

ABC Hosts 17th Annual HerbDay Celebration

By Gayle Engels

On Saturday, May 6, 2023, a beautiful, sunny day, the American Botanical Council (ABC) hosted its first live HerbDay event since 2019. The celebration took place from 10 a.m. until 4 p.m. at ABC's 2.5-acre Case Mill Headquarters in Austin, Texas.

The festivities began with a presentation called "All About Ginger and Its Kin: From Garden to Kitchen and Apothecary" by herbalists Susan Belsinger and Tina Marie Wilcox. They covered topics including how to grow and harvest members of the family Zingiberaceae, the easiest way to peel rhizomes, and how to make various culinary and medicinal preparations, such as decocting ginger (*Zingiber officinale*) for a syrup, pickling ginger, and making "golden milk" with turmeric (*Curcuma longa*).



Belsinger and Wilcox have collaborated on presentations and workshops since they met and became friends in 1996, when Belsinger presented two herb programs at the Ozark Folk Center (OFC) State Park in Mountain View, Arkansas. Wilcox is the head herbalist and gardener and herbal event coordinator of the OFC. There, she and Belsinger lead the Wild Herbal Field Trip and Medicinal Plant Symposium each May and organize the Herb Harvest Fall Festival in October, which focuses on food and plants from a different part of the world each year. They have practiced their craft together for more than 25 years, so it may not be surprising that they have been called the "Grace and Frankie of the herbal community."

In the afternoon, renowned herbalist Rosemary Gladstar gave a moving presentation titled "Herbs as Sweet Medicine for the Soul." After ABC Founder and Executive Director Mark Blumenthal's introduction, Gladstar began her presentation with a song and then, for more than an hour, spoke from her heart about the connection between people and plants and how humans can nurture cooperation with plants to make the world a better place for both. She ended with another song. It was unlike many other HerbDay keynote speeches, but it was fitting for the first one after the three-year COVID-19 pandemic, which isolated so many people from each other.



Gladstar has been learning, teaching, writing about, and practicing herbal medicine for more than 50 years. Considered a star figure in the modern herbal movement and often referred to as the "godmother of American herbalism," Gladstar is the author of 12 books, the co-founder and former director of both the International Herb Symposium and the New England Women's Herbal Conference, the founding president of United Plant Savers (UpS), and the co-founder and original formulator of Traditional Medicinals, an ABC HerbDay sponsor. She is also the author and inspiration behind the popular home study course "The Science and Art of Herbalism," which thousands of students have taken over the past four decades. In 2017, Gladstar was awarded an honorary doctorate for her life's work from the National University of Natural Medicine in Portland, Oregon.



Top photo: Rosemary Gladstar speaks to attendees. Photo ©2023 Denise Meikel

Middle photo: Jesus Garcia leads a "myco-meditation." Photo ©2023 Denise Meikel

Bottom photo: Tina Wilcox, Susan Belsinger, and Rosemary Gladstar lead a plant walk. Photo ©2023 Caglar Orhan

In between their presentations, Gladstar, Belsinger, and Wilcox led a plant walk together. They focused on the Human Systems Gardens in front of ABC's main building. These gardens include separate beds with herbs commonly used for digestive, endocrine, respiratory, cardiovascular, excretory, immune, and central nervous systems, as well as ear, nose, and throat health. At least 100 people took part in the plant walk to learn what these knowledgeable women had to share about the plants.

As part of Central Texas Mycological Society's first involvement in HerbDay, Jesus Garcia led a short "myco-meditation" and mycology walk through ABC's Rose, Traditional Chinese Medicine, and Ayurvedic gardens. Garcia is a Mexican shaman and herbalist who teaches the traditions of *curanderismo* (folk medicine) and community spiritual herbalism. Garcia is an early childcare educator who focuses on nature school fundamentals through holistic enrichment garden programs and is the founder of the Herbal Action Project, a nature play-school and community garden sanctuary.

Throughout the day, ABC offered its usual HerbDay activities. Visitors lined up at the plant sale as soon as the event started, and few plants remained at the end of the day. ABC, the CLEAN Cause Foundation, and Buddha's Brew Kombucha provided complimentary refreshments. HerbDay sponsors Traditional Medicinals and Nature's Way provided free samples of teas and dietary supplements. The event also featured book sales, book signings by the speakers, and music by local performers, and the day ended with the traditional annual Maypole dance.

ABC is grateful to everyone who attended and contributed to HerbDay 2023, including ABC staff, interns, volunteers, and visitors from the International Herb Association who helped complete last-minute tasks the day before the event.

Several other HerbDay events were held in 2023. For example, the northern New Jersey chapter of the American Herbalists Guild (AHG) and Well-Sweep Herb Farm collaborated on an HerbDay celebration at Well-Sweep in Port Murray, New Jersey. The free event featured educational talks from Kerry Adams, RH (AHG), Wendy Warner, MD, Glenn Gero, ND, and others; plant walks and greenhouse tours hosted by Patrick McDuffee and David Hyde of Well-Sweep and David Winston, RH (AHG); and activities such as a guided meditation with botanical teas and a medicinal mushroom tincture demonstration. The event also featured a craft market with local artisans and restaurants and a plant sale with many of Well-Sweep's 1,898 plant varieties available. An estimated 2,000 people attended.

Cyrus and Louise Hyde founded Well-Sweep Herb Farm in 1966, and Cyrus' passion for collecting and propagating different varieties of herbs earned him recognition from the International Herb Association and the Herb Society of America. Cyrus died in June 2020 at age 90, but the Hyde family still owns the farm and continues his vision of growing organically cultivated plants from around the world and creating a peaceful, relaxing environment for visitors.

About HerbDay

HerbDay is an international celebration of herbs and herbal products, with events aimed at educating and sharing ideas about the many ways herbs bring joy and well-being into our daily lives. The events celebrate herbs' uses in food, beverages, medicine, beauty products, and crafts, along with the art of growing and gardening with herbs.

HerbDay is a grassroots movement, and anyone can participate. Although the 2023 events took place on May 6, ABC encourages people to commemorate HerbDay any day and any time of the year. The HerbDay Coalition consists of ABC, UpS, the American Herbal Products Association, the American Herbal Pharmacopoeia, and AHG.

Save the date for HerbDay 2024: Saturday, May 4! HG

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Botanical Adulterants Prevention Program Publishes New Bulletin on Elder Berry and Berry Extract Adulteration

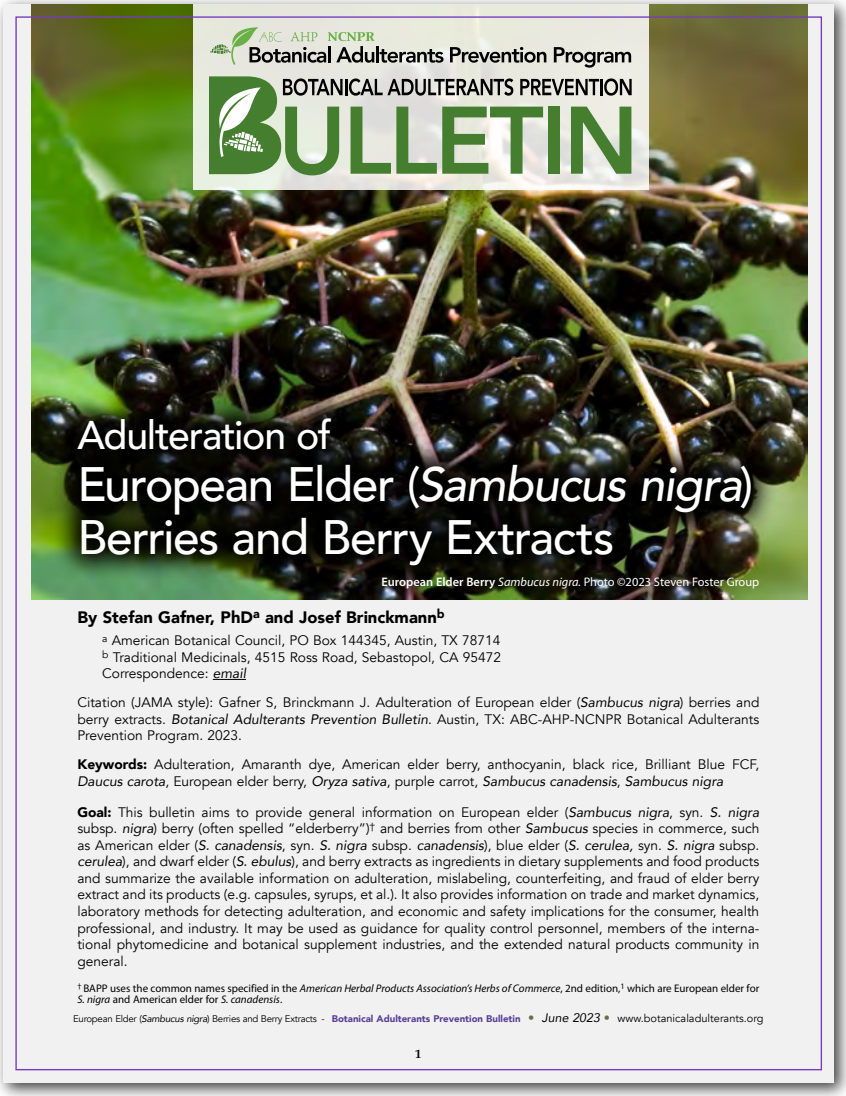
Peer-reviewed document provides evidence of elder berry extract adulteration with undeclared low-cost, anthocyanin-rich extracts and food dyes

By ABC Staff

In June 2023, the ABC-AHP-NCNPR Botanical Adulterants Prevention Program (BAPP) published a Botanical Adulterants Prevention Bulletin (BAPB) on European elder (*Sambucus nigra*, syn. *S. nigra* subsp. *nigra*, Viburnaceae) berry and berry extract adulteration.

In commerce, European elder is sometimes referred to as "elder," "elderberry," or "European black elder." Elder berry preparations are commonly used to treat symptoms of upper respiratory infections, including colds and flus. Several clinical studies support elder berry's potential benefits to treat symptoms of the common cold. Use of elder berry supplements as a cold and flu remedy has increased rapidly in recent years, particularly during the beginning of the COVID-19 pandemic. In the United States, elder berry ranked as the top-selling herbal supplement in the mainstream channel and the third top-selling herbal supplement in the natural channel in 2021, with sales totaling about $305 million in both channels, according to the American Botanical Council's (ABC's) 2021 Herb Market Report.[1]

The new bulletin summarizes available evidence of elder berry extract adulteration from seven reports and publications, five of which are from peer-reviewed journals. The adulteration of elder berry preparations typically involves undisclosed inclusion of black rice (*Oryza sativa*, Poaceae) extracts, although substitution with other anthocyanin-rich plant extracts or blue or purple food colorants also has been reported. According to some sources, genuine elder berry extract costs up to 30 times more than black rice extract, which provides a financial motivation for such fraud.



The new BAPB was written by Stefan Gafner, PhD, ABC chief science officer and BAPP director, and Josef Brinckmann, an herbal medicine expert, president of ABC's Board of Trustees, and research fellow at Traditional Medicinals (Sebastopol, California). The bulletin summarizes published data on adulteration of elder berry and its extracts and provides information on the taxonomy, therapeutic uses, supply chain/value network, market importance, and analytical methods to detect adulteration of elder berry. Twenty-two medicinal plant experts from academia, nonprofit organizations, contract analytical laboratories, government agencies, and the herb industry reviewed the bulletin before publication.

Gafner commented: "Elder berry is one of my favorite phytomedicinal ingredients and one that I have used on numerous occasions over the years. The relatively widespread occurrence of elder berry extract adulteration with extracts of black rice, which is documented in

the new bulletin, is disturbing. However, recent discussions with responsible members of the herb and dietary supplement industry suggest that the elder berry market has been stabilizing. Some brands that entered the market at the height of the elder berry demand, and which, unbeknownst to them, may have been selling adulterated products, appear to have exited the market. Therefore, the quality of available elder berry dietary supplement products may have improved in recent months."

ABC Founder and Executive Director Mark Blumenthal said: "As with other BAPP publications, … many members of the global medicinal plant community will use the new elder berry bulletin as a reliable resource for research and development and quality control, to help ensure the authenticity of the ingredients used in their consumer products.

"If the entire herb and dietary supplement industry were composed of ethical players, then we wouldn't need BAPP's efforts to help reduce and eliminate the sale of adulterated and fraudulent ingredients," Blumenthal added. "Unfortunately, history tells us that some individuals and companies' pursuit of profits outweighs their commitment to the welfare of consumers who use products with their questionable ingredients. Fortunately, many companies do care about quality and the consumer experience, and we are deeply grateful to them for their support of BAPP's mission."

The elder berry document is BAPP's 27th bulletin. All BAPP publications are freely available on the program's website (registration required).

About the ABC-AHP-NCNPR Botanical Adulterants Prevention Program

The ABC-AHP (American Herbal Pharmacopoeia)-NCNPR (National Center for Natural Products Research at the University of Mississippi) Botanical Adulterants Prevention Program is an international consortium of nonprofit professional organizations, analytical laboratories, research centers, industry trade associations, industry members, and other parties with interest in herbs and medicinal plants. The program advises industry, researchers, health professionals, government agencies, the media, and the public about various challenges related to adulterated botanical ingredients in commerce. More than 200 US and international parties have financially supported or otherwise endorsed the program.

As of June 2023, BAPP has published 82 extensively peer-reviewed articles, including BAPBs, Laboratory Guidance Documents, Botanical Adulterants Monitor e-newsletters, and *HerbalGram* articles. HG

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Elder berry *Sambucus nigra*
Photo ©2023 Steven Foster Group

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Botanical Adulterants Prevention Program

For more details on joining the program and access to the free publications produced to date, **please see www.botanicaladulterants.org or contact Denise Meikel at denise@herbalgram.org.**

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BAPP's Best Practices SOP for the Disposal / Destruction of Irreparably Defective Articles

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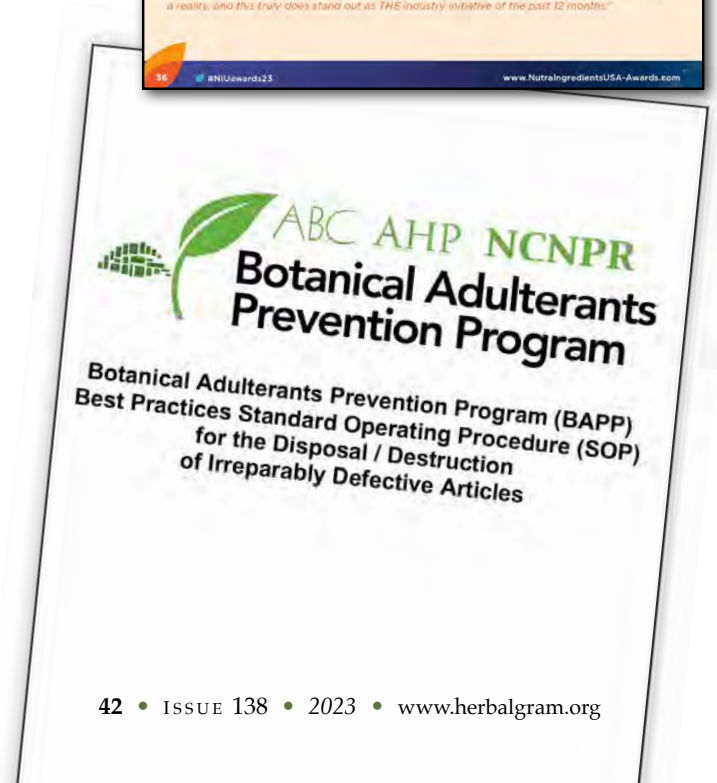
BAPP's Standard Operating Procedure Receives 'Industry Initiative of the Year' Award from NutraIngredients-USA

Best Practices SOP called 'game changing' and 'a momentous achievement'

By ABC Staff

In July 2023, NutraIngredients-USA (NIU), a leading online trade publication for the US dietary supplement industry, announced that the ABC-AHP-NCNPR Botanical Adulterants Prevention Program's (BAPP's) "Best Practices Standard Operating Procedure (SOP) for the Disposal/Destruction of Irreparably Defective Articles" is the recipient of its 2023 "Editors' Award for Industry Initiative of the Year."[1]





The award, given by NIU's editorial team, celebrates industry initiatives that improve quality, transparency, consumer confidence, and trust in the dietary supplement industry. The BAPP Best Practices SOP, which was released in October 2022, is available for download on the American Botanical Council's (ABC's) website after registration.[2]

"The BAPP best practices SOP for the disposal/destruction of irreparably defective articles truly does change the game," wrote Stephen Daniells, PhD, the editor-in-chief for North and South America of William Reed, the publisher of NIU, in an email. "This is a momentous achievement that will have wide ranging benefits for the dietary supplement supply chain, botanicals, and others. We salute the BAPP team for their years of work to make the SOP a reality."

BAPP's mission is to educate industry members about plant- and fungus-derived ingredient adulteration and help industry members properly authenticate these ingredients, thereby helping to ensure that only authentic materials are used globally in consumer health products. BAPP conducts research on how parties in the herb, dietary supplement, and natural products industries can better detect and establish appropriate authenticity specifications for natural health products made from plants and fungi.

In response to concerns about adulterated ingredients that are sometimes returned to suppliers and then resold into commerce, BAPP focused on finding a solution to this global supply chain problem. This voluntary, flexible, and carefully crafted BAPP Best Practices SOP creates a new regulatory term: "irreparably defective articles" (IDAs). The SOP stipulates that when the buyer and supplier agree (through appropriate third-party analytical lab testing) that an article is irreparably defective and cannot be lawfully remediated for any human or animal use, it will be destroyed.

BAPP's SOP applies to all forms of adulteration and food fraud. Articles may be deemed irreparably defective for reasons such as accidental chemical contamination, biological contamination, intentional "spiking" with undeclared prescription drugs, and other potentially harmful forms of fraud that have been found in foods, dietary supplements, dietary ingredients, over-the-counter drugs, and cosmetics.

"On behalf of all of us at BAPP and ABC, we thank Dr. Stephen Daniells and his colleagues at NutraIngredients-USA for their recognition of our unique and much-needed nonprofit research and educational work to help ensure that consumers are able to enjoy the health benefits of natural products made with authentic ingredients," said Mark Blumenthal, founder and executive director of ABC and founder of BAPP.

"I also thank the BAPP team, particularly Michael D. Levin, for their work on producing the BAPP SOP, as well as the many members of the herb industry in the United States and internationally who have underwritten BAPP's efforts to help ensure authenticity and provide information on how to detect adulteration and fraud in the global botanical ingredients supply network. It is important to recognize that many ethical, responsible, high-quality suppliers and manufacturers in the US and global herb and dietary supplement industry are strongly committed to ensuring the authenticity and quality of their ingredients and products," Blumenthal added.

Levin, the founder of Health Business Strategies, a health care and natural products consulting company that focuses on regulatory and quality issues, is the primary author of the SOP and principal SOP consultant for BAPP.

Stefan Gafner, PhD, chief science officer of ABC and director of BAPP, said: "I am pleased that the BAPP Best Practices SOP for the Disposal/Destruction of Irreparably Defective Articles has been recognized by NIU with this award. It is a testimony to the good work of Michael Levin, Mark Blumenthal, and all the legal and regulatory consultants who put so much volunteer effort into crafting this very useful document and have helped fill a gap in regulations and current purchasing agreements. Adoption of this SOP by industry members will lead to continued improvement of the quality of dietary supplements on the market."

The BAPP Best Practices SOP has been endorsed by herb and dietary supplement companies, trade associations, and professional medical organizations that serve millions of people in the United States and internationally. Industry members can endorse the BAPP SOP by downloading a form on ABC's website.[3] Completed forms can be sent to BAPPSOP@herbalgram.org.

This is the second time that NIU has recognized BAPP for its nonprofit research and educational work. In 2019, the NIU editors acknowledged BAPP for its leadership in the herb and dietary supplement industry. They noted that "BAPP is an exemplary educational resource about adulteration in the botanical supply chain, with its growing body of peer-reviewed literature, laboratory guidance documents, bulletins, and newsletters," according to NIU's article about the 2019 award.[4]

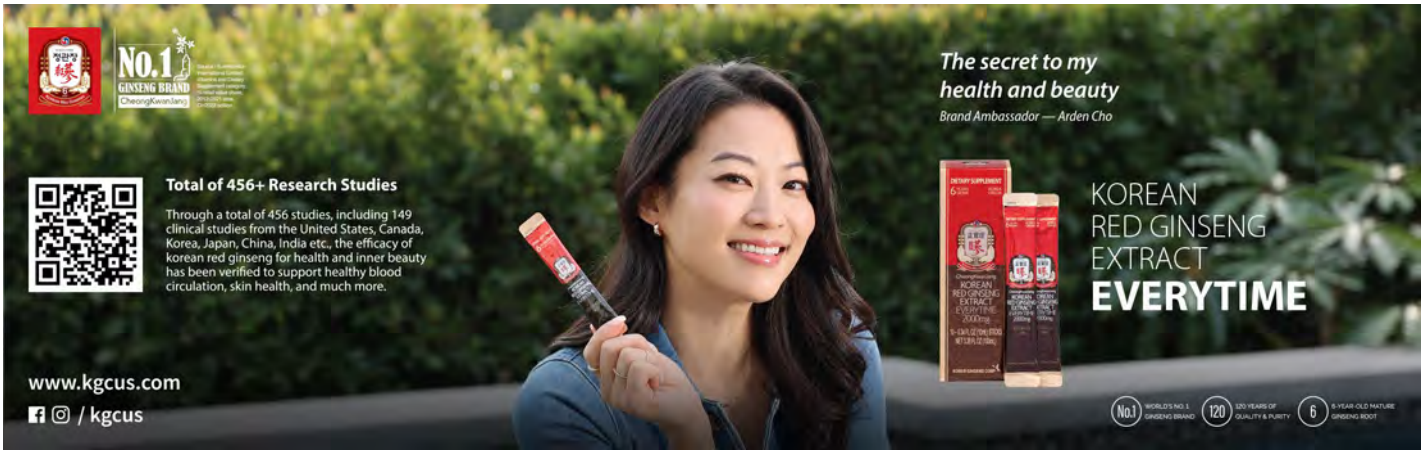
The NIU video news release and interview with Blumenthal and Levin discussing the BAPP SOP can be viewed on NIU's website.[1] HG

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"This is a momentous achievement that will have wide ranging benefits for the dietary supplement supply chain, botanicals, and others. We salute the BAPP team for their years of work to make the SOP a reality."

—Stephen Daniells, PhD



ABC's Sustainable Herbs Program Releases Video Exploring Regenerative Herb Farming in Costa Rica

In-depth video shows how regenerative farming addresses critical global environmental, social, and economic challenges

By ABC Staff

In March 2023, the Sustainable Herbs Program (SHP) released a video that explores how farmers are using regenerative practices to grow herbs and medicinal plants while building soil health and resilient communities in Costa Rica.[1] It also highlights how supporting these human and ecological communities is critical to ensuring the quality and long-term supply of many medicinal plants on which the herb industry depends.

Key points of this 21-minute video include:

- How organic certification is not enough to address the scale of current human, ecological, and economic challenges
- How regenerative farming practices like mulching, low and no-till procedures, and intercropping help balance the microbiology of the soil
- Why balancing the microbiology of the soil is critical
- How to support the intelligence of the plant
- The importance of dignified, stable work for farmers as a way to convince younger people to farm
- How the herb industry can better support the farming communities on which it depends



The video also features interviews with numerous regenerative herb farmers and regenerative agricultural experts. These include Ryan Zinn of Dr. Bronner's, Esteban Jiménez and Joshua Hughes of Blacksheep Regenerative Resource Management, Luis Iglesias and Ric Scalzo of CR Medicinal Farms, Geri and Rob Brown and Juan Pérez Sovalbarro of Cinco Ramas Organic Spice Farm, and many more.

"We are seeing more and more farmers stop growing because they're not making money and then they're going into cities and we're losing farmers," said Alison Czeczuga, director of social impact and sustainability at Gaia Herbs, in the video. "For this industry to survive, we really have to look at the start of the supply—treating those farmers right and buying herbs that really will positively impact people's health."

"Over the [past] five or seven years we've seen a transition to understanding that agriculture plays a really significant role in emitting greenhouse gases. [Regenerative farming] is one of the best ways that we can not only address global greenhouse [gas] emissions, but also really improve people's lives. I would say [it] is one of probably the most hopeful things I've seen," said Zinn, regenerative projects manager at Dr. Bronner's.

"We want to create impact, to make change in the world through regenerative agriculture," said Scalzo, founder and CEO of CR Medicinal Farms.

"Regenerative farming is increasingly a buzzword, and it is critical that we have the tools to know when these claims are real," said film co-producer and SHP Director Ann Armbrecht, PhD. "We produced this video to highlight the voices and initiatives of those investing in farming in Costa Rica in ways that not only produce high-quality raw botanical material but that also support the health of the soil and of the farming communities growing and processing those herbs."

Mark Blumenthal, founder and executive director of the American Botanical Council (ABC), described the video as information rich and insightful. "I learned a lot from it," he said. "This is a compelling educational primer on the great value of regenerative agricultural methods of growing medicinal plants."

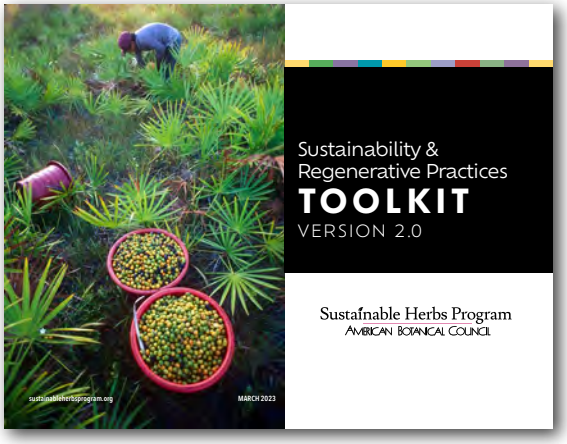
The SHP regenerative agriculture video was produced by Armbrecht and veteran documentary film producer Terry Youk. It is one of many videos that deal with regenerative and sustainable sourcing of herbs and medicinal plants and that are freely accessible on SHP's website: https://sustainableherbsprogram.org. HG

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SHP Launches Updated Sustainability and Regenerative Practices Toolkit Version 2.0

Resource-rich toolkit offers opportunities for herb businesses to operate more sustainably



By ABC Staff

In March 2023, the Sustainable Herbs Program (SHP) launched the SHP Sustainability and Regenerative Practices Toolkit Version 2.0, an updated, expansive collection of resources intended to generate awareness about, and help leaders in the global botanical industry implement, ecologically and socially responsible practices.[1] The toolkit is user friendly, freely accessible, and greatly revised from the initial SHP toolkit, which was released in 2020.[2]

Ensuring the long-term supply of medicinal and aromatic plants, on which herb, tea, dietary supplement, and/or natural cosmetics companies depend, is crucial to these companies' success, but knowing where to begin can be overwhelming without reliable guidance. The SHP Toolkit Version 2.0 offers a guide to help companies at different stages of their sustainability journey. It brings together resources and case studies from other industries to inform, inspire, and guide progress.

The SHP Toolkit Version 2.0 includes a new design with modified infographics; updated resources, especially summaries of certifications, new programs, and other relevant information in this rapidly changing field; and a short self-assessment to gauge where companies stand in their sustainability journey. This assessment can also be used as the basis for annual sustainability reporting and certification audits. The toolkit also includes access to webinars with experts who dive into key topics such as regenerative farming, wild plant collection and stewardship, living income, and social equity, among other subjects. Insights from these discussions are incorporated into the revised toolkit, as are links to summaries, video highlights, and the complete recordings.

The SHP Toolkit Version 2.0 retains these constructive resources from the original SHP Toolkit:

- Videos that highlight stories from the field and/or case studies to learn about each topic in the SHP Toolkit through meaningful examples of best practices
- Discussion questions to reflect on those examples and how they apply to the unique challenges of each company
- Action steps in each of the 10 sections to deepen the learning experience
- Curated resources from different sectors organized around topics that are particularly relevant to sourcing medicinal plants

"The botanical industry is uniquely suited to lead the way in doing business that serves health and wellness for all: for people, plants, and planet, not just finished product consumers," said Ann Armbrecht, PhD, SHP director. "The challenges threatening the long-term supply of medicinal plants — the climate crisis, the precipitous loss of biodiversity, social and economic inequity, and ongoing supply disruptions from the pandemic — are too big for any company to tackle on its own. The Sustainable Herbs Program helps [these companies] meet these challenges by providing tools, resources, and pre-competitive collaborative opportunities to take action in a meaningful and constructive way."

Josef Brinckmann, research fellow of medicinal plants and botanical supply chain at Traditional Medicinals and president of the American Botanical Council's (ABC's) Board of Trustees, congratulated Armbrecht "on the launch of a beautifully revised and expanded version 2.0 of the SHP Toolkit." He added: "C-level executives may consider the SHP Toolkit Version 2.0 to be a required course for employees who are responsible for botanical supply chain quality, sustainability, visibility, and assessments of corporate social responsibility in supply chains. Even those with experience in voluntary sustainability standards and responsible supply chains will find fresh ideas and shortcuts to essential information in version 2.0."

The SHP Toolkit Version 2.0 is one of SHP's many publications and projects, which include a video-rich website, a blog and monthly newsletter, webinars on numerous topics related to sustainability and regenerative practices in the global value networks for medicinal and aromatic plants, "brown bag" seminars, and more. SHP educational content is freely accessible on the SHP website. Accessing the SHP Toolkit Version 2.0 requires registration, which is also free. HG

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American Herbal Pharmacopoeia Publishes Yerba Santa Monograph and Therapeutic Compendium

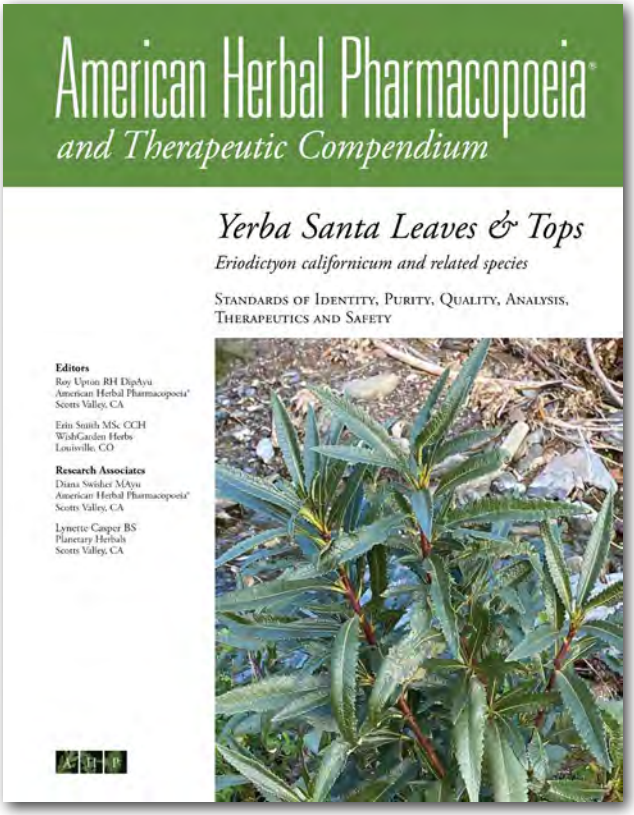
By Connor Yearsley

In May 2023, the American Herbal Pharmacopoeia (AHP) released a monograph containing quality control standards and a therapeutic compendium for yerba santa (*Eriodictyon californicum*, Boraginaceae) leaves and tops and related species. Yerba santa has been one of the most valued traditional herbal medicines throughout its growing region in California, an environment rich with thousands of other plants and hundreds of other botanical medicines.

"AHP likes to focus on developing monographs that have never been done," wrote Roy Upton, RH (AHG), DipAyu, president of AHP and editor of the yerba santa monograph (email, May 15, 2023). "Such was the case with yerba santa. It is not included in any other pharmacopoeia in the world. Among the select herbal manufacturers that use it, yerba santa is a key ingredient in some of their most effective formulas.

"The monograph's development coincided with the COVID-19 pandemic," Upton continued. "Though clinical evidence regarding yerba santa's efficacy is lacking, a plethora of empirical and pre-clinical research suggests it has a potential role to play in treating a variety of upper respiratory conditions and specifically was used for respiratory afflictions with symptoms that are similar to those experienced by people who have COVID-19."

According to AHP, the new monograph is the first and only one of its kind and is the most comprehensive ethnobotanical, historical, therapeutic, and safety review of yerba santa, which is an exclusively North American botanical. The original chemical analyses that were conducted for the monograph identified different chemotypes of one of the primary species used: *E. californicum*. Also, according to AHP, this is the first set of independent pharmacopeial quality control standards developed for the various species that are referred to as "yerba santa," which also include *E. angustifolium* and *E. trichocalyx*.



AHP monographs establish identification, purity, and quality standards for botanical raw materials and preparations. The therapeutic compendia provide a comprehensive review of pharmacological and safety data, including medical indications and evidence from clinical, animal, and in vitro studies; modern and traditional uses; pharmacokinetics; pharmacodynamics; and guidance for structure and function claims. The compendia also cover dosages, interactions, side effects, contraindications, toxicology, and more. This information can be used by individuals in the herbal community, from consumers and health care practitioners to industry members like quality control personnel, purchasing agents, and other people at dietary supplement manufacturers.

AHP's new yerba santa monograph was a collaboration among researchers at the Santa Barbara Botanic Garden's Department of Conservation and Research, the United States Department of Agriculture's (USDA's) Agricultural Research Service (Natural Products Utilization Research Unit), the National Center for Natural Products Research (NCNPR) at the University of Mississippi, the University of Vienna, CAMAG of Switzerland, and veteran herbal medicine researchers Erin Smith, the vice president of herbal science and research at Banyan Botanicals; Christopher Hobbs, PhD, an herbalist, mycologist, and author; and Steven Dentali, PhD, an industry consultant at Dentali Botanical Sciences; among others.

According to AHP, the monograph's review of yerba santa's chemistry (with the analytical help of the USDA, the University of Mississippi, and Dentali) and the therapeutic compendium by Hobbs are the most comprehensive to date. The safety assessment was coordinated with the most up-to-date review of the literature by the *Botanical Safety Handbook* team of the American Herbal Products Association (AHPA), and the botany coincided with researchers involved with a taxonomic revision of the genus. Work on the monograph began in 2020.



Yerba santa *Eriodictyon californicum*
Photo ©2023 Steven Foster Group

"Yerba santa (*E. angustifolium*), along with *Salvia apiana* (Lamiaceae), was the subject of my graduate thesis, thanks to the late, great herbalist Michael Moore, who provided me with samples of a dozen desert herb species known for their antibacterial activities," Dentali wrote (email, June 1, 2023).

"Recognized as an expectorant with mild decongestant functions, yerba santa has a sweet aftertaste and is still recognized as a flavoring agent," Dentali added. "It is rich in an external leaf resin that is composed of flavanone aglycones and is chemically similar to poplar (*Populus* spp., Salicaceae) buds. AHP's new monograph brings all this home and so much more. To say that it is comprehensive would be an understatement because it encompasses historical and [modern] uses, as well as quality information, as expected for any plant monograph. Known to many Western herbalists, until now, yerba santa has not received the attention it deserves and that is indicated by its name, which translates to 'sacred herb.' Thanks to AHP, this important medicinal herb and its uses need not languish in relative obscurity. Well done, AHP."

Smith wrote (email, June 6, 2023): "Yerba santa is an herb with such a rich ethnobotanical history and yet, to date, much of the information about it has been scattered in various sources. While all AHP monographs are an amazing team effort, to me, this monograph is particularly unique because it was an incredible collaborative process to bring together traditional uses, modern clinical practice, recent science, natural product industry use, and the knowledge of wildcrafters and ecosystem scientists. The result is the most in-depth … work on yerba santa to date. It is very exciting, and it is particularly special that it includes on-the-ground information from wildcrafters who have worked directly with this herb for decades. This information is rarely captured in written form and often is lost when harvesters age out of the business without passing on their knowledge.

"I have no doubt this will be the go-to authoritative resource on yerba santa and will be used by clinicians and industry members alike," Smith added. "I am particularly excited about the in-depth Identification, Commercial Sources and Handling, and Analytical sections, which the industry has needed for a long time to meet quality standards and sustainability goals. Yerba santa has long been revered within Indigenous and Western herbal traditions but hasn't seen as much commercial growth as other herbs. Given its broad array of uses across various body systems, it is apparent why it was revered for so long as an important medicinal ally in many traditional health systems."

According to Upton, most people who use yerba santa use only the leaves, and the species have a wide but sporadic growing range. "Some species within the genus are considered threatened or endangered," he wrote. "We established that at least three primary species of *Eriodictyon*, and a few other secondary species, were used as 'yerba santa.' Each of these are organoleptically and chemically similar and overlap in more than a dozen primary compounds, many of which are shown to contribute to activity that



is beneficial for upper respiratory conditions. Broadening the use beyond a single species helps to lessen the pressure on any single species.

"Second, the ethnobotanical literature established that both leaves and tops were used," Upton added. "Typically, the tops are either not harvested or discarded by modern wildcrafters. This means that a lot of valuable biomass goes to waste. Our chemical analyses established that, while the leaves do yield higher concentrations of secondary metabolites, there were very [few] quantitative and qualitative differences between leaves only and tops. Also, based on the experience of pickers, harvesting tops encourages the plants to branch out, which actually increases yields in subsequent years. Through interfacing with others who are experienced with yerba santa agronomics, it was established that yerba santa can be cultivated successfully by transplanting wild plants into similar habitats and will even survive at the outskirts of its native range. All of this can help encourage the sustainable harvest of the plant, which is a key desire of AHP."

According to Upton, developing the monograph was challenging partly because there is almost no formal clinical data on yerba santa, except for a medical case report from the late 1800s and a relatively recent clinical trial that suggests a potential benefit for weight loss. "Obtaining authentic samples for chemical characterization is always challenging," Upton wrote. "Luckily, we are situated within yerba santa country (*E. californicum* in central California) and were able to collect more than 100 samples from various locations, as well as from various wildcrafters and herbalists. It was difficult to obtain enough samples of species other than *E. californicum*, so the chemical characterization of these is not as robust as we would have liked but still more robust than what currently exists. The fact that the monograph was started at the onset of the COVID-19 pandemic added an element of difficulty, as many labs shut down, universities closed, and a lot of work slowed to a halt. The progress of other AHP monographs suffered as well.

"As with all AHP monographs, our primary goal is to continue to build on the foundation of herbal knowledge that came before us, compile the totality of information, critically review it, establish basic quality standards, and reintroduce herbal stakeholders to many aspects of the monographed botanical, so that we can identify gaps for building on that knowledge," Upton added.

AHP's yerba santa monograph is the 44th monograph published by AHP since 1998. It is available for purchase through AHP's website[1] and was made possible by the financial support of AHP Gold and Platinum members, EuroPharma USA, Herb Pharm, Herbs, Etc., Natreon, Nature's Way Brands, Planetary Herbals, Traditional Medicinals, Vitality Works, and WishGarden Herbs. HG

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ABC Sustainable Herbs Program's

Sustainability & Regenerative Practices

TOOLKIT

VERSION 2.0

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Your resource for improving sustainability.

Includes a Self-Assessment Workbook.

Nigella Shown Effective as Adjuvant Therapy for Type 2 Diabetes Management in Systematic Review

Reviewed: Hoda F, Khanam A, Thareja M, Arshad M, Ahtar M, Najmi AK. Effect of *Nigella sativa* in improving blood glucose level in T2DM: systematic literature review of randomized control trials. *Drug Res (Stuttg)*. January 2023;73(1):17-22. doi: 10.1055/a-1936-8412.

By Shari Henson

Type 2 diabetes mellitus (T2DM) affects about 9% of adults worldwide. This disease is characterized by high blood glucose levels due to tissue insulin resistance and inadequate insulin production. Maintaining glucose homeostasis and improving lipid levels and blood pressure can help reduce complications of T2DM. Traditional hypoglycemic pharmaceutical drugs are used to increase insulin production, improve insulin sensitivity, and boost glucose uptake. However, these medications may have undesirable adverse effects.

Study Details: At a Glance	
Study Design	Systematic review
Included Studies	Randomized, controlled clinical trials (N = 7)
Participants	A total of 523 adults diagnosed with type 2 diabetes mellitus
Interventions	Various nigella seed preparations (e.g., oils, powders)
Controls	Placebo
Disclosures	None declared

Many herbal therapies have demonstrated hypoglycemic and hypolipidemic activities in people with T2DM. Nigella (*Nigella sativa*, Ranunculaceae), also known as black cumin, has been shown to help control T2DM and alleviate its complications. The purpose of the systematic review summarized here was to assess the available clinical evidence of randomized, controlled trials (RCTs) of nigella for T2DM.

The authors searched PubMed/MEDLINE and Google Scholar for RCTs that included people with T2DM and were published in English from 2010 through 2021. The studies used various nigella seed preparations (e.g., oils, powders) and included outcome measures of glycemia (glycated hemoglobin [HbA1c]) and/or fasting blood sugar (FBS). The authors did not include cross-sectional studies, case reports, case series, nonclinical studies, commentaries, editorials, or review articles.

Of the original 332 potentially relevant articles retrieved, the authors found seven RCTs that met the inclusion criteria. In those seven studies, 523 adults with T2DM were randomly assigned to nigella groups or control groups. Men made up roughly 49% of the total participants. The authors assessed study quality using the Cochrane Risk of Bias Tool.

Four studies were conducted in Iran, two in Saudi Arabia, and one in India. Sample sizes ranged from 43 to 114 participants, and study durations were eight to 52 weeks. The mean age of the participants ranged from 46 to 54 years. Nigella interventions included oil capsules (n = 2), oil (n = 2), or powder (n = 3), and daily doses ranged from 500 mg to 3 g. All participants continued their standard oral antidiabetic drugs.

Six studies reported significant decreases in HbA1c after nigella interventions that ranged from eight to 52 weeks and used various daily doses of nigella oil (500 mg, 3 g, or 2.5 mL) or nigella powder (500 mg, 1 g, 2 g, or 3 g). These decreases were significant compared with baseline and/or the placebo groups. All seven studies assessed the effects of nigella on FBS. In each study, the authors reported significant decreases in FBS in the intervention groups compared to baseline and/or the placebo groups. However, the exact extent of FBS reductions was not reported in this review.

One study was found to have an overall high risk of bias, and the other six studies had low risks of bias. The systematic review is limited because it restricted outcome measures to glycemic control, and it excluded non-English articles, which could have introduced linguistic bias. Also, six of the seven RCTs were conducted in Middle Eastern countries, so the results may not be generalizable to other populations.



Nigella *Nigella sativa*
Photo ©2023 Steven Foster Group

"With a considerable decline in fasting blood glucose and HbA1c levels, [nigella] was shown to enhance laboratory measures of hyperglycemia and diabetes control," the authors concluded. The findings suggest that nigella may be effective when used as an adjuvant to treat and manage T2DM. HG

Adjuvant Supplementation with *Echinacea* Combination Product May Improve Outcomes in Women with Cervical Lesions

Reviewed: Riemma G, Schettino MT, Munno GM, et al. *Echinacea angustifolia* and *Echinacea purpurea* supplementation combined with vaginal hyaluronic acid to boost the remission of cervical low-grade squamous intraepithelial lesions (L-SILs): A randomized controlled trial. *Medicina*. May 9, 2022;58(5):646. doi: 10.3390/medicina58050646.

By Samaara Robbins

Infection with human papillomavirus (HPV) can lead to cervical carcinoma, among other types of cancer. HPV can cause squamous intraepithelial lesions (SILs) and cervical intraepithelial neoplasia (CIN), which are precancerous growths that can lead to squamous carcinoma. (Squamous cells are found throughout the body, including in the lining of various organs. Neoplasms are abnormal cell growths that can be benign or cancerous.) These lesions are characterized as low-grade or high-grade. High-grade lesions (H-SIL and CIN-2-3) require surgical intervention, whereas low-grade lesions (L-SIL and CIN-1) typically do not, due to the low risk of progression.

Standard treatment of low-grade cervical lesions L-SIL/CIN-1 includes vaginal hyaluronic acid (HA), which has been shown to improve re-epithelialization and restoration of the cervix and help spontaneous viral clearance. However, some women who use HA as a standalone treatment experience persistence and progression of cervical lesions.

Echinacea angustifolia (EA; Asteraceae) and *E. purpurea* (EP) roots and extracts have demonstrated anti-inflammatory and immunostimulatory properties. EP plant parts have been shown to have significant antiviral activity, and the roots, leaves, stems, and flowers of EA and EP may inhibit the expression of proinflammatory cytokines. The purpose of this three-arm, randomized, single-blind, controlled clinical trial was to determine the efficacy of adjuvant therapy using an EA and EP combination product with an HA product on the regression of L-SIL/CIN-1 in women undergoing a non-surgical approach to treatment.

The study was conducted at a colposcopy (a procedure in which a colposcope is used to examine the



Echinacea purpurea
Photo ©2023 Steven Foster Group

Study Details: At a Glance	
Study Design	Three-arm, randomized, single-blind, controlled clinical trial
Duration	Three-month intervention period, with follow-up visits at six and 12 months
Participants	153 women diagnosed with squamous intraepithelial lesions or cervical intraepithelial neoplasia
Interventions	Arm A: Tiagin® (IDI Farmaceutici; Pomezia, Italy) plus Normoimmuno® (ADL Farmaceutici; Milano, Italy), described below Arm B: Tiagin only (vaginal hyaluronic acid-based soft gel capsules) Arm C: Normoimmuno only (a combination product that contains *E. angustifolia*, *E. purpurea*, polyphenols, vitamin C, zinc, and copper)
Disclosures	None declared

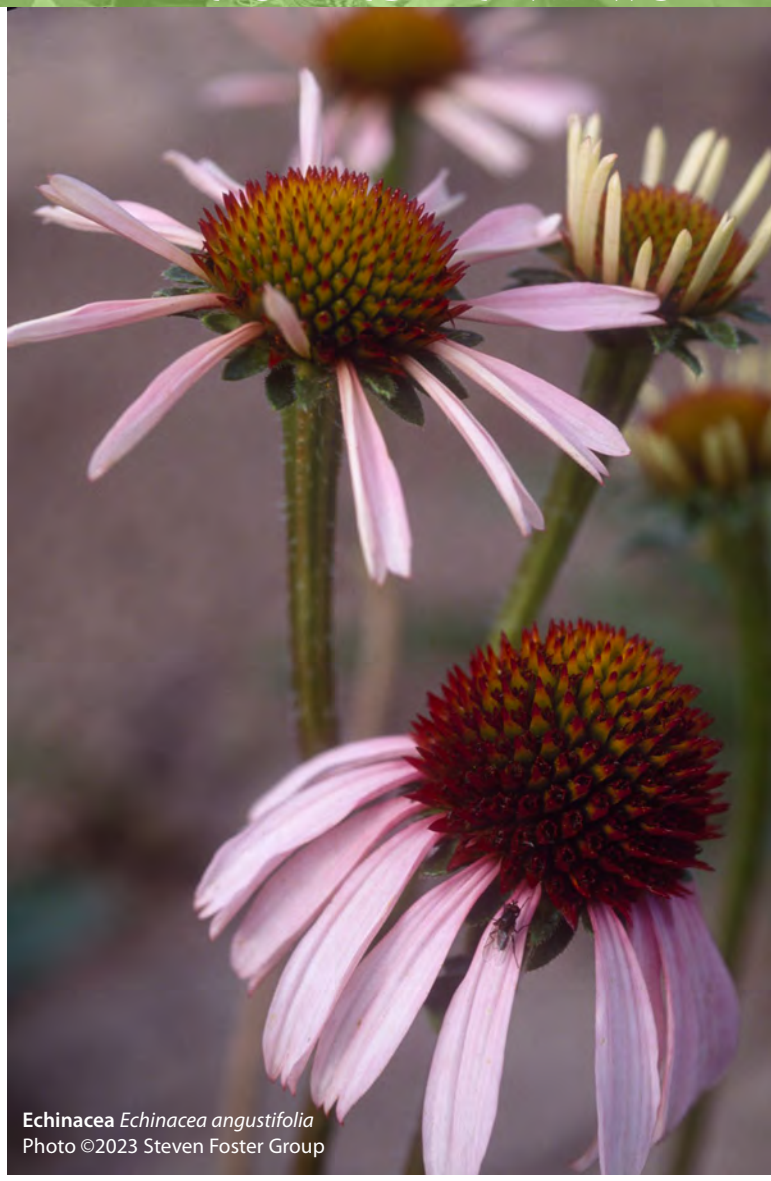
cervix, vagina, and vulva for signs of disease) and cervical-vaginal pathology outpatient clinic in Naples, Italy, between December 2019 and December 2021. The authors included women who were 18-40 years of age of any ethnicity and who had a positive HPV test and a diagnosis of L-SIL or CIN-1. Additionally, participants did not have contraindications to the proposed treatment or, within the preceding three months, use any type of pharmacological or nonpharmacological aid that might interfere with treatment. The authors also excluded women who had received an HPV vaccination, were undergoing immunosuppressive treatment, were pregnant, or had been diagnosed with H-SIL, CIN-2-3, or micro-invasive or invasive cervical carcinoma.

Upon enrollment, women completed a full clinical examination and were assessed at three, six, and 12 months. (The intervention period lasted for three months, and the follow-up visits took place at six and 12 months.) After a colposcopy, including a vulvoscopy, participants were assigned to one of three arms. The primary outcome measure was the regression of L-SIL/CIN-1 based on histological assessments. Secondary outcomes were changes in pap smear results, acetic acid and Lugol tests, histological reports, and vaginal health.

During the three-month intervention period, participants in arm A received both Tiagin® (IDI Farmaceutici; Pomezia, Italy) once daily for 10 days and Normoimmuno® (ADL Farmaceutici; Milano, Italy) twice daily. The authors describe Tiagin as "vaginal hyaluronic acid-based soft gel capsules" but do not mention other ingredients. (According to one online source, Tiagin contains ionic silver, hyaluronic acid, aloe vera [*Aloe vera*, Asphodelaceae] extract, "mallow" extract [*Malva* sp., Malvaceae], and benzalkonium chloride.[1]) Normoimmuno is a combination supplement that contains EA (100 mg), EP (100 mg), polyphenols (4 mg), vitamin C (40 mg), zinc (5 mg), and copper (0.5 mg). Participants in arm B received only Tiagin once daily for 10 days during the three-month intervention period, and Arm C received only Normoimmuno twice daily.

A total of 181 patients were assessed for eligibility, and 153 participants were allocated to arms A (n = 52), B (n = 50), or C (n = 51) and included in the final analysis. No significant differences were observed among the three groups at baseline.

After three months, no significant differences were observed for any of the parameters among the three groups and compared to baseline. At six months, persistent cytologic L-SIL/CIN-1 diagnosis was significantly lower in arm A compared to arms B and C ($P = 0.03$ for both). The number of regressed lesions at six months was significantly higher in arm A compared to arms B and C ($P = 0.03$ for both). At 12 months, these results (persistent cytologic L-SIL/CIN-1 diagnoses and regressed lesions) were still significant ($P = 0.03$ for all). Significant improvements in vaginal, cytologic, and colposcopic parameters at 12 months also were observed in arm A compared to arms B and C ($P < 0.05$). No adverse events were reported.



Echinacea *Echinacea angustifolia*
Photo ©2023 Steven Foster Group

Limitations of this study include the single-blind design, lack of placebo, and small sample size. The authors also note that the increased frequency of cervical biopsies during follow-up may have affected the number of complete excisions of L-SILs. Notably, as other ingredients in the *Echinacea* combination product (e.g., polyphenols, vitamin C, zinc, and copper) may have been responsible or partly responsible for the observed differences, it is not possible to attribute the effects to either or both of the *Echinacea* ingredients.

The authors conclude that adding an "oral supplement of EP, EA, zinc, vitamin C, and polyphenols to vaginal HA soft gel capsules may boost the regression of CIN-1/L-SIL." Additionally, the study found that, at 12 months, the combined treatment improved colposcopic, vaginal, and cytologic parameters compared to HA or EA/EP capsules alone. The authors highlight the need for further research to confirm the results of this study. HG

Reference

1. Tiagin 10 Vaginal Softgel Capsules. Pharmacy Loreto website. Available at: https://pharmacyloreto.com/tiagin-10-softgel-capsules-vaginal. Accessed July 31, 2023.

Maca Shows Promise as Alternative to Testosterone Replacement Therapy for People with Symptoms of Late-onset Hypogonadism

Reviewed: Shin D, Jeon SH, Piao J, et al. Efficacy and safety of maca (*Lepidium meyenii*) in patients with symptoms of late-onset hypogonadism: A randomized, double-blind, placebo-controlled clinical trial. [published online January 1, 2023]. *World J Mens Health*. doi: 10.5534/wjmh.220112.

By Mariann Garner-Wizard

Late-onset hypogonadism (LOH) is characterized by androgen deficiency and low testosterone levels in men and is associated with advancing age. Symptoms include decreased muscle and increased fat mass, anemia, osteoporosis, depression, low vitality, excessive sweating, hot flashes, low libido, and erectile dysfunction. LOH treatment focuses on testosterone replacement therapy (TRT), but there is no consensus on threshold levels of low testosterone, and LOH symptoms do not always significantly correlate with total serum testosterone levels. TRT also can increase risks of prostate cancer, heart attack, and stroke.

Maca (*Lepidium meyenii*, Brassicaceae), a high-altitude plant of Peru, has been used since antiquity as food and medicine and is considered a "superfood" for its nutritive and therapeutic qualities. Maca research has focused on its ability to boost male libido without raising testosterone levels or causing serious adverse effects (AEs). The authors designed a randomized, double-blind, placebo-controlled clinical trial to study the safety and efficacy of a gelatinized maca tablet in eugonadal patients (those with normally functioning gonads) with symptoms of LOH.

Eligible participants were men aged 40 years or older who had a total score of 27 or higher on the Aging Males' Symptoms (AMS) scale, a validated measure used to assess testosterone deficiency. Exclusion criteria were prostate-specific antigen (PSA) levels of 4.0 μg/mL or greater, history or diagnosis of prostate cancer, severe obstructive sleep apnea, serum total testosterone (TT) levels less than 20 μg/mL in the morning, use of TRT for more than six months before randomization, untreated/unstable endocrine disorders, and liver enzymes or creatinine levels more than 2.5 times the normal limits. History or presence of mental, cardiovascular, cerebrovascular, or hematological disorders, or abnormal physical, hematological, or biochemical findings also were exclusionary.

Participants were recruited from February 2020 to February 2021 at Seoul St. Mary's Hospital (The Catholic University of Korea) and Guro Hospital (Korea University), both in Seoul, South Korea. A total of 88 participants were randomly assigned to the maca or placebo group (44 in each group). The maca group took approximately 5 g of "black" maca per day (two 1,000-mg tablets containing 833 mg gelatinized maca powder plus excipients before each of three meals). Black maca is believed to have different biological properties than other types of maca (e.g., red or yellow maca).[1] The placebo group took a total of 6 g of mixed lactose powder per day on the same dosing schedule. Compliance monitoring is not discussed. Maca and placebo tablets were made by Easter B&F (Seoul, South Korea). Maca was standardized to contain n-benzyl-hexadecanamide at 115-175 μg/g,* with minimal heavy metals and no detectable coliform bacteria.

Participants visited the outpatient urology department at either hospital for follow-up appointments at four and 12 weeks. The primary outcome was the change in AMS total scores from baseline. Secondary outcomes were changes on questionnaires including Androgen Deficiency in the Aging Male (ADAM), the International Index of Erectile Function (IIEF), and International Prostate Symptom Score (IPSS), as well as serum levels of TT, free testosterone (FT), and lipids, and weight and waist circumference (WC). Blood tests, urinalysis, vital signs, and AEs were used to monitor safety.

Three people from the maca group and five from the placebo group did not complete the study, leaving a total of 80 participants at the end of the trial. At baseline, there were significant differences between groups in serum TT, FT, total cholesterol (TC), and low-density lipoprotein cholesterol (LDL-C), all of which were higher in the placebo group compared to the maca group (P = 0.0086, 0.0018, 0.0181, and 0.0304, respectively).

Study Details: At a Glance	
Study Design	Randomized, double-blind, placebo-controlled clinical trial
Duration	12 weeks
Participants	80 eugonadal men with symptoms of late-onset hypogonadism
Intervention	Tablets containing gelatinized maca powder plus excipients
Control	Placebo containing mixed lactose powder
Disclosures	None declared

*N-benzyl-hexadecanamide is a macamide, a group of non-polar long-chain fatty acid N-benzylamides from maca with reported fertility-enhancing, aphrodisiac, immunomodulatory, hormone-regulating, hypoglycemic, antioxidant, memory-preserving, neuroprotective, cardioprotective, energizing, and anti-osteoporotic effects. The authors did not specify why they chose to standardize the content of this macamide only.

Compared to baseline, AMS scores decreased significantly after four weeks for maca ($P < 0.001$) and placebo ($P = 0.0251$) but at 12 weeks were significantly improved only in the maca group ($P < 0.0001$). The improvement in scores at 12 weeks from baseline was significantly greater for maca vs. placebo ($P < 0.0001$). In the maca group, ADAM scores fell from 70.7% to 29.3% (indicating an improvement) after four weeks but rose to 56.1% after 12 weeks. At 12 weeks, ADAM scores had improved significantly more with maca vs. placebo ($P < 0.0001$). IIEF scores improved significantly in the maca group at weeks four ($P = 0.0241$) and 12 ($P < 0.0001$). Placebo IIEF scores worsened significantly at each data point. IPSS was significantly lower (i.e., improved) in the maca group at four ($P = 0.0134$) and 12 ($P = 0.0025$) weeks, and significantly better vs. placebo at the end of the study ($P = 0.0001$).

Although the placebo group showed decreased serum TT levels at 12 weeks compared to baseline, there were no significant between-group differences in TT, FT, or PSA levels. TC, high-density lipoprotein cholesterol (HDL-C), and triglyceride (TG) levels decreased with maca, but LDL-C increased. In the placebo group, TC, LDL-C, and TGs increased and HDL-C decreased. Changes were not significant from baseline, but at 12 weeks, the decrease in TGs in the maca group was significantly different compared to the placebo group ($P = 0.0047$). Weight and WC increased in both groups but did not differ between them. Two participants in the maca group had mild gastrointestinal AEs that did not preclude continuing the study. There were no significant changes in laboratory tests or vital signs.

The authors mentioned several limitations of the clinical trial, including the relatively short study duration and a study population that included only Korean participants. Additionally, the placebo group had significantly higher baseline levels of several key markers (TT, FT, TC, and LDL-C) compared to the maca group. The authors recommended that future studies include long-term follow-ups and examine maca's mechanisms of action. They concluded that maca shows promise as an alternative to TRT. HG

Reference

1. Gonzales GF. Ethnobiology and ethnopharmacology of *Lepidium meyenii* (maca), a plant from the Peruvian Highlands. *Evid Based Complement Alternat Med*. 2012. doi: 10.1155/2012/193496. Available at: www.ncbi.nlm.nih.gov/pmc/articles/PMC3184420/pdf/ECAM2012-193496.pdf. Accessed May 11, 2023.



Maca *Lepidium meyenii*
Photo ©2023 Steven Foster Group

Number of Medicinal and Aromatic Plant Species Under Cultivation Is Showing an Upward Trend Globally

Reviewed: Brinckmann JA, Kathe W, Berkhoudt K, Harter DEV, Schippmann U. A new global estimation of medicinal and aromatic plant species in commercial cultivation and their conservation status. *Econ Bot*. August 25, 2022;76:319-333. doi: 10.1007/s12231-022-09554-7.

By Dani Hoots

***Editor's note**: Josef Brinckmann, research fellow at Traditional Medicinals, is the corresponding author of the reviewed journal article. He is president of the American Botanical Council Board of Trustees.*

Most medicinal and aromatic plant (MAP) species are harvested in the wild. MAPs are used to produce pharmaceuticals, dietary supplements, natural health products, beauty products, personal care products, and flavorings and/or processing aids in the food sector. Many of these species are declining in numbers due to exploitation, increased global demand, and habitat loss, among many other factors.

Various organizations have created conservation and sustainability policies to help address declines in certain MAP species. The "Guidelines on the Conservation of Medicinal Plants," established in 1993 by the World Health Organization, International Union for Conservation of Nature (IUCN), and World Wide Fund for Nature, provided a framework and recommended conservation actions, including transitioning from wild collection to cultivation. However, there are pros and cons for domestication (cultivation) versus sustainable wild collection and ecosystem management.

An often-cited paper from 2006 estimated that there were about 72,000 MAP species globally, of which less than 1% were reported to be sourced from commercial cultivation.[1] However, the number of cultivated species has not been verified recently. The authors of the reviewed paper conducted a study to generate a standardized list of MAP species with evidence of commercial cultivation at some level. Types of evidence included information about where the MAP is cultivated, the threat status of the species, the form(s) of cultivation, and a taxonomic verification (a current Latin binomial).

Data Collection

This study took place between June 2017 and October 2020. Included for analysis were species with evidence



of medicinal use based on sources that provided a Latin binomial and geographic location of the cultivation. The authors excluded species that were used only for food or other non-medicinal purposes, did not have botanical identity or location details, and literature that used only vernacular names. Forms of cultivation included agroforestry, controlled cultivation, extensive farming, intensive farming, and natural fostering (according to the paper, natural fostering is a farming method of "augmenting wild populations by cultivating a native species in the same area where it naturally grows or can grow."). Data were also collected on additional attributes, secondary to the primary form of cultivation, such as aquaculture, dryland farming, home garden farming, intercropping, sustainable agriculture (e.g., biodynamic, organic, regenerative), and trial (experimental) cultivation. The authors did not find a single internationally accepted agricultural glossary to cite, relevant to medicinal plant agronomy, so the research team developed a classification glossary based on its field experience. In difficult cases, after reviewing the data and deliberating, the team decided on the most appropriate classification for an entry.

Global conservation status was obtained through the IUCN Red List of Threatened Species. For country-specific threat assessments, the national red lists of 87 countries were consulted in this study. Also reviewed was the international protection status of MAP species listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendices, which include species that are threatened, may become threatened, or are protected by regulations in at least one country. MAP crop data were obtained through desk research (traditional and online); catalogs, directories, and databases; crop survey interviews; and the direct experience and knowledge of members of the research team. Types of cited publications include MAP crop-specific Good Agricultural Practices, handbooks on agrotechniques for MAP crops, and scientific papers evaluating methods of MAP production.

Data collection was conducted in Chinese, Dutch, English, French, German, Japanese, Korean, Persian, Portuguese, Russian, and Spanish through Google Scholar and ResearchGate. Relevant databases of standards setting organizations and inspection and certified bodies were also searched, including the US Department of Agriculture's Organic INTEGRITY Database, Demeter International's product database, FLOCERT's customer database, and the Ecocert Fair for Life certified products database. The websites of MAP farms and traders that were listed in the certification online databases were reviewed, and crop lists, price lists, and catalogs of commercially available cultivated MAP crops were obtained. Information on 491 MAP farms was evaluated. Selected interview partners (e.g., MAP producers, traders, and other experts) were given a survey that requested information about crop names, countries, forms of cultivation, and when cultivation began from selected farms and trading companies.



Echinacea purpurea
Photo ©2023 Steven Foster Group

Of the 2,800 publications reviewed, 867 met the inclusion criteria. Only two surveys from interview partners were returned. Instead, most informants responded via email, LinkedIn private messaging, or other direct communication (e.g., telephone, Skype, etc.). Of the 29 interview partners that provided information, 14 worked for MAP farms or companies that procure MAPs from farms, seven were independent MAP experts, five worked for research institutes involved with MAP crops, and three worked for biodiversity conservation organizations.

Results

Using the previously described methods, the authors found 13,371 distinct examples of MAPs under commercial cultivation at some level, of which 2,428 were excluded based on the established criteria. Of the 10,943 remaining entries, 7,271 had all the required data (botanical name, country where grown, and form of cultivation or an "additional attribute"). Five thousand and eighteen entries provided sufficient information on form of cultivation, and 3,092 provided additional attributes (e.g., "evidence of biodynamic or organic farming certification"). From the 10,943 entries, 3,227 accepted scientific names were found of which 128 are infraspecific taxa (i.e., any taxon below the species level) were reported, including 66 sub-species, 61 varieties, and one forma.

The authors found evidence of commercial cultivation in 162 different countries. The identified species belonged to 235 different plant families, with Asteraceae (n = 272) having the most species under cultivation. Thirty-one countries had more than 100 MAPs in cultivation, and six species were cultivated in at least 40 countries: chamomile (*Matricaria chamomilla*, Asteraceae), calendula (*Calendula officinalis*, Asteraceae), basil (*Ocimum basilicum*, Lamiaceae), lemon balm (*Melissa officinalis*, Lamiaceae), peppermint (*Mentha* × *piperita*, Lamiaceae), and rosemary (*Salvia rosmarinus* syn. *Rosmarinus officinalis*, Lamiaceae).

Agroforestry was the most predominant form of cultivation, followed by intensive farming, controlled cultivation, extensive farming, and natural fostering. The authors could not determine a form of cultivation for 2,335 entries although an additional attribute, such as organic farming, could be determined. Of these 2,335 entries, 1,042 provided evidence of a sustainable agriculture production system. No broad generalization linking a MAP crop to a specific form of cultivation can be made. To illustrate, the authors provide an example of one farmer growing a species as part of an agroforesty intercropping system according to organic



Peppermint *Mentha* × *piperita*
Photo ©2023 Steven Foster Group

agriculture rules, while another farmer in the same region is growing the same species as a conventional monocrop in the open field.

The study found that 954 of the commercially cultivated MAPs have an IUCN Red List assessment for the wild populations of the species, of which 82 were classified as "threatened," 798 were "least concern" or "lower risk," 45 were "data deficient," 24 were "near threatened," and five were "extinct in the wild." Through national red lists, 1,732 had been assessed in various countries, and 688 were "threatened" at a national level and 36 were "extinct." Fifteen nationally red-listed MAP species were associated with the natural fostering form of cultivation, which supports wild populations through their natural environment and the authors of this study suggested may be the most sustainable form of cultivation. The study also found 109 cultivated species included in the CITES Appendices: two species in Appendix I, one species in Appendix III, and the remaining 106 species in Appendix II.

Conclusions

The authors found evidence of 3,227 MAP species under cultivation at some level, which is more than three times the previously reported and often-cited number of about 900.[2] The authors also identified the number of cultivated species that were known to be threatened in the wild and how different forms of cultivation could be sustainable. "[I]t has become evident that the threat status of species does not systematically lead to increasing levels of domestication and cultivation of these species," they noted. More research into sustainable cultivation forms that are economically feasible is needed.

Limitations of the study include the set time frame for completion of the funded project, the use of data from only 162 of the 195 countries in the world, the limited availability of information in published sources or farm lists, the use of only common local names by many sources (which were thus excluded), research not stating cultivation forms in many cases, and not having the capacity to investigate the reasons for or mechanisms of domestication of species. HG

References

1. Schippmann U, Leaman D, Cunningham AB. A comparison of cultivation and wild collection of medicinal and aromatic plants under sustainability aspects. In: Bogers RJ, Craker LE, Lange D, eds. *Medicinal and Aromatic Plants: Agricultural, Commercial, Ecological, Legal, Pharmacological and Social Aspects*. Dordrecht, Netherlands: Springer Netherlands; 2006.
2. Mulliken T, Inskipp C. Medicinal plant cultivation: Scope, scale and diversity. In: *Proceedings of the 1st IFOAM International Conference on Organic Wild Production, Teslic, Bosnia and Herzegovina*. Bonn, Germany: International Federation of Organic Agricultural Movements; 2006.



Passionflower (*Passiflora incarnata*) farming
Photo ©2023 Steven Foster Group



HERB NEWS
Herbalgram™

MARK BLUMENTHAL, Editor
ROB McCALEB, Associate Editor

SUMMER 1983

HERB TRADE ASSOCIATION DEFUNCT

The Herb Trade Association (HTA) held its last meeting of the Board of Directors in August 1981 in San Diego. Since that time, there has been little attempt to keep the organization alive and operative by members of the Board. Members of the Herb Trade and Natural Food Industry have known for about a year that HTA had closed its doors.

HERB NEWS IN HIBERNATION AFTER HTA CLOSING

With the closing of the HTA, the HERB NEWS Magazine, formerly the official publication of the HTA, also went into a protracted period of inactivity. This was largely due to lack of funds and sufficient personnel to deal with the task of writing, editing and printing a magazine. Our heartfelt apologies to all of those herbal enthusiasts who have written us requesting HERB NEWS subscriptions and information. Republication of HERB NEWS is being considered, possibly under the aegis of some of the new herb organizations. In the meantime, however, we will be putting out the "Herbalgram" in this format, which is much easier, faster, and cheaper to produce. Everyone who has sent us HERB NEWS subscription money or was previously a member of the HTA will recieve a copy of "Herbalgram."

AMERICAN HERBAL PRODUCTS ASSOCIATION

In the wake of the HTA's closing, several of the larger herb companies have met to form the American Herbal Products Association (AHPA), which is designed to continue some of the work of the HTA in the area of herb business and industry matters. The President of the new organization is Peter Landes of KHL Flavors in New York. Vice-president is Lorah D. Israelson, General Counsel of Nature's Way Products of Provo, Utah. Jim Adelson, of Aphrodisia, Inc. of Brooklyn, is Treasurer, and the Secretary is Chuck Stevens of Whole Herb Co. of Mill Valley, California.

AHPA has held three meetings in the past year. During the latest meeting, held in Anaheim, California, during the Natural Foods Expo 83, the Board of AHPA voted to support a resolution offering the organization's support of the position taken by the FMALI Herb Co., of Santa Cruz, California, in the current legal dispute with the FDA over food safety law interpretation. Any company or individual who wishes to seek more information regarding the specifics of the suit should contact Ben Zarlcor at FMALI Herb Co., 831 Almar, Santa Cruz, CA 95060.

The Board of Directors of AHPA also voted to help underwrite the costs of producing and mailing this edition of Herbalgram as a service to the herb industry and movement in general. For further information about AHPA, contact Peter Landes, AHPA President, c/o KHL Flavors, 37-02 48th St., Long Island City, NY 11104 (212) 729-3666.

The Second Annual General Meeting of AHPA will be held Saturday, July 23 at 10:00 a.m. in the Silver Room of the Denver Hilton. Tea and coffee will be served at 9:45. For more information, contact Peter Landes (212) 729-3666.

Issue 1

40 YEARS of HERBALGRAM

PART 1: The First 10 Years (1983–1993)

By ABC Staff

Editor's note: *Summer 2023 marks* HerbalGram*'s 40th year of publication. As part of the American Botanical Council's (ABC's) year-long commemoration of this milestone,* HerbalGram *will include a series of timelines of each of the magazine's four decades in print. This issue's timeline explores the first 10 years of* HerbalGram *— from 1983 to 1993 — and highlights notable articles and other developments. The ABC editorial staff hopes the "40 Years of* HerbalGram*" series will provide a glimpse into the evolution of ABC's flagship publication and the role it has played and continues to play in the herbal community.*

#1 "HERB NEWS/Herbalgram" (Summer 1983)

HerbalGram Happenings

- The first issue of *HerbalGram*, which was then an eight-page newsletter called "HERB NEWS" with "Herbalgram" as the subtitle, is published for the American Herbal Products Association (AHPA), which was founded in 1982.
- The issue included a "MediaWatch…Herbs in the News" section. (On its website, ABC still maintains an "Herbal MediaWatch" page, which highlights relevant news articles from various online sources.)

Article Highlights

"HERB NEWS in Hibernation after HTA Closing"*

An article on page 1 explains that "HERB NEWS," the official publication of the now-defunct Herb Trade Association (HTA), will be replaced by the new "HERB NEWS/Herbalgram" newsletter.

"Flurry of Interest in Feverfew [*Tanacetum parthenium*, Asteraceae]"

"FDA OTC Panel Reviews Menstrual and Aphrodisiac Herbs"

* Many early *HerbalGram* articles did not list author names. In most cases, these articles were written by members of the editorial staff.



Echinacea purpurea
Photo ©2023 Steven Foster Group





Sassafras *Sassafras albidum*
Photo ©2023 Steven Foster Group

#2 "HERB NEWS/Herbalgram" (Fall/Winter 1983–1984)

Issue 2


HERB NEWS
Herbalgram

APPEALS COURT OVERRULES FDA ON FOOD SAFETY

HerbalGram Happenings

- Newsletter adds description on cover: "Published jointly by the Herb Research Foundation [HRF] and the American Herbal Products Association."

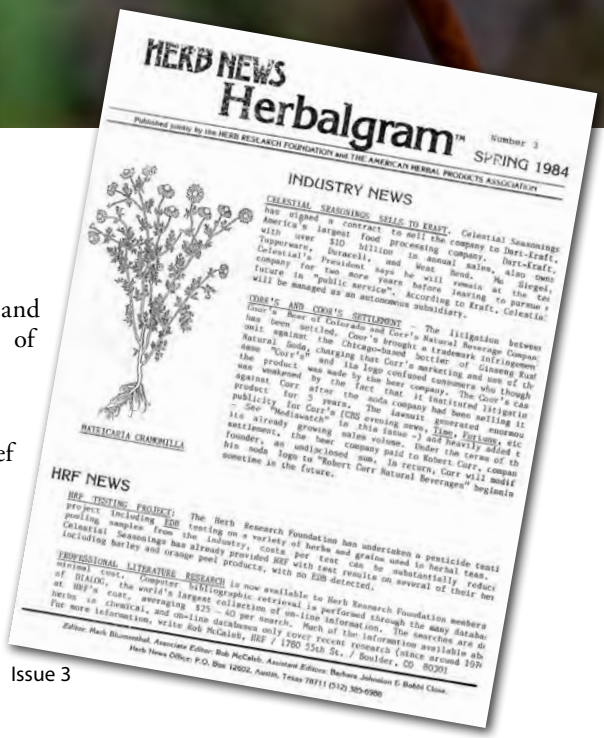
Article Highlights

"Appeals Court Overrules FDA on Food Safety"

The Ninth Circuit Court of Appeals strikes down the US Food and Drug Administration's (FDA's) interpretation of the "Grandfather Clause," which exempted common foods from food-additive status. The article refers to this action as "probably the most significant legal decision affecting the status of herbs in the last 25 years."

"Celestial Seasonings Recalls Comfrey Tea"

#3 "HERB NEWS/Herbalgram" (Spring 1984)


HERB NEWS
Herbalgram™
Number 3
SPRING 1984
Published jointly by the HERB RESEARCH FOUNDATION and THE AMERICAN HERBAL PRODUCTS ASSOCIATION

INDUSTRY NEWS

CELESTIAL SEASONINGS SELLS TO KRAFT. Celestial Seasonings has signed a contract to sell the company to Dart-Kraft, America's largest ... with over $10 billion in annual sales, also owns Tupperware, Duracell, and West ... Celestial's President ... company for ... two more years before ... The future is ... will be managed as an autonomous subsidiary.

CORR'S AND COOR'S SETTLEMENT. The litigation between Coor's Beer of Colorado and Corr's Natural Beverage Company has been settled. Coor's brought a trademark infringement suit against the Chicago-based ... Natural Soda, charging that Corr's marketing and ... name "Corr's" ... the product ... was weakened by the beer company. The Coor's case against Corr ... after the ... that it ... publicity for Corr's ... its "Headwatch" ... already growing ... settlement, the ... founder, ... his nods ... undisclosed ... sometime in the future.

HRF NEWS

HRF TESTING PROJECT: The Herb Research Foundation has undertaken a pesticide testi project including ... testing on a variety of herbs and grains used in herbal teas. pooling samples from the industry, costs per test can be substantially reduci Celestial Seasonings has already provided HRF with test results on several of their bra including barley and orange peel products, with no EBN detected.

PROFESSIONAL LITERATURE RESEARCH is now available to Herb Research Foundation members at minimal cost. Computer bibliographic retrieval is performed through the many databas of DIALOG, the world's largest collection of on-line information. The searches are d at HRF's cost, averaging $25 - 40 per search. Much of the information available ab herbs is chemical, and on-line databases only cover recent research (since around 19 For more information, write Bob McCaleb, HRF / 1780 55th St. / Boulder, CO 80301

Editor: Mark Blumenthal, Associate Editor: Bob McCaleb, Assistant Editor: Barbara Johnston & Bobbi Close.
Herb News Office: P.O. Box 12602, Austin, Texas 78711 (512) 385-6900

Issue 3

HerbalGram Happenings

- Newsletter begins including black-and-white plant illustrations.

Article Highlights

"Antibacterial Sassafras"

In "Rob's Research Reviews," Rob McCaleb, president of the HRF and associate editor of "Herbalgram," discusses antimicrobial activity of sassafras (*Sassafras albidum*, Lauraceae).

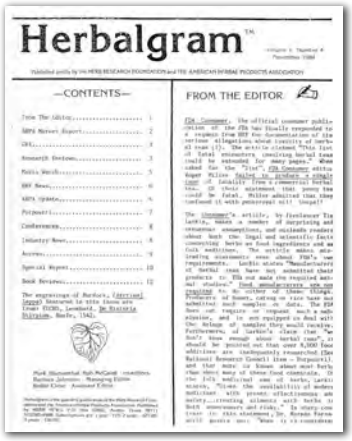
"Enquirer Touts Feverfew as Migraine Remedy"

This "MediaWatch" item explores reports of migraine symptom relief after taking feverfew.

"AHPA Market Report" / "AHPA Herb & Spice Report"

A half-page report by AHPA President Peter Landes (KHL Flavors) and AHPA Treasurer Jim Adelson (Aphrodisia).

#4 "Herbalgram" (November 1984)


Herbalgram™

—CONTENTS—

FROM THE EDITOR

Issue 4

HerbalGram Happenings

- "HERB NEWS" is dropped from the masthead. The newsletter is now known as "Herbalgram."
- The first issue to feature book reviews and a table of contents.

Article Highlights

"Mislabeled Remedy Recalled"

The FDA recalls an illegal "herbal product" called "SupHerb," which was found to contain the undisclosed prescription drugs indomethacin, hydrochlorothiazide, and diazepam.

"Alternative Approaches to Gout"

In his first *HerbalGram* article, James "Jim" A. Duke, PhD, describes herbal alternatives to pharmaceutical drugs for gout.

#5 "Herbalgram" (Spring 1985)


Herbalgram

REGULATORY UPDATE

Issue 5

Article Highlights

"FDA sues GNC"

In this cover article, Loren Israelsen, then general counsel for Nature's Way, describes an FDA indictment of GNC executives and store managers on conspiracy to defraud the FDA.

"Herb Traders Beware!"

Steven Foster alerts readers to reports of *Echinacea purpurea* (Asteraceae) root products that may have been adulterated with wild quinine (*Parthenium integrifolium*, Asteraceae). This was one of the first notices about this important issue of the late 1980s and early 1990s. (ABC would continue to report on adulteration problems in the herbal industry, eventually culminating in the formation of the ABC-AHP-NCNPR Botanical Adulterants Prevention Program (BAPP) in 2011.)

#6 "Herbalgram" (Summer 1985)

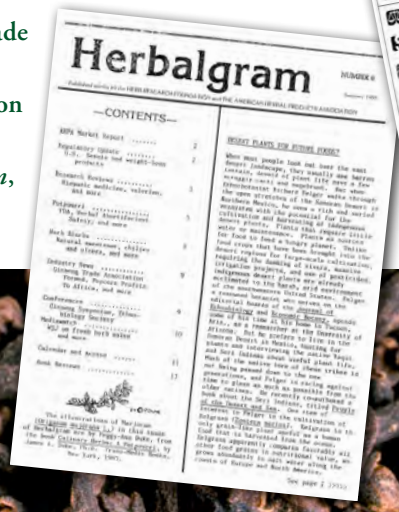
Article Highlights

"Ginseng [*Panax* spp., Araliaceae] Trade Association Formed"

"Senate Committee Holds Hearings on Weight-loss Products"

"Toxic Clove [*Syzygium aromaticum*, Myrtaceae] Cigarettes"

Issue 6

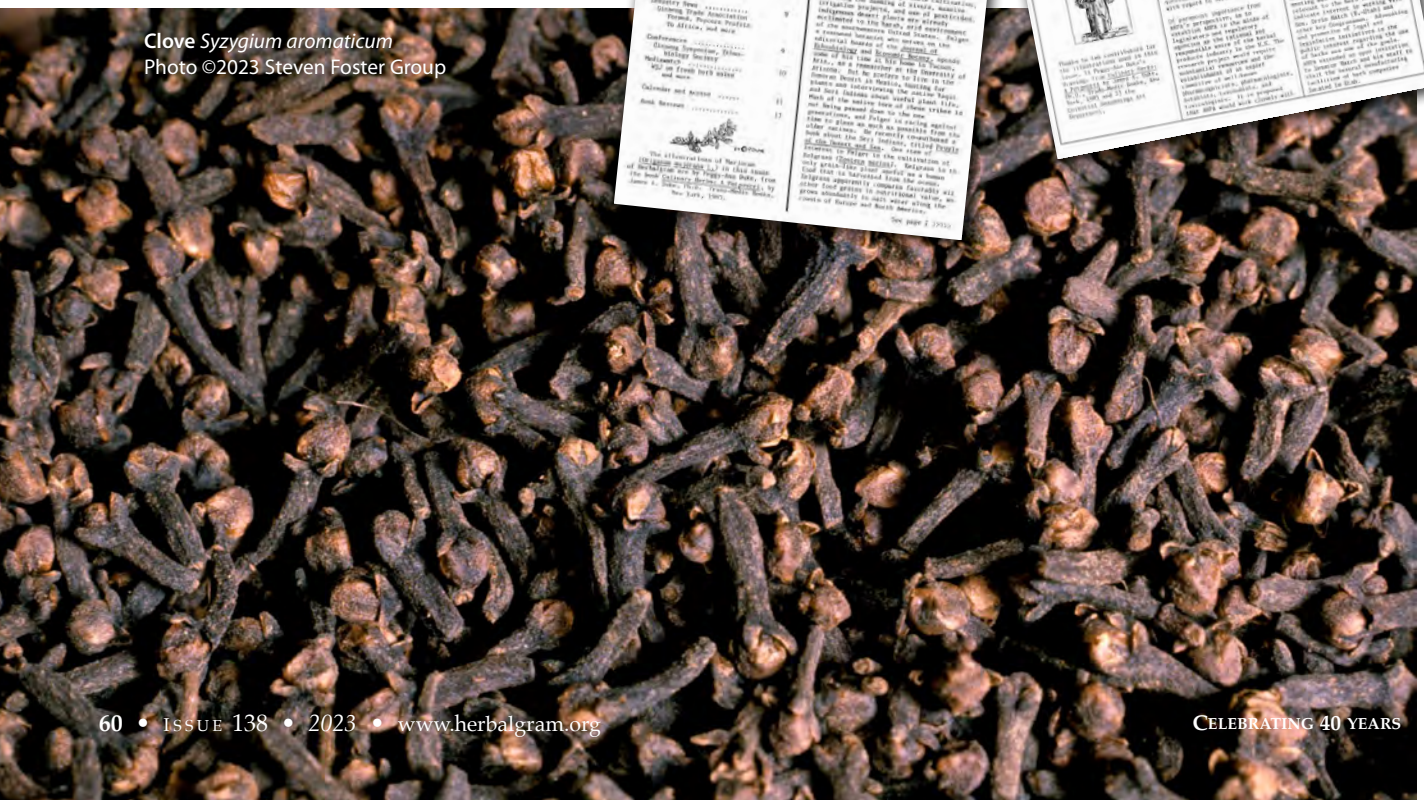

Herbalgram

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Issue 7


HERBALGRAM

THIS ISSUE


Clove *Syzygium aromaticum*
Photo ©2023 Steven Foster Group

#7 HerbalGram (Fall 1985)

HerbalGram Happenings

- The now-12-page newsletter adds the stylized *HerbalGram* masthead, which is still used in the current layout. The masthead font is called "Belwe Lt BT."
- The issue ("Vol. 2 No. 3") includes several of Peggy-Ann Duke's illustrations from *Culinary Herbs: A Potpourri* (Trado-Medic Books, 1985) by Jim Duke.

Article Highlights

"Scullcap [sic] Substitution"

One of the first known reports of substituting germander (*Teucrium* spp., Lamiaceae) for skullcap (*Scutellaria lateriflora*, Lamiaceae). (In the second BAPP article for *HerbalGram*, in issue 93 in 2012, Foster wrote an extensive article on this subject.)

"Meeting with Senator's Staff"

AHPA representatives met with one of Sen. Orrin Hatch's (R-UT) staffers to discuss a potential legislative initiative regarding herbs.



#8 HerbalGram (Winter 1986)

HerbalGram Happenings

- *HerbalGram* debuts a new "Profile" section with a short article about Jim Duke. The section features bios of influential members of the herbal community.

Article Highlights

Media Watch: "Ginseng in Space"

"High Pharmaceutical Prices Call for Government-Sponsored Natural Drug Research"

Duke, in this "Guest View" article, advocates for government-sponsored research of herbal medicines.

#9 HerbalGram (Spring 1986)

Article Highlights

"Canadian Panel Makes Recommendations on Herb Usage"

A government committee reviewed safety and regulatory mechanisms for herbs sold as food in Canada.

"Naturopathic College Fights to Maintain Accredited Status"

John Bastyr College faced a challenge to their accreditation status.

"Methods in Phytochemistry"

#10 HerbalGram (Summer/Fall 1986)

HerbalGram Happenings

- "A New Look for *HerbalGram*": A brief notice mentions that the issue was produced using a Macintosh and "Lazer Writer," a laser printer sold by Apple in the late 1980s.

Article Highlights

"Major FDA Policy Shift on Herbs"

Loren Israelsen reports on the FDA's "case-by-case" policy guidance that replaced the controversial "List of 27 Unsafe Herbs" previously used for regulatory actions.

"Chernobyl Limits [Herb] Supplies; Raises Prices" by Peter Landes

"Mate and Caffeine"

This "Industry News" article describes a company that marketed yerba mate (*Ilex paraguariensis*, Aquifoliaceae) as a natural stimulant.

#11 HerbalGram (Winter 1987)

Article Highlights

"Biologists Race to Save Tropical Rain Forests"

"Plant Drugs in the 21st Century"

HerbalGram includes a special six-page reprint of an article by Professor Varro E. Tyler, PhD. Originally published in *Economic Botany* in June 1986, the article "discusses the realities and possibilities in the field of plant drug research."

Rob's Research Reviews: "Chinese Herb Research Gains Momentum"

#12 HerbalGram (Spring 1987)

HerbalGram Happenings

- Issue features first "Father Nature's Farmacy column by Jim Duke. In the column, Duke outlines why he prefers polyherbal formulas over synthetic "silver bullets."

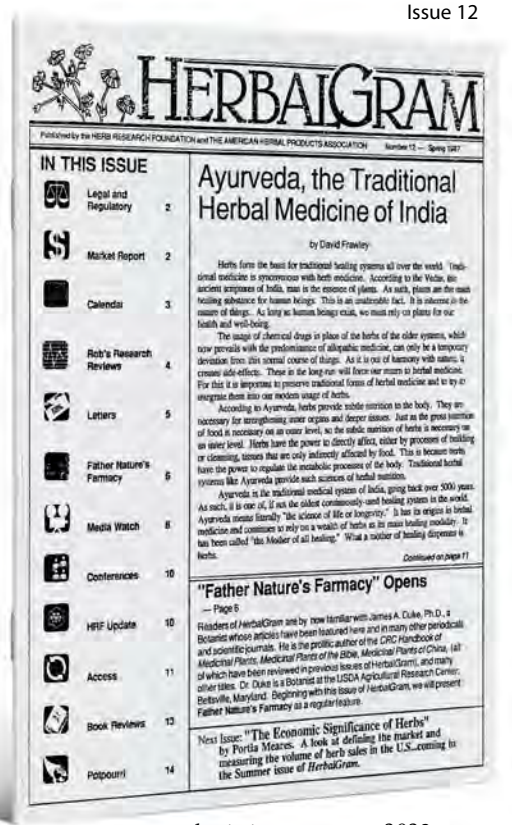
Article Highlights

"Ayurveda, the Traditional Herbal Medicine of India"

Author David Frawley introduces readers to one of the oldest continuously used healing systems in the world. This is the first time Ayurveda is mentioned in *HerbalGram*.

Potpourri: "'Green Medicine': A TV Documentary on Amazon Plants"

Issue 12


HERBALGRAM

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Ayurveda, the Traditional Herbal Medicine of India

by David Frawley

"Father Nature's Farmacy" Opens



Comfrey *Symphytum* spp.
Photo ©2023 Steven Foster Group

#13 HerbalGram (Summer 1987)

Article Highlights

"Swedish Court Ruling Favors Evening Primrose [*Oenothera* spp., Onagraceae] Over Black Currant Oil [*Ribes nigrum*, Grossulariaceae]: Possible Impact on U.S. Market"

"The Economic $ignificance of Herbs"

Portia Meares, the editor/publisher of the trade publication *The Bu$iness of Herbs*, explores the challenges in quantifying the economic value of herbs.

"Chinese Herbal Soups: Food or Medicine?"

This Media Watch article describes a Chinese restaurant in San Francisco that offers soups with potential health benefits. (In 2014, ABC launched a "Food as Medicine" article series in its HerbalEGram e-newsletter as part of its ongoing coverage of this topic.)

Conference Report: "Society for Economic Botany Symposium on the Investigation of Folk Medicine"

#14 HerbalGram (Fall 1987)


HERBALGRAM

IN THIS ISSUE

Celestial Seasonings sold to Lipton, Inc.

Special Report — HERBAL DATA BASES
Page 9

Issue 14

Article Highlights

"Celestial Seasonings Sold to Lipton, Inc."

"Special Report: Herbal Data Bases"

Rob McCaleb explores "the development of computer data bases during the past ten years" and how they could be used to store and organize herbal data.

"NOVA Airs 'The Hidden Power of Plants'"

1988

- Mark Blumenthal incorporates ABC as a nonprofit organization in November.
- Jim Duke, Norman R. Farnsworth, PhD, and Blumenthal are the inaugural members of ABC's Board of Trustees.

AMERICAN BOTANICAL COUNCIL





Sarsaparilla *Smilax* spp.
Photo ©2023 Steven Foster Group

#15 HerbalGram (Winter 1988)

Article Highlights

"Major Herb Conference in Thailand"

"Export Control of Ladyslipper"

This Legal and Regulatory article describes a bulletin from the Office of Management Authority (OMA) that reminds US herb dealers that lady's slippers (*Cypripedium* spp., Orchidaceae) are orchids protected by CITES and require export permits issued by OMA.

"Canada Bans Comfrey Leaf"

Canadian regulators ban the import and sale of some comfrey (*Symphytum* spp., Boraginaceae) leaf products due to concerns about inadequate quality control procedures to detect potentially hepatotoxic pyrrolizidine alkaloids.

#16 HerbalGram (Spring 1988)

Article Highlights

"'Herbal Glasnost': Soviet Scientist Visits U.S. Ginseng Conference"

According to the article, Rob McCaleb conducted the first US press interview with I. I. Brekhman, MD, a pioneering researcher and leading authority on adaptogens and eleuthero (*Eleutherococcus senticosus*, Araliaceae).

Rob's Research Reviews: "Many a Beneficial Fungus Among Us"

#17 HerbalGram (Summer 1988)

Article Highlights

"Sarsaparilla: A Literature Review"

Author Christopher Hobbs, PhD, explores the botany, history, chemistry, pharmacology, clinical uses, and adulterants of sarsaparilla (*Smilax* spp., Smilacaceae). The article — *HerbalGram*'s first feature-length literature review — includes 69 references.

"An Interview with Prof. [Hildebert] Wagner"

"Should The Forest Disappear"

An educational and endearing poem by Jim Duke.

Issue 17

HERBALGRAM

Published by the HERB RESEARCH FOUNDATION and THE AMERICAN HERBAL PRODUCTS ASSOCIATION

IN THIS ISSUE

CELESTIAL BUYS ITSELF BACK! — Page 5
Management team purchases company from Kraft; Lipton's Tea bid on ice.

HERB RESEARCH IN GERMANY — Page 16
An interview with Professor H. Wagner

RESEARCH ON ASTRAGALUS — Page 24
Chinese herb shows immune activity

LADY'S SLIPPER UPDATE
Herb industry adopts protection resolution — Page 24

SARSAPARILLA
A literature review

by Christopher Hobbs

Introduction

Botany

#18/19 HerbalGram (Fall 1988/Winter 1989)

HerbalGram Happenings

- Issue "18/19" is the first and only combined issue of *HerbalGram*.
- The cover now says "Published by the American Botanical Council and the Herb Research Foundation."
- The introduction of color and significant layout changes resulted in a noticeably refreshed look.
- The magazine increased to 48 pages, with a saddle-stitched (stapled) binding.
- Ira Kennedy is listed in the staff box as the first Art Director of *HerbalGram*. Previously, Managing Editor Barbara "BJ" Johnston also served as the "Publication Designer."

Article Highlights

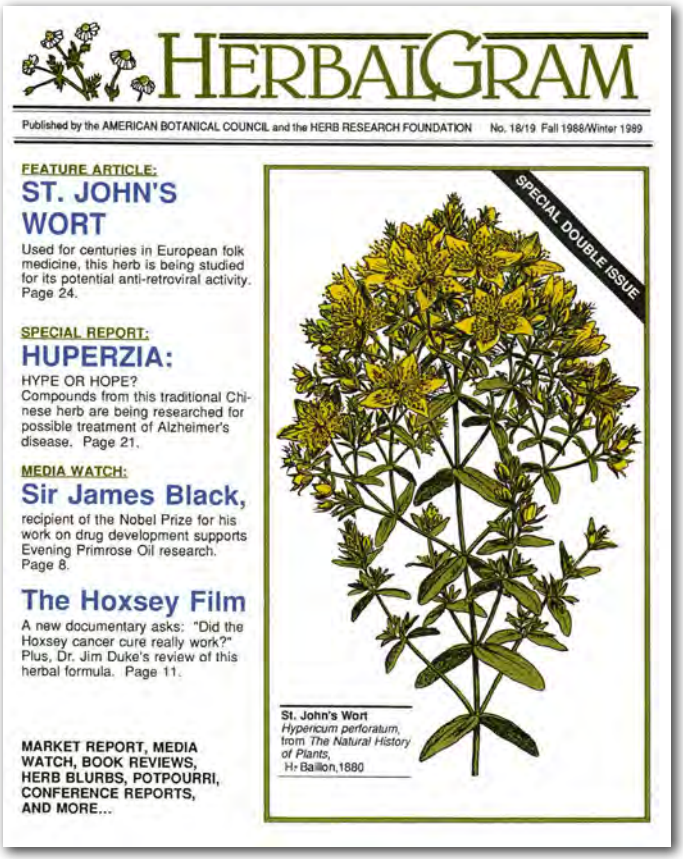
"St. John's Wort: *Hypericum perforatum* L. [Hypericaceae] — A Review by Christopher Hobbs"

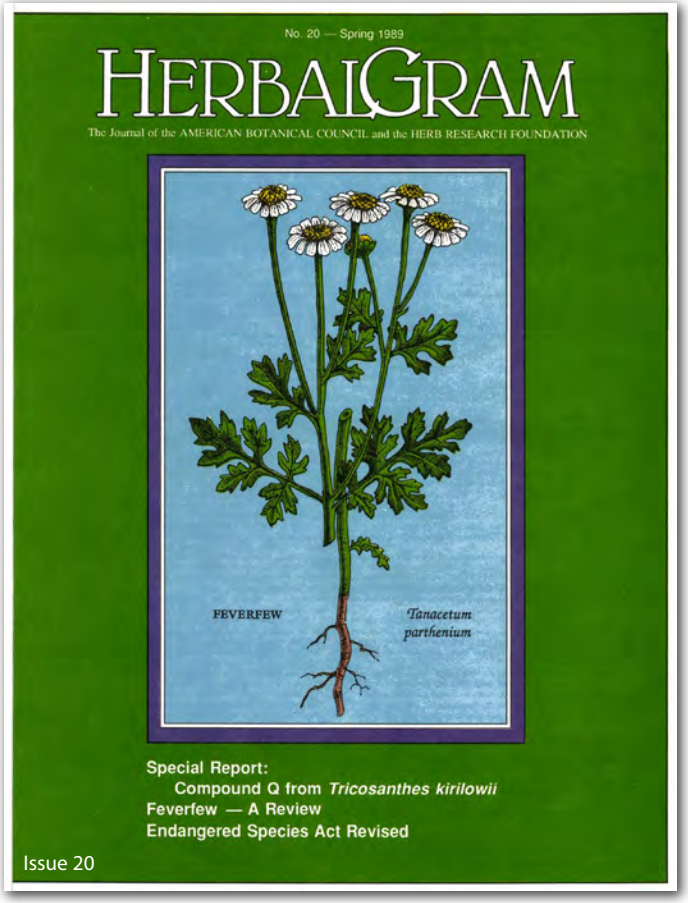
Before St. John's wort became a top-selling "mainstream" herb, Hobbs presented a comprehensive review of its botany, history, chemistry, pharmacology, and clinical applications.

"Epazote [*Dysphania ambrosioides*, Amaranthaceae]: An Herbal Cure for the Greenhouse Effect?"

"Huperzia [Lycopodiaceae]: Hype or Hope?" by Steven Foster

Issue 18/19





#20 HerbalGram (Spring 1989)

HerbalGram Happenings

- *HerbalGram* features its first In Memoriam article, on ethnobotanist Timothy Charles Plowman (1944–1989).

Article Highlights

"Feverfew: *Tanacetum parthenium* — A Review by Christopher Hobbs"

***HerbalGram* provides timely coverage of medicinal plant research related to HIV/AIDS during the peak of the US epidemic:**

- "*Tricosanthes* [sic] *kirilowii* [Cucurbitaceae]*:* A New Hope in the AIDS-Relief Search?" by Jim Duke and Steven Foster
- "New Strategy Against AIDS: Castor Bean [*Ricinus communis*, Euphorbiaceae] Compound" by Rob McCaleb

#21 HerbalGram (Fall 1989)

HerbalGram Happenings

- The first issue printed on recycled paper.

Article Highlights

"In Memoriam: Nathan Podhurst (1893–1989)"

This obituary honors the life of Podhurst, a Polish immigrant who owned Nature's Herbs, an herbal pharmacy in San Francisco, California, for more than 60 years.

"Valerian [*Valeriana officinalis*, Caprifoliaceae] — A Literature Review by Christopher Hobbs"

"Goldenseal [*Hydrastis canadensis*, Ranunculaceae] Masking of Drug Tests — From Fiction to Fallacy: An Historical Anomaly" by Steven Foster

#22 HerbalGram (Spring 1990)

HerbalGram Happenings

- *HerbalGram* is enhanced with new design elements, including four-color photography.

Issue 22



Article Highlights

"Black Pearls Lose Luster: Prescription Drugs Masquerade as Chinese Herbal Arthritis Formula"

In this investigative piece, Rob McCaleb and Mark Blumenthal report that an "all-natural" herbal formula sold in health food stores for arthritis symptoms was found to contain multiple undeclared prescription drugs. The addition of undeclared drugs continues to pose a challenge for the medicinal plant community, industry, and regulators.

"Hawthorn [*Crataegus* spp., Rosaceae]: A Literature Review" by Christopher Hobbs and Steven Foster

"Canadian Update; 'Traditional Herbal Medicines' in Current Drug Category"

Blumenthal reports on new policy from the Canadian Health Protection Branch that permits the marketing of "Traditional Herbal Medicines" with limited drug claims.

"The Lloyd Library"

Rebecca A. Perry, a librarian at the Lloyd Library, introduces readers to the educational facility in Cincinnati, Ohio, which was founded in the 1870s.

#23 HerbalGram (Summer 1990)

HerbalGram Happenings

- The "From the Editor" section is updated with the title "Dear Reader," a column that still runs in every issue of *HerbalGram*.

Article Highlights

"FDA Declares 258 OTC Ingredients Ineffective"

Mark Blumenthal reports on the FDA's declaration that 258 over-the-counter (OTC) ingredients are ineffective, including botanical ingredients such as prune (*Prunus domestica*, Rosaceae) juice as a laxative. The FDA began removing these products from the market after reviews of the scientific and clinical evidence did not adequately support the products' various health-related claims, according to conclusions drawn by the FDA's expert panels.

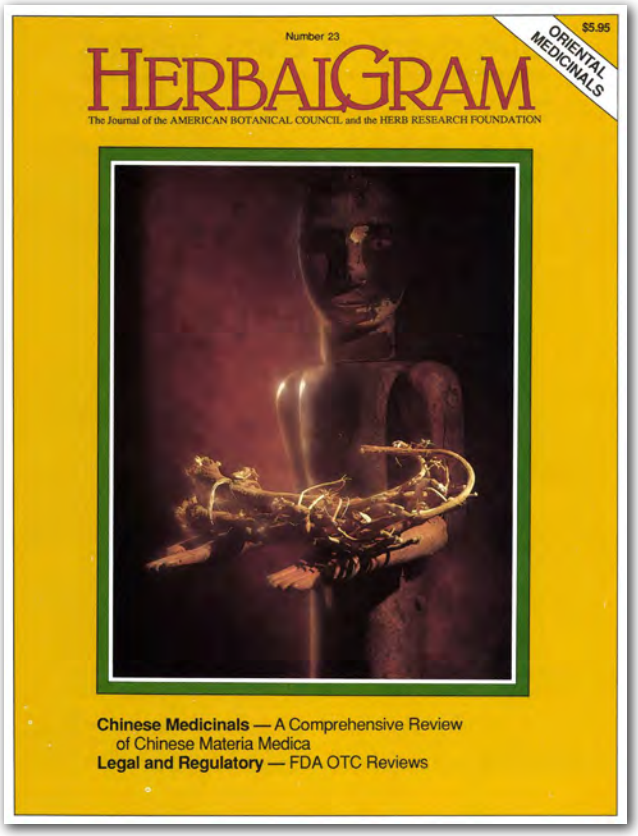
"FDA Collecting Information on Herb Products to Assess Safety"

According to this article by Blumenthal, the FDA was particularly interested in safety information on comfrey.

This issue includes two articles that focus on the growing body of scientific research on herbs used in traditional Chinese medicine (TCM):

- "Chinese Medicinals" by Albert Leung, PhD
- "Contemporary Sources of Information on Chinese Medicinals" by ABC Staff

Issue 23



#24 HerbalGram (Winter 1991)

Article Highlights

"Harvesting Medicinals in the Wild: The Need for Scientific Data on Sustainable Yields"

Steven Foster describes the importance of collecting comprehensive conservation data on wild medicinal plants. This is one of the earliest articles published on the subject and the first *HerbalGram* article to include Foster's beautiful photography, which would become a major part of the publication's identity.

"The Need for Cooperation Between Modern and Traditional Medicine" by Ara H. Der Marderosian, PhD

Der Marderosian, a professor of pharmacognosy at the Philadelphia College of Pharmacy and Science, advocates for the recognition of scientifically studied traditional medicinal plants.

"European Scientific Cooperative [on] Phytotherapy Symposium: European Harmony in Phytotherapy"

Blumenthal reports on the October 1991 symposium of the European Scientific Cooperative on Phytotherapy (ESCOP). The article includes a reprint of a proposed ESCOP monograph on chamomile (*Matricaria recutita*, Asteraceae) flowers. ABC was the first North American member of ESCOP, which has published more than 100 herbal monographs as of June 2023.

#25 HerbalGram (Summer 1991)

Article Highlights

"Comfrey Update"

Dennis Awang, PhD, provides scientific data on the potential toxicity of pyrrolizidine alkaloids in comfrey.

"Editorial Policy"

HerbalGram clarifies its editorial policy in a one-page article.



Issue 25

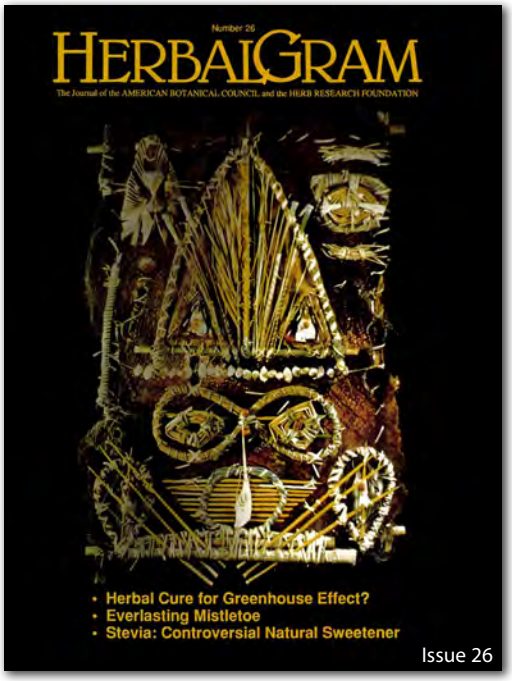
"Meals that Heal: Ounce of Prevention Outweighs a Kilogram of Cure"

HerbalGram reprints an interview with Jim Duke after he appeared on a CBS "This Morning" segment about meals that heal, highlighting the potential of food as medicine.

1992

- ABC launches its HerbClip™ service, which provides summaries and critical reviews of herbal studies.

HerbClip™
Summaries and critical reviews of seminal herb articles



#26 HerbalGram (Winter 1992)

HerbalGram Happenings

- First issue to switch from saddle-stitched to perfect binding. This allows for a magazine "spine" with information about the issue's contents.

Article Highlights

"TIME for 'Lost Tribes, Lost Knowledge'"

Mark Blumenthal refers to a *TIME* cover story as a "remarkable sign of increased interest in traditional and indigenous cultures." *HerbalGram* continues to cover ethnobotany and promote the importance of preserving Indigenous cultures and knowledge.

"AHPA Petitions FDA for Approval of Stevia Leaf Sweetener"

AHPA's petition followed several years of industry frustration with the FDA's policy on stevia (*Stevia rebaudiana*, Asteraceae), which could not be used as a natural noncaloric sweetener at the time. According to industry sources, the policy appeared to favor the interests of the synthetic sweetener industry.

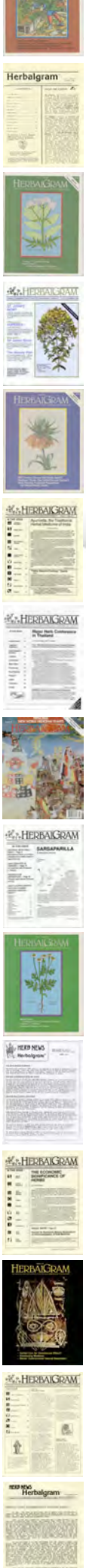
"The Everlasting Mistletoe and the Cardiovascular System"

Inci A. Bowman, PhD, reviews the effects of European mistletoe (*Viscum album*, Santalaceae) on the cardiovascular system

#27 HerbalGram (Summer 1992)

HerbalGram Happenings

- This "Special Issue," which was published during the 500th anniversary of Christopher Columbus' 1492 voyage, focuses on medicinal plants of the American continents.



- The cover features a mural ("The people demanding health") by renowned Mexican artist Diego Rivera from the La Raza Hospital of Mexico City.

Article Highlights



Issue 27

"Conservation and Tropical Medicinal Plant Research"

Steven R. King, PhD, highlights tropical medicinal plant research and conservation efforts and explores ethnobotany-based pharmaceutical drug discovery efforts by companies like Shaman Pharmaceuticals, for which King served as chief operating officer.

"The Badianus Manuscript: The First Herbal from the Americas" by Steven Foster

Foster explores the ca. 1552 Aztec herbal, *The Badianus Manuscript*, also known as the *Codex Badiano*, which was translated into Latin by Mexican-born Juan Badiano and is believed to be the first herbal written in the Americas. The text had been held in the Vatican Library for centuries until it was returned by Pope John Paul II to the people of Mexico in 1990.

"U.S. Herb Industry Proposes Self Regulation"

Mark Blumenthal describes AHPA's efforts to promote herb industry self-regulation, an objective of AHPA since its founding 10 years earlier, and which the trade association has continued to promote for more than 40 years.

Media Watch: "Focus on Rain Forest Remedies"

#28 HerbalGram (Winter 1993)

HerbalGram Happenings

- *HerbalGram* is printed on semi-gloss stock to accommodate more pages per issue.

Article Highlights

"Herb Industry and FDA Issue Chaparral Warning"

Mark Blumenthal describes an unknown connection between chaparral (*Larrea tridentata*, Zygophyllaceae) toxicity and hepatitis.

"Natural Products and Medicine: An Overview"

Varro Tyler advocates for a new regulatory paradigm.

"NLEA and Hatch Bill Update: Widespread Support Prompts NLEA Moratorium"

US Congress implements a moratorium on FDA regulations under the Nutrition Labeling and Education Act of 1990 (NLEA).

#29 HerbalGram (Spring/Summer 1993)

HerbalGram Happenings

- This issue focuses on "Herbal Safety."

Article Highlights

"FDA and Herb Industry Dispute Continues" by Mark Blumenthal

"Feverfew Fever: A Headache for the Consumer"

Dennis Awang reviews clinical evidence and clarifies the regulatory status of feverfew after it was approved as a headache treatment in Canada.

"Relative Safety of Herbal Medicines"

Based on a survey of the scientific literature, Norman Farnsworth concludes that herbal medicines generally do not present significant safety concerns. HG

Thanks for supporting ABC's nonprofit mission! Keep a lookout for Part 2 (1993–2003) of the "40 Years of *HerbalGram*" series, coming in *HerbalGram* issue 139.

"*HerbalGram* has had quite an impact on my life and career. Many years ago, my sister, [who] was a Master Gardener, ... subscribed to *HerbalGram*. She gave me a 'bootleg' copy and, even though I was a food chemist at the time, it introduced me to the world and science of botanicals. And now here I am, decades later, the CEO of NOW, a dietary supplement company, interested and involved in all aspects of the botanical industry and still relying on *HerbalGram* to provide inspiration, trusted information, and resources. Happy 40th anniversary, *HerbalGram*!"



—Jim Emme

HerbalGram Is 40!

We're Announcing ABC's

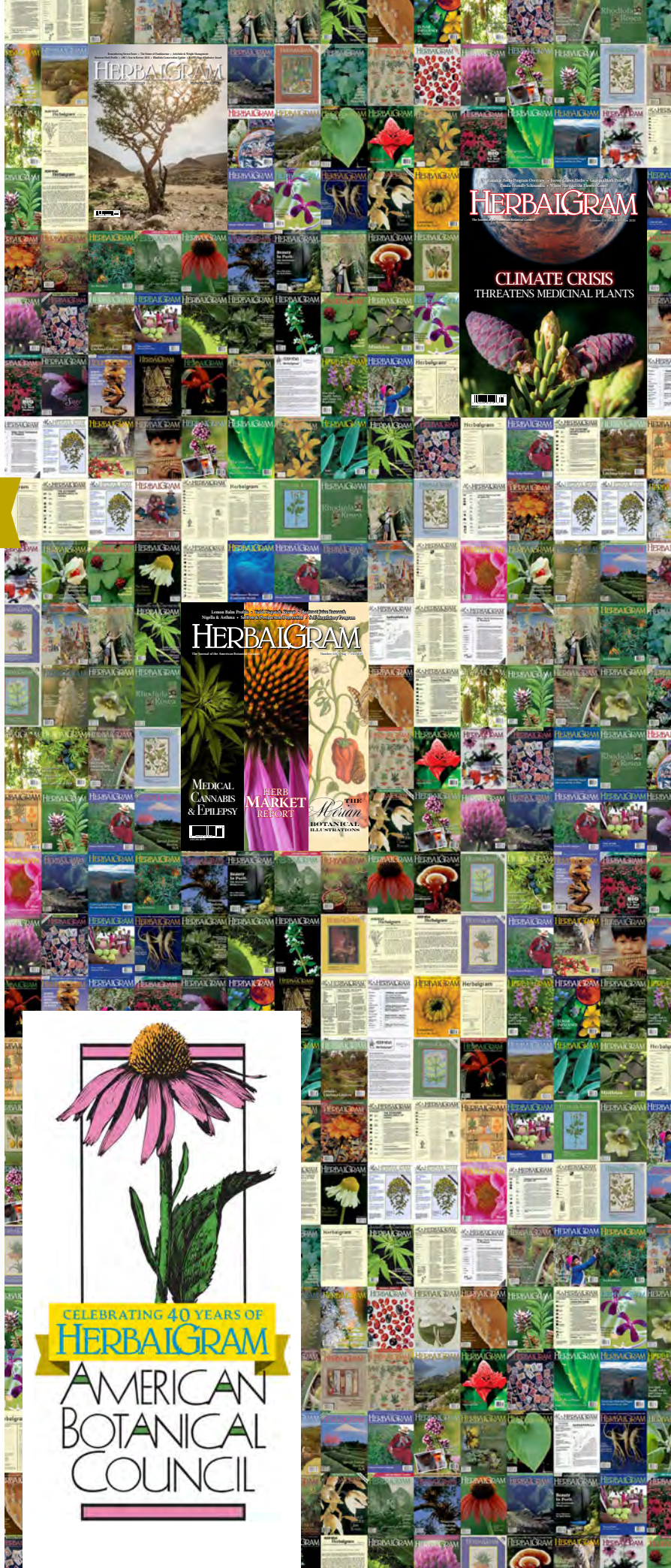
HERBALGRAM40

A year-long celebration of *HerbalGram's* 40th anniversary and ABC's robust future.

Learn more and join us in envisioning and creating the next 40 years of *HerbalGram* and ABC's unique nonprofit mission.

For more information, scan the QR code or visit:

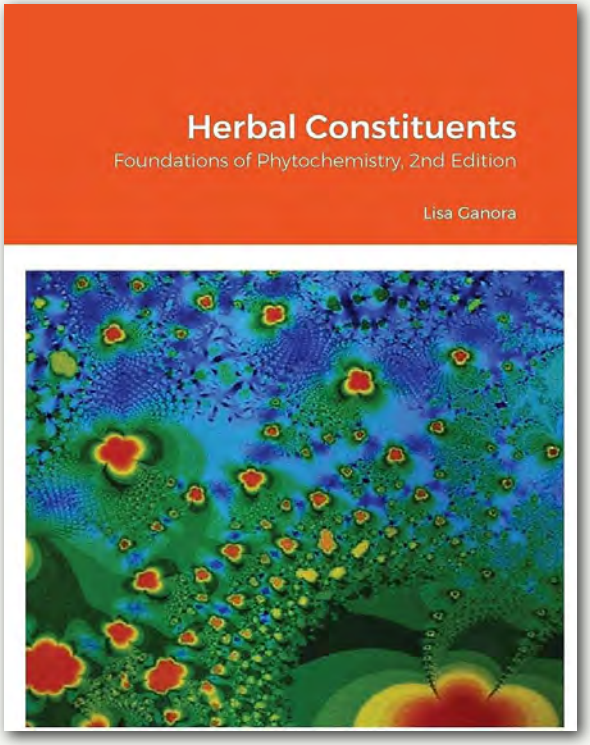
www.herbalgram.org/get-involved/herbal-gram-40th-anniversary/



CELEBRATING 40 YEARS OF HERBALGRAM

AMERICAN BOTANICAL COUNCIL

***Herbal Constituents: Foundations of Phytochemistry*, 2nd ed.**, by Lisa Ganora. Louisville, CO: HerbalChem Press; 2021. Softcover, 334 pages. ISBN: 9781105836954. $55.46.



By Stefan Gafner, PhD

Herbal Constituents is for herbalists who are curious about what molecules are in botanical ingredients and how these phytochemicals work (or may work) in the human body. The book is divided into 10 chapters, including three introductory chapters, one chapter that provides an overview of different constituent classes in plants, and six chapters that detail specific classes of plant metabolites: carbohydrates, lipids (except terpenoids), amino acids and their derivatives (except alkaloids), polyphenols, terpenoids, and alkaloids. Author Lisa Ganora is the former director of the Colorado School of Clinical Herbalism and the director of Elderberry's Herbal Education and Retreat Center in Paonia, Colorado.

The book starts with a few fundamental concepts of chemistry to provide a basis for understanding plant constituents. The author masters this challenging undertaking without going into too much detail or making the first chapter overly complicated, despite including difficult topics such as stereochemistry. This knowledge is put to the test in the second chapter, which explains how different functional parts in plant and fungal constituents can be used to understand the solubility of molecules in different solvents. (One suggested edit for a future edition is to use the more accurate term "acetal" rather than "ether" when describing glycosidic bonds.) The third chapter introduces the concept of synergism and touches on chemical variability of plant species due to environmental factors and processing.

The fourth chapter, which provides an outline of different classes of constituents, is written as a series of bullet points and is sometimes difficult to follow. It lists constituent groups, plants that contain the constituents, therapeutic benefits, and other helpful comments in a way that would benefit from reorganization.

The last six chapters, which deal with various classes of phytochemicals, are much better. The author does a fine job of explaining the different constituent groups and provides a few good examples to show that many of these constituent classes overlap, such as how the phenolic compound thymol (found in thyme [*Thymus vulgaris*, Lamiaceae] and other plants) is also a terpenoid, and solanidine (found in the potato plant [*Solanum tuberosum*, Solanaceae]) is both a steroid and an alkaloid. The text is illustrated with numerous chemical structures that help with understanding the fascinating world of plant metabolism. The author also provides examples of the uses and benefits of the constituents and the plants that contain them.

The book is written mainly for herbal practitioners. It excels at teaching the chemistry of plants to this target audience and is easy to follow, without using overly complicated language. Numerous helpful examples are taken from the author's experience with using plants to treat patients, although the frequent mentioning of anticancer properties based on in vitro studies using cancer cell lines should have warranted a more cautionary approach. The term "anticancer" should be reserved for ingredients that have proven anticancer efficacy in human clinical trials. As such, many of these "anticancer" herbal constituents should instead be considered to be "cytotoxic." Generally, a better distinction among data from in vitro, in vivo, and human studies would be beneficial for the third edition of this book.

One other shortcoming is the lack of a reference section in the book. Those who are interested in accessing the references are asked to use an online link that is available on the author's website.[1] This is inconvenient and may not be intuitive or easy to find for some people. Also, those who read the book from start to finish will find a number of repetitions, such as the echinacea (*Echinacea* spp., Asteraceae) alkylamides' causing a tingling sensation on the tongue. Other than that, the book is well written. I checked many of the structural drawings of the discussed chemistry and did not find any errors. The informative content and accessible introduction to plant chemistry certainly make this book a worthwhile investment for the curious herbalist. HG

***Stefan Gafner, PhD**, is chief science officer of the American Botanical Council and director of the ABC-AHP-NCNPR Botanical Adulterants Prevention Program.*

Reference

1. About the book. Herbal Constituents website. Available at: www.herbalconstituents.com/about-the-book. Accessed April 20, 2023.

James 'Jim' LeRoy Beck 1946–2021

By Hannah Bauman


James Beck

James Beck, the founder of supplement manufacturer Solaray, Inc., and a driving force behind the Dietary Supplement Health and Education Act of 1994 (DSHEA), died at his home in Ogden, Utah, on July 25, 2021, at age 75. Beck had been battling cancer for seven years.

Beck was born on March 6, 1946, in Preston, Idaho, to Syble Wells and Ardith LeRoy Beck. The family moved to Ogden when Beck was a young man, and he helped his father maintain the Memorial Gardens of the Wasatch cemetery. He earned a bachelor's degree in psychology at Weber State University in Ogden in 1968 and minored in chemistry. After graduation, he was drafted into the Army and served as a medic in Vietnam from 1968 to 1970. Despite personally opposing the war, Beck believed, as a medic, he could help his fellow soldiers with their mental health instead of being engaged in combat.

Beck believed strongly in the role of herbs and good nutrition in health and wellbeing, and he focused on natural remedies for himself after his time in the Army. He was eager to share his knowledge with the public and founded his company, originally called Solar Herbs, in 1973. However, to avoid confusion and a dispute with Solgar, a well-established supplement company founded in 1947, he later renamed the company Solaray.

Beck pioneered new herbal formulas and delivery methods, and Solaray was among the first companies in the United States to produce encapsulated herbal combination formulas in contrast to tinctures or teas. Many of these targeted formulas are still in production. He created a line of "Guaranteed Potency Herbs" using chemically standardized botanical extracts, and Solaray was one of the earliest companies in North America to promote the chemical consistency of standardized extracts. Another Solaray innovation was "Cool Cayenne" technology, which aimed to eliminate the burning sensation of cayenne (*Capsicum annuum*, Solanaceae) pepper supplements in the stomach, in 1988. Beck took pride in maintaining high-quality standards for Solaray formulas, and health food stores around the world stocked his products.

Beck served as Solaray's president until 1994, when Salt Lake City, Utah-based Nutraceutical Corporation acquired the company. However, he continued his research and development of herbal formulas until his death.

In the early 1990s, the US Food and Drug Administration (FDA) grappled with the challenge of regulating the growing market for herbal supplements and planned to consider them drugs that would be subject to a lengthy and cost-prohibitive new drug approval process. Beck, who believed that most popular herbs were food items and not drugs, feared that the FDA's plans would limit consumer access to these products and approached Senator Orrin Hatch (R-UT, 1934–2022) with an idea to protect herbs. This initial effort, known as the Health Freedom Act of 1992, failed in Congress. Another attempt, co-sponsored by Senators Hatch and Tom Harkin (D-IA), later passed as DSHEA, which officially defined dietary and herbal supplements as food products and created a separate framework for their regulation and safety.

Loren Israelsen, founder and president of the United Natural Products Alliance (UNPA), a leading industry trade group, recalls Beck's early support of Utah-based industry efforts to create appropriate and meaningful federal legislative reform for herbs and other dietary ingredients. "Jim was there from the beginning of our statewide efforts to coalesce the burgeoning Utah herb and dietary supplement industry into an effective political force," Israelsen wrote (email, January 28, 2023). "Jim was a founding member of UNPA, which at that time was called the Utah Natural Products Alliance. Although he and I did not always agree on various issues (and there were many on the table), I respected his unwavering commitment and his blunt candor as we debated how to reform FDA regulation of supplements. He was a pure soul. He said what he meant, no matter the blowback. Through all this, he and I formed a warm friendship and great mutual respect. I salute his cardinal contribution to the creation of DSHEA."

Beck was also an important part of the American Botanical Council's (ABC's) history. ABC Founder and Executive Director Mark Blumenthal recalls a situation in 1992, when he asked ABC's accountant why they paid so much for photocopier toner. The reason, the accountant explained, was Blumenthal's habit of sending copies of various newspaper, magazine, and scientific journal articles to an increasingly large circle of friends and colleagues.

"I looked up Jim's phone number in one of the four or five Rolodex® card holders on my desk and called him," Blumenthal wrote (email, May 3, 2023). "I asked him if he would be willing to help fund a clipping service on herbs so that he and his staff at Solaray could use the information for product development. He said, 'Sure. How much?' And so, in 1992, HerbClip was born."

HerbClips, which are now a fully electronic ABC member benefit, are two- to three-page summaries and critical reviews of scientific journal articles that cover medicinal

plant-related human clinical research, ethnobotanical analyses, analytical methods, regulatory data, market information, conservation and sustainability studies, and more. In January 2023, ABC released its 9,000th HerbClip summary, thanks in part to Beck's initial support.[1]

Family and friends remember Beck's dedication to his personal health and wellness, including his adherence to an organic, vegan diet and pranayama yoga practice. He authored the book *New and Highly Advanced Pranayama Techniques* (BLJ, Inc., 2017). He also was devoted to his children and enjoyed traveling with his family, including annual backpacking excursions to the Wind River Range in Wyoming and trips around the United States and Europe.

Jim Beck is survived by his children Nathanial (Laura) Beck, Kasandra (Brian) Hyde, and Candace (Brandon) Miles; 11 grandchildren; sisters Maxine Palmer, Patricia Henry, and Sally Web; six nieces and nephews; and his longtime companion and caregiver Valere McFarland. A memorial service was held on August 5, 2021, and he was laid to rest in the Memorial Gardens of the Wasatch cemetery, where he helped maintain the grounds. HG

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Robert 'Bob' Layton Beyfuss 1950–2023

By Eric Burkhart, PhD

Editor's note: *A previous version of this article with tributes from some of Beyfuss' friends and colleagues was published by the American Herbal Products Association in January 2023.*[1]



Robert Beyfuss

American ginseng (*Panax quinquefolius*, Araliaceae) has lost one of its greatest champions with the death of Bob Beyfuss of Preston Hollow, New York, on January 12, 2023, at age 72. Bob was born in Jersey City, New Jersey, on March 15, 1950. He earned his bachelor's degree in botany from Rutgers University in New Jersey in 1973. His ginseng journey began at Cornell University, in Ithaca, New York, where he earned his master's degree in agriculture in 1987 and wrote his master's thesis titled "The History, Use, and Cultivation of American Ginseng."

Although Bob never produced a single paper for a scientific journal or was lauded for a single scientific discovery, he was an immensely knowledgeable and thoughtful man, and his contributions to ginseng stewardship and forest farming are legendary. Through writing, public speaking, YouTube videos, conferences, social media posts, and workshops, Bob's influence and impact on the ginseng industry are immeasurable and far reaching. Bob's own ginseng planting activities in his home state of New York and his other cooperative extension activities outside the world of ginseng were so extensive that the New York state legislature declared him a "State Treasure of New York" in 2021. A quick internet search of his name provides endless examples of his topical breadth and audience reach.

As an extension agent and ginseng specialist with Cornell Cooperative Extension (CCE) until his retirement in 2009, he was a tireless advocate for ginseng stewardship and for forest farming as a conservation solution and economic opportunity. It is impossible to know how many people he influenced over his many decades of extension activities, but it was easily in the tens of thousands.

With his trademark ginseng arm tattoo (an endless source of amusement for many), he was a quintessential New Yorker and a legendary character. Outspoken, outgoing, opinionated, thoughtful, inspirational, multifaceted, sage, party animal, and listener are but a few adjectives that describe Bob. He was also an avid outdoorsman and loved the time he spent turkey hunting, fishing, foraging, and gardening in New York as much as the time he spent fishing, playing softball, and exploring in Florida, where, later in life, he spent his winters near his children and grandchildren.

I first met Bob in September 2000, when I was invited to attend a ginseng forest farming conference that he organized in his beloved Greene County in the Catskill Mountains of New York, where he served as a CCE agent for 31 years. As I arrived, exhausted at the end of a long day and after six hours of driving, I was directed to a cabin through the dark and told to "check in with Bob." When I finally found the cabin, to my surprise, I found Bob hosting a "night before the conference" party with him at the center of it all and the main source of both laughter and deep conversation. I expected to find some half-asleep, anxiety-ridden extension agent, but instead I found a vivacious and beloved white-haired man with a classic Burt Reynolds mustache, surrounded by his many friends and colleagues. And so began our friendship of more than two decades.

I have since attended countless ginseng-related events and conferences either organized by Bob or where Bob was an invited speaker. We also went on many adventures together, visiting ginseng growers, buyers, and contacts in Ontario, Wisconsin, North Carolina, Tennessee, and just about everywhere in between. He loved a good road trip (he refused to fly anywhere) and even more so if a new ginseng experience lay at the end of it. Our last trip was in August 2022, when we met in Ohio and traveled to Wisconsin to visit ginseng industry insiders and growers. Along the way, he insisted that we stop at "my friend Pete's who owns a bar" outside Chicago for the night. I was not sure what I was getting into, but, as it always turned out with Bob, we were welcomed like longtime friends and treated to deep-dish pizza and whatever we wanted to drink from the bar. "How do you know this guy, Bob?" I asked. "He is an old friend from Florida," he replied.

And so it went with Bob. He had many circles of friends from all walks of life. A road trip with Bob Beyfuss inevitably became a journey of discovery into all these people who came to exist in his orbit. Bob loved meeting and working with different people, and he, in turn, was loved by many.

Bob was a valued mentor and friend to many, both inside and outside academia. When ginseng questions came up, it was almost default to hear, "Have you asked Bob what he thinks?" or simply "Ask Bob." His counsel was regarded as essential when it came to ginseng, and his "jabs" at government regulation, especially later in life, while not always welcome, were always well-intentioned and meant to help both the plant and people.

Even after his retirement, Bob continued to be a fixture on the "ginseng scene." In November 2022, he was an invited speaker at an educational event hosted by Middle Tennessee State University in Murfreesboro, Tennessee.[2] It is difficult to imagine Bob no longer being with us at ginseng events. His presence was always a given. When he was not speaking, he was in the audience, listening and learning. He was a lifelong student. He once told me that, as an extension agent, he had to be. His clients were always asking him questions, and he needed to give them the best advice he could. And so, he studied and observed and learned and shared his knowledge with others. When I visited him in Florida during his annual winter migration south, he would set aside time to work on his newspaper column or record his "Mountain Gardener" radio piece for his audience back home that faithfully tuned in each week to read or hear what "Doctor Bob" had to share.

We say goodbye to an icon of the ginseng world, knowing that his legacy will live on through his writing, the educational projects of which he was a part, and the memories we hold dear from time spent with a remarkable man. If you find yourself in New York state, especially in the Catskills, there is a very good chance that any ginseng plant you encounter in the wild has something to do with Bob. His influence on ginseng will be felt both directly and indirectly for a long time to come. HG

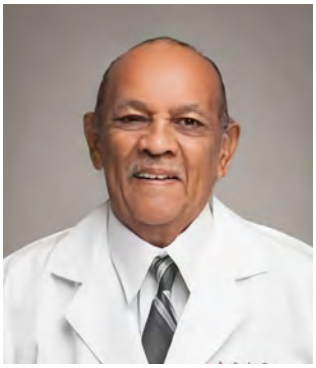
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Charles Allen Champion 1930–2023

By Hannah Bauman



Charles Champion

Charles Champion, DPh, the first Black pharmacist to work at a hospital in the Memphis, Tennessee, area, died on January 21, 2023, at age 92. In 1981, Champion founded Champion's Pharmacy and Herb Store in Memphis, which he ran for more than 40 years. The store remains family owned.

Champion was born in Memphis on August 20, 1930, and raised in Greenfield, Tennessee. He studied pharmacy at Xavier University of Louisiana, a historically Black university in New Orleans, and graduated with a doctorate in pharmacy in 1955. At Xavier, he studied pharmacognosy, which was his first introduction to herbal medicine.

Immediately after graduating, Champion was drafted into the US Army and served as an Army pharmacist in Germany for two years. When he completed his tour of duty, he returned to Memphis and began working at John Gaston City Hospital (now Regional One Health) as the city's first Black pharmacist in 1957. In 1958, he married Carolyn Bailey Champion, the daughter of Walter and Loree Bailey, who owned and operated the Lorraine Motel in Memphis. The motel was a *Green Book* refuge during the segregation

era, catered to an upscale Black clientele, and was the site of Martin Luther King Jr.'s assassination in 1968. It is now the site of the National Civil Rights Museum.

After 12 years at Gaston Hospital, Champion left to join the staff of a local Katz Drug Store, where he was likely the first Black pharmacist to work at a chain drugstore in Memphis. He worked at Katz until 1981, when he applied for and received a $40,000 loan from the Tennessee Valley Authority to open Champion's Pharmacy in southwest Memphis.

The pharmacy's first location was near Boxtown, a community in southwest Memphis that was founded by emancipated, formerly enslaved people in the late 1800s.[1] Boxtown was annexed by the city of Memphis in 1968 with the promise of extending city services to this area, which largely had no electricity, indoor plumbing, or fire and police services. However, for decades after Boxtown was annexed, many of these services were provided sporadically or not at all, and most residents lacked access to conventional health care.

"[These residents] had no physicians, no dentist[s] there," Champion was quoted as saying in a 2020 news report.[2] "So a lot of people, they're dependent on herbal medicine. I started to refresh myself about the different herbs, and I start putting the herbs on the counter."

In 1991, the pharmacy moved to its current location on Elvis Presley Boulevard, just under three miles from Presley's Graceland mansion, and was renamed Champion's Pharmacy and Herb Store. The pharmacy became a neighborhood staple, with the goal of providing personalized and holistic approaches to health care and medicine. The pharmacy has its own line of herbal remedies, including salves, ointments, and medicated oils, and Champion took pride in compounding formulas onsite and stocking hard-to-find items like mutton tallow. The store's motto is "Live Like a Champion." Champion also wrote a booklet titled *Herbs Found in the Bible*.

Jimmy Lewis, the owner of the former Squash Blossom health food store in Memphis, who knew Champion and admired his work in the local community, wrote (email, February 6, 2023): "Charles 'Champ' Champion was a licensed pharmacist, an herbalist, and a community leader. Champion's Pharmacy, his business, was in the heart of a dense urban landscape in Memphis, and I've never seen another place like it. It was part conventional pharmacy and part pharmacy with traditional medical products, many of which were compounded on site. Dr. Champion's customers had the best of both worlds, and they were greeted daily at the front of the store by a huge personality. Charles Champion was a guy who identified what he wanted to do in life, and he did it."

Throughout his 60-year career, Champion received numerous commendations, awards, and recognitions for his work in pharmacy and dedication to the Memphis community. In 2022, he received the Authur S. Holmon Lifetime Achievement Award from the University of Memphis' Black Student Union and the Memphis Heritage Trailblazer Award, which is given to individuals and organizations who have "demonstrated innovative contributions to underserved populations" and "passion and commitment to service and the preservation of Memphis history, culture, and rich heritage."[3] Also in 2022, the House of Black Church Studies at the Memphis Theological Seminary established the Dr. Charles A. Champion Healthcare Award in his honor, and he was the first recipient. Memphis Mayor Jim Strickland granted Champion the key to the city in 2019. He also received the Tennessee Pharmacists Association's Shelby Rhinehart Public Service Lifetime Achievement Award (2015) and Bowl of Hygeia Award (1992) for outstanding community service, among others.

Champion was dedicated to his community and business and always looked to inspire the next generation of pharmacists. His daughters Carol Champion, PharmD, and Charita Champion-Brookins, PharmD, have followed in his footsteps and continue to run Champion's Pharmacy, and his wife Carolyn still manages the business. Though he began to lose his eyesight in 2015, he still showed up to the pharmacy every day to consult with customers and stay connected to the people he served, refusing to officially "retire."

A statement released by the family read: "We mourn his departure but celebrate his incredible life and legacy. He was a wonderful husband, father, grandfather, and friend. Dr. Champion spent his career creating and providing remedies to treat many common illnesses. His dedication and love for people and his community were evident in his work. The joy Dr. Champion found in serving others was immeasurable, and we are grateful to everyone who trusted him and Champion's Pharmacy and Herb Store with their health and wellness needs."[4]

Charles Champion is survived by Carolyn, his wife of 64 years; daughters Carol and Charita; and three grandchildren. He is predeceased by his daughter Chandra Champion-Walker, who also worked in the pharmacy before her death in 2014. Funeral services for Champion were held at Mt. Olive Cathedral in Memphis on January 30, 2023. HG

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Michael Robert Phillips 1957–2022

By Connor Yearsley



Michael Phillips
Photo by Frank Siteman
Photo courtesy of Nancy Phillips

Michael Phillips, an apple (*Malus* spp., Rosaceae) grower extraordinaire, farmer, Earth steward, author, community activist, educator, and citizen scientist, who called himself a "tree guy," died suddenly on February 27, 2022, at age 64, from a heart attack while chasing off a deer in his orchard in the Lost Nation area of northern New Hampshire. Phillips was an innovator and pioneer in the organic orcharding movement but preferred the term "holistic."[1,2]

He emphasized the health of the entire ecosystem and the importance of finding balance and emulating nature. His work and research inspired many others to be better stewards of their land and find new ways to live in harmony with the Earth.

Phillips authored *The Apple Grower* (Chelsea Green Publishing, 1998; 2nd ed., 2005); *The Holistic Orchard* (Chelsea Green Publishing, 2012), which won an American Horticultural Society (AHS) Book Award in 2012; and *Mycorrhizal Planet* (Chelsea Green Publishing, 2017). With his wife Nancy, an herbalist, he also co-authored *The Herbalist's Way* (Chelsea Green Publishing, 2005).

Phillips was born in Wernersville, Pennsylvania, on July 17, 1957, to Robert and Dorothy (Christman) Phillips. He graduated from Pennsylvania State University with a degree in civil engineering and briefly worked as a construction manager outside Washington, DC, but liked to joke that he retired from civil engineering in his early 20s.[1,3]

Soon after that, in Rumney, New Hampshire, Phillips became a carpenter for the New England Salem Children's Trust, a community dedicated to helping abused and abandoned children. There, he helped build post-and-beam solar houses, dug up old tennis courts to turn them into gardens, and planted apple trees. He took time off to pick apples in southern Vermont and New Zealand and, when he returned, he committed to grow apples organically and had fallen in love with Nancy (née Spannenberg), who was then a social worker at the children's community in New Hampshire. They married on August 10, 1985, and moved north, where they purchased Heartsong Farm and raised a daughter, Grace.[1,3]

At their 58-acre Heartsong Farm, an 1860 farmstead in the mountains of northern New Hampshire, Phillips and his family grew many herbs, including garlic (*Allium sativum*, Amaryllidaceae), comfrey (*Symphytum* spp., Boraginaceae), horsetail (*Equisetum* spp., Equisetaceae), and stinging nettle (*Urtica* spp., Urticaceae). In his orchard, Phillips grew more than 100 apple varieties and some other fruit trees.

His 1998 book *The Apple Grower* defied the common belief that apples could not be grown without pesticides. At the time, though, he believed that fungicides like copper and sulfur sprays, which certified organic growers may use, were sometimes necessary.[3] However, the more he learned about how nutrient-dense foods, fermented products, and herbal medicines created a healthy microbiome in humans, the more he was convinced of the potential of using fungi-rich mulches and herbal sprays to improve the immunity and health of his trees.

Eventually, he rejected even copper and sulfur sprays, except on rare occasions for transitional orchards. He used neem (*Azadirachta indica*, Meliaceae) oil (which contains the compound azadirachtin and, according to Phillips, deters the round-headed apple tree borer) and sprays made of liquid fish fertilizer, as well as horsetail and stinging nettle (both of which contain silica, which, according to Phillips, helps the trees fend off fungal disease).[3]

Beneath his trees, Phillips grew herbs like comfrey, which contains calcium and draws minerals from the soil. Comfrey flowers also attract bees, which pollinate the apple blossoms. To encourage native bees like mason bees (*Osmia* spp.) and bumblebees (*Bombus* spp.) to stay, he made nests from pieces of septic pipe.[3]

For the book *Planting the Future* (Healing Arts Press, 2000), he and Nancy wrote a chapter on goldthread (*Coptis* spp., Ranunculaceae). His and Nancy's book *The Herbalist's Way* discusses the roles and responsibilities of herbalists in their communities, growing and preparing medicinal herbs, how to listen to clients and recommend holistic treatments, issues facing modern herbalists, and how to build an herbal library. In a 180-minute educational video, *Holistic Orcharding with Michael Phillips* (Chelsea Green Publishing, 2013), he leads viewers through a year in his orchard and reveals unique strategies for growing apples and other fruits. Phillips' last book, *Mycorrhizal Planet*, explores mycorrhizal fungi, which form mutualistic relationships with the root systems of plants, and it emphasizes the importance of minimizing or eliminating soil disturbance.

Phillips was deeply committed to a local food system and had little interest in wholesaling his apples. He was one of the founding members of the Lancaster Farmers Market in Lancaster, New Hampshire, and one of the first Community Supported Agriculture (CSA, or cropsharing) programs in the state. For 10 years, he was a selectman (a member of the government board) of Groveton, New Hampshire.[1] Like-minded growers continue Phillips' research at the Holistic Orchard Network, an online educational platform that he created to connect growers and share ideas, research, and resources on holistic orcharding.[1]

Phillips was also a central part of the Berkshire Roundtable, an annual meeting of orchardists and cider makers in Hawley, Massachusetts, each March, and organized the 2022 meeting, but died just days before. "Several of us recounted how [Michael] had initiated us into the world of holistic orchard-

ing," according to a letter summarizing the 2022 meeting.[4] "In short, we agreed that Michael Phillips was a 'damn fine keeper' who we all wished had had more time on this earth," the letter continued. "We moved unanimously that the somewhat outdated term 'mycorrhizae' be replaced by the infinitely more appropriate 'Michaelrrhizae.'"

Alan Surprenant, the owner of Brook Farm Orchard in Ashfield, Massachusetts, wrote (email, March 31, 2023):

> When I learned of [Michael's] death from Nancy, I went into the orchard and pruned a tree for him. I spoke with him as I pruned. I cried. It will forever be his tree. It is the first one you come to as you enter the orchard. Michael gave so much of himself to his research, writing, and connectedness to other growers. We all have benefited from that giving. Many people are carrying on his research in their own orchards today.

Dave Chapman, the owner of Long Wind Farm in East Thetford, Vermont, and executive director of the Real Organic Project, wrote (email, March 17, 2023):

> The first time I saw Michael, he was fearlessly singing a healing song to some 500 people. As the keynote speaker at the conference, he was a huge presence. He talked about the intertwining of our lives with mycorrhizal fungi, the threads that connect all of us. He had an "elder" gravitas and confidence that filled the room. I went up to talk to him afterward and was surprised by his uneasy shyness. Like most public people, Michael had many parts. I suspect that he might have been most comfortable working alone in his beautiful orchard. Michael blended a solitary work life with an active social engagement by giving workshops and talks. He was always building community. His generosity was inspiring.

Rosemary Gladstar, an author and the "godmother of American herbalism," wrote (email, March 27, 2023):

> Most of us who knew Michael Phillips knew him for his remarkable and impassioned work as an organic orchardist, but he was a person of many accomplishments and facets. He was a brilliant thinker and wrote seminal books on soil health, herbs, mycorrhizal [fungi], and, of course, apples.
>
> Michael had this amazing ability to put down deep roots in just about everything he did, and then he nourished those roots so they flourished. He did this with his relationship with his family, the land, his orchard, his friends, and his never-ending vision to make the Earth a better place for all living beings. His visionary work and research inspired so many to better care for their land and find new ways to live in partnership with the Earth…. At the heart of all he did was a deep and abiding love of nature, family, community, and sharing what he considered essential skills with others.

John Bunker, an orchardist, gardener, and founder of the mail order nursery Fedco Trees in Maine, wrote (email, March 30, 2023):

> Michael was a deep observer of the astonishing plant world that has been figuring out how to live so elegantly since long before humans picked an apple and took a bite. Michael also had the willingness, patience, and ability to study and dissect mountains of scientific research, to listen to everyone, and to consider all possibilities.… For many years, he chaired an annual two-day roundtable apple meeting in western Massachusetts. Although he was always one of the most knowledgeable growers in the room, he rarely said more than a word or two here and there. Most of the time, he asked questions, listened attentively, and took piles of notes. He wanted to hear what everyone had to say. His efforts to observe, understand, and clearly explain the botanical world were remarkable. Without Michael, organic orcharding as we know it would not exist.

Ben Watson, a writer and editor who edited all of Phillips' books, wrote (email, April 18, 2023):

> I don't think I really understood what "holistic" meant until I had known and worked with Michael Phillips for a few years. After a while, I came to realize that what his life's work involved was an ongoing quest, both intellectual and practical, for ways that we can understand our place in nature and work in tune with her. Lots of people say this sort of thing, including those who are committed to organic growing methods. For Michael, though, "organic" seemed too narrow a path. Michael transcended that choice with his holistic vision, which combined modern scientific research and traditional farmers' wisdom in a breathtaking way. His final book on mycorrhizal fungi — something appreciated mostly by soil scientists at the time — caused a new generation to appreciate this vast underground network, a symbiotic exchange between plant roots and fungi upon which natural agriculture depends. His constantly evolving thinking, informed by his gentle philosophy and reverence for nature, will live on in his books and benefit generations to come.

Michael Phillips is survived by his wife Nancy, daughter Grace, and brother Alan. His orchard at Heartsong Farm is being sustained by Grace, Nancy, and volunteers, and according to Nancy, it continues to thrive. Nancy hopes to make it more of an educational venture and offer "apple apprenticeships" for students who want to learn Phillips' holistic orcharding techniques. HG

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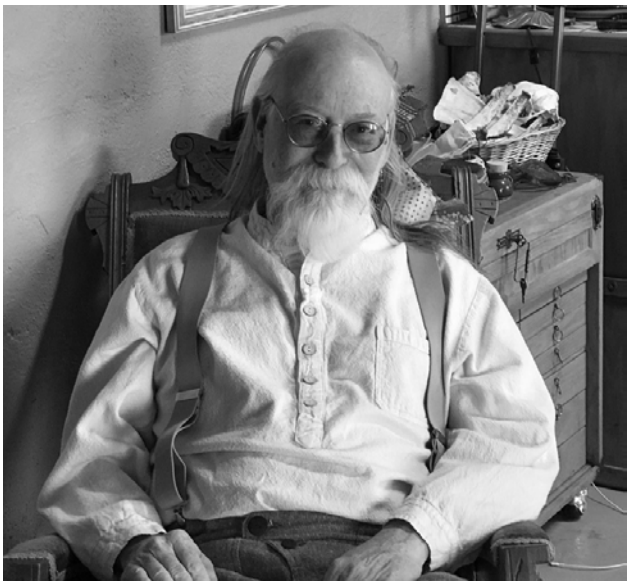
Stephen Harrod Buhner 1952 – 2022

By Connor Yearsley

Stephen Buhner, a prolific author, herbalist, philosopher, polymath, and autodidact (self-taught person), who described himself as an "independent scholar, amateur naturalist, and citizen scientist,"[1] died at his home in Silver City, New Mexico, on December 8, 2022, at age 70, from idiopathic pulmonary fibrosis and related complications.

"He was in ceremony with friends and family" when he died, according to a post on his Facebook page the next day. "He was aware, conscious, present, open hearted and humorous."[2]

Buhner was a fellow of Schumacher College (a college for ecological studies in Devon, England) and a member



Stephen Buhner. Photo courtesy of Trishuwa

Friends and Colleagues Remember Stephen Harrod Buhner

Dennis McKenna, PhD, a renowned expert on psychoactive plants and fungi, wrote (email April 7, 2023):

> Stephen was a true natural philosopher, an incredible herbalist, and a teacher and mentor to many. Although I never had the pleasure of meeting him personally, we had been exchanging emails regularly before he passed. His books have long been a source of wisdom, insight, and comfort to me and many others. In an era where scientific reductionism has eliminated much of the mystery from our appreciation and understanding of the natural world, Stephen's writings are a much-needed reminder that nature is permeated with mystery, intelligence, and wonder. Other modalities of knowing encompass and transcend scientific reductionism, and a truly comprehensive understanding of nature can be achieved only by embracing these other modalities. This is the essence of natural philosophy. Stephen Buhner understood this, and his articulate presentation of this perspective to a wider audience has reintroduced magic and mystery into a world that clearly needs it.

Rosemary Gladstar, an author and the "godmother of American herbalism," wrote (email, February 1, 2023):

> Stephen Buhner may well be considered one of the great plant geniuses of our time, and he's left a legacy that will live on through his books and teachings for generations to come. A brilliantly complex, impassioned, and deeply driven individual, Stephen was an inspiring teacher and storyteller. He was also a contrarian and provocateur in the best of ways. Stephen loved to challenge people, to get us to look deeper, to broaden our horizons, and to seek greater meaning in the world around us. He wanted us to not only see the plants, but to hear them and learn their "lost language," so that we, too, could follow their wisdom teachings.
>
> He was amazingly dedicated to his work, so much so that he pushed himself to stay alive long enough to finish his last book, *Becoming Vegetalista*, his final gift to the world.… He wrote passionately and soulfully about subjects he loved and cared about deeply and that were of timely importance to the world.
>
> Stephen was always a favorite teacher at Sage Mountain Botanical Sanctuary in central Vermont. One of my favorite memories of Stephen was after a Sacred Plant Medicine retreat. Stephen, along with noted poet, author, and ethnobotanist Dale Pendell (1947–2018) and Ecuadorian ethnobotanist Rocio Alarcón, was teaching at a weekend event at Sage Mountain. After the students left, we were all sitting in the living room enjoying each other's company, when Stephen suggested that we sample some of Dale's special homemade absinthe. Well, we, of course, did, and before we knew it, we were all laughing uncontrollably — a joyous moment suspended in time.

Amy Goodman, a community herbalist and educator based in Montpelier, Vermont, wrote (email, January 26, 2023):

> Stephen was generous, complex, sometimes difficult, and most always remarkable. He was an Earth poet,

of American Mensa and Intertel (an international high-IQ society). For more than 30 years, he was the senior researcher of the nonprofit Foundation for Gaian Studies, whose work focuses on reinhabiting humans' interbeing with the Earth, which is considered a self-organized whole and a superorganism of which humans are only a tiny part. What some people call "Deep Gaia" (that the Earth is alive, intelligent, and aware) is fundamental to this work.

He wrote 25 books and many magazine articles, memoirs, fictional short stories, and poems. His writing covered diverse topics, including ecology, the rise of antibiotic-resistant bacteria, viral pandemics, the dangers of pharmaceuticals and pharmaceutical drug waste in the environment, the use of plant medicines to treat resistant infections and chronic diseases like Lyme disease, brewing herbal beers, fasting, and more.

Buhner estimated that he read about 30,000 books and about 50,000 scientific articles in his lifetime. "I do so not only for entertainment or to educate myself but also to cross-correlate insights from multiple and widely divergent fields into usable knowledge that can address some of the problems we face as a species, in particular those that call me to them most strongly (since I can't, as no one can, effectively address all of them)," he wrote on his website.[3]

He achieved some degree of expertise in many areas, including bacterial ecology, intelligence, and resistance; plant intelligence, ecology, and medicinal sophistication; psychotherapy; human psychology; biological self-organization (pattern formation processes in the physical world); nonlinearity (systems in which the change of outputs are not proportional to the change of inputs); contemplative spirituality, especially contemplative animism (the idea that the universe is alive); transcultural epistemology (theory of knowledge); fine woodworking and the restoration/remodeling of old houses; sophistication in nonfiction writing; lectures as performance art; and more.

To become a "plant person and Earth poet," in Buhner's words, he "had to take a lot of other jobs along the way

> a pioneer, and a pot stirrer. He inspired many of us to find our true work with the plants and to share it with others. He leaves a richness of curiosity, research, and inspiration behind in the hearts of many. Personally, Stephen was the person who showed me that my vulnerability, which I previously had buried, is actually a great strength. For this, I am ever grateful.

Kat Maier, RH (AHG), the founder and director of Sacred Plant Traditions, a center for herbal studies in Charlottesville, Virginia, wrote (email, January 19, 2023):

> From the first moment I heard Stephen present (at the International Herb Symposium in 1997), I knew he would have a significant influence on my work. Stephen was a poet, writer, and performer, and his teachings were far from linear. His classes and books were an invitation to the liminal worlds where perceptions shifted, hearts were honored, and the wild and unseen benevolence of nature flourished. How timely that one of his last books, *Earth Grief*, might be one of his best and one with which he was deeply pleased. Through this book, he gifted us with an honest, deeply researched, and compassionate lens with which to navigate climate change…. He is another bright star in the constellation of herbal ancestors to help us on our way.

Susan Leopold, PhD, executive director of the United Plant Savers (UpS), wrote (email, January 25, 2023):

> I was … amazed how he had taken to learning music and playing guitar later in life, weaving sound into his teachings and adding more layers to the depth of understanding plant wisdom. In 2022, we engaged in a discussion about UpS' receiving books from his library. Stephen's roots tie back to the healing traditions of Appalachia, and … [a]s the UpS library grows, we are again reminded of how the plants of Appalachia in particular have inspired so many.

Kate Gilday, a clinical herbalist and founder of Woodland Essence, a forest botanicals and flower essence company and workshop center in Cold Brook, New York, wrote (email, January 24, 2023):

> Stephen … wrote his farewell love letter to his community just days before he passed. This deep caring for people and the human experience wove its way into the many books he wrote and the workshops he presented throughout his life.
>
> He opened eyes, engaged minds, and touched hearts with his words, challenges, humor, and attention. On one occasion, Stephen sent us off to sit with a unique woodland herb: ghost pipe (*Monotropa uniflora*, Ericaceae). We were to listen to this plant, trust our hearts, and, after writing of our encounter, return to share our personal experience with the group. A remarkable thing occurred.… Each participant felt a profound heart opening and deep sense of being loved. We shared a sense of being fully welcomed, as we perceived ourselves to be an integral part of nature. It was a remarkable moment indeed.
>
> Stephen's prolific writings will continue to educate, inspire, and remind his readers to pay attention, listen with their hearts, and engage in the work of healing self and planet. His books will be read, and the information and herbs he researched so deeply will benefit countless people.

to make enough money to survive: doughnut baker, construction laborer, woodworker, mansion restorer, furniture maker, rare book seller, and so on."[1]

Born on July 15, 1952, in Louisville, Kentucky, Buhner came from a long line of healers, including Leroy Burney, the Surgeon General of the United States under presidents Eisenhower and Kennedy. The most important to him, however, were Elizabeth Lusterheide, a midwife and herbalist in southern Indiana in the early 1800s, and Buhner's great-grandfather C.G. Harrod, a physician in rural Indiana who inspired Buhner "to become the kind of healer that American medicine no longer has a place for."[3]

Buhner described his childhood home life as deeply unhealthy. "Love was in short supply," he wrote, but he found refuge at his great-grandfather's farm, where he felt connected to nature and cared for in ways he did not at home. He described his great-grandfather's approach to treating patients as "hands-on, compassionate, and personal," and Buhner wanted to grow up to be like him.[1]

At age 16, Buhner moved to California, where he attended college and "majored in the sixties." He later moved to the mountains of Colorado, where he rebuilt a cabin, which he lived in for four years, and taught himself the forgotten crafts of the 19th century.[1] He graduated from the University Without Walls program (a self-directed degree program) of Loretto Heights College in Denver.

At age 34, he became ill with severe abdominal cramping, and his doctors were unable to provide a diagnosis. He met a local herbalist, who told him that the root of a plant, oshá (*Ligusticum porteri*, Apiaceae), which grew in the forest around his house, was helpful for his condition. His doctors wanted to do exploratory surgery, but Buhner ate some of the oshá roots instead.

"The pain was about half as severe the next time it happened, and the next time about half again, until finally it just went away," he was quoted as saying in *The Sun* magazine.[1] "After that, I began to take control over my own health.

"I just dug up the root and began eating it," Buhner added.[1] "It's got a spicy, celery-like taste. Not only did I feel my body getting better, but I could feel, inside, some living entity that *cared* about me. It's difficult to explain, because it's not something we generally talk about in the West. When you use a living medicine and get well, you feel that the world is alive and aware and wants to help you. People often talk about saving the Earth, but how many times have you experienced the Earth saving *you*?"


Stephen Buhner

His experience with oshá changed Buhner's life, and he began studying, writing about, and practicing herbal medicine after that. "I began practicing when the hunger in me to heal was too strong to be suppressed," he was quoted as saying.[1] "Those who are meant to heal all have this hunger in them."

Buhner described his approach to healing as a relationship, not a technique. "My clients often feel lost and alone in their suffering," he was quoted as saying.[1] "They need human companionship and also a sense of companionship with the living world. If I can, I'll take them into the woods and introduce them to the plant that will be helping them.

"I've found that if people are ill, the plants they need are almost always growing in their vicinity," he added.[1] "I've watched plant populations change around me in places I've lived for thirty-some years, and they seem to shift in response to changes in my own disease complexes. This sounds airy-fairy to the Western reductive mindset, but people have been commenting on it since Hippocrates. Plant populations rise and fall according to the needs of the ecosystem in which they grow, and that includes the animal life there, which includes us."

One of Buhner's notable books, *Healing Lyme: Natural Healing and Prevention of Lyme Borreliosis and Its Coinfections* (Raven Press, 2005), a bestseller that he followed up with other books on the topic, examines leading scientific research on Lyme infections and outlines herbal medicines and supplements that may help prevent and treat the disease, either alone or with antibiotics.

Buhner was inspired to write the book after frequently being asked, during his teaching, if he knew anything about treating Lyme disease. "There seemed such need, and the lack of a definitive text was troubling to me," he was quoted as saying.[4] "For instance, no one I knew of was even remotely aware that the reason that Lyme produced so many different kinds of symptoms was because of damage to collagen structures in the body."

Buhner developed what was, according to him, the first comprehensive analysis of what *Borrelia* bacteria, which cause Lyme disease, do in the body, so physicians, herbalists, and the infected could knowledgeably

treat the condition. He also estimated that about 100,000 people or more have been treated with his protocols for Lyme disease.[3]

He helped bring to prominence two herbal medicines that previously were not well-known in the United States: Japanese knotweed (*Polygonum cuspidatum*, Polygonaceae) root (for the treatment of Lyme infections and as a systemic anti-inflammatory) and pine (*Pinus* spp., Pinaceae) pollen (which contains testosterone and, according to Buhner, can increase free testosterone levels in the blood when used as a tincture). He also helped introduce the concept of direct (rather than indirect) androgenic plants (those that contain testosterone and other androgens) in American herbalism.[3]

According to Buhner, his book *Sacred and Herbal Healing Beers: The Secrets of Ancient Fermentation* (Brewers Publications, 1998) helped revive ancient and herbal brewing traditions and lead to the gruit (an herb mixture used for bittering and flavoring beer) renaissance, especially in France, and the introduction of unique historical beers made by companies like Dogfish Head Brewery (Milton, Delaware).[3]

Also, according to him, his book *Herbal Antibiotics: Natural Alternatives for Treating Drug-Resistant Bacteria* (Storey Publishing, 1999; 2nd ed., 2012) was the first comprehensive text on systemic antibacterial plants that may effectively treat resistant infections, and his book *Herbal Antivirals: Natural Remedies for Emerging and Resistant Viral Infections* (Storey Publishing, 2013; 2nd ed., 2021) was the first comprehensive text on herbal antivirals in American herbalism.[3]

Some of Buhner's personal favorites of the books he wrote include *Ensouling Language* (Inner Traditions, 2010), about the sophisticated use of language in the crafting of nonfiction; *Plant Intelligence and the Imaginal Realm* (Bear & Company, 2014), a manual for directly engaging the intelligence of the natural world; *Earth Grief* (Raven Press, 2022), which won a Nautilus Book Award in 2023 and delves into the emotional, spiritual, and psychological impacts of ecological loss and what is needed to overcome them; and his last book, *Becoming Vegetalista* (Raven Press, 2023), which explores human relationships with plants.

In 2022, Buhner received the first annual Distinguished Natural Philosopher Award from the McKenna Academy, a nonprofit founded in 2020 by Dennis McKenna, PhD, a renowned expert on psychoactive plants and fungi. (Tributes from McKenna and other friends and colleagues of Buhner can be found in the sidebar on pages 76-77.)

"I am and always have been interested in the invisibles of life, those meanings and communications that touch us from the heart of Earth and let us know that we are surrounded by more intelligence, mystery, and caring than our American culture admits of; how to reinhabit our interbeing with the world; how to sit in the council of all life as kin rather than dominators; and how to live sustainably on this Earth that I love more than I know how to say," Buhner wrote.[3] "Most of all though, I have spent the last half century doing my best to learn how to be a human being, the hardest thing of all, I have realized, to learn."

Stephen Buhner was buried deep in the Gila Forest in New Mexico, as he wanted, and leaves behind his family: Trishuwa, Julie McIntyre, and Benjamin Bailey-Buhner. HG

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Acerola *Malpighia glabra*
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FOOD AS MEDICINE

ACEROLA

Malpighia emarginata and *M. glabra*, Malpighiaceae

Acerola, also known as "Barbados cherry" and "West Indian cherry," is native to Mexico, Central America, and parts of South America. Acerola fruit is among the highest natural sources of vitamin C, which, combined with its other antioxidant compounds, has made the fruit a prized ingredient in both traditional medicine and modern dietary supplements. Though little research has been conducted on acerola as a single ingredient, it is often found in combination formulas for skin conditioning, immune support, and more.

Fast Facts

- In Brazil, acerola fruit is used as a nutritional supplement for people with anemia, cardiovascular disease, and liver disease.
- Acerola bark, called nancebark, has been used in traditional medicine practices as an astringent and to reduce fevers.
- The acerola plant is known to host the larvae of butterflies, including the white-patched skipper (*Chiomara georgina*), Florida duskywing skipper (*Ephyriades brunnea*), brown-banded skipper (*Timochares ruptifasciata*), and Cassius blue (*Leptotes cassius*).
- Brazil is currently the largest commercial producer of acerola juice, with smaller amounts produced by China, India, and Mexico.

Nutrition Profile Per 100g of acerola fruit		
Excellent source of		
Vitamin C	1677 mg	1864% DV*
Good source of		
Pantothenic Acid (Vitamin B_5)	0.31 mg	6.2% DV
Riboflavin (Vitamin B_2)	0.06 mg	4.6% DV
Magnesium	18 mg	4.3% DV
Dietary Fiber	1.1 g	4% DV
Vitamin A	37.3 mcg	4% DV

* DV = Daily Value as established by the US Food and Drug Administration, based on a 2,000-calorie diet.

Phytochemical Focus

- Ripe acerola fruit can contain up to 2 g of vitamin C per 100 g of fresh fruit, the highest concentration measured in any fruit.
- Acerola fruit contains beneficial carotenoids including lutein, beta-carotene, and lycopene. These orange, yellow, and red plant pigments are powerful antioxidant compounds that support eye health and the immune system.
- Acerola is a popular ingredient in skin-conditioning formulas due to its antioxidant and anti-inflammatory activities, and it has shown potential protective effects against ultraviolet rays from the sun.
- Acerola seeds, which are the main waste product discarded during processing, have the potential to be a functional ingredient, as they can be dried and processed into a powder that contains protein, fiber, fatty acids, vitamin C, and minerals including iron, calcium, potassium, and magnesium.

About ABC's Food as Medicine Series

The Food as Medicine article series published in the American Botanical Council's (ABC's) monthly e-newsletter HerbalEGram highlights a conventional food and explores its history, traditional uses, nutritional profile, and modern medicinal research. The articles also feature an easy recipe to encourage readers to experience the extensive benefits of these whole foods.

The full "Food as Medicine: Acerola" article with references is available on ABC's website in the HerbalEGram section (April 2023 issue).

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