

# CAM AT THE NIH

FOCUS ON COMPLEMENTARY AND ALTERNATIVE MEDICINE

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## New Campaign Encourages Open Communication About CAM



© Getty Images

**“I**t’s time to talk.”

That’s the message of a new educational campaign launched by NCCAM to help open the lines of communication between health care providers and their patients about CAM use. NCCAM is reaching out to professional and consumer organizations to help educate their members about the importance of this dialogue.

The “Time to Talk” campaign grew out of findings from a national survey by NCCAM and AARP published in 2007 (see the Winter 2007 issue) and from focus groups. Among the almost 1,600 Americans age 50 or older in the survey, two-thirds reported that they used some form of CAM. However, fewer than one-third of those who used CAM

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## A Walk in the Botanical Research Centers “Garden”

*This article focuses on three of NIH’s Botanical Research Centers (BRCs). Others will be profiled in future issues. For recent papers based on BRC presentations at the 2007 Experimental Biology Annual Meeting, see “References.”—Editor*

**I**n the large, diverse “garden” of research that NCCAM supports, the NIH Botanical Research Centers (BRC) Program is one colorful, meticulously cultivated corner. Walk down its paths, and you’ll see, for example, grass-like blades of Russian tarragon, with its mild scent and taste of anise; tiny blue flowers of echium and borage, cousins in the forget-me-not family (*Boraginaceae*); and tall spikes of echinacea, named from a Greek term meaning sea urchin or hedgehog for the flower’s spiny center.

Each plant is part of a research program that ascends a trellis of plant and medical knowledge. This program extends from the genetic materials in seeds up to finished



Russian tarragon  
(*Artemisia dracunculoides*)

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products, and from basic biology up to health-related effects in people. Also of interest are how and why the effects of these botanicals occur and factors that may affect their activity, such as where the plant grows; how it is harvested; whether it is

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**NCCAM**

NATIONAL CENTER FOR COMPLEMENTARY AND ALTERNATIVE MEDICINE

NATIONAL INSTITUTES OF HEALTH

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

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Web site: [nccam.nih.gov](http://nccam.nih.gov)

E-mail: [info@nccam.nih.gov](mailto:info@nccam.nih.gov)

**Editorial Address:**

CAM at the NIH

P.O. Box 7923

Gaithersburg, MD

20898-7923, or

[info@nccam.nih.gov](mailto:info@nccam.nih.gov)

**NCCAM Exhibits  
at Upcoming  
National Meetings**

Association of American  
Indian Physicians,  
July 24-29, Worley,  
Idaho

American Psychological  
Association,  
August 14-17, Boston

AARP, September 4-6,  
Washington, D.C.

American Academy  
of Family Physicians,  
September 17-21,  
San Diego

Society for the  
Advancement of  
Chicanos and  
Native Americans,  
October 9-12,  
Salt Lake City

American Association  
of Medical Colleges,  
October 31-November 5,  
San Antonio

**New Campaign Encourages  
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About CAM**

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discussed their CAM use with their physicians. The most common reasons for this, the survey found, were that the physician never asked, the patients did not know they should talk about it, and there was not enough time during the office visits.

“We know that about two-thirds of Americans are using CAM. These therapies can enhance or interact with conventional health care practices,” said Josephine P. Briggs, M.D., Director of NCCAM. “If you are a health care provider, asking your patients about CAM use will help you provide safe, coordinated care. If you are a patient, giving your provider a full picture of what you do to manage your health, including any use of CAM, will help you stay in control and allow your provider to be an informed partner



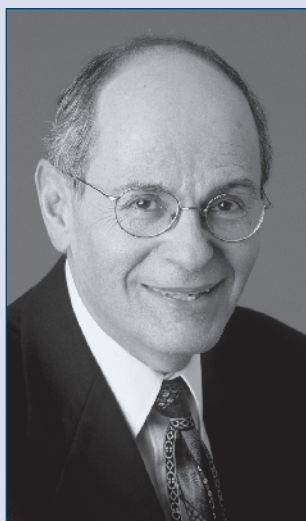
in your care.” As part of this campaign, the Center is offering an array of free tools and resources for a variety of audiences:

- **For patients:** A packet including a tip sheet and a wallet card for keeping track of medications
- **For health care providers:** A toolkit including tip sheets, patient wallet cards, posters, and resource information

- **For professional associations and consumer organizations:** A toolkit designed for these organizations, including an article for use in publications.

These materials are available from the NCCAM Clearinghouse (1-888-644-6226 toll-free) and via the “Time to Talk” Web site ([nccam.nih.gov/timetotalk/](http://nccam.nih.gov/timetotalk/)). ❖

**Goldrosen Named Director of Division of Extramural Activities**



Rhoda Beer

**Martin H. Goldrosen, Ph.D.**

**Martin H. Goldrosen, Ph.D.**, formerly Director of NCCAM’s Office of Scientific Review (OSR), was recently appointed Director of NCCAM’s Division of Extramural Activities. This Division, through the OSR, coordinates the receipt, referral, and scientific review of grants, cooperative agreements, and research contracts; oversees, through its Office of Grants Management, the processing of grant, cooperative agreement, and contract awards; and coordinates meetings and directs committee management activities for NCCAM’s advisory council (see pg. 6).

Dr. Goldrosen began his NIH career in 1991 as a health scientist administrator within the Grants Review Branch of the Division of Extramural Affairs at the National Cancer Institute. Prior to joining NIH, Dr. Goldrosen was a cancer research scientist at the Roswell Park Cancer Institute in New York. Concurrently, he was a research professor of experimental pathology at the State University of New York, Buffalo.

# CAM and Fibromyalgia: At a Glance

People with chronic health conditions such as fibromyalgia often turn to some form of CAM. This article provides basic information on fibromyalgia and “what the science says” about the effectiveness of CAM practices that many people with fibromyalgia use. If you are considering a CAM therapy for fibromyalgia, this information can help you talk to your health care provider about it.

## About Fibromyalgia

Fibromyalgia is a disorder that causes muscle pain and fatigue. People with fibromyalgia have chronic widespread pain, as well as “tender points” on the neck, shoulders, back, hips, arms, and legs, which hurt when slight pressure (about 9 pounds) is applied.

People with fibromyalgia may also have other symptoms, such as:

- Trouble sleeping
- Morning stiffness
- Headaches
- Problems with thinking and memory (sometimes called “fibro fog”)
- Irritable bowel syndrome.

Women with fibromyalgia may also have painful menstrual periods. Fibromyalgia may also be associated with depression.

The causes of fibromyalgia are unknown, but problems with the nervous system could be involved. It is estimated that fibromyalgia affects as many as 1 in 50 Americans. Most people with fibromyalgia are women, and most are diagnosed during middle age. However, men and children also can have the disorder.

## CAM Practices Used for Fibromyalgia

Conventional therapies for fibromyalgia are limited, and research shows that about 90 percent of people with fibromyalgia use some form of CAM. These practices include:

- Acupuncture
- Biofeedback
- Chiropractic care
- Hypnosis
- Magnesium supplements
- Magnet therapy
- Massage therapy
- SAME (S-Adenosyl-L-Methionine)
- Tai chi.

## What the Science Says About CAM and Fibromyalgia

According to reviewers who have assessed the research on CAM and fibromyalgia, much of the research is still preliminary, and evidence of effectiveness for the various therapies used is limited.

- Research on **acupuncture**—stimulation of anatomical points with thin metallic needles—for fibromyalgia has produced mixed results. One review article notes that three studies found some evidence to support the use of electroacupuncture (in which the needles are pulsed with



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About 90 percent of people with fibromyalgia use some form of CAM.

electric current). However, the effects of electroacupuncture in these studies were mostly short lived, and two studies of traditional acupuncture had negative results.

- Some researchers believe that low levels of magnesium may contribute to fibromyalgia. However, there is no conclusive scientific evidence that **magnesium supplements** relieve fibromyalgia symptoms. Two small studies had conflicting results.
- A review of the research on **massage therapy** for fibromyalgia notes only modest, preliminary support. Two studies had some positive findings, but two others found either no benefits or only short-term improvements.

- Supplements containing the amino acid derivative **SAMe** are used for a variety of conditions. Although several small studies of SAMe for fibromyalgia have had mixed results, there is some evidence of a benefit. Reviewers conclude that more research is needed.
- Finally, according to reviewers, research evidence is insufficient to draw conclusions about the effectiveness of other CAM treatments—**biofeedback, chiropractic care, hypnosis, and magnet therapy**—used for fibromyalgia.

## NCCAM Research on Fibromyalgia

NCCAM funds clinical trials that look at CAM for fibromyalgia. Recent projects include studies of:

- The effects of tai chi on fibromyalgia patients’ musculoskeletal pain, fatigue, sleep quality, psychological distress, physical performance, and health status

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## Upcoming Talks by the Director

This new column lists selected upcoming talks by Josephine P. Briggs, M.D., Director of NCCAM.

### August 13, Albuquerque: 11th Annual Force Health Protection Conference

This conference provides training for service members and Department of Defense civilians who work in health care.

### October 17, Chicago: Annual Conference, American Association of Acupuncture and Oriental Medicine

### November 8, Toronto: Fifth Annual Research Symposium, the Canadian Interdisciplinary Network for CAM Research (IN-CAM)

# Conference Explores Therapy/System Interactions



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According to the science, could manual (hands-on) treatment from a chiropractic physician help with stomach conditions? Could osteopathic manual therapy have an effect on lung disorders?

While manual-therapy practices are most known for treatment of the muscular and skeletal systems, their effects on the internal organs—also called the viscera—and on

the autonomic (involuntary) nervous system are active areas of inquiry.

A scientific conference on this topic brought clinicians and scientists from a

range of professions to the University of North Texas, Fort Worth, on March 31 and April 1, 2008. NCCAM was a cofunder of the event, “Somato-Visceral Interactions and Autonomic Mechanisms of Manual Therapy.”

Partap Khalsa, D.C., Ph.D., D.A.B.C.O., an NCCAM program officer, commented to CAM at the NIH, “This was an historic, multidisciplinary, international gathering. The basic science of interactions between the connective tissues and the visceral organs, via the involuntary nervous system, was defined. The importance of these interactions for many body systems was presented. While there is not much rigorous clinical research yet, participants identified areas for future research.” ❖

## CAM and Fibromyalgia: At a Glance

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- Brain-imaging techniques for determining whether acupuncture relieves pain due to fibromyalgia
- The effectiveness of a form of electroencephalograph (EEG) biofeedback in treating fibromyalgia.

### If You Are Considering CAM for Fibromyalgia

- Talk to your health care providers. Tell them about the therapy you are considering and ask

any questions you may have. They may know about the therapy and be able to advise you on its safety, use, and likely effectiveness in relieving your fibromyalgia symptoms.

- If you are considering a practitioner-provided CAM therapy such as acupuncture, check with your insurer to see if the services will be covered, and ask a trusted source (such as your fibromyalgia doctor or a nearby hospital or medical school) to recommend

a practitioner. Although acupuncture treatment is generally safe, complications can result if needles are not adequately sterilized or if the treatment is not properly delivered.

- If you are considering dietary supplements, keep in mind that they can act in the same way as drugs. They can cause medical problems if not used correctly or if used in large amounts, and some may interact with medications you may take. The health care providers you see about

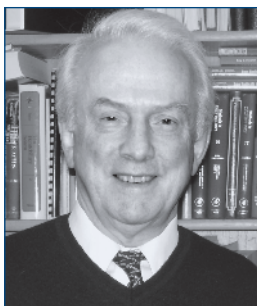
your fibromyalgia can advise you.

- Tell all your health care providers about any complementary and alternative practices you use. Give them a full picture of what you do to manage your health. This will help ensure coordinated and safe care.

This article was adapted from a new fact sheet, CAM and Fibromyalgia: At a Glance, available (including references) at [nccam.nih.gov/health/pain/fibromyalgia.htm](http://nccam.nih.gov/health/pain/fibromyalgia.htm) or from the NCCAM Clearinghouse (see pg. 2). ❖



## Meet a Member of NACCAM



Stephen Barnes, Ph.D.

**S**tephen Barnes, Ph.D., is a member of NCCAM's National Advisory Council for Complementary and Alternative Medicine (NACCAM). He is associate director of NCCAM's Botanicals Center for Age-Related Diseases, a collaboration between Purdue University and the University of Alabama at Birmingham (UAB). The center's projects include the effects of isoflavones (estrogen-like substances found in some plants, including soy and kudzu root) on bone and vascular health in postmenopausal women, and their effects on the onset of cataracts in aging. Isoflavones

are members of a broader class of a group of chemical components called polyphenols that are widely found in plants, including in the skins and seeds of grapes and in many other fruits and berries.

Dr. Barnes is an expert in high-technology research techniques, especially mass spectrometry.\* He is professor of pharmacology and toxicology, biochemistry and molecular genetics, environmental health sciences, genetics, and vision sciences at UAB, where he is also director of the Comprehensive Cancer Center Mass Spectrometry and Proteomics Shared Facility, and senior scientist at the Comprehensive Cancer Center and the Center for Aging. Dr. Barnes received his Ph.D. in biochemistry from the University of London, United Kingdom. He is also carrying out other NIH-supported research on cancer prevention, skin diseases, and bile acids.

### **Why use mass spectrometry to study botanicals in CAM?**

We have important questions about botanicals used as CAM—such as what is in them, at what concentrations, and what the structures of their constituents (ingredients) look like. Mass spectrometry and its various instruments are vital tools in CAM research for answering them, because of their extreme precision in measuring any compound, large or small.



Kudzu

© Peggy Greb

A great challenge that lies before us is the variation in substances not only among plants, but within them. Plants are incredible chemical factories. They don't make their chemicals (called phytochemicals) just to suit us, but for their own survival. For example, certain compounds in the petal of a flower give the "come hither" sign to bees, aiding pollination, while others fight off attacking insects or microbes. A compound in a plant always leaves the same "fingerprint" of its constituents when analyzed by mass spectrometry.

"Plants are incredible chemical factories. They don't make their phytochemicals just to suit us, but for their own survival."

—Stephen Barnes, Ph.D.

### **What are a few of the major results so far from your center?**

We have a great interest in isoflavones from certain plants, including soy, and especially in several types of substances called daidzein glucosides† that they contain. These appear to have differences in where they go in the body and how they are metabolized. We have analyzed isoflavones both from soy dietary supplements and from the bodily fluids of study volunteers, and have found a kudzu root isoflavone glucoside that lowers blood glucose levels. It is absorbed without being changed and may compete with glucose for uptake.

Another finding is that grape seed extract fed to young rats caused changes in brain proteins that appear to be opposite of the changes caused by Alzheimer's disease. We are now studying in more detail what happens when one of those proteins, creatine kinase, is attacked via oxidative stress during the process of cognitive degeneration, as in Alzheimer's.

Also, Connie Weaver, Ph.D., director of our botanical research center and distinguished professor of foods and nutrition at Purdue University, has been using accelerator mass spectrometry (AMS)‡ to study the preservation of bone in women as they go through menopause. AMS allows measurements of the turnover

\* Mass spectrometry is a method used with a variety of specialized instruments (mass spectrometers) for analytical purposes in chemistry. Each mass spectrometer separates out and identifies all the chemicals in a substance according to their mass and electrical charge.

† Daidzein is a component of the isoflavones in soy; glucosides are chemical compounds that yield glucose (sugar) when broken down by hydrolysis, a chemical reaction that involves water.

‡ Accelerator mass spectrometry uses an ultrasensitive technique that takes mass spectrometry analysis to a high level through an advanced device called a particle accelerator.

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NIH has a **new Public Access Policy** that includes important requirements for NIH-funded scientists (see pg. 7). Visit NCCAM's **Active Funding Announcements** page for more on the following opportunities and others ([nccam.nih.gov/cgi-bin/grants/funding.pl](http://nccam.nih.gov/cgi-bin/grants/funding.pl)). All applications must be submitted electronically ([era.nih.gov/electronicreceipt](http://era.nih.gov/electronicreceipt)).

■ **PA-08-121: Symptom Interactions in Cancer and Immune Disorders.** *Sponsors:* NCCAM and three other NIH components. This initiative's goals include supporting research to identify and assess biobehavioral interactions among two or more symptoms, in cancer and immune disorders, that are related or occur together; find out more about their underlying mechanisms and pathways; and design and test treatments (including CAM).

■ **PAR-08-062: Alzheimer's Disease Pilot Clinical Trials.** *Sponsors:* NCCAM, the National Institute on Aging, and the National Institute of Nursing Research. These awards, part of a wider NIH initiative on Alzheimer's disease prevention, are for pilot clinical trials using new and innovative treatments intended to prevent or delay the onset of Alzheimer's symptoms, mild cognitive impairment, and age-related cognitive decline. ❖

## Meet a Member of NACCAM

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of calcium-41 from bone with great sensitivity and rapidity. Using this technique, Dr. Weaver has examined the effects of soy protein isolate enriched with isoflavones on calcium turnover in the bones of the same patients for 5 years.

### What are some things you have learned about CAM from your time on NACCAM?

Most scientific studies in CAM today are being carried out with the same rigor one expects from all NIH-funded investigators. CAM is an important area of study since it is widely being used by the public. It is necessary that

NCCAM-funded research sort out which of the CAM modalities work. If the experiments are done well, the true benefit (or lack thereof) of the CAM treatment can be established.

To read a longer, more detailed version of this interview, go to [nccam.nih.gov/news/ newsletter/2008\\_july/naccammember.htm](http://nccam.nih.gov/news/newsletter/2008_july/naccammember.htm).

### Selected References

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Weaver CM, Barnes S, Wyss JM, et al. Botanicals for age-related diseases: from field to practice. *American Journal of Clinical Nutrition*. 2008;87(2):493S-497S. ❖



New, current, and retiring members of the National Advisory Council for Complementary and Alternative Medicine (NACCAM) met on June 6, 2008. Back row: Ted Kaptchuk, Herman Taylor, Fabio Cominelli, Bruce Redman, Sheldon Cohen, Stephen Ezeji-Okoye, Frank Torti. Center row: Lupo Carlota, Danny Shen, Margery Gass, Timothy Birdsall, Stephen Barnes, Stefanie Vogel, Gert Bronfort, Boyd Bowden, Richard Niemtzw. Bottom row: Shin Lin; Lori Arviso Alvord; Jack Killen, Josephine Briggs, and Martin Goldrosen of NCCAM; Joan Fox. The next NACCAM meeting is on September 12, 2008, at the Neuroscience Center Building, 6001 Executive Blvd., Rockville, Maryland.

# More Information

The following **new NCCAM publications** are available on the Web and from the NCCAM Clearinghouse: *Yoga for Health: An Introduction and Spinal Manipulation for Low-Back Pain*.

\* \* \*



Are you interested in reading recent research-based articles on your topic(s) of interest, including CAM? The **NIH Public Access Policy**, formerly a voluntary policy and now a law, is designed to give the public access to such articles and to advance science and human health.

As of April 7, 2008, all NIH-funded investigators must submit to one database—PubMed Central—all final, peer-reviewed manuscripts of studies that are based on NIH funding and accepted for publication. They must also cite their PubMed Central references in all applications, proposals, and progress reports to NIH on or after May 25, 2008.

Interested readers, including the public, can access these articles at PubMed Central ([www.pubmedcentral.nih.gov](http://www.pubmedcentral.nih.gov)) and through other scientific and medical databases. To read more about the new Public Access Policy, go to [publicaccess.nih.gov](http://publicaccess.nih.gov).



At the NCCAM Grantsmanship Workshop (see below), Richard Nahin, Ph.D., M.P.H., NCCAM (left), met with Jun Mao, M.D., University of Pennsylvania Health System.

What happens when you submit an application for funding to NIH? How does one develop an effective grant application in the first place? Experts from NIH and NCCAM addressed these and other questions at the “**NCCAM Grantsmanship Workshop**.” This 3-day event, held June 3-5, 2008, in Rockville, Maryland, is available for viewing at no charge on the Internet. You must have a copy of RealPlayer to view it (free at [www.real.com](http://www.real.com)). To access the videocast, go to [www.videocast.nih.gov](http://www.videocast.nih.gov) and type the workshop title into the search engine.

\* \* \*

NCCAM’s Complementary and Integrative Medicine Consult Service at the NIH Clinical Center has inaugurated a **new lecture series** in Bethesda, Maryland. The lectures are designed for Clinical Center staff to advance the understanding of integrating CAM approaches into the research and practice of medicine. Upcoming topics, available also for the local interested professional community, are posted at [nccam.nih.gov/consultservice/lecture.htm](http://nccam.nih.gov/consultservice/lecture.htm). ❖



On May 28, 2008, leaders from more than 20 health professional and consumer organizations gathered in Washington, D.C., with NCCAM Director Josephine Briggs for a **Stakeholder Roundtable Discussion**, part of Dr. Briggs’s listening tour. At center in the photo is Vernell DeWitty, Ph.D., R.N., American Association of Colleges of Nursing. To her left are Bonnie Hillsberg, D.C., M.H.A., M.Ed., Association of Clinicians for the Underserved, and Bernice Hutchinson, National Association of State Units on Aging.

## A Walk in the Botanical Research Centers "Garden"

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taken as an extract, tablet, or tea, or in another form; dosages; and how the constituents (ingredients) interact with each other.

### Roots of the BRC Program

The BRC Program is sponsored by NCCAM and the NIH Office of Dietary Supplements (ODS). The program began in 1999, when Congress appropriated funds for ODS to develop a botanical research center initiative. Currently, there are six BRCs, with many features in common:

- Research activities range from identifying plants to conducting early phase clinical studies; preclinical research is the primary focus.
- The research is collaborative and integrated, and involves a number of disciplines. Experts on one project might include plant biologists, pharmacognosists (experts in the study of drugs from natural sources), clinicians, toxicologists, statisticians, and experts in high-technology research techniques.
- Each center is a partnership among institutions.
- Each uses advanced technologies and innovative research approaches.
- Each team seeks to identify and describe chemically the botanicals under study and their

constituents of potential health interest.

- Many of the plant products have a history of use as traditional herbal medicines (also called phytomedicines); most are also available as dietary supplements.
- Each center is organized around a theme with substantial potential for benefiting people's health.\*

### Testing Popular Therapies, Addressing Disease Burdens

Many Americans are using botanicals and other supplements as CAM. For example, the 2002 National Health Interview Survey found that, in the previous year, 19 percent of the people surveyed (which translates to over 38 million adults) had used natural products, a diverse category that includes herbs and other botanical products.

"Millions of Americans are using natural products, including those from plants, as CAM," says Josephine P. Briggs, M.D., Director of NCCAM. "Careful scientific investigation of these therapies is necessary. While in many cases there is a long tradition of use, we need to verify scientifically the conditions under which a botanical therapy is effective, as well as any risks to health. The BRCs study a variety of widely consumed botanicals to verify their identity, biological and chemical activity, and safety, as well as their potential health effects in diseases such as asthma, cardiovascular diseases, cataracts, and

cancer. These studies are helping to move the entire field of scientific research on phytomedicines forward."

"The Dietary Supplement Health and Education Act of 1994 assured consumers access to a variety of dietary supplements, including products with botanical ingredients," says Paul M. Coates, Ph.D., Director of ODS. "The NIH BRC Program has renewed interest in natural products research with a specific focus on botanicals. Appreciation of the complexity of botanicals demands a new research model that considers the many components of botanicals and their potential effects on multiple biological targets."

### Echinacea and St. John's Wort To Treat Infection

Diane Birt, Ph.D., and her colleagues at the Iowa Center for Research on Dietary Botanical

**Supplements** study two widely used botanicals, echinacea and St. John's wort (*Hypericum perforatum*), and their effects in the laboratory on the viral, inflammatory, and pain aspects of infection. The center is a collaboration between Iowa State University (ISU), the University of Iowa, and the U.S. Department of Agriculture's North Central Regional Plant Introduction Station (NCRPIS). Dr. Birt is professor and chair of the food science and nutrition department at ISU in Ames, Iowa, and director of that university's Nutrition and Wellness Research Center.

Honeybees buzz in individual field cages of very pure plants at the Agriculture Department's station, which obtains, conserves, and conducts research on plant germplasm (genetic material). NCRPIS owns and maintains specimens

of more than 48,000 varieties of plants—more than 150 of echinacea alone. Thus, center investigators have access to a resource with a wide variety of plants that are well documented and defined, and are grown, harvested, and stored under controlled conditions.

This team is also studying factors that influence the constituents that are



Photo by A. Paul Ovrorn

**Echinacea tennesseensis flourishes in a field cage at the Iowa center. The cage, about 5' by 5' by 21', helps isolate this species of echinacea from others so that the researchers can regenerate seeds that are true to type. It also keeps out leafhoppers, pests that carry Aster yellows, a serious disease that affects echinacea. A hive of bees in each cage performs pollination.**

\* The BRCs are a key part of NCCAM's research portfolio but are not the only NCCAM centers or other grant recipients studying botanicals; for the URL to NCCAM's 2007 portfolio, see the end of this article.





Dr. Mark Widrlechner and Dr. Diane Birt of the Iowa center

ISU photo by Bob Elbert

bioactive (i.e., cause an effect in living organisms) such as genetic, growth, harvest, and environmental factors, and which human populations could benefit most or be at the most risk from using these botanicals.

Among the findings that Dr. Birt and her colleagues have presented so far:

- Certain compounds in echinacea appear to have “promising” antiviral activities against HIV.
- Some anti-inflammatory effects from echinacea have been observed; how much varied by species. Out of nine species, *Echinacea* (*E.*) *sanguinea* had the most effects, followed by *E. angustifolia*, *E. pallida*, and *E. simulata*. These effects seem more likely to be, the researchers say, from interactions of complex chemicals than from single compounds.
- An echinacea preparation appeared to be “a potent agonist” of a specific pain receptor in mammals, TRPV1—it appeared to bind to this pain receptor on cells, possibly mimicking one aspect of how the body relieves pain.

Their future work will include studies of the herb *prunella* (self-heal) for antiviral and anti-inflammatory properties; work to find out more about how the herbs’ bioactive ingredients have effects in the body; and clinical trials.

### Oils From Botanicals To Treat Inflammatory Diseases

Many people have heard that “fish oil is good for you”—a message that typically refers to substances called essential fatty acids (EFAs) plentiful in the oils of certain fish. However, fish oil may not be the only approach to obtaining some of those reported benefits in supplement form.

The Wake Forest and Brigham and Women’s Center for Botanical Lipids is studying dietary supplements based on EFAs from the seed oils of flaxseed, echium, and borage plants. The center is a collaboration between Wake Forest University, Winston-Salem, North Carolina, and Brigham and Women’s Hospital, Boston. Floyd Chilton, Ph.D., a professor in Wake Forest’s department of physiology and pharmacology, is the principal investigator. The disease focus at the center is chronic inflammatory diseases, especially asthma and atherosclerosis, or hardening and narrowing of the arteries. One in three Americans will have an inflammatory disease by the year 2028, the investigators report—diseases such as heart disease, asthma, arthritis, diabetes, lupus, or Crohn’s disease.

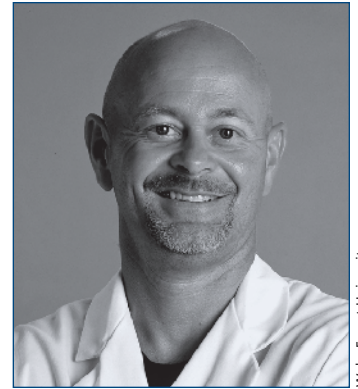


Borage

© Steven Foster

“There is tremendous interest in botanical oils and supplements—as an alternative to fish oil—as a source of n-3 [omega-3] fatty acids and combinations of n-3 and n-6 fatty acids for their health protection against chronic diseases in which elevated triacylglycerols and inflammation are major issues.”

—From the AJCN study paper by Dr. Chilton, et al.



Floyd Chilton, Ph.D.

Wake Forest University

Among their findings so far:

- Mice models of atherosclerosis were fed a controlled diet with palm oil, echium oil, and/or fish oil added as their fat source. Those that received either echium oil or fish oil showed a marked drop in total plasma cholesterol and in plasma triacylglycerol (a type of triglyceride). In contrast, those receiving a palm oil diet had an increase in these biomarkers. A similar human study from this center has demonstrated that echium oil reduces triglycerides in patients with elevated triglyceride levels.
- Leukotrienes are chemicals in the body known to play a role in the inflammation associated with asthma. Researchers found that giving healthy volunteers borage supplements (rich in an EFA called GLA) markedly inhibited their leukotriene production. However, this supplement also increased production of another substance that has the opposite effect, arachidonic acid (AA). By adding fish oil supplements (rich in another EFA called EPA) to this regimen, they

(continued on pg. 10)

(continued from pg. 9)

maintained a drop in leukotriene production without increasing circulating AA. They also demonstrated a marked reduction in the expression of several critical inflammatory genes.

### Botanicals for Metabolic Syndrome

Many health agencies and experts have described an epidemic of obesity in the United States. One aspect of obesity is a related and also increasingly prevalent disorder called metabolic syndrome. In this syndrome, a person has a cluster of conditions that have been shown to increase risk for developing cardiovascular diseases (such as heart disease and stroke), including high blood pressure, high levels of triglycerides, low levels of good cholesterol, obesity, intolerance to glucose (sugar), as well as a condition called insulin resistance.

**The Center for the Study of Botanicals and Metabolic Syndrome** is investigating new botanical approaches in this area. The center is a collaboration between the Pennington Biomedical Research Center and the Agriculture Center, Louisiana State University (LSU), Baton Rouge, and the Biotechnology Center of Agriculture and the Environment, Rutgers University, New Brunswick, New Jersey. William Cefalu, M.D., professor and chief of Pennington's Division



## Staff News

This column announces recent NCCAM staff changes that may be of interest to the scientific and medical communities.

### New Appointments

**Linda C. Duffy, Ph.D.**, has been appointed as a program officer. She will oversee such portfolio areas as probiotics, pediatrics, and gastrointestinal diseases. Dr. Duffy, who was formerly with NIH's National Center for Research Resources, earned her Ph.D. in medical sociology and epidemiology/biostatistics from the State University of New York at Buffalo.

**Adeline Xiao-Ying Ge, M.D., O.M.D., Lic. Ac.**, has joined NCCAM's Complementary and Integrative Medicine Consult Service, at the NIH Clinical Center, as senior Chinese medicine consultant. Dr. Ge was formerly on the Rehabilitation Medicine Department staff of the Clinical Center. She is a graduate of Jiangsu University Medical School and Shanghai University of Traditional Chinese Medicine. ❖

of Nutrition and Chronic Disease, is the principal investigator.

Dr. Cefalu and his colleagues are conducting basic and clinical studies to determine how certain botanicals might treat, or delay the progression of, insulin resistance, a key feature of metabolic syndrome: Russian tarragon (*Artemisia dracunculus*), shilianhua (*Sinocrassula indica*, an herb native to China), and a class of chemicals called anthocyanins from the skins of grapes; they also give berry fruits their colors. The group also hopes to gain further insight at the cellular level about how people develop metabolic syndrome. The center uses hydroponic greenhouse cultivation to enhance the production and consistency of the study botanicals and their bioactive constituents.

Among early findings from the LSU-Rutgers team are

- A beneficial effect, from a preparation of Russian tarragon, on carbohydrate metabolism in a mouse model of diabetes

- An effect (although weak), from a shilianhua extract, on glucose metabolism and insulin sensitivity in a mouse model of obesity
- Indications of an improvement, from an anthocyanin extract, on a number of measures of insulin sensitivity in a mouse model.

### A Key Strategy

"We look forward to additional findings from the BRCs. These centers are an important part of NCCAM's effort to explore promising approaches and develop the evidence base for CAM and integrative medicine strategies to prevent and treat disease, maintain wellness, and improve quality of life," says Dr. Briggs.

NIH's other three Botanical Research Centers are the Center for Botanical Dietary Supplements Research in Women's Health, at the University of Illinois at Chicago College of Pharmacy; the Botanicals Research Center for Age-Related Diseases, at Purdue University; and the Center for Botanical

Immunomodulators, at Memorial Sloan-Kettering Institute for Cancer Research. For brief profiles of all NCCAM's research centers, see [nccam.nih.gov/training/centers/descriptions.htm](http://nccam.nih.gov/training/centers/descriptions.htm).

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- Swanson CA, Liu QY. Introduction to the National Institutes of Health Botanical Research Centers program. *American Journal of Clinical Nutrition*. 2008;87(2):471S. ❖

# Spotlight on Clinical Trials

The clinical trials below are among the many NCCAM-sponsored trials that were recruiting, or planning to start recruitment soon, at press time. To see others, go to [nccam.nih.gov/clinicaltrials/alltrials.htm](http://nccam.nih.gov/clinicaltrials/alltrials.htm). Readers who do not have access to the Internet can inquire with the NCCAM Clearinghouse (see pg. 2).

## A CAM Approach for Crohn's Disease

Crohn's disease (CD) is a chronic gastrointestinal disorder that causes the digestive tract to become inflamed. This condition can cause stomach pain, diarrhea, fever, bleeding, and weight loss, as well as many complications. Medications, lifestyle changes, and surgery help in minimizing CD flare-ups, but long-term management of the disorder is a challenge. This trial is studying whether two dietary approaches are beneficial and safe for the management of CD, and, if so, how the effects occur:

- A special diet that combines recommendations from a number of CAM practices
- A probiotic supplement. [Probiotics are nondigestible food ingredients that selectively stimulate

the growth and/or activity of beneficial microorganisms already in the colon.—Editor]

An earlier pilot study found these treatments to be acceptable and well tolerated, and two-thirds of the participants had improvement in their symptoms.

*Principal investigator:* Ece Mutlu, M.D., M.B.A., Rush University Medical Center, Chicago

*More information:* Go to [www.clinicaltrials.gov](http://www.clinicaltrials.gov) and enter "NCT00343642" in the search box.

## A Chinese Practice in Survivors of Breast Cancer

A University of Arizona study is examining the effects of qi gong on quality of life (including fatigue and cognitive issues) in a group of survivors of stage II or III breast cancer.

Qi gong is a practice of gentle movements and breath training that originated in traditional Chinese medicine and is intended to enhance what is believed to be the flow of vital energy, or qi, in that medical system. It is being compared to Restful Movement, a series of stretches and movements

that is based on the Lebed Method, a therapeutic exercise program.

*Principal investigator:* Linda Larkey, Ph.D., Arizona Cancer Center, University of Arizona, Phoenix

*More information:* Go to [crisp.cit.nih.gov](http://crisp.cit.nih.gov) and enter "5U01AT002706-02" in the "grant number" box. ❖



Members of the NIH community and the public gathered over a common interest in yoga during NIH's first-ever Yoga Week, held May 19-23, 2008. Highlighting the science and practice of yoga and offering free classes, lectures, and practices (as pictured above), the event was cosponsored by NCCAM. Speakers included Sat Bir S. Khalsa, Ph.D., an assistant professor at Harvard Medical School and an associate neuroscientist at Brigham and Women's Hospital, Boston, who is studying "Neuroendocrine Mechanisms in Yoga Treatment of Insomnia" under an NCCAM grant.



**Jack Killen, M.D.**, Acting Deputy Director of NCCAM, is pictured during his trip to China in November 2007. Dr. Killen represented Michael O. Leavitt, Secretary of Health and Human Services; Elias Zerhouni, M.D., NIH Director; and Ruth L. Kirschstein, M.D., former Acting Director of NCCAM, at the "International TCM Conference for Cooperation in Science and Technology," held in Beijing. He also met with Chinese government and scientific officials and representatives to advance the goals of a Letter of Intent on International Collaboration in Complementary, Alternative, and Traditional Medicine Research signed by the People's Republic of China and the United States in 2006 and to discuss additional opportunities in collaborative research.

Here, Dr. Killen views an historical exhibit of the Institute of Information on Traditional Chinese Medicine, part of the China Academy of Chinese Medical Sciences.

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## Research Digest

### Study Points to Cost-Effectiveness of Naturopathic Care for Low-Back Pain

Researchers who studied treatment alternatives for low-back pain in a group of 70 warehouse workers found that a naturopathic approach incorporating a range of treatment options—acupuncture, exercise and dietary advice, relaxation training, and a back-care booklet—was more cost-effective than the employer's usual patient education program. Both the workers and the employer benefited from the naturopathic approach, which was associated with better health-related quality of life, less absenteeism, and lower costs for other treatments and pain medication. Overall, naturopathic care resulted in a

net savings (reduced "societal cost") of \$1,212 per participant.

In this NCCAM-funded study, Patricia Herman, N.D., and colleagues recruited workers ages 18 to 65 who had experienced low-back pain for at least 6 weeks. The workers were randomly assigned to receive naturopathic care or patient education visits over a 3-month period. The 30-minute, onsite visits were conducted semiweekly (naturopathic) or biweekly (patient education).

The researchers conclude that naturopathic care is more cost-effective than a patient education program in treating low-back pain. They also recommend further

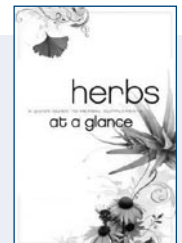
studies of the economic impact of naturopathic medicine, particularly to address the limitations of their evaluation.

#### For More Information

Herman PM, Szczerko O, Cooley K, et al. Cost-effectiveness of naturopathic care for chronic low back pain. *Alternative Therapies in Health and Medicine*. 2008;14(2):32-39.

National Center for Complementary and Alternative Medicine. *An Introduction to Naturopathy*. National Center for Complementary and Alternative Medicine Web site. Accessed at <http://nccam.nih.gov/health/naturopathy/> on May 7, 2008.

"Research Digest" presents selections from recently published papers based on NCCAM-funded research. For more findings, go to [nccam.nih.gov/research/results/](http://nccam.nih.gov/research/results/). ❖



#### New NCCAM Booklet on Herbs

Are you interested in herbal supplements? Perhaps you use them, or, if you are a health care provider, perhaps you have patients who do. NCCAM's newest booklet, *Herbs at a Glance: A Quick Guide to Herbal Supplements*, offers easy-to-read information on more than 40 herbs, including what the science says, side effects to consider, and additional resources. For a free copy, contact the NCCAM Clearinghouse or go to [nccam.nih.gov/health/herbsataglance.htm](http://nccam.nih.gov/health/herbsataglance.htm).

