



NIH Office of the Director

NIH Office of Dietary Supplements

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NIH announces five Botanical Research Centers

Studies of the safety, effectiveness, and biological action of botanical products are major focuses for the five dietary supplement research centers selected to be jointly funded by the Office of Dietary Supplements (ODS) and the National Center for Complementary and Alternative Medicine (NCCAM), two components of the National Institutes of Health. The NIH's National Cancer Institute is co-supporting two of the five centers.

The competitive awards, approximately \$1.5 million each per year for five years, were made to Pennington Biomedical Research Center, Baton Rouge, La.; University of Illinois at Chicago; University of Illinois at Urbana-Champaign; University of Missouri, Columbia; and Wake Forest University Health Sciences, Winston-Salem, N.C.

These five interdisciplinary and collaborative dietary supplement centers, known as the Botanical Research Centers (BRC) Program, are expected to advance understanding of how botanicals may affect human health. "Eventually, the program may provide data that translates to new ways to reduce disease risk," explained Paul M. Coates, Ph.D., director of ODS. "Until then, the research from these centers will help the public make informed decisions about botanical dietary supplements."

"Botanicals are usually complex mixtures of many active constituents," said Josephine P. Briggs, M.D., director of NCCAM. "This complexity poses some unique research challenges that these centers are well positioned to address."

The 2007 National Health Interview Survey shows that about 18 percent of adults reported taking a non-vitamin, non-mineral, natural product, spending about \$15 billion on the purchase of these products. These products contain a dietary ingredient intended to supplement the diet other than vitamins and minerals, such as single herbs or mixtures.

Botanical products, including supplements, are among the most popular and use appears to be on the rise. Nutrition Business Journal (NBJ) data show that sales of dietary supplements have steadily increased by about 24 percent from 2003 to 2008. Elderberry supplement sales, for example, grew by almost 50 percent during this time. Furthermore, NBJ forecasts that sales of herbs/botanicals will increase about 19 percent over the next five years. Many of the botanicals



proposed for study by the five centers appear on NBJ's list of Top 100 Dietary Supplements According to U.S. Sales, 2002-2008: Part II. They include plant oils, garlic, soy, elderberry, licorice, black cohosh, St. John's wort and dong quai. The safety and efficacy of these products has not been adequately studied, despite their widespread use.

In 1999, ODS received funding to develop a botanical research initiative that resulted in the BRC Program. The BRC Program is entering its third five-year cycle. Three of the five centers are renewals; that is, they received funding in the last cycle. The renewed centers are Pennington Biomedical Research Center, Wake Forest University Health Sciences, and University of Illinois at Chicago.

Award Highlights

- **Botanicals and Metabolic Syndrome**
Principal Investigator: William Cefalu, M.D.
Institution: Pennington Biomedical Research Center, Louisiana State University System, Baton Rouge
Partner Institutions: Biotechnology Center for Agriculture and the Environment, Rutgers University, New Brunswick, N.J.; Louisiana State University, Baton Rouge

This center was supported from 2005-2010 and in the next five years aims to provide a comprehensive evaluation of specific, compelling hypotheses about the molecular, cellular, and physiological mechanisms by which botanicals, such as Artemisia and St. John's wort, may reduce the chance of developing conditions that often lead to metabolic syndrome and of developing metabolic syndrome itself. Metabolic syndrome, a grouping of risk factors that may develop into diabetes and heart disease, has always been this center's focus.

- **Botanical Dietary Supplements for Women's Health**
Principal Investigator: Norman Farnsworth, Ph.D.
Institution: University of Illinois at Chicago

This center has been supported for 10 years and has always focused on women's health. In this new cycle, the center's mission has evolved to a focus on the safety of botanical dietary supplements, such as black cohosh and licorice, which are widely available. The investigators will study how multi-component mixtures work together; how they are absorbed, distributed and eliminated by the body; how they affect chemical and physical processes within the body; how they interact with drugs; and how they impact women's own estrogenic hormones.

- **Botanical Estrogens: Mechanisms, Dose and Target Tissues**
Principal Investigator: William Helferich, Ph.D.
Institution: University of Illinois at Urbana-Champaign
Partner Institutions: University of Mississippi, University; Oregon State University, Corvallis; National Center for Toxicological Research, Jefferson, Ark.



This new center will address safety, efficacy, and mechanism of action of botanical estrogens, such as wild yam, soy and dong quai, currently being consumed by women. The projects will look at biological effects of botanical estrogens on molecular mechanisms and cellular pathways, and their actions on bone, uterus, breast tissue, breast cancer metastasis, and cognition.

- Center for Botanical Interaction Studies
Principal Investigator: Dennis Lubahn, Ph.D.
Institution: University of Missouri
Partner Institutions: Missouri Botanical Garden, St. Louis

This new center will look at safety and efficacy of botanical dietary supplements, such as elderberry and garlic. The center's main emphasis will be on interactions among five pathways. Signaling pathways describe a group of molecules in a cell that work together to control one or more cell functions. After the first molecule in a pathway receives a signal, it activates another molecule. This process is repeated until the last molecule is activated and the cell function involved is carried out. The function can be normal or abnormal. The primary focus being antioxidant signaling and how it relates to other pathways and mechanisms of action in preventing prostate cancer and deterioration of nerve function, as well as in improving resistance to infectious diseases.

- Center for Botanical Lipids and Inflammatory Disease Prevention
Principal Investigator: Floyd Chilton, III, Ph.D.
Institution: Wake Forest University Health Sciences, Winston-Salem, N.C.
Partner Institutions: University of Colorado Health Sciences, Aurora; Brigham and Women's Hospital, Boston; Bent Creek Institute, Asheville, N.C.; The Johns Hopkins University, Baltimore

The goal of this renewed center is to delineate the molecular mechanisms by which botanical oils, such as borage oil, may prevent or affect disease (cardiovascular disease, asthma and metabolic syndrome) while focusing on immunity and inflammation. The center will also examine the influence of genetic differences in the metabolism of botanicals to determine the populations where they are most likely to be effective.

The mission of the NIH Office of Dietary Supplements (ODS) is 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. For additional information about ODS, visit ods.od.nih.gov.

The National Center for Complementary and Alternative Medicine's mission is to explore complementary and alternative medical practices in the context of rigorous science, train complementary and alternative medicine researchers, and disseminate authoritative information to the public and professionals. For additional information, call NCCAM's Clearinghouse toll free at 1-888-644-6226, or visit the NCCAM Web site at nccam.nih.gov.



The National Cancer Institute leads the National Cancer Program and the NIH effort to dramatically reduce the burden of cancer and improve the lives of cancer patients and their families, through research into prevention and cancer biology, the development of new interventions, and the training and mentoring of new researchers. More information about cancer, screening, and prevention is available on the NCI Web site at www.cancer.gov or from NCI's Cancer Information Service at 1-800-4-CANCER (1-800-422-6237).

The National Institutes of Health (NIH)—The Nation's Medical Research Agency—includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. It is the primary federal agency for conducting and supporting basic, clinical, and translational medical research, and it investigates the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit www.nih.gov.

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