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**The Medicinal Botanical Program**  
Mountain State University (304) 929-1630

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## Attend MSU, Enroll in Herbal Sciences!

The demand for medicinal plants is increasing worldwide, markets are expanding and jobs are being created. Get a Bachelor degree in Herbal Sciences and enjoy the rewards. Learn how to increase your profits. If you have access to land, be a successful grower; if you have an entrepreneurial spirit, create your own herb business; if you like corporations, get a well



paid professional job in the medicinal plant industry. Secure a bright future by registering now in the Bachelor degree in Herbal Sciences scheduled to start in the

fall of 2005. Seize the opportunity now and become an expert in any of the specialties this exciting field has to offer. Become a professional producer, processor, marketer or practitioner of herbal medicine. Do not delay it and register today. Call the Medicinal Botanical Program (929-1630) to learn more about this exciting program, or the MSU Enrollment Office (9291433) to enroll.

## Bachelor Degree in Herbal Sciences--Course Description

### YEAR 1--FALL 17 Credits

#### **BIOL 101 General Biology I (3)**

Coreq: 101L. First of two courses introducing the principles of biology for science and health science majors; continued with 102. Topics include energetics and physiology of cells, organism and population genetics, and evolution.

#### **BIOL 101L General Biology I Laboratory (1)**

Coreq: 101. Introduction to the scientific method of investigation as it applies to biological systems, the microscope, organic and inorganic compounds, photosynthesis, survey of plant and animal organisms, and mitosis energy transformations in cells. Lab experience conducted through a variety of methods that may include CD-ROM. Formerly 101A.

#### **CHEM 211 College Chemistry I (3)**

Prereq: HS chemistry, or 100 and MATH 112, or MATH 120 placement. Coreq: 211L. Basic laws and theories of chemistry and their applications, periodic classifications of the elements with their chemical and physical properties, atomic and molecular structure, chemical bonding, nomenclature, the structure of compounds, stoichiometry, liquids and solids, and solutions. Formerly 101. F.

#### **CHEM 211L College Chemistry I Laboratory (1)**

Coreq: 211. Basic laboratory techniques, equipment used in the chemistry laboratory, and the importance of accurate

measurement in a chemistry laboratory. Lab experience conducted through a variety of methods that may include CD-ROM. Formerly 101A, 211A. F.

#### **MATH 116 Elementary Statistics (3)**

Prereq: C or better 102 or placement score for 112. A general introductory course in probability and statistics, including descriptive statistics (data organizing, data displaying), probability (counting techniques, probability distribution, random variables and their normal distribution), and inferential statistics (measures of central tendency and variability, point estimation, interval estimation, and hypothesis testing). All.

#### **SPAN 101 Spanish I (3)**

Introductory course outlining the basic patterns of Spanish grammar. Instruction emphasizes reading skills and basic vocabulary. F, Sp.

#### **ENGL 101 English Composition I (3)**

Prereq: 100, ACT score of 17 or higher, or test placement. Explores expository writing as a process. Students work through a series of papers with different goals, emphasizing focus, invention, organization, development, grammar, and style. All.

### YEAR 1--SPRING 17 Credits

#### **BIOL 102 General Biology II (3)**

Prereq: 101 and 101L, both with C or better. Coreq: 102L. Second of two courses introducing the principles of biology for science and health science majors; continuation of 101. Topics include plant and animal reproduction, and regulation and control of

multicellular organisms.

#### **BIOL 102L General Biology II Laboratory (1)**

Coreq: 102. Introduction to the structure and function of seed plants and their response to environmental stimuli. The evolution of mammalian skeletal, muscular, nervous, circulatory, respiratory, digestive, excretory, and reproductive systems. Formerly 102A.

#### **CHEM 212 College Chemistry II (3)**

Prereq: C or better 211 and 211L. Coreq: 212L. Continuation of 211 with emphasis on gas laws, acids, bases and ionic equations; complexions; electrochemistry; nuclear reactions; metals and nonmetals; and an introduction to organic chemistry. Formerly 102. Sp.

#### **CHEM 212L College Chemistry II Laboratory (1)**

Coreq: 212. A continuation of the study of the basic concepts of 211 and 211L. Lab experience conducted through a variety of methods that may include CD-ROM. Formerly 102A, 212A. Sp.

#### **MATH 120 College Algebra (3)**

Prereq: C or better 112, placement score for 120, or ACT score of 21 or higher. Concepts of modern college algebra, including linear and quadratic equations, basic coordinate geometry, relations and functions, exponential and logarithmic functions, and some conic sections. All.

#### **SPAN 102 Spanish II (3)**

Prereq: 101. Emphasizes further development of reading skills; includes an introduction to literature in Spanish. F, Sp.

## The Herbal Dispatch

A monthly publication of the Medicinal Botanical Program

Mountain State University  
P.O. Box 9003  
Beckley, WV 25801

The goal of this newsletter is to inform readers of the Program's educational, research and outreach activities and events; and of results of the latest research on the chemistry, cultivation, processing and preventive and therapeutic use of herbs, botanicals and vegetables

Mario R. Morales  
Editor & Publisher

## Bachelor Degree in Herbal Sciences—Course Description (Cnt'd)

**ENGL 102 English Composition II (3)**  
Prereq: C or better 101, ACT score of 23 or higher, or test placement. Continuation of 101, emphasizing style, the study and practice of argument, and development and use of formal research skills. All.

**YEAR 2—FALL 17 Credits**

**CHEM 301 Organic Chemistry I (3)**  
Prereq: C or better 211, 211L, 212, 212L. Fundamentals of organic chemistry, the structure and properties of organic compounds, and reaction mechanisms. Consideration of ionic and free radical mechanisms as they apply to nucleophilic aliphatic substitution (SN1 and SN2), elimination (E1 and E2), and addition reactions. The various types of stereochemical effects that are encountered in these reactions, and the role of solvents in determining the course of particular reactions, are studied. Includes an introduction to the concept of functional groups and an examination of the structure and physical and chemical properties of alkanes, alkenes, alkyl halides, and alcohols and ethers. F.

**CHEM 301L Organic Chemistry I Laboratory (1)**  
Coreq: 301. Lab course illustrating topics covered in 301. Lab experience conducted through a variety of methods that may include CD-ROM. Formerly 301A. F.

**BIOL 219 Microbiology (3)**  
Prereq: 101 and 101L, or 216 and 216L. Coreq: 219L. Overview of microorganisms with selected emphasis on general microbial cell structure, function, and metabolism; their role in infection; and survey of pathogenic microorganisms in relation to health care. F, Sp, Su I.

**BIOL 219L Microbiology Laboratory (1)**  
Coreq: 219. Practice in various clinical procedures including staining procedures, culturing techniques, and biochemical testing to identify bacteria; emphasis on the safe handling and control of microorganisms. Lab experience conducted through a variety of methods that may include CD-ROM. Formerly 219A. F, Sp, Su I.

HERB 200 Plant Propagation (3)  
**Prereq: BIOL 102 and BIOL 102L. Sexual and asexual reproduction: plant propagation by seeds and by vegetative means such as grafts, buds, layers, cuttings, micropropagation and specialized structures. Morphological changes and physiological processes involved in plant propagation are discussed. Practical application of propagation techniques. F.**

**MKTG 206 Principles of Marketing (3)**  
Theories, principles, and concepts of marketing management, with special emphasis on the marketing mix: product, price, place, and promotion. Formerly 306. F, Su II.

**IT 106 Basic Computer Applications (3)**  
Introductory computer course combining IT 100, 101, and 102.

**YEAR 2—SPRING 17 Credits**

**CHEM 302 Organic Chemistry II (3)**  
Prereq: C or better 301, 301L. A continuation of the study of the fundamentals of organic chemistry, with an introduction to the concepts of conjugation and resonance and their effects on reaction mechanisms. Consideration of alkynes and cyclic aliphatic compounds, the importance of aromaticity, and an examination of electrophilic aromatic

substitution. Investigation of a variety of functional groups, specifically aldehydes and ketones, carboxylic acids and their derivatives, and amines and phenols, as well as an examination of carbanion chemistry. Sp.

**CHEM 302L Organic Chemistry Laboratory II (1)**  
Coreq: 302. Laboratory course illustrating topics covered in 302. Lab experience conducted through a variety of methods that may include CD-ROM. Formerly 302A. Sp.

**BIOL 340 Genetics (3)**  
Prereq: 101 and 101L or perm. Coreq: 340L. In-depth study of genetics, including classical molecular genetics and recombinant DNA technology. Includes genetics of viruses, bacteria, fungi, *Drosophila*, and the mouse, with special emphasis on human genetics. Formerly 380. Sp odd.

**BIOL 340L Genetics Laboratory (1)**  
Coreq: 340. Experiments illustrating major genetic principles with viruses, bacteria, fungi and *Drosophila*. Formerly 380A. Sp odd.

**HERB 205 Aromatic and Medicinal Plants (3)**

Prereq: HERB 200, CHEM 301 and CHEM 301L. Use of plants as medicines through history. World cultures and herbal medicines. Aromatic plants production and essential oils extraction. Chemistry and use of essential oils. Practical techniques to sow, grow, dry and utilize aromatic and medicinal plants. Production, processing and marketing of medicinal plants. Herb show project and identification of selected plant species. Sp.

**MGMT 240 Communication and Presentation (3)**  
Develops skills necessary for oral and written communication on the job. Includes preparation of reports and business letters as well as oral presentations. Sp.

**HLTH 301 Physical Assessment Skills (3)**  
Prereq: BIOL 315, 315L, 320, 322. Detailed instruction in the principles and practical skills required to perform and interpret the findings of physical examinations. Emphasizes normal physical findings; introduces normal variants and common abnormal findings. Laboratory sessions provide supervised small-group practice. At the completion of the course, each student is required to demonstrate proficiency and competency in systematically performing a complete physical examination on an adult patient. Formerly PA 321. Sp.

**YEAR 3—FALL 15 Credits**

**BIOL 222 Fundamentals of Nutrition (3)**  
Prereq: 212 and 212L, or 216 and 216L. An introductory course dealing with human nutrition, preventive diet therapy, and the effects of diseases upon an individual's nutritional state. Current topics and controversial issues in nutrition are discussed. Emphasis on concepts of nutrition and how they relate to physiology and health. Food cookery principles and shopping are also discussed. F, Sp.

**HERB 300 Herb Processing, Quality Control and Standardization (3)**

Prereq: HERB 205. The processing of herbs and botanicals: Changes due to environment, culture, harvest, drying, storage and handling conditions. Identification and evaluation of the authenticity and quality of raw herbal

material: use of sight, touch, smell and taste. Quality assurance: microscopic identification, interpretation of assay and spec sheets, and chromatographic analysis. Standardization: extraction and measurement of active compounds in raw products. F.

**HERB 310 Phytopharmacognosy (3)**

Prereq: HERB 205. The Identification, isolation, and characterization of biologically active substances in plants; the study of their physical, chemical, biochemical and biological properties; the search and discovery of new plant drugs. F.

**SSCI 301 Appalachian Studies (3)**  
Prereq: ENGL 102. An exploration of the Appalachian experience through the study of social history; literature; culture; and the expressive traditions of music, dance, drama, and narrative. Discussions draw on local cultural resources in considering settlement patterns, work views, cultural and aesthetic values, informal learning systems, and traditional performance practices. Also offered as ENGL 320 and HUMN 301. Sp.

**MGMT 304 Organizational Behavior (3)**  
Prereq: 202. Addresses issues related to how we live our lives at work and in other organizations, with an overarching theme of how to gain the competitive edge through people. Understanding individuals as they function in organizations and in groups. F, Sp, Su I.

**YEAR 3—SPRING 16 Credits**

**BIOL 351 Botany (3)**  
Prereq: 101 and 101L. Coreq: 351L. General overview of the plant kingdom emphasizing parts of the plant body, ecology of plants, and general taxonomy. Wildflower identification is encouraged. Sp odd.

**BIOL 351L Botany Laboratory (1)**  
Coreq: 351. Hands-on experience in plant taxonomy and analysis. Lab experience conducted through a variety of methods that may include CD-ROM. Formerly 351A. Sp odd.

**BIOL 301 Advanced Ecology (3)**  
Prereq: 101 and 101L, or perm. Coreq: 301L. Application of basic concepts of ecology proceeding from individual species to population ecology. Major topics emphasize structure and diversity within communities and ecosystems. Sp odd.

**BIOL 301L Advanced Ecology Laboratory (1)**  
Coreq: BIOL 301. Field-oriented laboratory involving hands-on observations and collections in local ecosystems, especially those involving wildlife and stream ecology. Formerly 301A. Sp odd.

**MKTG 333 Promotional Management (3)**  
Prereq: 206 or perm. Explores the field of advertising. Includes distribution in the American economy, marketing and the consumer, place and function of sales promotion and advertising, mechanics of attracting attention and creating interest, use of various types of media, and procedures for sales promotion campaigns. Formerly 122. Sp.

**HERB 305 Herb Classification and Identification (3)**  
Coreq: BIOL 351. The study of herb characteristics and distinction at the

family, genus and species levels. Develop skills to identify aromatic herbs, botanicals and medicinal plants. Study life cycle of plant groups in relation to habitat, seasonal changes and climate impact. Field exploration and herbarium collection required. Sp.

**HERB 315 Herbal Drug Preparations (2)**

Prereq: HERB 310. Dosage threshold: quantification of active ingredients in preparations; selection of appropriate inactive ingredients. Pharmacy of herbal medicine: preparations from plants to products, a practical medicine-making course, hands-on in the making of preparations for internal and topical use including infusions and decoctions, tinctures, and other extracts, creams and ointments, compresses, poultices, suppositories and more. Sp.

**YEAR 4—FALL 15 Credits**

**HERB 400 Herb Production (3)**

Prereq: HERB 305. Discussion of theory and practice of technologies used in the production of herbs. Topics include: soil preparation, planting, crop establishment, cultural management, environmental regulation, crop protection, harvesting, and post harvest handling. Control and quality assurance. F.

**HERB 410 Phytotherapy (3)**

Prereq: HERB 315. The use of plant products (parts and extracts) as natural remedies for health disorders; study of herbs and botanicals as medicines; analysis of the commission E monographs; study of latest publications attesting the curative properties of medicinal plants; evaluation of herbs from an organ system perspective. F.

**HERB 490 Capstone Seminar (3)**  
During senior year, qualified bachelor's degree students must complete the capstone course for their degree program. The capstone is designed to ease the transition from school to work and includes resume writing, interview techniques, discussion of the latest economic and business trends, and career management information.

**IDS 303 Research Methods (3)**  
Prereq: ENGL 102, MATH 102, perm of IDS director. Second IDS "gateway" course; introduces the concept and merit of interdisciplinary research, including hypothesis formulation and a survey of methodologies. Requires development of a formal research proposal (ideally for the senior project). Normally taken during the junior year; must be completed with a grade of C or better. F.

**ENTR 201 Introduction to Entrepreneurship (3)**  
Combination of assignments, case studies, and projects explores the process, required skills, and risks and rewards associated with the entrepreneurial life. F.

**YEAR 4—SPRING 15 Credits**

**HERB 425 Herbal Sciences Internship/Practicum (15)**  
Prereq: HERB 400, HERB 410 and IDS 303. Only for Seniors. Individual study of special interest to herbal sciences students using MSU labs, greenhouse, garden, research farm at Bolt, WV; and the Appalachian Farming Systems Research Center of the ARS at Beaver, WV. Sp.

## Contributor's Corner

### The Native Plant Midwife

*Peter Heus  
Enchanter's Garden, Hinton WV*

Propagation methods for native wildflowers, grasses, sedges, rushes ferns, even algae inadvertently, utilizing scientific and not-so-scientific practices.

In the following I will attempt to reveal as much as I know about the mysterious world of native plant propagation. Not that I know much of anything at all, but I have produced beautiful live plants of many species from seemingly inert seeds.

In the interest of saving time and my poor fingers I will treat most plant by genus or family, if they all have similar germination requirements. With the exception of most of our family food crops which have been bred over the centuries to germinate promptly (after a dry storage period) in warm moist soil, most plants have somewhat more complex requirements that need to be met in order for their seeds to germinate.

Most native species of the Eastern United States are dependant upon a wide range of environmental factors that trigger complex chemical changes in their seeds to allow germination under conditions optimum for seedling survival and thus, species survival. No less complex are the mechanisms nature employs for seed

dispersal. A case in point is the little starchy eliasome food gift that Bloodroot seeds have which entices ants to carry away the seeds to their nests, Losing some along the way, but, nevertheless, scattering them about the forest floor. Wild Geraniums have a loaded-spring mechanism that shoots its seeds many feet away from the parent plant.

Before going into specifics, I would like to mention a new method employed to germinate stubborn species that inhabit fire-dependent ecosystems such as prairies, pine savannahs, etc. I call it Smoke Therapy for recalcitrant seeds. In Australia, South Africa and the United States researchers have discovered that many plant species that were difficult to germinate respond markedly to being fumigated or exposed to smoke produced by burning grasses, wood chips and even paper! Now I know why I have had such success since I habitually smoke cigars while sowing seeds. Several methods have been used to treat seeds with smoke with favorable results.

First, seeds are sown in flats or pots and placed in a tent, or building into which smoke from burning grass or brush is pumped. Another method is to layer dry grass or plant stems on sown beds or non-combustible flats and set

them on fire. A third novel method gaining growing usage is to create smoke water by a process similar to a hookah or Turkish pipe, that is, bubbling smoke through water and irrigating the seeds with the "smoked" water. I would propose even another way, by using a bee smoker stoked with dry Broomsedge or Little Bluestem Grass and blowing the smoke into sown flats or pots. By the way, smoking seeds seems to improve germination and seedling vigor of plants not associated with fire-dependant ecosystems.

Here is a novel method that sometimes works to get seedlings of some very difficult plants. Orchids, ferns and mosses can sometimes be induced to grow on the bare soil exposed by uprooted trees (in natural woodlands) that fall in ice or wind storms and banks exposed along logging tracks. Spores and seeds should be sown on these freshly bare soils. In a few years young plants should be evident.

### Seed sowing, soil, etc.

As a general rule seeds should be sown or covered with soil to twice their diameter. Exceptions are very small seeds which need no covering at all. It is better to sow too shallow rather than too deep. Seeds sown in outdoor beds and flats would benefit from a covering of straw, sawdust, or leaves to

prevent heaving from frost. The mulch should be pulled back in the Spring. Soils for outdoor beds may be a commercial, sterile potting soil, or, if you want to use the native soil, it must be heat sterilized to kill weed seeds which will quickly overrun your plants. For flats, pots and indoor or greenhouse seed starting, a good commercial seed starting mix like Metro 360 is excellent.

You may also compose your own from peat moss, sand, vermiculite and a low, low dose of bone meal, ground limestone (for most plants; none for acid lovers), or if you wish to use chemical fertilizer, a low dose of 8-9 month osmocote. Freshly sown seeds must not be allowed to dry out until they are poking through the soil. They should not be sopping wet either. After germination, allow the soil surface to dry out between waterings to prevent damping off. Sifted whole sphagnum moss may be used to cover the soil surface to hinder damping off as well. When the first set of leaves appear it is time to initiate fertilization of your seedlings. You may use a weak manure tea or other liquid organic fertilizer at ¼ to ½ strength, or a similarly diluted commercial fertilizer like Peters. Again, use at ¼ to ½ their recommendation. Do not over fertilize or you will kill your plants.

## Contributor's Biographical sketch

Peter Heus is a native of Nissequogue, NY who moved to a small farm in the mountains of Summers County, WV in 1974. He gradually developed a strong interest in native plant life which led to the start of the state's only nursery devoted to native plants in 1995, The Enchanter's Garden. Peter is self educated and has spent many years perfecting

his talents. His back ground in farming and gardening enhanced his natural ability to collect, propagate, and grow both woody and herbaceous plants. His specialty is mid-Atlantic perennial wild flowers.

Many of the plants Peter produces have not only aesthetic but also medicinal value. He is an advocate for

restoration landscaping using native plants and promotes the use of unknown and unappreciated plants into the landscaping trade. Peter is continually attending conferences and garden shows where he is often a speaker. He frequently lectures on plant propagation and restoration landscaping with native plants and basic principals to restore

ecological processes of properties. The Enchanter's Garden plants are propagated from seeds, cuttings and root division. The nursery has 214 herbaceous and 30 woody native species. Visits and tours to the Enchanter's Garden are by appointment only. To schedule your visit, please call (304) 466-3154.

## Contributor's Corner (Cont'd)

### Harvesting Ginseng

David C. Carman

Ginseng may be dug and dried during the legal harvest season only, which in WV is from August 15 to November 30. To be considered mature, the plant must have three prongs. Young undeveloped ginseng is very small and is illegal to harvest. Also, buyers will not accept immature roots. If you are growing ginseng or digging wild, harvest mature plants only (three-prong or better, eight to ten years old or older). West Virginia law requires written permission from the owner to dig wild ginseng on his property.

To harvest ginseng you will need a sturdy digging tool. I use a modified masonry hammer with a three-foot hickory handle. It is plenty sturdy, and doubles as a walking stick. You will also need a container for carrying your harvested roots. I prefer a large plastic bread bag tucked under my belt. If you are digging cultivated roots, a round point shovel and five gallon bucket is a great

choice.

It is very important to learn to dig your ginseng without damaging the root. Damaged roots are worth much less than undamaged roots. A medium to large root has feeder rootlets that may extend outwards from the root body 12 inches or more. Each digger has his own technique. When I find a mature wild root to be dug, I first collect the seed berries to be planted later. Next I rake back the debris with my hands, exposing a two-foot diameter circle. Holding the stem at ground level with one hand, then I cut or break off the stem as low as possible without damaging the underground neck. By removing the top at ground level, I eliminate the possibility of inadvertently breaking the neck during the digging process.

Next I dig a shallow, narrow exploratory, circular trench about three inches wide by three inches deep and about twelve inches outwards from the broken off stem. At this point, I loosen the soil at the stem stub with my fingers. If

the soil, tree roots and rocks permit, I continue to gently digging down around the neck to determine the growth direction of the root body. Now the soil can be gently loosened in trench bottom with your digging tool to about six to eight inches deep and cautiously lift out the soil ball containing the intact ginseng root system. Now I can free the entire root system from the soil with my fingers without damaging the delicate feeder rootlets. This procedure works, generally speaking, but must often be modified to suit the individual root being dug. Do not rush the digging process. A slow, exploratory, planned digging technique ensures quality roots for drying.

Now, I plant the seeds. They should be planted in the general vicinity where the root was dug. Squeeze the seeds from the berries one at a time and plant them a few feet apart, one to two inches deep, in the soil. Place a few rotten leaves on top for mulch and continue with your wild sang hunt.

Happy hunting

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**Do not rush the digging process. A slow, exploratory, planned digging technique ensures quality roots for drying.**



**To help with preservation, after digging a ginseng root, always plant the seed in the general vicinity where the plant was found.**

## Appalachian Plant Profile: Groundnut

Submitted by: Dean Myles  
Horticulture Technician  
Medicinal Botanical  
Program, MSU

*Apios americana* is a perennial twining vine commonly known as groundnut. Groundnut is a member of the pea family. Like most legumes, it is considered a nitrogen-fixing plant. The plant grows from 2-5 feet and produces a maroon pea-like flower during August and September. Groundnut can be found growing in low-damp bottomland or near

riparian areas. It produces under ground tubers that have been used for food and medicine. As a food source, groundnut is an excellent source of protein. Groundnut has been reported by James Duke to have 3 times the protein of a potato. It is also reported to have 2 ½ times the protein of an egg and to be full of amino acids. As medicine, groundnut contains phytoestrogens that may inhibit the formation of tumors by preventing the production of blood vessels. *A. americana* may also control blood sugar and curb appetite. Groundnut

cultivation can be from seeds or root divisions. It prefers a sandy loam with a neutral pH. To produce from root divisions, simply plant a single tuber and it will produce a plant. This new plant has the potential to produce 5 lbs of tubers in 2 years. This plant can be invasive, so plant with care in moist, well drained areas with full or partial sun for best results. *A. americana* may be rare in your area. Please practice sustainable harvesting techniques and contact your local forestry department for harvest regulations.

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**Please contact your state's Department of Forestry for laws and regulations concerning groundnut harvest in your area.**



## Herbal Medicine Research



**Butterbur extract, at a dose of 75 mg twice a day, is effective as a preventive therapy for migraine**

***Petasites hybridus* root (butterbur) is an effective preventive treatment for migraine**

Lipton, R. B. et al. 2004. *Neurology* 63: 2240-2244

The objective of this study was to evaluate the clinical efficacy of a standardized special root extract from butterbur (*Petasites hybridus*) as a preventive therapy for migraine.

This was a randomized trial comparing the effect of 75 mg and 50 mg of butterbur extract and a placebo given twice a day to 245 patients with migraine. Eligible patients met International Headache Society criteria for migraine, were ages 18 to 65, and had at least two to six attacks per month over the preceding 3 months. The

main outcome measure was the decrease in migraine attack frequency per month calculated as percentage change from baseline over a 4-month treatment period.

Over 4 months of treatment, 75 mg of butterbur extract, 50 mg of butterbur extract and the placebo reduced migraine attack frequency by 48%, 36%, and 26%, respectively. The proportion of patients with a  $\geq 50\%$  reduction in attack frequency after 4 months was 68% for patients that took 75-mg of butterbur extract and 49% for patients that took the placebo. Results were also significant in favor of 75 mg of butterbur at 1, 2, and 3 months based on this endpoint. Mild gastrointestinal events, predominantly burping, were

the most frequently reported adverse reactions, possibly related to treatment.

Butterbur extract, at a dose of 75 mg, taken twice daily, is more effective than the placebo as a preventive therapy for migraine, and is well tolerated.

People who have three or more days of headaches per month should consider taking a preventive medication. For people who do not like to take a prescription medication every day, butterbur is an excellent alternative.

**Caution:** Butterbur root contains toxins and homemade extracts may still contain them. Toxins are removed during the manufacturing process of commercial products.

### Remember-FX: A Smart Pill

Herb users have brewed ginseng tea to restore lost memory for centuries. Recently, a Canadian biotechnology firm isolated molecules from ginseng root that appear to boost brain activity and preserve nerve cells. CV Technologies now sells the compounds as a "smart pill" called Remember-FX. The drug has only undergone a few pilot studies, so it is being sold in Canada as a "traditional medicine". Researchers say the drug appears to work. A month's supply of 60 capsules costs around \$20.

Christina Benishin, a professor of physiology at the University of Alberta, said that "in general, it enhances the function of existing neurons. What people find is that

they're more alert, that they find it easier to retain things that they've been studying." In one human study, a group of subjects aged 20 to 22 and another group aged 45 to 65 enjoyed a 300% increase in tests of their memory. Animal studies show that Remember-FX increases choline uptake in the brain, raising levels of acetylcholine, a chemical important for learning and memory functions.

Studies show that the amount of active ingredients in ginseng products can vary widely, depending on the quality. To ensure a consistent product, CV Technologies uses a technology called "ChemBioPrint" to isolate the active compounds called ginsenosides.

Company president

Jacqueline Shan says Remember-FX also appears to protect the brain against the ravages of old age, including such neurodegenerative diseases as Alzheimer's and Parkinson's. "The brain is a vast complex organ with billions of brain cells, and when it starts to fade, who we are as individuals start to fade with it," she said. "So part of our research was focused on ways to help an ailing brain to store memories". That's good news for the estimated 364,000 Canadians over 65 who suffer from Alzheimer's and other dementias. Current drugs on the market work by preserving existing neurons, but do nothing to reverse the effects of disease.

Research shows even healthy people start to show

signs of forgetfulness at age 30 due to deterioration of memory cells. In laboratory tests, the product helped promote the growth of new brain cells. It also appeared to have mild antidepressant qualities. In a double-blind, placebo-controlled study of the drug in memory function in patients with schizophrenia, it helped enhance "visual working memory," a key deficiency in such patients.

In spite of decades of research into drugs that improve alertness and memory, most new products do not do much better than caffeine. Dr. Benishin said Remember-FX appears to be at least as effective as caffeine, but without the jitters and withdrawals that some consumers suffer.

## Mountain State University

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### About the Medicinal Botanical Program

This Program was created as a result of a Specific Cooperative Agreement between Mountain State University and the USDA/ARS-Appalachian Farming Systems Research Center in Beaver, WV.

The establishment of this agreement came through the efforts of Senator Robert C. Byrd and a Congressional Appropriation. The mission of the Program is to promote the medicinal plant industry through research, education, marketing and outreach.

Educational offerings include a Bachelor degree in Herbal Sciences, a symposium and workshops. The Program also conducts research on the chemistry, propagation and cultivation of native medicinal plants.

## Subscriptions

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[mmorales@mountainstate.edu](mailto:mmorales@mountainstate.edu)

or

Medicinal Botanical Program  
Mountain State University  
P.O. Box 9003  
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## Contributions

Dear growers, processors, marketers, and practitioners, would you like to share your knowledge and personal experience on how to produce, process, market and use herbs and aromatic and medicinal

plants with our readers? It is simple. You just have to put your ideas on paper (typed or handwritten) and mail them to us. We will publish your article as space becomes available in subsequent issues of the Herbal Dispatch.

Optional: you may want also to send a short biographical sketch, so our readers can know you better.

Please send contributions to the e-mail or the postal mailing address provided above.

## Advertisements

MBP Searches for Assistant Director

**POSITION:**  
We are looking for the right professional to fill the position of Assistant Director of the Medicinal Botanical Program at MSU, Beckley, WV. This is a 12 month, grant funded, administrative faculty position with an annual salary of 35-38K.

**QUALIFICATIONS:**  
The successful candidate should have a MS or PhD degree with experience in herbal medicine, natural products, phytochemistry, botany, or a related field with strong background in medicinal plants. Experience with conference planning, curriculum development, teaching and grant writing is desirable.

**CONTACT:**  
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Human Resources  
Mountain State University  
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