

The Herbal Dispatch

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WVHA/MSU 2009 Fall Conference: Celebration of Herbs

With summer over before it hardly started, it's time to start thinking of harvesting the herbs, fruits, and vegetables you've grown or purchased and using them throughout the coming months.

Plan on joining the West Virginia Herb Association (WVHA) and Mountain State University (MSU) celebrate National Herb Day Saturday October 10th at historic Jackson's Mill (Weston, WV) and obtain tips on how to use herbs and herbal products for all winter long.

There will be demonstrations, weed walks, music, fun, a dessert contest and tea party, raffles, make-it/take-it workshops, and videos on value-adding, straw bale buildings, and UpS' "At Risk" Native Medicinal Plants.

Annie Seay, of the Collaborative for the 21st Century Appalachia, will be available to register participants for the wvfarm2U web site, if interested.

Some workshops and demonstrations planned are: Making Tinctures from Roots, Container Gardening and Seed Saving, Herbal Holiday Ornaments, Herbal Infused Oils and Salves, Dyeing with Plants, Making Tea Mixes and Bath Salts, Herbal Hair Rinses, and Cooking with Herbs.

Herbal products, plants, and



books will be available for purchase as well as free information on a wide array of gardening subjects.

Dr. Hassam Amjad will be speaking on The Language of Flowers and their Medicinal and Health Benefits, Fibromyalgia and Chronic Fatigue, and Tea-the Elixir of Life. Annette Gall will tell you When It's Important to Buy Organic. See tentative schedule on page 5.

To register send registration form (page 5) with check or money order made out to WVHA to: Susan Patterson, 160 Jackson's Mill Rd., Weston WV, 26452.

Remember to come as early as you can for speakers may have to be moved from one time to another as travel plans unfold. Some demonstrations are short and will be repeated. Check times for each one that you are interested in when you register.

I look forward to this event every year as the best chance to meet and mingle with like-minded old and new friends to have fun, taste something new, and hopefully learn new things to make my life easier or healthier or just more interesting. Hope to see you all there!

Herbally yours,

Ann Nye, WVHA President

The Herbal Dispatch

A monthly publication of the Medicinal Botanical Program

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 botanicals.

Information presented here is for educational purposes only and not intended to diagnose, cure, treat or prevent disease. Authors are responsible for their views, which not necessarily reflect those of MSU.

Mario R. Morales
Editor/Publisher

The Soil Biology Primer-Part IX

By Elaine R. Ingham
Oregon State University

Chapter 4: SOIL FUNGI

WHERE ARE FUNGI?

Saprophytic fungi are commonly active around woody plant residue. Fungal hyphae have advantages over bacteria in some soil environments. Under dry conditions, fungi can bridge gaps between pockets of moisture and continue to survive and grow, even when soil moisture is too low for most bacteria to be active. Fungi are able to use nitrogen up from the soil, allowing them to decompose surface residue which is often low in nitrogen.

Fungi are aerobic organisms. Soil which becomes anaerobic for significant periods generally loses its fungal component. Anaerobic conditions often occur in waterlogged soil and in compacted soils.



Figure 6: Mushrooms, common in forest systems, are the fruiting bodies made by a group of fungi called basidiomycetes. Mushrooms are "the tip of the iceberg" of an extensive network of underground hyphae.

Credit: Ann Lewandowski, NRCS Soil Quality Institute

Fungi are especially extensive in forested lands. Forests have been observed to increase in productivity as fungal biomass increases.

MYCORRHIZAL FUNGI IN AGRICULTURE

Mycorrhiza is a symbiotic association between fungi and

plant roots and is unlike either fungi or roots alone. Most trees and agricultural crops depend on or benefit substantially from mycorrhizae. The exceptions are many members of the Cruciferae family (e.g., broccoli, mustard), and the

Chenopodiaceae family (e.g. lambsquarters, spinach, beets), which do not form mycorrhizal associations. The level of dependency on mycorrhizae varies greatly among varieties of some crops, including wheat and corn.

Land management practices affect the formation of mycorrhizae. The number of mycorrhizal fungi in soil will decline in fallowed fields or in those planted to crops that do not form mycorrhizae. Frequent tillage may reduce mycorrhizal associations, and broad spectrum fungicides are toxic to mycorrhizal fungi. Very high levels of nitrogen or phosphorus fertilizer may reduce inoculation of roots. Some inoculums of mycorrhizal fungi are commercially available and can be added to the soil at planting time.



Figure 5: In arid rangeland systems, such as southwestern deserts, fungi pipe scarce water and nutrients to plants.

Credit: Jerry Barrow, USDA-ARS Jornada Experimental Range, Las Cruces, NM.

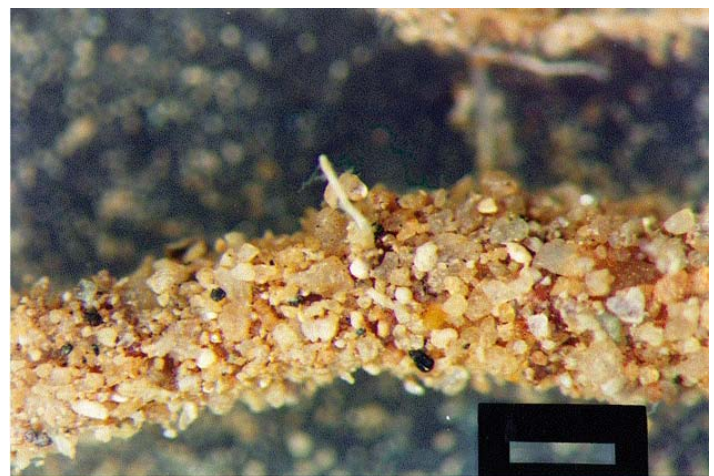


Figure 7: Mycorrhizal fungi link root cells to soil particles. In this photo, sand grains are bound to a root by hyphae from endophytes (fungi similar to mycorrhizae), and by polysaccharides secreted by the plant and the fungi.

Credit: Jerry Barrow, USDA-ARS Jornada Experimental Range, Las Cruces, NM.

Elderberry Prevents Swine Flu

Recent research has given new scientific evidence to the long-held empirical belief that elderberries possess antiviral activities. The research involved a specific, reproducible elderberry extract developed by HerbalScience Group LLC, and succeeded in identifying key chemical components of the extract that inhibited in vitro infection and were shown to bind directly to Human Influenza A (H1N1) virus particles.

The binding blocked the ability of the viruses to enter host cells, and thereby effectively preventing H1N1 infection in vitro.

An article detailing the study has been published in the peer-review scientific journal *Phytochemistry*. The article's authors are affiliated with HerbalScience Group, a Naples, Florida, and Singapore-based company dedicated to applying advanced science and technology to the production of botanical drugs and nutraceuticals, and with the Univ. of Miami.

The research results are

notable not only because they identified and characterized two specific flavonoids (plant nutrients that are beneficial to health) that are the major contributors to the anti-influenza activity of the elderberry extract, but also verified how the flavonoids provide that benefit, via direct binding to H1N1 virus particles and blocking the virus from infecting host cells.

"Our studies on the elderberry extract have enabled us to identify the key bioactives that contribute to its antiviral activity, and begin to understand how the mixture of natural chemistries present in elderberry functions," says Randall Alberte, CSO of HerbalScience Group.

"Using methods, technologies, and procedures that are standard in the pharmaceutical industry and new technologies developed by us, we're able to demonstrate the effectiveness of the elderberry extract in inhibiting viral entry into target cells and effectively blocking its ability to reproduce."

Central to the research was the use of a direct analysis in



real time time-of-flight mass spectrometer which is able to detect, identify with high accuracy, and quantify the hundreds or thousands of individual chemicals present in botanical extracts. When this technology is combined with HerbalScience's Platform Technology, this information can be used with other data to rapidly identify the key bioactives present.

The elderberry extract used in the study is the result of technology that enables the company to standardize the chemical profile of any selected botanical in order to deliver a compositionally and functionally consistent product that is effective and safe.

The patented technology was developed for the company by researchers in botanical and

natural products chemistry and plant biology, as well as experts in supercritical CO₂ and affinity absorbent extraction technologies, methods used for extracting plant phytochemicals.

The company's proprietary and environmentally friendly technology is able to extract a broad diversity of phytochemicals from botanicals and produce a consistent and reliable chemical "fingerprint" for each dose. The scientists also developed a process that enables the beneficial chemical compounds in botanicals to be enhanced while removing any harmful compounds like heavy metals and pesticides.

Source: HerbalScience
September 11, 2009

Escalated regeneration in sciatic nerve crush injury by the combined therapy of human amniotic fluid mesenchymal stem cells and fermented soybean extracts, Natto

HC Pan, DY Yang, SP Ho, ML Sheu, CJ Chen, SM Hwang, MH Chang and FC Cheng. 2009. *J Biom Sci* 16

Attenuation of inflammatory cell deposits and associated cytokines prevented the apoptosis of transplanted stem cells in a sciatic nerve

crush injury model. Suppression of inflammatory cytokines by fermented soybean extracts (Natto) was also beneficial to nerve regeneration. In this study, the effect of Natto on transplanted human amniotic fluid mesenchymal stem cells

(AFS) was evaluated. Peripheral nerve injury was induced in SD rats by crushing a sciatic nerve using a vessel clamp. Animals were categorized into four groups: Group I: no treatment; Group II: fed with Natto (16 mg/day for 7 consecutive days);

Group III: AFS embedded in fibrin glue; Group IV: Combination of group II and III therapy. Transplanted AFS and Schwann cell apoptosis, inflammatory cell deposits and associated cytokines, motor function, and nerve regeneration were evaluated 7

Natural Compounds in Vegetables plus Selenium Fight Melanoma

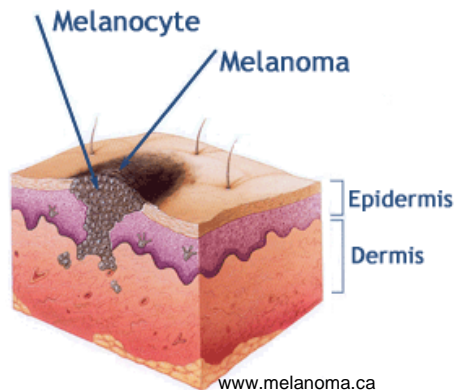
According to the National Cancer Institute about 67,720 people in the US were diagnosed last year with melanoma, the most serious form of skin cancer, and around 8,420 Americans died from this malignancy. Melanoma can become deadly if it spreads to other parts of the body -- because that makes it particularly difficult to treat. But now research just published in the March edition of the journal *Clinical Cancer Research* concludes a compound derived from vegetables, especially when combined with the micronutrient selenium, may deliver a knock-out punch to this potentially lethal kind of cancer.

There are currently no drugs that can shut down the Akt3 protein which triggers the development of melanoma. However, Penn State College of Medicine scientists have discovered that a class of naturally occurring chemicals called isothiocyanates found in cruciferous vegetables (which include broccoli, cabbage, cauliflower, kale and Brussels sprouts) appears to target this

protein. And the Penn State researchers found they could make the isothiocyanates even more potent at lower doses by "rewiring" them with trace mineral selenium.

"Selenium deficiency is common in cancer patients, including those diagnosed with metastatic melanoma," explained lead researcher Gavin Robertson, associate professor of pharmacology, pathology and dermatology at Penn State, in a statement to the media. "Besides, selenium is known to destabilize Akt proteins in prostate cancer cells."

To study the effectiveness of the isothiocyanates-plus-selenium compound (dubbed isoselenocyanate) the scientists injected laboratory mice with 10 million cancer cells. After six days, the rodents developed large tumors. Then half were treated with the vegetable compounds and the others were treated with the same naturally occurring chemicals supplemented with selenium. When combined with selenium, the compounds resulted in a 60 percent reduction in the rate of



Melanoma is a serious form of skin cancer that starts in the pigment-producing skin cells (melanocytes). These cells become abnormal, grow uncontrollably, and aggressively invade surrounding tissues.

growth of the cancerous tumors, compared to the vegetable-only compounds. The researchers also tested three different human melanoma cell lines with the two versions of the compounds and determined the selenium-enriched version was 30 to 70 percent effective in inhibiting the human cancer cells.

"We found that the selenium-enhanced compounds significantly reduced the production of Akt3 protein and shut down its signaling network," Robertson, who is associate director of translational research and leader of the experimental therapeutics program at Penn

State Hershey Cancer Institute, said in the press statement. "We have harnessed something found in nature to target melanoma. And since we only need tiny amounts to kill the cancer cells, it means even less toxic side-effects for the patient."

The cancer fighting properties of cruciferous vegetables have been documented in many studies. In additional new research recently published in the journal *Nutrition and Cancer*, University of Milan scientists reported that eating broccoli appears to help protect smokers from lung cancer.

Source: Natural News, March 3, 2009

Escalated regeneration in sciatic nerve crush injury by the combined therapy of human amniotic fluid mesenchymal stem cells and fermented soybean extracts, Natto (*Cont'd*)

or 28 days after injury. The deterioration of neurological function was attenuated by AFS, Natto, or the combined therapy. The combined therapy caused the most significantly beneficial effects. Administration of Natto suppressed the inflammatory responses and correlated with

decreased AFS and Schwann cell apoptosis. The decreased AFS apoptosis was in line with neurological improvement such as expression of early regeneration marker of neurofilament and late markers of S-100 and decreased vacuole formation. Administration of either AFS,

or Natto, or combined therapy augmented the nerve regeneration. In conclusion, administration of Natto may rescue the AFS and Schwann cells from apoptosis by suppressing the macrophage deposits, associated inflammatory cytokines, and fibrin deposits.



Schedule* – Celebration of Herbs Conference



Saturday October 10th, 2009

- 8:00–9:00 Registration; Vendor Setup
- 9:00–10:00 Weed Walks
Making Paper Folded Ornaments for holding Potpourri–Carol Schweiker
Container Gardening and Saving Seeds
- 10:30–12:00 Value Adding and wvfarm2U–Annie Seay
Building Straw Bale Workshop video–John Seay
Making Bath Salts–Melissa Dennison
Herbal Infused Oils and Salves–Andrea Lay
- 12:00–1:00 Lunch, Raffles throughout the day
Stilt Grass, Ginseng, and Forestry Surveys for Farms– Russ Richardson
- 1:00–2:00 When It's Important to Buy Organic–Annette Gall
"At Risk" Native Medicinal Plants" UpS video
Tinctures from Roots– Eve Von Deck
Making Tea Mixes–Dot Montgillion
Herbs for Your Hair: Homemade Hair Rinses and Other Tips for Beautiful Hair–Eva Ristl
- 2:00–4:00 The Language of Flowers and their Medicinal and Health Benefits–Dr. H. Amjad
Fibromyalgia and Chronic Fatigue–Dr. H. Amjad
Tea: The Elixir of Life–Dr. H. Amjad
Cooking with Herbs–Myra Bon-Hage Hale
Dyeing with Plants–Becky Nesbit
Felting wool–Dawn Conner
- 4:00–5:00 Dessert Contest
Tea Party
Closing remarks

* Tentative, still under development

To enter the Dessert Contest, please bring a healthy herbal dessert with its recipe (so the judges can see it's healthy content) and leave at the registration desk with your name on bottom of plate and back of recipe card. First prize is \$50, second- \$25, and third- \$15.

Fall Conference Registration Form
West Virginia Herb Association/MSU Medicinal Botanicals Program
 October 10, 2009

Mail form and check or money order made out to WVHA to:
 Susan Patterson, 160 Jackson's Mill Rd., Weston WV, 26452

Name: _____

Address: _____

County: _____

Phone: () _____

Email: _____

Registration Fee is \$30 per person (which includes a 2010 membership in WVHA)

Vendor Fee for businesses is \$35 per person (which also includes a 2010 membership in WVHA and registration for the event)

Box Lunches are available @ \$10 each if purchased by Sept. 30th.

Vegetarian: _____

Regular: _____

Mountain State University

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About the Medicinal Botanical Program

This Program was created as 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 in WV through research, education and outreach. The Program conducts research aimed at the identification and development of native plants as specialty vegetable/forage crops. Educational offerings include symposia, workshops and farm visits.

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Mountain State University
 Medicinal Botanicals Program
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 Beckley, WV 25801-9003

Obesity Linked To Brain Degeneration

While the talking heads on TV frantically warn about the so-called swine flu pandemic that is supposedly on the verge of causing world-wide suffering and death, there's another world-wide health problem of enormous proportions that's here, right now -- being overweight. The World Health Organization (WHO) estimates more than 300 million people across the planet are obese, and another billion more are overweight. Being too fat isn't a cosmetic problem, it's a condition that kills people prematurely by leading to cardiovascular disease, high blood pressure, stroke and type 2 diabetes. And now there's evidence that being too fat also causes brain degeneration and maybe even Alzheimer's disease.

In a study just published in the current online edition of the journal *Human Brain Mapping*, a research team headed by Paul Thompson, senior author and a University of California at Los Angeles (UCLA) professor of neurology, and lead author Cyrus A. Raji, a medical student at the University of

Pittsburgh School of Medicine, compared the brains of people who were obese, overweight, and of normal weight. To define the weight categories, the scientists used the Body Mass Index (BMI), to establish that normal weight people had a BMI between 18.5 and 25, overweight people had a BMI between 25 and 30, and obese people's BMI was more than 30.

The scientists wanted to document whether the brains of those in each of the three groups were equally normal and healthy. Surprisingly, they weren't. In fact, the scientists discovered that obese people had eight percent less brain tissue than people with normal weight. In addition, people who were only overweight and not downright obese still showed a loss of about four percent of brain tissue.

Thompson, who is a member of UCLA's Laboratory of Neuro Imaging, said in a statement to the media that this study marks the first time anyone has established a link between being being overweight and having what Thompson called in a statement to the media "severe brain degeneration." In fact, he noted that "...the brains of obese people looked 16 years older than the brains of those who were lean, and in overweight people looked eight years older."

"That's a big loss of tissue and it depletes your cognitive reserves, putting you at much greater risk of Alzheimer's and other diseases that attack the brain," Thompson stated. "But you can greatly reduce your risk for Alzheimer's, if you can

eat healthily and keep your weight under control."

The researchers used brain images from the earlier Cardiovascular Health Study Cognition Study. The researchers then transformed those scans into three-dimensional images using a high tech neuroimaging method that produces detailed resolution mapping of differences in brain anatomy.

When they compared both grey matter and white matter of the brain, the scientists found that the people defined as obese had lost brain tissue in the frontal and temporal lobes (parts of the brain critical for memory and planning), the anterior cingulate gyrus (needed for attention and executive functions), hippocampus (critical for long term memory) and the basal ganglia (needed for movement). Overweight people showed less brain loss, but it was brain loss, all the same -- mostly in the basal ganglia and the parietal lobe (known as the sensory lobe).

"It seems that along with increased risk for health problems such as type 2 diabetes and heart disease, obesity is bad for your brain: we have linked it to shrinkage of brain areas that are also targeted by Alzheimer's," Raji said in a statement to the press. **"But that could mean exercising, eating right and keeping weight under control can maintain brain health with aging and potentially lower the risk for Alzheimer's and other dementias."**

Source: Natural News
 September 17, 2009

Contributions

Dear reader:

Would you like to share your knowledge, skills and experience with us? Do you know how to produce, process, market and/or use herbs and medicinal plants?

Would you like to share this knowledge with our readers? It is quite simple. Just write your ideas on a piece of paper and mail it to us. We will type it and make sure that it gets published in our newsletter.

Please send contributions to the addresses indicated above.