

The Association of Traditional Chinese Medicine and Acupuncture UK

TCM Research Updates

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Scientists discover molecular secrets of 2,000-year-old Chinese herbal remedy

<http://phys.org/news/2012-02-scientists-molecular-secrets-year-old-chinese.html>

February 12, 2012 by Cathryn Delude

For roughly two thousand years, Chinese herbalists have treated Malaria using a root extract, commonly known as Chang Shan, from a type of hydrangea that grows in Tibet and Nepal. More recent studies suggest that halofuginone, a compound derived from this extract's bioactive ingredient, could be used to treat many autoimmune disorders as well. Now, researchers from the Harvard School of Dental Medicine have discovered the molecular secrets behind this herbal extract's power.

It turns out that halofuginone (HF) triggers a stress-response pathway that blocks the development of a harmful class of immune cells, called Th17 cells, which have been implicated in many autoimmune disorders.

"HF prevents the autoimmune response without dampening immunity altogether," said Malcolm Whitman, a professor of developmental biology at Harvard School of Dental Medicine and senior author on the new study. "This compound could inspire novel therapeutic approaches to a variety of autoimmune disorders."

"This study is an exciting example of how solving the molecular mechanism of traditional herbal medicine can lead both to new insights into physiological regulation and to novel approaches to the treatment of disease," said Tracy Keller, an instructor in Whitman's lab and the first author on the paper.

This study, which involved an interdisciplinary team of researchers at Massachusetts General Hospital and elsewhere, will be published online February 12 in *Nature Chemical Biology*.

Prior research had shown that HF reduced scarring in tissue, scleroderma (a tightening of the skin), multiple sclerosis, scar formation and even cancer progression. "We thought HF must work on a signaling pathway that had many downstream effects," said Keller.

In 2009, Keller and colleagues reported that HF protects against harmful Th17 immune cells without affecting other beneficial immune cells. Recognized only since 2006, Th17 cells are "bad actors," implicated in many autoimmune diseases such as inflammatory bowel disease, rheumatoid arthritis, multiple sclerosis and psoriasis. The researchers found that minute doses of HF

reduced multiple sclerosis in a mouse model. As such, it was one of a new arsenal of drugs that selectively inhibits autoimmune pathology without suppressing the immune system globally. Further analysis showed that HF was somehow turning on genes involved in a newly discovered pathway called the amino acid response pathway, or AAR.

Scientists have only recently appreciated the role of the nutrient sensing-AAR pathway in immune regulation and metabolic signaling. There is also evidence that it extends lifespan and delays age-related inflammatory diseases in animal studies on caloric restriction. A conservationist of sorts, AAR lets cells know when they need to preserve resources. For example, when a cell senses a limited supply of amino acids for building proteins, AAR will block signals that promote inflammation because inflamed tissues require lots of protein.

"Think about how during a power outage we conserve what little juice we have left on our devices, foregoing chats in favor of emergency calls," said Whitman. "Cells use similar logic."

For the current study, the researchers investigated how HF activates the AAR pathway, looking at the most basic process that cells use to translate a gene's DNA code into the amino acid chain that makes up a protein.

The researchers were able to home in on a single amino acid, called proline, and discovered that HF targeted and inhibited a particular enzyme (tRNA synthetase EPRS) responsible for incorporating proline into proteins that normally contain it. When this occurred, the AAR response kicked in and produced the therapeutic effects of HF-treatment.

Providing supplemental proline reversed the effects of HF on Th17 cell differentiation, while adding back other amino acids did not, establishing the specificity of HF for proline incorporation. Added proline also reversed other therapeutic effects of HF, inhibiting its effectiveness against the malaria parasite as well as certain cellular processes linked to tissue scarring. Again, supplementation with other amino acids had no such effect. Such mounting evidence clearly demonstrated that HF acts specifically to restrict proline.

The researchers think that HF treatment mimics cellular proline deprivation, which activates the AAR response and subsequently impacts immune regulation. Researchers do not yet fully understand the role that amino acid limitation plays in disease response or why restricting proline inhibits Th17 cell production.

Nevertheless, "AAR pathway is clearly an interesting drug target, and halofuginone, in addition to its potential therapeutic uses, is a powerful tool for studying the AAR pathway," said Whitman.

More information: "Halofuginone and other febrifugine derivatives inhibit prolyl-tRNA synthetase" by Keller et al. *Nature Chemical Biology*, online publication, February 12
Provided by Harvard Medical School

CHANG SHAN 常山

Pharmaceutical: Radix Dichroae
Febrifugae

Botanical: Dichroa febrifuga
Lour.(Saxifragaceae)

Other names: Ji Gu Chang Shan

Description: Dichroa Root.

Actions:

Induces vomiting to eliminate Phlegm; Stops malaria; ...

Origin:

South of Changjiang river, Gansu, Shaanxi, Sichuan.;

Preparation:

The drug is collected in autumn, removed from rootlet, washed clean, dried in the sun, and cut into pieces. The root can also be stir-fried.;



2,000-year old Chinese herbal remedy could be used to treat autoimmune disorders, Harvard scientists find

<http://phys.org/news/2012-02-scientists-molecular-secrets-year-old-chinese.html>

Tuesday, April 24, 2012 by: Jonathan Benson, staff writer (NaturalNews)

Chang shan is a root extract of a specific type of Himalayan hydrangea plant, also known as hortensia, that has long been used in traditional Chinese medicine to treat malaria and other maladies. And a new investigation conducted by researchers from *Massachusetts General Hospital (MGH)*, the *Harvard School of Dental Medicine (HSDM)*, and elsewhere has revealed that this powerful natural medicine is also useful in treating autoimmune disorders.

In an effort to better understand the therapeutic benefits of chang shan, the team evaluated its active components and observed that one component in particular, halofuginone (HF), blocks the development of T helper 17 (Th17) cells. Th17 cells are highly inflammatory cells that appear to play a primary role in the development of autoimmune disorders such as multiple sclerosis, psoriasis, juvenile diabetes, rheumatoid arthritis and Crohn's disease.

Building upon previous research that identified how HF activates the body's amino acid response (AAR) pathway, the team was able to identify that HF specifically targets and blocks an enzyme known as tRNA synthetase EPRS, which is responsible for incorporating proline, an amino acid, into cells. This blockage essentially tells the AAR not to activate the inflammatory immune responses associated with autoimmune disorders.

"HF prevents the autoimmune response without dampening immunity altogether," said Malcolm Whitman, a professor of developmental biology at HSDM, and senior author of the study, which was published in the journal *Nature Chemical Biology*. "This compound could inspire novel therapeutic approaches to a variety of autoimmune disorders."

Like most herbal remedies that have therapeutic properties, HF's anti-inflammatory and immune-inhibiting properties only target autoimmune pathology rather than the entire immune system.

So supplementing with HF can both fight autoimmune disorders and boost natural immunity, which makes the herb a safe and effective natural remedy that is unmatched by any competing pharmaceutical.

"This study is an exciting example of how solving the molecular mechanism of traditional herbal medicine can lead both to new insights into physiological regulation and to novel approaches to the treatment of disease," said Tracy Keller, co-author of the study and an instructor in Whitman's lab.

Chang shan, a powerful anti-cancer nutrient

But chang shan's benefits do not stop there. In 2011, researchers from the *University of Sao Paulo*, the *University of Brazil*, and *Tel Aviv University* discovered that HF is capable of fighting leukemia. Not only does HF prevent leukemia cancer cells from spreading, but it also induces apoptosis, also known as cell death.

Similarly, a 2003 study published in the journal *Clinical Cancer Research* found that HF contains specific anti-tumor properties that are effective in treating a variety of other cancers besides leukemia. According to the findings, HF can inhibit the progression of both bladder carcinoma and prostate cancer tumors, and may even be a potential preventive treatment that blocks the initial development of these and other cancers.

Chang shan, which is also commonly identified as *dichroa febrifuga* or dichroa root, can be found at some health food stores and online retailers in both liquid and powder extract forms. Practitioners of traditional Chinese medicine are also a great resource to consult when seeking to learn more about chang shan and how it might be able to help you.

Strong scientific evidence shows that eating berries benefits the brain

http://www.naturalnews.com/035213_berries_brain_health_scientific_evidence.html

Sunday, March 11, 2012 by: J. D. Heyes

(NaturalNews) As we age, one of the functions that can often deteriorate dramatically is our mental function - our *brain power*, if you will. The good news is, researchers may have discovered a way to prevent this kind of decline: Eat more berries.

That's right. According to research published in the *American Chemical Society's (ACS) Journal of Agricultural and Food Chemistry*, eating more blueberries, blackberries, strawberries and other berry fruits may help prevent age-related memory loss and other mental status changes.

In the journal article, Dr. Barbara Shukitt-Hale, PhD, and Marshall G. Miller note that as we live longer on average, there are increasing concerns about the social and monetary costs of treating Alzheimer's disease and other forms of mental decline. That concern will only grow as the U.S. population continues to age.

Keep your brain healthy and functioning as you age

According to the research, eating more berries can have benefits for the aging brains. "To analyze the strength of the evidence about berry fruits, they extensively reviewed cellular, animal and human studies on the topic," said a press release from the ACS.

A review of the data found that there was strong scientific evidence that berry fruits help the brain remain healthy in a number of ways. For example, berry fruits contain high levels of antioxidants, "compounds that protect cells from damage by harmful free radicals." In addition, research shows that berry fruits alter the manner in which neurons in the brain communicate.

"These changes in signaling can prevent inflammation in the brain that contribute to neuronal damage and improve both motor control

and cognition," said ACS, a nonprofit organization chartered by Congress.

"They suggest that further research will show whether these benefits are a result of individual compounds shared between berry fruits or whether the unique combinations of chemicals in each berry fruit simply have similar effects."

'Berry' good benefits

The ACS research isn't the first to suggest that antioxidants in berry fruits are beneficial to your overall health. The *Global Healing Center* also says berries are high in antioxidants and "have been shown to be some of the healthiest foods on the planet."

The antioxidants in berries and other fruits act as "scavengers" of free radicals, which create a destructive process on the cellular level, causing molecules within cells to become unstable, according to Dr. Edward Group.

"They may even be a big player in the formation of cancerous cells by a 'chain-reaction' effect, causing other cells to become damaged," he writes. "Because of the inherent instability of free-radicals, they try to attack other healthy cells to get stable themselves. This then causes the once-healthy cells to react in the same way, attacking others in [a] never-ending attempt for cellular stability."

But just like with everything else, some scientists and researchers say you should be careful not to overindulge in antioxidants.

"Too much of a good thing can be bad, and some scientists believe excessive amounts of antioxidants can overtax the immune system, hurting the body's ability to repair itself," says Robert Wildman, Ph.D., R.D., L.D., a nutritional expert.

China takes new steps to promote TCM overseas

<http://english.people.com.cn/102774/7803336.html>

By Yin Xiaoyu (People's Daily Overseas Edition)

April 28, 2012

China will establish a sound international market-oriented trade promotion, management, and marketing system for traditional Chinese medicine (TCM) in the next five years, according to a joint proposal issued by 14 government agencies including the Ministry of Commerce and State Administration of Traditional Chinese Medicine in Beijing on April 26.

Wang Guoqiang, Vice Health Minister and Director of the State Administration of TCM, said that the substantial cultural difference between the East and the West has impeded TCM's acceptance by Western society. Therefore, the TCM culture must be actively promoted abroad to ensure TCM's smooth international expansion.

TCM has already achieved worldwide recognition. The 62nd World Health Assembly adopted a resolution initiated by the Chinese government to promote traditional medicine worldwide. The International Organization for Standardization set up the secretariat for its TCM technical committee in China. More than 200 institutional members from over 60 countries and regions have joined the World Federation of Acupuncture-Moxibustion Societies and World Federation of Chinese Medicine Societies, which both headquartered in China.

China has signed a total of 96 bilateral intergovernmental agreements involving TCM cooperation with other countries, and another 49 bilateral agreements exclusively on TCM cooperation. Acupuncture has been inscribed on the Representative List of the Intangible Cultural Heritage of Humanity. Two TCM classics – Compendium of Materia Medica and the Yellow Emperor's Classic of Internal Medicine have been listed on the prestigious Memory of the World Register.

The trade in TCM services faces many policies and technical barriers overseas. TCM is marketed solely as dietary supplements or non-medicinal treatments in much of Europe. Furthermore, the European Medicines Agency (EMA) required all TCM products to undergo a registration process before they enter the European market starting in 2011, making it more difficult for TCM to penetrate into the European medicine market.



Di'ao Xin Xue Kang, a Chinese herbal medicine developed by the Chengdu Di'ao Pharmaceutical Group for treating myocardial ischemia, was recently licensed for sale in the European Union, making it the first Chinese therapeutic drug to receive marketing authorization in the Western market. Wang said that preferential fiscal and tax policies should be introduced to promote the trade in TCM services. Major TCM companies that are identified as high-tech enterprises should enjoy a reduced corporate income tax rate of 15 percent according to the tax law and related regulations. The tax on TCM companies' business income from cultivating herbal medicines and raising poultry and livestock should be reduced or abolished. Furthermore, the country should provide effective financial support to the promotion of TCM products, and policy banks should actively provide credit support for the export of TCM products.

Finding alternatives to valuable TCM ingredients is a difficult process.

TCM production unavoidably involves certain rare and endangered plants and animals as well as scarce minerals, including natural bezoars and bear bile. Some TCM ingredients such as rhino horns have been prohibited under international wildlife protection agreements.

Wang said that China has attached great importance to finding alternatives to valuable TCM ingredients, and has enhanced research and spent heavily in this regard. However, as most valuable medicinal herbs themselves are like compounded prescriptions and will lose their original effectiveness if their chemical structure is changed, making it a long and difficult process to find their alternatives. Researchers once tried to substitute artificial bezoars for natural bezoars, but the experiment turned out to be a failure. In addition, despite many years of research and moderate progress, artificial musk is still unable to substitute for natural musk in TCM production.