

Mechanism of black cohosh versus hot flashes revealed

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The natural herb black cohosh is commonly used by women to treat menopausal symptoms such as hot flashes, but the molecular mechanisms underlying its action have eluded scientists -- until now.

Researchers at the University of Illinois at Chicago and the National Institutes of Health Center for Botanical Dietary Supplements Research have discovered that black cohosh may act on human opiate receptors, which play a role in regulating a body's temperature.

Z. Jim Wang, assistant professor of pharmacology and pharmaceuticals, led the study, which will be published in an upcoming issue of the Journal of Agricultural and Food Chemistry; the paper is currently available on the journal's web site.

Opiate receptors are chemical sensors that respond to opiates like morphine and endorphins, Wang said. Chemical substances with opiate activity bind to the receptors and produce the appropriate response, including the regulation of pain, temperature and appetite.

"We used several extracts of black cohosh and found that elements of the herb could bind to the human 'mu' opiate receptor," Wang said. "The opiate receptor system affects several aspects of female reproductive neuroendocrinology, such as the levels of sex hormones and neurotransmitters that are important for temperature regulation."

Black cohosh (known as both *Actaea racemosa* and *Cimicifuga*

racemosa) is a member of the buttercup family. A perennial plant, it is native to North America. It has been used by Native Americans to treat malaise, gynecological disorders, kidney ailments, malaria, rheumatism and sore throat, as well as colds, cough, constipation, hives and backaches, and to induce lactation.

Women experience a variety of symptoms of menopause, but the hot flash is the most common. Although the exact mechanism of the hot flash is unclear, estrogen withdrawal during menopause clearly plays an important role, Wang said. It is assumed that declining estrogen concentrations may change the levels of brain chemicals called neurotransmitters.

As a result, the thermoregulatory center located in the hypothalamus functions irregularly, which leads to inappropriate peripheral vasodilatation that causes hot flashes.

"The hypothalamic thermostat setting can be controlled directly or indirectly by the opiate system," Wang said.

Wang said this is the first time black cohosh has been linked to the activity of the opiate receptors. The ethanol extract used in this study, he said, is currently being used in a phase II clinical trial conducted by researchers from the UIC/NIH Center for Botanical Dietary Supplements Research.

Source: University of Illinois at Chicago

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