

## Study on Valerian/Hops Combination Sheds Light on Mechanism of Action in Promoting Sleep

**R**eviewed: Schellenberg R, Sauer S, Abourashed EA, Koetter U, Brattström A. The fixed combination of valerian and hops (Ze91019) acts via a central adenosine mechanism. *Planta Med.* July 2004;70(7):594-597.

Sleep cycles go through a sleep-wake rhythm during the entire night. The rhythm is related to changes in adenosine concentration within the central nervous system (CNS). Studies have shown that CNS administration of adenosine induces sleep. Valerian (*Valeri-*

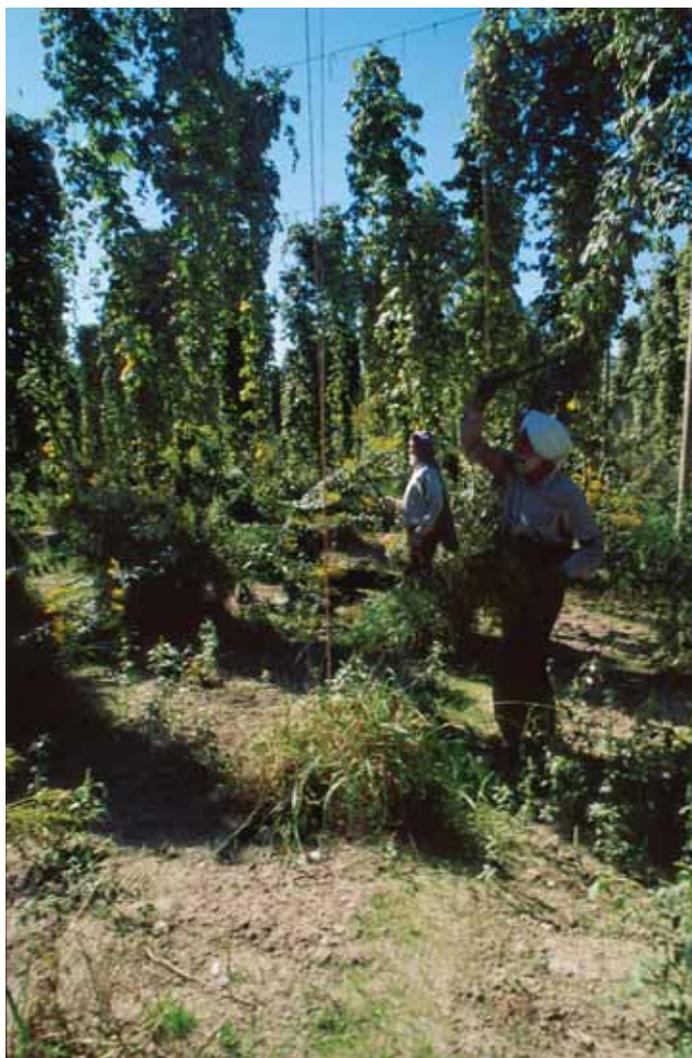
ana) also acts on the adenosine receptors. It works as an antagonist—inhibiting adenosine from binding to the receptor and inducing sleep. As a result, caffeine causes CNS arousal. The excitation produced by caffeine is most pronounced 1-3 hours after consumption. A study conducted in 1929 suggests that the caffeine excitation might be blocked by simultaneous administration of valerian. Modern technology enables this early finding to be evaluated and validated. The present study evaluated the competition between the compounds in a valerian/hops extract and caffeine for CNS adenosine binding sites. The goal was to better understand the mechanism of action of valerian/hops extract.

Healthy men (N = 48) participated in this randomized, placebo-controlled, blinded study approved by the Hessen Medical Association (Germany). The subjects did not use coffee, nicotine, or CNS drugs; they had no history of psychiatric and/or neurological diseases, and no drug, alcohol, or caffeine abuse. Subjects received either 6 tablets of placebo, 6 tablets of valerian/hops extract (Ze 91019 by Max Zeller AG, Romanshorn, Switzerland; imported and marketed as Alluna® Sleep in the U.S. by Enzymatic Therapy, Green Bay, WI), or 2 tablets of valerian/hops extract and 4 tablets of placebo. Each active tablet contained 250 mg valerian extract and 60 mg hops extract, both standardized by a defined manufacturing procedure. Simultaneously, the subjects received 200 mg caffeine (Coffeinum® N 0.2, Merck, Germany). An electroencephalogram (EEG), which is placed on the head, was used to record CNS activation.

The caffeine arousal effect was dose-dependently neutralized by oral administration of the valerian/hops extract. The full dose of valerian/hops (6 tablets) inhibited, rather than reduced (2 tablets), the caffeine-induced arousal. Valerian had an early action—within one hour the full dose had neutralized the caffeine. This suggests that valerian might induce sleep by activating adenosine receptors.

The authors conclude that valerian/hops extract acts as a sleep aid by suppressing arousal via a central adenosine-mediated mechanism. Also, the onset of action is relatively fast. Since only men and non-coffee drinkers were studied, the onset of action and efficacy may be different in women and in habitual coffee or tea drinkers. 🌿

—Heather S. Oliff, PhD



Hops *Humulus lupulus*. Seiks cut hop vines for mechanical harvest in British Columbia. Photo © 2005 stevenfoster.com

*ana officinalis* L., Valerianaceae) and hops (*Humulus lupulus* L., Cannabaceae) are used as sleep aids. Valerian contains constituents that can bind to the adenosine receptor. This enables some of these valerian compounds, and/or their metabolites, to act like adenosine in the brain. Their action resembles that of a “partial agonist” in that they do not stimulate the receptor as fully as adenosine itself.

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