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VALERIAN: HOW A ROOT MAY HELP NIP INSOMNIA AND ANXIETY IN THE BUD

STEVEN P. ADAMS

Department of Biology and the James C. Parks Herbarium, Millersville University of Pennsylvania, PO Box 1002, Millersville, Pennsylvania, 17551, United States of America

The Valerian plant, *Valeriana officinalis*, is an herbaceous, flowering, perennial plant usually boasting inflorescences of pink or white flowers that release a sweet scent when in bloom during the summer months (Fig 1). It is also commonly referred to as “garden valerian” to differentiate between it and other members of the genus. The name Valerian is thought to be derived from the Latin verb *valere*, meaning to be strong or healthy, and is believed to refer primarily to the typically robust odor produced from oils in the plants’ roots. Valerian is native to Eurasia, although it is frequently cultivated as a garden plant that sometimes escapes and can be found wild in the United States, including Pennsylvania (Rhoads and Block 2007).

Valeriana officinalis belongs to the genus *Valeriana*, which includes approximately 200 named species found primarily in temperate regions around the world (Mabberley 1997). The family Valerianaceae includes 13 genera and 350 species. The family is widely distributed, but with centers of taxonomic diversity in the Mediterranean and temperate Asia, as well as great morphological diversity in the Andes. The family is poorly represented throughout Africa and tropical Asia, and entirely absent from Australia (Heywood 2007). In Pennsylvania, there occur five species of the family in the wild: these

include two species of *Valeriana*, the non-native *V. officinalis* and native *V. pauciflora*, and three species of *Valerianella*, the natives *Valerianella chenopodiifolia* and *Valerianella umbilicata*, as well as the non-native *Valerianella locusta* (Rhoads and Block 2007). Above the family, valerian is a member of the order Dipsacales, which includes members of other families that are familiar to us, such as honeysuckles (species of the genus *Lonicera*) and viburnums (species of the genus *Viburnum*).

MEDICINAL VALUE

Valeriana officinalis has had a long history of human usage which continues through present time. In Medieval Sweden it played a role in courtship rituals, where it was sometimes placed within the wedding clothes of grooms to ward off the envy of the elves (Thorpe 1851). More practically, flower extracts began to be employed in perfumes throughout the 16th century and still serve that purpose today. There also are written accounts that, during this time, the Anabaptist reformer, Pilgram Marpeck would prescribe teas of steeped valerian to ailing women. However, its usage as a medicinal herb has been diverse and extends much further back into human history (Bergsten 1958). It has seen such use since the



Fig 1. Illustration of the valerian, *Valeriana officinalis*, from Köhler (1887). For readers with black-and-white printers, please note that this figure appears in color in the electronic version of this article.

time of Hippocrates, forefather of contemporary medicine, in the times of ancient Greece. Its ability to serve as a remedy for insomnia also was later described by Galen, another Greek physician, who treated patients during the time of the Roman Empire (Jarema 2008). Today, preparations of valerian root are widely available as herbal and dietary supplements employed primarily in the treatment of insomnia and anxiety due to the sedative and anxiety-relieving properties associated with the compounds stored within, but also for the relief of pain and its anti-convulsive effects.

The medicinal effects of valerian root extracts stem from the many chemical constituents that are produced by the plant, which tend to have milder effects than synthetic alternatives. Over 150 compounds are produced by valerian, many of which are physiologically active (Patocka and Jakl 2010). Of these, the known pharmacologically active chemicals present in extracts include alkaloids, terpenes, organic acids, valepotriates, and flavones. From this selected group, the sedative effects of the plant are largely attributed to the valepotriates, principally valtrate and isovaltrate. Additionally, valerenic acid and its derivatives play a major role in potentiating the sedative effects.

The methods by which these plant compounds produce the sedative, anxiety-relieving, anti-convulsive, and pain-relieving effects remain largely unknown. Much research has been devoted to exploring the interaction of these compounds with the gamma-aminobutyric acid (GABA) neurotransmitter pathway, the same pathway influenced by synthetic sedatives and sleep aids. Through this research, an association between the various components of valerian extracts, mainly valerenic acid, and the GABA_A receptor has been discovered (Benke et al. 2009). However, the particulars of this interaction remain a mystery beyond a notable effect on increasing the physiological response to GABA, which is the neurotransmitter responsible for the inhibition of neuronal excitability and signal transduction (Watanabe et al. 2002).

Given the depressant effects of valerian root extract preparations on the nervous system,

some caution must be exercised in their use. The potential for interactions with other depressant substances is high and therefore usage in conjunction with alcohol, benzodiazepines, and barbiturates should be carefully monitored (Miller 1998). Because these substances can act to induce sleepiness and drowsiness as their primary effect or as a side effect, valerian can act to exacerbate these effects, leading to increased risk of falling asleep. Additionally, as with all chemical compounds, the risk of allergic reaction exists and if a history of allergic reaction with plants and plant extracts exists, a physician should be consulted before use to ensure no dangerous reactions will occur as a result of its use.

Preparations of valerian root are widely available for public purchase as herbal dietary supplements and are marketed largely as herbal sleep aids. Bottles containing anywhere from 50 to 100 capsules of root extract can be found in health food stores, nutrition centers such as GNC, or chain retail stores such as Wal-Mart. Liquid extracts, raw herbal powders, herbal teas, and herbal preparations including other herbal sleep aids also are available but are seen more often at specialty markets and online retailers. Prices for the widely available extract capsules vary depending upon the number of capsules included in each bottle as well as the brand and retailer. Costs per 100 capsules can range from \$4 to \$20 based upon brand and retailer. It is also important to note that these preparations can come in both a standardized and non-standardized whole-herb form. Standardized extracts are quality controlled to ensure a guaranteed amount of particular components that is consistent across all batches. This is often the preferred form to purchase because it eliminates the variability present in other iterations and provides a consistent dosage per capsule. Due to the increased precautions taken to ensure quality, standardized extracts tend to cost slightly more than whole-herb preparations.

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HOW TO CITE THIS ARTICLE

Adams SP. 2014. Valerian: How a root may help nip insomnia and anxiety in the bud. *Parksia* 3: 14-18. Available at <http://herbarium.millersville.edu>.

Published May 5, 2014

PARKSIA

Editor

Christopher R. Hardy

James C. Parks Herbarium, Department of Biology, Millersville University of Pennsylvania, PO
Box 1002, Millersville, Pennsylvania, 17551, United States of America

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