

Peaceful Nights™ Product Science – Valerian Abstract & Monographs

{Note: the underlined sections within the text of the abstracts is highlighted for emphasis by us, not the authors}

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Critical evaluation of the effect of valerian extract on sleep structure and sleep quality.

Donath F, Quispe S, Diefenbach K, Maurer A, Fietze I, Roots I.

Institute of Clinical Pharmacology, Charité University Medical Center, Humboldt University of Berlin, Germany.

A carefully designed study assessed the short-term (single dose) and long-term (14 days with multiple dosage) effects of a valerian extract on both objective and subjective sleep parameters. The investigation was performed as a randomised, double-blind, placebo-controlled, cross-over study. Sixteen patients (4 male, 12 female) with previously established psychophysiological insomnia (ICSD-code 1.A.1.), and with a median age of 49 (range: 22 to 55), were included in the study.

The main inclusion criteria were reported primary insomnia according to ICSD criteria, which was confirmed by polysomnographic recording, and the absence of acute diseases. During the study, the patients underwent 8 polysomnographic recordings: i.e., 2 recordings (baseline and study night) at each time point at which the short and long-term effects of placebo and valerian were tested. The target variable of the study was sleep efficiency. Other parameters describing objective sleep structure were the usual features of sleep-stage analysis, based on the rules of Rechtschaffen and Kales (1968), and the arousal index (scored according to ASDA criteria, 1992) as a sleep microstructure parameter. Subjective parameters such as sleep quality, morning feeling, daytime performance, subjectively perceived duration of sleep latency, and sleep period time were assessed by means of questionnaires.

After a single dose of valerian, no effects on sleep structure and subjective sleep assessment were observed. After multiple-dose treatment, sleep efficiency showed a significant increase for both the placebo and the valerian condition in comparison with baseline polysomnography. We confirmed significant differences between valerian and placebo for parameters describing slow-wave sleep. In comparison with the placebo, slow-wave sleep latency was reduced after administration of valerian (21.3 vs. 13.5 min respectively, $p < 0.05$). The SWS percentage of time in bed (TIB) was increased after long-term valerian treatment, in comparison to baseline (9.8 vs. 8.1% respectively, $p < 0.05$). At the same time point,

a tendency for shorter subjective sleep latency, as well as a higher correlation coefficient between subjective and objective sleep latencies, were observed under valerian treatment. Other improvements in sleep structure - such as an increase in REM percentage and a decrease in NREM1 percentage - took place simultaneously under placebo and valerian treatment. A remarkable finding of the study was the extremely low number of adverse events during the valerian treatment periods (3 vs. 18 in the placebo period). In conclusion, treatment with a herbal extract of radix valerianae demonstrated positive effects on sleep structure and sleep perception of insomnia patients, and can therefore be recommended for the treatment of patients with mild psychophysiological insomnia.

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Monograph. Valeriana officinalis. *Alt Med Rev.* 2004;9(4):438-441.

While valerian is the common name for over 250 species of plants of the genus Valeriana (Valerianaceae), Valeriana officinalis is the most common species found in Western preparations. The valerian root contains more than 150 constituents that have been identified. Some of the constituents include valepotriates (notably valtrate and dihydrovaltrate) and volatile oils (valeranone, valerenal, and valerenic acid). Free amino acids such as gamma-aminobutyric acid (GABA), tyrosine, arginine, and glutamine are also present. The valepotriates were once thought to be the sole active component. However, other components such as the metabolism product, the baldrinals, are thought to have therapeutic value. Due to the variation in content and composition as well as breakdown of some constituents, valerian standardization has been difficult.

Valerian is employed as a sedative, sleep aid, and gastrointestinal spasmolytic. In a double-blind trial, adults placed in an experimental situation of social stress reported a reduction of anxiety when they had been given valerian beforehand. Valerian is also used for the treatment of insomnia. Four placebo-controlled studies have clearly demonstrated the effectiveness of valerian in the treatment of insomnia. Participants reported a reduction in the amount of time it took to fall asleep as well as an improvement in sleep quality. Valerian is traditionally used in the treatment of intestinal spasms, colic, and "nervous stomach."

According to this review, the essential oils in valerian appear to be responsible for its sedative activity, while the valepotriates exert an effect on the autonomic nervous system. The specific mechanism of valerian's actions is unknown. This is partly due to the interaction of the many components of valerian. One such interaction is with neurotransmitters such as GABA. Valerian's interaction produces a further release of GABA within the body and inhibits the breakdown of GABA in the brain, thus magnifying a sedative effect.

Valerian is on the FDA's Generally Recognized as Safe (GRAS) list. However, as with all herbals, care must be exercised to reduce toxicity due to valerian interactions with other agents. One in vitro study reported that high concentrations of valerian exhibited inhibition of CYP3A4. In addition, valerian was reported to prolong barbiturate-induced sleep in mice. Valerian also may be expected to potentiate the sedative effect of drugs such as midazolam that act at the GABA receptor. However, studies in German medical journals have shown that valerian does not amplify the negative effects of alcohol on driving performance with combined use.

Dosage: In general, insomnia treatment ranges from 300-600 mg of valerian before bedtime, which is equivalent to 2-3 g (~2 teaspoons) of dried valerian root steeped covered for 15 minutes. When using tincture, 2.5-5 mL is needed. Residual daytime sedation has been reported with daily dosages of 900 mg of valerian. — Heather S. Oliff, PhD

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AMERICAN BOTANICAL COUNCIL - Herbal Medicine Review

Valerian root

Latin Name: *Valeriana officinalis* **Pharmacopeial Name:** Valerianae radix **Other Names:** garden valerian, Mexican valerian, garden heliotrope, Pacific valerian, Indian valerian

Overview

Valerian is an extremely polymorphous perennial herb represented by a complex of sub-species with natural populations dispersed over temperate and sub-polar Eurasian zones, naturalized in northeastern America, now extensively cultivated in Holland, Belgium, France, Germany, eastern Europe, Japan, and the United States (Bradley, 1992; Wichtl and Bisset, 1994). New sub-species evolve by the mechanism of polyploidy (changes in chromosome number). Twelve mainly European sub-species, such as *exaltata* (diploid), *nitida* (tetraploid), and *procurrens* (octaploid), and some transitional types have been defined (Bradley, 1992; Titz et al., 1982, 1983). Valerian is one of Germany's most important medicinal plant crops (Lange and Schippmann, 1997). The material of commerce is obtained from Belgium and France, the former U.S.S.R., and China (BHP, 1996; Leung and Foster, 1996; Wichtl and Bisset, 1994).

Its modern day therapeutic uses in Germany and the United States stem from traditional Greek medicine, originally documented by Hippocrates (ca. 460–377

B.C.E.) and later by Dioscorides (first century C.E.), author of *De Materia Medica*. Galen (ca. 130–200 C.E.) prescribed valerian for insomnia. Dioscorides and Galen referred to the drug as "phu" as an expression of aversion from its offensive odor. The current genus name, *Valeriana*, first came into use around the tenth century C.E. In the medical texts of that period, the names "Valeriana," "phu," and "fu" are used synonymously (Bown, 1995; Brown, 1995; Grieve, 1979). Although the sedative properties of valerian have been recognized for at least two thousand years, the constituents responsible for this effect and their mode of action remain unknown, despite considerable pharmacological and clinical studies confirming the empirically recognized sedative effect (ESCOP, 1997; Tyler, 1998). Today, valerian root (*Valeriana officinalis* L.s.l.) is official in the national pharmacopeias of Austria, France, Germany, Great Britain, Hungary, Russia, Switzerland, and the *European Pharmacopoeia*, among others (BP, 1988; Bradley, 1992; DAB, 1997; Newall et al., 1996; AB, 1981; Ph.Eur.3, 1997; Ph.Fr.X, 1990; Ph.Helv.VII, 1987; Ph.Hg.VII, 1986; USSR X, 1973; Wichtl and Bisset, 1994). Japanese valerian root (*V. fauriei* Briquet) is official in the national pharmacopeia of Japan (JP XII, 1993). Indian valerian root (*V. jatamansi* Jones; syn. *V. wallichii* DC) is used in Indian Ayurvedic, Tibetan Buddhist, and traditional Chinese medicines (Clifford, 1984; Kapoor, 1990; Leung and Foster, 1996; Nadkarni, 1976).

In Germany, valerian is official in the *German Pharmacopoeia*, approved in the Commission E monographs, and licensed as both a standard medicinal tea infusion and as a standard medicinal tincture, 66.3 vol.% alcohol (BAnz, 1998; Bradley, 1992; Braun et al., 1997; DAB, 1997; Meyer-Buchtela, 1999; Schilcher, 1997; Wichtl and Bisset, 1994). It is used by itself in fresh pressed juice, drops, tea, and coated tablets (e.g., Baldrian-Pflanzensaft Nerventrost® and Valdispert® Drage) but more often used in many sedative and nerve teas (e.g., Nerven- und Schlaf-Tee N and Species Sedativae AB). Valerian is used in approximately sixty hypnotic/sedative drugs (Kneipp®, 1996; Schilcher, 1997; Wichtl and Bisset, 1994). For example, valerian is a main component in the licensed drug Beruhigungstee I (Sedative Tea I), composed of 40% valerian root, 20% hop strobile, 15% lemon balm leaf, 15% peppermint leaf, and 10% orange peel (Braun et al., 1997). It is also a main component in an approved Commission E "Sedative Tea," composed of 40% valerian root, 30% passion flower herb, and 30% lemon balm leaf (BAnz, 1998; Schilcher, 1997). In German pediatric medicine, valerian aqueous infusions, alcoholic tinctures diluted in milk or fruit juice, and cold macerates are used. In popular medicine, the cold macerate is considered the most efficacious (Schilcher, 1997). In the United States, valerian root is widely used in sleep aids and sedatives in alcoholic tincture, aqueous infusion, and capsules and tablets. Crude valerian root, fluid extract, alcoholic tincture, and ammoniated tincture were formerly official in the United States Pharmacopoeia and National Formulary (Grieve, 1979; Leung and Foster, 1996).

In 1992, the European-American Phytomedicines Coalition (EAPC) formally

petitioned the U.S. Food and Drug Administration to review and approve valerian as an over-the-counter drug in the night-time sleep aid category (Pinco and Israelsen, 1994). At the time of publication of this book (Fall, 1999) the FDA had not yet responded to this petition. In 1998, the USP stated in a consumer information bulletin that the USP Advisory Panel did not recommend or support the use of valerian because it believed that there have not been an adequate number of clinical studies of sufficient size or duration to adequately support valerian's reported uses, although its overall safety was recognized by the USP (USP, 1998).

Modern human studies have investigated valerian's use by itself and in combination with other herbs for a variety of conditions: in combination with hops (*Humulus lupulus*) as an alternative to benzodiazepine to treat nonchronic and non-psychiatric sleep disorders (Schmitz and Jackel, 1998), its use in combination with hops as a sedative to treat disturbed sleep (M ller-Limmroth and Ehrenstein, 1977), its effects in combination with hops on vigilance (Gerhard et al., 1996), its use in combination with St. John's wort (*Hypericum perforatum*) as an alternative to diazepam to treat symptoms of anxiety (Panijel, 1985), its use in combination with camphor (*Cinnamomum camphora*), night-blooming cereus (*Echinocereus grandiflorus*), and hawthorn (*Crataegus* spp.) to treat functional cardiovascular disorders, hypotension, or meteorosensitivity (Busanny-Caspari et al., 1986), its effect on sleep latency and sleep quality in patients suffering from insomnia (Kamm-Kohl et al., 1984; Leathwood et al., 1982; Leathwood and Chauffard, 1982–1983, 1985), its effectiveness and tolerability in patients with insomnia (Vorbach et al., 1996), its effect on poor sleep (Lindahl and Lindwall, 1989), its effect on human sleep in healthy, young subjects (Balderer and Borbely, 1985), its effect on sleep polygraphy in poor sleepers (Schulz et al., 1994), its ability to treat nervous sleep disorders (Schmidt-Voigt, 1986), and its ability to treat control disorders of the autonomic nervous system (Boeters, 1969).

One randomized, double-blind, controlled clinical trial in parallel group design investigated the efficacy and tolerability of a hop-valerian preparation compared with a benzodiazepine preparation in patients suffering from sleep disorders according to DSM-IV criteria. (The DSM-IV is the *Diagnostic and Statistical Manual of Mental Disorders*. 1995. Washington: American Psychiatric Press). Sleep quality, fitness, and quality of life were determined by psychometric tests, psychopathologic scales, and sleep questionnaires at the beginning of the therapy, end of therapy (duration two weeks), and one week after therapy. The patient's state of health improved during therapy with both substances and a deterioration after cessation was reported for both preparations. Withdrawal symptoms were only reported in the benzodiazepine group. The authors concluded that the hop-valerian preparation in an appropriate dose is a sensible alternative to benzodiazepine for the treatment of nonchronic and non-psychiatric sleep disorders (Schmitz and Jackel, 1998).

In one double-blind, placebo-controlled, crossover study with 128 volunteers, the effects of a valerian root aqueous dry extract (approx. 3:1) on sleep latency and sleep quality were investigated. For nine nights, 400 mg of valerian extract or placebo were taken in crossover design. Compared to placebo, the extract produced significant improvements in sleep latency and in sleep quality, particularly in relatively poor sleepers (ESCOP, 1997; Leathwood and Chauffard, 1982–1983; Leathwood et al., 1983).

In a double-blind, placebo-controlled randomized study, 27 adult males and females suffering from insomnia compared a valerian extract preparation (ValerinaNatt[®]) with placebo on successive nights. ValerinaNatt[®] tablets (Pharbio Medical Sverige, Oslo, Sweden) contain 100 mg valerian extract (4:1), corresponding to 400 mg dried root, 45 mg hops extract (8.5:1), corresponding to 382 mg dried strobile, 25 mg lemon balm leaf (*Melissa officinalis*) extract (6.5:1), corresponding to 162 mg dried leaf, and 275 mg of excipient materials. The investigators stated that the valerian root extract, contained in this preparation, is composed mainly of sesquiterpenes as opposed to valepotriates. The subjects ingested either 400 mg of drug (4 tablets) or placebo each night for two nights. The results were based on a subjective evaluation method using a self-reporting scale. By comparison with placebo, the valerian preparation demonstrated a good and statistically significant effect on poor sleep ($p < 0.001$). In the drug group, 89% reported improved sleep, 78% rated the valerian preparation better than placebo, and 44% reported perfect sleep. No adverse side effects were reported for either group (ESCOP, 1997; Lindahl and Lindwall, 1986, 1989; NetDoktor.dk, 1999; Pharbio Medical, 1999).

In a double-blind, placebo-controlled, parallel-group study, the effects of acute and repeated treatment with a valerian extract preparation (Valdispert[®] forte) were studied in 14 elderly female patients suffering from insomnia over a seven day period. Valdispert[®] forte coated tablets (Solvay Arzneimittel, Hannover, Germany) contain 45 mg valerian root dry aqueous alkaline extract (5–6:1), corresponding to 225–270 mg of dried root, and are standardized to contain 0.05 mg valerenic acid and acetoxyvalerenic acid. A daily dose of 405 mg of the valerian preparation (3 tablets, three times daily) was administered to eight subjects and the other six received placebo. Objective and subjective sleep parameters were investigated using methods including polysomnography for recording the electroencephalogram (EEG) and a self-reporting scale. Polysomnography was conducted on three nights, at one-week intervals (N0, N1, N2). N0 was one week prior to treatment, N1 was one hour before first night of treatment, and N2 was on the last night of treatment. Increased short-wave-sleep (SWS) was reported for the valerian group as well as a decrease in sleep stage 1. Rapid eye movement (REM) sleep was unaltered. Based on the EEG data, there were no significant changes in sleep latency, waking time, or sleep quality. The authors hypothesized that the valerian extract preparation increased SWS in subjects with low baseline values, which implies that sleep

quality may be improved only under certain conditions (ESCOP, 1997; NetDoktor.dk, 1999; Schulz et al., 1994; Solvay Pharma, 1998; Upton, 1999).

The approved modern therapeutic applications for valerian appear to be supportable based on its history of use in well established systems of traditional and conventional medicine,extensive phytochemical investigations, many *in vitro* and *in vivo* pharmacological experiments in animals,and some human clinical studies.

Pharmacopeial grade valerian root consists of the rhizome, root, and stolons of *V. officinalis* L.s.l., dried carefully at a temperature below 40°C. The fresh undried root must contain not less than 5% (v/m) volatile oil and the dried pulverized root must contain not less than 15% water- and alcohol-soluble (40% water and 60% ethanol) extractive. Botanical identity must be confirmed by thin-layer chromatography (TLC), macroscopic and microscopic examinations, and organoleptic evaluation (DAB 10, 1993; Ph.Eur.3, 1997; Wichtl and Bisset, 1994). The ESCOP valerian root monograph requires that the material comply with the *European Pharmacopoeia* (ESCOP, 1997).

Pharmacopeial grade valerian root dry extract is composed of the native extractive yielded from DAB-grade valerian root manufactured in accordance with the DAB Extracta monograph. The drug-to-extract ratio ranges from 3:1 to 6:1 (w/w). Identification is confirmed with TLC and organoleptic evaluation (DAB, 1997).

Description

Valerian root, consisting of fresh underground plant parts, or parts carefully dried below 40°C, of the species *V. officinalis* L. [Fam. Valerianaceae] and its preparations in effective dosage. The roots contain essential oil with monoterpenes and sesquiterpenes (valerenic acids). Preparations of valerian used therapeutically (infusion, extract, fluidextract, and tincture) no longer contain the thermolabile and chemically unstable valepotriates.

Chemistry and Pharmacology

Constituents include valtrates, didrovaltrates, and isovaltrates (Leung and Foster, 1996). Other constituents include 0.4–1.4 % monoterpenes and sesquiterpenes, caffeic, gamma-aminobutyric (GABA), and chlorogenic acids, *b*-sitosterol, methyl,2-pyrrolketone, choline, tannins, gum, alkaloids, and resin (Bradley, 1992; ESCOP, 1997; Newall et al., 1996).

The Commission E reported sedative and sleep-promoting activities.

Uses

The Commission E approved the internal use of valerian for restlessness and sleeping disorders based on nervous conditions.

Valerian has been reported to relieve pain, reduce spasms, and stimulate appetite (Newall et al., 1996).

The World Health Organization notes the following uses for valerian that are supported by clinical data: mild sedative and sleep-promoting agent, often used as a milder alternative or a possible substitute for stronger synthetic sedatives, e.g., benzodiazepines, in the treatment of states of nervous excitation and anxiety-induced sleep disturbances (WHO, 1999).

Contraindications

None known.

Side Effects

None known.

Use During Pregnancy and Lactation

No restrictions known.

Interactions with Other Drugs

None known.

Dosage and Administration

Unless otherwise prescribed:

Infusions: 2-3 g of fresh or dried root per cup, once to several times per day.

Tincture: 1/2-1 teaspoon (1-3 ml), once to several times per day.

Extracts: Amount equivalent to 2-3 g of preparation, once to several times per day.

External use: 100 g for one full bath; equivalent preparations.

Infusion: 2-3 g in 150 ml water.

References

Balderer, G. and A.A. Borbely. 1985. Effect of valerian on human sleep. *Psychopharmacology* (Berl) 87(4):406-409.

BAnz. See *Bundesanzeiger*.

Boeters, U. 1969. Behandlung vegetativer Regulationsstörungen mit Valepotriaten (Valmane) [Treatment of control disorders of the autonomic nervous system with valepotriate]. *MMW* 111(37):1873-1876.

Bown, D. 1995. *Encyclopedia of Herbs and Their Uses*. New York: DK Publishing, Inc. 367.

Bradley, P.R. (ed.). 1992. *British Herbal Compendium*, Vol. 1. Bournemouth: British Herbal Medicine Association.

Braun, R. et al. 1997. *Standardzulassungen für Fertigarzneimittel Text and Kommentar*. Stuttgart: Deutscher Apotheker Verlag.

British Herbal Pharmacopoeia (BHP). 1996. Exeter, U.K.: British Herbal Medicine Association.

British Pharmacopoeia (BP). 1988. (With subsequent Addenda up to 1992.) London: Her Majesty's Stationery Office.

Brown, D.J. 1995. Valerian: Clinical Overview. *Townsend Lett Doctors* May:150-151.

Bundesanzeiger (BAnz). 1998. Monographien der Kommission E (Zulassungs- und Aufbereitungskommission am BGA für den humanmed. Bereich, phytotherapeutische Therapierichtung und Stoffgruppe). Kln: Bundesgesundheitsamt (BGA).

Busanny-Caspari, E. et al. 1986. Indikationen: Funktionelle Herzbeschwerden, Hypotonie und Wetterfühligkeit. *Therapiewoche* 36:2545-2550.

Clifford, T. 1984. *Tibetan Buddhist Medicine and Psychiatry*. York Beach, ME: Samuel Weiser, Inc. 171186.

Deutsches Arzneibuch, 10th ed. 3rd suppl. (DAB 10). 1993. Stuttgart: Deutscher Apotheker Verlag.

Deutsches Arzneibuch (DAB 1997). 1997. Stuttgart: Deutscher Apotheker Verlag.

ESCOP. 1997. "Valerianae radix." *Monographs on the Medicinal Uses of Plant Drugs*. Exeter, U.K.: European Scientific Cooperative on Phytotherapy.

Europäisches Arzneibuch, 3rd ed. (Ph.Eur.3). 1997. Stuttgart: Deutscher Apotheker Verlag.

Gerhard, U., N. Linnenbrink, C. Georghiadou, V. Hobi. 1996. [Vigilance-decreasing effects of two plant-derived sedatives] [In German]. *Schweiz Rsch Med* 85(15):473481.

Grieve, M. 1979. *A Modern Herbal*. New York: Dover Publications, Inc.

Japanese Pharmacopoeia, 12th ed. (JP XII). 1993. Tokyo: Government of Japan Ministry of Health and Welfare Yakuji Nippo, Ltd. 151152.

Kamm-Kohl, A.V., W. Jansen, P. Brockmann. 1984. Moderne Baldriantherapie gegen nervse Strungen im Senium. *Med Welt* 35:14501454.

Kapoor, L.D. 1990. *Handbook of Ayurvedic Medicinal Plants*. Boca Raton: CRC Press.

Kneipp, 1996. *Wegweiser zu den Kneipp Mitteln* [Guide to Kneipp Remedies]. W rzburg: Sebastian Kneipp Gesundheitsmittel-Verlag. 8991.

Lange, D. and U. Schippmann. 1997. *Trade Survey of Medicinal Plants in Germany A Contribution to International Plant Species Conservation*. Bonn: Bundesamt f r Naturschutz. 2934.

Leathwood, P.D. and F. Chauffard. 19821983. Quantifying the effects of mild sedatives. *J Psychiatr Res* 17(2):115122.

. 1985. Aqueous extract of valerian reduces latency to fall asleep in man. *Planta Med* 51(2):144148.

Leathwood, P.D., F. Chauffard, E. Heck, R. Munoz-Box. 1982. Aqueous extract of valerian root (*Valeriana officinalis* L.) improves sleep quality in man. *Pharmacol Biochem Behav* 17(1):6571.

Leathwood, P.D., F. Chauffard, R. Munoz-Box. 1983. Effect of *Valeriana officinalis* L. on subjective and objective sleep parameters. Sixth Eur Congr Sleep Res, Zürich (Basel: Karger).

Leung, A.Y. and S. Foster. 1996. *Encyclopedia of Common Natural Ingredients Used in Food, Drugs, and Cosmetics*, 2nd ed. New York: John Wiley & Sons, Inc.

Lindahl, O. and L. Lindwall. 1986. God smneffekt av valeriana vid jmfrelse med placebo [In Swedish]. *Lkartidningen* 83(44)36743675.

.1989. Double blind study of a valerian preparation. *Pharmacol Biochem Behav* 32(4):10651066.

Meyer-Buchtela, E. 1999. *Tee-Rezepturen Ein Handbuch f r Apotheker und rzte*. Stuttgart: Deutscher Apotheker Verlag.

Mller-Limmroth, W. and W. Ehrenstein. 1977. Untersuchungen ber die Wirkung von Seda-Kneipp auf den Schlaf schlafgstorter Menschen. *Med Klin* 72:11191125.

Nadkarni, K.M. 1976. *Indian Materia Medica*. Bombay: Popular Prakashan. 12601261.

NetDoktor.dk. 1999. Naturlaegemidler. Denmark: NetDoktor.dk. Available at: www.netdoktor.dk/naturlaegemidler/fakta/valerianen.htm

Newall, C.A., L.A. Anderson, J.D. Phillipson. 1996. *Herbal Medicines: A Guide for Health-Care Professionals*. London: The Pharmaceutical Press.

sterreichisches Arzneibuch, Vols. 12. (AB). 1981. Wien: Verlag der sterreichischen Staatsdruckerei.

Panijel, M. 1985. Die Behandlung mittelschwerer angstzustnde. *Therapiewoche* 41:46594668.

Pharbio Medical. 1999. Vra produkter. Oslo, Sweden: Pharbio Medical AS. Available at: www.pharbio.cederroth.com

Ph.Eur.3. See *Europäisches Arzneibuch*.

Pharmacope Franaise Xe dition (Ph.Fr.X). 19831990. Moulins-les-Metz: Maisonneuve S.A.

Pharmacopoeia Helvetica, 7th ed. Vol. 14.(Ph.Helv.VII). 1987. Bern: Office Central Fdral des Imprints et du Matriel.

Pharmacopoea Hungaric, 7th ed. (Ph.Hg.VII). 1986. Budapest: Medicina Knyvkiad.

Pinco, R.G. and L.D. Israelson. 1994. European-American Phytomedicines Coalition Citizen Petition to Amend FDA's Monograph on Nighttime Sleep-aid Drug Products for Over-the-Counter ("OTC") Human Use to Include Valerian. Jun 7.

Schilcher, H. 1997. *Phytotherapy in Paediatrics: Handbook for Physicians and Pharmacists*. Stuttgart: Medpharm Scientific Publishers. 59, 62.

Schmidt-Voigt, J. 1986. Die Behandlung nervser Schlafstrungen und innerer Unruhe mit einem rein pflanzlichen Sedativum. *Therapiewoche* 36:663667.

Schmitz, M. and M. Jackel. 1998. [Comparative study for assessing quality of life of patients with exogenous sleep disorders (temporary sleep onset and sleep interruption disorders) treated with a hops-valerian preparation and a benzodiazepine drug] [In German]. *Wien Med Wochenschr* 148(13):291298.

Schulz, H., C. Stolz, J. M Iler. 1994. The effect of valerian extract on sleep polygraphy in poor sleepers: A pilot study. *Pharmacopsychiat* 27(4):147151.

Solvay Pharma. 1998. Beruhigungsmittel and Antidepressiva. Hannover, Germany: Solvay Arzneimittel. Available at: www.solvay.com/de/gesundh.htm

State Pharmacopoeia of the Union of Soviet Socialist Republics, 10th ed. (USSR X) 1973. Moscow: Ministry of Health of the U.S.S.R.

Titz, W. et al. 1983. [Valepotriates and essential oil of morphologically and karyologically defined types of *Valeriana officinalis* s.l. II. Variation of some characteristic components of the essential oil] [In German]. *Sci Pharm* 51:6386.

Titz, W., J. Jurenitsch, E. Fitzbauer-Busch, E. Wicho, W. Kubelka. 1982. [Valepotriates and essential oil of morphologically and karyologically defined types of *Valeriana officinalis* s.l. I. Comparison of Valepotriate content and composition] [In German]. *Sci Pharm* 50:309324.

Tyler, V.E. 1998. In: Lawson, L.D. and R. Bauer (eds.). *Phytomedicines of Europe Chemistry and Biological Activity*. Washington, D.C.: American Chemical Society. 10.

Upton, R. (ed.). 1999. *Valerian Root Analytical, Quality Control, and Therapeutic Monograph*. Santa Cruz, CA: American Herbal Pharmacopoeia.

USP Drug Information (USP). 1998. Rockville, MD: U.S. Pharmacopoeial Convention. Available at: www.usp.org/did/mgraphs/botanica/valeria2.htm

USSR X. See *State Pharmacopoeia of the Union of Soviet Socialist Republics*.

Vorbach, E.U., R. Grtelmeyer, J. Br ning. 1996. Therapie von Insomnien: Wirksamkeit und Vertrglichkeit eines Baldrian-Prparates. *Psychopharmakotherapie* 3:109115.

Wichtl, M. and N.G. Bisset (eds.). 1994. *Herbal Drugs and Phytopharmaceuticals*. Stuttgart: Medpharm Scientific Publishers.

World Health Organization (WHO). 1999. "Valerianae radix." *WHO Monographs on Selected Medicinal Plants*, Vol. 1. Geneva: World Health Organization.

Additional Resources

Boss, R. et al. 1997. *Valeriana* species. In: De Smet, P.A., K. Keller, R. Hnsel, R.F. Chandler, (eds.). *Adverse Effects of Herbal Drugs*, Vol. 3. New York: Springer Verlag.

Bravo, S.Q. et al. 1996. Polysomnographic and subjective findings in insomniacs under treatment with placebo and valerian extract (LI 156). (Proceedings of the 2nd International Congress on Phytomedicine, Munich, Germany.) *Eur J Clin Pharmacol* 50(6):552.

Diefenbach, K. et al. 1997. Valerian effects on microstructure of sleep in insomniacs. (2nd Congress of the European Assoc. for Clinical Pharmacology and Therapeutics, Berlin, Germany, Sept. 1720.) *Eur J Clin Pharmacol* 52 (suppl.):A169.

Donath, F. and I. Roots.1996. Effects of valerian extract (Sedonium) on EEG power spectrum in male healthy volunteers after single and multiple application. (6th Annual Meeting of the German Society for Clinical Pharmacology and Therapeutics, Dresden, Germany, Sept. 57.) *Eur J Clin Pharmacol* 50(6):541.

DreBring, H., 1992. Insomnia: are valerian/balm combinations of equal value to Benzodiazepine? *Therapiewoche* 42:726.

Fauteck, J.D., B. Pietz, H. Winterhoff, W. Wittowski. 1996. Interaction of *Valeriana officinalis* with melatonin receptors: a possible explanation of its biological action. (Proceedings of the 2nd International Congress on Phytomedicine, Munich, Germany.)

Kohnen, R., W.D. Oswald. 1988. The effects of valerian, Propranolol and their combination on activation, performance and mood of healthy volunteers under social stress conditions. *Pharmacopsychiat* 21(6):447448.

Lindahl, O. and L. Lindwall. 1992. Double-blind study of valopotriates by hairy

root cultures of *Valeriana officinalis* var. *sambucifolia*. *Planta Med* 58(7):A614.

Quispe, B.S. et al. 1997. The influence of valerian on objective and subjective sleep in insomniacs. (2nd Congress of the European Assoc. for Clinical Pharmacology and Therapeutics, Berlin, Germany, Sept. 1720.) *Eur J Clin Pharmacol* 52 (suppl.):A170.

Sanner, B., A. Strum. 1997. Treatment of sleep disorders in the elderly. *DMW (Deutsche Medizinische Wochenschrift)* 122(5152):15991604.

Santos, M.S. et al. 1994. Synaptosomal GABA release as influenced by valerian root extract involvement of the GABA carrier. *Arch Int Pharmacodyn* 327(2):220231.

Santos, M.S. et al. 1994. The amount of GABA present in aqueous extracts of valerian is sufficient to account for [3H]GABA release in synaptosomes. *Planta Med* 60(5):475476.

Seifert, T. 1988. Therapeutic effects of valerian in nervous disorders: A field study. *Therapeutikon* 2(94).

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1) The Overview section is new information.

2) Description, Chemistry and Pharmacology, Uses, Contraindications, Side Effects, Interactions with Other Drugs, and Dosage sections have been drawn from the original work. Additional information has been added in some or all of these sections, as noted with references.

3) The dosage for equivalent preparations (tea infusion, fluidextract, and tincture) have been provided based on the following example:

- Unless otherwise prescribed: 2 g per day of [powdered, crushed, cut or whole] [plant part]
- Infusion: 2 g in 150 ml of water
- Fluidextract 1:1 (g/ml): 2 ml
- Tincture 1:5 (g/ml): 10 ml

4) The References and Additional Resources sections are new sections. Additional Resources are not cited in the monograph but are included for research purposes.

**CAUTION-DISCLAIMER: This information is for informational and educational purposes only. It has not been reviewed or approved by the Food & Drug Administration. It does not constitute competent, qualified professional advice for the diagnosis, treatment, cure, or prevention of any human disease or disorder. Consult your family healthcare professional before taking any products or other actions, based on this information, especially if you are currently taking prescription medication or you have been or are currently being treated for a serious illness, disease, or medical condition.*