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Passionflower

Updated: March 28, 2020.

OVERVIEW

Introduction

Passionflower is an extract of the flowers of the plant Passiflora incarnata that is claimed to have natural sedative properties and to be useful for treatment of anxiety and insomnia. Passionflower has not been implicated in causing serum enzyme elevations or clinically apparent liver injury.

Background

Passionflower is a flowering plant, extracts of which have been used as a mild sedative and sleeping aid. The genus Passiflora includes more than 500 species which typically have complex and unique structures and flowers, and are found throughout much of the world. Passiflora incarnata (maypop) is indigenous to the United States and Central and South America and was used by Native Americans to treat insomnia, hysteria, epilepsy and as a mild analgesic. Other species of Passiflora reportedly lack these medicinal effects. Passionflower contains several flavonoids (apigenin, benzoflavone and others), harmala alkaloids (hamaline, harmalol, harmine and harmol), coumarins, maltol, phytosterols and glycosides. Studies in animals suggest that extracts of passionflower have sedative, anxiolytic, analgesic and antispasmodic effects but the specific components responsible for these effects have not been defined. The herb is used most frequently as a mild sleeping medication, sedative, and treatment for gastrointestinal complaints often in the form of an herbal tea, but also in multiple herbal preparations, generally in combination with other agents including valerian, hops and lavender. Passionflower is also used in creams, lotions, soaps and cosmetics. Side effects of oral use are not common but can include dizziness, sedation, confusion and ataxia.

Hepatotoxicity

Despite widescale use, passionflower extracts have not been convincingly linked to instances of clinically apparent liver injury. However, there have been no placebo controlled and adequate sized trials with careful prospective assessment of adverse events and effects on laboratory test results.

Likelihood score: E (unlikely cause of clinically apparent liver injury).

Other Names: Apricot vine, Granadilla, Maypop, Passion vine

Drug Class: Herbal and Dietary Supplements

See also Drug Class: Sedatives and Hypnotics

PRODUCT INFORMATION

REPRESENTATIVE TRADE NAMES

Passionflower – Generic (OTC Products)

DRUG CLASS

Herbal and Dietary Supplements

SUMMARY INFORMATION

Fact Sheet at National Center for Complementary and Integrative Health

COMPLETE LABELING

Product labeling at DailyMed, National Library of Medicine, NIH

CHEMICAL FORMULA AND STRUCTURE

DRUG	CAS REGISTRY NUMBER	MOLECULAR FORMULA	STRUCTURE
Passionflower Extract	8057-62-3	Unspecified	No Structure

ANNOTATED BIBLIOGRAPHY

References updated: 28 March 2020

Zimmerman HJ. Unconventional drugs. Miscellaneous drugs and diagnostic chemicals. In, Zimmerman HJ. Hepatotoxicity: the adverse effects of drugs and other chemicals on the liver. 2nd ed. Philadelphia: Lippincott, 1999, pp. 731-4.

(Expert review of hepatotoxicity published in 1999; several herbals are discussed, including comfrey, Jin Bu Huan, germander, chaparral leaf, skullcap and valerian, but not passionflower).

Seeff L, Stickel F, Navarro VJ. Hepatotoxicity of herbals and dietary supplements. In, Kaplowitz N, DeLeve LD, eds. Drug-induced liver disease. 3rd ed. Amsterdam: Elsevier, 2013, pp. 631-58.

(Review of hepatotoxicity of herbal and dietary supplements [HDS]; passionflower is not discussed).

Passion flower. In, PDR for Herbal Medicines. 4th ed. Montvale, New Jersey: Thomson Healthcare Inc. 2007: pp. 634-5.

(Compilation of short monographs on herbal medications and dietary supplements).

Gyllenhaal C, Merritt SL, Peterson SD, Block KI, Gochenour T. Efficacy and safety of herbal stimulants and sedatives in sleep disorders. Sleep Med Rev. 2000;4:229–51. PubMed PMID: 12531167.

(Review of herbals used for sleep disorders; mentions that animal studies suggest that passionflower has sedative effects, but there has been little clinical study of their efficacy in humans).

Wheatley D. Medicinal plants for insomnia: a review of their pharmacology, efficacy and tolerability. J Psychopharmacol. 2005;19:414–21. PubMed PMID: 15982998.

(Review of herbals used to treat insomnia; mentions that there appears to be a complete lack of clinical research on passionflower).

Meolie AL, Rosen C, Kristo D, Kohrman M, Gooneratne N, Aguillard RN, Fayle R, et al; Clinical Practice Review Committee. American Academy of Sleep Medicine. Oral nonprescription treatment for insomnia: an evaluation of products with limited evidence. J Clin Sleep Med. 2005;1:173–87. PubMed PMID: 17561634.

(Systematic review of efficacy of nonprescription treatments for insomnia states that there is scientific evidence that passionflower has hypnotic efficacy and adverse effects including dizziness, confusion, and ataxia).

Ngan A, Conduit R. A double-blind, placebo-controlled investigation of the effects of Passiflora incarnata (passionflower) herbal tea on subjective sleep quality. Phytother Res. 2011;25:1153–9. PubMed PMID: 21294203.

(Crossover trial of 1 week course of passionflower vs placebo tea in 41 subjects found short term subjective improvement in sleep quality with the herbal tea; side effects were not mentioned).

Sarris J, Panossian A, Schweitzer I, Stough C, Scholey A. Herbal medicine for depression, anxiety and insomnia: a review of psychopharmacology and clinical evidence. Eur Neuropsychopharmacol. 2011;21:841–60. PubMed PMID: 21601431.

(Overview and summary of herbals used to treat anxiety, depression and insomnia; ranks passionflower and valerian as having evidence level "C" for efficacy in insomnia in humans; no mention of adverse events).

Drugs for insomnia. Treat Guidel Med Lett. 2012;10(119):57–60. PubMed PMID: 22777275.

(Guidelines for therapy of insomnia; mentions herbal products that are claimed to have sleep inducing effects including valerian root, kava, chamomile tea, passionflower, hops, lemon balm, lavender and skull cap, but that there is no convincing evidence for their efficacy and that the purity of commercially available, over-the-counter products is suspect).

Miroddi M, Calapai G, Navarra M, Minciullo PL, Gangemi S. Passiflora incarnata L.: ethnopharmacology, clinical application, safety and evaluation of clinical trials. J Ethnopharmacol. 2013;150:791–804. PubMed PMID: 24140586.

(Extensive and careful review of the history, chemistry, pharmacology, preclinical evaluation and clinical trials of passionflower concludes that its “supposed efficacy does not appear to be adequately corroborated by the literature”, but that it has a “good safety profile”, the shortcomings being small numbers of subjects and short durations of therapy, lack of placebo controls, and use of commercial combinations without documentation of purity or concentrations; no mention of effects on ALT levels or hepatotoxicity).

Maroo N, Hazra A, Das T. Efficacy and safety of a polyherbal sedative-hypnotic formulation NSF-3 in primary insomnia in comparison to zolpidem: a randomized controlled trial. Indian J Pharmacol. 2013;45:34–9. PubMed PMID: 23543804.

(Among 91 adults with insomnia treated with a fixed combination of valerian [300 mg], passionflower [80 mg] and hops [30 mg] or zopidem at bedtime for 2 weeks, sleep time and insomnia index improved similarly in both groups and there were no serious adverse events and “none of the laboratory parameters changed significantly from baseline” which included tests of “hepatorenal function”).

Navarro VJ, Barnhart H, Bonkovsky HL, Davern T, Fontana RJ, Grant L, Reddy KR, et al. Liver injury from herbals and dietary supplements in the U.S. Drug-Induced Liver Injury Network. Hepatology. 2014;60:1399–408. PubMed PMID: 25043597.

(Among 85 cases of HDS associated liver injury [not due to anabolic steroids] enrolled in a US prospective study between 2004 and 2013, passion flower was not implicated in any of the cases).

García-Cortés M, Robles-Díaz M, Ortega-Alonso A, Medina-Caliz I, Andrade RJ. Hepatotoxicity by dietary supplements: A tabular listing and clinical characteristics. Int J Mol Sci. 2016;17:537. PubMed PMID: 27070596.

(Listing of published cases of liver injury from HDS products, but does not list any attributed to passion flower).

Brown AC. Liver toxicity related to herbs and dietary supplements: Online table of case reports. Part 2 of 5 series. Food Chem Toxicol 2017; 107 (Pt A): 472-501.

(Description of an online compendium of cases of liver toxicity attributed to HDS products, passion flower is not listed or mentioned).

de Boer YS, Sherker AH. Herbal and dietary supplement-induced liver injury. Clin Liver Dis. 2017;21:135–49. PubMed PMID: 27842768.

(Review of the frequency, clinical features, patterns of injury and outcomes of HDS hepatotoxicity with specific mention of anabolic steroids, black cohosh, germander, green tea, kava, pyrrolizidine alkaloids and proprietary multiingredient dietary supplements [MIDS]; does not mention passion flower).

Mansoor K, Qadan F, Hinum A, Schneider C, Hechenbichler K, Schmidt M, Linsinger G, Matalka K. An open prospective pilot study of a herbal combination "Relief" as a supportive dietetic measure during alcohol withdrawal. Neuro Endocrinol Lett. 2018;39:1–8. PubMed PMID: 29604618.

(Among 32 patients hospitalized for alcohol withdrawal treated for 15 days with “Relief” a fixed combination of extracts of saffron, passionflower, cocoa sed, radish and cumin, withdrawal symptoms improved and adverse events were mild, serum ALT, AST and GGT improving by 50% overall, but there was no comparison to placebo or standard of care therapy).

Lemoine P, Bablon JC, Da Silva C. A combination of melatonin, vitamin B6 and medicinal plants in the treatment of mild-to-moderate insomnia: A prospective pilot study. Complement Ther Med. 2019;45:104–8. PubMed PMID: 31331545.

(Among 40 adults with insomnia treated with a fixed combination of melatonin, vitamin B6, and extracts of California poppy, lemon balm and passion flower for 2 weeks reported that it improved sleep quality and was well tolerated with no serious adverse events or discontinuations).