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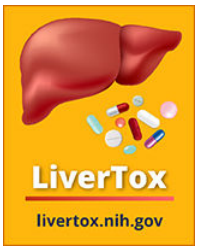

Chaste Tree

Updated: January 20, 2023.

OVERVIEW

Introduction

Chaste tree is an extract of the small flowering tree *Vitex agnus-castus* which has been used in traditional medicine for women's health conditions including menstrual pain, premenstrual tension and infertility. Oral forms of chaste tree have not been implicated in serum aminotransferase elevations or in instances of clinically apparent liver injury.

Background

Chaste tree is derived from fresh or dried, green, sterile shoots of the plant *Vitex agnus-castus*, a small flowering tree native to Asia and the Mediterranean regions but which is now widely cultivated. In the past it was believed to decrease sexual desire, for which reason it was named "chaste tree", which is also the meaning of "agnus" (in Greek) and "castus" (in Latin). Extracts of chaste tree are prepared from the leaves, tender stems, flowers, and seeds and provided as syrup, elixir, powder, or a component of a multiingredient dietary supplement. Chemical components of chaste tree extracts include flavonoids, glycosides, organic acids, alkaloids, essential oils, diterpenoids and sterols, but its active ingredient is unknown. In traditional medicine, chaste tree has been purported to be useful for premenstrual syndrome, menstrual cramps, breast pain associated with the menstrual cycle, and infertility, but it has not been shown to be effective for any of these conditions in adequately controlled, prospective clinical trials. Chaste tree is found in multiple commercial forms including liquid extracts, powders and capsules. The recommended daily dose ranges widely, from 20 mg to 100 mg daily to as high as 1 gram three times daily. Chaste tree is generally considered to be safe and side effects are few and generally mild, but may include nausea, indigestion, abdominal discomfort, itching and headache. Rare instances of hypersensitivity reactions, skin rash and allergic dermatitis have been described.

Hepatotoxicity

In several short term clinical trials, chaste tree in conventional oral doses was typically described as having no or only mild adverse side effects, with no mention of either hepatotoxicity or ALT elevations. Furthermore, in multiple large series of drug and herbal product induced liver injury no cases of chaste tree associated injury have been reported. Single case reports of liver injury with jaundice attributed to chaste tree have been reported to manufacturers, but other possible diagnoses were not adequately excluded. Thus, there is little evidence that chaste tree in conventional oral doses causes clinically apparent liver injury with jaundice in humans. Because of its possible hormonal effects, use of high doses in persons with preexisting liver disease or cirrhosis is discouraged, and its use is not recommended in pregnant or breastfeeding women, or in women on birth control or hormone replacement.

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

Mechanism of Injury

The mechanism by which chaste tree might cause liver injury is unknown. When present in multiingredient dietary supplements, the contribution of other components or toxic contaminants must be considered.

Drug Class: Herbal and Dietary Supplements

Other names: Vitex, Chaste Berry, Lilac Chaste Tree, Monk's Pepper.

PRODUCT INFORMATION

REPRESENTATIVE TRADE NAMES

Chaste tree – Generic

DRUG CLASS

Herbal and Dietary Supplements

SUMMARY INFORMATION

Fact Sheet at National Center for Complementary and Integrative Health, NIH

CHEMICAL FORMULA AND STRUCTURE

DRUG	CAS REGISTRY NUMBER	MOLECULAR FORMULA	STRUCTURE
Chaste Tree	91722-47-3	Herbal	Not Applicable

ANNOTATED BIBLIOGRAPHY

References updated: 20 January 2023

Abbreviations: HDS, herbal and dietary supplements.

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 herbal medications are discussed, but not chaste tree).

Liu LU, Schiano TD. Hepatotoxicity of herbal medicines, vitamins and natural hepatotoxins. In, Kaplowitz N, DeLeve LD, eds. Drug-induced liver disease. 2nd ed. New York: Informa Healthcare USA, 2007, pp. 733-54.

(Review of hepatotoxicity of herbal and dietary supplements [HDS] published in 2007; no mention of chaste tree).

Chaste Tree. In, PDR for Herbal Medicines. 4th ed. Montvale, New Jersey: Thomson Healthcare Inc. 2007: pp. 185-7.

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

Lauritzen C, Reuter HD, Repges R, Böhnert KJ, Schmidt U. Treatment of premenstrual tension syndrome with Vitex agnus castus controlled, double-blind study versus pyridoxine. Phytomedicine. 1997;4:183–9. PubMed PMID: 23195474.

(Among 127 women with premenstrual tension syndrome treated with a commercial chaste tree product or pyridoxine for 3 menstrual cycles, symptom scores improved to a similar extent in both groups and adverse event rates were similar; no mention of ALT elevations or hepatotoxicity).

Berger D, Schaffner W, Schrader E, Meier B, Brattström A. Efficacy of Vitex agnus castus L. extract Ze 440 in patients with pre-menstrual syndrome (PMS). Arch Gynecol Obstet. 2000;264:150–3. PubMed PMID: 11129515.

(Among 50 patients with premenstrual syndrome treated with a chaste tree extract [20 mg daily] for 3 menstrual cycles, symptom scores decreased by 42.5% and gradually returned to baseline after stopping; there were no serious adverse events and "laboratory evaluations did not reveal any relevant influence of treatment").

Loch EG, Selle H, Boblitz N. Treatment of premenstrual syndrome with aphytopharmaceutical formulation containing Vitex agnus castus. J Womens Health Gend Based Med. 2000;9:315–20. PubMed PMID: 10787228.

(In a survey of 1643 women with premenstrual syndrome taking chaste tree supplements, most patients and providers viewed the therapy as beneficial and adverse events were reported in only 1% of subjects, most of which were mild and none were serious).

Stedman C. Herbal hepatotoxicity. Semin Liver Dis. 2002;22:195–206. PubMed PMID: 12016550.

(Review and description of patterns of liver injury due to herbals, including discussion of potential risk factors, and herb-drug interactions).

Daniele C, Thompson Coon J, Pittler MH, Ernst E. Vitex agnus castus: a systematic review of adverse events. Drug Saf. 2005;28:319–32. PubMed PMID: 15783241.

(Systematic review of adverse events associated with chaste tree identified 33 studies including 5 controlled trials, postmarketing surveys, spontaneous reports to regulatory groups, and information from manufacturers, and concluded that most adverse events from chaste tree are mild and transient, most commonly nausea, headache, gastrointestinal upset, acne, pruritus and rash; along spontaneous reports was a case of Stevens Johnson syndrome and one of hepatitis with jaundice in a 39 year old woman on chaste tree from 60 days which resolved when the supplement was stopped).

Rotem C, Kaplan B. Phyto-Female Complex for the relief of hot flushes, night sweats and quality of sleep: randomized, controlled, double-blind pilot study. Gynecol Endocrinol. 2007;23:117–22. PubMed PMID: 17454163.

(Among 44 women with menopausal symptoms treated with a multiingredient supplement [black cohosh, milk thistle, red clover, ginseng and chaste tree] or placebo for 3 months, symptoms improved more with the supplement, while ALT and AST levels did not change in either group).

He Z, Chen R, Zhou Y, Geng L, Zhang Z, Chen S, Yao Y, Lu J, Lin S. Treatment for premenstrual syndrome with Vitex agnus castus: a prospective, randomized, multi-center placebo controlled study in China. Maturitas. 2009;63:99–103. PubMed PMID: 19269753.

(Among 208 women with moderate-to-severe premenstrual syndrome treated with chaste tree extract [40 mg] or placebo once daily for up to 3 cycles, symptom scores decreased more with chaste tree [from 19.2 to 6.4] than placebo [28.1 to 12.6], adverse event rates were similar [8.5% vs 7.6%] none of which were serious, and no significant differences were found in routine chemical laboratory test results).

Jacobsson I, Jönsson AK, Gerdén B, Hägg S. Spontaneously reported adverse reactions in association with complementary and alternative medicine substances in Sweden. Pharmacoepidemiol Drug Saf. 2009;18:1039–47. PubMed PMID: 19650152.

(Review of 778 spontaneous reports of adverse reactions to herbals to Swedish Registry found none attributed to chaste tree).

Reuben A, Koch DG, Lee WM; Acute Liver Failure Study Group. Drug-induced acute liver failure: results of a U.S. multicenter, prospective study. Hepatology. 2010;52:2065–76. PubMed PMID: 20949552.

(Among 1198 patients with acute liver failure enrolled in a US prospective study between 1998 and 2007, 133 [11%] were attributed to drug induced liver injury of which 12 [9%] were due to herbals, including several herbal mixtures, usnic acid, Ma Huang, black cohosh, and Hydroxycut, but not chaste tree).

Stickel F, Kessebohm K, Weimann R, Seitz HK. Review of liver injury associated with dietary supplements. Liver Int. 2011;31:595–605. PubMed PMID: 21457433.

(Review of current understanding of liver injury from herbals and dietary supplements focusing upon Herbalife and Hydroxycut products, green tea, usnic acid, noni juice, Chinese herbs, vitamin A and anabolic steroids; chaste tree is not discussed).

Teschke R, Wolff A, Frenzel C, Schulze J, Eickhoff A. Herbal hepatotoxicity: a tabular compilation of reported cases. Liver Int. 2012;32:1543–56. PubMed PMID: 22928722.

(A systematic compilation of all publications on the hepatotoxicity of specific herbals identified 185 publications on 60 different herbs, herbal drugs and supplements but does not list or mention chaste tree).

Björnsson ES, Bergmann OM, Björnsson HK, Kvaran RB, Olafsson S. Incidence, presentation and outcomes in patients with drug-induced liver injury in the general population of Iceland. Gastroenterology. 2013;144:1419–25. PubMed PMID: 23419359.

(In a population based study of drug induced liver injury from Iceland, 96 cases were identified over a 2 year period, 15 of which [16%] were attributed to HDS products, but none were listed as containing chaste tree).

Bunchorntavakul C, Reddy KR. Review article: herbal and dietary supplement hepatotoxicity. Aliment Pharmacol Ther. 2013;37:3–17. PubMed PMID: 23121117.

(Systematic review of literature on HDS associated liver injury does not mention chaste tree).

Navarro VJ, Seeff LB. Liver injury induced by herbal complementary and alternative medicine. Clin Liver Dis. 2013;17:715–35. PubMed PMID: 24099027.

(Review of the epidemiology, regulatory status, diagnosis, pathogenesis and causes of liver injury from herbal products with specific discussion of conjugated linoleic acid, ephedra, germander, green tea, usnic acid, flavocoxid, aloe vera, chaparral, greater celandine, black cohosh, comfrey, kava, skullcap, valerian, noni juice, pennyroyal and traditional herbal remedies).

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 839 cases of liver injury from drugs collected in the US between 2004 and 2013, 130 were due to HDS products, including 45 from body building agents [probably anabolic steroids] and 85 from diverse HDS products but no case was attributed specifically to chaste tree).

Navarro VJ, Lucena MI. Hepatotoxicity induced by herbal and dietary supplements. Semin Liver Dis. 2014;34:172–93. PubMed PMID: 24879982.

(Review of the international regulatory framework for HDS products and the epidemiology, clinical presentation, diagnosis and cause of HDS associated liver injury with tables and discussion of the most commonly implicated agents, but does not include mention of chaste tree).

Depypere HT, Comhaire FH. Herbal preparations for the menopause: beyond isoflavones and black cohosh. Maturitas. 2014;77(2):191–4. PubMed PMID: 24314619.

(Brief review of herbal therapies for menopausal symptoms, mentions that chaste tree has not been shown to be effective for menopausal symptoms; no mention of adverse events or hepatotoxicity).

Seeff LB, Bonkovsky HL, Navarro VJ, Wang G. Herbal products and the liver: a review of adverse effects and mechanisms. Gastroenterology. 2015;148:517–532.e3. PubMed PMID: 25500423.

(Extensive review of herbal associated liver injury does not discuss chaste tree specifically).

Brown AC. Liver toxicity related to herbs and dietary supplements: Online table of case reports. Part 2 of 5 series. Food Chem Toxicol. 2017;107:472–501. PubMed PMID: 27402097.

(Description of an online compendium of cases of liver toxicity attributed to HDS products, does not list or discuss chaste tree).

Medina-Caliz I, Garcia-Cortes M, Gonzalez-Jimenez A, Cabello MR, Robles-Diaz M, Sanabria-Cabrera J, Sanjuan-Jimenez R, et al; Spanish DILI Registry. Herbal and dietary supplement-induced liver injuries in the Spanish DILI Registry. Clin Gastroenterol Hepatol. 2018;16:1495–1502. PubMed PMID: 29307848.

(Among 856 cases of hepatotoxicity enrolled in the Spanish DILI Registry between 1994 and 2016, 32 were attributed to herbal products, the most frequent cause being green tea [n=8] and Herbalife products [n=6], while no case was attributed to chaste tree).

Bessone F, García-Cortés M, Medina-Caliz I, Hernandez N, Parana R, Mendizabal M, Schinoni MI, et al. Herbal and dietary supplements-induced liver injury in Latin America: experience from the LATINDILI Network. Clin Gastroenterol Hepatol. 2022;20:e548–e563. PubMed PMID: 33434654.

(Among 367 cases of hepatotoxicity enrolled in the Latin American DILI Network between 2011 and 2019, 29 [8%] were attributed to herbal products, the most frequent being green tea [n=7], Herbalife products [n=5] and garcinia [n=3], while chaste tree was not mentioned).

Ballotin VR, Bigarella LG, Brandão ABM, Balbinot RA, Balbinot SS, Soldera J. Herb-induced liver injury: Systematic review and meta-analysis. World J Clin Cases. 2021;9:5490–5513. PubMed PMID: 34307603.

(Systematic review of the literature on herb induced liver injury identified 446 references describing 936 cases of liver injury due to 79 different herbal products, the most common being He Shou Wu [91], green tea [90] Herbalife products [64], kava kava [62] and greater celandine [48]; no case was attributed to chaste tree or a vitex species).