



Horse Chestnut

Updated: March 30, 2018.

OVERVIEW

Introduction

Horse chestnut is an herb prepared from the leaves or seeds of the Horse chestnut tree (*Aesculus hippocastanum*), and is used primarily for complications of venous insufficiency including varicose veins, ankle swelling, and leg cramps. Horse chestnut has been implicated in rare instances of clinically apparent liver injury.

Background

The horse chestnut tree is native to Persia and Eastern Asia, but has been introduced worldwide and is widely planted for its handsome shape and attractive leaves, nuts and flowers. The horse chestnut should not be confused with the California or Ohio chestnuts (*Aesculus californica* and *glabra*), which are different species and more often called buckeye trees. Horse chestnut extract is used for the treatment of symptoms of varicose veins, hemorrhoids and phlebitis. Extracts of the horse chestnut seeds are also used for diarrhea, fever and urinary hesitancy. Creams with horse chestnut extract are used topically for muscle and joint aches due to arthritis or trauma. The constituents of horse chestnut extracts are many and include triterpene saponins, hydroxycoumarins, flavonoids, and tannins. Importantly, horse chestnut seeds contain the toxic triterpene saponin known as escin and its glycoside esculin. Commercial preparations remove the toxic saponins and are generally well tolerated. Horse chestnut is available as capsules, tablets, liquid extract, gels and solutions for parenteral administration. Side effects include nausea, dizziness, headache and pruritus.

Hepatotoxicity

Despite wide scale use, there have been few published instances of liver injury due to horse chestnut. In isolated cases of liver toxicity attributed to horse chestnut extracts, injury became apparent between 4 and 8 weeks after starting the herbal and were associated with either hepatocellular or mixed patterns of serum enzyme elevations and with a self-limited, rapidly resolving course. Immunoallergic and autoimmune features were not present or not mentioned.

Likelihood score: D (possible, rare cause of clinically apparent liver injury).

Mechanism of Injury

The cause of liver injury attributed to horse chestnut extracts is unknown, but is likely to be idiosyncratic.

Outcome and Management

Liver injury attributed to horse chestnut use has been relatively mild and self-limited. There have been no instances of acute liver failure, death, chronic hepatitis, cirrhosis or vanishing bile duct syndrome attributed to its use.

Other Names: Aescin, escine, venastat

Drug Class: [Herbal and Dietary Supplements](#)

PRODUCT INFORMATION

REPRESENTATIVE TRADE NAMES

Horse Chestnut – 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
Horse Chestnut	90045-79-7	Herbal mixture	Not applicable

ANNOTATED BIBLIOGRAPHY

References updated: 30 March 2018

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; horse chestnut is not discussed).

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];*

horse chestnut is not discussed).

Horse chestnut. In, PDR for Herbal Medicines. 4th ed. Montvale, New Jersey: Thomson Healthcare Inc. 2007: pp. 453-7.

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

Takegoshi K, Tohyama T, Okuda K, Suzuki K, Ohta G. A case of Venoplant-induced hepatic injury. Gastroenterol Jpn 1986; 21: 62-5. PubMed PMID: 3699401.

(37 year old man given single intramuscular injection of horse chestnut extract [Venoplant®] for malignant bone fracture developed jaundice 32 days later [bilirubin 2.9 rising to 9.0 mg/dL, ALT 31 rising to 300 U/L, Alk P 2.3 rising to 4 times ULN], positive lymphocyte stimulation test and biopsy showing cholestatic hepatitis 2-3 months after onset, resolving within 6 months of presentation).

De Smet PA, Van den Eertwegh AJ, Lesterhuis W, Stricker BH. Hepatotoxicity associated with herbal tablets. *BMJ* 1996; 313: 92. PubMed PMID: 8688761.

(69 year old woman developed jaundice six weeks after starting herbal tablets [“Venencapsan”] prepared locally from horse chestnut leaf, milfoil, celandine, sweet clover, milk thistle and dandelion root, recurring on reexposure [bilirubin 1.6 and 4.7 mg/dL, ALT 244 and 1004 U/L, Alk P 229 and 250 U/L], resolving rapidly on stopping).

García-Cortés M, Borraz Y, Lucena MI, Peláez G, Salmerón J, Diago M, Martínez-Sierra MC, et al. Liver injury induced by “natural remedies”: an analysis of cases submitted to the Spanish Liver Toxicity Registry. *Rev Esp Enferm Dig* 2008; 100: 688-95. PubMed PMID: 19159172.

(Among 521 cases of drug induced liver injury submitted to Spanish registry, 13 [2%] were due to herbals, including one case due to horse chestnut in a 69 year old woman who developed jaundice 4 weeks after starting the herb [bilirubin 3.8 mg/L, ALT 11.6 times ULN, Alk P normal], resolving in 1 months and considered “definite”).

Pittler MH, Ernst E. Horse chestnut seed extract for chronic venous insufficiency. *Cochrane Database Syst Rev* 2012; 11: CD003230. PubMed PMID: 23152216.

(In 14 studies of horse chestnut therapy for venous insufficiency, 4 studies reported no side effects and the remained mentioned dizziness, gastrointestinal complaints, nausea, headache and pruritus in 1-36% of recipients; no mention of ALT elevations or hepatotoxicity).

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

(Review of HDS associated hepatotoxicity; does not mention horse chestnut).

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, none were attributed to horse chestnut).

Chalasani N, Bonkovsky HL, Fontana R, Lee W, Stolz A, Talwalkar J, Reddy KR, et al.; United States Drug Induced Liver Injury Network. Features and outcomes of 899 patients with drug-induced liver injury: The DILIN Prospective Study. *Gastroenterology* 2015; 148: 1340-52. PubMed PMID: 25754159.

(Among 899 cases of drug induced liver injury enrolled in a prospective database between 2004 and 2012, HDS were implicated in 145 [16%], none of which were due to horse chestnut: see Navarro [2014]).