



Stinging Nettle

Updated: March 3, 2023.

OVERVIEW

Introduction

Stinging Nettle is an extract of either the leaves and flowering parts or the roots of *Urtica dioica*, a tall herbaceous plant found throughout the world in temperate and humid areas. Extracts of the leaves of stinging nettle are used in foods and animal feed and are purported to be beneficial for many conditions. Extracts of the roots are purported to relieve urinary symptoms in patients with benign prostatic hypertrophy. Stinging nettle extracts are generally well tolerated and have not been implicated in instances of serum aminotransferase elevations or cases of clinically apparent liver injury.

Background

Stinging nettle (also simply called nettle or stinger) is derived from the plant *Urtica dioica*, a tall herbaceous weed found in temperate and humid areas throughout the world. Stinging nettle is so named because contact with fresh leaves can cause a transient stinging skin rash, the result of histamine, acetyl choline and other irritants that are injected into the skin by minute sharp pointed hairs (spicules or trichomes) on the surface of the leaves. Processing of the leaves and flowering parts of the plant destroy the stinging spicules and can be taken orally or consumed in food without stinging or irritation. Nettle is widely used as a food, flavoring additive, animal feed, fiber, and coloring agent. The botanical extracts have been purported to have beneficial effects for infections, inflammation, hay fever, asthma, arthritis, high blood pressure, diabetes, and even Gulf War syndrome. The bases of these claims have not been substantiated in controlled trials in human, but laboratory studies suggest that components of stinging nettle leaves have antioxidant and antiinflammatory properties. More frequently used are extracts of the roots of *Urtica dioica*, which have been reported to increase urinary flow and decrease symptoms of benign prostatic hypertrophy. Stinging nettle roots contain multiple sterols, lectins, polysaccharides, hydroxycoumarins, and lignans, but the active ingredient with effects on lower urinary tract symptoms is not known. Laboratory studies suggest that the nettle root lectin agglutinin may bind to or block sex hormone synthesis or pathways of activity and thus act on prostatic hypertrophy. The rigor and reproducibility of trials of stinging nettle extracts have been questioned, and they are not approved for any medical condition in the United States. Stinging nettle is found in multiple over-the-counter, commercial forms as capsules, tablets or solutions, typically recommended in doses of 300 to 600 mg daily. The commercially available products include either leaf or root extracts and sometimes both. Stinging nettle extracts are well tolerated with minimal or no adverse events, which may include headache, nausea, diarrhea, constipation or abdominal discomfort. Raw fresh stinging nettle leaves cause skin rash and urticaria and are sometimes used as a counterirritant or even as a punishment; they should not be taken by mouth.

Hepatotoxicity

In multiple short- and long-term clinical trials of different preparations of stinging nettle extracts, adverse side effects were described as uncommon and minimal with no mention of either hepatotoxicity or ALT elevations. Few prospective studies included monitoring of liver tests, but those that did reported no change in serum aminotransferase levels. Despite widespread use, there have been no published reports of serum enzyme elevations or clinically apparent liver injury attributable to stinging nettle root or leaf extracts.

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

Mechanism of Injury

The mechanism by which stinging nettle might cause liver injury is unknown.

Outcome and Management

Hepatotoxicity from extracts of stinging nettle roots, leaves and flowering parts has not been reported.

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

Other names: Nettle, Common Nettle, Stinger, Bichu, Ortie, Urtica.

PRODUCT INFORMATION

REPRESENTATIVE TRADE NAMES

Stinging Nettle – Generic

DRUG CLASS

Herbal and Dietary Supplements

CHEMICAL FORMULA AND STRUCTURE

DRUG	CAS REGISTRY NUMBER	MOLECULAR FORMULA	STRUCTURE
Stinging Nettle	84012-40-8	Herbal	Not Applicable

ANNOTATED BIBLIOGRAPHY

References updated: 03 March 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 nettle).

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 stinging nettle).

Stinging Nettle. In, PDR for Herbal Medicines. 4th ed. Montvale, New Jersey: Thomson Healthcare Inc. 2007: pp. 792-797.

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

Wikipedia. Available at: https://en.wikipedia.org/wiki/Urtica_dioica

(Wikipedia chapter on Urtica dioica with an excellent description of the plant, its etymology, distribution, ecology, uses and cultural history including Shakespeare's adoption of the English meaning of nettle: "out of this nettle, danger, we pluck this flower, safety" from Henry IV, part 1).

Kulze A, Greaves M. Contact urticaria caused by stinging nettles. Br J Dermatol. 1988;119:269–70. PubMed PMID: 3166946.

(Commentary on the contact urticaria caused by skin exposure to stinging nettle leaves that is transient but can last for up to 24 hours, produced by minute hair-like spicules with sharp ends on the leaf surface that penetrate the skin, injecting a solution of histamine, acetylcholine, serotonin and other irritants).

Wilt TJ, Ishani A, Rutks I, MacDonald R. Phytotherapy for benign prostatic hyperplasia. Public Health Nutr. 2000;3(4A):459–72. PubMed PMID: 11276294.

(Systematic review of the literature on the efficacy of herbal products used for benign prostatic hyperplasia concludes that there is no convincing evidence supporting the use of Urtica dioica).

Melo EA, Bertero EB, Rios LA, Mattos D Jr. Evaluating the efficiency of a combination of Pygeum africanum and stinging nettle (Urtica dioica) extracts in treating benign prostatic hyperplasia (BPH): double-blind, randomized, placebo controlled trial. Int Braz J Urol. 2002;28:418–25. PubMed PMID: 15748367.

(Among 49 men with symptomatic benign prostatic hypertrophy treated with a fixed combination of Pygeum africanum and Urtica dioica extracts vs placebo for six months, rates of symptomatic improvement and adverse events were similar in both groups and there were no serious adverse events; no mention of ALT elevations or hepatotoxicity).

Schneider T, Rübhen H. B. Urologe A. 2004;43:302–6. [Stinging nettle root extract (Bazoton-uno) in long term treatment of benign prostatic syndrome (BPS). Results of a randomized, double-blind, placebo controlled multicenter study after 12 months]. PubMed PMID: 15045190.

(Among 226 men with symptomatic benign prostatic hypertrophy treated with stinging nettle root extract [Bazoton: 429 mg] or placebo daily for 52 weeks, symptom scores improved slightly more with the extract [-5.7 vs -4.8 points], while urinary flow and residual volume measurements were similar and adverse event rates were less; no mention of ALT levels or hepatotoxicity).

Lopatkin N, Sivkov A, Walther C, Schläfke S, Medvedev A, Avdeichuk J, Golubev G, et al. Long-term efficacy and safety of a combination of sabal and urtica extract for lower urinary tract symptoms—a placebo-controlled, double-blind, multicenter trial. World J Urol. 2005;23:139–46. PubMed PMID: 15928959.

(Among 219 men with benign prostatic hypertrophy who participated in a randomized controlled trial of a commercial herbal fixed-dose combination of sabal and stinging nettle vs placebo and were then treated with the product for another 96 weeks, improvement in symptoms was maintained, adverse event rates were similar to that in the placebo phase, and there were no treatment related serious adverse events; no mention of ALT elevations or hepatotoxicity).

Safarinejad MR. Urtica dioica for treatment of benign prostatic hyperplasia: a prospective, randomized, double-blind, placebo-controlled, crossover study. J Herb Pharmacother. 2005;5:1–11.

(Among 558 men with symptomatic benign prostatic hypertrophy in a placebo controlled trial, Urtica dioica therapy was associated with a higher rate of symptom improvement [81% vs 16%], increase in urinary peak

flow, decrease in post-void residual volume, and decrease in prostate size, but no change in PSA or testosterone levels and “no side effects were identified in either group).

Popa G, Hägele-Kaddour H, Walther C. MMW Fortschr Med. 2005;147 Suppl 3:103–8. [Efficacy of a combined Sabal-urtica preparation in the symptomatic treatment of benign prostatic hyperplasia. Results of a placebo-controlled double-blind study]. PubMed PMID: 16261945.

(Among 40 adult men with benign prostatic hypertrophy treated with an herbal combination product of stinging nettle and sabal palmetto extracts vs placebo for 24 weeks, urinary symptoms of frequency and urgency as well as quality of life measures improved more in the herbal product treated subjects; no mention of adverse events, ALT elevations or hepatotoxicity).

Chrubasik JE, Roufogalis BD, Wagner H, Chrubasik S. A comprehensive review on the stinging nettle effect and efficacy profiles. Part II: urticae radix. Phytomedicine. 2007;14:568–79. PubMed PMID: 17509841.

(Review of the efficacy and possible mechanism of action of stinging nettle root extract in benign prostatic hypertrophy concludes that the clinical evidence of efficacy is promising yet unproven, but that it is well tolerated with minimal adverse effects).

Randall C, Dickens A, White A, Sanders H, Fox M, Campbell J. Nettle sting for chronic knee pain: a randomised controlled pilot study. Complement Ther Med. 2008 Apr;16:66–72. PubMed PMID: 18514907.

(Among 42 patients with chronic knee pain treated with topical application of stinging nettle leaves [Urtica dioica] or a non-stinging nettle leaves [Urtica galeopsifolia] to both knees 3 times for 10 minutes once daily for 7 days, there was no differences in changes in pain or stiffness scores and the side effect of stinging was usually but not always short lived and tolerated).

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 stinging nettle).

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 stinging nettle).

Pavone C, Abbadessa D, Tarantino ML, Oxenius I, Laganà A, Lupo A, Rinella M. Urologia. 2010;77:43–51. [Associating Serenoa repens, Urtica dioica and Pinus pinaster. Safety and efficacy in the treatment of lower urinary tract symptoms. Prospective study on 320 patients]. PubMed PMID: 20890858.

(Among 320 men with lower urinary tract symptoms due to benign prostatic hypertrophy or chronic prostatitis treated with a fixed combination of Serenoa repens [320 mg], Urtica dioica [120 mg] and Pinus pinaster [5 mg] once daily for 1 to 12 months, urinary symptoms improved in 85% of patients but prostate volume and urinary flow rates did not change; no discussion of adverse events or mention of ALT elevations or hepatotoxicity).

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 stinging nettle).

Kianbakht S, Khalighi-Sigaroodi F, Dabaghian FH. Improved glycemic control in patients with advanced type 2 diabetes mellitus taking *Urtica dioica* leaf extract: a randomized double-blind placebo-controlled clinical trial. *Clin Lab*. 2013;59:1071–6. PubMed PMID: 24273930.

(Among 92 patients with type 2 diabetes and poor control on standard antidiabetic medications treated with stinging nettle [500 mg] or placebo 3 times daily for 3 months, fasting blood glucose, 2 hour postprandial glucose and HbA1c levels decreased with the herbal product but not with placebo, and there were no adverse effects, and no effect of treatment on serum creatinine, ALT and AST levels).

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 stinging nettle).

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 stinging nettle).

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 stinging nettle).

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 stinging nettle).

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], no mention of stinging nettle).

Younger J, Donovan EK, Hodgin KS, Ness TJ. A placebo-controlled, pseudo-randomized, crossover trial of botanical agents for Gulf War illness: Reishi mushroom (*Ganoderma lucidum*), Stinging Nettle (*Urtica dioica*), and Epimedium (*Epimedium sagittatum*). *Int J Environ Res Public Health*. 2021;18:3671. PubMed PMID: 33915962.

(In a crossover study of 30-day courses of high and low doses of three herbal preparations [10 patients each] or placebo, Gulf War illness symptom scales improved with high doses of stinging nettle leaf extract daily [1305 mg] compared to placebo [$p=0.048$], but not with low doses [435 mg] or with Reishi mushrooms or Epimedium).

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 stinging nettle is 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 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]; stinging nettle is not discussed).