



## Bilberry

Updated: February 20, 2019.

## OVERVIEW

### Introduction

Bilberry is a popular herb used alone or as a component of multiingredient herbal products that has several purported uses including improving stamina, weight control, mental concentration and vision as well as various gastrointestinal, kidney, rheumatologic and vascular conditions. Neither fresh bilberries nor fruit or plant extracts have been implicated in causing serum enzyme elevations during treatment or clinically apparent acute liver injury.

### Background

Bilberry is a popular herbal product derived from the berries and leaves of the bilberry plant (*Vaccinium myrtillus*), a deciduous, perennial shrub native to Europe and North America which produces dark purple berries resembling blueberries. Typically, bilberry is prepared from the berries or leaves and contains anthocyanidins and tannins which are claimed to contain astringent, antioxidant and antiseptic activities. In traditional medicine, bilberry was used to treat varicose veins, venous insufficiency, fatigue, diarrhea and gastrointestinal complaints. Small clinical trials have assessed its effectiveness in treating multiple medical conditions including chronic venous insufficiency, varicose veins, diabetes, irritable bowel syndrome, ulcerative colitis, glaucoma, eye strain, myopia and dysmenorrhea. It has also been assessed as a weight loss agent and as a means of improving night vision. However, rigorous evidence for its efficacy in any these conditions is lacking. Bilberry (typically extracts of the fruit) is available as capsules and tablets of varying concentrations, ranging from 40 to 1000 mg. The typical dose varies greatly from 80 to 1000 mg once or twice daily. Side effects are few and generally mild and may include gastrointestinal symptoms of nausea or abdominal discomfort.

### Hepatotoxicity

Despite widespread use, bilberry has not been specifically linked to liver injury, either in the form of transient serum enzyme elevations or clinically apparent acute liver injury. Bilberry demonstrates minimal effect on drug metabolism but may affect platelet aggregation and predispose to excessive bleeding in patients on anticoagulants such as warfarin.

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

Other Names: Dyeberry, Huckleberry, Whortleberry, Wineberry Hurts

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

## PRODUCT INFORMATION

### REPRESENTATIVE TRADE NAMES

Bilberry – Generic

### DRUG CLASS

Herbal and Dietary Supplements

### COMPLETE LABELING

Fact Sheet at National Center for Complementary and Integrative Health

## CHEMICAL FORMULA AND STRUCTURE

DRUG	CAS REGISTRY NUMBER	MOLECULAR FORMULA	STRUCTURE
Bilberry	84082-34-8	Herbal mixture	Not applicable

## ANNOTATED BIBLIOGRAPHY

References updated: 20 February 2019

Abbreviations used: 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; bilberry is not discussed).*

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 published in 2007; bilberry is not listed).*

Bilberry. In, PDR for Herbal Medicines. 4th ed. Montvale, New Jersey: Thomson Healthcare Inc. 2007: pp. 78-82.

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

Canter PH, Ernst E. Anthocyanosides of *Vaccinium myrtillus* (bilberry) for night vision--a systematic review of placebo-controlled trials. *Surv Ophthalmol* 2004; 49: 38-50. PubMed PMID: 14711439.

*(A systematic review identified 12 clinical trials of bilberry for night vision, only 5 of which were placebo controlled and results provided no evidence that bilberry improves night vision in healthy subjects; bilberry was well tolerated with few and mostly minor gastrointestinal complaints in clinical trials and in postmarketing surveillance studies).*

Russo MW, Galanko JA, Shrestha R, Fried MW, Watkins P. Liver transplantation for acute liver failure from drug-induced liver injury in the United States. *Liver Transpl* 2004; 10: 1018-23. PubMed PMID: 15390328.

*(Among ~50,000 liver transplants reported to UNOS between 1990 and 2002, 270 [0.5%] were done for drug induced acute liver failure, including 7 [5%] for herbal medications, but none were attributed to bilberry use).*

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. Spanish. PubMed PMID: 19159172.

*(Among 521 cases of drug induced liver injury submitted to a Spanish registry, 13 [2%] were due to herbals, but none were attributed to bilberry).*

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, none of which were attributed to bilberry).*

Navarro VJ. Herbal and dietary supplement hepatotoxicity. *Semin Liver Dis* 2009; 29: 373-82. PubMed PMID: 19826971.

*(Overview of the regulatory environment, clinical patterns, and future directions in research with HDS; bilberry is not listed as a potentially hepatotoxic botanical).*

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 HDS, but none incriminated bilberry).*

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 liver injury from HDS focusing upon Herbalife and Hydroxycut products, green tea, usnic acid, Noni juice, and Chinese herbs; does not mention bilberry).*

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 and supplements, does not list bilberry or vaccinium myrtillus).*

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, including 15 attributed to HDS products none of which were attributed to bilberry).*

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 bilberry).*

Seeff LB, Bonkovsky HL, Navarro VJ, Wang G. Herbal products and the liver: a review of adverse effects and mechanisms. *Gastroenterology* 2015; 148: 517-32. PubMed PMID: 25500423.

*(Extensive review of possible beneficial as well as harmful effects of herbal products on the liver does not specifically discuss or mention bilberry).*

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 does not mention bilberry).*

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. PubMed PMID: 27402097.

*(Description of an online compendium of cases of liver toxicity attributed to HDS products; does not list bilberry among products linked to liver injury).*

Belcaro G, Dugall M, Luzzi R, Corsi M, Ledda A, Ricci A, Pellegrini L, et al. Management of varicose veins and chronic venous insufficiency in a comparative registry with nine venoactive products in comparison with stockings. *Int J Angiol* 2017; 26: 170-8. PubMed PMID: 28804235.

*(Registry of 1051 otherwise healthy patients with chronic venous insufficiency assessed 9 products including bilberry [Mirtoselect] found “no safety or tolerability problems”).*