



Elderberry

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Elderberry refers to the several varieties of *Sambucus* tree. The dark purple berries of the European or Black elder (*Sambucus nigra*) have been used for both medicinal and culinary purposes. While elderberry bark and leaves have also been used traditionally for a variety of ailments, the flowers and berries are more commonly used for their purported antioxidant and immune-stimulating properties. Cooked elderberries are used for making wine, tea, pies, jellies and jams. Dried or fresh berries have been used to treat constipation, neuropathic pain, headache, toothache, sinus congestion, sore throat, influenza and the common cold, among others. More recently claims have emerged that elderberry may be effective in the prevention or treatment of COVID-19.

LATIN NAME: *Sambucus nigra*

COMMON NAMES: Black-berried alder, European black elder/elderberry, black elder/elderberry, boor tree, bountry, ellanwood, ellhorn, devil's eye, pipe tree, Sambuci sambucus, sambunigrin, sweet elder, tree of doom, and many more.

PREPARATIONS: Available as a syrup, liquid, infant drops, throat spray, lozenges, gummies, capsules,

tablets, effervescent tablets, and powder. Also obtainable as fresh and dried fruit, tea, and oil for use in skin-care and cosmetics.

ACTIVE CONSTITUENTS: Compounds identified as co-active include flavonoids (kaempferol, quercetin, epicatechin, 5,7-dihydroxy-4-oxo-2-(3,4,5-trihydroxyphenyl)chroman-3-yl-3,4,5-trihydroxycyclohexanecarboxylate), anthocyanins (cyanidin-3-glucoside and cyanadin-3-sambubioside), phenolic acids, lectins (SNA – *S. nigra* agglutinin-IV), essential oils and vitamins.

MANUFACTURERS CLAIMS: Elderberry is claimed to support general health and wellbeing and improve energy levels. More specifically it is purported to support the immune system, respiratory health, and promote fast recovery from winter viruses such as the common cold or influenza.

EVIDENCE FOR EFFICACY: A meta-analysis of four randomised, placebo-controlled, trials found that elderberry supplementation reduced the duration of upper respiratory symptoms in verified cases of influenza, or symptoms consistent with either influenza or the common cold, when administered at the onset of symptoms. Flu vaccination did not

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Summary message

Although findings suggest that elderberry may be effective in reducing symptoms and duration of viral infections, more high-quality human trials are needed to substantiate these claims. Currently no studies support the use of elderberry in coronaviruses. Generally regarded as safe, toxicity may result from ingestion of raw or uncooked fruit, and allergies may occur in susceptible people. Use is not recommended in pregnancy and lactation due to insufficient evidence. Elderberry products may exacerbate symptoms in patients with autoimmune diseases. Caution is advised with immunosuppressants as elderberry may reduce effectiveness of these drugs. No major drug interactions are known.

Herbal medicines are a popular health care choice, but few have been tested to contemporary standards. **POTION OR POISON?** summarises the evidence for the potential benefits and possible harms of well-known herbal medicines.

appear to influence overall effect of supplementation. Other studies have reported that elderberry supplementation significantly reduced symptoms and the duration of influenza A by 3–4 days, or the common cold by ~2 days in long-haul travellers. However, in the latter study half of the participants also used co-medication to relieve symptoms, limiting the application of these findings.

Several mechanisms of antiviral action have been proposed. Flavonoids are hypothesised to modulate inflammatory cytokines. Two specific flavonoids have shown to bind directly to the H₁N₁ virus particles *in vitro* rendering the virus incapable of entering host cells. Other compounds such as SNAs, polyphenols and polysaccharides have also been theorised to play a role in the inhibition of DNA and RNA viruses.

Although findings have largely been positive for the use of elderberry in the treatment of viral infections, conclusive evidence is lacking due to the variability of elderberry preparations, combination preparations, and lack of high quality clinical trials. Moreover, many studies have been conducted *in vitro* or in animal models and therefore more human studies are needed to substantiate these claims. Currently there is no research substantiating the use of elderberry in coronaviruses.

ADVERSE EFFECTS: Ingestion of unripe or uncooked berries (and other plant parts) may lead to toxicity

due to cyanogenic glycosides (sambunigrin) and can cause gastrointestinal (nausea, vomiting, diarrhoea) and neurological effects (weakness, dizziness, numbness, stupor). Large amounts can lead to serious poisoning. Cooking will eliminate the toxin. When taken in amounts found in foods, elderberry is possibly safe for up to 12 weeks. Some people may experience an allergic reaction to elderberry extracts. Insufficient evidence is available for use during pregnancy or breastfeeding.

INTERACTIONS: Caution with immunosuppressants as elderberry may increase cytokines, interleukin and tumour necrosis factor, and interfere with effectiveness of these drugs. As a result of immune system activation, elderberry may exacerbate symptoms of autoimmune diseases, and it is best to avoid use in these patients.

Key references

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