



## GOLDENSEAL

(*Hydrastis canadensis*)

**Family:** Ranunculaceae

**Synonyms:** Puccoon root, Yellowroot (1), Eye balm, Eye root, Goldsiegel, Ground Raspberry, Indian Plant, Indian tumeric, Jaundice root, Orange root, Sceau d'or, turmeric root, Warnera, Wild curcuma, Yellow Indian paint, Yellow paint (2,3), Kanadische Gelbwurzel, Guldsegl (4).

### Plant characteristics

Goldenseal is a perennial herb in the buttercup family.(4) It grows to a height of 6-12 inches (5) with a spread of 6-12 inches.(6) The stem is purplish and hairy above ground and yellow below ground where it connects to the yellow rhizome.(4) The plant bears 2 rounded, hairy leaves with 5-7 double-toothed lobes (5) and produces single, small, inconspicuous flowers with greenish-white stamens in the late spring.(6) The fruit consists of a soft red berry, somewhat like a raspberry, with 10-30 black seeds.(6) The fruit ripens in midsummer.(6) The rhizome is about 2 inches long and has many long, skinny fibrous rootlets.(6) Farmers or wild-crafters harvest the rhizome in the fall after the 3<sup>rd</sup> year if grown from division and after the 6<sup>th</sup> year if grown from seed.(6)

Goldenseal grows in the forests of eastern United States and Canada. Once it was plentiful in the wild, but is rare today because of over-harvesting.(3,7) Farmers use artificial shading materials to cultivate goldenseal.(6)

### Herb chemical constituents and properties

**Biologically-active chemicals:** isoquinoline alkaloids- berberine, hydrastine, and canadine.(8) Research into the toxicology and pharmacology of goldenseal has focused on berberine and hydrastine.(9) Berberine is a constituent of the roots of several species of plant, though hydrastine is found only in *Hydrastis canadensis* and *Berberis laurina*. (10) The National Toxicology Program is currently investigating the toxicology of goldenseal root powder.(11,12) Preliminary studies in animals show no toxic effects on the fetus when the mothers are fed goldenseal.

**Herbal properties:** alterative, analgesic, anti-catarrrhal, antimicrobial, anti-inflammatory, antiseptic, aperient, astringent, bitter tonic, cardi tonic, choleric, depurative, detergent, digestive, emmenagogue, emetic, fungicide, laxative, stomachic, vulnerary, and muscular stimulant.(1,3,13,14)

| How herb was used traditionally   | How it is used today (based on scientific evidence)   |
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| <p>Native Americans, especially the Cherokee, used goldenseal root for digestive disorders, including ulcers.(3,7) They also employed goldenseal root as a yellow dye, as an eye wash, and as a treatment for skin disorders.(3,9)The Iroquois found it useful for diarrhea, digestion and whooping cough.(9) Goldenseal became popular among European settlers, especially in the mid-19th century when it was an official herbal remedy in the United States Pharmacopeia.(3,9)</p> <p>By 1905, the herb was much less plentiful, partially due to over-harvesting and partially to habitat destruction. (3) Wild goldenseal is now so rare that it is listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora.(CITES) (15)</p> <p>Herbalists recommend goldenseal for gastritis, colitis, duodenal ulcers, loss of appetite, and liver disease. (1,3,13) They discuss the astringent effect it has on mucous membranes of the upper respiratory tract (applied as a mouthwash or taken as snuff), the gastrointestinal (GI) tract, the bladder, rectum (applied topically), and the skin. Goldenseal is very bitter. Bitters in herbal medicine stimulate the appetite, aid digestion, and often stimulate bile secretion.(2)</p> <p><b>Preparation and dosage:</b></p> <ul style="list-style-type: none"> <li>• For a tea, simmer 1 tsp of dried root in 1 cup of water for 10-20 minutes, drink three times daily.(1)</li> <li>• You can take 2-4 ml (about half a teaspoon of the tincture (1:10 strength in 60% alcohol)</li> <li>• Or take 0.3-1ml of the stronger fluid extract (1:1, 60% alcohol) mixed with water.(9,13)</li> <li>• British sources recommend 0.7-2g of the dried root per day.(4)</li> <li>• As an eyewash, use a commercially-prepared 0.2% solution in sterile water: two drops in each eye, 3 times daily.(9)</li> </ul> | <p>Today, manufacturers of herbal products include goldenseal in preparations for upper respiratory infections, stomach and intestinal disorders, liver disease, cancer, urinary tract infections, uterine bleeding, and painful periods.(2) Goldenseal is in many topical products, too, including those for sore gums, skin rashes, ulcers, wounds and infections, itching, acne, dandruff, ringworm, and herpes.(2) Goldenseal is a component of products for eye infections and inflammations.(2) Goldenseal is also available as a homeopathic remedy for chronic nasal discharge and uterine hemorrhage.(9)</p> <p>Some people have taken goldenseal with large quantities of water to mask drugs in the urine, but this practice is not based on evidence, and is not recommended.</p> <p><b>Scientific evidence for use</b></p> <p>All of the clinical studies of goldenseal have focused on its constituent: berberine. Goldenseal is very popular in the US, but is little known in Europe, which may explain the lack of clinical research on the whole herb (9).</p> <ul style="list-style-type: none"> <li>• Goldenseal is not effective for interfering with urine drug tests: Studies so far have been negative.</li> <li>• It may be effective for treating infectious diarrhea; studies have been positive for treatment of <i>Giardia</i> and <i>E.coli</i>-induced diarrhea, but further study is needed.</li> <li>• Berberine is not effective for cholera.</li> <li>• Unknown effectiveness for treating colds.</li> <li>• Researchers have not studied goldenseal for use in upper respiratory infections.</li> <li>• Uncertain effectiveness for treating eye infections: early studies in the treatment of trachoma are promising, but further work is necessary before any conclusions can be made.</li> </ul> |

| Safety issues  | Consumer marketing issues  |
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| <p><b>Side effects:</b> Goldenseal tea and tincture are very bitter and the disagreeable taste can cause nausea.</p> <p><b>Adverse events:</b> Reportedly, high doses of berberine can cause stomach upset, nausea, vomiting, nervousness, depression, dyspnea, bradycardia, cardiac damage, hypotension, seizures, paralysis, spasms, and death. Overdoses of hydrastine can cause exaggerated reflexes, convulsions, paralysis, and respiratory failure. (2)</p> <p>Irritation of the mouth has occurred with the fresh plant and vaginal ulcers have occurred with use as a douche (2).</p> <p><b>Precautions/contraindications:</b></p> <ul style="list-style-type: none"> <li>• Avoid during pregnancy and when nursing.</li> <li>• Avoid using with other herbs that increase stomach acid secretion, such as coffee, cola, black and red pepper, cinnamon, calamus, dandelion root, devil's claw root, gentian, ginger, horseradish, ironweed, mate, mustard, tobacco, snakeroot, wormwood, and yarrow, among others.(16)</li> <li>• Avoid with autoimmune disease (such as lupus and rheumatoid arthritis).</li> <li>• Avoid with inflammatory conditions (such as asthma).</li> </ul> | <p>Goldenseal is one of the most popular herbs in the US, chiefly because of its reputation as an immune stimulant (17). Because of its designation as an endangered species, wild-harvested goldenseal is less available. The price for cultivated roots of good quality is stable and fairly high, at \$32-38 per pound, and the demand exceeds the supply. Most of the buyers of goldenseal in the US require a root with high levels of berberine and hydrastine, the components felt to be most active. Buyers paid \$7.5 million dollars for quality root in 2001.( 18)</p> <p>Goldenseal grows especially well in the western parts of North Carolina. The forested southern Appalachians offer ideal conditions for producing high quality roots. The demand for goldenseal is expected to increase by 10-15% each year.(18)</p> |

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