

Eclipta alba, prostrata

Bhringaraj, False Daisy, Yerba de Tago

Indications

Liver and gallbladder disorders, including infective hepatitis, liver cirrhosis, liver enlargement, and gallbladder disease.

Mechanism of Action

Medicinally active compounds in *Eclipta* species include coumestans, alkaloids, thiopenes, flavonoids, polyacetylenes, and triterpene saponins and their glycosides.¹ Wedelolactone is one coumestan credited with diverse pharmacological activities,² including reducing liver inflammation via repression of the interstitial space inflammatory mediator nuclear factor- κ B and inducing apoptosis in activated hepatic stellate cells.^{3,4} Five oleanane-type triterpenoids (steroid-like molecules) are also identified in *Eclipta*: echinocystic acid and its four derivative eclalbasaponins. All are credited to have antifibrotic activity in the liver⁴ and antitumor activities in liver cancer cell lines.⁵

Animal studies suggest that inhibition of alpha-glucosidase and aldose reductase by *Eclipta* echinocystic acid saponin glycosides improves glucose regulation and reduces inflammatory organ damage in diabetes.^{6,7} Animal studies have also shown *Eclipta* to ameliorate hyperlipidemia, in part, by reducing oxidative stress and modulating the transcription of genes involved in lipid metabolism.⁸

Eclipta is reported to reduce multidrug resistance to chemotherapy agents in human cancer lines because of its effects on PP-glycoprotein systems and to reduce mRNA expression of nuclear factor- κ B.⁹ *Eclipta* may improve the efficacy and reduce the adverse drug reactions in patients requiring glucocorticoid therapy because of its effects on the 11 β -hydroxysteroid dehydrogenase enzyme (11 β -HSD). 11 β -HSD enzymes are a type of oxidoreductase that catalyze the interconversion of prednisone to active prednisolone. *Eclipta* significantly increases 11 β -HSD enzyme activity, increasing the plasma concentration of prednisolone when coadministered, while decreasing the level of prednisone in rats,¹⁰ evidence that *Eclipta* up-regulates activity and expression of 11 β -HSD.

Evidence-Based Research

Eclipta is suggested to have hepatoprotective effects in animal and molecular studies by using small and moderate dosages; however, a biphasic effect for *Eclipta* is demonstrated, wherein large dosages are hepatotoxic in animal studies.¹¹ Because of effects on drug metabolism, *Eclipta* may improve drug resistance in chemotherapy for liver cancer as well as exert direct anticancer mechanism on the liver.¹²

Eclipta saponins have antifibrotic effects in the liver via supportive actions on hepatic stellate cells. Chronic inflammation in the liver can lead to fibrotic and cirrhotic changes and loss of liver function as

healthy hepatic stellate cells undergo transformation into fibroblast-like cells. If and when the irritating influences are removed, the transformed stellate cells will frequently revert back to a normal state as recovery of the entire organ occurs. Animal models of liver cancer typically induce cancer and an inflammatory state in the liver with various hepatotoxins. Inflamed liver cells are resistant to many chemotherapy drugs because the high levels of reactive oxygen species interfere with their activity and induce proteins that allow for cancer progression. *Eclipta* has been shown to reduce reactive oxygen species and normalize intracellular proteins and to reduce resistance to chemotherapy drugs.¹³ These studies suggest that *Eclipta* may be valuable as an adjunctive agent for tumor chemotherapy.

Cell culture studies suggest that *Eclipta* is inhibitory to hepatitis C virus, with wedelolactone, luteolin, and apigenin being credited as active compounds.¹⁴ Because hepatitis C is one of the contributors to the chronic inflammatory state and the pathogenesis of liver cancer, *Eclipta* is being explored as a possible chemopreventative for those with chronic hepatitis and other states of chronic hepatocellular inflammation. Wedelolactone has been formed into vesicles with phosphatidyl choline, a preparation reported to improve absorption and to be a useful hepatoprotective agent.¹⁵

Safety in Pregnancy and Breastfeeding

Because of potential liver toxicity at very high doses, *Eclipta* should probably be avoided during pregnancy and lactation.

General Safety

Animal studies suggest the aqueous leaf extracts of *Eclipta* had a detrimental effect on the liver at high doses.¹¹ In mice, the LD₅₀ dose of *Eclipta* is well over several grams per kilogram of body weight and is associated with elevated liver enzymes and histopathological changes in the liver.¹¹

Dosage

Dosage is 100–600 mg, several times per day. One to three times per day.

Traditional Uses

This tropical herb has served as a traditional food and medicine for >1000 years in India and Asia, where it has been used as an anti-inflammatory, liver tonic, kidney tonic, and blood sugar-balancing agent, among many other traditional uses. Liver indications include infective hepatitis, liver cirrhosis, liver enlargement, and gallbladder disease. Newer research has identified activity against the hepatitis C virus.^{16, 17}

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