Gymnema sylvestre

Description

Gymnema sylvestre is a woody, climbing plant, native to India. The leaves of this plant have been used in India for 2,000 years to treat madhu meha, or “honey urine,” an early term for glucosuria detected by pouring the patients urine onto the ground and observing whether or not insects were attracted to it. Chewing the leaves also destroys the ability to discriminate “sweet” taste, giving it its common name, gurmar or “sugar destroyer.”

Active Constituents

Plant constituents include two resins (one soluble in alcohol), six-percent gymnemic acids, saponins, stigmasterol, quercitol, and the amino acid derivatives betaine, choline, and trimethylamine.1

Mechanisms of Action

Gymnema sylvestre is a stomachic, diuretic, refrigerant, astringent, and tonic.1 The herb has been found to increase urine output and reduce hyperglycemia in both animal and human studies.

The antidiabetic activity of Gymnema appears to be due to a combination of mechanisms. Two animal studies on beryllium nitrate- and streptozotocin-diabetic rats found Gymnema extracts to double the number of insulin-secreting beta cells in the pancreas, and to return blood sugars to almost normal.2,3 Gymnema increases the enzymes responsible for glucose uptake and utilization,4 and inhibits peripheral utilization of glucose by somatotropin and corticotrophin.5 Plant extracts have also been found to inhibit epinephrine-induced hyperglycemia.6

Clinical Indications

The primary clinical application for this botanical is as an antidiabetic agent. Gymnema has been the object of considerable research since the 1930s, with promising results for both type 1 and 2 diabetes. Numerous animal studies have confirmed the hypoglycemic effect of Gymnema sylvestre.7-9
Type 1 Diabetes
In a controlled study, a standardized extract of the plant was given to 27 type 1 diabetics at a dose of 400 mg daily for 6-30 months. Thirty-seven other diabetics continued on insulin therapy alone and were tracked for 10-12 months. In the Gymnema group, insulin requirements were decreased by one-half and the average blood glucose decreased from 232 mg/dL to 152 mg/dL. The control group showed no significant decreases in blood sugar or insulin requirement. In addition, there was a statistically significant decrease in glycosylated hemoglobin (HbA1c) after 6-8 months on Gymnema when compared to pretreatment levels or the control group.  

Type 2 Diabetes
Twenty-two type 2 diabetics were administered 400 mg Gymnema extract daily for 18-20 months along with their oral hypoglycemic medications. This group experienced significant decreases in average blood sugar and HbA1c, and an increase in pancreatic release of insulin. Medication dosages were decreased and five participants were able to discontinue their medications entirely. 

Lipid-lowering
Preliminary animal studies indicate Gymnema may be beneficial for lowering blood lipids. When fed to rats on either a high- or normal-fat diet for 10 weeks, Gymnema sylvestre suppressed body weight gain and liver lipid accumulation to the same extent as chitosan in those on a high-fat diet. In a three-week study in rats, Gymnema feeding decreased total cholesterol and triglycerides and increased fecal fat elimination. Further research is warranted to determine whether Gymnema has this same lipid-lowering effect in clinical practice.

Side Effects and Toxicity
No significant adverse effects have been reported, aside from the expected hypoglycemia. Safety in pregnancy has not been established.

Dosage
The typical therapeutic dose of an extract standardized to contain 24-percent gymnemic acids is 400-600 mg daily. It is not clear from examining the studies whether divided doses is ideal but, because it is being used to regulate blood sugar, three divided doses with meals seems preferable.
References