Monograph

Gymnema sylvestre

Description

Gymnema sylvestre is a woody, climbing plant, native to India. The leaves of this plant have been used in India for over 2000 years to treat madhu meha, or "honey urine." Chewing the leaves destroys the ability to discriminate the "sweet" taste, giving it its common name, gurmar, or "sugar destroyer."

Constituents

Plant constituents include two resins (one soluble in alcohol), 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] It has been found to increase urine output and reduce hyperglycemia in both animal and human studies.

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

Clinical Applications

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 types 1 and 2 diabetes.

In a controlled study, a standardized Gymnema extract was given to 27 type 1 diabetics at a dose of 400 mg daily for 6-30 months. Thirty-seven others continued on insulin therapy alone and were tracked for 10-12 months. Insulin requirements were decreased by about one-half and the average blood glucose decreased from 232 mg/dL to 152 mg/dL in the Gymnema group. 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 either the pretreatment levels or the control group.[7]

Twenty-two type 2 diabetics were administered 400 mg Gymnema extract daily for 18-20 months in addition to 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 were able to discontinue drugs entirely.[8]

Numerous animal studies have confirmed the hypoglycemic effect of *Gymnema sylvestre*.[9-11]

Dosage and Toxicity

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 would seem ideal.

No significant adverse effects have been reported, aside from the expected hypoglycemia.[12] Safety in pregnancy has not been established.

References

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