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**File: ■ Boswellia (*Boswellia serrata*, Burseraceae) Gum Resin
■ Type 2 Diabetes Mellitus
■ Glucose and Lipid Levels**

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RE: Boswellia Gum Resin Intake for 12 Weeks Improves Glucose and Lipid Levels in Patients with Type 2 Diabetes

Azadmehr A, Ziaee A, Ghanei L, et al. A randomized clinical trial study: anti-oxidant, anti-hyperglycemic and anti-hyperlipidemic effects of olibanum gum in type 2 diabetic patients. *Iran J Pharm Res.* 2014;13(3):1003-1009.

Because some antihyperglycemic and antihyperlipidemic drugs used to treat patients with type 2 diabetes mellitus have limited effects and can cause adverse side effects, some patients seek safe, effective agents such as complementary and alternative medicine therapies. Boswellia (olibanum; *Boswellia serrata*, Burseraceae) gum resin is used in India to treat inflammatory ailments, cardiac disorders, arthritis, and pain.¹ Boswellic acids, the major active constituents of boswellia gum resin, have been associated with anti-inflammatory, anticancer, and antiulcerous activity. In animals, boswellia exhibited protective effects against long-term diabetic complications.² These authors conducted a randomized, placebo-controlled, double-blind clinical trial to investigate the antihyperglycemic and antihyperlipidemic effects of boswellia gum resin in patients with type 2 diabetes.

Recruited for the study were 71 Iranian men and women, aged 18 to 65 years, with type 2 diabetes (according to American Diabetes Association criteria) and being treated at the Diabetic Clinic of Qazvin Hospital in Qazvin, Iran. At baseline, the 2 groups were similar in demographic data, including age, gender, duration of diabetes, and body mass index (BMI), and in all clinical parameters. The patients were randomly assigned to the boswellia group (n=37) or the placebo group (n=34). They were instructed to take 2 capsules daily after meals for 12 weeks and to continue their metformin, a conventional oral antihyperglycemic drug. All patients completed the trial. Capsules of 400 mg of boswellia gum resin powder and capsules of toast powder (placebo) were used. Thin-layer chromatography revealed the following main types of components of the boswellia gum resin: phenylpropanoids, terpenoids, phenolic compounds, and flavonoids.

At baseline and after 12 weeks, the following measurements were recorded: BMI, body weight, waist circumference, fasting blood sugar (FBS), glycosylated hemoglobin (HbA1c), triglycerides (TGs), total cholesterol, insulin, low-density lipoprotein cholesterol

(LDL-C), high-density lipoprotein cholesterol (HDL-C), alkaline phosphatase (ALP), alanine aminotransferase (ALT), aspartate aminotransferase (AST), urea, and creatinine levels.

The authors report that the boswellia gum resin significantly lowered glucose ($P < 0.001$), HbA1c ($P < 0.001$), insulin ($P < 0.001$), total cholesterol ($P = 0.003$), LDL-C ($P < 0.001$), and TG ($P < 0.001$) levels compared with the placebo after 12 weeks. No significant effects were observed on the other measures, including the liver and kidney function tests (ALP, ALT, AST, urea, and creatinine). According to the authors, the hypoglycemic effect observed in the boswellia group may be due to improved insulin sensitivity or other glucose metabolism mechanisms altered by the plant; however, further studies are needed to confirm the effect. Although blood glucose control helps prevent the development of diabetes-related complications, controlling other factors such as lipids is also important. Significant findings in this study include the lowered total cholesterol, LDL-C, and TG levels reported in the boswellia group.

No adverse side effects were reported during the study.

"In summary, considering the results of the present and previous trials and safety of olibanum gum resin, this plant could be used as a safe anti-hyperglycemic and anti-hyperlipidemic agent for type 2 diabetic patients," write the authors, cautioning that additional, larger clinical trials are needed.

—*Shari Henson*

References

¹Sallaki: *Boswellia serrata*. In: Paranjpe P. *Indian Medicinal Plants: Forgotten Healers (A Guide to Ayurvedic Herbal Medicine)*. Delhi, India: Chaukhamba Sanskrit Pratishthan Publishers; 2001:233-234.

²Rao AR, Veeresham C, Asres K. In vitro and in vivo inhibitory activities of four Indian medicinal plant extracts and their major components on rat aldose reductase and generation of advanced glycation endproducts. *Phytother Res*. 2013;27(5):753-760.

Referenced article can be accessed at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4177622/>.

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