



# HerbClip™

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**FILE: ■Type 2 Diabetes**  
**■Maitake Mushroom (*Grifola frondosa*)**  
**■Hypoglycemic Activity**

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**RE: Maitake Mushroom's Hypoglycemic Activity**

Konno S. A mushroom extract for syndrome X and type II diabetes. *Natural Pharmacy* 2003;7(5)16-17.

It is commonly accepted that humans become more vulnerable to diseases as they age. Aging-related diseases and disorders include hypercholesterolemia (high cholesterol concentrations), obesity, hypertension, and hyperglycemia (high blood glucose concentrations)—all of which are associated with an increased risk of diabetes, heart disease, and cancer. Currently, more than 16 million persons in the United States and 250 million persons worldwide have diabetes (type I or type II). Approximately 80% of cases are type II; this article focuses on this form of diabetes.

Type II diabetes is the more difficult form to treat because insulin resistance, rather than insulin deficiency (as is associated with type I diabetes), is the primary problem that needs to be overcome. The drugs troglitazone and metformin were developed for this purpose; however, the use of troglitazone is associated with severe hepatotoxicity and is no longer commercially available in the United States, and metformin has potential toxic effects. Thus, safer alternative therapies are needed for the treatment of type II diabetes.

Syndrome X is a term that "is increasingly heard in conjunction with diabetes" because it also involves insulin resistance. Syndrome X represents a cluster of conditions that develop with aging and that "may predispose [patients] to diabetes, hypertension, cardiac disease, and other lethal aging-related diseases." Approximately 20% of the adult population in the United States is estimated to possibly have Syndrome X. Insulin resistance results in an excessive accumulation of both insulin and glucose in the body, and elevated blood concentrations of these two substances have been shown to accelerate the aging process. No specific drugs are available to treat this syndrome. Proper diet, regular exercise, and other lifestyle measures are recommended to manage the symptoms of this syndrome.

The possibility that the maitake mushroom (*Grifola frondosa*), which has long been claimed to have medicinal properties, represents a safe alternative therapy for diabetes and Syndrome X has been investigated. An active extract from the mushroom known as D-fraction has been scientifically shown to have immunostimulatory, antitumor, antiviral, and apoptosis (programmed cell death) activities. Many animal studies have shown that a specific extract (fraction-SX) from this mushroom, distinct from the D-fraction, significantly decreases blood glucose, insulin, or both in a time-dependent manner. In one study, serum glucose decreased from 241 to 171 mg/dL ( $p < 0.05$ ) and insulin from 5.9 to 2.5 ng/mL ( $p < 0.05$ ) in mice fed maitake extract (dose not provided in the article) twice daily for seven days. Few clinical studies in humans have been conducted; however, six patients with type II diabetes showed decreases in fasting blood glucose of 30% to 63% after consuming maitake mushroom powder caplets (500 mg fraction-SX/caplet) for two to four weeks; the number of caplets consumed daily was variable, ranging from 500 mg 3 times per day to 2 capsules 3 times per day. No adverse effects from treatment were observed. One of these six patients showed complete glycemic control.

The results of the studies described "support a potent hypoglycemic effect of maitake mushroom, although the mode of its action remains to be defined." A dosage protocol for patients with type II diabetes or Syndrome X has been developed for fraction-SX; however, the dosages are merely recommendations and have not been established in controlled clinical trials. The recommended regimen is two to three caplets of the commercially available product (SX-FRACTION™, 500 mg/caplet; Maitake Products, Inc, New Jersey) three times daily after breakfast, lunch, and dinner with a full glass of water. Now that the highly purified fraction-SX of maitake mushroom is commercially available, its potential as a hypoglycemic agent in patients with type II diabetes or Syndrome X "warrants extensive controlled clinical study" to establish safe and efficacious doses.

—Brenda Milot, ELS

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