

Glucosan™

Glucosan™ contains a total of **four active B.E.E.® ingredients** to help enhance glucose metabolism and promote healthy blood sugar levels in people with pre-diabetes, type 1 or type 2 diabetes.

Diabetes is caused by many factors; the principal factor being related to the hormonal functions within the body. In men with diabetes, our scientists believe that the testosterone levels are not properly balanced and in women, the estrogen hormone needs to be properly balanced. Yeast infections, which can cause the gallbladder to malfunction, will also have an effect on the secretion of the pancreas juice. The main focus however, is to correct the hormonal functions within the body while paying close attention to the health of the digestive system.

Glucosan™ helps control blood sugar in a number of ways. Not only does it help to properly balance key hormones within the male and female body, it also helps the body respond better to insulin that it makes naturally decreasing the amount of sugar the liver makes and the intestines absorb. It also helps enhance glucose uptake and inhibit glycosylation (the abnormal attachment of sugar to protein).

Glucosan™ also reduces the daily insulin requirement of patients with Type I diabetes. In addition,

Glucosan™ helps with various diabetes complications. It helps lower blood triglycerides and cholesterol levels, but it does not lower HDL ("good") cholesterol levels. It also helps protect the membranes of the lens of the eyes and improves diabetic nerve damage and reduces pain associated with that nerve damage.

Glucosan™ may not reduce blood sugar levels in healthy, non-diabetic people.

Applications

Glucosan™ has been successfully used to:

- Control blood sugar levels by improving insulin response
- Promote cardiovascular health and minimize the possible risk of degenerative complications.
- Improve the metabolism of glucose (carbohydrates), protein and fat and enhances uptake
- Help the body respond better to naturally produced insulin
- Reduce the daily insulin requirement of people with Type 1 Diabetes

- Protect the membranes of the lens of the eye
- Improve diabetic nerve damage
- Stimulate insulin production by the pancreas
- Help lower blood triglyceride and cholesterol levels
- Replace all other supplements for diabetes problems.

Fenugreek Seed B.E.E.®: contains alkaloids (mainly trigonelline), steroidal saponins, mucilaginous fiber and protein high in lysine, L-tryptophan and isoleucine. It helps stimulate insulin and lower blood sugar levels in people with atherosclerosis and non-insulin-dependent diabetes (type II), while reducing the daily insulin requirement in people with type I diabetes. It also improves lipid levels and inhibits cholesterol absorption and synthesis.

In India, fenugreek seeds have traditionally been used as a treatment for diabetes. Various studies have identified hypoglycemic activity of various fenugreek seed extracts in rabbits, rats, and dogs. The effects have been attributed to a number of components, including a defatted seed fraction, nicotinic acid, coumarin, and trigonelline. Fenugreek does contain a number of steroidal saponins, including yamogenin and diosgenin, which could contribute to some traditional therapeutic applications for the herb. Several small, and mostly uncontrolled, human studies have shown a reduction in plasma glucose concentrations and insulin responses in non-insulin-dependent diabetics. The mechanism of action is not clearly understood. A recent study showed that fenugreek seeds significantly lowered serum cholesterol levels (14 percent reduction) in a twenty-four-week study with sixty non-insulin-dependent diabetics.

In two small studies of individuals with either type 1 or type 2 diabetes, fenugreek seed powder lowered blood glucose and improved levels of blood cholesterol and triglycerides, among other beneficial effects. The seeds are rich in dietary fiber, which may be the main reason that fenugreek can lower blood sugar levels in diabetes.

Other preliminary and double-blind trials have found that fenugreek helps improve blood sugar control in patients with insulin-dependent (type 1) and non-insulin-dependent (type 2) diabetes. Double-blind trials have shown that fenugreek lowers elevated cholesterol and triglyceride levels in the blood. This has also been found in a controlled clinical trial with diabetic patients with elevated cholesterol.

The effect of fenugreek seeds (*Trigonella foenum graecum*) on blood glucose and the serum lipid profile was evaluated in insulin-dependent (Type I) diabetic patients. Isocaloric diets with and without fenugreek were each given randomly for 10 d. Defatted fenugreek seed powder (100 g), divided into two equal doses, was incorporated into the diet and served during lunch and dinner. The fenugreek diet significantly reduced fasting blood sugar and improved the glucose tolerance test. There was a 54 per cent reduction in 24-h urinary glucose excretion. Serum total cholesterol, LDL and VLDL cholesterol and triglycerides were also significantly reduced. The HDL cholesterol

fraction, however, remained unchanged. These results indicate the usefulness of fenugreek seeds in the management of diabetes.

Incorporation of fenugreek seeds for 20 days in the diets of 5 diabetic patients resulted in similar changes of higher magnitude in all the above parameters.

Siberian Ginseng Root (Eleutherococcus Senticosus) B.E.E.®: mainly contains eleutherosides and some polysaccharides that help reduce blood sugar levels, increase general resistance to disease and relieve chronic fatigue and stress. It also benefits the immune system. Siberian ginseng helps to stabilize blood sugar and reduce cravings for sweets.

In a double-blind placebo-controlled study involving 36 diabetic (NIDDM) patients. The subjects were treated for 8 weeks with ginseng (100 or 200 mg) or placebo and efficacy was evaluated through a variety of standard psychophysical tests. They found that ginseng use was associated with elevated mood, improved psychophysical performance, and reduced fasting blood glucose (FBG) and body weight. Subjects who were given the 200 mg dose of ginseng also demonstrated improved glycated hemoglobin, serum PIIINP, and physical activity. (Sotaniemi EA, et al. *Diabetes Care*. 1995 Oct;18(10):1373-1375.)

The hypoglycemic action of ginseng may render it a therapeutically efficacious adjunct in the treatment of diabetics.

Onion Bulb (Allium Cepa) B.E.E.®: contains certain sulfur compounds, such as allyl propyl disulphide (APDS) and flavonoids including quercetin that help to block the breakdown of insulin by the liver and possibly stimulate insulin production by the pancreas, thus increasing the amount of insulin and reducing sugar levels in the blood. It also helps protect the membranes of the lens of the eye from accumulations of polyols as a result of high glucose levels.

Several uncontrolled human studies and at least one double blind clinical trial have shown that large amounts of onion can lower blood sugar levels in people with diabetes. Onion does not reduce blood sugar levels in healthy nondiabetic people.

Experimental and clinical evidence suggests that APDS lowers glucose levels by competing with insulin for insulin-inactivating sites in the liver. This results in an increase of free insulin. APDS administered in doses of 125 mg/kg to fasting humans was found to cause a marked fall in blood glucose levels and an increase in serum insulin. Allicin doses of 100 mg/kg produced a similar effect.

Onion extract was also found to reduce blood sugar levels during oral and intravenous glucose tolerance. The effect improved as the dosage was increased; however, beneficial effects were observed even for low levels that used in the diet (eg., 25 to 200 grams). The effects were similar in both raw and boiled onion extracts. Onions affect the hepatic metabolism of glucose and/or increases the release of insulin, and/or prevent insulin's destruction.

The additional benefits of onions are their beneficial cardiovascular effects. They are found to lower lipid levels, inhibit platelet aggregation and are antihypertensive. So, liberal use of onions is recommended for diabetic patients.

Rice Husk (Oryza Sativa) B.E.E.®: *contains a wide variety of vitamins, minerals and fibers. It helps reduce the absorption of sugar.*

One of the most astounding results of Oryza Sativa currently under study is the effect on blood glucose and insulin levels in those with Diabetes Mellitus Types I and II. Initial reports indicate that Oryza Sativa can aid in the regulation of glucose levels in Types I and II diabetes. Research also indicates a lowering of LDL cholesterol (or "bad cholesterol"), and increases of HDL cholesterol (or "good cholesterol"). In addition to these studies are those, which show the regulation of blood sugar for individuals with hypoglycemia.

In a recent trial, Oryza Sativa was able to lower blood glucose by up to 30% in a small group of patients with type 1 or 2 diabetes participating in a pilot study.

Researchers report that one out of four diabetics taking part in the 57-subject study were able to reduce their daily injection of insulin or medication dosages after adding stabilized rice bran to their diets for just two months. The findings were reported in the March issue of the *Journal of Nutritional Biochemistry*.

Researchers also found that patients with elevated cholesterol who consumed 20 grams per day of stabilized rice bran lowered their total serum cholesterol and triglyceride levels between 5% and 15%.

Alpha Lipoic Acid (ALA): is a vitamin-like antioxidant that is capable of regenerating several other antioxidants back to their active states, including vitamin C, Vitamin E, etc. Alpha Lipoic Acid enhances glucose uptake in type 2 diabetes, inhibits glycosylation and has been used to improve diabetic nerve damage.

One of alpha-lipoic acid's primary uses is to treat nerve damage, including diabetic neuropathy, a dangerous long-term complication of diabetes that causes pain and loss of feeling in the limbs. The nerve condition may be partly due to free-radical damage to nerve cells caused by runaway levels of sugar (glucose) in the blood. Alpha-lipoic acid may play a role in countering nerve damage through its antioxidant effects. In addition, it can help people with diabetes respond to insulin, the hormone that regulates glucose. In a study of 74 people with type 2 diabetes who were given 600 mg or more of alpha-lipoic acid daily, all benefited from lowered glucose levels. Studies in animals also show that alpha-lipoic acid increases blood flow to the nerves and enhances the conduction of nerve impulses. These effects may make alpha-lipoic acid suitable for the treatment of numbness, tingling and other symptoms of nerve damage from any cause, not just diabetes.

Preliminary and double blind trials have found that supplementing 600–1,200 mg of lipoic acid per day improves insulin sensitivity and the symptoms of diabetic neuropathy. In a preliminary study, supplementation with 600 mg of alpha-lipoic acid per day for 18 months slowed the progression of kidney damage in patients with type 1 and type 2 diabetes.

Alpha-lipoic acid is purported to improve insulin's action of skeletal muscle glucose transport and metabolism. Insulin resistance of muscle glucose is a prominent feature of type 2 diabetes and therapeutic interventions using alpha-lipoic acid have demonstrated impressive results. Enhanced glucose uptake and utilization (62%-64% and 33% increase respectively), reduced blood glucose levels and protein glycosylation (the process of combining a sugar and a protein), and amelioration of symptoms associated with diabetic neuropathy are apparent. Alpha-lipoic acid is easily absorbed and assimilated in the body with no apparent side effects.

SUGGESTED USE:

Start with 1 capsule twice daily and either increase or decrease the dosage until your blood sugar is controlled. Take Glucosan™ with meals.