GlucoSupreme™ Herbal

designs for health®

*Herbal blend to support healthy insulin and blood glucose metabolism**

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GlucoSupreme™ Herbal is a synergistic formula that has been designed to help maintain healthy blood sugar levels, and is ideal support for individuals with insulin and glucose-related conditions such as metabolic syndrome and diabetes.*

GlucoSupreme™ Herbal contains standardized phytochemical compounds, which include:

- 1% corosolic acid from Banaba leaf
- 40% isoflavones from Kudzu root
- 5% ginsenosides from American Ginseng root
- 60% saponins from Fenugreek seed
- 25% gymnemic acid from Gymnema leaf

Supplement Facts

Serving Size 4 capsules
Servings Per Container 30

Amount Per Serving		% Daily Value
Berberine (as Berberine HCl) (*Berberis aristata*)(root)	500 mg	*
Fenugreek Extract (*Trigonella foenum-graecum*)(seed) [standardized to contain 60% saponins]	200 mg	*
American Ginseng (*Panax quinquefolius*)(root) [standardized to contain 5% ginsenosides]	200 mg	*
Gymnema Extract (*Gymnema sylvestre*)(leaf) [standardized to contain 25% gymnemic acid]	200 mg	*
Banaba Extract (*Lagerstroemia speciosa*)(leaf) [standardized to contain 1% corosolic acid]	200 mg	*
Kudzu Extract (*Pueraria lobata*)(root) [standardized to contain 40% isoflavones]	200 mg	*
Cinnamon Extract (*Cinnamomum cassia*)(bark)	200 mg	*

*Daily Value not established.

Other Ingredients: Cellulose (capsule), microcrystalline cellulose, silicon dioxide, vegetable stearate.

Berberine (*Berberis aristata*) is a compound highly regarded for its efficacy in supporting blood glucose regulation and insulin sensitivity.* Evidence indicates berberine may be as effective as metformin in lowering fasting blood glucose (FBG) and HbA1c, LDL-C, triglycerides (TGs), and fasting insulin.[1] When added to the existing medication regimens of newly diagnosed type 2 diabetic patients, berberine significantly reduced body weight, blood pressure, BMI, blood glucose, total cholesterol (TC), TGs, LDL-C, fasting insulin, and HbA1c, while increasing high density lipoprotein cholesterol (HDL-C).[2] Additionally, insulin resistance (HOMA-IR) and the advanced glycation end product, MGO, were significantly reduced just after three months of berberine therapy.[2] There are multiple mechanisms behind berberine's efficacy, such as increased endogenous insulin secretion (evidenced by increased fasting and postprandial C-peptide) and increased insulin receptor expression.[3] Berberine regulates glucose metabolism through the GnRH-GLP-1 and MAPK signaling pathways by up-regulating GLP-1 receptor and MAPK 10 gene, while downregulating GnRHr and GnRH1.[4] Additionally, berberine is a natural inhibitor of dipeptidyl peptidase IV (DPP IV), an enzyme that degrades incretin hormones. Incretins stimulate post-prandial insulin secretion, so increasing the half-life of incretins may help increase endogenous insulin secretion in response to a meal.[5] Berberine's blood glucose-lowering effects also stem from stimulating glycolysis via inhibition of mitochondrial glucose oxidation (specifically at complex I of the electron transport chain), and by increasing cellular glucose uptake independently of insulin.[6] Berberine increases phosphorylation of AMP-kinase (AMPK), a process that occurs naturally in response to physical exercise, fasting, and caloric restriction.[6] In this sense, berberine may be thought of as a "calorie restriction mimetic," which again mirrors the multifactorial effects of metformin.

Fenugreek (*Trigonella foenum-graecum*) has a long history of many uses in Indian and Chinese medicine. Diosgenin, 4-hydroxyisoleucine, and dietary fiber (galactomannan) within the seeds are among fenugreek's most bioactive constituents with hypoglycemic, insulin-tropic and anti-diabetic properties.[7] Diosgenin stimulates insulin secretion, enhances insulin-dependent glucose uptake, and renews damaged pancreatic beta-cells.[7] 4-hydroxyisoleucine stimulates glucose-dependent insulin secretion and reduces IR in muscle and liver.[7] Galactomannan enhances glycemic control by slowing glucose and carbohydrate absorption, due to its high viscosity and mucilaginous fiber content in the gut.[7] An *in vitro* study found that the polyphenol stilbenes from fenugreek seeds improved insulin sensitivity and mitochondrial function and scavenged free radicals in adipocytes by promoting AKT and AMPK phosphorylation.[8] A small human randomized controlled trial demonstrated that by replacing only 10% refined wheat flour with fenugreek seed powder in buns and flatbreads, the glycemic response and the glycemic index of the breads were significantly reduced, suggesting it is a functional ingredient for lowering postprandial glucose levels.[9] Based on human and animal studies, fenugreek may lower FBG, HbA1c, postprandial glucose, TC, TGs, and LDL-C.[10,11]

American ginseng (*Panax quinquefolium*) was shown to improve insulin sensitivity and glucose uptake in human adipocytes, and blunted the development of type 2 diabetes and insulin resistance (evidenced by improved FBG and HOMA-IR) in animals fed a high fat diet.[12] In a human randomized trial, American ginseng extract, coupled with a standard hypoglycemic medication for 8 weeks, significantly reduced HbA1c and FBG, and lowered systolic blood pressure and LDL-C.[13] Additional *in vitro* studies provide evidence that the ginsenosides from American ginseng promotes human pancreatic beta-cell function.[14] American ginseng is difficult to cultivate; however, Canada now grows more American ginseng than any other country. In the U.S., most American ginseng is cultivated in Wisconsin.

Gymnema (*Gymnema sylvestre*) leaves have been used for more than 2,000 years in India to treat *madhu meha*, or "honey urine," and translates to "destroyer of sugar" in Hindi.[7] Preliminary human studies suggest that gymnema may be efficacious for the management of serum glucose levels in type 1 and type 2 diabetes and as an adjunct to conventional drug therapy. In mice with induced insulin resistance fed a high-fat diet and given *Gymnema sylvestre* significantly suppressed body weight gain, serum lipid levels, insulin, adipose tissue and liver inflammation, suggesting its potential efficacy against metabolic disorder.[15] Recent studies also report gymnema to play a significant role in reducing body weight, BMI, and VLDL cholesterol levels.[16]

Banaba (*Lagerstroemia speciosa*) is a medicinal plant that grows in India, Southeast Asia, and the Philippines. The main hypoglycemic effect of banaba leaf extract is similar to that of insulin, in that it induces glucose transport from the blood into body cells to be burned as energy. Currently, research suggests that orally administered banaba extract, standardized to 1% corosolic acid, may lower blood sugar in people with type 2 diabetes.[17,18]

Kudzu (*Pueraria lobata*) originated in China and was brought to the United States from Japan in the late 1800s. Type 2 diabetes is typically preceded by insulin resistance, so reversing insulin resistance may lessen chances of developing type 2 diabetes.[19,20] Kudzu demonstrates its ability to enhance glucose utilization and the secretion of beta-endorphins from the adrenal glands through activation of the alpha-1 adrenoceptors resulting in lowered blood glucose levels.[18]

Cinnamon (*Cinnamomum cassia*) extract chosen for this formula has been bio-assayed for alpha-amylase inhibition, and is standardized to a significant content of bioactive polyphenols. Chromium and polyphenols naturally found in cinnamon have been shown to:*[7,21-24]

- Trigger insulin cascade by initiating phosphorylation at the insulin receptor
- Improve insulin-regulated glucose utilization
- Enhance insulin signaling in skeletal muscle
- Aid glucose to glycogen conversion

The antioxidant properties of cinnamon also make it beneficial for subjects with metabolic syndrome and diabetes, both of which are inflammatory disorders resulting in excessive oxidative stress.[23,24]

Who should take GlucoSupreme™ Herbal? Those who would benefit from metabolic support for optimal blood sugar and those with dysglycemic conditions including metabolic syndrome, diabetes and polycystic ovary syndrome.* GlucoSupreme™ Herbal should only be used under the supervision of a qualified health care practitioner who can actively monitor a patient's blood sugar levels if they are diabetic and/or are using blood sugar modulating medication or insulin.

Who should not take GlucoSupreme™ Herbal? This product should not be taken by pregnant or nursing women or by patients with known allergies to any of the herbs used in this formula.

Recommended Use:

- Take four capsules per day with meals, or as directed by your health care practitioner (divided dosing recommended).

For a list of references cited in this document, please visit:

http://www.designsforhealth.com/techsheet-references/glucosupreme-herbal-references.pdf

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Health care practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage. Any product containing botanical substances has the potential for causing individual sensitivities. Individual monitoring, including liver function tests, may be appropriate.

***These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.**

To contact Designs for Health, please call us at (860) 623-6314, or visit us on the web at www.designsforhealth.com.