

GlucoSupreme™ Herbal



Herbal Blend to Support Healthy Glucose Metabolism*

By Caitlin H. Higgins, MS, CNS; Bri Mesenbring, MS, CNS, LDN; and David M. Brady, ND, DACBN, IFMCP, FACN

This information is provided as a medical and scientific educational resource for the use of physicians and other licensed health-care practitioners ("Practitioners"). This information is intended for Practitioners to use as a basis for determining whether to recommend these products to their patients. All recommendations regarding protocols, dosing, prescribing, and/or usage instructions should be tailored to the individual needs of the patient considering their medical history and concomitant therapies. This information is not intended for use by consumers.

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

Formula Highlights

- Berberine (*Berberis aristata*) supports optimal metabolic health by reducing GLP-1 breakdown*
- Includes berberine, fenugreek, American ginseng, and gymnema to help support normal GLP-1 function*
- Includes synergistic botanical extracts that support healthy glucose metabolism*
- 200 mg of fenugreek extract and 200 mg of American ginseng to support healthy metabolic function*
- Gymnema (*Gymnema sylvestre*), banaba (*Lagerstromia speciosa*), kudzu (*Pueraria lobata*), and cinnamon (*Cinnamomum cassia*) extracts – botanicals to help support optimal cellular glucose metabolism and reduced glucose absorption from starches*

Berberine (*Berberis aristata*) is a compound highly regarded for its efficacy in supporting blood glucose regulation and healthy insulin metabolism.* Evidence indicates berberine may be supportive in lowering numerous markers of metabolic dysfunction, including fasting blood glucose (FBG), hemoglobin A1C (HbA1c), low-density lipoprotein-cholesterol (LDL-C), triglycerides (TGs), and fasting insulin.¹ One of the main ways berberine may support metabolic health is through its ability to facilitate glucagon-like peptide-1 (GLP-1) secretion in vitro.² GLP-1 is a peptide hormone that promotes healthy body composition and weight by supporting insulin and inhibiting glucagon secretion, which stimulates glucose production in the liver.³ Two berberine metabolites, berberrubine (BBB) and palmatine (PMT), have been reported to have significant pharmacological effects on GLP-1; namely, increasing production of the GLP-1 peptide in mechanistic studies.² A systematic review and meta-analysis of randomized controlled trials (N = 4,158) published in 2021 investigated the efficacy of berberine intervention alone (between 1.5 to 2 g/day) or with standard Westernized therapies in treating diabetes (type 2 diabetes mellitus [T2DM] or prediabetes) compared to control groups.⁴ The primary and secondary outcomes assessed were HbA1C, FBG, and 2-hour post-prandial plasma glucose (2hPG) and fasting insulin (FINS), Homeostatic Model Assessment for Insulin Resistance (HOMA-IR), and body mass index (BMI), respectively. Significant reductions in HbA1C (MD = -0.73), FBG (MD = -0.86), 2hPG (MD = -1.26), FINS (MD = -2.05), HOMA-IR (MD = -0.71), and BMI (MD = -1.43) were reported (all P < 0.05).⁴

Berberine's efficacy is attributed to increased endogenous insulin secretion and insulin receptor expression.⁵ Berberine regulates glucose metabolism through the GnRH-GLP-1 and mitogen-activated protein kinase (MAPK) signaling pathways by up-regulating the GLP-1 receptor and MAPK10 gene while downregulating GnRHr and GnRH1.⁶ Additionally, berberine is a natural dipeptidyl peptidase IV (DPP IV) inhibitor. This enzyme degrades incretin hormones, especially GLP-1, which may help increase endogenous insulin secretion in response to a meal.⁷ Berberine also stimulates glycolysis by inhibiting mitochondrial glucose oxidation (specifically at complex I of the electron transport chain) and increasing cellular glucose uptake independently of insulin.⁸ Berberine increases the phosphorylation of AMP-kinase (AMPK), which is important for proper cellular glucose metabolism and uptake.⁸ In this sense, berberine may mimic the supportive metabolic effects typically seen in response to physical exercise, fasting, and caloric restriction.⁹

Fenugreek (*Trigonella foenum-graecum*) has a long history in Indian and Chinese medicine. Key bioactive compounds of fenugreek include N55, diosgenin, 4-hydroxyisoleucine, and dietary fiber (galactomannan), which have hypoglycemic, insulin-tropic, and anti-diabetic properties.¹⁰⁻¹³ N55 supports the postprandial endogenous response of GLP-1 secretion without activating GLP receptors or interfering with the actions of other GLP-1 analogues.¹⁴ Diosgenin stimulates insulin secretion, enhances insulin-dependent glucose uptake, and renews damaged pancreatic beta-cells.¹⁰ 4-hydroxyisoleucine stimulates glucose-dependent insulin secretion and reduces insulin resistance in muscle and liver.¹⁰ Galactomannan

Benefits*

- Supports healthy blood glucose metabolism^{1,2,4,6,8-10,14-17,20-22,26,31-34}
- May help support normal glucagon-like peptide-1 (GLP-1) secretion^{2,6,7,14,17,24}
- Promotes healthy insulin metabolism^{2-5,7,9,10,14,17,20,22,24-28,31-34}
- Helps support healthy metabolic function^{9,10,16,17,20,22}
- Supports antioxidant status^{10,30,33,34}

Supplement Facts

Serving Size 4 capsules
Servings Per Container 30

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

*Daily Value not established.
Other Ingredients: Cellulose (capsule), microcrystalline cellulose, stearates (vegetable source), silicon dioxide.

promotes glycemic control by slowing glucose and carbohydrate absorption due to its high viscosity and mucilaginous fiber content in the gut.¹⁰ A systematic review and meta-analysis of trials published in 2023 involving 894 subjects reported that the groups supplemented with fenugreek (between 0.5 g/day for four weeks to 10 g/day for six months) experienced a decrease in FBG (MD = 3.70), post-prandial glucose (MD = -10.61), and a statistically significant reduction in HbA1C (MD = -0.88, P = 0.00), suggesting its use as a supportive herbal glucose regulator.¹⁵

American ginseng (*Panax quinquefolium*) contains ginsenoside Rb1, an active saponin compound with numerous metabolic, immune, neurological, and cardiovascular benefits.¹⁶ Its ability to attenuate glucose and lipid metabolism is particularly important by supporting regular insulin and leptin sensitization.¹⁶ A mechanistic study reported that diabetic rats fed a high-fat diet and supplemented with ginseng total saponins (GTS), which included ginsenoside Rb1, experienced significantly attenuated blood sugar and blood lipid levels after four weeks.¹⁷ Additionally, it was reported that these findings were associated with increased levels of endogenous GLP-1 secretion.¹⁷ Numerous in vitro and in vivo studies support these data.^{16,18,19} A systematic review and meta-analysis reported that patients with T2DM who were given daily ginseng (2.7 to 5 g/day for 4 to 12 weeks) experienced improved glucose control and insulin metabolism compared to the control.²⁰ Similar results were reported when ginseng was co-administered with a standard hypoglycemic medication for eight weeks, signifying a possible synergistic effect.²¹

Gymnema (*Gymnema sylvestre*), known as the “destroyer of sugar” in Hindi, has been used for more than 2,000 years to treat *madhu meha*, or “honey urine.”²² The effect of *Gymnema sylvestre* administration on glycemic control was investigated in a systematic review and meta-analysis published in 2021. Pooled data from 10 studies and 419 participants reported that patients with type 2 diabetes who were given daily gymnema (400 mg to 10 g orally for 21 days to 20 months) experienced significantly attenuated FBG, post-prandial blood glucose, and HbA1C (all P < 0.0001) compared to baseline.²³ In animal research, streptozotocin (STZ)-induced diabetic rats administered with a hydroalcoholic extract of *Gymnema sylvestre* (HAGS) for 28 days experienced dose-dependent decreases in blood glucose and HbA1c levels and increases in insulin levels compared to untreated diabetic rats (all P < 0.05).²⁴ After the rats were sacrificed, the insulin receptor gene expression in the pancreas and the proglucagon gene expression levels in the ileum in HAGS-treated diabetic rats were significantly increased compared to the diabetic control.²⁴ Proglucagon is a precursor to GLP-1, crucial for appropriate insulin secretion in response to consuming an energy-rich meal. In the discussion, the authors hypothesize whether the increased proglucagon expression was the key mechanism behind the increased insulin output in the HAGS-treated diabetic rats. Further animal research indicated that groups supplemented with *Gymnema sylvestre* experienced significantly suppressed weight gain, serum lipid levels, insulin, adipose tissue, and liver inflammation in mice with induced insulin resistance, suggesting its potential efficacy against metabolic disorders.²²

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 like that of insulin in that it induces glucose transport from the blood into cells to be burned as energy.²⁵ Research suggests that orally administered banaba extract (up to 500 mg BID), standardized to 1% corosolic acid, may help promote normal blood sugar metabolism in people with T2DM and metabolic syndrome.²⁶⁻²⁸

Kudzu (*Pueraria lobata*) originated in China and was brought from Japan in the late 1800s to the United States. T2DM is typically preceded by insulin resistance, so reversing insulin resistance may lessen the chances of developing it.²⁹ Clinical studies observed the following effects in the presence of kudzu administration: attenuated glucose utilization and the secretion of beta-endorphins from the adrenal glands by activating the alpha-1-adrenoceptors, lowering blood glucose levels.²⁷

Cinnamon (*Cinnamomum cassia*) extract is standardized to contain many bioactive polyphenols, promoting normal carbohydrate digestion through inhibiting alpha-amylase in vitro.³⁰ Chromium and polyphenols naturally found in cinnamon have been shown in clinical, animal, and mechanistic studies to:^{10,31-34}

- Help trigger insulin cascade by initiating phosphorylation at the insulin receptor
- Support normal insulin-regulated glucose utilization
- Promote normal insulin signaling in skeletal muscle
- Support glucose to glycogen conversion

Cinnamon’s antioxidant properties may make it beneficial for individuals with dysregulated blood sugar and insulin function.*

Recommended Use: Take 4 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:

<https://www.designsforhealth.com/api/library-assets/literature-reference---glucosupreme-herbal-tech-sheet-references>

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.

***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.**

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