

What's Up Doc ?

This Month a New Formula & a New Product.



Supplement Facts

Serving Size 1 Capsule Servings per Container 90

Amount per Serving		% Daily Value ▼	
Chromium GTF	(in 60 mg food)	120 mcg	400%
Vanadium	(in 5 mg food)	5 mcg	*
Berberine HCL	(Plant Source)	75 mg	*
Gymnema Sylvestre Leaf	<i>Gymnema Sylvestre</i>	70 mg	*
Organic Cinnamon Bark	<i>Cinnamon Verum</i>	60 mg	*
Goat's Rue	<i>Galega Officinalis</i>	45 mg	*
Organic Fenugreek Seed	<i>Trigonella Foenum-Graecum</i>	35 mg	*
Bitter Melon	<i>Momordica Charantia</i>	30 mg	*
N-Acetyl-L-Cysteine	(Plant Source)	10 mg	*

* Recommended Daily Intake has not been established

This is a unique and carefully crafted whole food product, which contains no isolates or synthetic ingredients. Doctors Research products are only available to you as Healthcare Providers.

Doctors Research does not sell direct to the Public, and does not sell on Amazon, E-Bay, or any other retail sites.

So, what is so new or special about this formula ? We have added French Lilac, what is French Lilac?

Metformin's natural source!

French lilac, or Goat's rue, has a long history in traditional medicine, particularly in Europe, which makes it relevant to natural approaches to managing blood sugar.

Also known as *Galega officinalis* has been used for centuries in traditional medicine. Known for its potential effects on blood sugar levels including diabetes. Its significance in modern medicine is primarily due to its role in the discovery of metformin, a commonly prescribed medication for Type 2 Diabetes. Metformin however is a chemical isolate.

Mechanism of Action and Active Compounds

The key compounds in *Galega officinalis* responsible for its hypoglycemic properties are guanidine derivatives, including galegine. These compounds reduce blood glucose levels by the same mechanisms as metformin, including:

1. **Inhibition of hepatic glucose production** (reduction in gluconeogenesis).
2. **Increased peripheral glucose utilization**, especially in muscle cells.
3. **Improved insulin sensitivity**, helping cells better respond to insulin.
4. **Reduction of intestinal glucose absorption** in some models.

The discovery of these compounds in the early 20th century led to the synthesis of metformin, which mimics these effects.

Clinical Studies and Evidence

Several studies have explored the hypoglycemic effects of *Galega officinalis* and its active compounds:

1. **Preclinical Studies:** More recent preclinical studies have revisited French lilac, demonstrating that its extracts can reduce blood glucose levels in animal models of diabetes. These studies indicate that French lilac influences glucose metabolism, without the side effects of metformin or similar pharmaceuticals.
2. **Complementary Use:** Research has examined the potential of using French lilac in combination with other natural hypoglycemic agents, such as Berberine and Chromium GTF, or as part of a broader lifestyle intervention. The studies indicate the benefits of French lilac in managing blood sugar, particularly in individuals with hyperglycemia or insulin resistance.
3. **Adjunct to Conventional Treatment:** For patients already on metformin or other hypoglycemic agents, *Galega officinalis* can be used as an adjunct therapy. However, the use of the herb is recommended under the guidance of a Healthcare Provider (HCP) to monitor the safe reduction in glucose levels.
4. **Herbal Support in Lifestyle Interventions:** In patients who are undergoing dietary and lifestyle interventions to manage their blood sugar levels, the addition of *Galega officinalis* offers benefits, in improving insulin sensitivity and glucose uptake in tissues, without Pharmaceutical side effects. These gains can be improved upon when combined with herbs such as Berberine, Gymnema and Fenugreek.

Gluko-Sugar-Balance

A combination of key proven ingredients, in addition to French Lilac.

Gluko-Sugar-Balance includes the ingredients listed overleaf.

Chromium GTF. The biologically active form of chromium, sometimes called glucose tolerance factor or GTF, has been proposed to be a complex of chromium, nicotinic acid, and possibly the amino acids glycine, cysteine, and glutamic acid. Many attempts have been made to isolate or synthesize the glucose tolerance factor, with little success. Chromium is not naturally found in the body in the commonly used supplement forms such as chromium picolinate or chromium chelate. Only 1% or less of inorganic chromium is absorbed vs. 10-25% of chromium GTF. Chromium has been reported to reduce sugar cravings and is often advised to help with weight loss. Interestingly there is an exceedingly small amount of chromium in white sugar, that small amount can cause cravings if the individual is otherwise deficient in chromium. Since chromium is needed by the body to fully digest white sugar, this leads to a cycle of repeated sugar cravings. Supplementing with chromium GTF helps to break the sugar craving cycle.

Chromium is generally accepted as an essential nutrient that potentiates insulin action, and thus influences carbohydrate, lipid, and protein metabolism". One study found that chromium GTF reduced blood glucose levels by 16.8% versus 6.0% for inorganic chromium [1]. Another study found that chromium GTF benefit diabetics by improving blood glucose control, lowering serum lipids, and decreasing the risk of coronary heart disease.[2]

Chromium and *Saccharomyces cerevisiae* (SC). SC. holds several unique advantages for diabetics. First *Saccharomyces cerevisiae* (SC) is the most natural medium in which to grow chromium GTF. GTF is the body's form of chromium (Cr) and is the form that is best for regulating blood sugar. Specifically, it has been found that SC. with a high Chromium GTF content improved glucose tolerance, through a decrease in hepatic extraction of insulin. *Saccharomyces cerevisiae* chromium GTF is up to 25 times more bioavailable than chromium mineral salts such as chromium picolinate [3]

In 1999, Günter Blobel, a Howard Hughes Medical Institute investigator at The Rockefeller University was awarded the Nobel Prize for discovering that protein chaperones are necessary for mineral transport into cellular receptors; *Saccharomyces cerevisiae* naturally contains protein chaperones and other food factors which aid in mineral absorption. Additionally, *Saccharomyces cerevisiae* has proinsulin-like substances, "the specificity of the processing enzymes is so similar to the proinsulin converting enzymes in the human pancreatic beta-cell that it allows the processing of the mini-proinsulin to insulin". *Saccharomyces cerevisiae* also contains a variety of insulin precursors that can be helpful for diabetics.

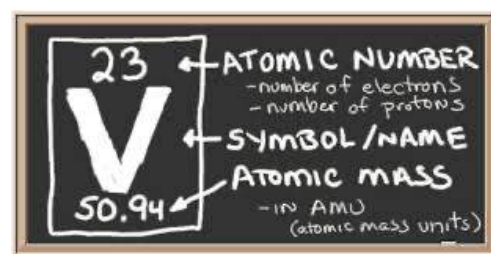
[1] Guan X, Matte JJ, Ku PK, Snow JL, Burton JL, Trottier NL. *J Nutr* 2000;130(5):1274-1279 [2] Thim L, Hansen MT, Sorensen AR. *Secretion of human insulin by a transformed yeast cell. FEBS Letters* 1987, 212(2):307-312 [3] Ensminger AH, Ensminger ME, Konlode JE, Robson JRK. *Food & Nutrition Encyclopedia*, 2nd ed. CRC Press, New York, 1993 [4] Kjeldsen T. *Yeast secretory expression of insulin precursors. Appl Microbiol Biotechnol* 2000;54(3):277-286

Vanadium. Vanadium is a mineral used to support healthy blood levels. Gluco Sugar Balance contains the vegan food form of vanadium, rather than a mineral salt. Vanadium "is used in pharmacological quantities to potentiate the effect of insulin"[5]

Studies show vanadium improves fasting blood glucose levels [6].

Vanadium may help with carbohydrate metabolism and seems to have "insulin-like effects" [7].

"Vanadate forms compounds with other biological substances". "Vanadium has been postulated to



play a role in the regulation of (NaK)-ATPase, phosphoryl transferase enzymes, adenylate cyclase, and protein kinases; as an enzyme cofactor in the form of vandyl and in hormone, glucose, lipid, and tooth metabolism". Vanadium in foods is found in an organic form. Vanadium in food is safer than non-food forms it also appears to be about 50% more effective.[8]

[5] Eckhert CD. In *Modern Nutrition in Health and Disease*, 10th ed. .Lippincott Williams & Wilkins, Baltimore, 2006: 348. [6] Nahas R, Moher M. *Complementary and alternative medicine for the treatment of type 2 diabetes. Can Fam Physician. 2009 Jun;55(6):591-6.* [7] Kimura K. [Role of essential trace elements in the disturbance of carbohydrate metabolism] *Nippon Rinsho. 1996 Jan;54(1):79-84* [8] Nielsen F. *Ultratrace Minerals. In Modern Nutrition in Health and Disease, 8th ed. Lea & Febiger, Phil.,1994:269-286.* Badmaev V, Prakash S, Majeed M. Vanadium: a review of its potential role in the fight against diabetes. *J Altern Complement Med. 1999;5(3):273-291*

Berberine “Berberine promotes glucose uptake and inhibits gluconeogenesis ... Many studies have



confirmed the glucose- lowering effect of berberine in Type 2 Diabetes patients”. A 2018 study found that berberine (BBR) “was more effective than metformin ... in decreasing Methylglyoxal (MGO) levels, and insulin resistance through improved glycemic control in newly diagnosed Type 2 Diabetic patients. BBR decreased MGO and insulin resistance by 56% and 73% compared to 43% and 40% by those using metformin. BBR was found to be superior to metformin in decreasing the MGO and insulin resistance”. [9]

[9] Memon AM, et al. *Methylglyoxal and insulin resistance in berberine-treated type 2 diabetic patients. J*

Res Med Sci. 2018; 23: 110 .

Gymnema Leaf and Callus “*Gymnema*

sylvestre has been used in traditional medicine and a number of societies for the management of blood sugar disorders. The phyto-constituents of *Gymnema sylvestre* are used in the treatment of diabetes and obesity Various animal studies have found that it has protective effects for the pancreas of diabetics. It contains substances that researchers have concluded “showed anti-diabetic activities through regenerating beta-cells.



Cinnamon Bark

Cinnamon cassia has been found in animal studies to improve fasting blood glucose and “significant decreases in plasma C-peptide, serum triglyceride, total cholesterol and blood urea nitrogen levels while serum high density lipoprotein (HDL)-cholesterol levels were significantly increased” HDL is known as “good cholesterol”).[10]



Likewise studies indicate Cinnamon extract regulates glucose transporter and insulin-signaling gene expression.

[10] Ping H, Zhang G, Ren G. Antidiabetic effects of cinnamon oil in diabetic KK-A(y) mice. *Food Chem Toxicol.* 2010 Jun 1

Fenugreek Seed. *Trigonella foenum-graecum* has been used since ancient times and is well studied



as part of a program for blood sugar management. The Physician's Desk Reference (PDR) states, "Fenugreek reduces blood sugar". A 2009 human study "showed that Fasting Blood Sugar, TG and VLDL-C decreased significantly (25 %, 30 % and 30.6 % respectively) after taking fenugreek seed.[11]

Recent studies show 4-hydroxyisoleucine (an amino acid within Fenugreek) is significant as an anti-diabetic agent by suppressing progression of type II diabetic states through the enhancement of insulin sensitivity and glucose uptake in peripheral tissue." Likewise, "Diosgenin a steroidal saponin present in Fenugreek improves glucose metabolism by

promoting adipocyte differentiation and inhibiting inflammation in adipose tissues...[12]

[11] Kassaian N, Azadbakht L, Forghani B, Amini M. Effect of fenugreek seeds on blood glucose and lipid profiles in type 2 diabetic patients. *Int J Vitam*

Nutr Res. 2009 Jan;79(1):34-9 [12] Uemura T, Hirai S, Mizoguchi N, Goto T, Lee JY, Taketani K, Nakano Y, Shono J, Hoshino S, Tsuge N, Narukami T, Takahashi N, Kawada T. Diosgenin present in fenugreek improves glucose metabolism by promoting adipocyte differentiation and inhibiting inflammation in adipose tissues. *Mol Nutr Food Res.* 2010 Jun 10. [Epub ahead of print.

Bitter Melon *Momordica charantia* "has been extensively used traditionally as food and herbal medicine for Type 2 Diabetes in Asia, Brazil, and east Africa". "Momordica charantia Linnaeus (Family Cucurbitaceae) is the most studied herb for its anti-hyperglycemic effect in vivo and in clinical studies". Studies show its efficacy in maintaining proper glucose levels.[13]



[13] Peter EL, et al. *Momordica charantia* L. lowers elevated glycaemia in type 2 diabetes mellitus patients: Systematic review and meta-analysis. *J Ethnopharmacol.* 2019 Mar 1;231:311- 324.

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N-Acetyl-L-Cysteine (NAC) Doctors Research uses a plant source. NAC is a stable form of the amino acid L-cysteine and helps with high glucose (HG) levels. One study stated "Our results clearly demonstrate protective effect of NAC is mediated through attenuation of oxidative stress and apoptosis and suggest therapeutic potential of NAC in attenuation of diabetic neuropathy" [14]. NAC is also shown to have blocked the impact of advanced glycation end products (AGEs)[15]

[14] Ko SY, Lin YP, Lin YS, Chang SS. Advanced glycation end products enhance amyloid precursor protein expression by inducing reactive oxygen species. *Free Radic Biol Med.* 2010 Aug 1;49(3):474-8. [15] Ko SY, Lin YP, Lin YS, Chang SS. Advanced glycation end products enhance amyloid precursor protein expression by inducing reactive oxygen species. *Free Radic Biol Med.* 2010 Aug 1;49(3):474-8.



FOOD RESEARCH

*100% Whole Food Supplements that are
TRUSTED by Healthcare Professionals!*



Gluko-Sugar Balance



Supplement Facts

Serving Size 1 Capsule Servings per Container 90

Amount per Serving		% Daily Value ▼	
Chromium GTF	(in 60 mg food)	120 mcg	400%
Vanadium	(in 5 mg food)	5 mcg	*
Berberine HCL	(Plant Source)	75 mg	*
Gymnema Sylvestre Leaf	Gymnema Sylvestre	70 mg	*
Organic Cinnamon Bark	Cinnamon Verum	60 mg	*
Goat's Rue	Galega Officinalis	45 mg	*
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Bitter Melon	Momordica Charantia	30 mg	*
N-Acetyl-L-Cysteine	(Plant Source)	10 mg	*

* Recommended Daily Intake has not been established

Chromium GTF - Essential nutrient that potentiates insulin action, influences carbohydrate, lipid, and protein metabolism.

Vanadium - Mimics the action of insulin improving blood sugar metabolism.

Berberine - Suppresses the production of glucose in the liver, helping to lower fasting blood glucose levels.

Gymnema Sylvestre Leaf - Improves insulin sensitivity, allowing cells to respond more effectively to insulin and uptake glucose from the bloodstream.

Organic Cinnamon Bark - Protects Pancreatic Beta Cells, which are responsible for producing Insulin, from oxidative stress and inflammation, preserving their function and promoting insulin secretion.

Goat's Rue/French Lilac - Was the basis for the anti-diabetic medication Metformin. Guanidine is an active ingredient extracted from Goat's Rue and observed to decrease plasma glucose in animal studies.

Organic Fenugreek seed - Contains galactomannan. this fiber slows down the digestion and absorption of carbohydrates. Fenugreek increases glucose uptake into cells by promoting the translocation of glucose transporter type 4 (GLUT4) to the cell membrane.

Bitter Melon - Contains bioactive compounds that enhance insulin sensitivity, stimulate glucose uptake into cells, and inhibit glucose production in the liver.

N-Acetyl-L-Cysteine - Supports GLP-1 production and activity, supports Mitochondrial function and cellular energy metabolism which are essential for proper glucose utilization and insulin signaling.

TO ORDER CALL 805-489-7185
or email Doctorsfoodresearch.com
to establish a practitioner account

These statements have not been approved by the FDA and are not intended to diagnose, treat or cure disease

Organic Mushrooms

Supplement Facts

Serving Size 1 Capsule Servings per Container 90

Amount per Serving		% Daily Value▼	
Organic Lion's Mane	<i>Hericium Erinaceus</i>	160 mg	*
Organic Cordyceps	<i>Cordyceps Militaris</i>	100 mg	*
Organic Chaga	<i>Inonotus Obliquus</i>	50 mg	*
Organic Reishi	<i>Ganoderma Lucidum</i>	50 mg	*
Organic Shiitake	<i>Lentinula Edodes</i>	50 mg	*
Organic Turkey Tail (8:1 concentrate)	<i>Trametes Versicolor</i>	50 mg	*

* Recommended Daily Intake has not been established



Benefits of *Organic Mushrooms*:

- Supports healthy immune function
- Organically grown by Nammex
- Supports a healthy mood
- Supports healthy nerves
- Provides DNA support against free radicals
- Supports a healthy gastrointestinal system
- 100 mg of beta glucans per capsule
- Supports healthy blood sugar levels
- Anti-aging
- Supports a healthy cardiovascular system
- Supports healthy cognition
- Naturally contains vitamin D

Organic Support for a Healthy Immune System

Organic Mushrooms supplies a healthy immune supporting blend of Organic Chaga *Inonotus obliquus*, Organic Cordyceps *Cordyceps militaris*, Organic Lion's Mane *Hericium erinaceus*, Organic Reishi *Ganoderma lucidum*, Organic Shiitake *Lentinula edodes*, and Organic Turkey Tail *Trametes versicolor* which naturally provides beta glucans.

Organic Chaga *Inonotus obliquus*

Chaga contains the *inonotus obliquus* polysaccharide which possesses antioxidant, hypoglycemic, and hypolipidemic activities [1]. It also contains inotodiol, various kinds of oxidized triterpenoids, trametenolic acid, various kinds of lanosterol triterpenoids (including tramadol acid (TA), indole diol and betulinic acid), folate derivatives, aromatic vanillic acid, syringic acid and γ -hydroxybenzoic acid and has anti-inflammatory, anti-fatigue, and anti-hyperlipidemic effects, plus helps support healthy blood sugar [2,3]. Betulinic acid also promotes the secretion of insulin and can help protect kidneys [2]. Chaga was traditionally used to support a healthy gastrointestinal system [4].

Organic Cordyceps *Cordyceps militaris*

“Polysaccharides are one of the bioactive constituents in *Cordyceps militaris* with a variety of biological activities, including immunomodulation, antioxidant, ... and anti-aging activities” [5]. It has been found that “regulatory properties of *C. militaris* on gut microbiota may underlie the potential mechanism responsible for the protective effect of *C. militaris* {for intestinal health} “Consequently, our study will provide support for the utilization of *C. militaris* as a whole food-based ingredient against the occurrence and development” of intestine dishealth [6]. Cordyceps also can support healthy blood sugar levels [7].

Organic Lion's Mane *Hericium erinaceus*

Lion's Mane has been shown to support mood [8] as well as healthy nerves [9,10]. It supplies beta glucans, supports a healthy cardiovascular system, and supports a healthy immune system [11]. A double-blind placebo-controlled trial found it helped support healthy cognition [12]. Lion's Mane has been found to support less anxious sleep [13]. Lion's Mane naturally contains vitamin D, folate, zinc, and other nutrients [14].

Organic Reishi *Ganoderma lucidum*

Ganoderma lucidum, its “regular consumption provides vitality and improves health” [15]. It reportedly has antioxidant, immunomodulatory, healthy neurological, and healthy blood sugar activities [15]. “Reishi contains polysaccharides (α/β -D-glucans), alkaloids, triterpenoids (ganoderic acids, ganoderenic acids, ganoderol, ganoderiol, lucidenic acids), sterols/ergosterol, proteins (LZ-8, LZ-9), nucleosides (adenosine, inosine, uridine), and nucleotides (guanine, adenine)” [16]. “*Ganoderma lucidum* (GL) has a significant role to play in preserving health,” including supporting nerve health [17].

Organic Shiitake *Lentinula edodes*

“*L. edodes*-derived polysaccharides are widely studied and the most valuable compounds with proven ... antioxidant, antiaging, ... and immunomodulatory properties ... Minerals present in *L. edodes*, particularly Mg and Zn, are essential for the innate and adaptive immune response. They regulate the function of macrophages, neutrophils, T and B lymphocytes, as well as NK cells” [18]. Shiitake has anti-inflammatory properties and can support a healthy gastro-intestinal system [19]. Shiitake naturally contains vitamin D, folate, zinc, and other nutrients [20].

Organic Turkey Tail *Trametes versicolor*

Turkey tail mushrooms contain beta glucans and have been found to support a healthy immune system [21,22]. Turkey tail also helps support a healthy gastro-intestinal system [23]. This is supplied in *Organic Mushrooms* with an 8:1 concentration.

Beta Glucans

“Beta-glucans are naturally occurring polysaccharides. ... {in certain} mushrooms ... These substances increase host immune defense by activating complement systems, enhancing macrophages and natural killer cell function. The induction of cellular responses by mushroom and other beta-glucans is likely to involve their specific interaction with several cell surface receptors, as complement receptor 3 (CR3; CD11b/CD18), lactosylceramide, selected scavenger receptors, and dectin-1 (betaGR)” [24]. β -glucans, can aid host defense ... by modulating inflammatory ... activity of neutrophils and macrophages” [25]. “Among the natural products used in complementary and alternative medicines, are the β -D-glucans; biopolymers found in foods (cereals, mushrooms)” supports a healthy cardiovascular system [26].

Ergothioneine

“Ergothioneine (EGT) is a naturally occurring hydrophilic amino acid ... As EGT can only be obtained through diet, consuming EGT-rich foods like mushrooms may be beneficial for living a long and healthy life. ... in mushrooms, the fruiting body is the supreme source of EGT. A systematic analysis of EGT occurrences in different types of mushrooms has been reported (Kalaras et al., 2017). Lentinus edodes (shiitake mushroom, 2090 mg/kg dry weight) ... contain the highest EGT level compared to other species, ... {other} edible mushrooms have high EGT content, which supports the notion that mushrooms may serve as our main dietary source of EGT. ... mushroom consumers had a lower incidence of cognitive impairment or dementia, suggesting that consuming 2 portions of mushrooms per week is ideal for healthy ageing (Feng et al., 2019).” [27]

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