GlucoBalance®

Support for Normal Glucose Levels

Effective regulation of blood glucose has important implications for health. Even mild disruptions of glucose homeostasis can have adverse consequences. Chronic diabetes may result in cardiovascular disease, neuropathy, blindness, or renal failure. Hypoglycemia (also called reactive hypoglycemia or dysinsulinism), though not generally associated with the organ damage seen in diabetes, can be responsible for a number of troublesome physical and psychological symptoms.

The human body possesses a complex set of checks and balances to maintain blood glucose concentrations within a narrow range. Blood sugar control is influenced by the pituitary, thyroid, and adrenal glands, as well as by the pancreas, liver, kidney, and even skeletal muscle.

Glucose homeostasis also depends on the presence of a wide range of micronutrients. In the typical American diet, high in refined and processed foods, many of these micronutrients are in short supply. In addition, some individuals with blood sugar disorders may have a special dietary need for higher amounts of one or more micronutrients.

The following nutrients are particularly important when considering blood sugar disorders:

Formulated for Biotics Research by Jonathan V. Wright, M.D. and Alan R. Gaby, M.D., leaders in the field of nutritional science.

Chromium — The effect of chromium on glucose metabolism apparently requires its conversion to glucose tolerance factor (GTF), a low-molecular-weight compound that contains chromium, niacin (nicotinic acid), glycine, glutamic acid, and cysteine. GTF, has been shown to potentiate the action of insulin at the cellular level.[1,4]

Tissue chromium levels were found to decline with age in Americans.[2] In other studies, including one by the U.S. Department of Agriculture, more than 50% of people consumed less than the lower level of chromium recommended by the National Academy of Sciences, Nutritional Research Council.[3,37]

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Chromium aspartate is a well-utilized form of supplemental chromium being solubilized at a wide range of ph. The amounts of chromium used in most clinical trials (*150 to 200 ug/day) are apparently inadequate for some patients, even when more efficient chromium compounds are used. Larger amounts of chromium, such as 500 to 1,000 ug/day, have often had a greater benefit.[4]

Contains both niacin, a vital component of GTF (Glucose Tolerance Factor) and niacinamide, necessary for producing NAD (Nicotinamide Adenine Dinucleotide) in insulin secreting pancreatic B cells.

Formulated with a uniquely high amount of biotin- 3,000 mcg. Biotin is essential for glucose phosphorylation by hepatic glucokinase, the first step in glucose utilization.

Antioxidant activity in vitamin E and selenium.

Niacin and Niacinamide — As a component of glucose tolerance factor, niacin plays an important role in carbohydrate metabolism. Many refined foods consumed by Americans are depleted of niacin. Grains and other foods that are "enriched" usually contain added niacinamide, which apparently cannot be converted by the human body into niacin. In addition, many vitamin supplements contain niacinamide, rather than niacin. Although niacinamide is capable of performing most of the functions of vitamin B3, a small amount of niacin seems to be necessary for the synthesis of GTF.[5] Both niacin and niacinamide may also be important for blood sugar control through a mechanism unrelated to GTF. As precursors to NAD, which is an important metabolite concerned with intracellular energy production, niacin and niacinamide may prevent the depletion of NAD in pancreatic B cells.

Biotin — The initial step in glucose utilization by the cell is its phosphorylation, mediated by the biotin-dependent enzyme hepatic glucokinase. Thus adequate biotin intake is required to initiate intracellular glucose into the cell.[6]

Biotin may also play a role in stabilizing blood sugar levels through biotin-dependent enzymes acetyl CoA carboxylase and pyruvate carboxylase.[37] Thus biotin deficiency should be avoided in those with blood sugar disorders.

Pyridoxine (vitamin B_6) — Serum vitamin B_6 levels were below normal in 25% of 518 diabetics.[7] Particularly where peripheral neuropathy is present, the inadequate B_6 intake should be contemplated.[8]

Copper — Because the typical American diet contains only about half of the RDA (2mg/day) for copper[9,36] deficiency of this mineral may be common. Copper is involved with insulin binding, and copper deficiency in mammals may be reflected in increased glucosylated hemoglobin, indicative of chronically raised blood sugar levels.[10]

Magnesium — The American diet is often low in magnesium. Dietary surveys have shown that 80-85% of American women consume less than the RDA for the mineral.[11] Daily magnesium intake in two other studies was only about two thirds of the RDA.[12,13,36] This may be particularly relevant in diabetics, where magnesium deficiency is thought to play a role in the development of insulin resistance.[14] Serum magnesium has been found to be significantly lower in many diabetics,[15] therefore, it is reasonable to make sure that diabetics have adequate dietary intake of magnesium. Low magnesium levels may also be associated with hypoglycemia.[16]

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Zinc — Zinc is involved both with insulin synthesis by pancreatic B cells[17] and insulin binding to liver and adipose tissue cells.[18,19] People with zinc deficiency may have significantly higher glucose levels and lower insulin levels than similar patients without zinc deficiency.[20]

Vitamin C (ascorbic acid) — Ascorbic acid levels may be lower in diabetics than controls[22] and patients with inadequate ascorbic acid levels may be found to have abnormal blood sugar curves.[23] In addition, ascorbic acid may compete with glucose for transport across cell membranes,[24] so that in hyperglycemia, ascorbic acid transport into the cell may be inhibited.[25]

Ascorbic acid deficiency may allow sorbitol to accumulate in erythrocytes, which may predispose diabetics to certain types of end-organ damage.[26]

Care should be taken to ensure that those with blood sugar abnormalities have adequate ascorbic acid intake.

Manganese — Manganese is a cofactor for certain enzymes involved in the intermediary metabolism of carbohydrates. In addition, the concentration of manganese in the pancreas is approximately ten times higher than in other organs.[27]

The optimal intake of manganese is not known but at least half of the manganese is lost when whole grains are replaced by refined flour.[29] The American diet may be low in manganese.[36]

Both B_{12} and folate are involved in a number of different steps in carbohydrate metabolism and the incidence of B_{12} deficiency was significantly greater in a series of diabetics than in the general population.[30] Folate is involved with gluconeogenesis as a cofactor with key enzymes in the liver and small intestine.[31] Deficiency of either B_{12} or folate is to be avoided in those with blood sugar abnormalities.

Vitamin B1 (thiamin) — Central to carbohydrate metabolism and Krebs Cycle function is adequate thiamin levels, and diabetics are more often deficient in thiamin.[32] Care should be taken to ensure that thiamin intake is adequate in those with diabetes and hypoglycemia.

Carnitine — Carnitine is involved as part of a vital transport mechanism of fat metabolism in which fat enters energy production pathway. Carnitine supplementation may be considered in those with blood sugar abnormalities.

Vanadium — Vanadate is an oxidized form of vanadium. Due to possible insulinotropic effects of vanadate[33], inadequate amounts of this trace mineral is undesirable in those with blood sugar abnormalities.

Vitamin E and Selenium — Vitamin E and selenium are essential nutritional factors, which act as antioxidants and may be involved in glucose balance.[34,35] As many complications associated with diabetes may be related to excess free radical activity, prudence demands that adequate selenium and vitamin E be supplied in the diabetic diet.

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GlucoBalance® is available in 180-count bottles (#1851).

Supplement Facts

Serving Size: 6 Capsules
Servings Per Container: 30

	Amount Per Serving	% Daily Value
Vitamin A (as retinyl acetate)	1,500 mcg RAE	167%
Vitamin C (as calcium ascorbate and ascorbic acid)	500 mg	556%
Vitamin D (as cholecalciferol)	20 mcg	100%
Vitamin E (as d-alpha tocopheryl acetate)	270 mg	1,800%
Thiamin (B1) (as thiamin mononitrate)	50 mg	4,167%
Riboflavin (B2)	25 mg	1,923%
Niacin (as niacinamide and niacin)	150 mg	938%
Vitamin B6 (as pyridoxine hydrochloride)	30 mg	1,765%
Folate (as calcium folinate)	800 mcg DFE	200%
Vitamin B12 (as methylcobalamin)	50 mcg	2,083%
Biotin	3,000 mcg	10,000%
Pantothenic Acid (as calcium pantothenate)	100 mg	2,000%
Calcium (as ascorbate, citrate and carbonate)	200 mg	15%
Magnesium (as aspartate, citrate and oxide)	400 mg	95%

	Amount Per Serving	% Daily Value
Zinc (as zinc picolinate and zinc citrate)	30 mg	273%
Selenium (as selenomethionine)	150 mcg	273%
Copper (as copper gluconate)	2 mg	222%
Manganese (as manganese citrate)	10 mg	435%
Chromium (as chromium aspartate)	1,000 mcg	2,857%
Potassium (as potassium aspartate)	99 mg	2%
Vanadium (as vanadium aspartate)	20 mcg	*
L-Carnitine fumarate	30 mg	*

*** Daily Value not established**

Other ingredients: Capsule shell (gelatin and water), steric acid and magnesium stearate (vegetable source).

This product is gluten, dairy and GMO free.

RECOMMENDATION: Six (6) capsules each day, with meal, as a dietary supplement or as otherwise directed by a healthcare professional.

WARNING: If you are taking Diabetes medications, do not use this product without medical supervision.

KEEP OUT OF REACH OF CHILDREN
Store in a cool, dry area.
Sealed with an imprinted safety seal for your protection.

Product # 1851 Rev. 01/19

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