

# Glucose Tolerance Factor, Chromium, Diabetes & Balancing Blood Sugar

GTF Complex: 6 tablets per day  
GreenNutrients: 6 tablets per day

Blood sugar imbalances are common, with diabetes and hypoglycemia on the rise. Much of this has to do with eating too many refined sugars. The typical, processed food diet of today lacks essential nutrients while at the same time includes artificial ingredients **that remove important nutrients from cells**. Today's farming practices have stripped soils of one of the most important minerals needed for blood sugar balance — chromium — all the more reason for eating organically grown foods. But chromium alone is not enough.

**What's needed is GLUCOSE TOLERANCE FACTOR (GTF), a unique "metallovitamin" (see chart) comprised of three amino acids — glutamic acid, glycine and cysteine, as well as two molecules of niacin; and in the center, trivalent chromium. GTF works with insulin to move glucose (sugar) out of the bloodstream and into cells where it can be used to generate energy.**

Scientists have shown that the desert rodent — the sand rat — under observation, developed sugar diabetes when raised on laboratory food. Why? The rat was missing chromium — an important nutrient in its native bush diet. Carl Pfeiffer, MD, (cited below) wrote, "Chromium bound in an organic form in the glucose tolerance factor (GTF) potentiates the effect of insulin on glucose intake and so suppresses the latent diabetes of the sand rat."

Other trace elements known to lower blood sugar are manganese, zinc, calcium, potassium and sodium. Sodium, however, is rarely necessary to worry about since it is added ubiquitously to the modern diet. These other nutrients are far more important to be concerned about.

The body content of chromium decreases with age. Diets higher in natural foods help avoid this loss. "Many women in Western countries are so deficient in chromium that the white blood cell chromium level may decrease by 50% with each pregnancy, resulting first in complete alcohol intolerance and later in glucose intolerance (adult-type diabetes)."

Pfeiffer wrote, "Humans, like rats, need this glucose tolerance factor...Glucose is required for every cellular function. It supplies the energy that is burned every time a muscle contracts or a nerve impulse is transmitted...GTF is not entirely new since brewer's yeast and soluble chromium salts have been used to lower the insulin requirement of unstable diabetic children and also to get older patients off insulin and oral insulin substitutes...GTF is a trivalent chromium in an organic chemical complex which cannot be easily synthesized in the body but may be synthesized by the normal bacteria of the intestine when enough chromium is contained in the diet."

Finding food with chromium is not enough because chromium occurs in several forms. For instance, inorganic chromium found in the typical diet is only 1 to 10% absorbable. Eggs are high in chromium, for instance, but little of it is biologically active. The best sources are yeast, black pepper, liver, beef, whole wheat bread, beets, beet sugar molasses, mushrooms and beer.

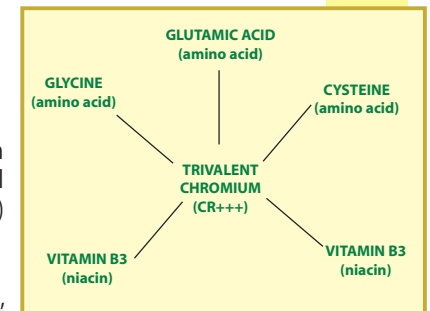
In addition to chromium, there are also certain plant foods that help with blood sugar balance. Among these is *Gymnema sylvestra*, from the tropical forests of central and southern India.

*Gymnema* has been used in India for diabetes for over 2,000 years. The hypoglycemic (blood sugar-lowering) effect of *Gymnema* leaves was first documented in the late 1920s.\* This action is gradual in nature, differing from the rapid effect of many prescription hypoglycemic drugs. *Gymnema* leaves raise insulin levels, according to research in healthy volunteers.\*\* The leaves are also noted for lowering serum cholesterol and triglycerides.\*\*\* While studies have shown that a water-soluble acidic fraction of the leaves provides hypoglycemic actions, it is not yet clear what specific constituent in the leaves is responsible for this action. Some researchers have suggested gymnemic acid as one possible candidate.+ Further research is needed to clearly determine which constituent is responsible for this effect. Gurmardin, another constituent of the leaves, and gymnemic acid have been shown to block sweet taste in humans. **Optimal amounts of GTF complex (containing biologically available trivalent chromium) decreases the amount of insulin needed to balance blood sugar.**

Blood sugar imbalances are commonplace, with diabetes as well as hypoglycemia on the rise. Much of this has to do with the overindulgence in refined sugars in the modern diet. Plus, the typical, processed food diet of today is lacking in essential nutrients while at the same time filled with artificial ingredients **that remove important nutrients from cells**. Today's farming practices have stripped soils of one of the most important minerals needed for blood sugar balance — chromium — all the more reason for eating organically grown foods. But chromium alone is not enough.

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## GLUCOSE TOLERANCE FACTOR (GTF)



## GTF IS IMPORTANT FOR

- Blood sugar balance hyperglycemia, diabetes, hypoglycemia
- Growth
- Longevity
- Eye health (cornea, vision)
- Weight control/weight loss
- Cardiovascular health (arteriosclerosis and hypertension)
- Cholesterol metabolism
- Fat metabolism
- Protein metabolism

### sources:

Carl Pfeiffer, MD, *Zinc & Other MicroNutrients*

\* Mhasker KS, Caius JF. *A study of Indian medicinal*

*plants. II. Gymnema sylvestre R.Br. Indian Medical Research Memoirs 1930;16:2-75.*

\*\* Shanmugasundaram KR, Panneerselvam C, Sumudram P, Shanmugasundaram ERB. *Insulinotropic activity of G. sylvestre, R.Br. and Indian medicinal herb used in controlling diabetes mellitus. Pharmacol Res Commun 1981;13:475-86.*

\*\*\* Bishayee A, Chatterjee M. *Hypolipidemic and antiatherosclerotic effects of oral Gymnema sylvestre R.Br. leaf extract in albino rats fed on a high fat diet. Phytother Res 1994;8:118-20.*

+ *Gymnema. Lawrence Review of Natural Products August, 1993 (Monograph).*

