Chromium SAP

*Science-based support for healthy blood glucose levels**

Chromium is an essential nutrient involved in the homeostatic control of blood glucose. Deficiency of this nutrient has been associated with hyperglycaemia, which is reversible by supplementation. Playing an integral role in the insulin receptor in mammalian tissues, supplementation of chromium has shown beneficial objective and subjective clinical outcomes in the treatment of both type 1 and type 2 diabetes mellitus as well as hyper- and hypoglycaemia.* Chromium supplementation has also shown positive outcomes in the management of cholesterol levels, DHEA, and osteoporosis.*

SUPPLEMENT FACTS

Serving Size: 1 Capsule — **Servings:** 60

	Amount Per Serving	% Daily Value
Chromium (from chromium picolinate)	500 mcg	417

**Daily Value not established

Other ingredients: Vegetable magnesium stearate and microcrystalline cellulose in a non-GMO vegetable capsule composed of vegetable hypromellose and purified water.

This product is non-GMO.

Contains no: Gluten, soy, wheat, corn, eggs, dairy, yeast, citrus, preservatives, artificial flavor or color, salt, sugar, or starch.

Chromium SAP contains 60 capsules per bottle.

DIRECTIONS FOR USE

Adults: Take 1 capsule daily with food or as directed by your healthcare practitioner. Consult a healthcare practitioner for use beyond 6 months.

INDICATIONS

Chromium SAP:

- May be used to manage high blood glucose levels and associated disorders.*
- May support healthy glucose levels, regulate food intake, and promote healthy weight maintenance.*
- Supports healthy levels of total cholesterol, lipoprotein B, and LDL-cholesterol.*

CAUTIONS AND WARNINGS

Consult a healthcare practitioner prior to use if you have a kidney disorder or diabetes. **For adults only.**

Contraindications: Do not use if you are pregnant or breast-feeding.

PURITY, CLEANLINESS, AND STABILITY

All ingredients listed for all **Chromium SAP** lot numbers have been validated by an ISO 17025–accredited third-party laboratory for identity, potency, and purity.

*** 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.**

Scientific Advisory Panel (SAP): adding nutraceutical research to achieve optimum health

NFH®

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For healthcare professional use only.

EFFECTS OF CHROMIUM DEFICIENCY

Chromium is an essential nutrient to lipid and carbohydrate metabolism. Deficiency has been associated with signs of type 2 diabetes mellitus, such as increased serum insulin, decreased expression of insulin receptors, and decreased glucose tolerance. Chromium deficiency may also mimic signs of cardiovascular disease, via inflammation processes associated with poor blood sugar balance: elevated serum cholesterol and triglycerides, and decreased serum high-density lipoprotein (HDL).

CHROMIUM FOR BLOOD SUGAR BALANCE

Diabetes and Hyperglycaemia

Deficiency of chromium has been shown to be associated with hyperglycaemia in both animal and human models, which is reversible by supplementation. The benefits of chromium supplementation extend to healthy individuals. In a small human study and within seven weeks, six healthy individuals were observed to decrease fasting blood glucose by 8% as well as fasting insulin by 28%, and half of the participants had a 30% increase in insulin sensitivity, following supplementation of only 200 mcg per day of chromium.[2]

In another trial, 29 nondiabetic, obese individuals with a family history of type 2 diabetes mellitus and normal serum chromium levels were supplemented with 1000 mcg chromium picolinate and showed significant increases in insulin sensitivity over eight months.

Chromium may be effective in treating various types of diabetes, as supplementation may aid in improving blood glucose, insulin, and haemoglobin A_{1c} (HbA_{1c}) levels, in a dose-dependent manner,[11, 15, 16] and most notably for HbA_{1c}, in combination with biotin.[12, 13] Anderson suggests that while 200 mcg per day of chromium picolinate may improve blood indices for type 2 diabetics, it may not be adequate to address all glucose abnormalities,[4] and higher doses should be considered on an individual basis. In a double-blind, placebo-controlled study of 180 type 2 diabetics, 1000 mcg per day of chromium picolinate was found to lower fasting and 2-hour postprandial glucose levels, cholesterol, and HbA_{1c} significantly, whereas 200 mcg was not effective, over four months.[5] In another study, volunteers were given 500 mcg per day, and effects on fasting glucose and 2-hour postprandial glucose were sustained over a 10-month follow-up period.[6]

Gestational Diabetes Mellitus (GDM)

Over eight weeks of supplementation with chromium picolinate, a study by Jovanovic, et al., found that supplementation of 4 to 8 mcg/kg_{bw} of chromium picolinate significantly improved fasting insulin levels, 1-hour postprandial glucose, and insulin levels during glucose tolerance testing. The 8 mcg/d group had significantly superior results over the 4 mcg/d group. The trial included 20 women between 20 and 24 weeks of gestation, aged 25–43 years old, and diagnosed with GDM.[8]

CHROMIUM FOR REACTIVE HYPOGLYCEMIA, FOOD INTAKE, AND SATIETY

As a key nutrient in the glucose-insulin axis, it has been theorized that chromium should have beneficial effects when supplemented in cases of hypoglycaemia. While evidence is sparse, in a single placebo-controlled, crossover trial over three months, 200 mcg per day of chromium picolinate showed effectiveness in relieving both subjective and objective factors associated with hypoglycaemia, including a raised minimum 2-hour postprandial glucose level following glucose challenge.[3]

In a study by Anton, et al., 1000 mcg per day chromium picolinate reduced food intake, hunger levels, fat cravings, and body weight as compared to placebo,[14] supporting the use of chromium for weight-management purposes.

CHROMIUM IN CHOLESTEROL BALANCE

Daily supplementation of chromium has been associated with reduction of cholesterol levels in doses as low as 200 mcg per day and up to 800 mcg per day, including statistically significant reductions in total cholesterol, reductions in LDL-cholesterol and apolipoprotein B with no significant changes in triglyceride levels, and some reduction in HDL-cholesterol.[9, 10, 11] Most notably, in a study by Anderson, et al., of 180 individuals with type 2 diabetes, there was a steady drop in total cholesterol during the four-month period in the group supplementing 1000 mcg per day of chromium, but there was no noted effect on cholesterol levels in the 200 mcg group.[5]

ABSORPTION, CAUTIONS, AND INTERACTIONS

The organic, trivalent form of chromium is the only biological active form of the nutrient, and chromium accumulates preferentially in the kidney. Absorption of chromium is typically referred to as between 0.5 and 2.0%, but its absorption can be altered by several factors. In the picolinate form, absorption has been established to be superior to nicotinate, chloride, and other forms of chromium. Aspirin and indomethacin are associated with increased absorption of chromium, whereas concomitant antacid use decreases chromium absorption via competitive inhibition of minerals in these products. Ingestion of complex carbohydrates with chromium improves absorption rates of chromium as compared to simple carbohydrates such as sucrose, fructose, or glucose, as these sugars increase urinary excretion of the nutrient. Ascorbic acid increases the absorption of chromium, whereas concomitant zinc supplementation reduces its absorption. Zinc deficiency, in turn, is associated with higher plasma levels of chromium following supplementation. Other divalent and trivalent minerals—such as calcium, iron, and manganese—may also impair absorption of chromium.[1]

Long-term studies have shown minimal side effects associated with chromium supplementation, including changes in thirst, fatigue and urinary frequency. No toxic reactions were noted in major studies over 10 months at doses of 500–1000 mcg/d.[5, 6] In vivo laboratory studies, measuring BUN, creatinine, LDH, ALT, and AST, have not shown any effects of toxicity at doses as high as 1500 mcg/d over 20 weeks in rats,[7] but it should be noted that chromium supplementation has been associated with anecdotal reports of toxicity, and a common factor in these cases was renal dysfunction. As such, supplementation of chromium should be considered a contraindication in preexisting cases of kidney disease or known reduced kidney function.[1]

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