

Supplements to help manage Blood Sugar Health

Chromium

COMMON NAME: Trivalent chromium

SCIENTIFIC NAME: Chromium picolinate, chromium nicotinate

RECOMMENDED WITH CAUTION

LEVELS OF EVIDENCE



Recommended:

Several well-designed studies in humans have shown positive benefit. Our team is confident about its therapeutic potential.



Recommended with Caution:

Preliminary studies suggest some benefit. Future trials are needed before we can make a stronger recommendation.



Not Recommended - Evidence:

Our team does not recommend this product because clinical trials to date suggest little or no benefit.



Not Recommended – High Risk:

Our team recommends against using this product because clinical trials to date suggest substantial risk greater than the benefit.

Evaluated Benefits

Lowers fasting and postprandial blood sugar

Source

Concentrated food sources of chromium include brewer's yeast (though not nutritional or torula yeast) and calf liver. A 2-ounce portion of brewer's yeast (equivalent to 4 ounces of calf liver) supplies approximately 50–60 mcg of chromium. Chromium chloride is the naturally occurring trivalent form and is found in common food sources such as whole grains, broccoli, mushrooms, cheese, and green beans.

Indications/Population

Lowers fasting and postprandial blood sugar

Patients with type 2 diabetes

Patients with metabolic syndrome

Mechanism of Action

Chromium appears to assist insulin function through a small protein called low-molecular-weight chromium-binding substance (LMWCr). Its precise mechanism of action is unknown.

Chromium improves glucose uptake and metabolism through upregulation of mRNA levels in the insulin receptor and UCP3 skeletal muscle cell. It may increase glucose uptake, glycogen synthase activity and GLUT4 expression.

Side Effects

Selected patients have developed a rash with chromium picolinate.

Chromium picolinate may alter neurotransmitter levels, thereby affecting mood stability, in selected patients.

Dosing

Chromium (as picolinate or nicotinate) has been studied for blood sugar lowering in daily doses ranging between 200 and 1,000 mcg.

Drug Interactions/Cautions

- Corticosteroid treatment may increase urinary losses of chromium supplement.
- Concurrent intake of a calcium carbonate supplement interferes with chromium absorption, and may require increased doses to achieve equivalent effects. Individuals taking calcium-carbonate-containing antacids should be aware of this interaction and should separate dosing of chromium supplements and calcium carbonate by a minimum of 2 hours.
- Animal studies have generated concerns about possible mutagenic properties in high doses of the picolinate form of the supplement at 2,000–2,400 mcg. The nicotinate form has not generated these concerns.
- Improvements in blood sugar control may increase the risk of hypoglycemia, whether symptomatic or asymptomatic. The need for dose adjustments in diabetes medications should be anticipated and addressed proactively.

Notes

Chromium is thought to be safe to a maximum daily dose of 1,000 mcg, and patients with a BMI greater than 30 may require dosing at the upper limit.

References

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Peng M, Yang X. Controlling diabetes by chromium complexes: The role of the ligands. *Journal of Inorganic Biochemistry*. 2015; 146: 97–103.

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