

CHROMIUM



- **Name of Nutritional Supplement**
 - Chromium
- **Scientific and Common Names** ^{1,4,5}
 - Chromium→ Scientific Name
 - Chromium Picolinate (chromium chelated in a form called *chromium picolinate*, a naturally occurring amino acid metabolite, which is better absorbed than any other forms)
 - Chromium Chloride
 - Chromium Nicotinate
 - Chromium 3
 - Chromium Aspartate
 - Chromium Citrate
 - Glucose Tolerance Factor (GTF)
 - Trivalent Chromium→ Dietary Chromium
- **Description of Active Ingredients** ^{1,2}
 - GTF contains a Chromium atom in complex with single molecules of glycine, cysteine, and glutamic acid, and two molecules of nicotinic acid
- **Mechanism of Action** ^{1,2,4,5}
 - Chromium works with insulin in assisting cells to take in glucose and release energy.
 - Increases insulin receptor sensitivity and enhances glucose transport into cells to maintain normal blood sugar levels
 - Chromium Picolinate is more easily absorbed than other forms and it may possibly sensitize insulin-sensitive glucoreceptors in the brain, resulting in appetite suppression, activate the sympathetic nervous system to stimulate thermogenesis, and down regulate insulin secretion
- **Current Indications and Efficacy** ^{1,2,4,5,7-9}
 - Body Building (ineffective), according to “Effects of chromium and resistive training on muscle strength and body composition”, the results indicate that chromium

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supplementation in addition with exercise training, does not provide a significant increase in strength and lean body mass, or a significant reduction in body fat percentage.

- Athletic Performance Enhancement (ineffective, as mentioned above)
- Diabetes Mellitus, type 1 and 2, according to “Chromium Picolinate Supplementation for Diabetes Mellitus”, indicates:
 - May be effective when used orally for glycemic control, at a dose of 200 mcg PO TID
 - Case report indicates that HbA1C declined from 11.3% to 7.9% 3 months after initiation of chromium picolinate
 - Monitoring is required, due to chromium continues to have unknown and unproven benefits and risks
- **Hyperglycemia**
- **Hypoglycemia, reactive**
 - Supplementation with chromium has alleviated symptoms of hypoglycemia
- Hyperlipidemia (from Micromedex)
 - May be effective when used orally for reducing serum cholesterol and triglyceride levels
 - No effect on LDL or HDL, however triglycerides were decreased by 17.4% during chromium treatment
- Dysthmic Disorder (unavailable information)
- Chromium intravenously as a supplement in total parenteral nutrition (TPN)
- Obesity, according to a chromium update: examining recent literature 1997-1998, concluded that:
 - Most likely ineffective when used orally for weight reduction
 - It has been reported that chromium reduces body fat, however some studies have shown no effect
- **Contraindications, Cautions, and Allergies** ¹⁻⁴
 - Impaired Renal Function
 - Psychiatric Disorders → using Chromium in this population may possibly cause notable changes in brain chemicals (serotonin, dopamine, norepinephrine), however it is unknown, data is unavailable at this time
 - Behavioral Disorders
 - Caution using Chromium in Diabetes Mellitus (monitoring required, risk of hypoglycemia)
 - Hypersensitivity to Chromium such as:
 - Chromate Allergy
 - Leather Contact Allergy
- **Dosage Forms, Recommended Doses, and Duration** ^{1,2,4}
 - How supplied
 - Capsule
 - Tablet
 - Intravenous
 - Solution

- **Oral**; Recommended Dietary Allowance (RDA) for adults is 50 to 100 micrograms (mcg) daily and for pediatrics it is 10 to 200 mcg daily, depending on age
 - Diabetes → recommendation is 200 to 1000mcg QD PO in divided doses
 - Hyperlipidemia → recommendation is 200mcg PO TID
 - Dysthmic Disorder → recommendation is 200mcg PO QD-BID
- **Safety and efficacy may not be established, the concentration of active ingredients may vary significantly between products, in other words, take caution when buying OTC supplementation.
- **Drug Interactions** ^{1,2,4}
 - Antacids → decrease chromium levels
 - Systemic beta blockers (unknown)
 - Systemic corticosteroids → decrease chromium levels
 - Didanosine → decrease chromium levels
 - Histamine₂ blockers → decrease chromium levels
 - Insulin → increase risk of hypoglycemia (additive effects)
 - Proton pump inhibitors → decrease chromium levels
 - NSAIDS (unknown)
 - Vitamin B3 → concomitant use may improve glucose tolerance
 - Vitamin C → increase chromium absorption
 - Zinc → coadministration may decrease absorption of both chromium and zinc
 - Sugar → increase urinary chromium loss
- **Drug Disease Interactions** ¹⁻⁵
 - Renal Insufficiency
 - Chromium may possibly worsen renal dysfunction
 - Diabetes
 - Chromium may possibly result in lower blood glucose levels, thus monitor for hypoglycemia
 - Behavioral disorders
 - Chromium may alter serotonin, dopamine, and norepinephrine metabolism in the central nervous system, unknown whether increased or decreased
- **Safety Issues** ^{1,2,4}
 - Pregnancy
 - Insufficient data available; avoid using doses above recommended dietary allowance
 - Lactation
 - Possibly safe, use caution with doses above recommended dietary allowance
- **Comments** ^{2,4,5}
 - **Herbs that contain chromium**
 - Catnip
 - Horsetail
 - Licorice
 - Nettle
 - Oat straw
 - Red clover

- Sarsaparilla
- Wild yam
- Yarrow
- **Dietary Sources** ^{4,5,6}
 - Liver
 - Fish
 - Whole grains
 - Milk
 - Beer
 - Cheese
 - Meat
 - Brewer's yeast

References:

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