

Chromium

Physiological Functions

Chromium was first identified as a component of the “glucose-tolerance factor” which is required for maintenance of normal blood glucose. As part of this factor, chromium acts synergistically with insulin to facilitate cellular uptake of blood glucose. Chromium may also have a role in other insulin-dependent activities such as protein and lipid metabolism.

Research does not support claims that chromium piccolinate supplements facilitate weight loss, build muscles or decrease body fat. However, chromium supplementation has been found to improve glucose tolerance in elderly adults who have low blood chromium levels. Tissue chromium depletion has been observed with age and may be responsible for abnormalities in glucose metabolism that often develop with age.

Factors Affecting Availability

When complexed with organic compounds, chromium is more efficiently absorbed than as an inorganic salt. Milled grains or other processed foods have considerably less chromium content than their unprocessed counterparts. Foods cooked with acid-based sauces in stainless steel pans may obtain additional chromium from some types of cookware.

Deficiency

Diets composed primarily of processed foods may not provide sufficient amounts of chromium. Since chromium is lost in urine, sweat, bile, and hair, excessive physical exercise or tissue injury may also deplete tissue chromium levels.

Chromium deficiency is characterized by insulin resistance, hyperglycemia and lipid abnormalities. Clinically, this deficiency has only been reported with long-term administration of parenteral nutrition when chromium is not added to these solutions.

Toxicity

No cases of chromium toxicity from excessive dietary intake have been reported. Chromium administered parenterally in high doses may cause skin irritation.

- ❖ *The upper limit of safety for chromium has not been determined due to lack of data of adverse effects. The Food and Nutrition Board of the Institute of Medicine recommends intake of chromium should be from food only to prevent high levels of intake.*

Requirements

The Daily Reference Intakes (DRI) for chromium are found in the table below.

Life Stage	Chromium (µg)
Infants	
0-6 mo	.2
7-12 mo	5.5
Children	
1-3 y	11
4-8 y	15
Males	
9-13 y	25
14-18 y	35
19-30 y	35
31-50 y	35
51-70 y	30
70 y	30
Females	
9-13 y	21
14-18 y	24
19-30 y	25
31-50 y	25
51-70 y	20
70	20
Pregnancy	
18 y	29
19-30 y	30
31-50 y	30
Lactation	
18 y	44
19-30 y	45
31-50 y	45

Dietary Sources

Dietary sources of chromium include whole grains, potatoes, oysters, liver, seafood, , cheese, chicken, and meat.. Brewer's yeast is a rich source of organic chromium complexes. Since many foods have not been analyzed for chromium, the listing of foods below does not include all possible sources.

Dietary Sources of Chromium	
Food	Chromium (mcg)
Broccoli, 1 cup, cooked	22.0
Turkey, leg, 3 oz. cooked	10.4
Juice, grape, 1 cup	7.5
Waffle, egg, 1 medium	6.7
Ham, 3 oz.	3.6
English muffin, one	3.6
Cookies, chocolate chip, one large	3.4
Potatoes, mashed, 1 cup	2.7
Bagel, egg, 1	2.5
Juice, orange, 1 cup	2.2
Green beans, 1 cup, cooked	2.2