

# Aunt Cathy's Guide to Nutrition:



**Aunt Cathy**

Cathy Breedon PhD, RD, CSP, FADA  
Clinical/Metabolic Nutrition Specialist  
Perinatal/Pediatric Nutrition Specialist  
Ucphqtf Medical Center Dept. of Pediatrics and  
UND School of Medicine Dept. of Pediatrics

## CHROMIUM

(Short version without references.)

Chromium is an important nutrient that has been in the news recently. There have been some unsubstantiated claims for chromium as a weight loss or muscle-building aid, and careful studies have NOT found it to be helpful for these uses.

**However, chromium adequacy IS important for controlling blood sugar and fat metabolism (including triglyceride and cholesterol metabolism), and the diet of many Americans contains considerably less chromium than is recommended.**

### Current expert opinion is this:

- 1. Inadequate chromium intake can certainly contribute to high blood sugar (diabetes), to high blood triglycerides, and to cholesterol problems.**

A high triglyceride level in a person with diabetes is considered an important risk factor for stroke. **In a study of men and women with diabetes who had high triglycerides, providing supplemental chromium just at the standard intake level of 200 mcg/day resulted in a significant improvement in triglyceride levels.** (For those who are interested: The study was randomly assigned placebo-controlled trial with a crossover design)

The form of chromium used in that study was “**chromium picolinate.**” It appears that not all forms of chromium supplements are equally well absorbed and utilized by the body. The picolinate form has been shown to be one of the best absorbed sources. Chromium chloride, the form used in many multivitamins is less well absorbed. There is much interest now in studying the relative safety and the absorbability of the various chromium-containing compounds now used as supplements. There are also several large NIH studies underway exploring chromium supplementation in a variety of medical conditions. Stay tuned . . .

**2. Many people in America eat a diet that does not provide enough chromium because much of the grain products we use have been refined.”**

The refining process removes many important vitamins and minerals in grain, including chromium and magnesium in particular, ut many others as well. Most are not added back when the product is “enriched.” For example, **only iron, and three B vitamins (thiamin, riboflavin and niacin) are added back to original levels.** [Since 1998, folic acid is now added to grain products in the US at a level above the original grain content.]

**The “germ” of the grain is the nutrient-dense part ... that’s the part that will become the baby plant.** The rest of the grain is starch for fuel for the baby plant, and a fibrous protective bran coating. Guess which part we remove from the grain when we refine it! If you guessed the bran and the germ, you’d be right. That means that we eat a lot of processed grain foods that contain just the starch calories and the few added-back nutrients mentioned above. That’s it. **We don’t add back the many micronutrients that are necessary to properly metabolize the starch, and we do not add back the bran fiber and its many heath-related benefits.** These include increasing the feeling of **satiety** associated with eating it and (possibly) assisting in helping us limit our intake of less satisfying sources of starch calories.

In spite of recommendations, most Americans eat few **whole grains and legumes.** Interestingly, **when people with diabetes are fed a diet that is rich in foods that are “high in fiber”, their blood sugar control often improves.** This is often attributed to the effects of the fiber itself on absorption of carbohydrate in the intestine.

However, along with that effect there is the “accidental” **great improvement in chromium and magnesium intake with a diet that is high in fiber-rich foods, and both of these nutrients have a role in blood sugar control and in many metabolic pathways.** In other words, there are many players on the team supporting healthy blood sugars; it makes sense to assure that all are present in appropriate amounts.

Eating lots of foods with refined sugar and flour -- even “healthy” non-sugary carbohydrate foods like rice or pasta -- increases the body's need for chromium. This is because chromium is needed in order to use carbohydrate for energy, and these refined foods are not good sources of it. If one cannot use the carbohydrate for energy, it is converted to fat and stored for later.

**The richest food sources of chromium are:**

**brewer's yeast, wheat germ, and oysters.**

**broccoli, cheese, prunes, peanuts, whole grain cereals,**

**mushrooms, asparagus and peas are also sources.**

### 3. If a supplement is used, how much is recommended?

For healthy people, there is no apparent advantage associated with taking more than the recommended **"adequate and safe" range of 50-200 mcg/day**, although studies suggest that levels up to twice this amount may be helpful for some people with diabetes. This amount, even with a high fiber diet, is not dangerous.

An interesting question is: "Do people with diabetes actually need more chromium than other people, or does people's poor chromium status contribute to their developing the diabetes?" That has not been evaluated yet. It may be that they do better with a higher supplement level because their chromium stores are quite low and giving just a regular maintenance dose may not get them up to speed. **In any case, ASSURING ADEQUACY instead of assuming adequacy is the way to go.**

**However, as with all minerals, excessive chromium can be toxic.** Toxic chromium levels are usually only seen with **accidental food contamination**, not from a generous intake of chromium-containing foods. One would not overdose on chromium from eating a big bunch of wheat germ. But it may be possible to cause chromium poisoning from excessive use of chromium supplements, and it also appears that **excessive** supplementation may interfere with absorption of other important nutrients. So the safest course is to avoid **supplementation** above the recommended 200 mcg upper level unless advised to do so by a physician.