



Chromium – A Micromineral forgotten in Diabetes Treatment?

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Introduction

How important a role do vital nutrients play in our overall health, and how does it relate to those with Type 2 diabetes, or those with symptoms of pre-diabetes? A healthy, well balanced diet, high in nutrients and minerals is important for all of us, but for diabetics, it is even more relevant. The study of macro and micro nutrients, and its inherent benefits for our bodies, has grown exponentially over the last 20 years. We now know more about the vitamins and minerals that we ingest thru healthy eating than ever before. But are there vitamins and/or minerals that as diabetics, and pre-diabetics we should be paying closer attention to? In this brief we will explore one of those microminerals that research, both early on, and in recent studies, has shown a potential to lower a person's fasting blood glucose readings¹. Blood glucose is the amount of 'sugar' that circulates in our blood and insulin is the hormone secreted by our pancreas that helps move glucose out of our blood stream and into our cells. When this insulin is less efficient in moving sugar into our cells it is referred to as insulin resistance. One out of five Americans currently have diabetes or prediabetes known as metabolic syndrome¹.

Let's take a look at one of those micronutrients, Chromium, as it relates to potential reduction of blood glucose levels or insulin resistance. We'll examine its function in our body, what amounts are bodies need and the natural sources one can obtain it thru.

Its Function and role

Chromium is a micromineral that our bodies require in trace amounts and in most circles considered essential, in other words our bodies can't make it and must come from outside sources thru food or supplementation. It is primarily found in two forms, chromium 3+ and chromium 6+. Chromium 3+ is primarily found in our food sources, and Chromium 6+ is a toxic mineral that comes from industrial pollution. Chromium Picolinate is the supplement form of chromium. Our bodies don't require a lot of the mineral, about 35mcg daily per the Institute of Medicine of the National Academy of Sciences, and is readily absorbed thru the lower intestine, however absorption rates are extremely low in adults, less than 2.5% range². Vitamin C, and B₃ have shown to improve absorption. Stores of chromium once absorbed can be found in the liver, spleen, tissue and bone.

Chromium helps our bodies metabolic processes including the digestion of fats, proteins and carbohydrates. In addition, chromium has been found to enhance the function of the insulin hormone and allow insulin to react with the cell walls more efficiently. As early as the late 1950's it was discovered that a component of brewer's yeast was able to inhibit the ability of rats to maintain high levels of blood sugar. This became known as the glucose tolerance factor (GTF), which research has shown increases the ability of insulin to interact with cell walls and move blood sugar into cells more effectively. This has led to many believing that chromium has an anabolic role in our bodies³.

¹ <https://www.ncbi.nlm.nih.gov/pubmed/15208835>

² <https://ods.od.nih.gov/factsheets/Chromium-HealthProfessional/#h3>

³ <https://www.news-medical.net/health/How-Chromium-Functions-in-the-Body.aspx>



Recent studies have shown that diabetic patients may be deficient in chromium leading to a condition known as insulin resistance. In these studies, patients with insulin resistance, taking the a higher dose of chromium picolinate thru supplementation have been found to increase insulin sensitivity and lower resistance⁴. It is still unclear why diabetics may be deficient in chromium, or exactly how chromium interacts with insulin and there are more studies to follow.

Deficiency & Excess

Due to its low absorption rate in our body excess chromium cases are rare when the intake of chromium is thru your food intake. However, there have been studies showing the supplement form, chromium picolinate, at high levels can cause potential DNA damage. However, the institute of Medicine has deemed this supplement safe. Before embarking on a supplement therapy you should talk with your health professional, have your blood work done, and follow up after implementation of the therapy to note any improvements specifically in your glucose and HDL levels⁵.

Deficiency

As with excess noted above, the low absorption rate can possibly be problematic but is typically rare in developed countries. However, Americans appear to have a higher propensity for being deficient than other developed countries. It is believed to be related to our love affair with processed and packaged foods that are lacking in balanced nutrition⁶. It appears to more prevalent in diabetes population than others for reasons unknown. Symptoms include weight loss, high fasting blood glucose levels and loss of appetite.

Food Sources

An average male adult needs to consume roughly 35mcg daily of chromium. Females and adults over 50, slightly less. Meat and animal organs are a good source of chromium, whole grains and broccoli also contain higher levels of the mineral. Most dairy products are low in chromium. Consuming a balanced diet of low processed foods should provide the average person with this mineral in proper amounts to stave off the deficiency aspects. Here are some specific foods to include in your diet⁷:

- Broccoli: 1 cup contains 22 mcg
- Grape juice: 1 cup contains 8 mcg
- [Turkey](#) breast: 3 ounces contains 2 mcg
- English muffin: one whole wheat muffin contains 4 mcg
- Potatoes, mashed: 1 cup contains 3 mcg
- Green beans: 1 cup contains 2 mcg
- Red wine: 5 ounces contains between 1 and 13 mcg

⁴ <https://www.ncbi.nlm.nih.gov/pubmed/16784965>

⁵ https://www.health.harvard.edu/newsletter_article/chromium-the-forgotten-mineral

⁶ <https://www.drweil.com/vitamins-supplements-herbs/supplements-remedies/chromium/>

⁷ <https://www.medicalnewstoday.com/articles/288177.php#sources>



Summary

Chromium is one of the earliest micronutrients studied as it related to blood sugar control and is still being studied today. Chromium can play an important role for diabetes patients in blood sugar control and insulin sensitivity. It is important that we monitor our food sources and periodically review with our health professionals our approach in our intake of both macro and micro nutrients.

Our bodies are a well-tuned machine, requiring maintenance and fuel to survive the rigors of our daily lives. Our bodies should be in harmony with our surroundings, the earth and the energy that envelopes us. It is important that we eat a well-balanced diet of fruits, vegetables and proteins. We should stay away from highly processed foods like refined sugar, flour and packaged foods to ensure we are getting the fuel our bodies need. Grounding ourselves to the earth allows us to absorb the energy that mother nature intended for all of us and provides daily. You can't mess with mother nature!

Eat fresh, eat colorfully, and enjoy the path you've chosen for your health and wellbeing. For further information on how you can incorporate easy, colorful plates into your diet please reach out to me at ray.orndorff@cookingandcolor.com.

Enjoy!