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Diabetes and Chromium

I began my medical practice in 1993 and have been specializing in science-based health analysis since 1999; a method designed to provide an in-depth analysis of your total system. Problem areas are identified and carefully documented so that proactive measures may be taken to attain optimal health. My approach is based upon comprehensive testing of the blood, hair, chelation urinary challenge testing, food allergy testing, and other testing as needed. I do not prescribe drugs, I only prescribe therapeutic grade natural supplements. My observations of diabetes and its relation to chromium is what I will cover in this topic.

While there remains controversy whether or not supplementation with chromium is beneficial to prevent, or help reduce diabetes; as a practicing physician I have always found chromium to be beneficial for my patients with blood sugar problems, and in most cases, quite significantly. The Journal of the American College of Nutrition has several positive articles regarding supplementation of chromium and its positive effects on all types of diabetes, including Type 1 insulin dependent, Type II non- and insulin dependent, and gestational diabetes. Many of their studies cite chromium intake of one daily dose of 200 mcg, or sometimes up to 200 mcg three times per day for a total daily dose of 600 mcg. I have found chromium requirements to be dose dependent. Some patient's bodies require more chromium, so they have to take more to get the same success as these studies or my patients. Some patients can get by just fine with 200 mcg per day, while other patients require up to 1200 mcg per day total daily dosage. Some patients who are consuming certain pharmaceutical drugs, such as corticosteroids or Thiazide diuretics, need additional chromium because these drugs actually cause significant losses of chromium from the body, and therefore can induce diabetes or diabetes-like conditions.

Whenever one of my patients has an elevated Hemoglobin A1C (HgA1C) level in their blood test, they also had a corresponding low level of chromium in their hair test. The hair test will analyze several minerals as well as dangerous toxic metals. Minerals need to be balanced, not too much and not too little. Hair samples are taken from the nap of the neck where blood flow is most prominent and represents what is flowing through the blood. Hair tests are valuable because not all tests can be through blood alone.

Without fail, assuming I have done everything else for my patients with diabetic tendencies, or full blown diabetes, whenever I supplement those patient's diets with chromium, their Hemoglobin A1C levels drop. This is not surprising to me. What is surprising to me is why conventional medicine does not advise their patients to take chromium?

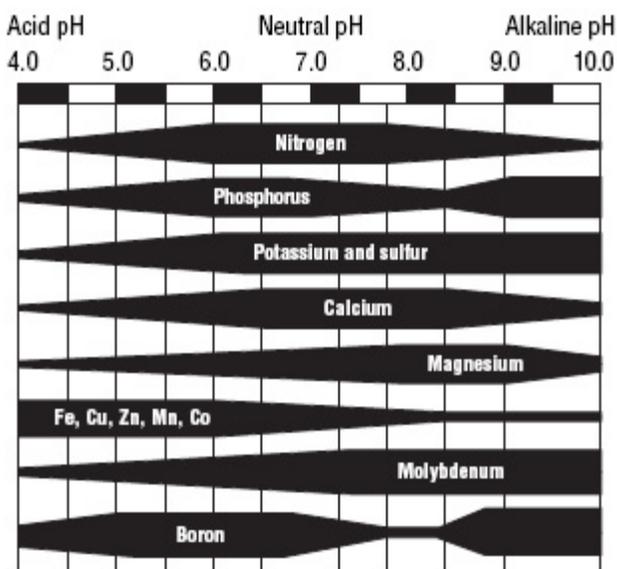
In Naturopathic Medical school we studied research conducted by Dr. Mertz. In 1957, Dr. Walter Mertz published his diabetes PhD thesis in the publication, "Federation Proceedings", which was the official journal of the National Institutes of Health (NIH). Dr. Mertz's early chromium research was performed at the NIH where he and Kenneth Schwartz isolated a compound, extracted from pork kidney, that they called "Glucose Tolerance Factor." Two years later, chromium was identified as the active ingredient of his glucose tolerance factor. Chromium binds insulin to cell membranes and helps regulate blood glucose metabolism in that manner. (Emphasis added.) In his 1957 publication, Mertz states that Adult Onset Type II Diabetes is a simple mineral deficiency of his "glucose tolerance factor."

Think of chromium as the “gate keeper.” When chromium is attached to cell walls, insulin is now able to bind itself to that cell wall. Now and only now can blood glucose (blood sugar) enter into those cells. What happens when chromium levels are low to extremely low? Insulin cannot bind to cell walls. Now glucose cannot enter the cells. The cells become starved for glucose. The inside of those cells become “hypoglycemic” (glucose levels are too low.) The patient’s cells are starved for energy and now the patient is loading up on simple carbohydrates in an attempt to quickly satisfy the cells’ need for energy. Because blood glucose is not being extracted normally from the blood and delivered into cells, glucose levels in the blood begin to rise rapidly and can reach dangerously high levels. The blood has now become “hyperglycemic” (too much blood glucose) and Adult Onset Type II Diabetes begins to develop.

It has since been discovered that a second element, vanadium, facilitates the body’s absorption of chromium. Therefore, both minerals are essential for blood glucose uptake by cells. A bottle of chromium is not very expensive and can be purchased individually. Vanadium is usually found in bottles of trace minerals.

In the United States we have an epidemic of new diabetic patients: one million new diabetics per year and growing. According to my studies in Naturopathic Medicine, there are two reasons for this alarming trend: 1) A significant increase in the intake of sugar and simple carbohydrates, followed by; 2) A rapid fall in the intake of the minerals necessary for insulin to function properly, which is chromium and vanadium.

In 1948 the average level of chromium in American blood was calculated to be 28 mcg/L (micro-grams per liter of blood). Today the average is a mere 0.13 mcg/L. Why? Drastic drops in soil levels of both macro and micro minerals is / has occurred. I personally witness this on our farm. Every few years I take several soil samples and hire A&L Western Agricultural Laboratories, 10220 SW Nimbus Ave, Bldg K-9, Portland, OR 97223, 503-968-9225, to test our soil for depletion of both macro and micro nutrients and pH changes. If the pH in soil becomes too low or too high, even if minerals are present in the amounts healthy for plants, release of those minerals from the soil to the plants is hindered. If the soil cannot release nutrients into plants, then how can we expect plants to give us the nutrients we need? The best pH for farming soil is between 6.5 and 7.0. I know from personal experience, I have to lime my soil on a regular basis to raise the pH back to normal and I have to replace many macro and micro nutrients if I want a healthy crop. Constant rain causes soils to become acidic. Depletion of nutrients in farming soils has been a hot topic at several Naturopathic continuing educational seminars. While the chart below does not list chromium, the principle is the same. The narrowing black lines indicates the soil cannot release that mineral.



Effect of soil pH on the availability of plant nutrients

According to Naturopathic Medical School and Dr. Mertz's research, chromium is an essential element in the treatment of diabetes.

There are other considerations when treating diabetes. Our culture has switched to the almost exclusive use of processed white flour in white breads, pastas, and many other food products. Why does this matter? Simple carbohydrates such as white flour, sugar, pastries, candy, soda pop, etc., breaks down in the intestines much faster than complex carbohydrates, allowing a rapid increase in blood sugar (glucose) levels which is dangerous to diabetics. Complex carbohydrates such as whole wheat bread (especially when nuts and seeds are included), vegetables etc., breaks down slowly, allowing a more even level of blood sugar which is easier on the body and essential for diabetics. Rapid rises in blood sugar is a well-known problem with diabetics which needs to be avoided. Eating complex carbohydrates is a well-established fact taught by nearly all health professionals who treat diabetic patients.

Remember, when blood sugar cannot pass through cell walls, the inside of the cells become "hypoglycemic." Symptoms of hypoglycemia are: ADD, ADHD, anxiety attacks, bipolar diseases, and depression including manic depression, hyperinsulinemia (narcolepsy - decreased ability to regulate sleep-wake cycles), panic attacks, rage, muscle weakness, and general overall loss of energy.

Long term complications of diabetes (uncontrolled high blood sugar levels) can include: amputations of toes, feet and legs; angiograms and angioplasty; cataract surgeries and detached retinas; prescriptions for cholesterol medications; coronary by-pass surgeries and heart transplants; essential prescriptions for high blood pressure medications; kidney dialysis and kidney transplants; and neuropathies (nerve pains) especially in the hands and feet.

Severe mineral deficiencies, including hypoglycemia, result in a "pica" eating behavior. What this means is constant snacking, a subconscious effort to finally consume enough of the nutrients and minerals the body is craving. "Pica" is the word used when horses are eating the wood inside barns because they are searching for more mineral intake and are eating the wood in an attempt to get those minerals. Farmers and ranchers already know, when their horses start eating up their barns, the best therapy is to provide

their animals with mineral blocks. Simple, effective, and natural. So why don't more humans consume micro and macro mineral supplementations?

Annual sugar consumption per capita in the United States in 1770 was 4 pounds. In 1990 this had risen to 90 pounds. In the year 2000 it had risen to 160 pounds. Current estimates today are up to 170 pounds individual sugar consumption per year in developed countries. This information is readily available on the internet. Many types of foods have added sugar to enhance flavor, especially the ever-so-common soft drinks. However, many other foods you would never think of contain added sugar and / or high fructose corn syrup to enhance both flavor and palatability. A 12 year study, concluded in 2002 at the Harvard School of Public Health, studied 42,000 men between the ages of 40 and 75 who frequently ate hot dogs, sausage and other sugar containing processed meats, found that daily consumption of these sugar enhanced meats increased the chances of acquiring Adult Onset Type II Diabetes by 46%. Sugar is literally everywhere!

According to Dr. Joel D. Wallach, D.V.M., N.D., who did extensive animal studies before earning his N.D. degree; Adult Onset Type II Diabetes is a simple mineral deficiency disease of chromium and vanadium that was eliminated as a disease in laboratory and pet animals fed complete dietary formulas as early as 1957! The animal industry identified this in animals in 1957, yet we are still today, debating whether humans also need supplementation of minerals and if diabetes has a mineral deficiency component.

Chromium also works with insulin to promote glucose conversion into fat (long-term energy storage), and into the liver as glycogen, (short-term energy storage). Through the process of gluconeogenesis, the liver can store up to 24 hours of energy which can be brought back into the body between meals to help maintain balanced glucose levels so we do not feel drained of energy when a long time has passed between meals.

Chromium also works with insulin to provide glucose for immediate energy to skeletal muscle cells, so you can move your legs and feet, arms and hands, etc.

Glucose is also the only food the brain can live on. Unbalanced levels of glucose in the brain leads to brain dysfunction, which then leads to the unregulated glucose brain diseases of ADD, ADHD, anxiety and panic attacks, bipolar diseases, depression, and rage.

There are two blood tests used when testing for diabetes: 1) Glucose levels in the blood and, 2) the percentage of Hemoglobin A1C in the blood. Glucose levels are tested while fasting. This is why your doctor has you fast for 12 hours before getting your blood drawn. Your doctor wants to see how much blood glucose is present without the influence of a recently consumed meal. After a big meal, if the higher levels of glucose in the blood cannot get into cells, blood glucose levels will not return back down to normal, thus your blood glucose levels will be too high. This test only tests for the past 12 hours. Hemoglobin A1C measures the amount of glucose that was incorporated into red blood cells manufactured by your body over the last three months. It is a much more accurate test for diabetes.

Patients be aware: In my patient chart notes I always list my patient's lab values in one column, compared to what Naturopathic Doctors believe is healthy in the next column, compared again to the recommended values of Allopathic (conventional) medicine in a third column. I obtain the current Allopathic values from each patient's lab report. What I have witnessed first-hand is conventional medicine changes their value systems from time to time. I called the labs to find out what was going on. I was told the values for

conventional medicine are based on the population as a whole. So I asked them: “If the population as a whole is having higher and higher Hemoglobin A1C levels as years pass, are these then considered the new “norms.” Answer: “Yes, these are population averages.” Who generates the data? It is a combination of both allopathic medicine and the testing labs.

What I have recorded is: In 2002, Allopathic doctors’ recommended values (lower and upper limits) for Hemoglobin A1C blood levels were between 4.80% and 5.90%. As time passed the upper limit (the 5.90% value), rose to 6.00%, then 6.10%, then 6.20%, then 6.30%, and now is at 6.40%. In a nut shell, Allopathic’s original 5.90 % value had been increased to 6.40%. This increases your health risk and I believe is misleading. According to my education of Naturopathic Medicine and several annual educational seminars since 1993 when I became licensed as a Naturopathic Doctor; permanent damages will begin to your body once the Hemoglobin A1C levels reach 6.00%. As a reference point, Naturopathic Doctors want to see the Hemoglobin A1C levels below 5.60%.

This is alarming. According to my observations of these changing values, modern day medicine will declare a patient is healthy when in essence, their bodies have already began going downhill.

Conclusion: I have found supplementation with chromium and vanadium to be of significant benefit to my patients with high Hemoglobin A1C levels, and have found the daily requirement to vary between patients. I’ve found a minimum dose of 200 mcg works well for average patients, and have needed to recommend up to 1200 mcg per day for some patients.

One of my diabetic patients attended a diabetes class. The diabetic dietician in the class made the statement: “For some unknown reason, some patient’s cells are not receptive to insulin.” This is what I am trying to get across in this article. The reason why cells are not receptive to insulin is because they lack sufficient amounts of chromium which must be present at the cell’s receptor sites, to allow insulin to bring blood glucose into the cells.

DISCLAIMER: This article is for informational purposes only and is not intended to diagnosis or treat diabetes. Any potential diabetic patient should seek professional help from a licensed health care provider specializing in diabetes and ask if this natural therapy is right for you. If you are currently taking insulin, do not stop! I do not prescribe insulin. Allow your diabetic doctor to decide what amount of insulin, or what amount of any other diabetic drug therapy is right for you. There may be other causes of diabetes other than the ones discussed in this article. Therefore, not all diabetic patients will respond the same. Results may vary.

References:

- 1) Naturopathic Medical School
- 2) Dr. Walter Mertz 1957 PhD thesis published in the National Institutes of Health
- 3) Many hours of diabetic continuing educational seminars for Naturopathic Doctors
- 3) Dr. Joel D. Wallach, D.V.M., N.D., “*Prepare, The Preppers Survival Bible.*”
- 4) Several issues of The Journal of the American College of Nutrition

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