



THE ROLE OF **MICRONUTRIENTS** in **DIABETES** IN CHILDREN

PART 2

In the last issue of the Health Science News Page we described the causes and effects of diabetes in children. Typically, type 1 diabetes affects children. However, due to poor diet and increasing obesity, type 2 diabetes is becoming common in children. While insulin and metformin are the FDA approved drugs for diabetic children, many other drugs are also used that are not tested in the younger population and, other safer avenues of addressing diabetic-related health issues are not emphasized enough.

Micronutrients are essential for the health of every cell in the body. However, a majority of children, including those in developed countries, consume processed foods and sugary drinks which lack the required amount of micronutrients. This increases the risk of developing micronutrient deficiencies, due to a child's higher demands for growth and micronutrient depletion caused by anti-diabetic drugs.

Specifically, metformin is known to cause deficiency of folic acid and the B group of vitamins. The B group of vitamins are critical for conversion of sugar molecules to bio-energy which is used by every cell. The B group of vitamins are essential for DNA synthesis and red blood cell formation. They work in synergy with other micronutrients to improve the sugar metabolism efficiency of the liver and pancreas. Metformin also causes coenzyme Q-10 deficiency, which can lead to low efficiency of cardiac function, increased risk of heart failure and other cardiovascular diseases.

Vitamin C plays a crucial role in diabetes due to its structural similarity to the sugar molecule. Increased blood glucose levels promote vitamin C deficiency inside the cells by competing with vitamin C for intracellular entry. This is particularly damaging for the cardiovascular system in diabetic patients. In diabetic patients high glucose-related vitamin C deficiency inside the blood vessel wall cells impairs collagen production, thereby weakening the blood vessel walls and increasing the chances of atherosclerosis and vascular dysfunctions in different organs. Vitamin K2 increases the insulin sensitivity of the cells and helps in lowering blood glucose levels. Vitamin D helps in calcium absorption, and also helps to improve immunity and prevent infection and inflammation thereby reducing sugar-related complications in other organs.

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The ground-breaking nature of this research poses a threat to the multi-billion dollar pharmaceutical "business with disease". It is no surprise that over the years the drug lobby has attacked Dr. Rath and his research team in an attempt to silence this message. To no avail. During this battle, Dr. Rath has become an internationally renowned advocate for natural health. Says he: "Never in the history of medicine have researchers been so ferociously attacked for their discoveries. It reminds us that health is not given to us voluntarily, but we need to fight for it."

This information is based on scientific research results. It is not intended to substitute for medical advice to treat, cure, or prevent any disease.
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Micronutrient deficiency is exaggerated by loss of vitamins and minerals through increased urination and increased metabolic turnover in diabetic children. Concurrent medications such as antacids and frequent use of antibiotics in diabetic children further increases the requirements for micronutrients. Antacids and antibiotics deplete several minerals including calcium and magnesium which are important for protein synthesis, optimum muscle and nerve functioning, blood glucose and blood pressure control and bioenergy production in the heart. Other minerals, including chromium, help to maintain glucose levels by increasing insulin sensitivity of the cells and appropriate utilization of glucose in the blood which eventually lowers insulin requirements.

Additionally, several plant extracts help in blood sugar maintenance. Cinnamon simulates the action of insulin in the body in turn reducing the blood glucose levels. Cinnamon also acts as an insulin receptor and increases the action of available insulin to facilitate the transport of glucose in the cells. Curcumin (from turmeric root) increases insulin sensitivity and improves immunity. Resveratrol improves glucose tolerance and delays insulin resistance, both of which are important for normal blood sugar maintenance. Green tea extract and quercetin are important antioxidants and help in reducing inflammation and building strong collagen and blood vessels.

At the Dr. Rath Research Institute, we compared the effects of a specific micronutrient mixture and metformin on immature mice fed a high fructose diet.* The animals in the metformin group had reduced insulin levels while the micronutrient supplemented group showed a restoration of insulin levels to normal and had additional benefits of reduced blood pressure, lower cholesterol, and increased energy. Instead of medicating diabetic children for their entire lives, safe and effective approaches with synergistically combined micronutrients should be seriously considered.

S. Guida, A. Niedzwiecki, Diabetes in Children and the Role of Micronutrients, CM&NH journal
*J. Cha, et al., Molecular Medicine Reports, 2011