

Diabetes

By Bryon Verhaeghe

When we think of diabetes we often think of it as hereditary or of unknown cause. We also think that diabetes stays with us for the rest of our life. The rate of diabetes is rising sharply and research has been brisk lately. The research is very interesting and we need to unlearn what we know and think again... The knowledge has changed.

Type of diabetes

Type 1: Was previously called 'juvenile-onset diabetes'. The general consensus is that Type 1 is characterized by a failure of the pancreas to produce and secrete insulin.



Oral glucose tolerance test

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Type 2 : Was previously called 'adult-onset diabetes'. This form also has lowered production of insulin plus resistance to the action of insulin. Diabetes is increasing at alarming rates in juveniles and the adult form is surprisingly more common in children. The word diabetes is Greek and literally means 'passing through'.

This has come to be known as the process of glucose passing through the membrane of the cell. Once inside the cell the glucose can be stored for later use or converted to energy. Glucose is one of the carbohydrates and the most important one for us.

Insulin It is popularly known that insulin lowers blood sugar levels but, in reality, insulin has a wide range of functions in the body.

Insulin also controls potassium balance. Potassium is a mineral that the body uses to constrict blood vessels. When potassium is under insulin control the body can move blood to the regions that require more circulation, such as the gut during digestion. If the level is too high all the time we have high blood pressure. Also there is diminished blood flow to the peripheral and we get cold hands and feet. After months of elevated potassium levels we start to acquire foot infections, like those seen in diabetics.

Insulin also controls cell growth and differentiation. In cancer there is abnormal cell growth and differentiation where 'insulin-like growth factors' cause uncontrolled growth of a tumor. This is an area where research will uncover more knowledge. Insulin is important in many bodily functions. We could get very absorbed in studying the details of diabetes but we would get stuck in the old truths. Let us back up and consider why the pancreas is not producing this important hormone called insulin.

To understand insulin we need to look at the different types of carbohydrates and how they are handled in the body. Carbohydrates come in many forms. They are organic molecules made by

plants and obtained by animals through the diet. The three main constituents of food are; carbohydrates, fats, and proteins. The largest carbohydrate is cellulose (fibre) being the structure of wood, cotton, and paper with a basic subunit of glucose. Starch is also made of glucose and is found in rice and potatoes. Our body digests out glucose and then under regulation of insulin utilizes it for the energy of life. We are not able to regulate or control the smaller molecule called fructose. Glucose, fructose, and galactose are called the simple sugars or building blocks of larger sugars and carbohydrates. Glucose is 'blood sugar', galactose is milk sugar, and fructose is fruit sugar.

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In the past we thought of simple sugars as bad and complex sugars as good, but we were wrong. More recently we talk about the glycemic index of carbohydrates, but we still haven't got it right. This is just a value of how fast the carbohydrate is digested and absorbed into the blood. What is more important is which sugar is of a health benefit and which sugar causes us harm. Most sugars found in nature are two simple sugars bound together called disaccharides.

“Three common disaccharides are sucrose, lactose, and maltose.”



They are; sucrose – common table sugar (glucose + fructose), lactose – major sugar in milk (glucose + galactose), maltose – product of starch digestion (glucose + glucose). Remember that our body has the ability to control and utilize glucose only.

Fructose

Fructose is the smallest sugar and has the greatest sweetness of all the sugars. It is often called 'fruit sugar'. In the 1970's it became commercially available as a processed sugar for the food industry. Fructose is 30% sweeter than sucrose (glucose + fructose), on a weight basis, and twice as dissolvable in water as glucose. Fructose is more stable at low temperatures and browns seven times faster at high temperatures than glucose. This is important for the meat coatings used in baking chicken or barbecuing meat. One of the greatest achievements in the sugar industry is the hydrolyzing of cornstarch into high fructose corn syrup. They have achieved up to 90% pure fructose available to the food industry.

Fructose is what we are referring to when we talk about refined sugar. **Our body is not able to regulate fructose with insulin.** When we consume fructose there is no need for the pancreas to produce insulin. Fructose is physically smaller than glucose and because of this enters the cell without any control. After the cell is full of fructose it signals that there is enough sugar and insulin production is halted in an attempt to reduce cellular sugars. This is called type 1 diabetes.

Furthermore fructose is a ketone. When ketones are high in the blood we begin to urinate abundantly in an attempt to get rid of this excess sugar. Sugar will show up in the urine.

Fructose floods the cell with sugar and the cell attempts to store the excess as fat. When there is too much fat and no more room the cell begins to grow uncontrollably. This is what is seen with cancer. In contrast to fructose the larger sugar glucose requires insulin to gain entry to the cell and under insulin control the cell receives a limited supply of glucose. If the cell has a bit too much, some is stored as fat. Animals have the ability to control energy and growth with insulin. Insulin has the ability to protect the cell from too much sugar energy. Plants, which include yeast, have no insulin. They grow indiscriminately in response to energy. When we have an abundance of fructose in our body the yeast grows wildly.

Where do we get the yeast ? We all carry yeast. We get it as diaper rash, jock itch, or athlete's foot and air born dust particles. Fructose is the favorite food of yeast. With all this excess fructose floating around the yeast grow easily and we develop secondary infections. Some of these infections include bladder and foot infections. Fifty percent of the surgical amputations in Canada are the feet of diabetics. In laboratory medicine it is routine to induce diabetes in lab animals by feeding them a high fructose diet. Two apples are equivalent to one pop for fructose quantity. Notice how many kids are drinking apple juice and notice how many kids are developing diabetes. I shudder to think about how much fructose is in a glass of apple juice. Notice how many things are sweetened with apple juice and called 'organic'. **Two apples are equivalent to one pop for fructose quantity.**



Fructose in medical studies is known to increase the 'bad' cholesterol, increase uric acid (gout), increase diarrhea, increase insulin resistance, increase iron excretion, increase calcium in the kidney, create pronounced bowel distress, provoke malabsorption, and reduce collagen in the skin. Fructose converts to fat more easily than glucose, removes more ATP energy than glucose, and inhibits copper metabolism. When we eat fructose our brain is not signalled that we have eaten so we continue to feel hungry and food cravings develop. This is what is meant when we are told to avoid processed sugar; avoid fructose.

I encourage people to eat plain glucose as found in the starch of potatoes and rice and avoid fruit and the grains, particularly oatmeal. I have witnessed a fellow who became diabetic and his doctor advised him to eat low glycemic index fruit daily and stop rice. After four months he was in a diabetic coma for 8 days. He then took some supplements, ate rice, and avoided fruit; he was drug free and had normal blood sugars in one month. Combining starch with protein and fat will slow down the absorption of the sugars and give the pancreas time to produce insulin to regulate the glucose.

But remember; overdoing anything is not healthy.