

Diabetes is a Liver Disease

Although known worldwide for decades as a chronic disease, today the diagnosis of diabetes mellitus is reaching epidemic proportions. Diabetes is an expensive disease in many ways; it generates billions of dollars of medical care expenses annually (\$174 billion in the U.S. in 2007 as reported by the Center for Disease Control). It causes serious, and sometimes fatal, complications such as blindness, nerve degeneration, amputations, kidney failure, and circulatory disease and, in the process, significantly reduces the quality of life of those diagnosed with diabetes. Prevention and early intervention before the development of significant symptoms may substantially reduce medical costs and improve patients' quality of life.

Dr. Xianen Wang's new book, *Diabetes is a Liver Disease*, is a response to this diabetic epidemic. Trained in both allopathic (western) and traditional Chinese (eastern) medicine, Dr. Wang analyzes the internal processes involved in the body's use of glucose as an energy resource. In traditional Chinese medicine, the liver is considered an organ for digestion, absorption, and metabolism as well as an important organ regulating the functions of the whole body - in particular the emotions, reproductive organs, eyes, fascia, and tendons. He concludes that although inability of the pancreas to produce insulin is a symptom of diabetes, Type 2 diabetes is actually a disease of the liver, and on that basis can be successfully treated.

Glucose is the basic energy source in tissue cells throughout the body. Blood glucose levels are usually in balance and fluctuate within a narrow range. The molecular mechanisms of glycemic control are complicated. Simply put, the control is based on a balance between glucose replenishment and consumption and a balance between storage and release. At its core, diabetes is a disease of impaired glucose (sugar) tolerance, which is why it was long known in the U.S. as "sugar diabetes". Diabetes is diagnosed when blood glucose levels are consistently too high.

Dr. Wang identifies Type 2 diabetes as a severe form of metabolic syndrome. The true nature of life lies in metabolism in cells, which function with the use of glucose and other energy sources and excrete waste products. Metabolic processes support energy creation, hormone production, blood flow and the health of nerves and other body functions.

In traditional Chinese medicine, patients with metabolic syndrome have a *qi* deficiency with blood stasis (poor circulation) and lack of energy. Decreased energy production is associated with decreased utilization of energy sources and greater accumulation of glucose and fat in the blood. Blood flow is decreased, and energy sources, such as glucose and fat, congest the blood vessels, which causes extensive circulatory disorders. These circulatory disorders are associated with impairment of material exchange within cells, which further worsens the energy metabolism disorder. This vicious cycle affects tissue cells in the whole body, leading to extensive dysfunction.

Carbohydrates, fats, and proteins undergo interconversion in the body, and thus long-term, excessive replenishment of total energy sources (such as from overeating, especially of rich and/or carbohydrate-laden foods) predispose persons to hyperglycemia and hyperlipidemia – high levels of glucose and fat in the blood. Carbohydrates are stored primarily in three major tissues – the liver, muscle, and fat.

Produced by the pancreas, insulin promotes glucose uptake in these tissue cells. When the effect or the amount of insulin is reduced, glucose uptake and storage are decreased, and blood glucose levels are increased. Functional conditions of glucose-storing tissues influence blood glucose levels.

Type 1 diabetes is caused by insulin deficiency, whereas Type 2 diabetes primarily results from decreased insulin activity. The decreased activity is caused by insulin resistance in the liver and other tissues, and to overcome the condition, more insulin is secreted in patients with diabetes than in healthy individuals. This insulin resistance results from decreased liver function and is associated with metabolic inflammation. Particularly in the west, treatment of Type 2 diabetes has focused on glycemic control, primarily through drug therapy, but also through proper diet and exercise.

Too much glucose (sugar) in the blood and urine is known as hyperglycemia; low blood sugar levels is called hypoglycemia. Thus, hypoglycemic agents are substances that reduce blood sugar. These include insulin, sulfonylureas (which promote insulin secretion), glucose absorption inhibitors (which act directly on the cell membrane of the small intestine), gluconeogenesis inhibitors (which promote glucose uptake in muscle and suppress glucose absorption in the intestinal tract) and adipocyte differentiation promoting agents.

The consumption of glucose differs substantially, depending on the type of tissue and level of activity. Taken together, when excessive total energy intake, glucose storage disorder, or excessive release from the storage, and particularly decreased tissue glucose utilization, exceed the regulatory capacity of the liver, glucose is accumulated in the blood, leading to hyperglycemia.

While there is a significant genetic component to some types of diabetes, most cases seem to occur spontaneously with no genetic connection. Diabetes is often thought of as a “lifestyle” disease, connected with overeating, lack of exercise, and an impaired “constitution” or tendency toward metabolic and circulatory impairment. Management of Type 2 diabetes definitely requires three principal measures – correction of the poor lifestyle, symptomatic therapy, and improvement of the constitution.

Whereas lifestyle modifications and improvement of the constitution are macroscopic approaches to overall conditions, symptomatic therapy is a microscopic approach at the molecular level. Improvement of the constitution is based on the notion of traditional Chinese medicine. This method uses a collective effect of natural

ingredients to improve an abnormal constitution instead of focusing on a single symptom or single parameter.

Patients with metabolic syndrome, including Type 2 diabetes, have a constitution of liver depression, internal heat (i.e., inflammation) and a *qi* deficiency with blood stasis (disorders of energy production and circulation), which should be improved by the principle of *soothing the liver and clearing away heat, tonifying qi, and activating the blood*. This can be accomplished through the use of edible Chinese herbal ingredients, which Dr. Wang has combined in a supplement named Ketsumeisei. The ingredients in Ketsumeisei have the effect of improving digestive, absorptive, and metabolic functions, promoting the healing of damaged tissue, and enhancing immunity.

As recounted in the book, studies of patients treated with Ketsumeisei who range in age from 31 to 85 show improvements in energy, vision, circulation, numbness, erectile function, palpitations, shortness of breath and healing of wounds.