



Julie Senko, MS, M.Ed,  
Registered Acupuncturist

**West Chester  
Wellness Center**  
828 Paoli Pike  
West Chester, PA 19382  
Tel: (610) 431 2005  
Fax: (610) 344 7292  
Email : [info@juliesenko.com](mailto:info@juliesenko.com)  
[www.juliesenko.com](http://www.juliesenko.com)

## **Treating Metabolic Syndrome**

**By Jake Paul Fratkin, OMD, LAc**

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Metabolic syndrome describes a cascade of symptoms and physiological presentations due to elevated insulin and glucose in the blood. It is synonymous, or at least directly leads to, type 2 diabetes.<sup>1</sup> It's important to know the difference between type 1 and type 2 diabetes.

Both show increased blood glucose but for different reasons. Type 1 diabetes is due to a genetic or autoimmune process that destroys the pancreatic beta cells that produce insulin. Therefore, the elevated blood glucose levels are due to an absence of insulin, the chemical that transports glucose into cells. In type 2 diabetes, blood sugar is elevated because of the inability of cells to recognize insulin, with consequential accumulations of sugar and insulin in the blood. It corresponds directly with weight gain and obesity.

Metabolic syndrome is a direct consequence of diet; specifically, intake of large amounts of refined carbohydrates and sugars. The American diet has been rich in sugar and breads since 1945, but the blame of the increase in obesity and metabolic syndrome lies in our heavy consumption of sugars and corn syrup. In 1999, per capita intake of sugars was 158 lbs. per person, 30 percent higher than in 1983.<sup>2</sup> Since the introduction of high-fructose corn syrup in 1980, obesity rates have doubled.<sup>3</sup> Corn syrup sugars more readily turn to fat in the liver, raising triglyceride and LDL levels, which can affect the hormone leptin, which regulates appetite and body weight.<sup>4</sup> It is now estimated that 24 percent of America's population is at risk for metabolic syndrome and type 2 diabetes.<sup>5</sup>



Physiologically, metabolic syndrome occurs because of excessive amounts of carbohydrates (including sugar) in the diet. The pancreas secretes insulin when glucose is present in the blood, in order to transport it to the cells of the body. Glucose is the main source of cellular energy, being used to make ATP. In our evolutionary development as hunter-gatherers over the last million years or so, humans ate a diet of animal protein, nuts, seeds, fruits and berries, roots and digested contents within animal guts. This is how our bodies developed, and actually is the diet best suited to our evolutionary origins. It is only in the last 12,000 years or so that humans expanded their diets to include dairy from domesticated herds and rice or wheat. Even so, we did not see the advent of type 2 diabetes until this past century when two events occurred. First was the creation of labor-saving devices involving electricity and gasoline that allowed Western societies to lead a more sedentary lifestyle. The second was the increased consumption of animal fat, breads and sugars which increased dramatically after World War II. The average weight in 1950 in men was around 150 lbs., increasing to 200 lbs., 50 years later.

The increased dietary load placed more glucose into the blood and more demand to create insulin to manage the glucose load. Levels of insulin in someone fasting should actually be 2 uU/ml, although no one seems to have this low level. Medical doctors consider fasting insulin to indicate type 2 diabetes if it is greater than 15 units, but those in functional medicine define metabolic syndrome at 6 uU/ml.

Elevated insulin is not good for the body. My view, based on scientific evidence, is that insulin itself is harmful to the interior epithelial lining of blood vessel walls.<sup>6</sup> Insulin acts like a solvent: It tells cell walls to open up, that glucose is coming in. Left in the blood stream, however, it can damage and inflame the interior walls of blood vessels. When the body goes to heal and repair this inflammation, LDL (low-density lipid) cholesterol is trapped in the repair. This is the main reason arteriosclerosis happens with LDL cholesterol. Without elevated insulin, however, I do not believe LDL cholesterol can cause arterial plaquing. While doctors are busy chasing LDL cholesterol with statin drugs, it would be more important to evaluate and lower blood insulin levels. (Glucophage, which



lowers blood sugar, also lowers blood insulin). Why does the body allow elevated insulin to stay in the blood? Because if the cells have glucose, they signal the cell walls to ignore insulin. This is called insulin resistance. The origin of this problem, of course, is the over-abundance of glucose in the diet. (All refined carbohydrates break down into glucose.)

The damaging effect of blood insulin - ignored in conventional medicine - would explain why type 1 diabetics have so many problems as their disease progresses. The consequences in type 1 diabetes - heart and kidney disease, gangrene in the limbs, diabetic retinopathy - may not be due to diabetes per se, but to excessive amounts of insulin in their systems.<sup>7</sup> Type 1 diabetics typically take 60 to 80 combined units of insulin a day. With diet control, they could reduce that to 20 units a day.

The second consequence of metabolic syndrome, following elevated blood insulin, is elevated blood glucose. This causes sticky blood, much the same as adding sugar to water. The stickiness correlates with many disease processes, including heart disease, atherosclerosis and senility. In Chinese medicine, sticky blood implies blood stagnation, which inhibits organ function to the heart, kidneys and brain. It is involved in many of the health consequences we associate with aging.

Type 2 diabetes and metabolic syndrome can be controlled by diet. Excess weight is clearly correlated to type 2 diabetes. (A typical sign would be to have a belt size less than half of one's height.) The best approach is the Paleolithic diet - one absent of all refined carbohydrates, dairy and sugars.<sup>8</sup> This diet of animal protein, vegetables, fruits and nuts allows fairly quick weight loss of perhaps 13 lbs. per month. Once one has reduced weight, one can add in rice, essentially producing a typical Chinese diet.