

Super Breakfasts for Blood Sugar Balance

Health is the ability of a body to regulate its internal conditions so as to maintain health and functioning, regardless of outside conditions.¹ An all too common way that many of us begin to lose our health is when we are no longer able to maintain a healthy level of sugar in our blood.^{2,3,4}

Low blood sugar occurs when we are not able to keep enough sugar in our blood. When this happens, our nervous system starts to dysfunction leading to irritability, fatigue, loss of focus and cravings for sweets and stimulants like caffeine. Low blood sugar can be caused by not eating or, paradoxically, by eating too many low fiber carbohydrates and sweets. Consuming the latter causes our blood sugar to spike up and then crash down. This phenomenon is often easily apparent in children. This "spike up, then crash down" pattern is caused by our hormone insulin. Insulin's main job is to get sugar from the blood to into the cells. When large amount of low fiber, simple sugars are ingested, a large amount of insulin is released in response. The large flux of insulin works so well in clearing the sugar of blood into the cells that low blood sugar results.

Long term continued over eating of sweets and low fiber carbohydrates eventually "burns out" the insulin receptors on the cells that assist getting sugar from the blood into the cells. This results in what is called *insulin resistance*. Such "burn out" is quickened by lack of exercise.⁵ In an effort to overcome this, our bodies may make more insulin. Too much insulin can eventually lead to "Metabolic Syndrome". Metabolic syndrome is often a precursor to heart disease and diabetes. The common findings are blood pressure above 130/90 (either number), high triglycerides and "bad" LDL cholesterol and central adiposity. Central adiposity is perhaps most easily defined as a waist size more than half your height.⁶ It is important to realize that blood sugar tests will usually still read "normal" with metabolic syndrome, though often on the high side of normal. However, it is now possible to measure blood insulin.⁸

Eventually, insulin resistance reaches such a magnitude that even fasting blood sugar becomes abnormally high, commonly known as diabetes. As it gets higher, sugar will begin to appear in the urine. Relatively minor symptoms will then appear first, such as frequent urination, excessive thirst, extreme hunger, increased fatigue, and irritability. Eventually cardiovascular, nerve and kidney disease, loss of vision, and non healing wounds and ulcers evidence advanced diabetes.

The key to preventing hypoglycemia, metabolic syndrome and diabetes is balanced eating, regular exercise and proper rest and recreation. Balanced eating means meals combining healthy fats, high fiber carbs and protein. Mediterranean, South Beach, Zone and 40-30-30 diets are some of the more common diets that try to balance these three. By far the most important meal of the day for maintaining a health blood sugar and weight is breakfast. A good breakfast is also associated with less heart disease and cancer.⁹

Superfoods for Blood Sugar Balance

There are some foods and spices that are particularly good for balancing blood sugar. The minerals chromium and magnesium are both essential for maintaining healthy blood sugar levels.¹⁰ Good sources include organic black strap molasses, toasted wheat germ, and brewer's yeast. Foods rich in zinc are important, too.¹¹ Good zinc food sources aside from meats are dairy products, brewer's yeast, wheat germ and omega-3 rich pumpkin seeds.

Fiber content is the major difference between simple and complex carbohydrates. Fiber is an indigestible carbohydrate, so it does not add to net calorie intake. Insoluble fiber, commonly called roughage, promotes bowel movement. Soluble fiber slows down the absorption of sugar into the blood stream. The bran and germ of wheat, rice, oats and corn are very high in fiber, as is flaxseed, the later being a good source of healthy omega 3 fats, along with fair amounts of magnesium, manganese and some zinc. Omega-3 fats can also have been shown to lower insulin resistance.^{12,13}

A little known fact is that fenugreek seeds, with their sweet maple aroma, help to control cholesterol and regulate blood glucose. These benefits are linked to a group of soluble fibers, most notably galactomannans.^{14,15} The spice cinnamon may also help lower insulin resistance in doses as little as one gram.^{16,17}

Finally, the best sweetener for blood sugar balance is stevia. Stevia has good evidence for supporting healthy blood sugar and blood pressure.¹⁸

For references see www.biopharmasci.com/downloads/bloodsugarbalance.pdf

1 <http://www.thefreedictionary.com/homeostasis>

2 Simon Yu, M. D. Diabetes Epidemic: Evolutionary Adaptation to Food Crimes
http://www.preventionandhealing.com/articles/Diabetes_Epidemic_Evolutionary_Adaptation_to_Food_Crimes.pdf

3 Diabetes epidemic shows No Signs of Abating. The Medical News. January 2009 06:33
<http://www.news-medical.net/news/2009/01/27/45297.aspx>

4 Martin L. Budd. LOW BLOOD SUGAR Hypoglycemia: The 20th Century Epidemic? Sterling pp 128
9/15/1983

5 Goutham Rao, M.D. Insulin Resistance Syndrome. Clinical Opinion. The American Family Physician.
3/15/2001 <http://www.aafp.org/afp/20010315/1159.html>

6 Ruchi Mathur, M.D. Metabolic Syndrome. MedicineNet.com.
http://www.medicinenet.com/metabolic_syndrome/article.htm

7 Robert JJ. Methods for the measurement of insulin resistance: Hyperinsulinemic euglycemic clamp.
La Presse Médicale, 1983,24(15):730-4.

8 Rémi Rabasa-Lhoret, et al. Modified Quantitative Insulin Sensitivity Check Index Is Better Correlated to Hyperinsulinemic Glucose Clamp than Other Fasting-Based Index of Insulin Sensitivity in Different Insulin-Resistant States. The Journal of Clinical Endocrinology and Metabolism, Vol. 88, No. 10 4917-4923

9 Breakfast Research and Statistics, MrBreakfast.com.
http://www.mrbreakfast.com/glossary_term.asp?glossaryID=152

10. <http://www.diabetesmellitus-information.com/articles/control-your-diabetes.htm>

11 Helmut Sigel. Zinc and its role in biology and nutrition. CRC Press, 1983 p. 398

12. Jacob S, Ruus P, Hermann R, et al. Oral administration of RAC-alpha-lipoic acid modulates insulin sensitivity in patients with type-2 diabetes mellitus: a placebo-controlled, pilot trial. Free Rad Biol Med 1999;27:309-14.

13. Konrad T, Vicini P, Kusterer K, et al. Alpha-lipoic acid treatment decreases serum lactate and pyruvate concentrations and improves glucose effectiveness in lean and obese patients with Type 2 diabetes. *Diabetes Care* 1999;22:280-7.
- 14 Madar Z, Abel R, Samish S, Arad "Glucose-lowering effect of fenugreek in non-insulin dependent diabetics." *J Eur J Clin Nutr* 1988 Jan 42:1 51-4
- 15 Bordia A, Verma SK, Srivastava KC "Effect of ginger (*Zingiber officinale* Rosc.) and fenugreek (*Trigonella foenumgraecum* L.) on blood lipids, blood sugar and platelet aggregation in patients with coronary artery disease." *Prostaglandins Leukot Essent Fatty Acids* 1997 May 56:379-84
- 16 Khan, MS, PHD, Alam, Safdar, MS, Mahpara, Ali Khan, MS, PHD, Mohammad Muzaffar, Khattak, MS, Khan Nawaz, and Anderson, PHD, Richard A.. "Cinnamon Improves Glucose and Lipids of People With Type 2 Diabetes." *Diabetes Care* 26(2003): 3215-3218.
- 17 Anderson, Ph.D., CNS, Richard A.. "Cinnamon, Glucose Tolerance and Diabetes." *Agricultural Research Service*. 08 Aug 2005. United States Department of Agriculture. 17 Nov 2006.
- 18 Stevia. *NaturalStandards.com* ,
<http://www.naturalstandard.com/naturalstandard/monographs/monoframeset.asp?monograph=/monographs/herbssupplements/aux3-stevia.asp&patientVersion=/monographs/herbssupplements/patient-stevia.asp>