



KNOW YOUR NUMBERS!

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BOB vs. Cheerios

One of the most amazing results we've witnessed from **BOB** is the incredible drop in cholesterol. It's been nothing short of miraculous to watch triglycerides cut in half, risk ratios normalized and HDL nearly double! Everybody wants to own this secret to cholesterol reduction. In fact, General Mills was even advertising *Cheerios* as a cereal cure for elevated cholesterol! That was until the FDA stepped in; the corporation was forced to change their inaccuracy on the *Cheerios* box!

Hopefully those of you participating in BOB were able to see the "biological hole" in the *Cheerios* claim. ***A carb will never be the secret weapon against heart disease.*** In fact, as we've all learned (many of us the hard way!), it's just the opposite. Carbs will increase blood sugar, increase triglycerides & LDL, and increase the risk for heart disease.

Heart disease is a metabolic disorder- caused by abnormal chemical reactions in the body that disrupt the healthy process of metabolism.

A.G.E. with AGE

This metabolic mystery of cardiac risk can be divided into three general areas: inflammation, *AGE's* (advanced glycation end products) and elevated cholesterol..

Let's begin with inflammation. Internal inflammation within the artery wall, otherwise known as *atherosclerosis*, is a hallmark of heart disease. **Chronic inflammation destroys the elasticity of the artery, or "hardens the arteries"**. In a healthy individual, the arteries are tough, yet flexible and elastic. Hardening and the loss of elasticity, increases the risk for arterial damage. Once the artery wall is damaged, fatty deposits, or plaque, builds at the damage site resulting in blockage.

What causes this internal inflammation? An imbalance within the autocrine system ultimately regulates inflammation at this base level. The autocrine system is inclusive of the essential omega 3 & 6 fatty acids (EPA, DHA, AA, GLA, DGLA) and the tiny hormones, which live only seconds, called eicosanoids. These hormones are produced at the cellular level and they control the mechanisms of inflammation, pain, and blood flow. (*Elevated insulin also causes thickening & stiffening of arterial walls.*)

Grains or Algae?

When the balance between the omega 3 and omega 6 essential fatty acids is disturbed, the result is chronic inflammation. Excess omega 6's (found in the seeds of grain) promote thick blood, pain and chronic inflammation. The omega 3's (found in the seed of algae/flax) oppose these actions of the omega 6. ***Most Americans are omega 6 dominant; thus, they are at an increased risk for heart disease and chronic inflammation.***

The ideal omega 6/omega 3 ratio is between 1.5 - 3; however, many Americans have ratios between 10 - 40! The fatty acid blood spot test is the tool we use to ascertain your ratio. It measures two specific essential fatty acids, AA & EPA.



What's your Ratio?

These are the two primary essential fatty acids which challenge and oppose each other to prevent inflammation. Many people have an inherited tendency toward elevated AA levels, thus a genetic tendency toward heart disease & inflammation.

The AA (omega 6)/EPA (omega 3) ratio has become the suggested indicator for determining a person's risk of degenerative heart disease and sudden death from heart attack.

In fact, Harvard-based research released in June 2009, in the *New England Journal of Medicine*, documented the superiority of the bloodspot fatty acid profile test (AA/EPA ratio) for the diagnosis and prevention of all types of heart related disease.

Fighting internal inflammation is an essential key in the reduction of heart disease.

Got Honey?

AGE's, or advanced glycation end products, are also an indication of heart risk. An *AGE* is the bi-product of sugar binding to a protein. When blood glucose levels are perpetually high, abnormal amounts of glucose will bind with protein molecules creating sharp debris within the blood, known as an *AGE*.

An *AGE* is structurally similar to honey left overnight on a counter; the protein/glucose molecule has a sharp, rough edge. Then, as the *AGE* travels through the artery (especially if that artery wall is hardened through inflammation) it will nick the wall causing damage. At the site of damage, fatty debris from the blood will accumulate causing a plaque formation, or blockage. *AGE's* also cause stiff tissue through cross-linking, the process of multiple *AGE's* locking together. The stiffness is a result of sugars reacting with the protein.

The best indication of risk for *AGE's* is the fasting glucose level and/or the A1C test. An A1C measures the glycated hemoglobin. Healthy fasting glucose levels should be between 70-90. **Readings over 90 indicate excess glucose in the blood, and a substantially higher risk for *AGE* formation.** The A1C is a measurement of the average blood glucose levels over a longer period. The higher the A1C, the higher the risk for *AGE* formation.

Know your numbers!

AGE's increase the risk for arterial blockage and hardening, but they are also associated with an increased risk for blindness, nerve damage, dementia, and cancer. Again, elevated blood glucose and *AGE's* are often silent killers effecting thousands of unsuspecting people. **Monitor your fasting glucose, know your numbers.** *If you would like more information on glucose control, talk to your trainer.*

How does cholesterol play into this mix? Elevated triglycerides are produced in the liver from excess sugar in the blood. They are then stored within LDL, a lipid carrier. LDL carries that fat for deposit within the arteries, leading to blockage/plaque build-up. The higher the blood glucose, the higher the triglycerides & LDL.

Here's to your heart.....swallow your oil, follow BOB and lower your fasting glucose!