



# BIOLOGY OF BURN (BOB)

by Dr. Kelly J. Gibas



## THE BIOLOGY OF BURN (B.O.B.)

*“The Japanese eat little fat & suffer fewer heart attacks than British or Americans. Mexicans eat a lot of fat & suffer fewer heart attacks than British or Americans. Japanese drink very little red wine and suffer fewer heart attacks than British or Americans. Italians drink excessive red wine and suffer fewer heart attacks than British or Americans. Germans drink a lot of beer and eat lots of sausages & fats and suffer fewer heart attacks than British or Americans. Conclusion: eat & drink what you like. Speaking English is apparently what kills you! “*

I’m kidding, of course, but this internet humor displays the ridiculous associations we can make to justify eating what we like! When it comes to meal planning, the basic bio-chemistry of nutrition will always work. Starting in September, we are excited to announce the addition of *individualized* meal planning particular to your metabolic condition. This system will allow us to give you a weekly meal plan complete with recipes & a shopping list! But, most importantly, it is not a “one size fits all” like other meal planning programs. Instead, it has the capability of personalizing the macronutrient breakdown based on your body fat%, glucose readings, fitness level (VO2 score), metabolic rate & hormonal profile.

We believe it is imperative to have a basic understanding of the bio-chemistry of nutrition before embarking on a meal plan. An inherent weakness of so many “diet” programs is the lack of education. We don’t want to toss a menu at you; we want you to have an understanding of the food chemistry. Otherwise, once the “program” is over, old habits will return along with the fat that was lost!

### WHICH FUEL?

The body has three primary forms of fuel for its energy needs ...glucose (sugar) from carbs, amino acids from protein, and fatty acids from fats. The strategy is to switch the body from a *sugar burning/fat storing monster* over to a *fat burning machine!* In hormonal terms, we want to shift the metabolic axis from primarily insulin based (storing) over to glucagon based (burning.)

### *Easier said than done...right?*

One key principle to remember: **it is impossible to burn fat in the presence of insulin.** When insulin is present in the blood, the body must burn immediate sugar. This means the stored fat around the tummy stays & you are “hormonally” stuck. Insulin is released at the ingestion of any carb...candy, whole grain bread or fruit of all kinds! Insulin is fine if it does its job & leaves. But, for many overweight people the insulin never clears the blood. These people, with chronic weight problems, are stuck in a fat storing cycle. Yes, it is a hormonal imbalance between insulin & glucagon, but it is also a sugar addiction.

*Physiologically the body refuses to use body fat for energy (lipolysis) which forces the brain to crave sugar for survival.*

***“If there is a single marker for life span, it’s insulin sensitivity.”***

Dr. Ron Rosedale of Rosedale Center for Metabolic Medicine in Boulder Colorado.



## **SWITCH GEARS**

Biologically, this is a **glucose based metabolism**, but psychologically and emotionally, sugar becomes like a drug. Sugar has a dramatic & immediate effect on our serotonin levels. Serotonin is the “feel good” neurotransmitter. But, soon after sugar is consumed, serotonin levels will plummet. This sharp fall creates an addictive cycle.

*The brain literally begins to crave the next hit of serotonin through sugar. **The American Association of Clinical Endocrinologists estimates that 1 in 3 Americans has a glucose based metabolism!*** As you can see, this cycle must be broken on many different levels.

***The biological truth is the body really has no physiological need for carbs.*** You cannot live without protein. You cannot live without fat, but you can exist just fine without carbs! Here’s why...the basic glucose (sugar) requirement for the brain is 150-200 grams of glucose/day. If you don’t consume carbs, the body will begin to move into “**gluconeogenesis,**” or a state of creating new sugar from non-carb sources.

Where will this new sugar come from? The body has the ability to break down the glycerol molecule in triglycerides & convert it to glucose, or protein/amino acids can also be changed to glucose. ***But, perhaps the most efficient & beneficial way is through lipolysis...the conversion of fat into sugar!***

Yes! pull the fat rolls from the middle and burn baby burn! This is exactly what happens when we break the cycle of sugar addiction. Oh yes, there will be resistance & withdrawal from your body. Switching the body’s primary fuel source to lipolysis will be similar to breaking the will of a spoiled child. The body has been physiologically addicted to burning immediate sugar, and it will resist the conversion of fat into energy. Sugar withdrawal symptoms can include: low blood sugar attacks, aches & pains, tiredness, headaches, foggy thinking, and irritability. **But, if you are disciplined & dedicated to changing your metabolism, it will work!**

## **KETOSIS**

Ketosis, the opposite of a glucose based metabolism, is the condition of forced fat burning. This benign ketosis is often confused with a *diabetic ketosis*. A diabetic ketosis occurs when a type I diabetic, whose pancreas cannot produce insulin, has no opposition to glucagon. The body begins converting fat into sugar without control. This can result in death.

***For the rest of us, we have plenty of insulin hanging around to challenge the work of glucagon. Don’t worry, you won’t get too skinny!***

## **WHAT’S YOUR CCL?**

*In fact, in normal people, ketosis keeps blood sugar steady & stabilized while burning stored fat for energy.* The basic biochemistry of ketosis is the restriction of carbs in order to force the body to switch to glucagon. Then, once your metabolism has shifted, the challenge is to **discover your critical carb level (CCL)**. *This is the maximum amount of carbs you can eat per day while keeping a glucagon based metabolism.*

This is the good news ... once the sugar addiction, of a glucose based metabolism, is broken, the cells begin to **up-regulate**. Up-regulation means the tissue begins to regain its sensitivity to insulin & glucose.

**This sensitivity allows your critical carb limit to increase without storing fat!** Up-regulation also occurs as new muscle tissue develops from strength training. *New muscle is always sensitive to insulin!* Again, is this change easy?

Diapers are always easier than a potty chair...right? Discipline will never be the path of least resistance, but it’s the path of maturity & accomplishment. At **Bristlecone**, you are not alone on this journey!