

**NUTRI-SPEC**



*Live Stronger Longer*

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**THE NUTRI-SPEC LETTER**

**Volume 37 Number 7**

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**ENERGY -----  
30 – 20 – 20 ----- FEED YOUR BRAIN PLENTY**

**ARE YOU SHORT OF YOUR  
20 – 20 – 30 ENERGY REQUIREMENT?**

Dear Doctor,

You have 3 organs that succumb to INFLAM-AGING if you fail to supply them with the vast majority of your available energy --- along with the efficient mitochondrial energetics to turn that energy into productive ATP.

Of all the calories you consume --- every day of your life ...

20% must be allocated for liver energetics

20% is demanded by your intestinal epithelium

30% is life-or-death to keep brain cells young and sharp.

The mitochondria of every cell in your body are begging for energy. Of your total daily energy production, how much do you allocate to each body tissue? Another way to express that --- what are the three most important tissues to feed, if you are going to maintain ---

**LIVE STRONGER LONGER?**

If you can maintain high-level energetics in your liver, your intestinal epithelium, and your brain, you have all the energy you need to prevent both Exogenous INFLAM-Aging and Endogenous INFLAM-Aging.

Your liver is continually calling out, “FEED ME! I cannot possibly complete my thousands of metabolic functions unless you guarantee the conditions I need to use 20% of your dietary caloric intake.”

Your intestinal lining is incessantly screaming, “What are you doing to me?!?! Your HOHUM PUFA intake & Fructose intake are punching holes in my lining nonstop. The Leaky Gut Syndrome we are stuck with is poisoning you with endotoxin --- and --- breaking down your (--- and MY!) Microbiota-Intestine Axis and Microbiota-Liver Axis. You are suffering from simultaneous starvation and toxemia. Shape up!”

Your brain is forever reprimanding you, “What do you think you are doing? Truthfully, you are incapable of thinking either rationally or analytically. Why? How can you think clearly if you starve your ‘thinker’? My mitochondria either function as fine-tuned race car engines or they don’t function at all. I need the perfect blend of fuel --- Glucose and Ketones, perfectly balanced and rebalanced from moment to moment. I need the energy to think and remember, and just as importantly, I need the energy to maintain a high level of autophagy. Otherwise, I run like a 1976 Chrysler being fed economy gasoline, with oil that hasn’t been changed in 30 years, and plugs with a lifeless spark. Ultimatum --- Give me energy, or I’ll give you dementia!”

Why are your liver, your gut lining, and your brain so irate? Why are they pleading, “Energy! More energy, PLEASE!”?

Unless you are a skinny minny, you are obviously feeding those tissues enough calories. The problem is that the energy input is not being matched by the energy output.

The calories are not going through an efficient energetics pathway to produce ATP by OXPHOS in the Electron Transport Chain (ETC).

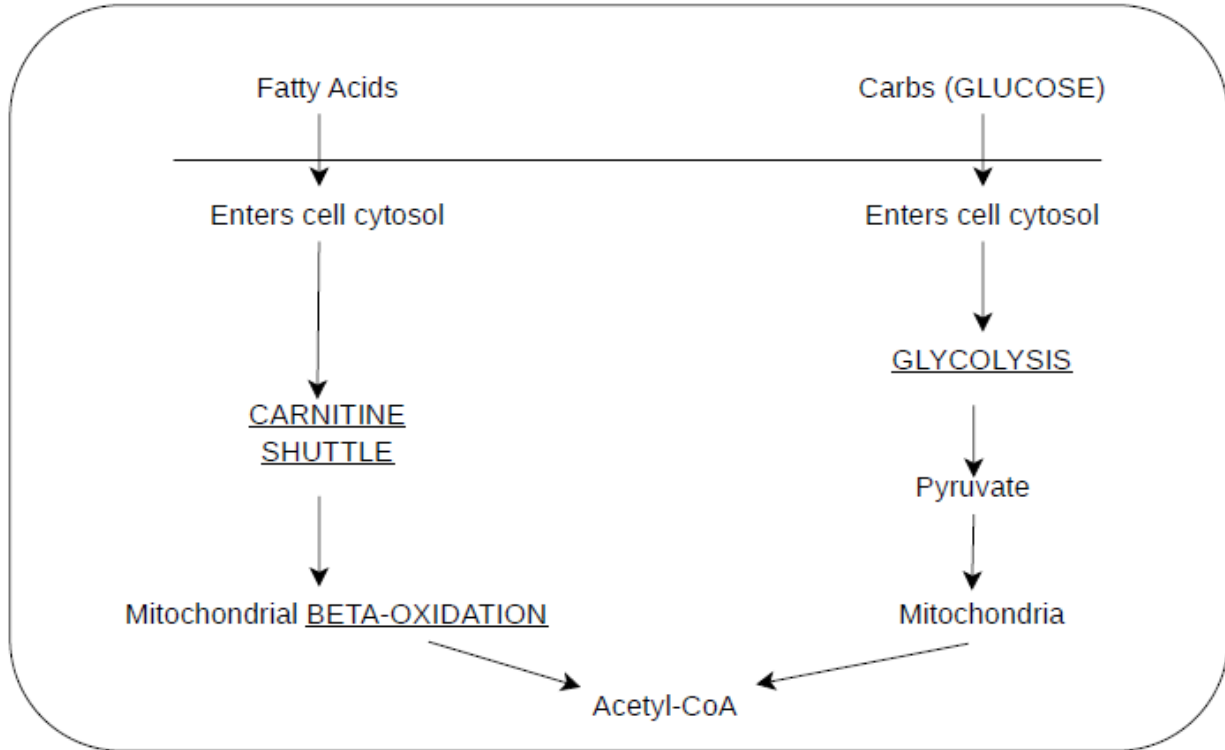
### **WHERE ALONG THE WAY DO THESE CALORIES GET LOST?**

Neither your carb calories nor your fat calories are feeding the ATP-producing fire.

Some of those calories are smoldering like a wet, dirty log in a fireplace.

And some are so lost they wander until they find their way to fat cell storage.

The pathways should be quite simple and direct ...



From Acetyl-CoA, it should be an automatic step into the Krebs Cycle, and from the Krebs Cycle into the Electron Transport Chain and the production of ATP.

But Glucogenic/Ketogenic Imbalances have many roadblocks, both before and after Acetyl-CoA, pushing the pathways off course. Two consequences ...

- The energy substrates diverted from the normal pathway enter futile cycles that produce very little energy
- These substrates that are blocked from further progress are either converted into sugar, or converted into excess cholesterol or triglycerides.

Following those misdirections, the glucose, cholesterol, and triglycerides can accumulate in the liver and in the blood, or, the triglycerides can be stuffed into ever-expanding fat cells.

So much for where things go astray. Now consider ...

## **WHY ALONG THE WAY DO THESE CALORIES GET LOST?**

It is all about ---

### **THE RANDLE CYCLE.**

The Randle Cycle (the Glucose-Fatty Acid Cycle) shows that there is a ---

### **RELENTLESS COMPETITION BETWEEN GLUCOSE AND FATTY ACIDS ---**

as they beg to be chosen as the energy substrate at that moment. Glucose and fatty acid molecules approach your liver, your gut lining, your muscles, and all the tissues of your body, with each little molecule screaming, “Choose me! Choose me! Choose me!”

What the Randle Cycle shows you is that each tissue cell, whether it be brain, liver, gut, muscle, or whatever ---

### **IS CAPABLE OF USING ONLY ONE --- THE GLUCOSE PATHWAY OR THE FATTY ACID PATHWAY --- AT A TIME.**

Got that? At this precise moment, as your brain is at least halfway engaged with reading this Letter, your liver has opened the door to Glucose, and slammed the door to fatty acids. The Glucose feeds the liver itself, but also serves as a supply line to the brain.

The few fatty acids the liver admitted are pretty much kicked out of the way. The remaining fatty acids in your bloodstream go down the street and knock on the door of muscles, gut epithelium, adipose cells, and the brain – with each tissue making its individualized decision at that moment whether it wants to slurp up fatty acids or post the “KEEP OUT!” sign.

Suppose you put this Letter down and pursue some other activity. A little later, you pick up the Letter again and resume reading, but by now your blood sugar is at the lower end of ideal. Your brain is still seeking Glucose as its preferred energy substrate, but cannot find an adequate supply. Since long-chain fatty acids cannot pass through the blood-brain barrier, your brain says, “Uh-oh --- I better find a source of ketones.”

The communication lines between your frontal brain, your hypothalamus, your microbiota-liver axis, and your liver-brain axis are all activated in a search for ketones. ----- Now, the liver changes its priorities. It sends a message to your fat cells to mobilize fats --- the liver eagerly invites them in, runs them through the Carnitine Shuttle and Beta-Oxidation, but stops short of sending them into the ETC --- instead producing ketones to be shipped out to the brain.

What you just contemplated is normal, healthy Energetics.

It is the Randle Cycle that manages the demand of glucose and of fatty acids by fine-tuning energy pathways --- leading to maximally efficient OXPHOS along the ETC. The Randle Cycle demonstrates that ---

### **THE EXCLUSIVE UTILIZATION OF FAT OR GLUCOSE THOROUGHLY INHIBITS THE USE OF THE OTHER.**

The Randle Cycle represents a survival adaptation to unpredictable nutrient availability, and establishes a close inverse relationship between adipose tissue and muscle tissue energetics, with the liver as the intermediary.

Such is the description of the Randle Cycle as the anthropologically-derived means by which humans have maximized energetics efficiently over many centuries in the face of inconsistent availability and quality of food.

But modern dietary imbalances provided by grotesque excess quantities of food, along with poor quality (particularly the consumption of the two major anti-metabolites = polyunsaturated oils and fructose sugars), exceed adaptative capacity. In many of your patients, the Randle Cycle is overwhelmed, struggling to maintain energetics.

### **LIVE STRONGER LONGER?**

All the “Diseases of Aging” begin early in life, and are associated to some degree with, “I just don’t have enough energy” (both metabolically and subjectively) to meet the stresses of life.

I suspect we have just described the majority of your patients.

The Randle Cycle is the essence of your Glucogenic/Ketogenic Imbalances.

Does the following list of patient comments sound familiar?

“Sometimes my brain fogs so bad, I can’t think straight about anything.”

“I have a mid-afternoon slump, and sometimes I just cannot pull out of it.”

“I used to get migraines the week before my period, but now I get them several times a month.”

“Just about the only time I feel good is when I eat sugar.”

“My cholesterol keep going higher and higher, even though I am doing a good job of cutting all the high cholesterol foods.”

“No matter how much I stick to my diet, I cannot lose weight.”

We could expand this list almost endlessly. Suffice it to say that the majority of your patients are suffering to some degree from a 20-20-30 deficiency in one or more organs/tissues. That is to say, they have a Glucogenic or Ketogenic Imbalance.

In your Glucogenic patients, the pathways of fatty acid energetics are blocked, and the person is struggling with access limited to only glucose as the energy substrate. ----- And the reverse is true of your Ketogenic patients, who have the glucogenic pathways blocked, and are desperately but inadequately trying to rely on fatty acid energetics.

Neither Imbalance is getting efficiently to Acetyl-CoA. And once they fail at Acetyl-CoA, both your Glucogenic & Ketogenic patients have their own further deranged pathways of energetics. ----- As we just said, all the “Diseases of Aging” link in some way to Glucogenic or Ketogenic Imbalance.

Look at your patients. See the Tubby Tummies (Ketogenic). Look at the Hippo Hips (Glucogenic). Listen to their complaints about brain fog, depression/anxiety, weight gain, rising cholesterol, and Type 2 Diabetes. These are all signs of Exogenous and/or Endogenous INFLAM-Aging, but more primarily, they are signs of Glucogenic/Ketogenic Energetics Imbalance.

Monthly Special for July  
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