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THE NUTRI-SPEC LETTER

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CARNITINE --- FAT-BURNING OBESITY CURE?

JELLY BELLY? HIPPO HIPS?

Will Carnitine make them melt away?

Actually, that is not a totally absurd notion. Carnitine is critically essential to

EFFICIENT FAT BURNING.

When was it that Carnitine enjoyed ---

**ITS RUN TO NUMBER ONE ON THE
HEALTH FOOD INDUSTRY LIST OF TOP TEN HITS?**

I think it was in the 1990s ...

The disreputable natural food industry executed to perfection its old trick of seizing upon a truth revealed by the research literature, extrapolating it outrageously, and then contriving a supplement to foist upon gullible health food store shoppers. In this case it loudly broadcast the fat-burning pathway (mitochondrial Beta-Oxidation) as depending entirely on Carnitine transporting dietary fatty acids into the mitochondria. Every supplement company rushed to market with its own Carnitine supplement --- a magical pill ...

GUARANTEED TO BURN OFF THAT TUBBY TUMMY AND MELT AWAY THOSE EXPANSIVE HIPS.

Magazine articles, natural cure industry promotions, and alternative healthcare providers all jumped on the bandwagon. The eager public bought it big. Many of my patients and even my staff were among the thundering throng stampeding through the local health food store door --- certain they were going to get something for nothing --- a slim physique they had not earned.

Month after month, Carnitine remained the natural food industry flavor of the month. Predictably, many thousands were painfully disappointed.

How did the supplement industry protect its mega sales volume? Since this was the decade when “complex carbs” had been named the crown jewel of healthy eating, and fats were vilified as the cause of everything from obesity to cardiovascular disease and cancer --- it was easy to promote the notion that “Carnitine will only work if you go on a low-fat diet.”

OH THE IRONY!!!

Here we have a nutrient that truly has remarkable effects at activating fat-burning energetics --- being promoted as effective only if you avoid dietary fat! Do you see the absurdity? If you go on a high-carb diet, there isn't even a fat substrate for Carnitine to work on! Every molecule of Carnitine is wasted without a fatty acid entering the cytosol.

What is the truth about Carnitine?

The reality is that it fits perfectly into the Nutri-Spec paradigm of ---

BIOLOGICAL INDIVIDUALITY.

Particularly, we are talking about individuals on the Glucogenic side of Glucogenic/Ketogenic Balance. Glucose metabolism and fat metabolism are not just separate energetics pathways; they actually compete with each other. Glucogenic/Ketogenic Imbalance means that one of those two energetics pathways is blocked.

Glucogenic patients cannot access fatty acid energetics, having deficient mitochondrial beta-oxidation. Ketogenic patients are the opposite, stuck in inefficient fat metabolism with barriers to fully accessing glucose energetics.

While Carnitine is an amazing nutrient, benefiting many, many aspects of metabolism, and enhancing the health of every organ in the body, it is most fundamentally essential to your Glucogenic patients. If Glucogenic patients supplement with Carnitine (along with the other “fat-burning” --- which is to say beta-oxidation-enhancing --- nutrients) in your Energetics G supplement--- and --- if they eat a reasonably high-fat diet supported by adequate protein and low carb, they will not only experience a tremendous surge in metabolic energy, but will quite easily lose weight.

The primary function of Carnitine is transporting fatty acids from the cytosol into the mitochondria to generate ATP. In the mitochondrial matrix, fatty acids are broken down through β -oxidation to acetyl-CoA for entry into the Krebs Cycle. Fatty acids can only enter a flaming mitochondrial fire if pushed by Carnitine.

- Carnitine is essential for the transport of long-chained fatty acids into the mitochondria; thus, Carnitine depletion causes intracellular accumulation of triglycerides and cholesterol.
- Carnitine is essential for translocation of long-chain fatty acids into skeletal muscle mitochondria for β -oxidation. Beta-oxidation, in turn, feeds acetyl-CoA into the Krebs Cycle. Resting muscle derives 85% of its energetics from fat burning --- delivered by Carnitine.
- Carnitine increases liver co-enzyme A (Co-A-SH).
- Carnitine stabilizes the Co-A-SH/Acetyl-CoA ratio.
- Carnitine is a Betaine derivative (this is one more example of the amazing biological activity of Betaine, another ingredient in your Diphasic A.M., Energetics G & K, Proton Plus, Oxygenic D, Complex S, and Activator).
- Carnitine increases the conversion of ammonia to urea. Protecting the brain from excess ammonia requires Carnitine, Taurine, and Betaine.
- Carnitine protects membrane structures.

CARNITINE Facilitates Healthy Triglyceride & Cholesterol Metabolism

Maebashi, N. et al, "Lipid-lowering Effect Of Carnitine in Patients with Type IV Hyperlipoproteinaemia." Lancet 2:805-807, 1978.

- Carnitine has a dramatic impact on decreasing triglycerides. It decreases elevated cholesterol as well, but has a far greater effect on triglycerides. Carnitine also increases high-density lipoproteins ("good cholesterol").
- Studies show that a deficiency of Carnitine is a causative factor in increasing triglycerides, both in the liver and in the serum.

CARNITINE Facilitates Healthy Glucose Metabolism

- Carnitine increases glucose oxidation in Type II diabetics. Carnitine increases glucose storage in both Type II diabetics and controls.
- Carnitine decreases the age-associated decline in mitochondrial function and general metabolic activity.
- Carnitine reduces lactic acid production (extremely beneficial for Glucogenic and Anaerobic Imbalances).
- Carnitine improves insulin resistance. It decreases the spike in glucose concentration after glucose administration, and decreases the associated insulin secretion.
- Carnitine supplementation reduces severity of physical and mental fatigue and increases cognitive functions in geriatric subjects.
- Carnitine supplementation (along with vitamin B12) is shown to decrease anorexia. [Side Note: Anorexia always indicates Sympathetic Imbalance.]
- Carnitine improves fat metabolism in virtually all organs, particularly in the heart.

Fritz, I. et al, "Specificity of Carnitine Actions of Fatty Acid Oxidation by Heart Muscle." Am. J. Physiol. 202:117-121, 1962.

Enhanced pyruvate flux (through PDH conversion to acetyl-CoA) is beneficial for the cardiac cells since less pyruvate is converted to lactate, thus preventing the acidification of the intracellular compartment.

During high-intensity exercise (and other circumstances of increased pyruvate decarboxylase (PDC) flux), Carnitine buffers the excess acetyl groups formed, ensuring continuation of reactions. If the activity of the PDC were maximal at high exercise intensity, but without a high muscle Carnitine content, then the entire pool of muscle acetyl-CoA would become overwhelmed within one second of the initiation of the muscle contraction --- hypothetically resulting in the immediate and complete inhibition of the Krebs Cycle energy production.

Increasing muscle total Carnitine content alleviates the decline in fat oxidation rates routinely observed during high-intensity exercise, and concomitantly reduces muscle glycogen utilization. Trained human athletes have a higher capacity to utilize fatty acids during exercise, and have a higher total muscle Carnitine content compared to untrained controls. Increasing skeletal muscle Carnitine content delays fatigue development by 25%.

Jen-Yu Ho, et al. L-Carnitine Supplementation Favorably Affects Biochemical Markers of Recovery from Physical Exertion in Middle-Aged Men and Women. Metabolism. 2010 Aug.

Carnitine-supplemented participants performed four sets of 15 repetitions of squat/leg press at 50% 1 repetition maximum. Blood samples pre-, during-, and post-exercise and during 4 days of recovery showed that Carnitine supplementation had positive effects and significantly attenuated biochemical markers of purine metabolism (hypoxanthine, xanthine oxidase), free radical formation (Malondialdehyde), muscle tissue disruption (Myoglobin, creatine kinase), and muscle soreness after physical exertion. In summary, Carnitine supplementation can reduce chemical damage to tissues from exercise and optimize the process of muscle tissue repair and remodeling.

NUTRI-SPEC practitioners have been benefiting for years from the true value of Carnitine. As part of your Activator, Carnitine has given a metabolic boost to every single one of your nutrition patients. Carnitine is also a major component of your Formula ES because of its beneficial effects not only on myocardial energy

production, but also because it is one of the most effective ways to lower elevated triglycerides (one of the major independent risk factors for heart attacks and strokes).

Carnitine is also a critical component of the Oxygenic A that you give to all your patients with an Anaerobic Metabolic Imbalance. Why? Your Anaerobic patients show a deficiency of oxidative metabolism reflected in their over-dependence on anaerobic glycolysis. In particular, these Anaerobic patients are deficient in the ability to oxidize fatty acids. In reversing the deficient oxidation of fatty acids, Carnitine improves cellular energy production, with the resultant benefit of decreasing the excess lactic acid build-up typical of Anaerobic patients.

Carnitine contributes in a major way to the power of your Stage Of Life INFLAM-AGING Defense (SOLID) Diphasic Nutrition Plan. It is found in your Adapto-Max/Diphasic A.M. supplement that will protect all your patients against Endogenous INFLAM-AGING when taken in the morning (in harmony with the anti-anabolic phase of your patients' Diphasic Metabolic Cycle).

Carnitine supplementation enhances male fertility.

Returning to its specific benefits to your chronic Glucogenic Imbalance patients: Carnitine plays an important role in Metabolic-Associated Fatty Liver Disease (MAFLD). It is proposed that Carnitine has a “multiple hit” impact on the MAFLD progression and the downstream mechanisms. Carnitine supports efficient β -oxidation, improves mitochondrial dysfunction, and reduces insulin resistance in MAFLD. Carnitine may have a therapeutic role in liver diseases including Non-Alcoholic Steatohepatitis, Cirrhosis, Hepatocellular Carcinoma, Fatty Liver Disease, and Viral Hepatitis. Mitochondrial efficiency is empowered and fat burning is assured.

Li, et al. Role of Carnitine in Non-Alcoholic Fatty Liver Disease and Other Related Diseases. Front Med. 2021 Aug.

Make the most of Carnitine --- an amazing ADAPTOGEN and fat metabolizer with your equally amazing SPECIAL for September --- 1 bottle **FREE** for every 5 you buy of Energetics G, Energetics K, Formula ES, Oxygenic A, Adapto-Max & Oxy-Max.