FOUNDATIONS OF INTEGRATIVE ONCOLOGY

Module 4 Toolbox: Therapeutic Interventions & Immue Modulation

Lesson 2 Medical Foods, Protein Repletion & Glycemic Control

Learning Objectives – Understand and describe:

- Selected medical foods
- Nutrient-dense, high-protein, low-glycemic therapeutic shake
- Importance of protein repletion
- Importance of fatty acids
- Importance of broad spectrum of phytochemicals
- Functions and dosing of L-Carnitine and Acetyl L-Carnitine
- Function of Medium Chain Triglycerides

Foundation Therapeutic Shake

- Protein: 20-40g
  - Non-heat treated, undenatured whey powder (dairy)
  - Pure pea or rice protein powder (vegan and dairy-free)
  - "Paleo" purified hydrolyzed beef peptides (dairy-free, low-antigen, high PER)
- Fiber (both soluble and insoluble or high lignin flaxseed meal)
- Phytochemicals & Antioxidants: 1 heaping teaspoon concentrated Greens or Reds powder
- Carnitine: 1,000-3,000mg Tartrate or Acetyl L-Carnitine powder
- Mix with: Low-allergenic, non-dairy liquid
- Tip: Take with digestive and proteolytic enzyme capsules to enhance digestion, absorption
- Resource: *Patient Education: Therapeutic Super Shake* for full recipe options

Carnitine

- Hydrophilic amino acid derivative, produced endogenously in the kidneys and liver and derived from meat and dairy products in the diet.
- Essential for mitochondrial energy production (disturbance may contribute to fatigue)

L-Carnitine

- Beneficially influences several critical mechanisms involved in pathologic skeletal muscle loss
- Anti-catabolic effects associated with improvement of fatigue-related parameters

Acetyl L-Carnitine (1-3g daily)

- Supports neuronal repair, cognitive function, memory, immunity
- Relieves depression and mental fatigue

Medium Chain Triglycerides

- More readily used as energy source; can be converted to ketones as alternative energy source
- Increase in metabolism
- Caprylic and capric acids from coconut and palm oil – easily absorbed MCTs
- Tumor growth can be inhibited in patients given MCTs along with a ketogenic diet

References

Cruciani, R. A., Dvorkin, E., Homel, P., Malamud, S., Culliney, B., Lapin, J., ... & Esteban-Cruciani, N. (2006). Safety, tolerability and symptom outcomes associated with L-carnitine supplementation in patients with cancer, fatigue, and carnitine deficiency: a phase I/II study. *Journal of pain and symptom management*, *32*(6), 551-559.

Ringseis, R., Keller, J., & Eder, K. (2013). Mechanisms underlying the anti-wasting effect of L-carnitine supplementation under pathologic conditions: evidence from experimental and clinical studies. *European journal of nutrition*, *52*(5), 1421-1442.

Vidali, S., Aminzadeh, S., Lambert, B., Rutherford, T., Sperl, W., Kofler, B., & Feichtinger, R. G. (2015). Mitochondria: the ketogenic diet—a metabolism-based therapy. *The international journal of biochemistry & cell biology*, *63*, 55-59.