

TBI THERAPY WEBINAR: KETOGENIC DIET FOR TBI

By Dr. John Hughes February 13th, 2018





LEARNING OBJECTIVE



- What is a Traumatic Brain Injury (TBI)?
- What are Ketones?
- What is the Ketogenic Diet?
- How Does the Ketogenic Diet Help TBI?

WHAT IS A TBI?



- A sudden, violent blow or jolt to the head
- Brain collides with the inside of the skull
 - Bruising of the brain
 - Tearing of nerve fibers and bleeding



WHAT HAPPENS AFTER A TBI?

- During brain swelling, glucose uptake that surges to the injured area to provide energy for healing and repair is blocked
- The brain is flooded with disproportional responses

TBI = METABOLIC CRISIS

"The brain is in a metabolic crisis in a concussion, potassium ion from inside the cell going extracellular, calcium ions going intracellular, neurotransmitters widely released in a chaotic manner. It takes energy to pump that potassium back, put the neurotransmitters back on so the cell can function."

Dr. Robert Cantu MD

BIOCHEMICAL AND PHYSIOLOGICAL RESPONSES AFTER TBI

- Disproportional proinflammatory cytokine production and release
 - \rightarrow Small proteins that are important in cell signaling
- Increased counterregulatory hormones
 - ightarrow Work against the action of insulin
- Hypermetabolic and catabolic states
- Severely impairing nitrogen homeostasis



OXIDATIVE STRESS FROM TBI



A disturbance in the balance between the production of reactive oxygen species (free radicals) and antioxidant defenses

OXIDATIVE STRESS FROM TBI

Impairs cerebral vascular function

- Impairs circulation
- Impairs the energy metabolism
- Damages mitochondria and DNA

SYMPTOMS FROM OXIDATIVE STRESS

Fatigue

- Disturbances in sleep
- Memory loss and/or brain fog
 - Decreased eye sight
- Headaches and sensitivity to noise
 - Cognitive impairment
 - Changes in mood
 - Insulin resistance
 - Hormone abnormalities

HOW TO DECREASE OXIDATIVE STRESS?

"Ketones decrease oxidative stress, increase antioxidants and scavenge free radicals."

(Greco, Glenn, Hovda, & Prins, 2016)

WHAT ARE KETONES?



HOW DOES THE BODY CREATE ENERGY?

Glucose



If we cut out carbohydrates and sugar

Glycogen/Blood Sugar/Insulin Decreases

Body uses fat for energy



=Beta-oxidation / Ketosis / Decrease Oxidative Stress



Which burns more even?

KETONES BURN EVENLY



- Stabilizes the nervous system
- Reduces seizure threshold
- Enhances brain organization
- Corrects the metabolic crisis
- Balances hormones

KETONES ARE LIKE DIESEL FUEL (GLUCOSE IS LIKE GASOLINE)

- Diesel fuel has a high flash point than gasoline
- Harder to oxidize Less flammable (excitable)



- The brain works like a diesel engine
 - Burns more efficiently lasts longer

Video

Increases Neuroprotection

Increases GABA

Increases Calming



WHAT ELSE DO KETONES DO?

Decreases Glutamate



Decreases Depression, Fear, Anxiety

Decreases Oxidative Stress

NEUROPROTECTIVE ACTIONS OF THE KETOGENIC DIET

- Increases resistance to metabolic stress
- Increases resilience to neuronal loss
- Upregulates energy metabolism genes
- Stimulates of mitochondrial biogenesis
- Enhances alternative energy substrates
- Promotes synthesis of adenosine triphosphate (ATP)
- Interferes with glutamate toxicity
- Bypasses the inhibition of complex I in the mitochondrial respiratory chain





THE KETOGENIC DIET

- High-fat
- Adequate-protein
- Low-carbohydrate

Meats – fish, beef, lamb, poultry, eggs, etc.

Leafy Greens – spinach, kale, etc.

Above ground vegetables – broccoli, cauliflower, etc.

High Fat Dairy – hard cheeses, high fat cream, butter, etc.

Nuts and seeds – macadamias, walnuts, sunflower seeds, etc.

Avocado and berries – raspberries, blackberries, and other low glycemic impact berries

Sweeteners – stevia, erythritol, monk fruit, and other low-carb sweeteners

Other fats – avocado oil, coconut oil, grass-fed ghee, high-fat salad dressing, saturated fats, etc.

Grains – wheat, corn, rice, cereal, etc.
Sugar – honey, agave, maple syrup, etc.
Fruit – apples, bananas, oranges, etc.

Tubers – potato, yams, etc.

TBI THERAPY PROTOCOL 3 MONTHS

Boost Brain Power, and Increase Your Energy

DR. JOSEPH MERCOLA New York Times best-selling author of EFFORTLESS HEALING I. Begin ketogenic diet at beginning of TBI Therapy treatments

- 2. Read Fat for Fuel by Dr. Joseph Mercola
 - 3. Consider intermittent fasting
 - 4. Brain Octane (MCT Oils) =

16x more ketones than coconut oil



KETOGENIC DIET AND TBI



- Reduces oxidative stress
- Decreases neuroexcitatory glutamate
- Increases GABA the calming neurotransmitter
- Overall improvements in cognitive and motor functioning
- Proven treatment for patients suffering from epileptic seizures – since 1921



Learn more at tbitherapy.com or call 303-447-1257

Video