Optimizing Cellular Energy Production: The Mito Food Plan

ELIZABETH BOHAM, MD, RD

Integrative Health Symposium
February 21st, 2020
New York City
Performance Objectives
Following this activity, successful participants will be able to...

1. Implement the Mito Food Plan to improve mitochondrial health and support healthy aging.

2. Identify the top 12 mitochondrial therapeutic foods.

3. Explain different fasting strategies to improve mitochondria function.

4. Explain how to adapt Mito Food Plan to become ketogenic friendly.
The Mito Food Plan: Fueling Healthy Mitochondria
Food Is...
Food Is...
Macronutrient Metabolism

Protein
Deamination
TCA Cycle
ETC

Fat
β-oxidation
TCA Cycle
ETC

Carbs
Glycolysis
TCA Cycle
ETC

ATP Pool
Carbohydrates → Acetyl CoA → Citric Acid Cycle

- Oxaloacetate
- Malic Acid
- Fumaric
- Succinic Acid

Key:
- Collector
- Inhibitor

NADH/FADH₂ → Electron Transport and Oxidative Phosphorylation

(2) H + ½ O₂ → H₂O
Introducing the IFM
MITO FOOD PLAN

MITO FOOD PLAN FEATURES
- Protective Antioxidants
- Anti-inflammatory Nutrients
- High in Quality Dietary Fats
- Low Glycemic Impact
- Reduced Carbs with Ketogenic Option
- Intermittent Fasting and Calorie Restriction
- Low-Gluten, Low-Grain Foods
- Therapeutic Foods for Energy

MITO FOOD PLAN
Comprehensive Guide
Anti-Inflammatory Nutrients

Protective Antioxidant

High in Fat

Low Glycemic

Reduced Calories with Ketogenic Options

Intermittent Fasting and Caloric Restriction

Low-Grain and Gluten-Free
# Mito Food Plan Comprehensive Guide, Weekly Menu, Recipes, and Shopping List

## PROTEINS

- **Serving/day**
- **Protein**
- **Proteins**:
  - Free-range, grass-fed, organically grown animal protein: non-GMO, organic, plant protein, and wild-caught, low-mercury fish preferred.
  - Animal Protein: Beef, chicken, pork, fish, shellfish, tofu, tempeh, seaweed, lentils, beans, peas, and nuts.

## DAIRY & ALTERNATIVES

- **Protein**:
  - Organic, non-GMO preferred:
    - Cheese (hard), cheddar, Gouda, Swiss, Gruyère
    - Cottage cheese, ricotta
    - Milk, milk products
    - Yogurt, Greek, kefir

## SUGAR & SWEETS

- **Serving/day**
- **Sugar and Sweeteners**
  - Organic, non-GMO preferred:
    - Almonds, cashews, walnuts, pecans
    - Chia seeds
    - Coconut flakes, chocolate

## FATS & OILS

- **Serving/day**
- **Fats and Oils**
  - Organic, non-GMO preferred:
    - Avocado, olive, canola, sunflower, corn, rapeseed
    - Nuts, seeds, and oils

## LEGUMES

- **Serving/day**
- **Legumes**
  - Organic, non-GMO preferred:
    - Black beans, lentils, peas

## Notes:
- Limit or eliminate these foods when following a more stringent version of the Mito Food Plan.
- Dates in blue indicate preferred therapeutic foods.
Mitochondrial Therapeutic Foods
Getting to Know Your Mito Plan

- Take out your Mito Food Plan.
- Take out a pen.
- Review the categories and serving sizes (front and back).
- Write on the left side how many serving sizes in each category you ate yesterday.
# Mito Food Plan

## PROTEINS

**Proteins**

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Free-range, grass-fed, organically grown animal protein; non-GMO, organic plant protein; and wild-caught, low-mercury fish preferred.

### Animal Proteins:
- Cheese (hard)–1/2 oz
- Cheese (soft)–1 oz
- Cottage cheese–3/4 c
- Parmesan cheese–2 T
- Ricotta cheese–3/4 c
- Egg–1; or 2 egg whites
- Fish, Omega-3 rich: Alaskan salmon, cod, halibut, herring, Atlantic mackerel, sardines, shrimps, tuna, etc.–1 oz
- Meat: Beef, buffalo, elk, lamb, venison, other wild game–1 oz

### Plant Protein:
- Spirulina–2 T
- Tempeh–1 oz
- Tofu (firm/extra firm)–1/2–2 oz
- Tofu (soft/silkken)–3 oz

### Protein Powder:
- Check label for g/grain scoop (1 protein serving 7 g protein)
- Egg, hemp, pea, soy, rice, whey protein

### FATS & OILS

**Fats**

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Minimally refined, cold-pressed, organic, non-GMO preferred

### Unprocessed, organic preferred
- Avocado–2 T
- Olive oil–1 T
- Mayonnaise (unsweetened)–1 T

### Unprocessed, unsalted, organic preferred
- Ground nuts–6
- Brazil nuts–2
- Cashews–6
- Chia seeds–1 T
- Flaxseed (ground)–2 T
- Hazelnuts–5
- Hemp seeds–1 T
- Macadamias–2–3
- Nut and seed butters–1/2 T

### Sweeteners
- Nut cheeses (almond, cashew, etc.)–1 oz
- Pecans–4
- Pine nuts–1 T
- Pistachios–5
- Pumpkin seeds–1 T
- Sesame seeds–1 T
- Soy nuts–2 T
- Sunflower seeds–1 T
- Walnut halves–1 T

### Items in blue indicate preferred therapeutic foods
- Limit or eliminate these foods when following a more ketogenic version of the Mito Food Plan

### Notes:
- Nutritional amounts are based on average values for the variety of foods within each food category.
- Dietary prescription is subject to the discretion of the health practitioner.

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Phytonutrient Spectrum
Table of Contents

Why Phytonutrients? ............................. 3
Touring Through the Phytonutrient Food List .................................. 4-18
Red Foods ........................................ 4
Orange Foods .................................... 6
Yellow Foods ..................................... 8
Green Foods ...................................... 10
Blue/Purple/Black Foods ....................... 13
White/Tan/Brown Foods ......................... 15
Frequently Asked Questions ....19-30
Summary: 6 Steps to Getting More Phytonutrients ......................... 31
## Phytonutrient Spectrum Checklist for Kids

### RED

<table>
<thead>
<tr>
<th>Foods</th>
<th>Weekly Servings</th>
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<tbody>
<tr>
<td>Apples</td>
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<tr>
<td>Avocados</td>
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<tr>
<td>Cherries</td>
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<tr>
<td>Kidney beans</td>
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<tr>
<td>Pomegranate</td>
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<tr>
<td>Radishes</td>
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<tr>
<td>Strawberries</td>
<td></td>
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<tr>
<td>Sweet red bell peppers</td>
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<tr>
<td>Tomatoes</td>
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### ORANGE

<table>
<thead>
<tr>
<th>Foods</th>
<th>Weekly Servings</th>
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<tr>
<td>Apricots</td>
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<tr>
<td>Bell peppers</td>
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<tr>
<td>Butternut squash</td>
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<tr>
<td>Cantaloupe</td>
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<tr>
<td>Carrots</td>
<td></td>
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<tr>
<td>Mango</td>
<td></td>
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<tr>
<td>Nectarine</td>
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<td>Oranges</td>
<td></td>
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<tr>
<td>Sweet potatoes</td>
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### YELLOW

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<thead>
<tr>
<th>Foods</th>
<th>Weekly Servings</th>
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<tbody>
<tr>
<td>Bell peppers</td>
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<tr>
<td>Corn</td>
<td></td>
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<tr>
<td>Lemons</td>
<td></td>
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<tr>
<td>Persimmons</td>
<td></td>
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<tr>
<td>Spaghetti squash</td>
<td></td>
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<tr>
<td>Squash</td>
<td></td>
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<tr>
<td>Yellow squash</td>
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### GREEN

<table>
<thead>
<tr>
<th>Foods</th>
<th>Weekly Servings</th>
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<tbody>
<tr>
<td>Asparagus</td>
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<td>Avocados</td>
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<td>Beets</td>
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<tr>
<td>Bell peppers</td>
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<tr>
<td>Broccoli</td>
<td></td>
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<tr>
<td>Brussels sprouts</td>
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<tr>
<td>Cabbage</td>
<td></td>
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<tr>
<td>Collets</td>
<td></td>
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<tr>
<td>Chard</td>
<td></td>
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<tr>
<td>Cucumbers</td>
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<tr>
<td>Green beans</td>
<td></td>
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<tr>
<td>Green peas</td>
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<tr>
<td>Kale</td>
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<tr>
<td>Lettuce</td>
<td></td>
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<td>Radishes</td>
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<td>Snow peas</td>
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### BLUE/PURPLE

<table>
<thead>
<tr>
<th>Foods</th>
<th>Weekly Servings</th>
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<tbody>
<tr>
<td>Blackberries</td>
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<tr>
<td>Blueberries</td>
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<tr>
<td>Cabbage (purple)</td>
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<td>Carrots (purple)</td>
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<td>Dates</td>
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<td>Eggplant</td>
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<td>Grapes (purple)</td>
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<td>Kale (purple)</td>
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<tr>
<td>Pomegranates (purple)</td>
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<tr>
<td>Raisins</td>
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<td>Rice (black or purple)</td>
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### WHITE/TAN

<table>
<thead>
<tr>
<th>Foods</th>
<th>Weekly Servings</th>
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<tbody>
<tr>
<td>Bean sprouts</td>
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<tr>
<td>Garlic</td>
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<tr>
<td>Hazelnuts</td>
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<tr>
<td>Lemon</td>
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<tr>
<td>Mustard</td>
<td></td>
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<tr>
<td>Nuts</td>
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<tr>
<td>Oregano</td>
<td></td>
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<tr>
<td>Red bell peppers</td>
<td></td>
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<tr>
<td>Rosemary</td>
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**Eat at least 1-3 servings of any color every day.**

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# Phytonutrient Spectrum Foods

## Phytomedia

**Phytonutrients**
- Carotenoids (β-carotene, zeaxanthin)
- Flavonoids (flavones, flavonols)
- Phenolic acids (caffeic, chlorogenic, ferulic acids)
- Alkaloids
- Terpenoids

**Phytochemicals**
- Antioxidants
- Phytoestrogens
- Saponins
- Alkaloids
- Phytosterols

**Phytoconstituents**
- Phenols
- Polyphenols
- Alcohols
- Aldehydes
- Ketones

**Phytoregulators**
- Phytohormones
- Phytohormones
- Phytohormones

**Phytopharmaceuticals**
- Phytochemicals
- Phytochemicals
- Phytochemicals

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**Phytogenic**
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**Phytomedicine**
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**Phytoremediation**
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**Phytostandardization**
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Eat a Rainbow of Phytonutrients

Food is more than nutrition. We believe it is essential to have optimal amounts of these nutrients and to be nourished through the power of fun, joy of cooking and eating, and the courage to be creative while increasing control of our food supply and meal preparation.

6 STEPS TO GETTING MORE PHYTONUTRIENTS

1. Aim for 9-13 Servings of Plant Foods Everyday
   We need about 9-13 servings of whole plant foods if we want to prevent chronic disease. A typical serving is only half a cup of cooked vegetables, one cup of raw leafy vegetable, or a medium-sized piece of fruit. It would be best to aim for every meal of the day to have about 3-4 servings of plant foods so that at three general meals per day (not including snacks), you would make your serving requirement on a daily base.

2. Know Your Phytonutrient Sources
   Phytonutrients-rich roots are limitless, making it fun to experiment with new varieties and colors even within one category of food. Here are some sources of phytonutrients to get you started: any and all plant foods, including fruits, vegetables, whole grains, legumes, nuts, seeds, and even herbs and spices.

3. Enjoy the Rainbow of Colors
   Instead of getting the full rainbow of color, you may be eating the standard processed food colors of brown, yellow, and white. For example, think of the typical breakfast cereal—waffles, pancakes, cereal, etc., not cream, sausage, and eggs—which does not necessarily provide much color early in the day. However, if you had a fruit smoothie with blueberries, peaches, and raspberries, you'd have three colors of the seven colors of the rainbow first thing in the morning! Make it your goal to get the full seven colors every day with a variety of foods.

4. Vary Your Choices
   There are thousands of phytonutrients in nature, if we eat the same foods over and over again, even if they are colorful, we may be missing the universe of important phytonutrients in foods. One helpful hint is to try a new food every week to ensure that you are getting different foods to try!

5. Maximize Combinations
   When we put certain foods together, we may achieve a better effect than if we just had the foods by themselves. Sometimes, there can be a "synergistic" effect from combining certain foods. For example, putting turmeric with black pepper together with olive oil could enhance the phytonutrient effects of all these foods on your body. Adding lemon juice to spinach could help the iron become more absorbed by your body. Try putting plant foods together for an enhanced health benefit.

6. Be Creative with Substitutions
   One way to get more plant foods would be to think of foods that are commonly eaten that might not be in nature or cannot replace with nutritious, nutrient options. Some plant foods clearly give us more phytonutrients than others. For example, you could substitute mashed potatoes with mashed purple potatoes or sweet potatoes. You could substitute white rice with purple, brown, or black rice.

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Tracing Through the Myofunctional Food List

**RED**

Red foods contain phenylalanine that can help unlock the skill for curcumin, along with helping to protect the brain, heart, liver, and immune system.

The Food List: Red Foods

There is a selection of red foods to choose from in the red list. The red list is a great selection of foods like berries, apricots, dates, tomatoes, and peppers, which are good for skin, heart health, and overall wellness.

**ORANGE**

Orange foods have the potassium, citric acid, and fiber that will help you feel satisfied and energized. They are also rich in antioxidants, which are essential for protecting cells from damage.

The Food List: Orange Foods

When looking at the food list, we will find more orange-colored foods to include in your diet. Orange foods include sweet potatoes, carrots, oranges, tomatoes, and bell peppers. These foods are rich in vitamins, minerals, and antioxidants, which are essential for maintaining good health.

**GREEN**

Green foods are packed with nutrients and antioxidants that can help protect your heart and improve your overall health.

The Food List: Green Foods

Green foods are rich in vitamins, minerals, and antioxidants that can help protect your heart and improve your overall health.

**BLUE/PURPLE/BLACK**

Blue-purple-black foods are important because they contain compounds that promote cancer and inflammatory diseases. They are rich in antioxidants, which can help protect your heart and improve your overall health.

The Food List: Blue/Purple/Black Foods

One of the most important things we can do to protect our health is to eat a variety of foods. Eating a variety of foods helps to ensure that we get all the nutrients we need for optimal health.

**FEATURING GREEN FOODS**

The Food List: Green Foods

The green list is a great selection of foods like broccoli, spinach, kale, and peas. These foods are packed with nutrients and antioxidants that can help protect your heart and improve your overall health.

The Food List: Green Foods

Green foods are rich in vitamins, minerals, and antioxidants that can help protect your heart and improve your overall health.

**BLUE/PURPLE/BLACK**

Blue-purple-black foods are important because they contain compounds that promote cancer and inflammatory diseases. They are rich in antioxidants, which can help protect your heart and improve your overall health.

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**FEATURING GREEN FOODS**

The Food List: Green Foods

The green list is a great selection of foods like broccoli, spinach, kale, and peas. These foods are packed with nutrients and antioxidants that can help protect your heart and improve your overall health.

The Food List: Green Foods

Green foods are rich in vitamins, minerals, and antioxidants that can help protect your heart and improve your overall health.
The Mito Food Plan
“Decreasing calories specifically from carbohydrates and supplementing with fat calories enhances the production of BDNF”
“Appropriate rhythmic bioenergetics can be achieved without a purposeful ketosis or extremist diet by managing the amount of calories and spacing of meals”
"The low grade inflammaging that happened with aging can be neutralized by our food choices and our cooking methods"
Mitochondrial Therapeutic Foods
Protective Antioxidants
Protective Anti-oxidants
- Mild Oxidative stress
- Curcumin
- Green tea extract
- Resveratrol
- Sulforaphane
- Garlic (allicin)
- DHA

NRF2 Activation

Fasting
Carbohydrate Restriction
Caloric Restriction

Antioxidants

De-toxifying enzymes

Anti-stress

Anti-inflammatory

Keap
Nrf2
Nrf2

Signal Transduction

Differential responses to rising oxidative stress

- **Oxidative stress**
- **Inflammation**
- **Apoptosis**

**Mild to Moderate**
- Nrf2

**High**
- NFkB

**Extreme**
- AP-1

**Priming**

Anti-inflammatory (phyto)nutrients
Phytonutrient Diversity
“These findings indicate that botanical diversity plays a role in determining the bioactivity of high-VF (Vegetable & Fruit) diets and that smaller amounts of many phytochemicals may have greater beneficial effects than larger amounts of fewer phytochemicals.”

High in Quality Dietary Fats
High Quality Fats
Fatty Acids

- Mitochondrial membrane as a lipid bilayer
- Healthy fats regenerate the membrane and assist with fluidity.
- Fatty acids conjugate to Carnitine outside the mitochondria and CPT1 transports the conjugated fatty acid across the mitochondrial membrane.
- **Carnitine deficiency leads to inability to oxidize fats as fuel.**
Coconut Oil

Medium Chain Triglycerides

- High in beta HBA
- Increases beta oxidation of fats
- Attenuates effects of amyloid-beta on cortical neurons

Serving Suggestions:

- Should be both virgin and organic
- Use in stir-frying – no oxidation at high heat
- Shred on salads and yogurt/drink as water high in minerals


Medium Chain Triglycerides (MCT)

- MCTs contain 6 to 12 carbon atoms, including caproic acid (C6:0), caprylic acid (C8:0), capric acid (C10:0), and lauric acid (C12:0).
- In the liver, **MCFA can freely cross the inner mitochondrial membrane**, while other types of fatty acids must enter in a more regulated manner.
- This more rapid absorption of MCFA into the inner mitochondrial space **transiently** increases ketone body formation.


MCFA= medium chain fatty acids, OM = outer membrane, IM = inner membrane

Low Glycemic Impact
Low Glycemic Impact

![Graph showing blood glucose levels over time for high and low GI foods, with a peak at 1 hour for high GI and a lower, flatter line for low GI at the same time, indicating a slower rise and lower peak.](image-url)
Stream or Trickle?

“High Glycemic Index/Load”

“Low Glycemic Index/Load”

Glycemic Index

Low Glycemic Index/Load:
- Decreases insulin stimulation
- Increases insulin sensitivity
- Anti-inflammatory
- Improves satiety
Type 3 Diabetes

“Striking evidence has attributed loss of insulin receptor-bearing neurons to precede or accompany initial stage of Alzheimer’s Disease.

...Oxidative stress, tau hyper-phosphorylation, APP-Aβ deposition, and impaired glucose and energy metabolism have all been linked to perturbation in insulin/IGF signaling.

We conclude that AD could be referred to as ‘type 3 diabetes’. Moreover, owing to common pathophysiology with diabetes, common therapeutic regimes could be effective for AD patients.”

High Glucose Enhances Neurotoxicity and Inflammatory Cytokines

“...hyperglycemia in T2DM may be one of the factors contributing to the observed increased risk of AD by exacerbating astrocyte-mediated neuro-inflammation and neuronal injury caused by disease-associated agents.”

Mitochondrial Dysfunction And Diabetes

“... it has been elucidated that some environmental factors, pollutants, and mitochondrial toxins are involved in the pathogenesis of type 2 diabetes.

Taken together, we suggest that mitochondrial dysfunction plays a role in the pathophysiology of insulin insensitivity....”

Reduced Carbs with Ketogenic Option
I don’t know which worries me more—terrorists or carbohydrates.
Reduced Carbs and Ketogenic Options
When to Use this Plan

✓ Clients with **Neurological issues** (includes family Hx of Dementia and Neurodegenerative Dz)

✓ Clients with **Cognitive decline**

✓ Clients with “**Weight loss Resistance**”

✓ Clients with **Fatigue and Fibromyalgia**

✓ Clients with **Metabolic Syndrome** (includes high blood sugar, increased belly fat)

✓ Clients with **PCOS**

✓ Clients with **T2D**
The Ketogenic Diet (KD)

• Mimics fasting state – switches from metabolism of glucose to metabolism of ketones

• Clinically-used treatment for intractable seizures in children and adolescents

• High fat – low carbohydrate (4:1)

• Efficacy appears to be independent of seizure type

• Mechanism of action unclear but attributed to ketone bodies, glycolysis, and mitochondrial metabolism

Microbiota and Ketogenic Diet

• Changes in the gut microbiota are required for the anti-seizure effects of the KD.

• Specific KD-associated bacteria mediate and confer the anti-seizure effects of the KD.

• KD microbiota regulate amino acid g-glutamylation and hippocampal GABA/glutamate.

**Ketosis: an evolutionary adaptation**

- It allows for survival during brief periods of natural starvation.
- Everyone approaches ketosis during the normal sleep cycle.
- If only water is ingested, hepatic stores of glycogen decrease to zero in 12-24 hours.
- Gluconeogenesis is vital to meet needs of CNS and erythrocytes.
- Ketosis is a glucose-sparing strategy resulting in the metabolism of ketone bodies.

Ketones

• Ketones are water-soluble compounds that are produced as by-products when fats (fatty acids) are broken down for energy in the liver and kidney.

• Ketones inhibit the release of insulin and stress hormones.

• As a result, blood sugar becomes more stable and hunger is calmed. Anxiety decreases.

Low Carbohydrate, Higher Fat

β-hydroxybutyrate (ketones)

LIVER

fatty acids

fat
β-hydroxybutyrate

β-hydroxybutyrate, the principal “ketone,” is not just a fuel, but a “superfuel,” more efficiently producing ATP energy than glucose or fatty acid. Without this adaptation, *H. sapiens* could not have evolved such a large brain.

Keto Diet & Neurodegenerative Diseases

It may provide an efficient energy source for certain types of neurodegenerative diseases characterized by focal brain hypometabolism.

It may also decrease oxidative damage, increase mitochondrial biogenesis, and provide capacity for ketones to bypass the defect in complex I activity implicated in some neurological diseases.

The Metabolic Adaptation (keto-adaptation)

**Ketogenic diet**
- Low carbohydrate
- High fat
- Adequate protein

→ Reduced circulating glucose and insulin due to reduced dietary carbohydrate intake

Increased ketone bodies (βHB, acetoacetate, acetone) in circulation and utilization by brain as fuel source.

Increase in liver fatty acid oxidation

Increased production of ketone bodies using FFA (from dietary source and released from adipose tissue) for ketone body production within liver mitochondria

Increased use of FFA as energy source in skeletal muscle with preservation of glycogen stores

βHB, beta-hydroxybutyrate; FFA, free fatty acids
Measuring Ketones

• **Breath:** measures acetone

• **Urine:** measures urinary excretion of acetoacetate - although this is the easiest and most common test, it may provide false negative results following keto-adaptation

• **Blood:** finger stick / serum measuring circulating βHB levels - most accurate
Measuring Ketones

> **Optimal Levels of Ketosis:**
  - Overnight fasting: 0.2-0.5mM
  - Nutritional Ketosis (KD): 0.5-3.0mM

> **Dangerous Levels:**
  - Ketoacidosis: >10mM

Effects of Ketogenic Diet

- Reduces inflammation (NFkB)
- Enhances mitochondrial biogenesis
- Enhances ATP production
- Reduces ROS production
- Increases insulin sensitivity
- Increases leptin sensitivity

## Emerging Science

<table>
<thead>
<tr>
<th>Headlines</th>
<th>Study findings</th>
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<td><strong>KD increases longevity</strong></td>
<td>Preclinical studies on male mice show that KD <em>reduced midlife mortality</em></td>
<td>Newman JC et al. <em>Cell Metabolism</em> 2017; 26:547-57</td>
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<td>Roberts MN et al. <em>Cell Metabolism</em> 2017; 26:539-46</td>
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<td>Preclinical studies on male rodents show that KD <em>improves learning and memory outcomes in models of neurodegenerative diseases</em></td>
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<td>KD research has historically focused on <em>neurological disorders</em> whereas cognitive outcomes in healthy subjects have been <em>anecdotally reported</em></td>
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<td>Preclinical studies have shown <em>anxiolytic effects</em> associated with KD whereas few case reports have been published showing benefits in humans</td>
<td>Ari C et al. <em>Frontiers in Molecular Neuroscience</em> 2016; 9:137</td>
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<td>El-Mallakh RS &amp; Paskitti ME <em>Medical Hypothesis</em> 2001; 57(6):724-26</td>
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<td>Bostock ECS et al. <em>Frontiers in Psychology</em> 2017; 8:43</td>
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Intermittent Fasting and Caloric Restriction
Fasting

“The best of all medicines are resting and fasting”

Benjamin Franklin
Intermittent Fasting & Caloric Restriction
Types of Fasting
Caloric Restriction

➢ Intermittent Fasting:
  • 16-18 hour fast weekly or monthly
  • 24 hour fast monthly
  • 12 hour fast every daily
  • 5:2 food plan

➢ Caloric Restriction:
  • 20-30% less BMR
  • or 600 cal/day
BDNF Activation

The gene that turns on BDNF is activated by:

• Caloric Restriction (20-30%)
• Intermittent fasting
• Ketosis from lower carbohydrates
• Exercise
• DHA
• Meditation
• Curcumin

Fasting every other day for mice had 50% increase in a brain chemical called BDNF.

www.newscientist.com

• Mild Oxidative stress
• Curcumin
• Green tea extract
• Resveratrol
• Sulforaphane
• Garlic (allicin)
• DHA

NRF2 Activation

Allicin Decreases Lipopolysaccharide-Induced Oxidative Stress and Inflammation in Human Vein Endothelial Cells through Suppression of Mitochondrial Dysfunction and Activation of Nrf2.

Intermittent Fasting

• 12 hours from dinner to breakfast every day
• 16 hours from dinner to lunch 1-2x week or month
• 24 hour fast weekly or monthly
Circadian Rhythm of Eating

A. 3 meals and snacks
B. 3 meals consumed during the day
C. 2 meals no breakfast
D. 3 small meals
E. Complete fast

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Intermittent Energy Restriction

“....switching from eating 3 full meals per day to an IER diet such as one moderate size meal every other day (500-600 calories 2d/wk)”

✓ Increased insulin sensitivity
✓ Reduced levels of insulin and leptin
✓ Increased mobilization of fatty acids
✓ Elevated B-hydroxybutyrate
✓ Increased BDNF

Key to Success

- **Eat enough protein, fats and veggies at dinner so you will not be hungry later in the evening and want to snack.**

- **Slowly lengthen** the time between meals with complex conditions.
Caloric Restriction
20-30% Reduction

• **MALES:** Average calories consumed per day for males (assuming moderate activity) is generally 2000–2400 calories, so a **20–30% reduction of calories would be a range of approximately 1400–1800 calories per day.**

• **FEMALES:** Average calories consumed per day for females (assuming moderate activity) is generally 1400–1800 calories, so a **20–30% reduction of calories would be a range of approximately 1000–1400 calories per day.**
Caloric Restriction
600 calories

600 calorie menu plan

**Breakfast:** spinach omelet (two eggs) with 1 cup spinach cooked in water, and ½ cup blueberries

**Lunch:** 2 ounces grass-fed beef or buffalo burger or an organic turkey burger with 2 cups of salad greens (or a mixture of kale and greens) plus 2 cups of raw veggies, tossed with ½ T olive oil and your favorite vinegar, and a roasted seaweed snack

**Dinner:** 2 ounces wild salmon with 1 cup cooked broccoli and salad of 1 ½ cups greens, ½ cup cherry tomatoes, ½ cup thinly sliced red cabbage, ½ T tossed with olive oil and balsamic vinegar
CR, IF, & Longevity

“[Caloric Restriction] increases the lifespan in a wide array of organisms including humans...these restrictions not only have a direct effect on metabolism but also are capable of regulation gene expression...the amount and quality of nutrients in the diet influence longevity by modifying the epigenetic pattern.”

Low-Grain and Gluten-Free
Low-Grain and Gluten-Free
20P/60F/20C Macronutrient Distribution

Key
- SV/F/G: Starchy Vegetables, Fruits, Grains
- L/DA: Legumes, Dairy Alternatives
- P+C: Carbohydrate + Protein
# Mito Food Plan: Ketogenic Option

Customizing Macronutrients

## Food Distribution for 20P/60F/20C Plan by Caloric Ranges

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*The 600 calorie distribution is 32P/55F/13C. This very low-calorie level is recommended only for occasional intermittent fasting days.*

1. *When consuming dairy alternatives in the place of dairy products, substitute 2 dairy alternative servings for every 1 serving of dairy.*
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Mito Food Plan Flexibility

Within Certain Categories, the client can choose how they want to “spend” their serving size.

Example: 2200-2500 has 2 serving of carbs from this category:

• Starchy Vegetables
• Fruits

• They can choose any 2
  • Example: 1 fruit and 1 starchy vegetable, or 2 fruits
Mito Food Plan: **Ketogenic Adaptation**
Customizing Macronutrients

Food Distribution for **15P/70F/15C** Plan by Caloric Ranges
(Exclusively for Use with the Mito Food Plan)

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<tr>
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<tr>
<td><strong>Nuts &amp; Seeds</strong></td>
<td>0</td>
<td>3-4</td>
<td>4-5</td>
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<td>6-8</td>
<td>8-12</td>
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<tr>
<td><strong>Fats &amp; Oils</strong></td>
<td>4</td>
<td>8-10</td>
<td>10-11</td>
<td>11-14</td>
<td>13-16</td>
<td>16-18</td>
</tr>
<tr>
<td><strong>Vegetables, non-starchy</strong></td>
<td>4</td>
<td>6-8</td>
<td>8-9</td>
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<td><strong>10-11</strong></td>
<td>11-12</td>
</tr>
<tr>
<td><strong>Vegetables, starchy</strong></td>
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<td>1</td>
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<td>1</td>
<td>1-2</td>
<td>2</td>
</tr>
</tbody>
</table>

* The 600 calorie distribution is 32P/55F/13C. This very low-calorie level is recommended only for occasional intermittent fasting days.

At all calorie ranges, no more than 1-2 servings of grains should be consumed per week. On days when a grain is selected, no legumes should be consumed.

Differences between Mito and Mito with keto option:
- M-K has slightly less reliance on animal protein.
- M-K omits dairy products entirely.
- M-K limits GF grain servings to 1-2 per week at higher calorie ranges.
- M-K has increased an increased number of non-starchy vegetable servings.
Mito Food Plan Flexibility
Customizing Macronutrients
Utilizing IFM Food Plans
# Mito Food Plan Flexibility

## Customizing Macronutrients

<table>
<thead>
<tr>
<th>Plan</th>
<th>Core</th>
<th>Core v</th>
<th>Core vs</th>
<th>Elim Diet</th>
<th>Cardio</th>
<th>Detox</th>
<th>Mito</th>
<th>ReNew</th>
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<tr>
<td>20P/30F/50C</td>
<td>☐</td>
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<tr>
<td>30P/30F/40C</td>
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<td>☐</td>
<td>☐</td>
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<td>☐</td>
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<td>☐</td>
</tr>
<tr>
<td>30P/45F/25C</td>
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<tr>
<td>20P/60F/20C</td>
<td>☐</td>
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<td>☐</td>
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</tbody>
</table>

**Key:**
- ☐: Recommended Option
- ☐: Secondary Option
- ☐: Vegetarian
- ☐: Vegan
The Mito Food Plan
Customizing Your Plan
Transfer Serving Sizes Onto Mito Food Plan

Clients do not count calories. They count serving sizes.
**Mito Food Plan**

### Proteins

**Servings/day: 9**

- Free-range, grass-fed, organically grown animal protein; non-GMO, organic plant protein; and wild-caught, low-methylercury fish preferred.

- **Animal Proteins:**
  - Cheese (hard) – 6 oz
  - Cheese (soft) – 1 oz
  - Cottage cheese – 1/4 c
  - Parmesan cheese – 2 T
  - Ricotta cheese – 1/4 c
  - Egg – 1 or 2 egg yolks
  - Fish, Omega-3 rich: Alaskan salmon, cod, halibut, herring, Atlantic mackerel, sardines, shrimp, tuna, etc. – 1 oz
  - Meat: Beef, buffalo, elk, lamb, venison, other wild game – 1 oz

- **Protein Powder:**
  - Check label for # grams/scoop (1 protein serving = 7 g protein)
  - Egg, hemp, pea, soy, rice, whey protein

- **Legumes:**
  - Beans: soups – 3/4 c
  - Black soybeans (cooked) – 3/4 c
  - Dried beans, lentils, or peas (cooked) – 3/4 c
  - Edamame (cooked) – 3/4 c
  - Flour, legume – 3/4 c
  - Green peas (cooked) – 3/4 c

1 serving = 35–75 calories, 5–7 g protein, 3–5 g fat, 0–4 g carbs

### DAIRY & Alternatives

**Servings/day: 0**

- Unsweetened, organic preferred:
  - Buttermilk – 8 oz
  - Kefir (plain) – 6–8 oz
  - Milk: Almond, coconut, flaxseed, hazelnut, hemp, oat, soy (plain) – 8 oz
  - Yogurt: Coconut, soy (plain, cultured) – 6 oz

1 dairy serving = 90–150 calories, 7–8 g protein, 12 g carbs

### NUTS & SEEDS

**Servings/day: 8**

- Almonds – 6
  - Brazil nuts – 2
  - Cashews – 6
  - Chia seeds – 1 T
  - Coconut (dried) – 1 T
  - Flaxseed (ground) – 2 T
  - Hazelnuts – 5
  - Hemp seeds – 1 T
  - Macadamias – 2–3
  - Nut and seed butters – 6 T

1 serving = 45 calories, 5 g fat

### Fats & Oils

**Servings/day: 12**

- Minimally refined, cold-pressed, organic, non-GMO preferred:
  - Avocado – 2 T or 5/8 whole
  - Butter – 1 T
  - Chocolate, dark (70% or higher cacao) – 1 oz
  - Coconut milk, regular (canned) – 1/2 T
  - Coconut milk, light (canned) – 3 T
  - Mayonnaise (unsweetened) – 1 T
  - Oils, cooking: Avocado, coconut, ghee/clarified butter, grapeseed, grass fed butter
  - MCT, olive (extra virgin), rice bran, sesame – 1 T

1 serving = 45 calories, 5 g fat

### Notes:

- Nutritional amounts are based on average values for the variety of foods within each food category.
- Dietary prescription is subject to the discretion of the health/practitioner.
# VEGETABLES

<table>
<thead>
<tr>
<th>Non-starchy</th>
<th>Carbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servings/day</td>
<td></td>
</tr>
<tr>
<td>- Antichoke</td>
<td></td>
</tr>
<tr>
<td>- Arugula</td>
<td></td>
</tr>
<tr>
<td>- Asparagus</td>
<td></td>
</tr>
<tr>
<td>- Bamboo shoots</td>
<td></td>
</tr>
<tr>
<td>- Beets (cubed)</td>
<td></td>
</tr>
<tr>
<td>- Bok choy</td>
<td></td>
</tr>
<tr>
<td>- Broccoli</td>
<td></td>
</tr>
<tr>
<td>- Broccoli sprouts</td>
<td></td>
</tr>
<tr>
<td>- Cabbage</td>
<td></td>
</tr>
<tr>
<td>- Carrots</td>
<td></td>
</tr>
<tr>
<td>- Cauliflower</td>
<td></td>
</tr>
<tr>
<td>- Celery</td>
<td></td>
</tr>
<tr>
<td>- Chard/Swiss chard</td>
<td></td>
</tr>
<tr>
<td>- Chives</td>
<td></td>
</tr>
<tr>
<td>- Cilantro</td>
<td></td>
</tr>
<tr>
<td>- Cucumbers</td>
<td></td>
</tr>
<tr>
<td>- Daikon radish</td>
<td></td>
</tr>
<tr>
<td>- Eggplant</td>
<td></td>
</tr>
<tr>
<td>- Endive</td>
<td></td>
</tr>
<tr>
<td>- Fenel</td>
<td></td>
</tr>
<tr>
<td>- Fermented vegetables: Kimchi, pickles, sauerkraut, etc.</td>
<td></td>
</tr>
<tr>
<td>- Garlic</td>
<td></td>
</tr>
<tr>
<td>- Green beans</td>
<td></td>
</tr>
<tr>
<td>- Greens: Beet, collard, chlorella, dandelion, escarole, kale, mustard, purslane, radish, turnip, turnip, etc.</td>
<td></td>
</tr>
</tbody>
</table>

1 serving = 1/2 c; 1 c raw greens = 25 calories; 5 g carbs

Organic, non-GMO fruits, vegetables, herbs and spices preferred

# VEGETABLES

<table>
<thead>
<tr>
<th>Starchy</th>
<th>Carbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servings/day</td>
<td></td>
</tr>
<tr>
<td>- Acorn squash (cubed)</td>
<td>1 c</td>
</tr>
<tr>
<td>- Butternut squash (cubed)</td>
<td>1 c</td>
</tr>
<tr>
<td>- Plantains</td>
<td>3/4 c or 1/2 whole</td>
</tr>
<tr>
<td>- Potato: Purple, red, yellow</td>
<td>3/4 med</td>
</tr>
</tbody>
</table>

1 serving = 80 calories, 16 g carbs

**Low Glycemic Impact Recommendations**

Limit to 1-2 servings per day

# FRUITS

<table>
<thead>
<tr>
<th>No sugar added</th>
<th>Carbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servings/day</td>
<td></td>
</tr>
<tr>
<td>- Apple</td>
<td>1 sm</td>
</tr>
<tr>
<td>- Applesauce</td>
<td>3/4 c</td>
</tr>
<tr>
<td>- Apricots</td>
<td>4 c</td>
</tr>
<tr>
<td>- Banana</td>
<td>3/4 med</td>
</tr>
<tr>
<td>- Blackberries</td>
<td>3/4 c</td>
</tr>
<tr>
<td>- Blueberries</td>
<td>3/4 c</td>
</tr>
<tr>
<td>- Cherries</td>
<td>12 c</td>
</tr>
<tr>
<td>- Dates or figs</td>
<td>3 c</td>
</tr>
<tr>
<td>- Dried fruit</td>
<td>2 T</td>
</tr>
<tr>
<td>- Fig</td>
<td>3</td>
</tr>
<tr>
<td>- Grapefruit</td>
<td>3 c</td>
</tr>
<tr>
<td>- Grapes</td>
<td>5 c</td>
</tr>
<tr>
<td>- Kiwi</td>
<td>1 med</td>
</tr>
<tr>
<td>- Mango</td>
<td>4/5 sm</td>
</tr>
<tr>
<td>- Melon, all</td>
<td>1 c</td>
</tr>
</tbody>
</table>

1 serving = 40 calories, 15 g carbs

**Low Glycemic Impact Recommendations**

Limit to 1-2 servings per day; limit dried fruit and fruit juices

# GLUTEN-FREE GRAINS

<table>
<thead>
<tr>
<th>No sugar added</th>
<th>Carbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servings/day</td>
<td></td>
</tr>
<tr>
<td>- Amananth</td>
<td>3/4 c</td>
</tr>
<tr>
<td>- Buckwheat/kasha</td>
<td>3/4 c</td>
</tr>
<tr>
<td>- Crackers: Nut, rice, seed</td>
<td>3/4 c</td>
</tr>
<tr>
<td>- Millet</td>
<td>5 c</td>
</tr>
<tr>
<td>- Oats: Rolled, steel-cut</td>
<td>3/4 c</td>
</tr>
</tbody>
</table>

1 serving = 75-110 calories, 15 g carbs

**Low Glycemic Impact Recommendations**

Limit to 1-2 servings per day

**Short term: Consider removal**

**Long term: Limit to 1-2 servings per day**

# BEVERAGES, SPICES & CONDIMENTS

<table>
<thead>
<tr>
<th>No sugar added</th>
<th>Carbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Servings/day</td>
<td></td>
</tr>
<tr>
<td>- Black tea</td>
<td></td>
</tr>
<tr>
<td>- Coffee</td>
<td></td>
</tr>
<tr>
<td>- Filtered water</td>
<td></td>
</tr>
<tr>
<td>- Fresh juiced vegetables</td>
<td></td>
</tr>
<tr>
<td>- Gingko biloba tea</td>
<td></td>
</tr>
<tr>
<td>- Green tea</td>
<td></td>
</tr>
<tr>
<td>- Sparkling/mineral water</td>
<td></td>
</tr>
<tr>
<td>- Unsweetened coconut water</td>
<td></td>
</tr>
<tr>
<td>- Yerba mate</td>
<td></td>
</tr>
</tbody>
</table>

- Herbs and Spices: Cumin, marjoram, oregano, sage, etc.
- Condiments: Lemon/tomato juice, mirin, mustard, tamari, vinegars, etc.—use sparingly; suggest 1 T or less per serving

**Items in blue indicate preferred therapeutic foods**

- Limit or eliminate these foods when following a more ketogenic version of the Mito Food Plan

Notes: Nutritional amounts are based on average values for the variety of foods within each food category.

Dietary prescription is subject to the discretion of the health care practitioner.

©2019 The Institute for Functional Medicine
# Mito Food Plan: Ketogenic Adaptation

Customizing Macronutrients/ Servings

<table>
<thead>
<tr>
<th>Calories</th>
<th>600*</th>
<th>1000-1200</th>
<th>1200-1400</th>
<th>1400-1800</th>
<th>1800-2200</th>
<th>2200-2500</th>
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</thead>
<tbody>
<tr>
<td>Calorie Guidelines for Females</td>
<td>Fasting</td>
<td>Reduced</td>
<td>Mildly Reduced</td>
<td>Standard</td>
<td>Active</td>
<td></td>
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<tr>
<td>Calorie Guidelines for Males</td>
<td>Fasting</td>
<td>Reduced</td>
<td>Reduced</td>
<td>Mildly Reduced</td>
<td>Standard</td>
<td>Active</td>
</tr>
<tr>
<td>Proteins</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6-7</td>
<td>7-8</td>
<td>8-9</td>
</tr>
<tr>
<td>Legumes &amp; Grains†</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1-2</td>
</tr>
<tr>
<td>Dairy Alternatives</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1-2</td>
<td>2</td>
</tr>
<tr>
<td>Nuts &amp; Seeds</td>
<td>0</td>
<td>3-4</td>
<td>4-5</td>
<td>5-6</td>
<td>6-8</td>
<td>8-12</td>
</tr>
<tr>
<td>Fats &amp; Oils</td>
<td>4</td>
<td>8-10</td>
<td>10-11</td>
<td>11-14</td>
<td>13-16</td>
<td>16-18</td>
</tr>
<tr>
<td>Vegetables, non-starchy</td>
<td>4</td>
<td>6-8</td>
<td>8-9</td>
<td>9-10</td>
<td>10-11</td>
<td>11-12</td>
</tr>
<tr>
<td>Vegetables, starchy Fruit</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1-2</td>
<td>2</td>
</tr>
</tbody>
</table>

*The 600 calorie distribution is 32P/55F/13C. This very low-calorie level is recommended only for occasional intermittent fasting days.

†At all calorie ranges, no more than 1-2 servings of grains should be consumed per week. On days when a grain is selected, no legumes should be consumed.
Mito Food Plan: Ketogenic Adaptation
Customizing Macronutrients/Servings

PROTEIN
7-8 Servings of non-GMO protein

Unsweetened, organic preferred

Dairy:
• Butter or ghee (1-2 T)
• Heavy cream (1-2 T)

Non-Dairy Alternative:
• Almond, Avocado, chia, flax, hemp, sunflower, pumpkin, rice, chia

Oils, vinegar, and spices:
• Olive, avocado, coconut, grapefruit, ginger

Items in blue indicate preferred therapeutic foods:
•Limit or eliminate these foods when following a more ketogenic version of the Mito Food Plan.

LEGUMES
0 Servings

Unsweetened, organic preferred

Items in blue indicate preferred therapeutic foods:
• Limit or eliminate these foods when following a more ketogenic version of the Mito Food Plan.

FRUIT
0-1 Servings

Unsweetened, no sugar added

Items in blue indicate preferred therapeutic foods:
• Limit or eliminate these foods when following a more ketogenic version of the Mito Food Plan.

VEGETABLES
7-8 Servings

Unsweetened, organic preferred

Items in blue indicate preferred therapeutic foods:
• Limit or eliminate these foods when following a more ketogenic version of the Mito Food Plan.

SUGARS
0-1 Servings

Unsweetened, no sugar added

Items in blue indicate preferred therapeutic foods:
• Limit or eliminate these foods when following a more ketogenic version of the Mito Food Plan.

BEVERAGES, SPICES & CONDIMENTS
7-8 Servings

Unsweetened, no sugar added

Items in blue indicate preferred therapeutic foods:
• Limit or eliminate these foods when following a more ketogenic version of the Mito Food Plan.
# Customizing your Mito Food Plan

## Food Distribution for 15P/70F/15C Plan by Caloric Ranges (Exclusively for Use with the Mito Food Plan)

<table>
<thead>
<tr>
<th>Calories</th>
<th>600*</th>
<th>1000–1200</th>
<th>1200–1400</th>
<th>1400–1800</th>
<th>1800–2200</th>
<th>2200–2500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calorie Guidelines for Females</td>
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<td>Active</td>
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<td>Reduced</td>
<td>Mildly Reduced</td>
<td>Standard</td>
<td>Active</td>
</tr>
<tr>
<td>Proteins</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6–7</td>
<td>6–9</td>
<td>8–9</td>
</tr>
<tr>
<td>Legumes¹</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1–2</td>
</tr>
<tr>
<td>Grains¹</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1-2</td>
<td>2</td>
</tr>
<tr>
<td>Dairy Alternatives</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1-2</td>
<td>2</td>
</tr>
<tr>
<td>Nuts &amp; Seeds</td>
<td>0</td>
<td>3–4</td>
<td>4–5</td>
<td>5–6</td>
<td>6–8</td>
<td>8–12</td>
</tr>
<tr>
<td>Fats &amp; Oils</td>
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<td>8–10</td>
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<td>11–14</td>
<td>13–16</td>
<td>16–18</td>
</tr>
<tr>
<td>Vegetables, non-starchy</td>
<td>4</td>
<td>6–8</td>
<td>8–9</td>
<td>9–10</td>
<td>10–11</td>
<td>11–12</td>
</tr>
<tr>
<td>Vegetables, starchy</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1-2</td>
<td>2</td>
</tr>
<tr>
<td>Fruit</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1-2</td>
<td>2</td>
</tr>
</tbody>
</table>

* The 600 calorie distribution is 32P/55F/13C. This very low-calorie level is recommended only for occasional intermittent fasting days.

¹ At all calorie ranges, no more than 1-2 servings of grains should be consumed per week. On days when a grain is selected, no legumes should be consumed.

## Food Distribution for 20P/60F/20C Plan by Caloric Ranges

<table>
<thead>
<tr>
<th>Calories</th>
<th>600*</th>
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<th>1200–1400</th>
<th>1400–1800</th>
<th>1800–2200</th>
<th>2200–2500</th>
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</thead>
<tbody>
<tr>
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<td></td>
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<tr>
<td>Calorie Guidelines for Males</td>
<td>Fasting</td>
<td>Reduced</td>
<td>Reduced</td>
<td>Mildly Reduced</td>
<td>Standard</td>
<td>Active</td>
</tr>
<tr>
<td>Proteins</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6–9</td>
<td>9–10</td>
<td>10</td>
</tr>
<tr>
<td>Legumes</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Grains</td>
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<td>0</td>
<td>0</td>
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<tr>
<td>Dairy Alternatives</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nuts &amp; Seeds</td>
<td>0</td>
<td>3–4</td>
<td>4–5</td>
<td>5–6</td>
<td>6–8</td>
<td>8–12</td>
</tr>
<tr>
<td>Fats &amp; Oils</td>
<td>4</td>
<td>8-10</td>
<td>10-11</td>
<td>11-13</td>
<td>13-16</td>
<td>16-18</td>
</tr>
<tr>
<td>Vegetables, non-starchy</td>
<td>4</td>
<td>6–7</td>
<td>7–8</td>
<td>8–9</td>
<td>9–10</td>
<td>10–12</td>
</tr>
<tr>
<td>Vegetables, starchy</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1-2</td>
<td>2</td>
</tr>
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</table>

* The 600 calorie distribution is 32P/55F/13C. This very low-calorie level is recommended only for occasional intermittent fasting days.

¹ When consuming dairy alternatives in the place of dairy products, substitute 2 dairy alternative servings for every 1 serving of dairy.
Clinical Pearls

• Stabilize bloods sugars on Cardiometabolic Food Plan first with IR and DM.
• Consider doing Elimination diet for personalization before starting.
• Slowly lengthen the fasting time between dinner and first meal.
• Move towards 3 hours of fasting before bed.
• Transition out of Ketosis slowly.
Summary & Takeaways

Principles of the IFM Mito Food Plan:

1. Phytonutrient Density
2. Low Glycemic Impact
3. Anti-inflammatory and Anti-oxidant
4. Fats and Oils
5. Cooking Impact
6. Fasting; Calorie and/or Carb Restriction
7. Organic and Clean Food
Mito Food Plan Comprehensive Guide, Weekly Menu, Recipes, and Shopping List