

MitoTone Plus

Nutritional Support for Mitochondria†

DESCRIPTION

MitoTone Plus is a unique dietary supplement designed to provide a broad spectrum of beneficial nutrients to support mitochondrial energy production and healthy aging.†

FUNCTIONS

Mitochondria are the cellular components responsible for generating the energy required to sustain life. Because mitochondria serve as the powerhouse of the cell, their proper functioning is essential to the integrity and optimal performance of the living organism.

Cumulative oxidant stress is a major cause of mitochondrial dysfunction. Free radicals are normal byproducts of mitochondrial respiratory chain function. They can be damaging when produced in excessive amounts and not neutralized by naturally occurring antioxidants. Their accumulation may lead to peroxidation of membrane lipids, decline in oxidative phosphorylation, inefficient electron transport, and further increased oxidant flux.

Repletion with specific nutrients necessary to support electron transport chain function and antioxidant protection appears to nutritionally support healthy mitochondrial function.

Coenzyme Q10 is a critical rate-limiting constituent of the mitochondrial electron transport chain, the biochemical pathway in cellular respiration from which ATP (adenosine triphosphate) and metabolic energy are derived. When mitochondrial energetics are inhibited, such as occurs during stress, , or aging, demand for coenzyme Q10 increases which must be met by dietary intake in order to optimize mitochondrial function. Mitochondria are exposed to high levels of oxidant stress (i.e. free radical damage) during cellular respiration. Coenzyme Q10 is an antioxidant that protects mitochondrial membrane lipids and proteins and mitochondrial DNA from free radical-induced oxidative damage. It also regenerates and extends the action of vitamin E by reducing the α -tocopherol radical, thus further protecting against membrane lipid peroxidation.

Acetyl-L-Carnitine (ALCAR) is a form of L-carnitine, which facilitates the transport of fatty acids into mitochondria where they are oxidized, thus providing a major source of energy for the heart, brain, and skeletal muscle. L-carnitine also stimulates the synthesis of cardiolipin which plays a crucial role in mitochondrial membrane structure and function. Cardiolipin plays a pivotal role in maintaining mitochondrial proton gradients, permeability of inner mitochondrial membrane to small molecules, and activity of mitochondrial membrane translocase proteins. Cardiolipin content declines with age and oxidative stress.

Alpha-Lipoic Acid is a coenzyme involved in the energy metabolism of proteins, carbohydrates, and fats. It is also an antioxidant that neutralizes free radicals generated both inside and outside of membranes. In addition to its direct antioxidant activity, alpha-lipoic acid helps recycle vitamins C and E and stimulates the synthesis of glutathione.

N-Acetyl-L-Cysteine (NAC) is a nutrient precursor to glutathione and is effective at raising intracellular glutathione levels. Like alpha-lipoic acid, glutathione is an important antioxidant protector of mitochondrial membranes.

Magnesium Malate and Sodium Succinate are key metabolic intermediates in the Krebs's citric acid cycle which is primarily responsible for the release of energy (as ATP) from food fuels. Magnesium is a requisite cofactor for numerous mitochondrial enzymes.

Creatine phosphate constitutes a major energy reserve by providing a readily available high-energy phosphate which in turn can be used to reform ATP from ADP. This prevents the rapid depletion of ATP that results from intense muscle activity or reduced mitochondrial function.

Vitamin B1 (Thiamin), Vitamin B2 (Riboflavin), and Niacinamide. Thiamin, riboflavin and niacinamide stimulate the synthesis of NADH, FAD, and NAD respectively which play key roles in the functioning

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of the citric acid cycle.

Methylated Resveratrol. Pterostilbene is a natural dietary compound and the primary antioxidant component in blueberries and some grape varieties. It has a similar structure to resveratrol but has a superior bioavailability, a longer half-life and greater stability. It activates a very specific nuclear receptor known as PPAR-alpha. Nuclear receptors are proteins that activate gene expression. PPAR-alpha is activated during fasting states or the prolonged periods without food. Once activated, PPAR-alpha controls lipid metabolism among other essential functions. Animal studies demonstrate that pterostilbene has beneficial effects on cognition and neural function during aging.†

INDICATIONS

MitoTone Plus may be taken as a dietary supplement for individuals who wish to increase their intake of a broad spectrum of important mitochondrial support nutrients.

FORMULA (#202317)

3 vegetarian capsules contain:

Vitamin B1 (thiamin hydrochloride)	20 mg
Vitamin B2 (riboflavin-5-phosphate).....	20 mg
Niacin (as niacinamide).....	50 mg
Vitamin B6 (as pyridoxal-5-phosphate).....	20 mg
Vitamin B12 (as 500 mcg adenosylcobalamin, 500 mcg methylcobalamin)	1,000 mcg
Pantothenic Acid (as calcium pantothenate).....	50 mg
Magnesium (from magnesium malate).....	50 mg
Sodium (from sodium succinate).....	56 mg
Acetyl-L-Carnitine (HCL)	200 mg
N-Acetyl-L-Cysteine	100 mg
Alpha-Lipoic Acid.....	100 mg
Malic acid (from magnesium malate)	200 mg
Creatine Monohydrate.....	200 mg
Sodium succinate	200 mg
Co-Enzyme Q10 (ubiquinone).....	50 mg
Pterostilbene (pTeroPure®) (as methylated resveratrol)	100 mg

pTeroPure® is a trademarked material from ChromaDex

SUGGESTED USE

Adults take three capsules daily as a dietary supplement, or as directed by a healthcare professional.

SIDE EFFECTS

No adverse side effects have been reported.

STORAGE

Store in a cool, dry place, away from direct light. Keep out of reach of children.

REFERENCES

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For more information on MitoTone Plus visit douglaslabs.com

† These statements have not been evaluated by the Food and Drug Administration.
This product is not intended to diagnose, treat, cure, or prevent any disease.

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