



MITO PRO is an Advanced Micro Blend of nutrients designed to stimulate and support oxidative phosphorylation by aiding and assisting cellular communication and micro doses and providing nutrients at cellular doses. Oxidative phosphorylation provides most of the body's adenosine triphosphate (ATP), the energy currency of the body. The breakdown of ATP allows energy to be released for the use of the body's tissues¹. Adequate nutrient levels are crucial for proper mitochondrial function as several specific micronutrients play vital roles in energy metabolism and ATP-production. Supporting oxidative phosphorylation may assist with energy production and overall health.

¹ <https://www.sciencedirect.com/science/article/pii/S0261561418324269>

MITO PRO contains:

- Calcium chloride
- Copper (sulfate)
- Iron (citrate)
- Magnesium phosphate
- Manganese phosphate
- Sodium (oxalate, pyruvate)
- Niacinamide
- Potassium oxalate
- Selenium
- B Complex (B1, B2, B6)
- Zinc
- Proprietary Blend of Herbal, Glandular & Mineral essences
- Alpha lipoic acid, Citric acid, Colchicum autumnale, Conium maculatum, Fumaric acid, Lactic acid, Podophyllin, RNA, Succinic acid, Sulfur



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Benefits

Calcium chloride

Calcium is required to stimulate mitochondrial oxidative phosphorylation and skeletal muscle contraction, thereby contributing to the maintenance of cellular energy homeostasis. Calcium has been found to activate the entire muscle oxidative phosphorylation cascade, and directly stimulates ATP production by activating the enzyme F1Fo-ATP synthase.¹

Copper sulfate

Copper plays a role in mitochondrial function and signaling involving bioenergetics, dynamics, and mitophagy, which affect cell fate by means of metabolic reprogramming. Copper deficiency and overload have been associated with exacerbated ROS production and cell death due to mitochondrial dysfunction².

Iron

Iron plays a central role in oxidation–reduction reactions within the mitochondrial electron transport chain. Enzymes involved in oxidative phosphorylation cannot efficiently function without iron atoms, which means iron is indispensable for the effective oxidative catabolism of both carbohydrates and fats. Iron deficiency affects skeletal muscle functioning by limiting oxidative metabolism and may therefore be linked to loss of muscle oxidative capacity contributing to skeletal myopathy seen in patients with heart failure, chronic obstructive pulmonary disease, and type 2 diabetes mellitus³.

Magnesium

Magnesium is considered to be the main intracellular antagonist of calcium, which is an essential secondary messenger initiating or regulating many cellular functions. Mitochondrial Mg²⁺ activates F₀/F₁-ATP synthase (the terminal complex of mitochondrial oxidative phosphorylation), which makes magnesium the activator of mitochondrial energy metabolism.⁴ Magnesium deficiency is associated with mitochondrial dysfunction and oxidative modification of cardiac myosin binding protein (CcMyBPC), which is shown to cause diastolic cardiomyopathy in rats.⁵

Nicotinamide

Nicotinamide is the principal form of niacin (vitamin B3) and has important neuroprotective properties. Nutritional supplementation of nicotinamide at high doses is shown to decrease oxidative stress and improve mitochondrial and motor function in cells and may be an effective strategy for preventing and ameliorating certain neurodegenerative diseases.⁶

Sodium and potassium

Potassium is shown to facilitate oxidative phosphorylation and the respiratory response to ADP, while Na⁺ counteracted K⁺ in the effects on mitochondria. Research shows that potassium regulates cellular respiration at two structures, one directly in mitochondria, and the second indirectly through control of ADP production at the cell membrane⁷.

Selenium

Selenoenzymes play important roles in regulating metabolic activity, immune function, antioxidant defense and intracellular redox regulation. Selenium supplementation is shown to preserve mitochondrial function and stimulates mitochondrial biogenesis. It also helps to protect neurons against hypoxic/ischemic damage by reducing oxidative stress, restoring mitochondrial functional activities and stimulating mitochondrial biogenesis⁸.

B vitamins

B vitamins play an essential role in maintaining mitochondrial function. Mitochondria are severely compromised by a deficiency of any B vitamin.

Thiamin (B1) is required for oxidative decarboxylation processes within the citric acid cycle; riboflavin (B2) supplies protons for oxidative phosphorylation and regulates the structure and function of flavoenzymes in the respiratory chain. Phosphorylated vitamin B6 in the cell is involved in the biosynthesis and degradation of amino acids⁹.

Zinc

Zinc plays a major role in energy metabolism as it is required for proper mitochondrial pyruvate transport, oxidative phosphorylation, and the metabolism of carbohydrates and lipids. Zinc is involved in restoring impaired energetic metabolism and enhancing the cellular energy supply.¹⁰

Alpha lipoic acid

Alpha lipoic acid is a cofactor for key mitochondrial enzymes involved in glucose metabolism and energy production, and may be essential for energy metabolism. ALA protects mitochondrial enzymes by altering levels of S-nitrosylation levels, a protein that affects the activity of these enzymes.

1 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4157357/>
2 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8421569/>
3 <https://onlinelibrary.wiley.com/doi/10.1002/jcsm.12314>
4 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5516748/>
5 <https://www.ahajournals.org/doi/10.1161/JAHA.120.020205>
6 <https://pubmed.ncbi.nlm.nih.gov/18381761/>
7 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1264670/>
8 <https://bmcbiosci.biomedcentral.com/articles/10.1186/1471-2202-13-79>
9 <https://pubmed.ncbi.nlm.nih.gov/16765926/>
10 <https://www.nature.com/articles/s41598-017-14868-x>



Dosage

Adults: Administer 3 sprays into the mouth 3 times daily or as directed by a healthcare professional.

Safety and side effects

MITO PRO has an excellent safety rating with no reported interactions from the supplement.

MITO PRO is not intended to replace any medication or procedures used to treat cancer, viral infections, or illnesses. Do not discontinue treatment or cancer medications without a doctor's permission.

Women who are pregnant, nursing, or any person who is immune-compromised should consult their physician before using this product. Certain medications may interact with individual ingredients – talk to your doctor if you take any medications.

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- Information and statements contained have not been confirmed by additional studies.