ALIMENTUM LABS

EnerGenic

Cellular ATP & Mitochondrial Support

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Cellular ATP & Mitochondrial Support

EnerGenic contains clinically studied ingredients that activate healthy mitochondrial gene expression to promote mitochondrial biogenesis, increase energy through adenosine triphosphate (ATP) production, and protect cell functions.

Whole Body | Brain | Cardio | Metabolism

Health Indications

- Address Mitochondrial Disorders
- Manage Chronic Fatigue Syndrome (CFS)
- Inhibit Premature Cellular Aging
- Manage Neurodegenerative Diseases
- Reduce Brain Fog
- Manage Cardiovascular Diseases
- Address Metabolic Disorders
- Enhance Exercise Performance
- Reduce Stress and Burnout
- Address Chronic Infections

Instructions For Use

Take 2 capsules daily, with or without food, or as directed by your healthcare provider.

Individual needs may vary; please consult your practitioner before altering the prescribed doses or protocols.

Product Description

Mitochondria are indispensable cellular organelles that serve as the powerhouses of our cells. They are responsible for producing the energy required for all bodily functions. Beyond energy production, they influence metabolism, improve cell health, manage calcium levels, and fight free radicals that cause aging, inflammation, and health problems. Several factors, such as poor dietary habits, sedentary lifestyles, chronic stress, environmental toxins, and the natural aging process, can detrimentally impact mitochondrial health and the genes that regulate their functions and mechanisms.

When mitochondria are not functioning properly or are present in insufficient numbers, it can lead to a range of symptoms, including fatigue, muscle weakness, neurological issues, exercise intolerance, gastrointestinal problems, cardiac dysfunction, neuromuscular dysfunction, vision and hearing problems, metabolic disorders, and immune system dysfunction. EnerGenic was created to counteract these influences and promote mitochondrial well-being. With newly researched ingredients, the data shows we can enhance energy levels, reduce oxidative stress, support overall cellular health, and help maintain a healthy metabolism through a dietary nutrigenomic approach.

Key Elements and Features of EnerGenic

Cellular Energy and Health Through Mitochondrial Biogenesis

Science has identified key molecules that are necessary for 'mitochondrial biogenesis', a term describing how mitochondria are formed within cells. Increasing the number of mitochondria enhances the capacity for ATP synthesis, leading to improved cellular energy levels. This is particularly vital for tissues with high energy demands, such as muscles and the brain.

Metabolic Optimization

EnerGenic helps optimize metabolic processes to support weight management, insulin sensitivity, and blood sugar control. It also helps regulate lipid and cholesterol metabolism. Additionally, enhanced mitochondrial function can support overall metabolic efficiency.

Anti-Aging

Mitochondrial biogenesis has been shown to increase cellular lifespan. The renewal and maintenance of healthy mitochondria contribute to the overall longevity of cells, potentially slowing down the aging process and reducing the risk of age-related diseases.

Adaptation to Stress and Neurological Function

EnerGenic aims to significantly increase the generation of new mitochondria, which is vital in the brain where continuous energy-demanding processes take place. EnerGenic enhances cellular resilience and adaptability, thereby bolstering neuronal health, improving cognitive function, and addressing neurodegenerative diseases. This contributes to sustaining optimal neurological function, particularly in stressful conditions.

Physical Performance and Endurance

More mitochondria in muscle cells enable greater energy production, leading to increased endurance, improved exercise performance, and faster recovery. Athletes and individuals engaged in regular exercise may benefit from mitochondrial biogenesis, as it supports the physiological adaptations to training. This includes increased aerobic capacity and improved efficiency in utilizing oxygen during physical activities.

Gene Spotlight

Mitochondrial biogenesis is like your body's way of building and maintaining its power plants; these power plants are the mitochondria. These tiny power plants are found inside your cells and are responsible for producing energy. Your genes have instructions to build, repair, maintain, and regulate mitochondria. Here are just a few of the genes that EnerGenic targets to regulate and enhance mitochondrial production and function.

Genetic Interactions

*PGC-1*α (Peroxisome proliferator-activated receptor gamma coactivator 1-alpha) Gene

This is often considered the most potent and central regulator of mitochondrial biogenesis. *PGC-1*α is often referred to as the 'master regulator' of mitochondrial biogenesis. Activation of *PGC-1*α can trigger a cascade of events leading to increased mitochondrial biogenesis and overall cellular energy efficiency. Factors like *AMPK* and *SIRT1* genes can also influence the activity of *PGC-1*α, further highlighting its importance in this process.[1]

SIRT (Sirtuins) Genes

Both *SIRT1* and *SIRT3* genes are key players in maintaining mitochondrial health and function, ensuring that cells have a sufficient supply of functional and efficient mitochondria to meet their energy and metabolic needs.[2] SIRT1 is a deacetylase enzyme that regulates various cellular processes, including mitochondrial biogenesis, by deacetylating and activating PGC-1α. SIRT1 enhances both the quality and quantity of mitochondria, supporting energy production and overall cellular health.[3] SIRT3 works to improve mitochondrial efficiency and reduces oxidative damage, contributing to the overall health of mitochondria and their ability to produce energy.[4]

NRF (Nuclear Respiratory Factor) Genes

NRF genes go hand-in-hand with sirtuin genes, particularly *NRF1* and *NRF2*. These play a crucial role in regulating the expression of nuclear genes that encode mitochondrial proteins. These genes are involved in the transcription and expression of proteins essential for mitochondrial function, including those related to mitochondrial biogenesis, oxidative phosphorylation, and energy metabolism.[5]

TFAM (Mitochondrial Transcription Factor A) Genes

The *CFH* gene encodes a protein that works in conjunction with other proteins and cells in the immune system to ensure that they work properly. It helps to distinguish between damaged cells, cellular debris, invading organisms, and foreign matter from healthy functioning cells. When this protein doesn't function correctly, it can cause the immune system to over-respond, leading to an attack on healthy tissues. It is a known partner to the *ARMS2* gene involved in age-related eye diseases.[4,5]

How EnerGenic Works

EnerGenic plays a crucial role in promoting mitochondrial biogenesis, the process of increasing the size, abundance, and efficiency of mitochondria. This is vital for overall health, as it enhances cellular energy production, metabolism, and supports almost all physiological functions, contributing to a healthier, more resilient, and energetic body.

Key Ingredients

PQQ

PQQ, also known as pyrroloquinoline-quinone, is a molecule used as a cofactor in biological reactions. It has been shown to activate sirtuin genes, which are responsible for mitochondrial function, DNA maintenance, and overall cellular health.[7] PQQ enhances mitochondrial generation and energy production.[8]

Niacin (Vit B3) (NAD/NMN)

(Niacin→NMN→NAD) Niacin, also known as vitamin B3, is a molecule needed early on in a long reaction that creates energy from food eaten. It is essential for this reaction to occur. Nicotinamide mononucleotide (NMN) is a derivative of niacin, and it can be converted into NAD+ through a series of enzymatic reactions. NAD and its precursors, like nicotinamide riboside (NR) and NMN, work to enhance cellular energy production, support DNA repair mechanisms, activate sirtuin genes involved in aging and metabolism regulation, maintain mitochondrial function, and potentially offer neuroprotective effects. Ongoing research continues to explore their implications for anti-aging and overall well-being.[9]

Vitamin A (Retinyl Acetate)

When deficient in vitamin A, oxidative stress increases, and ATP production by the mitochondria decreases.[10] Correcting vitamin A deficiencies is essential for optimal mitochondrial function and overall health.

Thiamin (Vit B1)

Thiamin, also known as Thiamine or vitamin B1, is an essential cofactor for the ATP production reaction. When thiamin levels are low, energy production is reduced.[11]

Magnesium (Ascorbate)

Magnesium is an essential nutrient required for many physiological reactions. For example, it is required to complete the first step of energy production through a process known as glycolysis.[12] Additionally, magnesium is heavily involved in DNA, RNA, amino acid, and protein reactions. Research suggests that a deficiency in magnesium may exacerbate Type 2 diabetes.[13]

Potassium (Dipotassium PO4)

Potassium is an essential element for numerous biological processes. It is required for many reactions to occur by creating ion gradients, acting as a cofactor for enzymatic reactions, and more. Maintaining appropriate levels of potassium in the body supports the health and function of mitochondria and may even delay mitochondrial degeneration, contributing to healthy aging processes.[14]

N-Acetyl L-Carnitine

L-Carnitine is essential for mitochondrial function, specifically for β-oxidation, a form of energy production that occurs in the mitochondria. Acetyl L-Carnitine, in particular, has been shown to reduce oxidative stress in the body and within the mitochondria itself. Carnitine has also been shown to improve blood pressure, insulin sensitivity, and overall cardiovascular health. Additionally, it can aid in regulating sirtuin gene expression which helps with energy production, cellular health, and healthy aging.[15]

Kudzu Extract (Daidzin)

Daidzin promotes mitochondrial biogenesis through the SIRT1 pathway.[16]

Calcium Pyruvate

Calcium is an essential cofactor for several reactions involved in energy production within the mitochondria. Pyruvate is the molecule that enters the Krebs cycle to be broken down in order to make ATP.[17]

Coenzyme Q10

Coenzyme Q10, also known as CoQ10, is an integral part of the electron transport chain in the mitochondria. By protecting lipids in the cell membrane, CoQ10 supports the function and integrity of the cell as a whole.[18]

L-Tryptophan

L-Tryptophan is the sole precursor of serotonin, which has been linked to mitochondrial biogenesis.[19] Improved mitochondrial density can positively impact energy production. L-Tryptophan enhances mitochondrial function and output through the AMPK/SIRT1/PGC-1α signaling pathway.[20]

Alpha Ketoglutaric Acid

Alpha-Ketoglutaric acid is an intermediate molecule in the citric acid cycle, the second major step of energy and ATP production in the body. It has also been shown to improve muscle recovery and aging. Additionally, it's been reported that alpha-Ketoglutaric acid can upregulate the expression of *SIRT1*.[21]

Aspartic Acid

Aspartic acid is involved in generating NADH, an important energy molecule and a crucial component involved in cellular energy production. NADH plays a pivotal role in various biochemical reactions, particularly in the production of ATP, which serves as the primary energy currency for cells. Additionally, aspartic acid contributes to safeguarding the mitochondria, the cell's energy-producing organelle, and helps maintain a balance in the reduction-oxidation (redox) reactions occurring within these cellular powerhouses.[22]

Ribose

Ribose plays a crucial role in mitochondrial function, primarily through its involvement in the synthesis of ATP. In certain cardiovascular conditions characterized by a compromised ability to regenerate ATP efficiently, ribose supplementation has been investigated as a potential therapy to support mitochondrial function. Ribose also exhibits antioxidant properties that help protect mitochondria, and other cellular structures, from oxidative damage.[23,24]

L-Valine

Valine supplementation has been shown to increase the production of mitochondria by stimulating the expression of *SIRT1* and *SIRT2* genes. It is suggested that this may help support energy production, muscle health, and appropriate aging processes.[25]

L-Alanine

Alanine has been shown to improve mitochondrial biogenesis and mitigate the effects of aging through *SIRT* expression.[26]

ATP

ATP, also known as adenosine triphosphate, serves as the energy currency for every cell in all living organisms. Without ATP, life would not exist. It stores energy in the bonds between its phosphate groups and releases this energy when the bonds are broken. This energy producing process fuels numerous reactions in our body, including muscle contraction, nerve impulses, molecule creation, and ion transportation. The human body relies of the energy that comes from breaking down between one septillion and one octillion ATP molecules per day.[27]

Luteolin

In normal cells, luteolin has been shown to stimulate sirtuin genes, which enhances mitochondrial function. It also provides protection against oxidative stress in the mitochondria, which may potentially mitigate the damage caused by strokes.[28]

Note: In cancerous cells, luteolin causes immense mitochondrial disruption which triggers the cell to initiate apoptosis.[29,30]

Rosmarinic Acid

The polyphenolic compound rosmarinic acid exhibits numerous biological activities, including antiviral, antibacterial, antioxidant, antimutagenic, and anti-inflammatory effects.[29,30]

Pantethine

Pantethine is a precursor to the molecule CoQ10 and has been shown to significantly increase the production of Coenzyme A (CoA) in the liver, which is involved in energy production. It has also been reported to reduce cholesterol levels in the blood.[31]

Glucono Delta-Lactone

Glucono delta-lactone is a derivative of glucose. This organic compound is heavily involved in the first step of energy production in the body, glycolysis. It is also involved in controlling the cellular life cycle.[32]

Warnings/Contraindications

When used as directed there are no known contraindications for EnerGenic.

It is always recommended that you consult your practitioner prior to adding any new supplement to your regimen if you are pregnant, breastfeeding, experiencing renal failure, undergoing an organ transplant(s), managing diabetes with insulin, or are taking medication(s) for any pre-existing conditions.

Safety

All ingredients are tested before use for:

- Pathogenic microbial contaminants
- Heavy metals and/or chemical contaminants
- Purity

Additional Information

- Gluten Free
- Dairy Free
- Vegan
- No Sugar
- Non-GMO
- cGMP Facility
- No Egg

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