

MitoPQQ™

Pyrroloquinoline Quinone Disodium (PQQ) Salt

Pyrroloquinoline quinone disodium salt, abbreviated PQQ, is a novel coenzyme first discovered in bacteria. PQQ is found naturally in a variety of foods, such as milk, eggs, spinach, etc.

Mechanism of action

Accelerate the transformation of longevity factor -NAD⁺, and promote the efficient operation of mitochondria



1 MitoPQQ™ Advantages

Natural and safe

Natural fermentation, non-GMO; FDA GRAS certified; Kosher and Halal certified.

Patented technology

Exclusive low temperature vacuum drying process (patent No.: CN109134459B), with high purity, low water activity, high stability.

Personalized service

According to customer needs, provide comprehensive technical support from product use to efficacy evaluation; Provides solutions for various application scenarios.

2 Benefits

Improvement of mitochondrial function and promote energy metabolism

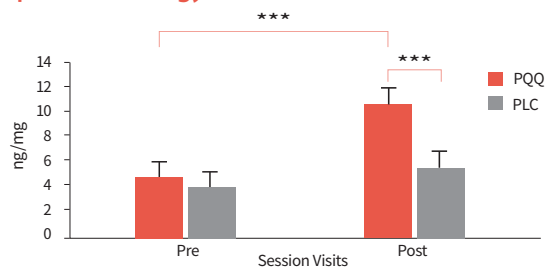


Figure 1. PQQ supplementation on PGC-1 α production in untrained male mitochondria (PGC-1 α : a biochemical marker for mitochondrial biogenesis, ng/mg; ***P<0.001)

As a REDOX cofactor, PQQ can stimulate the biogenesis of intracellular mitochondria, thereby increasing the quantity and quality of mitochondria in aging cells, protecting mitochondria from free radical oxidative damage, improving energy utilization, and regulating basic energy metabolism.

(Paul S. Hwang, et al. 2020.)

Antioxidation

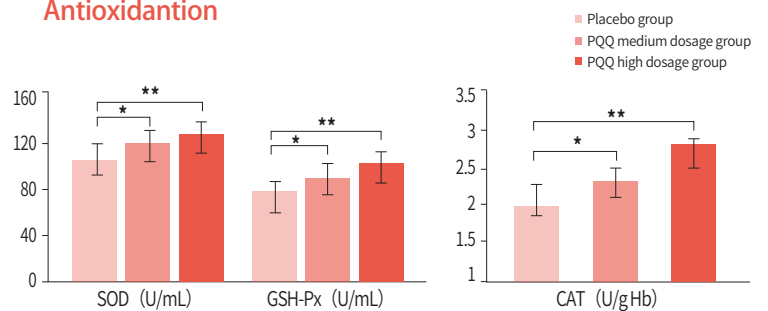


Figure 2. Effect of PQQ on the activities of serum SOD, GSH-Px and CAT in aging rats Compared with the control group, * P<0.05, ** P<0.01

PQQ is a powerful antioxidant that traps and neutralizes free radicals, chemicals that cause oxidative damage to cells. By counteracting free radicals, PQQ helps protect cells and tissues from oxidative stress, which helps slow the aging process and reduce the risk of chronic diseases.

(Modern Food. 2023, 29 (15))

Improvement of hypoxia tolerance and exercise performance

PQQ can mediate the REDOX reaction in the mitochondrial respiratory chain and enhance mitochondrial function, thereby improving the comprehensive exercise ability of the body, enhancing the hypoxia tolerance under high altitude and low oxygen environment, enhancing the lactic acid metabolism ability and the duration of extreme exercise.

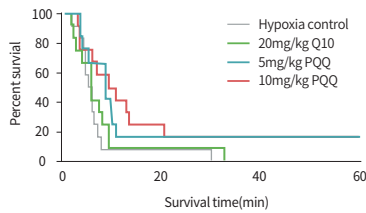


Figure 3. Effects of PQQ supplementation on inventory time and survival rate of mice with acute decompression and hypoxia

Group	Resting lactate level (mmol/L)	Area under the lactic acid curve
Control group	2.84±0.93	137.70±40.82
5mg/kg PQQ	1.92±0.41 ^a	69.92±15.10 ^b
10mg/kg PQQ	1.74±0.66 ^b	91.20±7.26 ^a

^aP<0.05, ^bP<0.01VSControl group

Figure 4. Effect of PQQ supplementation on lactic acid metabolism in hypoxic swimming mice

(YangRong, et al. Acta Nutrimenta Sinica.Dec.,2020)

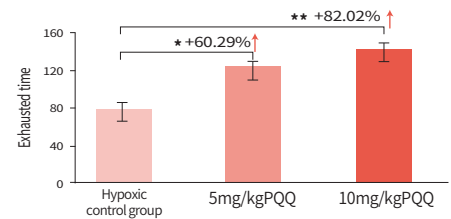


Figure 5. Effect of PQQ on exhaustion time of simulated 4000m hypoxic swimming mice

*P<0.05, **P<0.01 VS Hypoxic control group

Improvement of brain and cognition health

During aging, the brain is more vulnerable to oxidative degeneration of proteins or DNA triggered by reactive oxygen species produced by cellular oxidative stress, which can induce neurodegenerative diseases such as Alzheimer's or Parkinson's. As a cofactor of dehydrogenase and ammonia oxidase, PQQ can increase the production of nerve growth factor, stimulate the generation and connection of nerve cells, promote the communication between neurons, and improve the cognitive deficits caused by aging, thus improving brain health and enhancing cognitive ability.

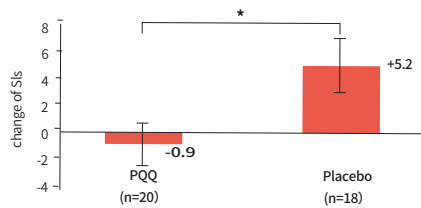


Figure 6. Effect of PQQ intake on selective attention in SIs

SIs: Stroop interference experiment, the lower the level, the stronger the concentration. *p<0.05 (Itoh Y, et al. 2016.)

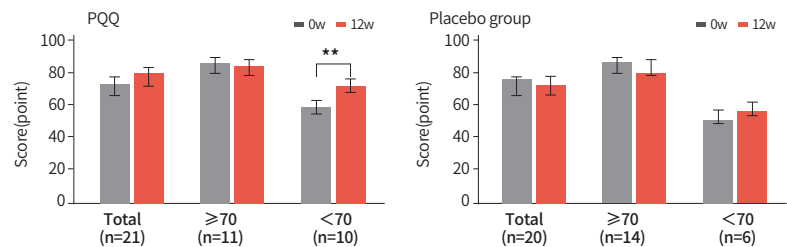


Figure 7. Effects of PQQ intake on Touch M visuospatial cognition

Touch M visuospatial cognition: the higher the score, the stronger the cognitive ability, the score will decrease with age, and the score below 70 can be regarded as a decline in brain function. **p<0.01 (Itoh Y, et al. 2016.)

Oral beauty & Skin anti-aging

Skin is the most external organ of the human body, which can reflect the health and aging status of the body. PQQ can accelerate the metabolism of senescent cells in vivo by promoting the proliferation of skin dermis cells, increasing the generation of skin collagen fibers and increasing the expression of genes related to the autophagy level in the skin, so as to achieve anti-aging and cosmetic effects in the skin.

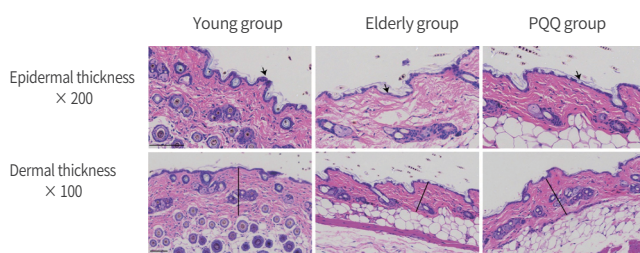


Figure 8. The skin structure of the young group is clear and clearly layered, the epidermis and dermis of the old group are thinner, while the epidermis and dermis of the PQQ group are increased compared with that of the old group

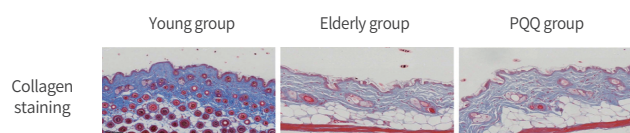


Figure 9. Collagen in young mice was abundant and arranged neatly without obvious fracture. The collagen in the aged group was significantly reduced and the arrangement was chaotic, while the collagen fibers in the PQQ group were significantly increased.

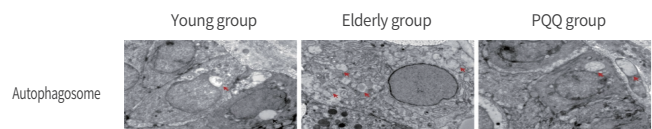


Figure 10. The number of autophagosomes in the dermis of the old group was more than that of the young group, and the number of autophagosomes in the PQQ group was less than that of the old group

(Bin Li, et al. 54.12(2021):6)

3 Applications

Recommended dosage ≤20mg/d

Suitable for a variety of dosage forms, such as tablets, powders, capsules, beverages, candy, etc.



CREATIVE TECHNOLOGY FOR VIBRANT LIFE

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