Male Fertility SAP

Science-based male fertility support

Male infertility due to impaired semen parameters is a global medical concern affecting couples of reproductive age. Amongst various disorders causing male infertility, idiopathic oligoasthenoteratozoospermia remains the most common etiology for which a specific therapeutic option is yet unavailable. Various environmental and lifestyle factors contribute to male infertility, especially resulting in elevated oxidative stress. Increasing evidence suggests the effective role of nutritional supplementation in improving sperm quality and mitigating infertility.

Male Fertility SAP is a synergistic formulation of key evidence-based nutraceuticals that can help improve sperm quality and function and alleviate infertility. **Male Fertility SAP** can help support sperm-cell health by increasing sperm count and motility, and by improving sperm morphology. **Male Fertility SAP** helps prevent oxidative damage of sperm DNA and support healthy glucose metabolism.

SUPPLEMENT FACTS

Serving Size: 2 Capsules	**Amount Per Serving**	**Servings:** 60 **% Daily Value‡**
Vitamin C (ascorbic acid)	250 mg	278%
Vitamin E (as D-*alpha*-tocopherol from 50 mg of non-GMO sunflower mixed tocopherols) (8 IU)	5 mg	33%
Folate (from calcium L-5-methyltetrahydrofolate)	680 mcg DFE	170%
Vitamin B_{12} (from methylcobalamine)	500 mcg	20833%
Zinc (from zinc citrate)	5 mg	45%
Selenium (from selenomethionine)	100 mcg	182%
Chromium (from chromium picolinate)	125 mcg	357%
Acetyl-L-carnitine hydrochloride	500 mg	**
N-Acetyl-L-cysteine	250 mg	**
PQ_{10} (emulsified coenzyme Q_{10})	150 mg	**

‡ Percent Daily Values are based on a 2,000-calorie diet.
**Daily Value not established.

Other ingredients: Pea protein, vegetable magnesium stearate, microcrystallne cellulose and silicon dioxide in a vegetable capsule composed of vegetable hypromellose and purified water.

This product is non-GMO.

Contains no: Gluten, soy, wheat, corn, eggs, dairy, citrus, preservatives, artificial flavor or color, starch, or sugar.

Male Fertility SAP contains 120 capsules per bottle.

DIRECTIONS FOR USE

Adult men: Take 2 capsules twice daily with food or as directed by your healthcare practitioner. If you are taking other medications, take this product a few hours before or after them.

INDICATIONS

Male Fertility SAP can:

- Help improve sperm parameters including sperm count, morphology, motility, and vitality.*
- Be used to alleviate oxidative stress–induced sperm DNA damage and enhance antioxidant capacity of seminal fluid.*
- Help promote insulin sensitivity and mitigate diabetes-induced male infertility.*
- Help regulate testosterone levels.*

CAUTIONS AND WARNINGS

Consult a healthcare practitioner prior to use if you are taking blood pressure medication or blood thinners; if you have kidney stones; if you have a liver disease, a kidney disease, or a seizure disorder; if you have a history of nonmelanoma skin cancer; if you have a kidney disorder and/or diabetes; and to ensure the timely treatment of a serious cause of infertility. Do not use this product if you are taking antibiotics or nitroglycerin. Do not use if seal is broken. Keep out of reach of children.

PURITY, CLEANLINESS AND STABILITY

All ingredients listed for each **Male Fertility SAP** lot number have been tested by an ISO 17025–accredited third-party laboratory for identity, potency, and purity.

*** 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.**

Scientific Advisory Panel (SAP): adding nutraceutical research to achieve optimum health

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MALE FERTILITY

Infertility is a medical concern worldwide, affecting 60–80 million couples (15% of couples of reproductive age). Male-factor infertility due to impaired semen parameters contributes to 50% of the infertility cases globally.[1][2] A number of disorders can lead to male infertility, including idiopathic oligospermia (low sperm counts), complete asthenozoospermia (absence of sperm motility; causative factor in 19% of infertile cases), and isolated asthenozoospermia (low sperm motility; caused by sperm dysfunction, varicocele, infection, or genetic factors; implicated in 24% of infertile cases). Among these, idiopathic oligoasthenoteratozoospermia remains the most common etiology of male infertility for which a specific therapeutic option is yet unavailable.

Various factors contribute to male infertility, majorly environmental factors such as exposure to certain chemicals, heavy metals, pesticides, heat, or electromagnetic radiation.[3][4] Other factors include smoking, alcohol abuse, chronic stress, obesity, urogenital trauma, and inflammation in the male reproductive system.[3][4] All these factors inevitably lead to elevated oxidative stress, which plays a significant role in male infertility.[2][3][4] Leukocytes and sperm cytoplasm are principal sources of reactive oxygen species (ROS) including hydroxyl radicals, superoxide anions, and hydrogen peroxide. Excessive amounts of ROS may profoundly affect sperm DNA, leading to the formation of 8-oxodeoxyguanosine, the major oxidative product of sperm DNA.[3] ROS production also leads to reduced sperm motility and disrupted sperm membrane integrity via lipid peroxidation. Immature spermatozoa (teratozoospermic forms), with large amount of cytoplasm, generate more ROS compared with mature and normal spermatozoa.[3] It has been shown that the antioxidant capacity of semen from infertile men is less than that from fertile men.[5] In addition to the environmental and lifestyle factors, mounting evidence points towards the vital role of nutrition in sperm quality and infertility.[6][7][8]

Therefore, nutraceutical antioxidant supplements have been gaining more attention in the treatment and management of male infertility.[3]

NUTRACEUTICALS IN THE MANAGEMENT OF MALE INFERTILITY

N-Acetyl-L-carnitine

N-Acetyl-L-carnitine (ALCAR), an ester of the trimethylated amino acid L-carnitine, is found in the highest concentration in the epididymis and plays a major role in the energy metabolism and maturation of spermatozoa.[9] L-Carnitine deficiency may reduce fatty acid concentrations within the mitochondria, leading to decreased energy production and potential alterations in sperm motility.[9] A positive correlation between free L-carnitine and both sperm count and sperm motility has been established in a study involving 124 infertile patients.[10] Various studies have investigated the effects of ALCAR supplementation on male infertility. In one study, 20 patients with oligoasthenozoospermia were treated with 4 g/d of ALCAR for 60 days. It was observed that 60% of the patients showed a significant increase in the progressive sperm motility, and the parameter returned to basal pretreatment value four months after therapy discontinuation.[11] In a double-blind clinical study in 60 infertile men with oligoasthenoteratozoospermia, a combination of 2 g/d L-carnitine and 1 g/d ALCAR supplementation for six months enhanced sperm motility.[12] Balercia et al observed increased sperm motility and total oxygen radical–scavenging capacity in asthenoteratospermic men after supplementing a combination of L-carnitine and ALCAR for six months.[13] In addition, five pregnancies occurred in patients treated with the combination therapy.[13] Two other studies testing a combination of L-carnitine and ALCAR reported substantial reductions of ROS in seminal fluid, and improvement in the progressive motility and vitality of spermatozoa.[14][15]

N-Acetylcysteine

N-Acetylcysteine, naturally derived from L-cysteine, functions as an antioxidant by serving as a precursor of glutathione peroxidase.[16][17] In two different studies, the effect of *N*-acetylcysteine supplementation on sperm parameters was studied at 600 mg/d for 26 weeks[16] and 13 weeks.[17] Both studies demonstrated an improvement in sperm motility; however, only one study observed an increase in sperm concentration and morphology.[16]

Vitamin C

Vitamin C is a water-soluble antioxidant and a key cofactor in various biochemical processes necessary for the synthesis of biocomponents.[18] Found in high concentrations in seminal plasma, vitamin C levels increase in the plasma as its dietary intake increases and helps prohibit DNA damage.[18] Vitamin C, alone and in combination with other antioxidants, has been shown to improve sperm quality and reduce DNA damage.[18][19]

Coenzyme Q_{10} (coQ_{10})

CoQ_{10}, also known as ubiquinone, is a potent antioxidant that plays a crucial role in aerobic cellular respiration and has gained wide attention for its beneficial effects in improving male infertility.[18] In a double-blind study, coQ_{10} supplementation (200 mg/d) in 60 men with idiopathic asthenoteratospermia for six months improved sperm motility, and 12 spontaneous pregnancies occurred.[20] Another study, in 228 infertile men with 28-week coQ_{10} treatment, showed improvement in sperm density, motility, and morphology.[21] Similarly, many other studies corroborate the beneficial effects of coQ_{10} in improving sperm parameters.[22] The pea-emulsified coQ_{10} (PQ_{10}) form is prepared by blending a unique emulsifier—a specific pea protein—with coQ_{10}. The protein is ideal for blending with coQ_{10}, as it has both hydrophobic and hydrophilic components. The PQ_{10} form has the ability to be absorbed 2.5–4.25 times more efficiently than the standard ubiquinone form of coQ_{10}.

Vitamin E

Vitamin E is a fat-soluble antioxidant that protects sensitive cell membranes by neutralizing free radicals.[18] Oral vitamin E supplementation has been shown to significantly decrease levels of the lipid-peroxidation byproduct malondialdehyde in seminal plasma, and improve sperm motility. In infertile men, vitamin E inhibits the production of ROS. When supplemented in combination with selenium, vitamin E has been shown to significantly increase sperm motility and overall percentage of normal spermatozoa.[19][23]

Selenium

Selenium is a vital trace element in testosterone biosynthesis and sperm formation. Selenoproteins are known to support structural integrity of sperm.[21] Studies lend evidence that selenium supplementation improves sperm count, concentration, motility, and morphology in infertile men, especially in combination with *N*-acetylcysteine and vitamin E.[21][23]

Zinc

Zinc, the second most abundant metal in the body after iron, is crucial for normal male reproductive system function.[18] Zinc deficiency is related to lower testosterone levels and sperm count, as zinc is essential for proper sperm motility and production.[18][19] Infertile men are usually characterized by lower zinc levels; therefore, zinc supplementation could be very useful in improving male infertility.[18][19] Two individual studies have shown that zinc supplementation (24 and 89 mg of elemental zinc) resulted in an increase in testosterone levels and sperm count, along with successful pregnancies.[19]

Chromium

Chromium deficiency negatively affects sperm count and male fertility. Type 2 diabetes (T2D) results in male reproduction dysfunction and remains a major health concern. Chromium supplementation has been proven to be beneficial for T2D and cardiovascular-disease management.[24] Preclinical evidence supports the use of chromium along with other nutritional supplements in improving testes morphology and preventing spermatogenesis impairment.[24]

Vitamin B_{12}

Vitamin B_{12} is important in cellular replication as well as RNA and DNA synthesis, and a lower B_{12} status has been associated with decreased sperm count and motility.[18][19] Methylcobalamin supplementation (1,500 mcg/d) in infertile men for a period of 8–60 weeks resulted in significant improvement in sperm parameters.[18] In another study, vitamin B_{12} administration (1000 mcg/d) in men with lower sperm count profoundly improved sperm count at the end of the therapy.[25]

Folate

Abnormal folate metabolism is an important factor contributing to male infertility.[26] Folic acid supplemented solely at 5 mg/d for 26 weeks improved sperm concentration, but not sperm motility or morphology.[27] Folic acid supplementation also has been shown to substantially improve pregnancy rate after assisted conception treatment.[18]

SYNERGISM FOR OPTIMAL EFFICACY

Evidence presented by systematic reviews points to the fact that supplementing a combination of key nutraceuticals such as *N*-acetyl-L-carnitine, *N*-acetylcysteine, vitamin C, vitamin E, and coQ_{10} can effectively improve semen parameters in infertile men.[18][19]

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