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# 抗氧化劑對罹患寡精、弱精與畸精症的治療具正面效應

# Positive Effect of Antioxidants (Ferti-A) for the Treatment of Oligoasthenoteratozoospermia

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## Purpose

Oligoasthenoteratozoospermia (OAT) constitutes approximately 90% of male infertility cases. Previous research has suggested that OAT may be triggered by oxidative stress (OS) in the body, thereby diminishing the likelihood of successful fertilization.

Oxidative stress occurs when there is an imbalance between the production of reactive oxygen species (ROS) and the ability of the body to neutralize these toxic products. This imbalance leads to cellular damage. Spermatozoa are more vulnerable than other body cells when it comes to damage due to the overproduction of ROS. High ROS-level in semen may lead to sub-fertility and even sterility of men. Existing evidence supports the idea that supplementing with antioxidants can mitigate OS, leading to enhancements in both the quality and quantity of sperm.

This prospective study aims to assess the influence of antioxidant supplementation on sperm quality, sex hormone levels, and metabolic parameters in male infertility patients with OAT.

## Materials and Methods

From Dec.2022 to Sep 2023, male infertile patients who suffered from OAT for in vitro fertilization and embryo transfer(IVF-ET) treatment were screened to joint this study. A total of 124 patients were screened, and 79 met the inclusion criteria. OTA was defined as presenting with hypospermia (semen volume ≤ 2cc), oligozoospermia (total sperm count ≤ 40 x$10^6$), asthenozoospermia (sperm motility ≤ 50 %), or teratozoospermia (sperm normal morphology ≤ 14% according to Kruger criteria).

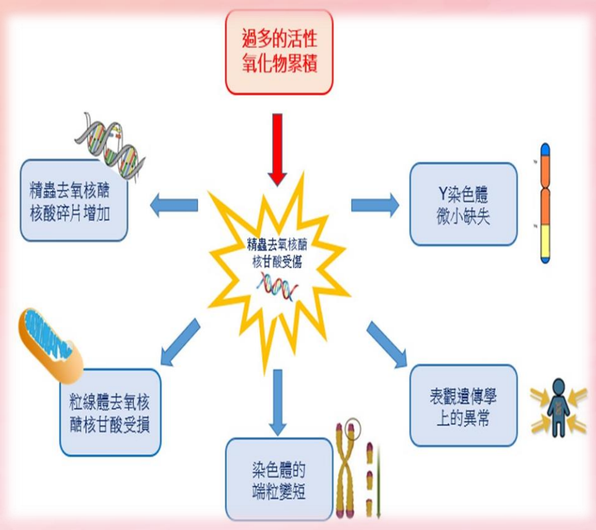
Patients were prescribed with oral antioxidants (Ferti-A) based on their body mass index (BMI). The nutritional supplement(Ferti-A), included L-carnitine(125 mg/ capsule), L-arginine(62.5/capsule), Zinc(6.25mg/ capsule), Vitamin E(15mg/capsule), Glutathione (20mg/capsule), Selenium(15ug/capsule), CoQ10 (3.84 mg/ capsule), Folic acid (160 ug/ capsule), and Maca (0.2 mg / capsule).For patients with a BMI < 28, Ferti-A was prescribed as 1 capsule twice a day, while those with a BMI ≥ 28 received 2 capsules twice a day.

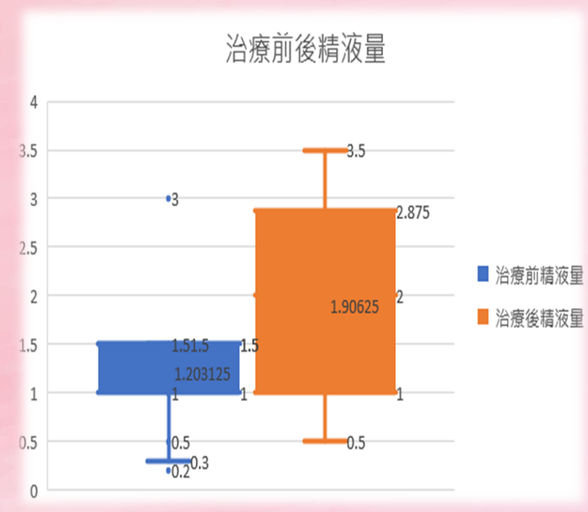
Patients with organic causes of male infertility, such as varicocele, cryptorchidism, or medical disorders like hypertension and diabetes mellitus, were excluded from the study. Semen analyses and serum levels of E2, P4, T, FSH, LH, prolactin, GOT, GPT, total cholesterol, LDL, HDL, and triglycerides were conducted before and after a 3-month period of antioxidant supplementation.

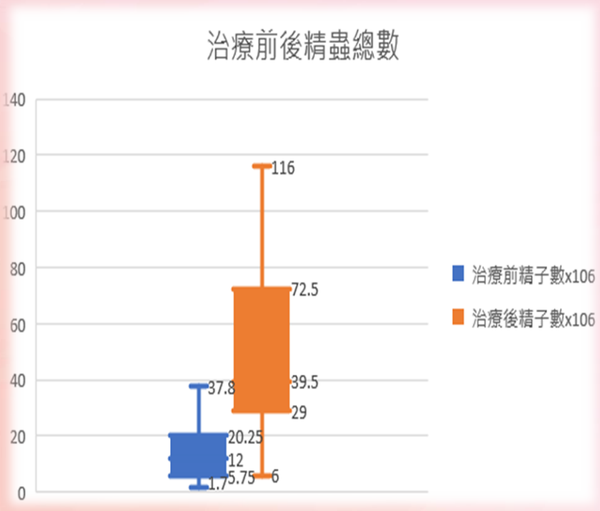
## Results

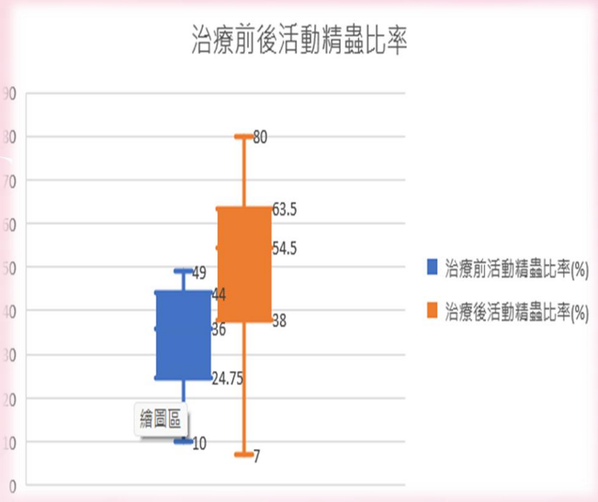
For patients who received oral antioxidants due to hypospermia (semen volume ≤ 2cc), the semen volume increased significantly from 1.18 ± 0.54 to 1.86 ± 1.02 (P=0.001). In patients receiving oral antioxidants due to oligozoospermia (total sperm count(TSC) ≤ 40 x 106), the TSC increased from 12.20 ± 10.52 x $10^6$ to 51.25 ± 33.24 x $10^6$ (P=0.001). For patients with athenozoospermia, the percentage of motile sperm increased from 33.81 ± 12.26% to 50.1 ± 17.6% (P=0.03).

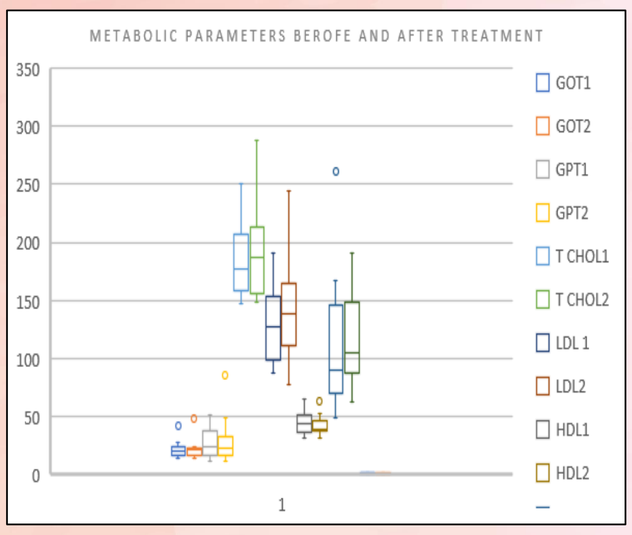
There were no statistically significant differences in serum levels of E2, P4, T, FSH, LH, and prolactin before and after treatment. Additionally, there were no significant differences in the main metabolic parameters such as GOT, GPT, total cholesterol, LDL, HDL, and triglycerides. Importantly, no patients withdrew from this study due to side effects.

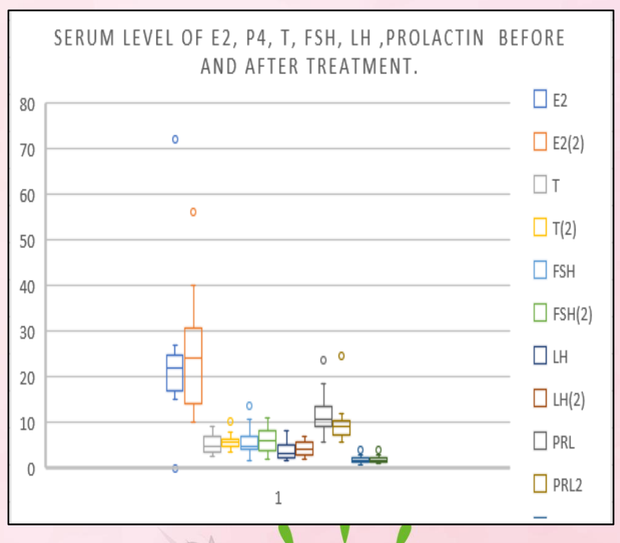



## Conclusion

Over the years, it has been proven that subfertile men, when compared with fertile men, have higher levels of ROS and lower levels of antioxidants in their semen.
Antioxidants have shown promise in treating male infertility.This follow up study demonstrate oral antioxidant (Ferti-A) was safe and can effective improving semen quality in patients with suboptimal sperm quality. Oral antioxidant can produce benefit effect on semen volume, total sperm count, and the sperm motility.