

## Male Infertility

[http://www.1whey2health.com/glutathione\\_infertility\\_sperm.htm](http://www.1whey2health.com/glutathione_infertility_sperm.htm)  
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It is a well-known fact that sperm counts have dropped by half in the last 50 years, and that modern men have 20 percent less semen volume than their fathers (BMJ, 1992, volume 305).

A recent report from researchers in Aberdeen presented preliminary data that suggests the sperm concentration of the men seen in their clinic had declined by 29% over the past 14 years. (British Fertility Society; 5 January 2004)

Persistent organic pollutants (POPs) and endocrine-disrupting chemicals from normal, everyday plastics are known to cause reproductive damage, as documented in Theo Colborn's book "Our Stolen Future."

Damage to sperm caused by exposure to common chemicals like alcohol, pesticides in food, has been linked to lowered intelligence and behavioral disorders in children.

### **Lifestyle risk factors known to decrease sperm quality include**

- **Cigarette smoking**
- **Alcohol consumption**
- **Chronic stress**
- **Nutritional deficiencies.**

Other reasons for infertility include congenital factors, and health conditions like prostatitis and diabetes that can affect sperm production.

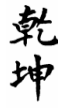
Pollution is stealing our future, and there's little anyone can do to avoid it. There may not be a lot you can do to reduce your exposure to persistent environmental toxins.

But there are definite measures you can take to reduce the impact of the environmental pollutants and toxins on your body.

You can prevent and, to a certain extent, repair the damage they cause to your body, through a better lifestyle and nutrition.

Some nutritional therapies and antioxidants that have proven beneficial in treating male infertility and improving sperm counts, sperm morphology and motility include:

- **Carnitine**
- **Arginine**
- **Zinc**
- **Selenium**
- **Vitamin B-12**
- **Vitamin C**
- **Vitamin E**
- **Glutathione**



- **Coenzyme Q10**

Studies show that anti-oxidant supplementation - glutathione in particular - can improve sperm quality, and possibly increase your chances of conceiving.

If you smoke, drink, are exposed to stress, chemicals, radiation, pesticides or take medication or drugs (like sulfasalazine, ketoconazole, azulfidine, anabolic steroids, marijuana) that affect fertility, you should consider taking an antioxidant supplement to reverse some of the damage.

### **Why are Antioxidants Important for Sperm Quality?**

Mammalian spermatozoa are coated by a membrane rich in polyunsaturated fatty acids. These fatty acids are extremely susceptible to oxidative damage by free radicals or Reactive Oxygen Species (ROS) by a process called lipid peroxidation (LPO).

Lipid peroxidation damages the sperm cell membrane. It is considered to be the key mechanism of ROS-induced sperm damage and leads to

- **Loss of sperm motility**
- **Abnormal sperm morphology**
- **Reduced capacity for oocyte penetration**
- **Infertility**

To protect sperm from damage, the body depends on powerful antioxidant enzymes in the body such as superoxide dismutase (SOD), catalase, and glutathione peroxidase/reductase (GPX/GRD).

Seminal plasma and spermatozoa have several antioxidant enzymes - glutathione peroxidase, glutathione reductase, superoxide dismutase.

Some amount of all the antioxidant enzymes, which may protect spermatozoa from oxidative attack, are also made by the epididymis during storage.

The glutathione peroxidase/reductase enzymes play a central role in the defense against oxidative damage in human sperm.

### **Why is Glutathione important for Sperm Quality and Fertility?**

A decrease in levels of reduced glutathione (GSH) during sperm production is known to disrupt the membrane integrity of spermatozoa due to increased oxidative stress.

Intracellular glutathione levels of spermatozoa are known to be decreased in certain populations of infertile men. Compared with a control group, the infertile men in all groups had significantly higher levels of ROS and lower levels of total antioxidants.

There is strong clinical evidence to show that men diagnosed with infertility have high levels of oxidative stress that may impair the quality of their sperm.

In some groups, higher levels of ROS were associated with lower sperm counts and defective sperm structure, while lower antioxidant levels correlated with reduced sperm movement.



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Previous evidence has also shown that oxidative stress can decrease a sperm's life span, its motility, and its ability to penetrate the oocyst, or egg cell.

Up to 40% of men with unexplained male infertility have higher levels of free radical activity in their bodies.

Because men with high levels of ROS have a seven-fold lower likelihood of inducing a pregnancy than men with lower levels, researchers recommend that treatment for infertile men should include strategies to reduce oxidative stress and improve sperm quality.

### **How can Glutathione help in the Treatment of Infertility?**

Glutathione is not only vital to sperm antioxidant defenses, but selenium and glutathione are essential to the formation of "phospholipid hydroperoxide glutathione peroxidase" - an enzyme present in spermatids - which becomes a structural protein in the mid-piece of mature spermatozoa.

When either substance is deficient, it can lead to instability of the mid-piece of the spermatozoa, resulting in defective motility.

Free radical scavengers - such as glutathione - that restore the structure and function of poly-unsaturated fatty acids (PUFA) in the cell membrane, can be used to treat these cases.

In a double-blind cross-over study of twenty infertile men, treatment with glutathione led to a statistically significant improvement of the sperm quality.

The study concerned men in whom the sperm quality was poor due to unilateral varicocele or germ-free genital tract inflammation - two conditions in which ROS or other toxic compounds are indicated as causative factors.

Treatment with glutathione was also found to have a statistically significantly positive effect on sperm motility (in particular forward motility) and on sperm morphology.

The findings of these studies indicate that glutathione therapy could represent a possible therapeutical tool in cases where ROS or exposure to toxins is the probable cause of infertility.

Read the complete report with references on Male Infertility and Glutathione