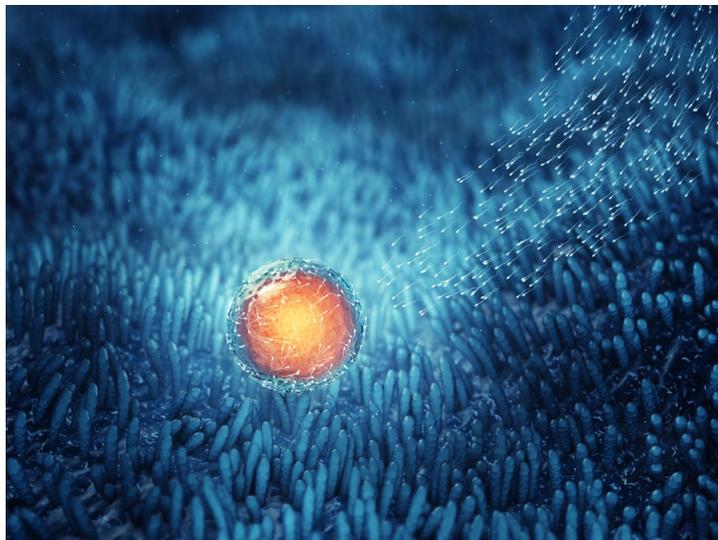


Male Fertility

Naturopathic Approaches



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Often times, when we hear the word “infertility,” our mind immediately goes to a woman wanting to bear a child. Less often, perhaps, does one immediately think about the potential that a male reproductive issue could be the reason a couple is having trouble conceiving. However, it is true that males face fertility challenges just as females do. In this article we will explore the evidence-based information that connects environmental exposures and nutrition/supplementation with male fertility and reproduction.

When evaluating a male’s reproductive capacity, some of the main factors which are looked at include how much sperm the male produces (also referred to as sperm count), how fast the sperm move, and how the sperm are shaped. Ideally, to fertilize an egg, the sperm should be present in high-enough amounts, their kinetic ability should be optimal (that is to say, they should be moving fast enough—we are all products of the fastest sperm that made it to the egg first and fertilized it to produce a us), and they should be shaped properly—yes, even their appearance matters, because this can affect their ability to move properly and their speed, and even their ability to fertilize an egg. If any one of these factors is compromised, a male may experience a challenging time reproducing. So the question is: “Why would there be something wrong with any of these factors in the first place?”

Evidence suggests that environmental exposures to toxins may play a role. The trouble with environmental exposure to toxins is that we are not always aware when we are being exposed to them. When we are aware that they are present, we may not know just how much exposure we are actually getting, and furthermore, we most likely are not aware of what the results of such exposure could mean. Oxidative stress,

decreased antioxidant capacity, and even impaired sperm mitochondrial function (the mitochondria are like powerhouses of the cell) are all thought to be factors related to male infertility.^[1] Furthermore, it is known that spermatozoa are extremely vulnerable to oxidative stress.^[2] Oxidative stress in the testicles or seminal fluid can be due to infection, inflammation, smoking, exposure to toxins environmentally, drugs, etc.^[1] Some sources even shed light on the use of pesticides, xenoestrogens, use of plastics and phthalates, and cosmetic additives as they relate to oxidative stress and fertility.^[3] It is believed that these substances actually increase oxidative stress.^[3]

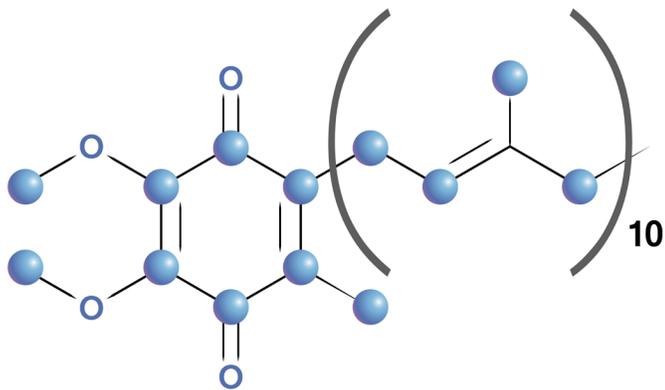
Why does this even matter? This is of great importance, because these factors have been correlated with a reduction of sperm motility, reduced sperm count, and even increased sperm pathology; it is even estimated that this oxidant issue is present in some groups of infertile men in as high as 25–40%.^[1] That's nearly half. Other sources even report that up to 80% of infertility cases are caused by oxidative stress.^[4] Environmental



toxins can lurk just about anywhere, and smoking is typically broadcasted as an issue for respiratory and cardiovascular health, but are men really considering their reproductive capacities and potential fertility challenges when exposing themselves to such toxins? The evidence suggests that they should be.

Oxidative stress manifests when what is referred to as reactive oxygen species (ROS) overwhelm the antioxidant defence system in cells.^[2] It has even been

reported that oxidative stress actually has the potential to impair spermatogenesis,^[5] which is the production of new sperm. The good news is that certain nutrients can help defend against radicals and decrease the overwhelm to the system. It has been found that vitamin C, vitamin E, folate, zinc, selenium, carnitine, and carotenoids act as scavengers of ROS, and can serve to protect spermatozoa.^[2] It has been concluded by researchers that serum levels of selenium are actually significantly different between infertile and fertile males.^[6] This may suggest a relationship between nutritional status and fertile capacity in males. Researchers examined the oral supplementation effects of L-carnitine fumarate, ubiquinol (commonly known as coQ₁₀), vitamin E, and vitamin C as a softgel on sperm parameters and oxidative stress measures in the blood plasma and seminal fluid in a group of infertile men. What they found was that sperm density was improved—that is to say, more sperm were present—by nearly 50% after three months of supplementation and by approximately 80% after six months of supplementation; furthermore, any sperm pathology was also decreased, by approximately 25%.^[1]



Coenzyme Q₁₀

Ubiquinol is a strong antioxidant, and there seems to be a strong correlation between sperm count, sperm motility, and the concentration of ubiquinol in seminal fluid, with researchers even stating there to be a *direct* correlation between seminal plasma coQ₁₀ concentration and sperm motility in particular.^[1] Some sources even state a finding of a significant increase not only in seminal plasma, but also in sperm cells of coQ₁₀ postsupplementation.^[7] Other sources have also reported that the supplementation of coQ₁₀ has been shown

to improve the motility of sperm.^[2] This is important to consider, because the body does endogenously make coQ₁₀, yet evidence suggests that even the supplementation of it can have direct links to improvements in the motility of sperm, which is an important factor to consider when trying to conceive.

Other oral supplementation that evidence suggests has a direct impact on seminal plasma is vitamin C. Researchers have found that as vitamin C intake increases, so does its concentration in the seminal plasma, which can serve to prevent DNA damage.^[4] This is important to consider, as we can take supplements orally, but it is extremely relevant that the oral supplementation actually serves to create an increase of that nutrient in the seminal plasma specifically.

L-Carnitine is another nutrient to consider in relation to specific sperm parameters such as sperm motility; it has been found that there is a significant relation between these two factors which was specific to infertile men.^[4] Researchers found that a six-month intervention demonstrated that L-carnitine increased sperm motility and even resulted in pregnancy, with over half of the achieved pregnancies resulting after supplementation with a combination of L-carnitine and L-acetylcarnitine.^[4] Sperm motility has also been found to be improved by the supplementation of coQ₁₀.^[4] In addition, coQ₁₀ has been found to improve not only sperm motility, but also sperm morphology and sperm density.^[4] However, some sources have shown that supplementation of coQ₁₀ in infertile men does not increase live birth rates or pregnancy rates,^[4] although the improvements in sperm parameters are of great merit.

Zinc is a metal that is very abundant in the body, yet zinc deficiency has been known to be present in approximately one-third of the world's population.^[4] This is of great concern when considering male fertility, as zinc is known to protect the spermatozoa against bacteria and prevent chromosomal/DNA damage.^[4] Decreased levels of zinc



have actually been shown to correlate with reduced sperm fertilization capacity.^[4] Zinc supplementation has been shown to improve sperm parameters, including sperm motility and total sperm count.^[4]

As we have explored, it is evident that not only can environmental exposures play a role in a male's fertile capacity, but nutritional status can as well. A man's "biological clock" doesn't seem to tick quite the same way as a female's tends to. Typically, there is less concern with men

preserving their reproductive abilities and, unlike females, males continuously make what they need to contribute to fertilization: sperm. Although age may not be quite the same concern for a male as it tends to be for a female when it comes to reproduction, environmental factors and nutritional status should be, or at least the research suggests so.

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