Across all cultures and social classes, infertility is an issue that no-one really wants to talk about and which is loaded with shame, helplessness and, in some cultures, even social discrimination. In about 30 to 40 per cent of cases, the unfulfilled wish to have children is attributable to a problem with the male partner. Indeed, around 8 per cent of men of reproductive age seek help for fertility problems. One of the most common causes of male infertility is poor sperm quality: it may be malformed, not agile enough or produced in insufficient quantity. Unfortunately, poor sperm quality is a problem that may increase in future, as it is known that male sperm counts decline under the influence of environmental factors such as pesticides, heavy metals and exogenous estrogens. But despite great advances in the field of infertility, many cases of male infertility are diagnosed as idiopathic (i.e. of unknown cause) and remain untreated. And only a few couples manage to achieve successful pregnancy with the aid of advanced assisted reproduction technology (ART) because this therapy is costly, stressful and not always effective.
Ubiquinol: the power of life > Two recent studies give reason to hope, however, that there is a new route to less complicated methods of treatment for male infertility. Supplementation with a naturally occurring substance called Ubiquinol, the active form of coenzyme Q10, may be the key. Ubiquinol is more bioavailable than Q10 and is easier for the body to use. The vitamin-like nutrient acts as an important electron transmitter in the respiratory chain inside mitochondrial cells, which produces more than 95 percent of the body’s energy. As one of its basic components, the amount of Ubiquinol available is directly linked to the speed of the respiratory chain. In addition, Ubiquinol is the most powerful lipid-soluble antioxidant known to man, and it protects cells and their membrane phospholipids, nuclear DNA and mitochondrial DNA from free radical damage and oxidative stress. It is well documented that any impairment in the availability of Ubiquinol causes serious problems for mitochondrial bioenergetics, gene regulation and ageing. In terms of male fertility, large amounts of mitochondria are present in spermatozoa, and it is known that sperm motility requires a high degree of energy expenditure. Better membrane protection against oxidative stress could also help to preserve sperm integrity.

Focus on fertility > Professor of Urology Mohammad Reza Safarinejad executed a series of clinical studies looking at idiopathic male factor infertility. His first investigations were conducted with coenzyme Q10. A total of 212 infertile men with idiopathic oligoasthenoteratospermia (OAT) were randomly assigned to receive 300 mg coenzyme Q10 orally daily or a similar placebo regimen for 26 weeks, followed by a 30-week treatment-free phase. Semen and blood analyses were carried out in all participants at the beginning and at the end of treatment. The results showed that semen parameters improved in terms of sperm count, motility and morphology. By the end of the treatment phase, the mean acrosome reaction had increased from 14 per cent to 31 per cent in the coenzyme Q10 group. The acrosome reaction is an important parameter of male fertility and serves as a rule for the insemination ability of sperm cells. The coenzyme Q10 group also had a significant decrease in serum follicle stimulating (FSH) hormone and luteinising (LH) hormone during the 26-week treatment phase. FSH and LH stimulate production of estrogen. Thus, having high levels of these hormones is counterproductive for optimum male fertility.

It would appear, however, that study outcomes based only on improvement in semen values do not cover the issue of male infertility in its entirety. It is likely that a more accurate outcome measure would be the pregnancy rate, since this is the ultimate goal of infertility treatment. Thus, Professor Safarinejad examined the effects of coenzyme Q10 supplementation on the partner pregnancy rate. In this study, 287 infertile men with idiopathic OAT were treated orally with 300 mg coenzyme Q10 twice a day for 12 months. Again, blood tests confirmed a significant improvement in semen quality. Patients were followed up for another 12
months after coenzyme Q10 discontinuation. It was found that 34.1 per cent of the women got pregnant during the study period. Compared to the crude 12-month cumulative spontaneous pregnancy rate of 6.4 per cent on the waiting list for male subfertility patients, this is a remarkable increase and might not have been achieved if these patients had been left untreated.

These results are promising. But they do not explain exactly how supplementation with Ubiquinol instead of coenzyme Q10 affects the findings.

As the active form of coenzyme Q10, Ubiquinol is composed of two more hydrogen atoms than its precursor. It is this difference in molecular structure that is responsible for Ubiquinol’s superior bioavailability compared with coenzyme Q10, as it does not have to be converted into its active form before it can be used by the body. Ubiquinol also becomes effective more rapidly. It is relatively new in supplement form because it was previously impossible to isolate the substance for use in useful applications. When exposed to air, the white Ubiquinol powder immediately oxidises and turns into the orange Q10. However, after more than ten years of research, the Japanese company Kaneka succeeded in developing the world’s first stable, bio-identical Ubiquinol. This patented ingredient is marketed under the brand name Kaneka QH™, and is produced via a natural yeast fermentation process.

Two further studies have examined these advantages and analysed the effects of Ubiquinol supplementation on male infertility.

In a virtual repeat of his first study arrangement, Dr Safarinejad carried out a double-blind, placebo controlled, randomised study in which a total of 228 men aged between 25 and 44 years with unexplained infertility were randomly assigned into two groups. The first group received 200 mg Ubiquinol for 26 weeks, while the second group received a similar regimen of placebo. A 12-week off-treatment period then followed for both groups. Compared with the previous study, Ubiquinol was found to be more effective than Q10 in improving sperm count and motility. Sperm density increased more than 2.5-fold with Ubiquinol compared with conventional Q10. Dr Safarinejad pointed out that oxidative stress is a primary influencing factor for male infertility, and he also reaffirmed findings of other scientists that oxidative stress causes a decline in the ratio of Ubiquinol to CoQ10 in the body.

Another fertility study offered a similar, positive outcome. Dr A.S. Thakur investigated Ubiquinol supplementation in 20 male subjects aged between 20 and 40 years with reduced fertility status. After four months of supplementation with 150 mg Ubiquinol a day, the total sperm count increased by 53 per cent and total sperm mobility improved by 26 per cent. In further analysis of sperm mobility, the quantity of rapidly motile sperm (RMS) increased to 41 per cent, while the number of sluggishly motile sperm (SMS) decreased to 29 per cent. The scientists hypothesised that their favourable findings could be attributed to Ubiquinol’s protection of testicular cells against oxidative stress, a theory in line with Dr Safarinejad’s study.
Huge demand – multiple benefits > With these studies, the clinical usefulness of Ubiquinol administration in the treatment of male factor infertility has been well documented. Ubiquinol may improve semen quality, and this opens up many possible advantages for those who are affected by male infertility. First of all, treatment with Ubiquinol is completely safe. The natural micronutrient has been thoroughly and scientifically tested and has no side effects. During treatment, no medical or surgical intervention is necessary and the therapy is discrete and cost-effective. This, in particular, may be relevant for Ubiquinol’s use in developing or underdeveloped communities where the problem of infertility is often treated with social ostracism and prejudices. But wherever they may be in the world, those affected by fertility issues are generally open to new therapies that may put an end to their psychological stress.

For manufacturers of food supplements, there is great market potential, and a huge variety of products targeting fertility are possible. Ubiquinol can be used in a wide range of nutraceuticals, as well as in functional foods, either alone or in combination with other substances to create “all-round” fertility products. Common application forms include soft gel capsules, gel pellets and sticks, all of which are easy to take and attractive to consumers.