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Antioxidants for male fertility - an evidence based review

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Background & Aim: Infertility affects approximately 10-15% of all couples in industrialized countries. Despite great advances in this field, many cases of male infertility are still diagnosed as idiopathic. Between 30% to 80% of male infertility cases are considered to be due to the damaging effects of oxidative stress on sperm. Infertile men have higher levels of seminal reactive oxygen species than fertile men, with associated sperm dysfunction, sperm DNA damage and reduced reproductive potential. This review is aimed to assess whether supplementation with oral antioxidants would improve sperm parameters and pregnancy rates in subfertile males.

Method: The MEDLINE database was searched using PubMed with combinations of the mesh terms “male infertility”, “antioxidants” and “oxidative stress”. The search was limited to clinical trials published in the period from year 2011 to 2016. Studies about the use of antioxidants during assisted reproductive techniques were excluded.

Results: From the numerous search results, 14 primary studies were chosen and their data were gathered in order to provide a complete overview of the literature. The majority of studies confirmed beneficial effects of different antioxidants on at least one of the sperm parameters. Favorable effect was confirmed when using vitamin E, vitamin C, selenium, N-acetyl-cysteine, L-carnitine and zinc. In a smaller number, some studies showed a significant improvement in pregnancy rate after antioxidant therapy.

Conclusions: Antioxidants play an important role in protecting semen from reactive oxygen species and can improve basic sperm parameters. However, there is a need to further investigation to confirm the safety of antioxidant supplementation as well as the need to determine the ideal dose of each compound to improve semen parameters, fertilization and pregnancy outcomes.