



Special Issue Reprint

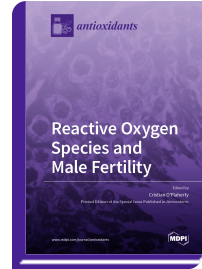
Reactive Oxygen Species and Male Fertility

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Reactive oxygen species (ROS) are inevitable by-products of aerobic cells. A delicate balance between ROS production and antioxidant defences is essential to assure cell function. This requirement is also true for the spermatozoon, the male gamete, with the unique goal of carrying and delivering the paternal genome into the oocyte. Oxidative stress promotes damage in lipids, proteins and DNA of spermatozoa, and this oxidative damage is associated with infertility. The ROS-dependent damage could occur at different stages of the production and maturation of the sperm. On the other hand, low and controlled levels of ROS are necessary to trigger and regulate sperm function. When ejaculated, spermatozoa are incapable of fertilizing the egg. They must reside in the oviduct of the female genital tract to undergo a yet to be understood the biochemical process called capacitation. Once capacitated, the spermatozoon undergoes the exocytotic event called acrosome reaction and fertilize the oocyte. ROS regulate the different molecular mechanisms such as sperm motility, capacitation and acrosome reaction to assure fertilization. This Special Issue includes original research and reviews of literature concerning the role of reactive oxygen species in male reproduction, particularly the role of antioxidants in the regulation of male fertility as well as basic and clinical studies using antioxidant-based strategies for the treatment of male infertility.



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