

PubMed Results

Item 1 of 1

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Antioxidant levels in blood and seminal plasma and their impact on sperm parameters in infertile men.

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Abstract

Excess reactive oxygen species (ROS) beyond the scavenging capacity of antioxidants leads to DNA damage and oxidation of lipoprotein components at the cellular and subcellular level. The oxidative stress (OS) adversely affects sperm function by altering membrane fluidity, permeability and impairs sperm functional competence. In the present study, the OS status in seminal plasma and blood serum in infertile men and its relationship with spermatozoa parameters have been investigated. Four groups of infertile men viz., oligozoospermic (n = 15), asthenozoospermic (n = 17), teratozoospermic (n = 19), and oligoasthenoteratozoospermic (n = 9), and healthy fertile controls (n = 40) have been analyzed for superoxide dismutase (SOD), catalase (CAT), glutathione (GSH) and malondialdehyde (MDA) in seminal plasma and blood serum. Significant correlation between blood serum SOD and sperm count has been observed in patients (p = 0.018) and controls (p = 0.021). Similarly, significant correlation between blood serum GSH and sperm progressive motility in patients (p = 0.036) and controls (p = 0.029) is observed. The low seminal MDA is associated with increase in sperm progressive motility in patients (p = 0.039) and controls (p = 0.028). Positive correlation is found between increased seminal MDA levels and abnormal sperm morphology in both patients and controls (r = 0.523, p = 0.029; r = 0.612, p = 0.034 respectively). Correlations between blood SOD and sperm count and between blood GSH levels and progressive motility suggest that these can be important biochemical markers in assaying the sperm count and motility. A negative correlation of motility with seminal MDA indicates that sperm membrane lipid peroxidation affects the fluidity and thus mobility of sperm axoneme. This affects functional competence of the sperm and acts like a biological safeguard. The results of the present study suggest the prospects of using the blood serum and seminal plasma antioxidants as a valuable tool to evaluate the sperm reproductive capacity and functional competence.

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