

The levels of ROS are normally limited by antioxidant defense mechanisms such as vitamin C and E that are present within the seminal plasma and sperm plasma membrane⁽⁷⁾. However, the supplementing infertile males with antioxidant vitamin C and E suggested as a potential treatment for idiopathic male infertility⁽⁸⁾. Vitamin E is a chain-breaking antioxidant because of its ability to terminate a free radical chain reaction and play an important role in pathogenesis of male infertility and protecting against oxidative attack both in vivo and in vitro⁽⁹⁾. Specifically, vitamin E inhibits peroxidation of polyunsaturated fatty acids (PUFA) which is especially important in spermatozoa due to their high PUFA content⁽¹⁰⁾. While, Vitamin C actually secreted from seminal vesicles during ejaculation and protect human sperm from endogenous oxidative DNA damage⁽¹¹⁾. It acts as a scavenger of a wide range of ROS which explains its ability to successfully counteract the effects of DNA damage and ROS production⁽¹²⁾. It has previously been shown to be the major antioxidant in seminal plasma of fertile men contributing up to 65% of the total chain-breaking antioxidant capacity⁽¹³⁾. In addition, concentration of Vitamin C in seminal plasma is 10 times greater than the concentration found in blood plasma⁽¹⁴⁾. The semen quality is an important factor in determining suitability of the couples in achieving pregnancy. The fertilization occurs despite an abnormal semen analysis, or it fails to occur when analysis values are normal. The semen analysis cannot ascertain the functional capacity of sperm and frequently fails to predict the outcome of male infertility⁽¹⁵⁾.

Subjects, Materials and Methods

Collection of semen samples:

Semen samples were obtained from a total of 60 asthenozoospermic men and attendance of IVF Institute of Embryo Research and Infertility Treatment/Al-Nahrain University between March and May 2007. The mean of age \pm S.E.M for infertile subjects was 30.05 ± 4.87 years. The ejaculates were collected by masturbation after 3-5 days abstinence and allow liquefying at 37°C in 5% CO₂ for 30 minutes. The liquefied semen is carefully mixed for few seconds, and then seminal fluid analysis parameters including sperm concentration, sperm motility, progressive sperm motility, and normal sperm morphology was examined before and after in vitro sperm treatment. However, WHO (1999) criteria for normal semen values were applied.

Sperm preparation technique and in vitro antioxidant treatment:

Sperm processing prepared using conventional layering technique by mixing 1ml of the liquefied semen was layered beneath 1ml culture medium (Ham's F-10) after finished the routine semen analysis and confirmed the results before in vitro sperm preparation which is regarded as a control. The supernatant was removed and divided into two tubes, 0.5 ml for each tube. One tube was mixed with 0.75 mg/ml antioxidant vitamin C (Sigma Aldrich Co. Ltd, Poole, UK) and another tube was mixed with 0.75 mg/ml antioxidant vitamin E (Trolox, Sigma Aldrich, UK).

Statistical analysis

Statistical analysis was performed with the SPSS version 12.00. The data analysis was done using paired sample t-test to assess the statistical differences in the results. Mean and standard error of mean (S.E.M) obtained from crude data to