

9th Yazd International Congress and Student Award on Reproductive Medicine with 4th Congress of Reproductive Genetics

Poster Presentations

P-2

The effect of cysteine and glutamine on human sperm functional parameters during vitrification

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Background: Assuming the adverse effects of reactive oxygen species (ROS) on sperm function, this study was conducted to assess the effects of cysteine and glutamine as effective antioxidants on human sperm parameters under vitrification.

Objective: The present study aimed to investigate the protective effect of cysteine and glutamine on motility parameters, plasma membrane potential, mitochondrial membrane potential, DNA damage and human sperm intracellular ROS during vitrification.

Materials and Methods: Twenty normozoospermic samples were used. The samples were subjected to a vitrification process and cysteine (5 and 10 mM) and glutamine (10 and 15 mM). The sperm motility

parameters, mitochondrial membrane potential (MMP), plasma membrane integrity (PMI), DNA damage and intracellular ROS damage were assessed for each sample.

Results: Statistical analyses showed that motility, mitochondrial membrane potential and DNA damage decreased in the vitrified groups with cysteine 5, 10 mM and glutamine 10, 15 mM separately. Also intracellular ROS increased significantly compared to the fresh group ($p < 0.05$). No significant differences were observed for PMI compared with the fresh group ($p > 0.05$). Supplementation of cysteine and glutamine in both concentrations separately decreased intracellular ROS and DNA damage of spermatozoa with significant increase in PMI, MMP and progressive motility compared to vitrified control group ($p < 0.05$).

Conclusion: The results showed no significant effect of a specific concentration in cysteine and glutamine on sperm parameters compared to other concentrations. Both amino acids have the potential to improve the harmful effects of freezing on sperm parameters.

Keywords: Cysteine, Glutamine, Human, Sperm parameters, Vitrification.

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