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Poster Presentations

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Investigating the correlation between ubiquitination with motility, morphology, and DNA methylation in rat sperm

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Background: There are various techniques for treatment of male infertility, nowadays. At the beginning, evaluations are performed to determine the cause of infertility and the treatment. These include advanced molecular evaluations and assessment of sperm parameters. There is no study investigating the relationship between sperm parameters as an elementary index of male infertility, and deoxyribonucleic acid (DNA) methylation as an important epigenetic mechanism with rat sperm ubiquitination, so far.

Objective: The aim of this study was to evaluate the motility, morphology, DNA methylation, and ubiquitination in rat sperm and to determine the relationship between them.

Materials and Methods: First, 10 male mature rats were kept in experimental condition for 9 weeks (one cycle of spermatogenesis). After sacrificing, their semen samples were used to determine the sperm parameters and smear preparation. Through prepared smear and immunofluorescence assay, percentage of ubiquitinationed and methylated sperm were determined and finally, the correlation coefficient between them was calculated.

Results: There was no significant correlation between the ubiquitination and DNA methylation. However, there was an inverse and significant correlation between the percentage of ubiquitination and morphological abnormalities in spermatozoa ($p < 0.05$). The percentage of ubiquitinized sperm and sperm motility showed no significant correlation.

Conclusion: Ubiquitination, as one of the important molecular processes, prevents the participation of defective sperm in fertilization, and transmission of disorders to next generation. DNA methylation and ubiquitination affect sperm chromatin, but these two processes act in an independent manner.

Key words: *Sperm motility, DNA methylation, Infertility, Ubiquitination.*

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