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## Expression of Aquaporin-3 and the role of aquaporins in human sperm motility

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Aquaporins (AQPs) are membrane proteins that increase the permeability of cell membrane to water. AQPs have important roles in Cell Volume Regulation (CVR) and detoxification in human sperm. Among AQPs expressed in human sperm, aquaporin-3 (AQP3) plays a more important role in CVR, this study was therefore performed to investigate the expression of AQP3 and the role of AQPs in human sperm motility. In this research, ejaculated human sperm was washed with human tubal fluid (HTF) medium and bovine serum albumin. RT-PCR and flow cytometry were used to investigate the expression of AQP3 at mRNA and protein levels, respectively. To study the role of AQPs in sperm motility, the sperm suspension was divided into four groups: 1. spermatozoa at 0 hour, 2. control group, 3. spermatozoa treated with HgCl<sub>2</sub> (AQPs inhibitor) and 4. spermatozoa treatment with HgCl<sub>2</sub> + 2-mercaptoethanol (the inhibitor of HgCl<sub>2</sub> effect). The treatment were done for 60 minutes. Data were analyzed with one way ANOVA. RT-PCR results confirmed the expression of AQP3 mRNA as specific band on agarose gel. Flow cytometry analysis for AQP3 protein indicated the expression of AQP3 in human sperm. After 60 minutes, spermatozoa treated with HgCl<sub>2</sub> showed a significant decrease in sperm motility compared to the control group. At this time point, 2-mercaptoethanol in the HgCl<sub>2</sub> + 2-mercaptoethanol group could compensate the effect of HgCl<sub>2</sub> compared to the HgCl<sub>2</sub> group. Result of this study showed the expression of AQP3 and the role of AQPs in human sperm motility.

### Biography

Atieh Alyasin is an MSc student of Animal Physiology at Arak University. The title of her Master's thesis is, "The Role of AQPs in Human Sperm Parameters". She has published two papers and had a poster presentation at "Royan 18<sup>th</sup> Congress on Reproductive Biomedicine" and "The 3<sup>rd</sup> International Congress on Reproduction".

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