

## 9<sup>th</sup> Yazd International Congress and Student Award on Reproductive Medicine with 4<sup>th</sup> Congress of Reproductive Genetics

### Poster Presentations

#### P-55

#### Effect of dietary polyunsaturated fatty acids on the status of uterine prostaglandins during the window of pre-implantation

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**Background:** The role of prostaglandins (PGs) in embryo implantation can be influenced by polyunsaturated fatty acids supplementation.

**Objective:** Therefore, the present study was conducted to investigate the effects of dietary omega-3 and -6 fatty acids on uterine PGs and their relevant receptors during the pre-implantation period in mice.

**Materials and Methods:** Twenty female mice were randomly divided into three groups and fed a standard pellet (control group), standard pellet +10% (w/w) fish

oil, and +10% (w/w) soybean oil. The uterine levels of PGI<sub>2</sub>, PGD<sub>2</sub>, and PGF<sub>2</sub>α, the mRNA expression of PG I, D, and F synthesis enzymes (PGIS, PGDS, and PGFS, respectively), and protein expression of their receptors (PI, PD, and PF, respectively) were evaluated in uterine tissues of all treated groups at days 1-5 of pregnancy.

**Results:** Our results showed that the uterine levels of PGI<sub>2</sub>, PGD<sub>2</sub>, and PGF<sub>2</sub>α and expression of their synthesis enzymes were markedly high on the 5<sup>th</sup> day of pregnancy, while protein expression showed significant elevation only for PF and PI during this day ( $p < 0.05$ ). Omega-6 significantly raised uterine levels of all three PGs on the fifth day of pregnancy compared to mice received omega-3 ( $p < 0.05$ ). Furthermore, the omega-6 group showed higher expression of PGDS and PGFS than the omega-3-supplemented group on days 5 and 4 of pregnancy, respectively. In addition, we found positive correlations between the implantation rate and expression levels of PGIS, PGFS, IP, and FP and the PGI<sub>2</sub> uterine levels.

**Conclusion:** Our study showed the positive effect of omega-6 PUFA supplementation on PGFS and PGDS expression together with the uterine levels of PGI<sub>2</sub>, PGD<sub>2</sub>, and PGF<sub>2</sub>α which makes PGs status as a possible indicator of successful implantation.

**Key words:** Embryo implantation, Pre-implantation window, Polyunsaturated fatty acids, Omega-3, Prostaglandins.