## 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-5

Potential therapeutic effect of bee pollen and metformin combination on testosterone and estradiol levels, apoptotic markers and total antioxidant capacity in a rat model of polycystic ovary syndrome

## Naseri L<sup>1</sup>, Khazaei MR<sup>2</sup>, Khazaei M<sup>2</sup>.

- Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran
- 2. Fertility and Infertility Research Center, Health Technology Institute, Kermanshah University of Medical Sciences, Kermanshah, Iran.

Email: mkhazaei1345@yahoo.com

**Background:** Polycystic ovary syndrome (PCOS) is associated with metabolic disorders as well as infertility. Many traditional remedies have been reported to show estrogenic and antioxidant potential. Bee pollen (BP) is a natural compound, reported as one such remedy.

**Objective:** The present study aimed to investigate the effects of BP extract (BP) and metformin (MET) on estradiol (E2) and testosterone (T) levels, apoptotic markers, and total antioxidant capacity (TAC) in a rat model of PCOS.

**Materials and Methods:** In this experimental study, 54 female Wistar (n = 6/group) rats received 2 mg of estradiol valerate (EV) intramuscularly and 6 additional rats were considered the control without EV injection. The rats were treated with BP (50, 100, and 200 mg/kg), MET (300 mg/kg) and BP+MET (50 BP+300 MET, 100 BP+300 MET, and 200 BP+300

MET mg/kg). Serum levels of E2 and T were assessed by the ELISA method. TAC of serum was also determined. The expressions of *Bcl2*, *Bax*, *Caspase3* (*Cas-3*), and *Sirt-1* genes were evaluated by real-time polymerase chain reaction (PCR). Data were statistically analyzed using one-way ANOVA.

**Results:** In the untreated PCOS group E2 and T levels (p < 0.01), and Bcl2 (p = 0.007) expression were increased, but TAC (p = 0.002) and expression of Bax (p = 0.001), Cas-3 and Sirt-1 (p < 0.01) were decreased significantly. The levels of E2 and T, as well as the expressions of Bcl2, were decreased in all treated groups compared to the untreated PCOS group (p < 0.01). On the other hand, TAC and expression of Bax, Cas-3and Sirt-1 were increased in the BP- and MET-treated groups (p < 0.05).

**Conclusion:** BP and MET synergistically improved serum E2, T, and TAC levels, and expression of apoptotic genes.

**Key words:** Metformin, Apoptosis, Bee pollen, Estradiol, Polycystic ovarian syndrome.

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