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

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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.*

The original full text of this abstract has been published in Int J Fertil Steril 2021; 15(2): 101-107. https://doi:10.22074/IJFS.2020.134604.

How to cite to this article: *Naseri L, Khazaei MR, Khazaei M. 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. Int J Fertil Steril2021; 15(2): 101-107.*