

Investigating the effect of one month fasting on the signaling pathway of PI3K\AKT in Rat model of PCOS

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Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in women, especially obese people, whose global prevalence is estimated between 6 and 20% in reproductive age. In the present study, the effect of one month of fasting on the Pi3k-Akt signaling pathway was investigated in the mouse model of polycystic ovary syndrome. Female Sprague-Dawley rats were randomly divided into three groups. The control group received normal food for 16 weeks. From the eighth week, they received carboxymethyl cellulose (CMC) daily for 21 days. The PCOS group had a high-fat diet for 16 weeks; In addition, from the eighth week, they received letrozole (dissolved in CMC) by gavage for 21 days. The Fasting group had all the conditions of the PCOS group, with the difference that they were subjected to fasting for 12 hours during the day and night for 30 days from the end of the eighth week. After the end of fasting, the animals were euthanized with ketamine and xylazine, and tissue samples were collected for histological studies as well as changes in the expression of the desired genes. The results of our study showed that fasting improves the histological characteristics of PCOS, and it also showed significant effect on the genes of *Pi3k*, *Akt*, *Caspase3*, *Caspase9*, *Bcl2*, *Bax*, but it did not show any significant effect on *Foxo3* gene. Fasting can be evaluated by modulating apoptosis and modulating the genes involved in the Pi3K/Akt signaling pathway as a therapeutic strategy in future studies.

Key words: polycystic ovary syndrome, apoptosis, high-fat diet, fasting, PI3K\AKT signaling pathway