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Effect of *Nigella sativa* on Glucose Levels, Insulin Resistance, Body Weight, and Ovarian Histology in Polycystic Ovary Syndrome

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ABSTRACT

Introduction: Overweight and diabetes are among the most important human problems in today's world. The aim of this study was to evaluate the effect of *Nigella sativa* on serum insulin level, insulin resistance, body weight, and tissue changes, which was conducted on rats suffering from polycystic ovary syndrome (PCOS).

Methods and Materials: This experimental study was carried out on 21-day-old Wistar female rats (n = 36; 60 ± 10 g). Rats were divided into six groups (n = 6 in each group): (1) control, (2) PCOS induced by dehydroepiandrosterone (DHEA; 60 mg/kg/subcutaneously), (3) PCOS + metformin (30 mg/kg), and (4), (5), and (6) experimental groups receiving DHEA combined with hydroalcoholic extract of *Nigella sativa* seeds at doses of 50, 100, and 200 mg/kg, respectively. After 30 days of treatment, blood samples were obtained to evaluate glucose and insulin. Ovary tissue was used for histopathological study.

Results: Our results indicated that the serum levels of luteinizing hormone, testosterone, glucose, insulin resistance, malondialdehyde, and insulin (p = 0.00), as well as estrogen, increased, while the levels of progesterone (p = 0.01) and antioxidant enzymes in the PCOS group decreased (p = 0.00).

Conclusions and Discussion: The administration of *Nigella sativa* in polycystic ovary syndrome rats led to a reduction in insulin resistance, insulin reduction, body weight loss, and ovarian tissue improvement. The role of *Nigella sativa* in controlling blood sugar is due to the insulin-like properties of this plant.

Keywords: Insulin, Insulin resistance, *Nigella sativa*, Polycystic ovary syndrome, Rats

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