



## Original Article

# Effect of combination of *Withania somnifera* Dunal and *Tribulus terrestris* Linn on letrozole induced polycystic ovarian syndrome in rats

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## ABSTRACT

**Background:** To investigate the effect of the combination of hydroalcoholic extract of *Withania somnifera* (WS) and *Tribulus terrestris* (TT) on letrozole induced polycystic ovarian syndrome (PCOS) in rat.

**Methods:** Twenty four female Wistar rats of regular estrus cycle were divided into four groups of six animals each. The negative control group received 1 mL of 0.5% carboxy methyl cellulose. The animals of the other groups were treated with letrozole (1 mg/kg) for 21 days for induction of PCOS. The animals of the positive control group were sacrificed on the 22<sup>nd</sup> day. In the test and standard groups, the treatment was started from the 22<sup>nd</sup> day and continued for a further 28 days. The test group was treated with hydroalcoholic extract of the combination of WS and TT (198 mg/kg) and the standard group with clomiphene citrate (1 mg/kg). Throughout the study, vaginal smears were collected daily from each animal for the determination of different phases of the estrus cycle. After completion of the treatment schedule all the animals of each group were sacrificed; analysis of hormones, total cholesterol, blood glucose, ovarian and uterine weight, and histopathological study of the ovary were carried out.

**Results:** The combination of the test drugs showed significant effects in normalizing the estrus cycle after being altered by letrozole. In the positive control group follicle-stimulating hormone level was decreased although luteinizing hormone, estradiole, and testosterone levels were increased ( $p < 0.05$ ), however, after treatment the reverse effect was observed in the level of these hormones. Significant reduction in serum total cholesterol was also observed ( $p < 0.05$ ). The test drugs decreased ovarian weight, and uterine weight was also returned to normalcy. Histopathology of the ovary showed almost normal ovary.

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