

First paper

The Possible Protective Effect of *Bougainvillea spectabilis* Leaves Extract on Estradiol Valerate-Induced Polycystic Ovary Syndrome in Rats (Biochemical and Histological Study)

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Abstract

Polycystic ovary syndrome (PCOS) is a reproductive and metabolic disorder in which the level of oxidative elements in blood rises. *Bougainvillea spectabilis* is a plant with a potent antioxidant effect, since it contains flavonoids.

The aim of this work was to explore the possible protective potency of *Bougainvillea spectabilis* leaves (BSL) extract on ovarian folliculogenesis using a rat model of estradiol valerate (EV) - induced PCOS.

Forty mature female rats were divided into four groups: 1. Control group (ten rats). 2. EV group (ten rats), singly injected with 2mg/kg EV subcutaneously. 3. BSL group (ten rats), given 100mg/kg BSL extract orally for 30 days. 4. EV + BSL group (ten rats), singly injected with EV subcutaneously and given 100mg/kg BSL extract orally for 30 days. Biochemical measurements of serum levels of estrogen, testosterone, LH, FSH, glucose, totals lipids, and total antioxidants were done using ELISA method. Histological (using hematoxylin & eosin and Masson's trichrome stains) and immunohistochemical (using anti cyclooxygenase 2 {COX 2}) studies were performed. This was followed by morphometric measurements and statistical analysis.

PCOS caused massive primordial follicle loss and development of cystic follicles with increase in fibrosis, COX 2 immunoexpression. There was a significant reduction in LH, estrogen and glucose serum levels and increase in FSH and the antioxidant serum levels between the EV + BSL extract-treated group compared to EV-treated group. Histomorphometric studies also showed the significant changes in the number of follicles and decreased cyst formation in the combined therapy group.

There was a significant role of BSL extract in restoration of ovarian folliculogenesis and reduction of biochemical, histological and immunohistochemical changes in EV treated group.

Key words: PCOS – Estradiol valerate – *Bougainvillea spectabilis* leaves – Anti COX 2