

## ABSTRACT

Polycystic ovarian syndrome (PCOS) is the most common endocrinopathy characterized by chronic anovulation or infrequent ovulation, obesity, hirsutism, hyperandrogenism and numerous follicular cysts in enlarged ovaries in women of reproductive age. Present study efforts to associate oxidative stress effect of *Beta vulgaris* L. leaf extract in PCOS condition in animal model. The plant *Beta vulgaris* L. was duly certified by a taxonomist. Quantitative estimation of selected nutrients and qualitative estimation for various phytochemicals were done. The antioxidant activity of aqueous extracts was examined by DPPH method, Hydrogen peroxide scavenging capacity and Reducing assay. Screening for flavonoids and secondary metabolites by GCMS method was done. Acute toxicity study conducted to determine dosage of supplementation (animal experiment) and toxicity effect. Wistar strain Albino female rats (no.36) were used for the study. The rats were grouped into six and all groups except normal control were induced with PCOS (IP injection of estradiol valerate). After confirmation of PCOS, the treatment groups received plant extracts (low dose 100 mg/kg, medium dose 200 mg/kg and high dose 400 mg/kg body weight). Different biomarkers responsible for PCOS estrous cyclicity, anti-obesity, hyperglycemia, hyperlipidemic, hepatoprotective effects, antioxidant status and histopathology of the ovary were analyzed at the end of the study period. Estradiol valerate induced standard control group showed increase in ovary weight, plasma triglyceride level, decreased HDL cholesterol level, increased blood glucose level, increased reproductive hormone levels of estradiol, progesterone, catalase, peroxidase, superoxide dismutase and showed irregular estrous cyclicity compared with the normal control group. *Beta vulgaris* L. leaf extract significantly reduced the levels of leutinizing hormone and estradiol hormone at ( $p < 0.001$ ) level. *Beta vulgaris* L. leaf extract showed significant improvement in reproductive, hormonal and structural changes in PCOS rats. Treatment group IV, V and VI showed reduction in the size of the cystic follicles. *Beta vulgaris* L. leaf extract of high dose 400 mg showed a significant improvement in controlling the reproductive hormone levels and improved antioxidant status of the PCOS induced treatment groups. This plant could be useful in the management/treatment of reproductive and metabolic disorders related to PCOS.