Abstract

Polycystic ovary syndrome (PCOS) is a common endocrine disorder in young women and leads to metabolic problems associated with the onset of infertility. The objectives of this study was to study the histopathological changes in ovaries of PCOS induced mice after treating with plant extract, nanoparticles and chitosan nanoparticles. Methanolic plant extract was used to prepare nanoparticles. The preparation of chitosan nanoparticles by ionic gelation method using methanolic extract C. zeylanicum (CZBE) bark was done and the synthesized Cinnamon zeylanicum chitosan nanoparticles (CZCNPs) were characterized by FTIR and XRD. Histopathological and vaginal smear were done which confirmed the development of poly cysts in the ovary. The present study shows the protective role of biomolecule coated chitosan nanoparticles that improve the ovulatory function in estradiol valerate (EV) induced PCOS female mice. The positive effect of the synthesized nanoparticles against PCOS induced mice were proved in histopathological analysis. The PCOS ovaries contain atretic follicles with irregular estrus cycles. It was also observed that the granulosa cell layer was also reduced in the cyst containing ovaries and destroyed oocytes when they were compared with the normal control group. Cinnamon loaded nanoparticles low dose (50mg/kg) show that the formation of oocyte was started and the high dose (100mg/kg) show the regaining of corpus luteum. The cinnamon loaded chitosan nanoparticles low dose (50mg/kg) show the formation of oocyte, formation of zona pellucida and zona granulosa was also observed in this group. Cinnamon loaded chitosan nanoparticles high dose (100mg/kg) show the dissolution of cysts. The conclusion of this study show that cinnamon loaded chitosan nanoparticles treatment revert the estrus cycle back to normal cycle in PCOS induced mice.