

Kelulut honey regulates sex steroid receptors in a polycystic ovary syndrome rat model

ABSTRACT

Reproductive and metabolic anomalies in polycystic ovary syndrome (PCOS) have been associated with the dysregulation of sex steroid receptors. Kelulut honey (KH) has been shown to be beneficial in PCOS-induced rats by regulating folliculogenesis and the oestrus cycle. However, no study has been conducted to evaluate KH's effect on sex steroid receptors in PCOS. Therefore, the current study examined the effects of KH, metformin, or clomiphene alone and in combination on the mRNA expression and protein distribution of androgen receptor (AR), oestrogen receptor α (ER α), oestrogen receptor β (ER β), and progesterone receptor (PR) in PCOS-induced rats. The study used female Sprague-Dawley rats, which were treated orally with 1 mg/kg/day of letrozole for 21 days to develop PCOS. PCOS-induced rats were then divided and treated orally for 35 days with KH, metformin, clomiphene, KH + metformin, KH+ clomiphene and distilled water. In this study, we observed aberrant AR, ER α , ER β and PR expression in PCOS-induced rats compared with the normal control rats. The effects of KH treatment were comparable with clomiphene and metformin in normalizing the expression of AR, ER α , and ER β mRNA. However, KH, clomiphene and metformin did not affect PR mRNA expression and protein distribution. Hence, this study confirms the aberrant expression of sex steroid receptors in PCOS and demonstrates that KH treatment could normalise the sex steroid receptors profile. The findings provide a basis for future clinical trials to utilize KH as a regulator of sex steroid receptors in patients with PCOS.