

Kelulut Honey Ameliorates Oestrus Cycle, Hormonal Profiles, and Oxidative Stress in Letrozole-Induced Polycystic Ovary Syndrome Rats

ABSTRACT

Kelulut honey (KH) has been proven to have excellent antioxidative and anti-inflammatory properties with unique physicochemical characteristics. Therefore, we investigated the isolated and combined effects of KH, metformin, or clomiphene in alleviating oxidative stress and reproductive and metabolic abnormalities in polycystic ovary syndrome (PCOS). Female Sprague-Dawley (SD) rats were given 1 mg/kg/day of letrozole for 21 days to induce PCOS. PCOS rats were then divided into six treatment groups: untreated, metformin (500 mg/kg/day), clomiphene (2 mg/kg/day), KH (1 g/kg/day), combined KH (1 g/kg/day) and metformin (500 mg/kg/day), and combined KH (1 g/kg/day) and clomiphene (2 mg/kg/day). All treatments were administered orally for 35 days. The physicochemical characteristics of KH were assessed through hydroxymethylfurfural, free acidity, diastase number, moisture content, sugar profile, metals, and mineral compounds. Additionally, we determined the semi volatile organic compounds present in KH through gas chromatography-mass spectrometry (GC/MS) analysis. KH and its combination with metformin or clomiphene were shown to improve the oestrus cycle, hormonal profile, and oxidative stress in PCOS rats. However, KH did not reduce the fasting blood glucose, insulin, and body weight gain in PCOS rats. These findings may provide a basis for future studies to discover the potential use of KH as a complementary treatment for women with PCOS.