

Supplementation of stingless bee honey from *Heterotrigona itama* improves antiobesity parameters in high-fat diet induced obese rat model

ABSTRACT

Heterotrigona itama is a common stingless bee species found in Southeast Asia. Studies on the health benefits of its honey are limited in comparison with other stingless bee species. This study examines the antiobesity benefits found in stingless bee honey (SBH) from *H. itama*. The parameters used to measure the benefits were weight change, morphological structures, and biochemical characteristics. The research was conducted by using rats that were given a high-fat diet (HFD). In total 48 male Sprague Dawley (SD) rats were given a formulated HFD to increase the levels of obesity, the HFD was administered with a value of 0.68 g/cm². The duration of the treatment was six weeks, and the results show that the induction of obesity using the HFD was successful. Following this, the rats were then treated with SBH (at dosages of 1000 mg/kg, 750 mg/kg or 500 mg/kg), with orlistat or with a placebo. Compared with typical obesity treatment methods, the one that used the three dosages of SBH showed a higher reduction in body mass index (BMI), percentage of body weight gain, adiposity index, and relative organ weight (ROW). The levels of liver enzymes (ALT, AST, and ALP) were also significantly lower in SBH-treated groups. The levels of triglycerides and LDL-cholesterol were significantly lower, while the level of HDL-cholesterol was significantly higher in comparison with the control obese group. In terms of morphological structures, the number of adipocyte cells was reduced, and the hepatocytes found in the liver were less prone to rupturing when treated with SBH. In conclusion, the administration of SBH led to an improvement in indicators associated with obesity reduction. SBH also possesses a hepatoprotective potential which can reduce the health risks related to obesity.