Abstract

One benefit of rice bran to health was to prevent the diseases. Recently, the water extract of rice bran (RBE) was shown to reduce fasting blood glucose in type1 diabetes and reduce the level of hemoglobin A_{1C} in type 2 diabetes. However, the study on the issue is scarce still. The aim of the study was to investigate the effect of RBE on the amelioration of insulin resistance and dyslipidemia found in rats fed with high-fat diet. It was the opportunity also to observe the etiology of diabetic development in abdominal obesity. The best quality (anti-oxidation activity) and highest yield of RBE was used in the study. This was the result of the extraction done at 70˚C in the presence of digesting enzymes for 1 hour. The study was carried out in high-fat (65 % of total calories) feeding Sprague-Dawley rats. Four groups of 8 rats each were separately either co-feeding daily with three doses (22.05, 220.5 and 2205 mg/kg) of RBE or 9.55 mg/kg metformin, twice daily. The study was done against a group of rats fed with standard chow diet and a group of rats fed with high-fat diet without any co-feeding. Blood parameters, including fasting blood glucose, insulin and lipid profile, were assayed at the end of the forth week. Glucose tolerance test was done and area under the glucose-clearance curve (AUC-G) was calculated. Homeostasis model assessment of relative insulin resistance (HOMA-IR) and homeostasis model assessment of pancreatic β-cell function (HOMA-β) were calculated. The results showed that RBE at the highest dose was able to significantly hamper the increasing Mean ± SEM of gm weight gain (125.98±7.32 *vs* 160.72± 10.03), gm visceral fat (8.99±0.72 *vs* 13.95±0.44) and AUC-G (1248.83±189.62 *vs* 2787.75±472.54). RBE showed a trend to restore the % HOMA-β, though there was no statistic significance, but not the HOMA-IR. The study confirmed the signs of pre-diabetic state and dyslipidemia found in high-fat feeding rats and RBE was able to ameliorate these metabolic abnormalities. In addition, the trend to restore the % HOMA-β the effect of RBE on the β-cell is worth further investigated. According to the quantitative and qualitative properties of RBE the possible active compounds in RBE those exerted the action were the anti-oxidants and certain amino acids.