Evaluation of the Bran Extracts of Rice (*Oryza sativa* L.) and Selected Bean (*Phaseolus vulgaris* L.) Varieties for Their Anti-Oxidative and Anti-Hyperglycemic Potentials

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Diabetes mellitus is a serious metabolic disorder characterized by hyperglycemia. One holistic approach to control the hyperglycemia condition is to partially inhibit the carbohydrate hydrolyzing enzymes during digestion of food. In this study, anti-hyperglycemic and anti-oxidative potentials of the bran extracts of rice (*Oryza sativa* L.) and some selected beans (red bean, red kidney bean and white bean) (*Phaseolus vulgaris* L.) obtained with 80% ethanol-water mixture were compared. The total phenolic content, the α-amylase and α-glucosidase inhibitory potentials, ferric reducing antioxidant power (FRAP), 2,2’-azino-bis (3-ethylbenzothiazoline-6-sulfonic acid (ABTS) radical scavenging activity and 2,2-diphenyl-1-picryl-hydrazyl-hydrate (DPPH) radical scavenging activity of the extracts were studied in vitro using the relevant assays. Results showed that red bean bran extract contained the highest phenolic content (0.122 mg of Gallic Acid Equivalent/g of extract). The mean of the FRAP values of the extracts were ranged from 48.98 to 75.94 μmol FeSO₄/g of bran extract. Bran extract of red kidney bean displayed the highest ferric reducing power (75.94 μmol FeSO₄/g) compared to any other bran extracts. Bran extract of rice displayed the highest inhibitory effect against the α-amylase activity (96.18%) while bran extract of red bean showed the highest inhibitory effect against the α-glucosidase activity (39.57%). This study concluded that the bran extracts of rice and the selected beans were potent sources of natural antioxidants and good postprandial hyperglycemia regulators.

Keywords: Antioxidant activity, Antihyperglycemic activity, Bran extracts, Diabetes