

**6th INTERNATIONAL CONFERENCE ON DRY ZONE
AGRICULTURE**

(ICDA 2020)

“Resilient Agriculture to Cope with Unforeseen Crisis”

CONFERENCE PROCEEDINGS

3rd and 4th December 2020

**Faculty of Agriculture, University of Jaffna,
Sri Lanka**

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

J.M.N. Marikkar^{1,2*}, A.A. Nuurhaffiszzulullah² and K.M.R.U. Gunarathne¹

¹National Institute of Fundamental Studies, Kandy, Sri Lanka

²Department of Biochemistry, University Putra Malaysia, Malaysia

*nazrim.ma@nifs.ac.lk

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 or 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 $\mu\text{mol FeSO}_4/\text{g}$ of bran extract. Bran extract of red kidney bean displayed the highest ferric reducing power (75.94 $\mu\text{mol FeSO}_4/\text{g}$) 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