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Physiochemical, functional and antioxidant properties of rice bran protein concentrates isolated from At 308, At 362 and BG 300 Sri Lankan rice varieties.

R.K.R. Dilhani* and K.D.P.P. Gunathilake

Department of Food Science and Technology, Faculty of Livestock, Fisheries and Nutrition, Wayamba University of Sri Lanka, Makandura, Gonawila (NWP)

Rice bran is an underutilized byproduct of the rice milling process. Rice bran can be used as a value added product in the food industry. It is not used in Sri Lanka except for the production of bran oil, bakery foods and animal feed. In this research three of commonly consumed Sri Lankan rice varieties (At 308, At 362, and BG 300) were used for the extraction of rice bran protein. This study was carried out to extract rice bran protein from At 308, At 362, and BG 300 rice varieties, and to evaluate physiochemical, functional and antioxidant properties of rice bran protein concentrates (RBPCs).

Alkaline extraction and isoelectric precipitation were used to prepare rice bran protein concentrates from defatted rice bran. Physiochemical, functional and antioxidant properties of RBPCs were analyzed in comparison to casein and ascorbic acid. The protein content of RBPCs ranged between 38.2 and 54.9%. At 362 exhibited highest reducing power, total antioxidant assay and DPPH radical scavenging activity compared to other two rice varieties. The water binding capacity of RBPCs ranged between 0.73 and 2.26 (g/g), while oil absorption capacity ranged between 1.09 and 2.00 (g/g). At 308 had highest bulk density (0.89 g/ml). Emulsifying capacity of RBPCs was in the range 11%- 70%. Emulsions were stable under pH 7, sugar 1.5% and salt 1% conditions compared to other pH, sugar and salt conditions. Nitrogen solubility was highest for At 308 than that of BG300 and At 362 protein concentrates. Foaming capacity was highest for BG 300. The results of this research suggest that RBPCs have the potential of being incorporated into the food manufacturing process, in addition to bakery food production, considering its physiochemical, functional and antioxidant properties.

Key words: Protein extraction, rice bran, Sri Lanka

rashmikaathnayake@gmail.com

Tel: +94714121421