
A preliminary study of some of the physicochemical, nutritional, and functional properties of rice bran in white and brown rice (Bg 300 and At 362) in Sri Lanka

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Rice bran, a by-product of rice milling, has garnered increasing attention for its potential as a valuable resource with versatile applications across various industries. This study extensively compares the physicochemical, functional, and nutritional properties of two distinct rice varieties (Bg 300 white rice bran and At 362 brown rice bran), that are highly consumed in Sri Lanka. Although, higher bulk density (0.40 ± 0.01 mg/mL), oil absorption capacity ($192.33 \pm 9.82\%$), water holding capacity (2.91 ± 0.03 g/g), foaming capacity ($13.95 \pm 2.12\%$), and foaming stability ($64.8 \pm 13.1\%$) were given by Bg 300, higher values of water absorption ($261.1 \pm 15.9\%$), swelling power (3.8 ± 0.08 g/g), and water solubility index (3.7 ± 0.05 g/g) were shown by the variety At 362. The variety Bg 300 exhibits higher levels of fat, ($20.43 \pm 0.32\%$), protein ($11.09 \pm 0.22\%$), and fiber content ($5.6 \pm 0.19\%$). Comparatively, higher levels of potassium (4554.05 ± 1.5 mg/kg) and sodium (72.70 ± 2.12 mg/kg) were also found in Bg 300. Total flavonoid content (552.14 ± 7.66 mg quercetin equivalents (QE)/100 g) and total phenolic content (312.93 mg gallic acid equivalents (GAE)/100 g) of At 362 were significantly higher than that of Bg 300. Similarly, according to TEAC assay, the antioxidant capacity of At 362 (27.12 ± 0.80 mmol Trolox/g) was higher than that of Bg 300. In comparison, Bg 300 is more dominant in physical properties like bulk density, oil absorption, hydration properties, and nutritional properties like fat, protein and fiber, whereas At 362 shows significantly higher levels of antioxidant activity and higher flavonoids, phenolics contents.

Keywords: Antioxidant, Functional properties, Nutritional composition, Physical properties, Rice bran

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