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## **Extraction, characterization and evaluation of Arabinoxylans from brans of BG 352, BW 367 and BG 300 rice varieties**

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Arabinoxylans (AXs), a major non starch polysaccharide in cereal by-products, have inspired considerable interest due to viscosity enhancement in solutions, water absorption, oil absorption, and the effect on the rheological behavior of doughs and the properties in bakery products. Rice bran is one of the underutilized by-products in Sri Lanka which can be used as a source of AXs. In this study, non-starchy polysaccharides (AX1, AX2, and AX3) were alkali-extracted from brans of three varieties of rice (BG352, BW367, and BG406 respectively) and characterized, and evaluated by incorporating in to a gluten-free rice bread. The extractions from tested varieties consisted considerable  $27.43 \pm 5.72\%$  (w/w, Dry extract) amount of AXs where the highest amount was resulted from AX1. The water holding capacities of the extracts were between 1-2 g/g (DM basis) and the amounts showed significant differences among the varieties ( $p < 0.05$ ). The amount of pentosans present might be different in different varieties or the extraction process may affect the varieties differently. The oil holding capacities of the extracts were between 1-4 g/g (DM basis). Highest oil holding capacity was observed in AX1  $\{3.74 \pm 0.09 \text{ g/g (DM basis)}\}$ . There was a positive linear relationship between the AXs solutions; the concentration and the relative viscosity decreased with the temperature of the AXs solutions. The AXs incorporated gluten free rice breads showed significant increase in moisture content ( $p < 0.05$ ). Each bread treated with AXs, showed higher water activity. However, the rate of decrease did not show a significant difference with the control ( $p > 0.05$ ). Addition of AXs increased the moisture retention of the gluten free rice breads and did not affect the rate of moisture loss during storage. The loaf volume showed significant increase with 2% supplementation of AXs compared to 1% supplementation and the control which indicates that 2% supplementation is ideal in terms of loaf volume. In conclusion, the extracted AXs of the rice brans showed a potential to be used as food ingredient.

**Keywords:** Arabinoxylans, moisture retention, oil holding capacity, rice bran, water holding capacity