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Resistant starch content of selected improved, old improved and traditional red and white rice varieties (*Oryza sativa* L.) of Sri Lanka

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Resistant starch (RS) is starch and starch degradation products that escape digestion in the small intestine by human digestive enzymes and is important to prevent and manage human chronic diseases. However, limited studies have been conducted on the RS content of Sri Lankan rice varieties (RV). Therefore, this study was carried out to determine the RS content of selected Sri Lankan RV. Twenty seven improved [Bg: Batalagoda and At: Ambalanthota], two old improved and nine traditional RV were used in the study. RS content of RV were determined according to the Megazyme protocol with some modifications. Briefly, rice flour (100 mg) was digested with pancreatic α -amylase (3 Ceralpha Units/mg) and amyloglucosidase (3300 Units/mL) for 16 h at 37 °C. The samples were centrifuged and the supernatant discarded. The resulting RS pellet was hydrolyzed using 2M KOH and the glucose concentration was determined by glucose oxidase peroxidase kit. Statistically significant differences ($p < 0.05$) were observed among the selected RV for RS content studied which ranged from 0.30 ± 0.02 to 4.65 ± 0.19 %. RS content of improved, old improved and traditional varieties ranged from 0.30 ± 0.02 to 3.11 ± 0.06 , 0.55 ± 0.05 to 1.92 ± 0.40 and 0.44 ± 0.14 to 4.65 ± 0.19 % respectively. Traditional RV had significantly high ($p < 0.05$) RS content compared to improved and old improved varieties. Further, red pericarp varieties had significantly high ($p < 0.05$) RS content compared to white RV. Among the varieties studied, a traditional white pericarp variety Suduru Samba had the highest RS content (4.65 ± 0.19 %), while improved white pericarp rice variety Bg 305 had the lowest RS content (0.30 ± 0.02 %). It is concluded that selected Sri Lankan RV, especially Sri Lankan traditional RV can be used in developing novel functional foods and nutraceuticals with high RS content for preventing and managing of some chronic diseases.

Keywords: Resistant starch, Sri Lankan rice varieties