

Antioxidant properties of selected traditional rice varieties in Sri Lanka

**T.I. Kariyawasam¹, P.I. Godakumbura^{1*}, M.A.B. Prashantha¹,
G.A.S. Premakumara² and W.K.S.M. Abeysekera²**

¹*Department of Chemistry, University of Sri Jayewardenepura, Sri Lanka,* ²*Industrial Technology Institute, Sri Lanka*
**pahanig@gmail.com*

Rice is the major cereal crop as well as the main staple food in Sri Lanka and other regions of Asia. Previous studies on some of the traditional rice varieties of Sri Lanka (STRV) show higher nutritional value and bioactivity when compared with improved rice varieties cultivated in Sri Lanka. This study evaluates the antioxidant properties of extracts of selected STRV. Methanolic extracts of four STRV (Kalu Heenati, Pokkali, Kahawanu and Sudu Murunga) were used for *in vitro* antioxidant assays. Antioxidant properties of STRV were measured using total polyphenolic content (TPC), 1, 1- diphenyl-2-picryl-hydrazyl (DPPH) radical scavenging, and 2-azino-bis (3-ethylbenzothiazoline-6-sulphonic acid (ABTS) radical scavenging assays.

Methanolic extracts of selected rice varieties showed potent antioxidant activity. Mean TPC of STRV were in the range of $1.66 \pm 0.08 - 7.66 \pm 0.17$ mg gallic acid equivalents/g. Mean DPPH and ABTS antioxidant properties were in the ranges of $0.56 \pm 0.03 - 2.58 \pm 0.15$ and $3.83 \pm 1.08 - 13.14 \pm 0.90$ mmol Trolox equivalents/ 100g flour, respectively. The order of mean TPC in the rice varieties was Pokkali > Kalu Heenati > Kahawanu > Sudu Murunga. Results show a difference among rice varieties in scavenging activity for DPPH and ABTS radicals. The order of scavenging activity for DPPH radicals was Kalu Heenati > Pokkali > Kahawanu > Sudu Murunga while for ABTS radicals, the order was Pokkali > Kalu Heenati > Kahawanu > Sudu Murunga. Accordingly the antioxidant power of the extracts was in the order of Pokkali > Kalu Heenati > Kahawanu > Sudu Murunga. Rice varieties having red pericarps displayed higher antioxidant activities when compared to rice varieties having white pericarps.

The present study highlights the importance of STRV as potential sources of antioxidant compounds, especially the varieties of Pokkali and Kalu Heenati. These traditional rice varieties may be able to limit the risk of various chronic diseases associated with oxidative stress and this data will be useful to nutritionists for formulating therapeutic diets rich in antioxidants.

Financial assistance received from the University of Sri Jayewardenepura, Sri Lanka (grant no. ASP/06/RE/SCI/2013/11) is acknowledged.