

Intake estimation of antioxidant constituents (total phenolics and flavonoids) through consumption of cooked rice (*Oryza sativa* L.) using dietary data from Sri Lankan households

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Rice (*Oryza sativa* L.) is the staple cereal grain in Sri Lankan household meals. It is a rich source of bioactive antioxidant compounds such as; phenolics and flavonoids. Dietary intake of these antioxidants may help reduce oxidative damage induced by hazardous chemicals and environmental contaminants implicated in many chronic disorders. This study aimed to estimate the dietary intake of total flavonoids(TFC) and total phenolics(TPC) through consumption of cooked rice, per meal basis using consumption patterns in typical Sri Lankan households. Twenty-five composite rice samples from ten commonly consumed rice varieties were cooked (1:2.25 V/V, rice:water) using a standardized domestic cooking process. Aqueous extracts of lyophilized cooked grain powders were quantified spectroscopically(triplicates) for TPC and TFC using Folin-Ciocalteu and Aluminium chloride assays respectively. Results were expressed as Gallic Acid Equivalents(GAE) and Quercetin Equivalents(QE) mg g⁻¹ dry weight basis(dw) of cooked grain flour. The moisture content factor(%MC_{Lyophilize}) was employed to extrapolate the levels in mg g⁻¹ wet weight basis(ww). Sri-Lankan household rice intake data across several geographical locations, were used to calculate, per meal estimation of antioxidants. The mean(±SD) %MC_{Lyophilize} in cooked rice grains($n_1=25$) was 47.52(±0.56)%. The mean(±SD) and median(IQR) TPC in cooked grains were; 0.91(±0.09), 0.73(1.17–0.5)mgGAEg⁻¹ww. For TFC, the mean and median values were; 0.73(±0.03) and 0.70(0.81 – 0.63) mgQEg⁻¹ ww. The mean per meal rice intake by a Sri Lankan adult($n_2=41$) was 267.41(±60.66)g. The mean and median TPC intake per meal was 242.25(±22.73) and 194.89(311.60–156.81) mgGAEg⁻¹ ww respectively. The mean and median intake of TFC per meal basis were 195.35(±6.72) and 187.71(215.56–168.63)mgQEg⁻¹ww. Consumption of traditional, red, parboiled grains provided an additional 65.64%,39.53%,54.79% of TPC and 28.61%,17.75%,16.58% of additional TFC respectively, compared to improved, white, non-parboiled grains ($U, p<0.05$). Rice rich Sri Lankan typical household diet would be a good source of natural antioxidants which may help reduce chronic disease burden. Incorporating traditional, pigmented, parboiled grain in daily meals will provide additional Nutra-pharmaceutical benefits.

Keywords: Rice, *Oryza sativa* L., antioxidants, Sri Lankan diet, bioactive compounds, dietary intake