

4.6 Potential utilization of Sri Lankan rice varieties to combat iron deficiency anaemia.

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ABSTRACT

Rice is the staple food among Sri Lankans. Potential to use rice as a vehicle, to combat population's iron deficiency anemia, has been emphasized in present study.

Forty two rice varieties were grown in Complete Randomized Block Design (CRBD) at Bombuwala (iron rich soil > 500ppm) and Batalagoda (iron non-rich soil ~ 100 ppm) during *Yala* and *Maha* season of year 2006 and 2007. Duplicates were screened for stable high iron rice varieties. The results of pooled analysis including total variation of iron contents in two seasons in two locations showed that the iron contents ranged from 1.75 mg/100g to 3.23 mg/100g. A significant difference ($p = 0.05$) in iron contents was observed for the varietal, locational and seasonal. Fifteen high iron rice varieties were selected and polished at a degree of polishing 8-10 %. Of them, endosperm iron rich rice varieties were analysed using ICP-OES. According to results the high iron contents were observed in Suduru samba (4.7 ± 0.58 ppm), Rathu Heenati (4.43 ± 0.75), Kalu Heenati (4.19 ± 0.13), Sudu Heenati (3.71 ± 0.75 .) and Basmati 370 (3.71 ± 0.62) on dry weight basis.

The bio-availability of five endosperm iron rich rice varieties, in terms of dialyzability was deduced by *in-vitro* simulated-gastro intestinal digestion followed by equilibrium dialysis method (Promchan *et.al*, 2005). Further, the percent bio-availability of some tested rice varieties are given below.

Kalu Heenati (8.71 ± 0.94), Suduru samba (7.65 ± 0.18), Basmati 370 (4.78 ± 0.55), Sudu Heenati (2.09 ± 0.49) and Rathu Heenati (1.73 ± 0.03). The present study indicated that Kalu Heenati and Suduru samba are good sources of traditional rice varieties to combat iron deficiency anemia.

References

Promchan J. and Shiowatana S. (2005). A dynamic continuous-flow dialysis system with on-line electrothermal atomic absorption spectrometric and pH measurements for *in-vitro* determination of iron bio-availability by simulated gastrointestinal digestion. *Anal Bioanal Chem* 382: 1360-1367.