Wahengbam Elizabeth Devi et al., Agrotechnology 2017, 6:4(Suppl)
DOI: 10.4172/2168-9881-C1-027

Development and evaluation of iron-fortified ready to eat rice

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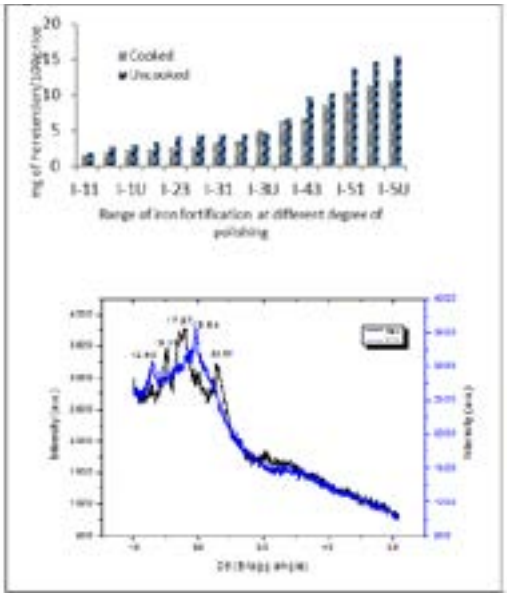
A ready to eat hydro-thermally treated iron fortified brown rice was prepared in the laboratory from a low amylose rice variety called 'chokua'. The developed product is prepared by parboiling of brown rice, deviating from the traditional method of producing 'komal chawal' meaning 'soft rice', which is prepared by parboiling of rough rice. For effecting fortification by soaking of brown rice at the first step of parboiling, five levels of iron concentration were used. Fortification by soaking for 90min below the gelatinization temperature was found to be a favorable condition for subsequent steaming process. Dried rice grains were polished for various degrees and were found to render into an edible form after warm water soaking, i.e. cooked state. The iron content of cooked rice was measured by XRF. Iron content in the product was higher when the fortification concentration was high, and was low when the degree of polishing was high. Range of 1.72 to 12mg of iron per 100g of rice as obtained by XRF measurements was within the range considered as acceptable for daily requirement. RVA study reveals that the kernel and flour properties are tremendously altered under pressure steaming conditions. Texture profile analysis reveals that the warm water soaked fortified rice for 15-20min gives the hardness value of nearly similar to that of cooked rice. Wide angle X-ray diffractography (XRD) of raw rice flour shows typical A-type starch diffraction pattern with peaks at 2 values near 15.07°, 17.76°, and 23.01°, whereas iron fortified rice shows peak values at the ranges of 12.90 and 19.64. This process rice has low GI. This processing condition for the development of fortified ready to eat rice will be considered for preparing the product as a ready to eat rice for the vulnerable people as well as the meal for disaster victims.



Biography

Wahengbam Elizabeth Devi has completed her Bachelor of Technology in 2012 and Master of Technology in Food Process Engineering in 2014. In 2014, just after the Master Degree, she has enrolled PhD as a UGC National Fellow in the Department of Food Engineering and Technology, Tezpur University, India. Her research interest includes Waste Utilization, Product Development, Extraction of Compounds, Food Fortification, Product Development, Food Processing, Drying Kinetics and Rehydration Kinetics of Food Products. Currently, she is working in Newton Bhabha Fellow at the School of Biological Sciences, Institute for Global Food Security, Queen's University Belfast, Northern Ireland.

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