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Development and Characterization of a Novel Zinc-Fortified No-cooking Rice (komalchawal)

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Rice is an important staple upon which billion of people are dependent for adequate nutrition, although considered as not a good source of micronutrients. The present study was to improve and check the utility of micronutrient fortification in rice. By modifying a traditional parboiling method a kind of zinc-fortified brown rice product 'Komalchawal' was produced which can be rapidly rehydrated for consumption. Zinc fortification increased total zinc content from 1.20±0.29 to ≤39.12±0.98mg/100g. *In-vitro* digestibility study was carried out to check the bio-accessible form of zinc. And bioavailability was measured by % absorption in Caco-2 cells. The bioaccessibility and bioavailability of zinc increased from 0.007±0.003 to ≤4.89±0.47 mg/100g and from 0.083±0.03 to ≤28.45±1.22 %, respectively. And also the physico-chemical (X-ray diffraction, FT-IR, grain size, pasting properties, colour) characteristics of the resulting product were analyzed. The texture profile analysis (TPA) of rehydrated (20-25 min) rice was comparable to cooked rice. It was noted that zinc concentration-dependently slightly decreased the lightness and redness values. It was also noted that parboiling and fortification lowered the simulated glycemic index. This novel approach could be utilized to provide micronutrient enriched ready-to-eat rice (no-cooking) for vulnerable people.

Keywords: Zinc-fortification; No-cooking; Bioaccessibility; Bioavailability; simulated glycemic index; XRD; Color; Texture

Biography:

Elizabeth Devi Wahengbam has completed her B.Tech (2012) and M.Tech degree (2014) in Food Process Engineering. In 2014, Devi has enrolled phd as a UGC National Fellow in the Department of Food Engineering and Technology, Tezpur University, Assam, India. Devi research interest includes waste utilization, product development, fortification, and food processing. Devi was selected through Newton Bhabha phd placement programme by British Council (UK) and DBT (India). And Devi as placed and worked (research) as a Newton Fellow (2016-17) at the Institute for Global Food Security, Queen's University Belfast, Northern Ireland, UK.