620/E2

Study on developing a micronutrient enriched spread using fermented cooked rice

J A E C Jayawardena* and M A J Wansapala
Department of Food Science and Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda

Most people in the world today suffer from micronutrient deficiencies caused largely by a dietary deficiency of vitamins and minerals. For vegetarians, it is difficult to find a single source of food which has an appealing taste, is rich in micronutrients and cheap. The objective of the present study was to develop a micronutrient enriched spread using fermented cooked rice, using the raw materials available in Sri Lanka; namely red rice, tomato, chick pea, spices, corn flour, salt, sugar, coconut oil and bee's honey. The cooked rice was fermented overnight and dried at 65-66 °C for 24 hours. The powdered dried rice was mixed with tomato pulp, powdered spices (garlic, cardamom, cloves, mustard, chili, black pepper), corn flour, chickpea flour, sugar, salt, coconut oil and bee's honey in different formulations. Four formulations were prepared to select the best spicy blend and another four formulations were prepared with the selected spicy blend to obtain the best formulae for the final product. Sensory analysis was carried out using 30 untrained panelists and the results were analyzed using Kruskal-Wallies test in MINITAB software. Formula 244 was selected as the best formula with respect to all sensory properties.

The presence of *Lactobacillus* bacteria group in fermented cooked rice was identified and confirmed using isolation technique (ISO 15214) using De man Ragosa Sharpe agar medium. The proximate composition of product number 244 contained 43 ± 0.002% moisture, 5.7 ± 0.6% crude protein, 5.2 ± 0.08% total fat, 4.1 ± 0.057% ash, 3.3 ± 0.011% crude fiber and 39.6% carbohydrate. Micronutrient content of 100 g of final product was 2.3 µg vitamin B_{12}, 40 mg ascorbic acid, and 820.78 mg Na, 826.09 mg K, 64.25 mg Fe, 9.74 mg Zn, 167.79 mg Mg and 184.94 mg Ca. The fatty acid profile of the final sample was 4.451% capric acid, 47.50% lauric acid, 17.49% palmitic acid, 9.74% linoleic acid, 16.31% oleic acid, 0.14% stearic acid and 4.24% erucic acid. The shelf life analysis for the final product was carried out and the sensory attributes and microbiological counts were within acceptable levels within 30 days under the refrigerated conditions. Finally, the product can be considered as low cost micronutrient enriched spread that can be introduced to society to fulfill the nutritional requirements of the people.

erandya87@gmail.com Tel: 0712371344