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Development of functional probiotic foods from fermented jackfruit (*Artocarpus heterophyllus*) seed flour

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Abstract

Jackfruit (*Artocarpus heterophyllus*) is an underutilized crop mainly found in tropical and subtropical regions, with strong potential as a nutritious food source and valuable economic commodity due to its suitability for large-scale food production. The aim of this study was to produce value added probiotic food products with using jackfruit seed flour. The fruits were collected from Mihintale, Sri Lanka. They were thoroughly washed, cut into appropriate sizes, and the seeds were removed prior to further processing. The remaining fruit was sliced, soaked in 90°C water for 3 minutes, milled, and sun-dried for 8 hours. The resulting flour was then packaged in polyethylene pouches (HDPE, 300 gauges) and stored in a refrigerator at approximately 4°C. The jackfruit seed flour was fermented using 10^8 CFU of *Lactobacillus delbrueckii* subsp. *bulgaricus* for 48 hours to produce four different products: dietary powder, food bars, ice cream, and butter in combination of different ingredients. Sensory evaluation was conducted for all four products to assess consumer acceptance and optimize their nutritional and probiotic. Statistical analysis was performed using the MINITAB software package, and ANOVA test was used. The protein content increased in all four products after fermentation compared to non-probiotic versions. For the food bars, there was a significant difference in all nutritional properties between the probiotic and non-probiotic versions, except fat content ($p = 0.071$). The fiber content decreased in all four products compared to their non-probiotic counterparts. Jackfruit bar, both probiotic and non-probiotic, contained comparatively high fat content. After one month of storage, the microbial count of both the jackfruit bars and the dietary powder was found to be 10^6 CFU. The ice cream and butter were kept in the freezer and the refrigerator for one month, 2×10^6 CFU of probiotics was observed. It was evident that the fermented jackfruit seed flour products were demonstrated high nutritional value and consumer preference.

Keywords: *Underutilized crop, sensory evaluation, dietary fiber, fermentation, nutritious*