Comprehensive Analysis of Composite Flour Blends Incorporating Jackfruit (Artocarpus heterophyllus) Bulb and Seed, and Characterization of Quality Attributes of Developed Crackers

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Jackfruit (*Artocarpus heterophyllus*) is one of the largest fruit-bearing crops in the world and is an underutilized crop in Sri Lanka. This study focused on developing composite flour blends of jackfruit seeds and bulbs, assessing the physicochemical properties of flour blends, developing jackfruit flour-based crackers, and assessing the nutritional, physical, functional, and sensory qualities of the developed crackers. Four different flour ratios were prepared using wheat flour (WF), jackfruit bulb flour (JBF), and jackfruit seed flour (JSF): F1 (Control) = 100% WF, F2 = 50% WF + 25% JBF + 25% JSF, F3 = 50% WF + 37.5% JBF + 12.5% JSF, and F4 = 50% WF + 12.5% JBF + 37.5% JSF. The water absorption capacity, solubility, and swelling capacity of the flour blends increased with higher incorporation of JBF. There were no significant ($P>0.05$) differences between each composite flour blend and the control sample in terms of oil absorption capacity. The highest crude fat (26.13a ±0.58%), crude fiber (2.73a ±0.06%), and ash content (3.17a ±0.25%) were in the F4 crackers. The significantly ($P<0.05$) lowest crude protein content (11.41%) was in the cracker which contained more JBF. The cracker containing more JBF showed significantly ($P<0.05$) higher antioxidant activity which was determined using the DPPH assay. According to the result obtained from a 9-point hedonic scale to evaluate the likeliness of sensory attributes using 30 untrained panelists, the F2 sample was not significantly different ($P>0.05$) from the control sample in terms of aroma, texture, and overall acceptability. There was no significance ($P>0.05$) each developed sample in terms of taste. This study provides evidence of successful incorporation of jackfruit bulb and seed flour in cracker production which could increase the utilization of jackfruit in the food industry.

Keywords: Jackfruit, Composite Flours, Crackers, Crude Fiber, Antioxidant

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