DEVELOPMENT AND EVALUATION OF NUTRITIONALLY ENRICHED PASTA INCORPORATING JACKFRUIT (*Artocarpus heterophyllus*) SEED FLOUR AND RICE (*Oryza sativa L.*) FLOUR WITH DURUM WHEAT (*Triticum durum*) SEMOLINA

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ABSTRACT

The development of nutritionally enriched pasta was achieved by partially substituting durum wheat semolina with jackfruit seed flour (JSF) and rice flour (RF), followed by evaluating the effects of these substitutions on physicochemical parameters, cooking quality, nutritional composition, sensory response, and short-term storage stability. Four formulations were produced: a control (T0: 100% durum wheat semolina) and three composite treatments (T1: 10% JSF, 24% RF, and 30% Durum, T2: 18% JSF, 22% RF, and 30% Durum, T3: 23% JSF, 20% RF, and 23% Durum). incorporating varying proportions of JSF and RF. Moisture content, flour yield, water absorption capacity, and proximate composition were examined, while sensory attributes were assessed using a five-point hedonic scale. Statistical analysis was performed using ANOVA and Tukey's HSD at $\alpha = 0.05$. Results showed that incorporating JSF and RF increased the nutritional value, particularly protein, fibre, and fat content, compared to the control. However, higher substitution levels in T2 and T3 negatively affected cooking behaviour and sensory acceptability, leading to increased cooking loss, reduced firmness, and lower sensory scores. Among all formulations, T1 demonstrated the most favourable performance, showing no significant difference from T0 ($p > 0.05$) in taste (4.46±0.57), texture (4.53±0.09), and overall acceptability (4.56±0.50), while providing improved nutritional attributes. Shelf-life evaluation over three months further confirmed the stability of T1, with consistently low microbial counts, minimal moisture variation, and no deterioration in sensory quality. Therefore, T1 was identified as the optimal formulation due to its balanced nutritional enhancement, desirable cooking properties, consumer acceptance, and stable short-term storage performance.

Keywords: Durum wheat semolina, Enriched pasta, Jackfruit seed flour, Nutritional quality, Rice flour, Sensory evaluation

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