

Development and Quality Evaluation of Fortified Instant Idli Batter Mix Enriched with Palmyrah Pulp

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Idli is a fermented breakfast food valued for its soft texture, easy digestibility, and health benefits. However, commercially available instant idli mixes often provide limited amounts of dietary fiber, antioxidants, and essential minerals. This study aimed to develop a nutritionally enhanced instant idli batter mix by fortifying it with Palmyrah (*Borassus flabellifer* L.) fruit pulp (PFP), an underutilized yet nutrient-rich resource commonly found in Sri Lanka. Five idli batter formulations (T₀, T₁, T₂, T₃, and T₄) were prepared by varying the proportions of PFP and semolina (0:80%, 10:70%, 20:60%, 30:50%, and 40:40%) respectively, while keeping the levels of other ingredients constant (black gram 15%, salt 3%, and yeast 2%). The developed batter samples were assessed for nutritional, physicochemical, microbiological, and sensory characteristics after the addition of yeast and one hour fermentation. Sensory evaluation using a 9-point hedonic scale indicated that formulation T₃ achieved the highest overall acceptability, providing an optimal balance of colour, aroma, taste, flavour, and texture. Based on these results, T₃ was selected as the optimized formulation, containing crude fiber (10.74%), crude protein (12.02%), crude fat (0.12%), ash (2.73%), salt (2.33%), moisture (62.19%), energy (316.76 kcal), pH (5.62), titratable acidity (0.24%), and °Brix (10.52). The inclusion of PFP significantly (< 0.05) enhanced the batter's dietary fiber, protein, fat, ash, salt, and mineral contents without adversely affecting sensory quality. Physicochemical parameters such as pH, titratable acidity, °Brix, moisture content, and energy varied among treatments but remained within acceptable limits, ensuring product stability. Microbiological analysis confirmed product safety, with the absence of coliforms and acceptable yeast and mold counts, indicating effective hygienic processing and satisfactory shelf stability. Overall, the study concludes that incorporating 30% PFP (T₃) into instant idli batter enhances nutritional quality while maintaining safety and consumer acceptability, supporting the value-added utilization of Palmyrah resources for functional foods.

Keywords: Fermentation, Idli batter, Palmyrah fruit pulp, Sensory analysis