IMPROVING INSTANT PIZZA DOUGH INCORPORATED WITH PALMYRAH TUBER FLOUR OVERCOMING FORMULATION CHALLENGES

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ABSTRACT

This study investigated the incorporation of Palmyra Tuber Flour (PTF), a sustainable, gluten-free, and nutrient-dense ingredient, into instant pizza dough formulations to address growing consumer demand for healthier convenience foods. The research focused on overcoming technical challenges such as texture alteration, hydration imbalances, and microbial stability while optimizing dough quality. Five dough formulations with varying wheat flour to PTF ratios such as, 70g:30g (T1), 60g:40g (T2), 50g:50g (T3), 40g:60g (T4) and 30g:70g (T5) were developed, tested for composition (moisture: 30.78 g/100g; ash: 1.81 g/100g), and evaluated by trained sensory panels. Results revealed that, T2 (50g of PTF) achieved superior sensory scores (5/5 in taste, texture, and overall acceptability), attributed to balanced hydration and optimal dough elasticity. However, microbial analysis indicated elevated aerobic plate counts (2.3×10^6 CFU/g), highlighting food safety risks linked to high moisture content and storage conditions. PTF's high fiber, low glycemic index, and mineral-rich profile position it as a viable wheat alternative, though formulation adjustments are critical to mitigate microbial growth and ensure structural integrity. The study underscores PTF's potential in gluten-free pizza dough systems but emphasizes the need for improved processing hygiene, preservative strategies, and consumer-driven flavor optimization. These findings contribute to advancing sustainable food innovation by leveraging underutilized crops while aligning with global health and convenience trends.

Keywords:- Food safety, Gluten-free formulation, Instant pizza dough, Palmyra Tuber Flour (PTF), Sensory evaluation.

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