DEVELOPMENT OF NUTRIENT RICH BISCUITS USING PINEAPPLE RESIDUE AFTER JUICE EXTRACTION

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Chenkalady

2026

ABSTRACT

This research focused on creating a nutrient-dense biscuit by integrating pineapple residue sourced from juice extraction, thereby improving nutritional content and fostering sustainable waste management. Four different formulations were developed by replacing wheat flour with various amounts of pineapple pulp: T1: (100% wheat flour, control), T2: (50% wheat flour + 50% pineapple pulp), T3: (70% wheat flour + 30% pineapple pulp), and T4 (100% wheat flour + 10g pineapple pulp). The physicochemical, nutritional, sensory, and microbial properties of the biscuits were assessed using established analytical techniques.

The results demonstrated that the addition of pineapple pulp had a significant impact on the nutritional profile of the biscuits. The T3 formulation exhibited higher levels of fat (24.72%), fiber (5.46%), and ash (0.51%) compared to the control (T1), while showing a slightly reduced protein (8.33%) and carbohydrate (58.98%) content. The moisture content increased slightly with the addition of pineapple (T3: 2.0%, T1: 1.52%), and the energy value was marginally elevated in T3 (491.64 kcal/100 g). The pH of the pineapple biscuits decreased with greater pulp incorporation, with T3 measuring pH 4.84 compared to T1: 6.11 in the control, indicating a mild acidity that is advantageous for flavor and microbial stability.

Sensory assessment using a seven-point hedonic scale indicated that Treatment 3 achieved the highest overall acceptability (5.50 ± 0.09) in terms of color, aroma, taste, and appearance, followed by T2 and T1. Microbial testing confirmed that all samples remained within safe limits throughout storage. In conclusion, the incorporation of 30% pineapple pulp (T3) into the biscuit formulation enhances nutritional quality, sensory appeal, and product stability. This study illustrates that pineapple residue can be effectively utilized to create value-added, nutrient-rich, and environmentally sustainable bakery products.

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