

DEVELOPMENT OF OATS AND RICE-BASED BREAKFAST CEREAL

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This study aimed to develop an oat and rice-based breakfast cereal with improved organoleptic properties. First, soaking (TS) and cooking (TC) were compared to select the best way to incorporate oats. Using 30 g of oats in 200 mL of water for 3 minutes-soaking was found to be more preferred based on sensory evaluation. Then five formulas (F1-F5) were tested using oats, sugar, milk powder, rice flour, wheat flour, whey powder, carboxymethylcellulose, tricalcium phosphate, and salt with selected TS. Among these, F3 with 50% oats, 2.5% rice flour, and 2.5% wheat flour was selected as the best in terms of sensory characteristics. Subsequently, the F3 formula was tested with TS and raw oats (O2), where the formula with O2 was sensorily selected as the best. The proportions of oats and grain flour of O2 were then optimized by comparing five proportions (I1-I5), and I1 (40% oats, 12.5% rice flour, 2.5% wheat flour) was sensorily more preferred. For flavor improvement of I1, two concentrations of vanilla (0.5% - V1, 1% - V2) were compared and V1 was with better flavor. Additionally, to optimize the portion size for single serving, three portion sizes (30 g, 40 g, 50 g) of I1 with V1 were tested and 50 g was selected as the best portion size. All selections were done by a trained sensory panel. The moisture, ash, crude fat, crude protein, bulk density, water-holding capacity, pH and total soluble solids, of the developed product (I1 with V1) were 5.98±0.02%, 3.10±0.43%, 7.01±0.26%, 27.17±0.73%, 0.76±0.01 g mL⁻¹, 72.45±1.7%, 6.7±0.05 and 10.78±0.1°Brix, respectively. Total plate count and yeast and mold count were 7×10³ CFU g⁻¹ and 1.5×10³ CFU g⁻¹. None of these parameters changed significantly during the 28-day storage period. In conclusion, an oat and rice-based cereal with 40% oats and 12.5% rice flour with a shelf life of 28 days can successfully be developed with other ingredients.

Keywords: Cooked oats, Sensory evaluation, Soaked oats, Water holding capacity