

Development of a Vegetarian Analogue of Chicken Drumstick and Determination of Its Physico-Chemical Properties and Shelf Life

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This study was aimed to develop a vegetarian analogue of chicken drumstick having authentic fibrous and tender meat texture, using locally available and potentially underutilized raw materials. Tender jackfruit (*Artoarpus heterophyllus*), *kohila* (*Lasia spinosa*) rhizome and chickpea flour were used as the main ingredients. Soy and wheat-based ingredients were not used since their potential allergenicity to some consumers. Four formulations were prepared changing above main ingredients ratio, along with Sri Lankan spices to match with authentic meaty flavor. The best formulation was selected following physico-chemical tests (pH, color, water activity, shrinkage, batter pickup, oil usage, and cooking loss) compared with real chicken drumstick as control. Sensory ranking tests were performed to study the consumer preference for texture, flavor and overall acceptability of the formulations. Physico-chemical tests results revealed that all formulations were not significantly different ($P > 0.05$) for before frying pH, after frying lightness (L^*) and yellowness (b^*) and batter pickup compared to the control. The formulation (jackfruit: *kohila*: chickpea 20:4:15) was selected depend on physico-chemical and sensory test results to prepare the final product. Real-time shelf-life determination revealed that the product was self-stable (without added preservatives) under frozen condition showing no significant impact ($p > 0.05$) on a packaging system (normal sealed package and vacuum sealed package), in terms of microbial quality, color, cooking loss and pH for 15-day study period. Based on the calculated Q_{10} value (2.06) of accelerated shelf life study, the product was self-stable for 56 days under frozen condition without added preservatives, in terms of microbial quality. Moisture, crude protein, crude fat, crude fiber and ash contents of the final product were $66.79 \pm 0.03\%$, $7.31 \pm 0.10\%$, $5.79 \pm 0.07\%$, $4.88 \pm 0.07\%$ and $2.63 \pm 0.08\%$, respectively. Further research is needed to improve the protein content similar to real chicken drumsticks.

Keywords: Chicken drumstick, Meat analogue, Physico-chemical properties, Storage stability, Composition

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