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Development of jak flour incorporated extruded snack

G E D A Jayarathna*, I Wickramasinghe and S B Navaratne

Department of Food Science and Technology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda

Jak seed, jak bulb and other edible parts (kos iri) from fully mature jak fruit were dehydrated at 65 °C until the moisture content reached 8%. Well dried seeds, bulb and 'kos iri' were ground separately using a disk mill and each of these constituents was mixed proportionately as 46%, 46% and 8% respectively in order to prepare jak flour. Thereafter, composite flour mixtures were prepared by mixing different proportions of rice flour, wheat flour, soya flour and corn flour. Proportions of jak flour in each sample were higher than 30.00% (33.33%, 40.00%, 30.00% and 36.36%).

The prepared flour mixtures were weighed into 5 kg batches and 230 mL of water and 50 mL of vegetable oil were added to each batch. These portions were fed into a commercial scale extruder in order to obtain a jak flour incorporated snack. The wet extruded product was dried in a hot air oven at 165 °C for 10 minutes. The flavour mixture used to enhance the organoleptic properties was prepared by mixing 70%, 25.4%, 4%, 0.5% and 0.1% of cheese seasoning, dry onion powder, pepper, curry leaves and salt respectively. For flavouring, 35 g of vegetable oil was heated to 46 °C and 20 g of the flavour mixture was added into oil and mixed well and then 100 g of extruded product was mixed with this mixture for 5 – 6 minutes. The final product was packed in a polyester outer layer, metalized polyester middle layer and low density polyethylene inner layer pouches for long term storage.

Sensory analysis was carried out for the selection of the best formula. The sample containing 30.00% jak flour, 26.92% rice flour, 18.31% wheat flour, 14.00% soya flour and 10.77% corn flour was selected as the most preferable sample. After selecting the best formula, proximate analysis and physical tests were carried out.

The selected extruded snack contained 3.01% moisture, 52.38% carbohydrate, 27.62% total fat, 12.07% of protein, 2.96% of crude fiber, 1.96% of ash and 0.11 % of acid insoluble ash. The caloric value of the product was 506.38 kcal/100 g. The product contained 503.69 mg of K, 27.05 mg of Mg, 29.44 mg of Ca and 3.95 mg of Fe in 100 g of the extruded snack. The water absorption index, water solubility index, bulk density and expansion ratio of the product were 3.88, 17.3, 0.2022 g cm⁻³ and 3.63 respectively.

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