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PRESERVATION OF FRESH COCOUNT GRATINGS (*Cocos nucifera L*) BYHURDLE TECHNIQUE

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Fresh coconut (*Cocos nucifera* L.) kernel is mostly consumed for culinary purposes in Sri Lanka, directly as scraped coconut or as the coconut milk extracted from the grated coconut. The high nutritional and moisture levels of fresh coconut lead to rancidity reactions and microbial spoilage within a short period. The study was conducted to preserve fresh coconut gratings by combination (hurdle) of preservation techniques such as disinfecting of dehusked coconut, blanching, mixing with humectants, acidulants, preservatives and antioxidants, heat treatment and low temperature storage.

Dehusked coconut was disinfected using 100-ppm sodium hypochlorite (NaOCl) solution for 1 minute before breaking the nut. Steam blanching for three minutes was used as a pre-treatment to inactivate the enzymes. The gratings were then mixed with additives and the levels were maintained within the permitted levels as given by Sri Lanka Standard Institute. The best proportion of ingredients was identified by measuring water activity (a_w) and pH of the coconut gratings in preliminary study. The gratings were packed in suitable flexible pouches and steaming was done for 5 minutes as the final heat treatment. Changes in moisture content, water activity, pH, crude fat, crude protein, calorific value and total ash contents were determined after processing and storage in three different conditions (ambient, cold and refrigerated conditions). The acceptability of the products was tested by a sensory evaluation panel using a nine-point hedonic scale. Suitable packaging material, best antioxidant and storage condition for the product were selected based on the free fatty acid level (FFA), TBA (Thio-Barbituric Acid) value, pH, and colour value.

Organoleptic properties of the coconut gratings were not significantly affected ($P<0.05$) at 3% NaCl, 0.03% citric acid, 0.009% tri-sodium citrate, 0.05% sodium benzoate and 0.02% (on fat basis) BHA [Butylated Hydroxy Anisole). The coconut sambol prepared from preserved coconut gratings, each with BHA and α-Tocopherol showed quality attributes (colour, flavour, aroma, texture and overall acceptability) comparable to coconut sambol prepared from fresh coconut gratings. The BHA based coconut sambol received the highest preference ($P<0.05$) for colour and overall acceptability with a median score of 6.5 in 9-point Hedonic scale. All the estimated physico-chemical properties (Moisture %, Crude fat, Crude protein, Crude fibre, Total ash, calorific value and colour values) of fresh and preserved coconut were not significantly different ($P<0.05$) except for the total ash for a period of one month. The storage study revealed that the preserved fresh coconut packed in pouches made out of aluminium foil (0.009 mm) laminated with PET (0.012 mm) and low density polyethylene (0.04 mm) could be stored for a month at 5±2 ^{0}C and 44±3% RH without significant change in the moisture content, a_w, FFA level, TBA value, pH, and colour value.