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**Optimization of the osmotic dehydration process to prepare coconut chips and value addition of sweet coconut chips**

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The osmotic dehydration (OD) in coconut chips was standardized by optimizing the drying efficiency, evaluating shelf life, palatability and overall acceptability. In the determination of drying efficiency, mass transfer, weight reduction, sugar gain and water content loss were measured at different concentrations of sugar (40, 50 and 60 °brix) at different temperatures; 30, 35, 45 and 55 °C. In order to identify the optimum drying time, oven drying was carried out after the osmotic process. Data were analysed by Completely Randomized Design (CRD) method using analysis of variance (ANOVA). Water loss and sugar gain for the coconut chips increased with increasing sugar concentration up to 60 °brix and temperature up to 45 °C. Weight of OD chips decreased and weight reduction was lower at 60 °brix and 45 °C compared to the other conditions tested. Optimum sugar gain, weight reduction and water loss at 60 °brix and 45 °C were  $0.28 \pm 0.02$ ,  $0.16 \pm 0.01$  and  $0.44 \pm 0.01$  g/ unit mass. The optimum moisture content of 2.1% in dry basis was achieved in five hours for the same sample. OD process was optimum at 60 °brix and 45 °C and oven drying time was 5 hours at this sugar and temperature level. Four types of sweet coconut chips were prepared for value addition. Three samples were flavoured by natural medicinal ingredients; ginger, lemon and cinnamon and another sample was used as the control, without flavouring. Shelf life was evaluated over a period of two months. All the products were within the acceptable limits given in Sri Lankan standards (acceptable limits of total plate count, yeast and mould count, moisture content and free fatty acids content are below  $10 \times 10^4$  (CFU/g), 50-100 (CFU/g), 3.5% and 0.3% respectively). At the end of the second month, total plate counts were 88, 42, 30 and 30 (CFU/g), yeast and mould counts were 33, 5, 18 and 18 (CFU/g), moisture contents were 0.93, 0.95, 0.92 and 1.19% and free fatty acids contents were 0.13, 0.14, 0.14 and 0.17% for ginger, lemon, cinnamon flavoured chips and control respectively. It is recommended that the products may be stored at ambient temperature up to a period of two months. The calorie values were obtained by means of the proximate analysis and those values were 465, 467, 459 and 443 (kcal/100 g) for ginger, lemon, cinnamon flavoured and sweet coconut chips respectively. Ginger flavoured coconut chips were identified as being more palatable and to have the highest overall acceptable conditions.

Keywords: Coconut chips, drying efficiency, osmotic dehydration, shelf life, value addition