

FORMULATION OF SOYBEAN BASED PRODUCTS AND PRESERVATION USING BLAST FREEZING TECHNIQUE

M.R.F. Risna¹, R.M.N.A. Wijewardane² and N.W.I.A. Jayawardana¹

¹*Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka*

²*Institute of Postharvest Technology, Jayanthi Mawatha, Anuradhapura, Sri Lanka*

Different types of soybean (*Glycine max*) based products are available in the local market, although, long term preservation of those products are neglected. Hence, this study was conducted to extend the shelf life of soya based products by freezing and to evaluate the effect of blast freezing vs normal freezing. In the first experiment, two soya based products were developed. Soya snack was prepared by adding 30%, 40%, and 50% of soybean mixed with baby jack, mung bean and pumpkin in different ratios. Sensory evaluation was done to select the most acceptable product. Vegetable soup mix (VSM) was prepared by using soya powder (8%) carrot (40%), pumpkin (40%) and spinach (12%). In the second experiment, these products were frozen by blast freezing and normal freezing to -20 °C, before storing in a normal freezer at -20 °C for 4 months to check the quality of the products during storage. In soya snack, fat, protein, ash, moisture contents, firmness, total plate count (TPC), and colour were measured while in VSM, firmness of carrot and pumpkin, colour of VSM and prepared soup, TPC of VSM, total soluble solid (TSS) of soup, chlorophyll of spinach were measured as quality parameters at one month intervals. Soya snack containing 40% soybean scored highest rating for overall sensory acceptability. After 4 months, fat, protein, moisture, firmness, ash, and TPC of soya snack samples frozen by blast freezing were significantly different ($p < 0.05$) with samples frozen by normal freezing while colour of soya snack did not change significantly ($p > 0.05$). In VSM, firmness, and color of carrot and pumpkin, TPC, colour and TSS of soup, colour and chlorophyll content of spinach were significantly different ($p < 0.05$) in samples frozen by blast freezing than normal freezing though colour of soya powder did not change significantly ($p > 0.05$) during 4 months of storage. Study concludes that blast freezing is more appropriate than normal freezing for better quality soya products.

Keywords: Blast freezing, Normal freezing, Soya snack, Vegetable soup mix