POSTHARVEST CHANGES AND PERFORMANCE AT PROCESSING OF SOME SRI LANKAN VEGETABLES

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A B S T R A C T

This work was carried out to study the processing possibilities of bittergourd, snakegourd and ridgegourd. These three vegetables were subjected to freezing, dehydration and fermentation. It was found that freezing was the superior processing method for these vegetables when compared to dehydration and fermentation. In the case of bittergourd, the best maturity stage for harvesting and the storage condition for harvested pods were studied. According to the proximate composition and physical properties such as weight, length and circumferance of bittergourd pods, the maximum yield was found to be obtained by harvesting after 10th day of flowering. The shelflife of harvested bittergourd was about 5 days at normal condition and the shelflife was found to be extended upto 30 days by packing in polypropylene bags and storing at 2°C (35.6° F).

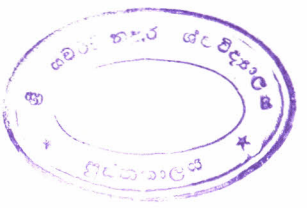
The dehydrated products of these three vegetables exhibited very poor qualities with respect to the retention of chemical constituents and textural qualities. These vegetables contain more than 90% of moisture and removal of this moisture content affected the textural quality of the final products. The microscopic examination of the dehydrated vegetables also showed irreversible changes of cellular structure of the tissues. Therefore, the dehydration ratio of dried vegetables was less than 5.

A natural convective solar dryer was constructed and it was found that the dryer was able to dehydrate vegetables while retaining 76.6% of β-carotene. This amount is significantly higher when compared with the β-carotene content retained in vegetables dehydrated by exposing to direct sun light. The latter process showing only trace amount of β-carotene.

The effect of pretreatments on the quality of processed vegetables were examined. Blanching was found to be an effective pretreatment in retaining ascorbic acid and β-carotene content of these vegetables. The retention of ascorbic acid was increased when the blanching solution contained 0.1% KMS (Potassium meta bisulphite). In the case of frozen bittergourd, the retention of ascorbic acid was 87.7 % in the sample blanched in 0.1 % KMS solution and at storage for 28 weeks at -18°C (-0.4°F).

Of these three vegetables, snakegourd and ridgegourd could be preserved by fermentation. The fermentation was carried out by providing the growth of naturally present lactic acid producing organisms on these comodities and the process was able to reach the 1% acid in the media within 12 days of fermentation. During this period, the total soluble sugar content was found to decrease by 90.8 % in snakegourd and 94.0 % in ridgegourd. In the case of bittergourd, the fermentation was incomplete and the

production of acid did not exceed 0.5 % during 12 days of fermentation. However, the development of a new product was possible by preserving bittergourd in acid-salt suspension. In this preservation, the ascorbic acid content was found to reduce gradually during storage, and at the end of the 6th month, the retention of ascorbic acid was 32.5 %. The variation of β-carotene in fermented vegetables was similar to frozen products. The overall results showed the possibility of preserving these three vegetables by freezing or fermentation. Dehydration possibilities exist with respect to bittergourd compared to snakegourd and ridgegourd.



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