FORMULATION AND STORAGE OF LOW CALORIE CABBAGE (*Brassica oleracea* L. Var. capitata) - LIME (*Citrus aurantifolia)* BLEND READY-TO SERVE (RTS) FUNCTIONAL BEVERAGE.

By

J. Indhuja

Department of Agricultural Chemistry, Faculty of Agriculture, Eastern University, Sri Lanka

ABSTRACT

In the last decades, special attention has been paid towards edible plants, especially those that are rich in secondary metabolites (frequently called phytochemicals) and nowadays, there is an increasing interest in the antioxidant activity of such phytochemicals present in diet. In this regard, functional foods play an important role, offering a new kind of health tool that promises specific effects related to particular food components. In recent years there has been a significant increase in consumer demand for low calorie products. Recent reports suggest that cruciferous vegetables act as a good source of natural antioxidants. Therefore, a research was conducted to formulate the low calorie cabbage-lime blend RTS functional beverage and to assess the quality attributes during storage.

Considering the results of preliminary studies six formulation of the low calorie functional RTS beverage were prepared by blending different ratio of cabbage and lime juice (27:3, 24:6, 21:9, 18:12 and 15:15) including control, where only cabbage juice was added. The prepared formulations were subjected to nutritional and sensory assessment after the formulation and during storage. Analyses were done at 2 weeks interval throughout the storage period. Nutritional parameters of titrable acidity, pH, vitamin c content, total sugar and total soluble solids and microbial studies were analysed for the low calorie RTS beverage. Sensory attributes of colour, aroma, taste, appearance and overall acceptability were evaluated by 30 semi-trained panelists using a seven point hedonic scale. The most preferred formulations

including control were selected to storage studies. The formulations were stored at room temperature 30±1°C and 70.75% RH for 12 weeks.

The nutritional analysis of the fresh low calorie RTS beverage shown increasing trend in titrable acidity (from 0.32% to 1.3% as citric acid), vitamin C content (from 8.35mg/100g to 17.75mg/100g), total sugar (from 2.75% to 4.99%), total soluble solids (from 4.64 °Brix to 5.17 °Brix) with the increase of lime juice from 3% to 15%. The pH was reduced when the lime juice concentration increased. The sensory assessment of fresh low calorie RTS beverage revealed that there were significant ($p<0.05$) differences among the sensory attributes according to Friedman Test.

Nutritional analysis of the stored RTS beverage revealed the declining trend in ascorbic acid, total soluble solids and pH and an increasing trend for total sugar, and titrable acidity. The nutritional analysis showed that there were significant ($p<0.05$) differences among the formulations. The sensory assessment revealed that there were no significant differences among the sensory attributed following storage. The highest overall acceptability was observed in formulation with 18% cabbage juice and 12% lime juice and the all formulations were microbiologically safe.

Based on the quality assessment, sensory analysis and microbiological studies, the low calorie RTS functional beverage with 18% cabbage juice and 12% lime juice could be stored for 12 weeks without any significant changes and extend the shelf life, which also has no deleterious effect on consumers.

Supervisor: Prof. (Mrs.). T. Mahendran
Department of Agricultural Chemistry
Faculty of Agriculture
Eastern University, Sri Lanka