

DEVELOPMENT OF READY TO SERVE CURRY LEAVE BEVERAGE

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Curry Leaves (*Murrayakoenigii*) rich in bioactive compounds and proven to have anti-diabetic, cholesterol reducing, anti-oxidative, anticancer, antiulcer, phagocytic activity and therapeutics of hepatotoxicity. A thermally processed ready to serve beverage was developed using an aqueous extracts of curry leaves that can be consumed as a health beverage according to the requirements of SLS 729:2010. There were no significance difference ($p>0.05$) of total soluble solids, pH value and colour of the test and reference tested within the six month shelf life period. No significance differences ($p>0.05$) between the colour, odour, taste, after taste and microbiological parameters of the test and reference. Microfiltration using 0.3 μ m pore size membrane showed that there were no growth of APC, Yeast and Moulds and Coli forms in the filtered samples. Effect of shelf life on antioxidant capacity and non-thermal techniques are being studying further to improve the overall quality.

Key words: Bioactive compounds, Juice quality, Thermal and Non-thermal techniques

INTRODUCTION

Due to the diseases complexity peoples are much focused on the control of chronic and cardiovascular diseases by bio-active compounds enriched functional super foods. The functional bioactive compounds of curry leaves (*Murrayakoenigii*) include oxalic acid, vitamin A, koenigin, bicyclomahanibine, coumarine, cyclomahanibine, murraayastines, koeridine, and pypayafolinecarbazole [1]. These are proven to have hypoglycemic to control type 2 diabetes and hyperlipidemic effect [2], antioxidant, anticancer, antimicrobial and hepatoprotective [2, 3,4], play a vital role in the therapeutics of hepatotoxicity [5]. The carbazole alkaloids that are recently isolated in curry leaves are of mahanimbine and koenigine which showed higher antioxidant activities. The active compounds in the curry leaves are of mahanimbine which involves increasing the secretion of insulin. Among the compounds, mahanine, and mehanimbine showed potential anticancer effect. Applying grater heat by thermal sterilization of food does not cause deterioration of antioxidants [6] thus, overall juice quality by non- thermal [7] techniques.

METHODOLOGY

Healthy curry leaves were washed by potable water, in 150 ppm chlorinated water and by running water. Leaves were blended and the resulting juice was strained, heated and sugar was added. Citric acid was added to maintain the pH (below 3.5). Sodium metabisulphite 50mg/Kg was added and mixed well. Cleaned polyethylene thalate bottles and caps were rinsed with hot

water (~80°C) and drained. The heated (~80°C) fiber free liquid extract (200ml) were filled into bottles and capped. The sealed bottles were kept in a water bath at 80°C for 20 minutes and cooled. The quality of the finished product was maintained according to the requirements of SLS 729:2010. Proximate composition and the antioxidant capacity of the developed beverage were determined. The products were stored under refrigeration and reference products were freeze. Total soluble solids, pH value and colour of the product were evaluated at two weeks interval. Product was tested for sensory and microbiological parameters initially and at one month interval. Fresh juice samples were micro filtrated using 0.3 μ m pore size membrane and filtered sample tested for the growth of microorganisms.

RESULTS

There was no growth of Yeasts and Moulds and Coli forms initially and during the six-month storage period. Aerobic Plate Counts were zero initially and during the six month storage period. Total soluble solids (12 °Brix) and pH value (3.4) showed that no significant ($p>0.05$) changes within six month storage period.

A correlation was observed between the total phenolic content (1.48mg of GAE/ml) and antioxidant capacity (34.0mg/ml) of the tested ready to serve curry leave beverage (Table 1) compared to IC 50 value of Gallic acid (76.93 μ g /ml). No significance differences ($p>0.05$) between the colour, odour, taste and after taste

(Figure 1) of the test and reference products during six-month storage.

Table 1: Nutritive value of the curry leaf beverage

| Parameter | Value |
|-------------------------------------|--------------|
| Energy (k Cal) | 41.60 ± 0.35 |
| Moisture (g /100ml) | 89.30 ± 0.47 |
| Total sugars (g/100ml) | 10.50 ± 0.10 |
| Protein (g /100ml) | 0.20 ± 0.00 |
| Ash (g /100ml) | 0.20 ± 0.01 |
| Fiber (g/ 100ml) | 0.15± 0.07 |
| Fat (g /100ml) | 0.04 ± 0.02 |
| Calcium (g /100ml) | 0.03± 0.00 |
| Phenolic content (mg of GAE /ml) | 1.48 ± 0.09 |
| IC 50 value of Juice (db) (mg /ml) | 34.00± 0.45 |
| IC 50 value of Gallic acid (µg /ml) | 76.93 ± 0.32 |

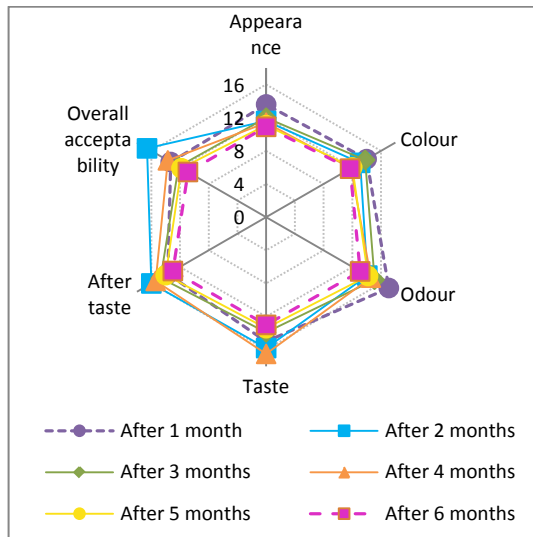


Figure 1: Sensory profile of Ready-To-Serve Curry Leaf beverage

There were no Aerobic Plate Counts, Yeasts and Moulds and Coli forms in the micro-filtered fresh juice sample. Further tests of microfiltration are required for effective commercial sterilization of the juice.

CONCLUSION

Thermally processed ready to serve curry leaf beverage packed and sealed in clear, 200ml thermally stable pet bottles and stored under refrigeration up to 6 months can be used as a health beverage.

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