DEVELOPMENT OF GELATIN FREE YOGHURT USING *Cyclea peltata* LEAF GEL

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ABSTRACT

A laboratory experiment was conducted at the Department of Agricultural Chemistry, Faculty of Agriculture, Eastern University, Sri Lanka to investigate the physical and chemical properties of *Cyclea peltata* leaf gel and develop gelatine free yoghurt using *Cyclea peltata* leaf gel

Physical parameters of *C.peltata* leave and its gel were determined to assess the quality characters of *C.peltata* leaf gel. The average value of leaf length, diameter and weight were 10 to 15 cm, 6 to 8 cm and 0.5 to 0.7 g respectively. The colour of the gel was dark greenish and was translucent in appearance. Fresh gel was viscous having slimy consistency. Chemical analysis of leaf gel revealed that *C.peltata* leaf gel had moisture of 72.6% while, ash and pH were 0.06 per cent and 4.85 respectively. Leaf gel contains 0.24 per cent protein. In addition it contains 16.48% crude fibre. The gel was extracted by grinding the *Cyclea peltata* leaves. There were four recipes for four treatments of yoghurts prepared incorporating different levels of *Cyclea peltata* leaf gel per one litre of yoghurt mix (0, 4, 6 and 8 g). The amount of gelatine in the control yoghurt was 6 gL^{-1} with 0 gL^{-1} *Cyclea peltata* leaf gel .The other ingredients were used in similar proportions in all treatments and there were four treatments in this study Vz: T_1 – 6g of Gelatine added yoghurt (use as control) , T_2 – 4g of leaf gel added yoghurt , T_3 – 6g of leaf gel added yoghurt , T_4 – 8g of leaf gel added yoghurt. The experiment was laid out with completely randomized design, with three replications. All four treatments of freshly prepared yogurts were analysed for Nutritional Qualities and Organoleptic Qualities. The Nutritional Qualities vz: pH, Moisture ,Ash, Titratable Acidity, Fat, Protein, Crude Fibre and Total Solid Content were analysed

according to AOAC (2002) methods. The Nutritional Qualities such as pH, moisture, titratable acidity, fat, protein and total solid content were no difference ($p>0.05$) among the treatments. But only crude fibre was significantly difference ($p<0.05$) among treatments. Organoleptic Qualities of four treatments of freshly made yogurts Vz: appearance, colour, aroma, taste and overall acceptability were evaluated through the panel of 20 members. T_3 (6 g leaf gel L^{-1} of yoghurt mix) had the highest score, mean value 8.7 in a nine point hedonic scale in appearance, colour, aroma, taste and overall acceptability and control treatment (T_1) had next best level .T_4 (8 g leaf gel L^{-1} of yoghurt mix) got the lowest score 4.5 of the overall acceptability .

Based on the above results, T_1 and T_3 treatments were kept for storage study in a refrigerator for 15 days. Nutritional and Organoleptic Qualities of these two treatments (T_1 and T_3) were analysed at 4 days interval for 15 days. The nutrient qualities (pH, moisture, titratable acidity, fat, protein, total solid) were not significantly different ($p>0.05$) between treatments with 6 gL-1 of leaf gel and control except for crude fibre content. A slight decrease in pH and moisture but, slight increase in titratable acidity, fat, protein and total solid content, considerable increase in crude fibre was noticed in both $0gL^{-1}$ and $6gL^{-1}$ of *C.peltata* leaf gel incorporated yoghurt products during storage period of 15 days (T_1 and T_3). Results of Organoleptic characteristics revealed that, treatment with 6 gL^{-1} of leaf gel (T_3) had the highest mean score of overall quality of all sensorial properties namely, appearance, colour, taste, aroma and overall acceptability and the control treatment (T_1) had next best level after 15 days of storage in a refrigerator. Based on these results, T_3 treatment with 6 gL^{-1} of leaf gel was selected as the best treatment. Thus, it can be concluded that *Cyclea peltata* leaf gel can be used to replace gelatine in yoghurt preparation completely.

TABLE OF CONTENTS