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Development of healthy fruit yoghurt incorporated with Star fruit

(*Averrhoa carambola* L.)

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Fruit yoghurts are becoming popular in the world due to their different flavours, tastes as well as high nutritional properties. Therefore, yoghurt manufacturers now-a-days add different fruit species to produce fruit yoghurts with improved nutritional and sensory properties. Star fruit (*Averrhoa carambola* L.) is an underutilized fruit growing well in Sri Lanka, India, Malaysia and Indonesia. Star fruit has a number of medicinal properties, besides being rich in vitamins and minerals. Researchers have demonstrated that Star fruit juice is capable of reducing blood pressure and moreover can be used as a remedy for diabetes. Therefore, the objectives of this study were to develop a value-added fruit yoghurt using Star fruit and to determine its sensory, physicochemical and microbiological properties. Properly washed golden color Star fruits were cut into small pieces, steamed for 3 min and oven-dried at 60°C for 3 h. Further, fruit pieces were introduced to saturated sugar solutions and dehydrated for 24 h before being used to produce fruit yoghurts. Three types of new yoghurts with Star fruit were produced and they were Star fruit jelly yoghurt, Star fruit stirred yoghurt, Star fruits on-top of yoghurt and plain set yoghurt (control). A panel of 30 sensory panelists was used to evaluate the sensory attributes of newly prepared yoghurts such as appearance, aroma, taste, texture and overall acceptability on a 5-point hedonic scale. The statistical analysis of sensory evaluation results was carried out by using Kruskal Wallis one-way ANOVA test with the use of STATISTIX computer software (Ver 2.0) for windows. Star fruit jelly yoghurt had a mean rank sum of 49 for overall acceptability thus showing significantly higher ($P < 0.05$) sensory properties and was selected as the best fruit yoghurt. The pH of the Star fruit jelly yoghurt decreased from 4.07 to 3.81 whereas the titratable acidity increased from 1% to 1.23% during storage for four weeks. The shelf-life of the Star fruit jelly yoghurt was 21 days. Redox potential (E_h) of the Star fruit jelly yoghurt increased from +105.3 mV to +153.6 mV during



storage. Microbiological tests revealed that *E. coli* was absent in the Star fruit jelly yoghurts. The results of the present study suggest that Star fruit jelly yoghurt conformed to the Sri Lanka Standards Institution (SLSI) standards and thus Star fruit jelly yoghurt can be produced as a high value, health promoting fruit yoghurt with improved sensory properties.

Keywords: Yoghurt, Star fruit, Jelly fruit yoghurt, Sensory properties, Acidity