

Development of Nutraceutical Yoghurt by Incorporating Amla (*Indian gooseberry*) and Iramusu (*Hemidesmus indicus*)

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Introduction

Amla (*Indian gooseberry*) and Iramusu (*Hemidesmus indicus*) are locally available herbaceous plants. As Kraft (2007) reveals some plants or part of the plant such as seeds, barriers, roots, leaves, bark or flowers are used for medical purposes. High levels of pharmaceutical value of these two herbals and high levels of nutritional value of yoghurt could be used to develop Nutraceutical yoghurt. Stephen (1992) defined the word Nutraceutical as "Food or part of food, that provide medical or health benefits, including the prevention or treatment for disease". However, studies aimed at developing Nutraceutical fermented dairy products are scarce. Hence the present study was carried out to assess the effect of incorporation of Amla (*Indian gooseberry*) and Iramusu (*Hemidesmus indicus*) herbal extracts in yoghurt on its organoleptic properties and nutritional profile.

Methodology

Four types of herbal extracts were produced. Five hundred grams of fresh Amla fruits were cut into small pieces and crushed with 100 mL of luke warm water to produce Amla raw extract. The mixture was filtered and 100 mL of sugar syrup was added to produce Amla syrup.

Iramusu roots were cut in to small pieces and 500 g of pieces were ground with 100 mL of cold water to produce Iramusu raw extract. Mixture was filtered and Filtrate mixture was boiled to reduce volume up to 1/8 of total volume. To produce Iramusu syrup the 100 g of sugar was added and boiled.

Yoghurts were prepared using the method of Tammime and Robinson (2007) with slight modifications to its composition. There were six treatments for each herbal extract as; 0%, 3%, 6%, 9%, 12% and 15% (% by weight). Organoleptic properties of yoghurt at 4 °C for day 1 were evaluated using 15 trained panelists with 7-point hedonic scale from 1- extremely dislike to 7- extremely like. Selected yoghurt samples based on sensory evaluation were stored at 4 °C for shelf life analysis. Titratable acidity (TA), pH, Total Colony Count (TCC) and detection and enumeration of yeast and molds were determined for 15 days of storage. Fat % and Total Solids were analyzed for the selected samples. Data were analyzed using one way ANOVA and Friedman non parametric test.

Results and Discussion

According to results of the sensory evaluation all treatments in each extract were significantly different ($P < 0.05$) with all attributes except odour. Yoghurts prepared by

incorporating 3% amla raw extract has shown significantly higher preference ($P < 0.05$) with respect to highest estimated median (5.95). Yoghurts prepared by incorporating 9% amla syrup has shown significantly higher preference ($P < 0.05$) with respect to highest estimated median (5.70). Yoghurts prepared by incorporating 3% iramusu raw extract has shown significantly higher preference ($P < 0.05$) with respect to highest estimated median (5.90). Yoghurts prepared by incorporating 12% iramusu syrup has shown significantly higher preference ($P < 0.05$) with respect to highest estimated median (6.04).

The change of titratable acidity, pH and of selected four treatments (based on sensory) at 4 °C with 15 days of storage were evaluated. There were no significant differences ($P > 0.05$) in lactic acid development during storage between control and other treatments.

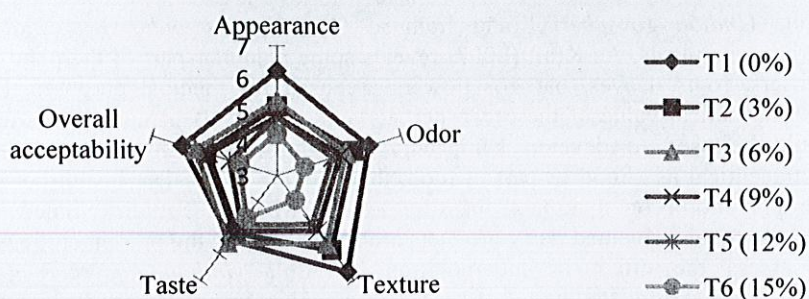


Figure 1: Web diagram of Iramusu raw extract incorporated yoghurts

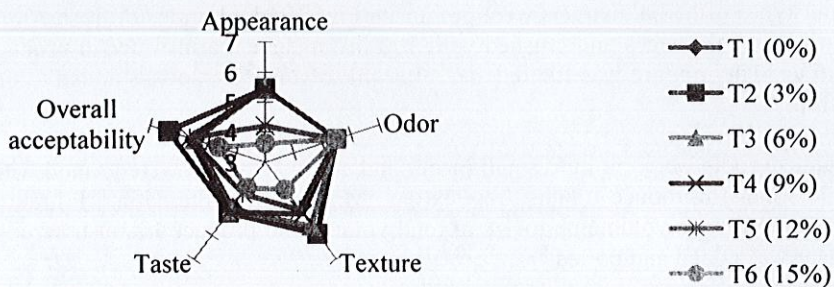


Figure 2: Web diagram of Amla raw extract incorporated yoghurts

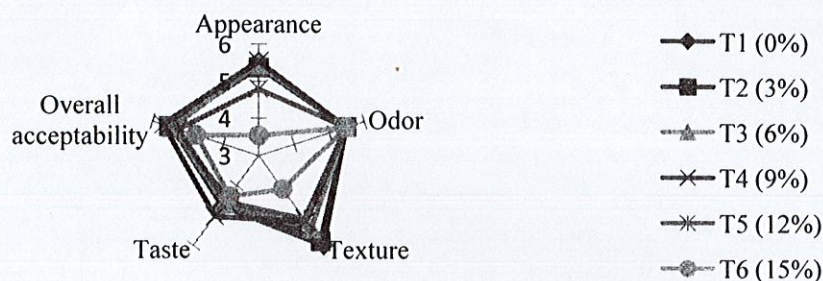


Figure 3: Web diagram of Amla syrup incorporated yoghurts

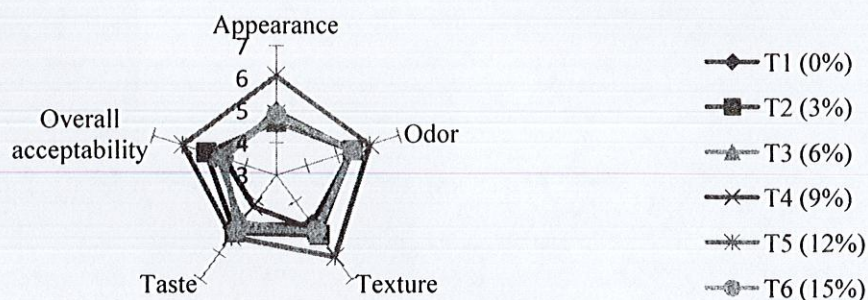


Figure 4: Web diagram of Iramusu syrup incorporated yoghurts

During the storage duration Total Colony Count (TCC), yeasts and moulds were enumerated for selected four treatments with the storage duration. With the time TCC count has slightly increased in both raw extract incorporated treatments. This study was in accordance with Sri Lankan Standards specified for set yoghurts (1989) up to 30th day of storage.

Conclusion

Amla and Iramusu herbals can be successfully incorporated into set yoghurt and the preference for this yoghurt is high. Either 3% of amla raw extract or 9% of amla syrup can be incorporated to produce set yoghurt. Similarly, either 3% of iramusu raw extract or 9% of iramusu syrup can be used to produce set yoghurt. The shelf life of set yoghurt is within the specified standards when stored at 04 ± 1 °C for 15 days of time. Fat % in 3% amla raw extract, 9% amla syrup, 3% iramusu raw extract and iramusu syrup is 9% were 1.2%, 1.3%, 1.1% and 1.2% respectively and suitable for health concerned people.

References

Sri Lanka Standards 824: part 2 1989. Specification for fermented milk products. Sri Lanka Standards Institution, Colombo.

Tamine, A.Y. and R.K. Robinson, 1985. Yoghurt science and technology, Pergamon press, New York

