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Development of robusta banana yoghurt

Pravitha P G, Anitha Chandran C
College of Agriculture Vellayani, Thiruvananthapuram, Kerala, India

Abstract
The study was focused at developing fruit blended yoghurt with Robusta banana pulp. The fruit yoghurts were prepared by incorporating varying proportions of blanched fruit pulp (15%, 20%, 25%, 30% and 35%), and homogenised toned milk (85%, 80%, 75%, 70%, and 65%). Yogurt starter culture (2%) and sugar (12%) were same in all the treatments. The banana fruit pulp was blanched for five minutes to prepare the fruit yoghurt. The plain yoghurt was served as control. The best combination of fruit yoghurts was organoleptically evaluated using 9 point hedonic scale. The present study shows that the Robusta banana yoghurt prepared with 20% fruit pulp in treatment T2B showed maximum sensory score.

Keywords: homogenised toned milk, *Lactobacillus bulgaricus* and *Streptococcus thermophilus*, fruit pulp, yoghurt

Introduction
Yoghurt is obtained from milk through the fermentation process with the required amount of starter culture that contains *streptococcus thermophilus* and *Lactobacillus bulgaricus*. Among all dairy fermented products, yoghurt is typical and more well-known than other fermented products and has more acceptability and consumer preference throughout the world (Coisson *et al.*, 2005) [1]. Yogurt is good for lactose mal-absorber, because it aids in the removal of toxic or anti-nutritive factors (lactose and galactose) that can cause lactose malabsorption by LAB. Lactic acid bacteria used as starter cultures for fermentation process, probiotic bacteria such as *L. acidophilus* and *B. bifidum* produce b-d-galactosidase enzyme that hydrolyses lactose, which results in increased tolerance for dairy products (Kim and Gilliland, 1983) [2]. Nationally, Kerala accounts for 50% of the total area under banana and the maximum quantity of fruit is sold locally. Bananas are the most important food crop in some parts of East Asia, with an annual consumption of 200 kg/ capital year (Valmayor, 1994). Banana is one of the highly nutritious fruits. It is an intense source of potassium and carbohydrate and a good food for all ages of people. Robusta banana contains 22.63g carbohydrate, 1.33g protein, 0.85mg calcium per100g (Siji, 2017) [6]. Robusta banana is very sweet with a good aroma and has a poor keeping quality leading to a quick breakdown of pulp after ripening. The popularity of yoghurts has increased due to fortification with sugar and fruits.
Addition of fruits in yoghurt relishes the product and adds nutritional and therapeutic benefits to the consumers. Hence, in the present study, an attempt was done to develop Robusta banana fruit yogurt using homogenised toned milk and to evaluate its nutritional parameters.

Methodology
Selection and collection of raw materials
Optimum ripened Robusta banana, homogenised toned milk and sugar were selected for the study and purchased from local market. The starter culture was procured from College of Dairy Science and Technology, Thiruvananthapuram.

Processing of banana fruit pulp
The fresh and optimum ripe fruits were washed properly, and peels were removed manually. Fruit pulp was extracted by an electric blender. The smooth pulp obtained was used for the preparation of fruit yoghurt. Banana pulp was blanched with fifty per cent of total sugar (12%) for 5 minutes at low flame and then cooled into room temperature for preparing the fruit yoghurt

Development of fruit yoghurts
Fruit yoghurts were processed according to the method standardized by Remya *et al.* (2019) [5] after minor modifications. The homogenised toned milk was heated at 90 °C for 10 minutes. Remaining sugar (Remaining after adding to the fruit pulp) was added to the milk total 12%. After boiling the milk was cooled to the temperature of 42°C and milk at a rate of 85%, 80%, 75%, 70%, and 65% was poured into five PET cups. Then the fruit pulp was added to each cup separately at a rate of 15%, 20%, 25%, 30% and 35% (v/v) except in control. *Streptococcus thermophilus* and *Lactobacillus bulgaricus* culture (2%) were inoculated at 42°C temperature to each cup and then incubated at 42°C for

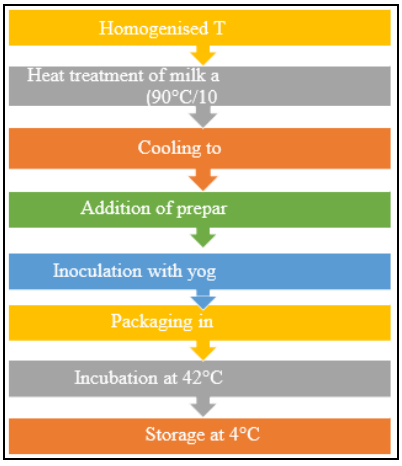

Plate 1: Development of Fruit Yoghurt

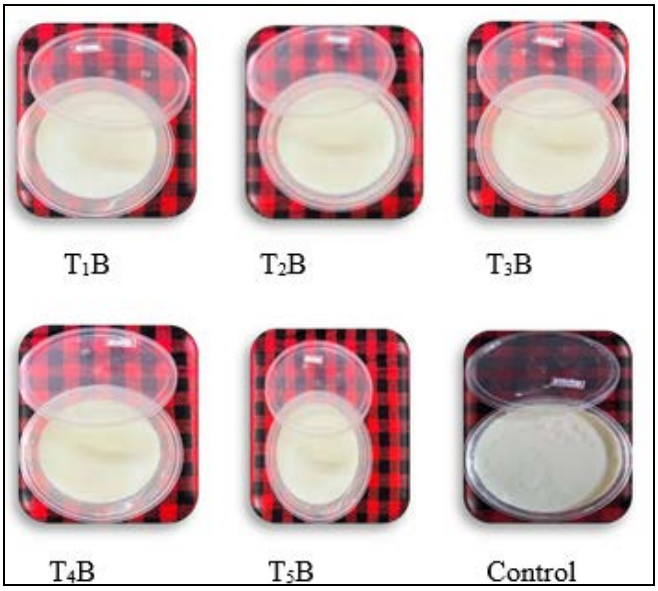

Fig 1: Formulations of Banana Yoghurt

Table 1: Sensory Evaluation of Robusta Banana Yoghurt

Treatment	Appearance		Color		Aroma		Texture		Taste		Overall Acceptability	
T1B	MRV	MS	MRV	MS	MRV	MS	MRV	MS	MRV	MS	MRV	MS
	32.80	7.00	32.00	7.20	31.40	7.00	41.45	7.90	33.35	7.50	34.50	7.60
T2B	42.00	7.50	40.20	7.70	43.50	8.70	47.50	8.40	47.50	8.40	45.75	8.30
T3B	29.95	6.80	20.50	6.50	22.85	6.50	26.00	7.10	25.40	6.90	28.25	7.20
T4B	27.66	6.50	29.05	6.70	35.50	7.20	23.50	6.90	28.90	7.20	28.25	7.20
T5B	9.00	5.50	27.65	6.90	18.00	6.20	25.55	7.00	26.00	7.00	29.80	7.30
Control	38.35	7.30	37.60	7.50	31.75	6.90	19.00	6.60	21.85	6.30	24.40	6.80
K value CD(P=0.05)	24.65		11.21		14.91		22.74, 9.48		14.93		14.17	

From the table, it can be observed that the sensory scores of the T2B found higher than the plain yoghurt taken as control, and it was the most acceptable treatment. The mean score of overall acceptability of T1B, 2B, T3B, T4B, and T5B were 7.6, 8.3, 7.2. 7.2, and 7.3 respectively and that of plain yoghurt was 6.8. T2B was prepared with 20% of banana fruit pulp, 80% homogenised toned milk, 2% yoghurt culture and 12% sugar. The study conducted by Jeyasekaran and Deepa (2021) [3] also found a similar result from passion fruit yoghurt prepared with 10%, 15% and 20% fruit pulp with milk and the one with 20 % passion fruit pulp incorporation was found to be highly acceptable.

Conclusion

The banana fruit yoghurt was more acceptable than the Plain yoghurt due to the addition of fruit pulp and it also provided consistency to the final products which in turn increased its acceptability. The best treatment among five treatments contained 20% fruit pulp. Blending fruit juice/pulp combinations offer promises in the production of value-added nutritious yoghurt.

References

1. Coisson JD, Travaglia F, Piana G, Capasso M, Arlorio M. Euterpe oleracea juice as a functional pigment for yogurt. Food Res. Int,2005:38:893-897.
2. Kim HS, Gilliland SE. Lactobacillus acidophilus as a dietary adjunct for milk to aid lactose digestion in humans. J. Dairy Sci,1983:66(5):959-966.
3. Jeyasekaran P, Deepa M. Formulation od stirred probiotic fruit yoghurt to boost immunity. J. Exp. Biol. and Agric. Sci,2021:9(1):169-175.
4. Lawless HT, Heymann H. Sensory evaluation of food: principles and practices (2nd Ed). Springer Science & Business Media, 2010, 152.
5. Remya PR, Sharon CL, Aneena ER, Panjikkaran ST, Shahanas E. Standardization and Quality Evaluation of Jackfruit based Low Fat Yogurt. Asian J. Dairy Food Res,2019:38:93-97.
6. Siji S. Phytochemical analysis and antioxidant potential of banana (*Musa spp*). MSc (HSc) thesis, Kerala Agricultural University, Trissur, 37p. Valmayor, R.V., Davide, R.G., Stanton, J.M., Treverrow, 2017, 37.
7. NL, Roa VN. Banana nematodes and weevil borers in Asia and the Pacific: proceedings. In Conference-Workshop Serdang. International Network for the Improvement of Banana and Plantain- Asia Pacific, Philippines, 1994, 298-302.