Development of a Banana-based "*Payasam* Mix"

Suma Divakar[*], Mary Ukkuru and U. Krishnaja

Department of Home Science, Kerala Agricultural University,
Trivandrum 695 522, Kerala, India
[*]E-mail: divakarsuma67@gmail.com

ABSTRACT Banana is grown in all kinds of soils having good drainage. This fruit has great socio-economic significance and is interwoven in the cultural heritage of the country. Of all the varieties, *'Nendran'* is the most prized cooking variety used in Kerala In the context of low productivity of *'nendran'*, there is need for value addition to this crop. Jaggery based *'payasam'* is an inevitable item for any festive occasion to a Malayali or for that matter, any South Indian. Owing to its cumbersome preparation, many housewives put off the preparation and prefer to make milk based *"payasam"* which is easier to prepare. Standardisation and shelf life assessment of the product has been conducted in this study. Five samples of "*payasam* mix" were developed and reconstituted using standard procedures. Sample S1 scored highest with respect to sensory parameters. Its nutrient composition was ascertained and shelf life was also observed to be of high quality till 15th day without addition of preservatives.

INTRODUCTION

Although there are many innovative laboratory techniques to process banana, the post harvest loss in banana is relatively high (Pillay and Tenkouano 2011). Studies of processed banana products and their industrial applications is still an under exploited area (Aurora et al. 2009).

Development of ready mixes for several foods offering convenience to housewives as well as working women has become a fast growing trend among the processed food products (Fanning et al. 2005). Moreover there is a rise in the demand for foods based on traditional Indian recipes across different states in India and abroad (Brindal 2000). This can be attributed to a number of factors including paucity of time and declining skills to prepare traditional Indian foods along with rise in globalisation of Indian foods (www.annemary.org.).

Hence as an earnest effort for value addition to the *'Nendran'* variety which is a major variety with respect to area of cultivation and at the same time under-exploited, this *'payasam'* mix was standardized using standard procedures.

Objectives

1. To develop a ready to cook product based on *nendran* variety of banana.
2. To evaluate its qualities with respect to sensory parameters, nutritive value and shelf life.

METHODOLOGY

The bananas were collected at optimum stage of ripening and they were washed thoroughly. The bananas were boiled until soft and in enough water. The bananas were de-skinned, inner fibrous strands removed and mashed to paste. The following variations in the ingredients for *payasam* mix were tried out as per Table 1.

Five samples of *payasam* mixes in various combinations were developed as follows (Table 1). Jaggery was made into syrup and added to the mashed banana, which was then concentrated in a thick bottomed vessel on a high flame with continuous stirring. When the mixture became semi-solid, cooked sago was added to it. At the final stage when the contents had started to get separated from the vessel one part of fat was added. Cashewnuts, raisins and coconut chips were fried in fat separately and added to the mix. Flavouring was added at the final stage.

The products were reconstituted using coconut milk (first milk was taken by adding 200ml of water to 150g of coconut scrapping and second milk by adding 300ml of water to the same) and was organoleptically evaluated for taste, texture, colour, flavour and overall acceptability on a five point Hedonic scale with '5' for excellent in all respects and '1' for highly disliked, by a team of 25 semi-trained panel members. The products receiving an overall acceptability score of '4' and above were considered most acceptable and those receiving below '4' were considered unacceptable in estimating shelf life.

Table 1: Composition and yield of various samples of *payasam* mixes

S. No.	Sample	Banana pulp (g)	Jaggery (g)	Dalda (g)	Ghee (g)	Cashew nuts (g)	Raisins (g)	Sago (g)	Fried coconut chips (g)	Carda-mom (g)	Dry ginger (g)	Final yield (g)
1	S1	500	300	-	10	10	10	10	10	¼ tsp	¼ tsp	830
2	S2	500	350	10	-	10	10	10	10	¼ tsp	-	840
3	S3	500	400	-	10	10	10	10	10	-	¼ tsp	845
4	S4	500	450	10	-	10	10	10	10	¼ tsp	-	850
5	S5	500	500	-	10	10	10	10	10	-	¼ tsp	860

Two hundred gram of the identified *payasam* mix was filled in 250 gauge polypropylene pouches and were heat sealed, weighed individually and stored at room temperature (38 ± 2°C) and RH of 65 ± 2%. During the storage the individual packs were weighed periodically and the contents analysed for microbial growth (fungal attack). The overall acceptability of the mix was judged by a panel of 25 members on alternate days for 15 days. The samples were also assessed for changes in free flow property.

The proximate composition of the ready mix samples were also calculated using the nutritive value table proposed by Indian Council for Medical Research (ICMR 1991).

RESULTS AND DISCUSSION

From Table 2, considering the sensory attributes and also the economics of the various samples, S1 was selected as the most acceptable sample. As S1 was selected as the best sample, it was used for further studies on shelf-life properties and for free flow and the values were tabulated as follows in Table 3.

From the sorption studies, it was inferred that the moisture content in *payasam* (S1) increased only by 0.1% on the 15th day. This a notable feature both from the commercial and health point of view as no preservatives were incor-

Table 2: Organoleptic evaluation of various samples of payasam mix

S. No.	Sample	Colour and appearance (Mean± SD)	Mouthfeel (Mean± SD)	Taste (Mean± SD)	Flavour (Mean± SD)	Overall acceptability (Mean± SD)
1	S1	4.88 ± 0.33	4.92 ± 0.32	5 ± 0.03	4.96 ±0.2	4.96 ± 0.2
2	S2	3.56 ± 0.5	3.6 ± 0.49	4.5 ± 6 0.5	4.23 ± 0.5	3.6 ± 0.49
3	S3	3.6 ± 0.49	3.80 ± 0.8	3.56 ± 0.5	4.56 ±0.53	3.92 ± 0.72
4	S4	3.56 ± 0.5	4.00 ± 0.7	3.92 ± 0.72	4.23 ± 0.4	3.92 ± 0.72
5	S5	3.49 ± 0.79	3.68 ± 0.47	3.49 ± 0.79	4.56 ± 0.53	3.68 ± 0.47

Table 3: Changes in moisture content and overall acceptability of payasam mix (S1) in 250 gauge poly propylene pouches

S. No.	Storage period (days)	Moisture pickup (%)	Colour and appearance	Mouth feel	Sensory attributes Taste	Flavour	Overall accepta-bility	Flow characteristics
1	1	-	5 ± 0.0	5 ± 0.0	5 ± 0.0	5 ± 0.0	5 ± 0.0	Good, free flowing
2	3	-	5 ± 0.0	5 ± 0.0	5 ± 0.0	5 ± 0.0	5 ± 0.0	Good, free flowing
3	5	-	5 ± 0.0	5 ± 0.0	5 ± 0.0	5 ± 0.0	5 ± 0.0	Good, free flowing
4	7	-	5 ± 0.0	4.96 ± 0.2	5 ± 0.0	5 ± 0.0	5 ± 0.0	Good, free flowing
5	9	-	5 ± 0.0	4.96 ± 0.2	4.96 ± 0.2	5 ± 0.0	4.96 ± 0.2	Good, free flowing
6	11	-	5 ± 0.0	4.96 ± 0.2	4.96 ± 0.2	4.96 ± 0.2	4.96 ± 0.2	Good, free flowing
7	13	0.1	5 ± 0.0	4.96 ± 0.2	4.96 ± 0.2	4.96 ± 0.2	4.96 ± 0.2	Good, free flowing
8	15	0.1	5 ± 0.0	4.96 ± 0.2	4.96 ± 0.2	4.88 ±0.3	4.96 ± 0.2	Good, free flowing

Storage at 65% RH and 38°C

porated into the mix to increase the shelf life and which can be used as a marketing technique.

The initial colour and appearance of the product did not vary significantly on the 15th day. From Table 3 the mean values of the mouth feel, taste and flavour showed similar results. The data also revealed that the overall acceptability did not vary with the increase in storage time.

The nutritive value composition of the sample (S1) was computed after method proposed by ICMR (1991) for energy, protein, carbohydrates, fat and fibre and represented in Table 4.

Table 4: Nutrient composition of *payasam* mix (S1) = 200 gm

Nutrients	Amount (830 g)	Amount (200 g)
Energy (kcal)	2158.15	520.03
Protein (g)	7.95	1.91
Carbohydrates (g)	527.57	127.12
Fat (g)	1.38	0.332

Shelf life without preservatives could be owing to lack of perishable products like milk. Jha and Patel (2014) converted a similar traditional Indian milk based dessert to a reconstitutable form by spray drying. Nutritive value per serving matched to those of the *payasam* mix developed by Geetha (2005).

CONCLUSION

A highly acceptable product of demand was standardized from the *'nendran'* variety of banana. The other ingredients were also locally available and economical. The product could be sold out at a price suiting the lay man's pocket with a profit margin of Rs.6/- pouch at the minimum. *Payasam* mix could fetch an income of a minimum of Rs.300/- day in a small scale unit of 4-5 entrepreneurs. Hence there is a great scope for exploring the possibilities of this value added products in the field of processing.

RECOMMENDATIONS

Payasam mix based on other ethnic fruits of the locality too could be developed. Preservatives can be avoided, if the shelf life needed is less. So processing and packing of pulp based on demand can be taken up

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