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Development and Quality Evaluation of Jackfruit Based Baked Rusk

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ABSTRACT

Use of refined flours in baked products is realized to be harmful to the body. However, refined flours cannot be totally done away with, owing to their functional qualities. Recent efforts in baking industry has been on incorporating composite flours of nutritional signicance. One such effort was attempted here to standardize a jackfruit based baked product with shelf life and commercial value. Jackfruit is an under exploited crop commercially. The traditional uses of the fruit has caused saturation among common man. Realising the demand for baked products, Rusk was proposed to be standardized, with different combinations of refined flour and jackfruit bulb flour. Formulation T6 with the combination of jackfruit bulb flour and refined flour in the ratio 20:80 was adjudged as the best treatment by the sensory panel.

Key words: *Raw jackfruit flour Rusk, Koozha, Composite flour, Sensory evaluation.*

INTRODUCTION

The present study was aimed at developing a value added baked product from raw jackfruit flour.

Now a day's consumers are also increasingly conscious about their health, they demand taste along with nutritive quality. There is an increasing realization that though bakery products processed from refined flour are tasty, they cause various harmful effects to the body, owing to the harmful additives. Thus there is a need felt to substitute refined flour with safe and healthy ingredients. Products from composite flours have thus become a trend in the market.

In the present scenario of Kerala, every year large amounts of jackfruit are produced, out of which a significant portion goes waste due to their perishable nature and seasonal glut. Value addition through processing and preservation has to be considered as an important alternative for reducing the post harvest losses of this nutritious fruit and also for serving it in off season. Among baked products, a product with good shelf life and less preservatives is rusk. It is usually had with tea as a snack.

Bakery products, once considered as a sickman's diet have now become essential food items of the vast majority of people in India. Breads, buns and biscuits have become popular among all sections of the population, irrespective of age groups and economic conditions.

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The cause for rise in popularity of baked products is mainly due to urbanization. This has called for an increased demand for convenience products, at reasonable costs, with greater nutritional qualities and variety with different textural and taste profiles. Rusk is a very old product in our country. It is a bakery product which is made of wheat flour and suji. It is slight sweet in taste and is consumed as a snack with tea and milk. Its preparation process is very simple. It can be preserved for a long period of time i.e. upto 2 to 3 months. They have very low storage cost. This is a very cheap bakery product and even common man can afford it easily. These are popular in urban as well as rural areas.[1].

MATERIAL AND METHODS

Selection and collection of jackfruit

Jackfruit (type koozha) was selected for the study. The matured jackfruits were procured from the Instructional Farm, College of Agriculture, Vellayani.

Raw mature jackfruits 90-105 days after fruit set with optimum visible maturity indices were selected. Maturity indices selected were distance between spines per unit area, hollow sound on tapping and green color of spines. The other ingredients namely refined flour, vegetable oil, sugar, yeast and iodised salt were purchased from the Super market.

Processing of flour

Jack bulb flour was processed according to the method standardized by Veena kumara *et al*[4].

Preparation of composite flour

Composite flour was prepared by substituting refined flour with jackfruit bulb flour up to a maximum of 60 per cent in different proportions. The treatments selected for the study are presented in Table-1

Table -1 Treatment selected for the formulation of baked products

Treatment	Proportion
T_1	60% jackfruit flour + 40% refined flour
T_2	55% jackfruit flour+45% refined flour
T_3	50% jackfruit flour + 50% refined flour
T_4	40% jackfruit flour + 60% refined flour
T_5	30% jackfruit + 70% refined flour
T_6	20% jackfruit flour + 80% refined flour
T_7 (control)	100% refined flour

Processing of Jackfruit Candy

Selected semi ripe jackfruit bulbs were cut into slices (1x1cm).They were subjected to osmotic treatments in two spells (600 and 700 brix). The drained fruit cubes were dehydrated at 65 deg C till crisp. They were cooled and packed[2].

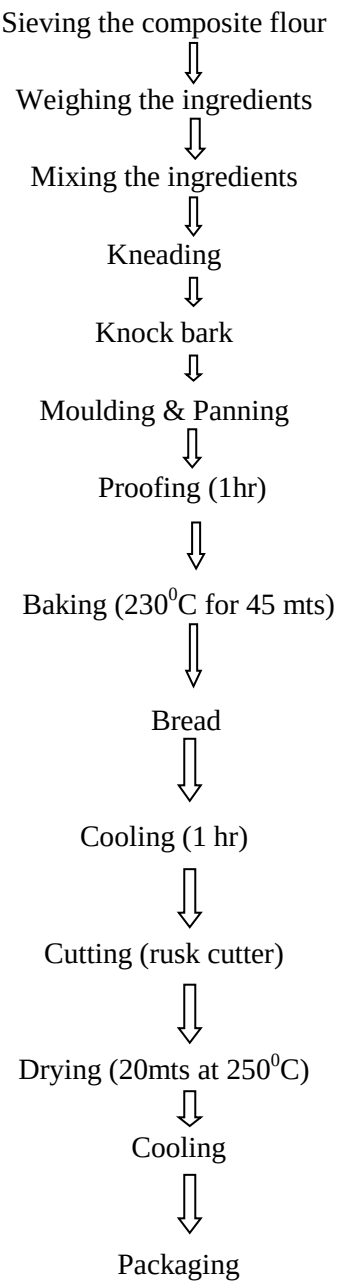
Standardization of baked products

Rusk was processed at Asian bread factory, Kaniyapuram. The details of formulations used for processing rusk is given in the table-2.

Table-2 Ingredients for Rusk

Ingredients	Treatments (100g)						
	T_1	T_2	T_3	T_4	T_5	T_6	T_7 (control)
Refined wheat flour (g)	40	45	50	60	70	80	100
Jack fruit bulb flour (g)	60	55	50	40	30	20	0
Salt (g)	1	1	1	1	1	1	1
Yeast(g)	1	1	1	1	1	1	1
Cardamom powder	2	2	2	2	2	2	2
Fat (g)	2	2	2	2	2	2	2
Sugar (g)	20	20	20	20	20	20	20
Jackfruit candy (g)	5	5	5	5	5	5	5

Flow chart for processing of Rusk



Sensory evaluation of baked products

Sensory evaluation was performed by semi trained panelists after considering their performance test in recognition of basic taste and aroma. The panel comprised of members aged between 20-30years.

Score cards were prepared on a 5 point rating. The 5 point score card for sensory evaluation comprised of the sensory attributes – appearance, colour, flavor, taste, texture and after taste. These were rated as scores ranging from 1-5 as described by Sudha *et al.*

The best treatment was selected by analyzing the scores of various sensory attributes. Among the sensory characteristics, appearance, colour, flavor, taste, texture and after taste of baked products were assessed.

RESULTS AND DISCUSSION

Sensory evaluation is a scientific discipline that analyses and measures human responses to the composition of food and drink, e.g. appearance, touch, odour, texture, temperature and taste. In schools this method provides an ideal opportunity for students to evaluate and give feedback on their dishes and test products.

Appearance

Surface characteristics of food products contribute to the appearance. From the analysis of score of sensory evaluation for appearance of rusk it was found that the sample varied in appearance from even surface to broken surface. Mean rank value for the appearance of rusk was superior in T6 (43.45) after control T_7 (49.45). While the lowest value was obtained for T_1 (21.95) followed by T_2, T_3, T_4 and T_5 with the mean rank value 24.7, 27.35, 29.85 and 63.95. Statistical analysis of the data revealed that there was significant difference between the mean rank scores at 5% level.

Texture

Texture of a food product can be defined as the moderate resistance and friction in response to the pressure of the teeth. The texture of developed rusk varied between crispy to difficult to break. From the sensory analysis of texture it was noticed that T_6 obtained the maximum mean rank value 41.60 after the control T_7 (50.65). While T_1 obtained the minimum mean rank value 21.95.Data analysis revealed that the values were significantly different.

Taste

Among all the parameters used for sensory analysis taste, is the most desirable characteristic for acceptability. The mean rank values for taste of the seven treatments of rusk ranged between 21.65 to 52.20. The highest mean rank score (42.60) for taste was obtained by T_6 after control T_7 (52.20) while lowest mean rank value was obtained for T_1 (21.65). The score obtained for seven the treatments of rusk were significantly different from each other.

After taste

In the present study the after taste of the product was judged by whether the taste of jackfruit bulb flour is remaining or not, after the product leaves the mouth. Statistical analysis of data revealed that there was significant difference between the mean rank values. From the sensory analysis of after taste it was observed that the highest mean rank value was obtained by T6 (43.55) and the lowest mean rank value 22.0 was obtained by T_1.

Flavour

The flavour of the product varied between starchy flavour to burnt flavor. From the sensory analysis it was the observed that the superior value for flavor was obtained by T_6 (45.15) after control T_7 (50.0). While the minimum mean rank value (21.50) was obtained by T_1.

Overall acceptability

Overall all acceptability of the seven treatments is clearly depicted in table 3.Among the seven treatments. T6 obtained the maximum mean rank value of 47.80 after the control T_7 (50.0). Least mean rank value of 22.0 and less acceptability was noted for T_1. Result of tests indicates that there was significant difference in the mean rank scores obtained for the seven treatments T_1 to T_7. On the basis of analysis of scores T_6 was selected as the best combination.

Table – 3 Sensory evaluation of rusk

Treatments (Ranks)	Appearance	Texture	Taste	After taste	flavor	Over all acceptability
T1 (VI)	21.95	21.95	21.65	22.00	21.50	22.00
T2 (V)	24.7	24.70	22.70	24.45	24.25	22.00
T3(IV)	27.35	27.85	26.45	27.70	26.35	24.2
T4(III)	27.85	40.50	39.06	38.12	39.12	36.37
T5(II)	36.95	35.45	37.75	37.95	36.05	39.50
T6 (I)	43.45	41.60	42.60	43.55	45.15	47.80
T7 (Control)	49.45	50.65	52.20	48.45	50.00	50.0
K value	18.20	18.75	23.30	17.35	20.84	25.02
CD (0.05)	**0.32**					

(Scores indicated are mean rank values)

CONCLUSION

The scope for utilizing jackfruit as a baked product proved to be successful. The product was essentially more healthy, without chemical additives and the nutritional quality was certainly better than pure refined flavor based rusk.

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