



DEVELOPMENT OF VALUE ADDED CEREAL PULSE BASED READY TO EAT PREMIXES

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ABSTRACT

Present study aimed to develop value added cereal pulse based ready to eat premixes using the traditional recipe *sattu*. Dried and powdered carrot, tomato, sapota and dates were used for value addition which also served as experimental samples. Sensory evaluation was carried out which exhibited better acceptability of value added *sattu* premix with carrot, tomato and dates powder. Experimental sample developed with sapota powder showed significant difference when compared with control *sattu* premix sample. The study concluded that addition of 10g of dried powder of carrot, tomato and dates are acceptable and can be used for nutritional and therapeutic purpose.

KEYWORDS : Ready to eat, value addition, premix, dried powders, *sattu*

INTRODUCTION

Ready to Eat (RTE) foods are popular and in demand due to convenience, time saving and require no skill in preparation. Nutrition is the key factor to look in such convenience foods. Now-a-days, many commercial, highly processed ready to eat foods are available but they may seem to be devoid of nutritional aspects. Also, there may be possibilities to contain hidden substances which are not suitable for health.

Sattu or *satu*, a mixture of roasted wheat and bengal gram is a traditional cereal pulse based health food. Seasoned with little spices like dried ginger powder or cinnamon powder, *sattu* is either prepared in a semisolid consistency to eat or dissolved in water to prepare a drink. It is a popular belief that *sattu* is having cooling effect on body hence taken during summer days. Various recipes like laddoo, barfi, paratha etc. are prepared from *sattu* flour.

From nutritional point of view, *sattu* is a nutrient rich food. Cereal pulse combinations mutually supplement proteins and make a complete protein in vegetarian diets. Addition of pure ghee, sugar or jaggery provides energy and quality fats. *Sattu* is also packed with minerals like calcium, phosphorous and magnesium. *Sattu* is liked by people of all ages and has therapeutic uses too. It can be used as a weaning food (Rohini Devi et al.1990), geriatric food, food for tube feeding and malnutrition. Without sugar or jiggery it can be used for obesity and diabetes.

Due to modernization, this traditional food is replaced by many commercial preparations like breakfast cereals, instant flakes and powders. But in rural and semi-rural areas *sattu* is still preferred seasonal health food.

Looking at overall benefits, the present study was carried out for value addition of *sattu*, a cereal pulse based ready to eat premix, to enhance its nutritional value and acceptability. Carrot, tomato, sapota and dates (dried variety) in powdered form were considered for value addition. Carrot is rich in carotenoids and good source of beta carotene whereas tomato is rich lycopene. All these components have potent antioxidant properties. Sapota and dried dates are packed with vitamins and minerals and functional components like fibre.

Sarika Tyagi and Suchi Gupta (2017) reported that fortification of *sattu* with soybean flour by 10% was acceptable and improved nutritional value. *Sattu* based fortified products were also developed by Nida Fatma et al (2017) and found them better acceptable. Nath et al (2017) stated that wheat

flour and *sattu* can be satisfactorily added together for making fortified cookies. Reeta Mishra et al (2018) carried out a study in which ready to eat snack food *sattu* was enriched with soy and pearl millet flour and found them highly acceptable and nutrient rich.

MATERIALS AND METHODS

All the ingredients used for control and experimental samples were procured from local market. For value addition carrot, tomato, sapota and dates were used. These were thoroughly washed and cleaned to remove dirt. Carrot and sapota were peeled. All the ingredients except dates were thinly sliced and sundried until completely dry and ground into fine powders.

For preparation of *sattu*, wheat and bengal gram were separately cleaned, washed, dried in shade and roasted on slow flame till pleasant aroma started coming from the roasted grains. The grains allowed to cool completely and then milled to get fine powder. The control sample was prepared by mixing 70g wheat flour and 30g bengal gram flour. Water was added slowly to the mix and stirred to get desired consistency. For flavor and taste, 20g jaggery and pinch of salt and cinnamon powder was added separately while serving.

Four experimental variations were prepared by addition of 10g of carrot, tomato, sapota and dates powder to control sample of *sattu* premix in (65g wheat flour and 25g bengal gram flour). The quantity of vegetable and fruit powders was decided to get benefits without altering the sensory parameters drastically. One serving of the *sattu* premix was 50g. The control and experimental samples were standardized in terms of ingredients used, time for preparation, procedure and measurements.

A panel of ten judges evaluated the control and experimental samples on the basis of appearance, consistency, taste, flavor and overall acceptability with the help of keys and scores assigned to each sensory characteristic. Procedure of sensory evaluation was repeated for three times. The scores were then averaged and in statistical analysis mean, ANOVA and t test were calculated.

RESULTS AND DISCUSSION

Table 1 Mean scores of sensory analysis of control and experimental samples

SN	Sensory Characteristics	Mean Scores				
		Control sample	Experimental samples			
		E1	E2	E3	E4	
1	Appearance	9.13	8.59	7.99	8.33	8.53

2	Consistency	8.59	8.29	8.33	8.39	8.33
3	Taste	8.39	8.59	7.59	8.12	8.46
4	Flavor	8.39	8.12	7.59	8.00	8.59
5	Overall acceptability	8.39	8.39	7.88	8.53	8.86
	F Stat	6.292 (P = 0.0019)				
	t value #		1.419	4.715*	1.999	0.129

Composition Tables, 2017, National Institute of Nutrition, Hyderabad, Telangana 500007

*Significantly different at 5% level of significance

t test value of mean scores of each experimental variation in comparison with control sample

It is observed from the table 1 that for appearance, control variation had highest mean score 9.13 and variation with sapota powder had minimum mean score of 7.99. for consistency, all the samples got good scores. For taste, flavor and overall acceptability, experimental sample with sapota powder received least mean score of 7.59 and 7.88 respectively, among all the samples. It is observed during the drying procedure changes occurred in color and flavor of the vegetables and fruits. Sapota dried powder had more intense brown color which adversely affected the sensory parameters.

ANOVA revealed significant difference between the mean scores of control and experimental samples ($P = <0.05$). When mean scores of each experimental variation was compared with mean scores of control sample with the help of t test, acceptable samples were *sattu* premix with carrot, tomato and dates as these showed no significant difference. But, *sattu* premix with sapota powder showed significant difference so it was not acceptable.

Nutritive value of the control and experimental variations was calculated refereeing Indian Food Composition Tables by Longvah et al. (2017). Energy and protein content of all the control and experimental variations were similar. Increase in carbohydrate content was observed in carrot and dates added *sattu* premixes. Besides these, fibre content was found to be increased in all the experimental variations.

Cost of the premixes was also calculated based on the current market prices at the time of procurement of the ingredients and other utility costs. It was seen that among all the samples, cost of *sattu* premix added with dried dates powder was high. Cost of developed premixes was found lower when compared with the cost of readymade *sattu* available in the local market.

CONCLUSION

Vegetables and fruits can be sundried, powdered and can be used for value addition. Cereal pulse based traditional premix *sattu* can be enriched with vegetables and fruits powder at household level. Carrot, tomato and dates powder in the 10 g quantity can be added to traditional *sattu* premix. It enhances nutritional benefits as vitamins, minerals, antioxidants and functional components get increased. These premixes can certainly use for therapeutic purposes in many diseases.

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