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Consumer acceptability of the nutri-dense burfis

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Abstract
Micronutrient deficiency has profound effects on physical and mental development eroding the quality of human resources. Micronutrients are also involved in the function of the human system that when deficient lead to potentially harmful infections. An attempt was made to combine the food groups to develop nutri-dense burfis in order to combat micronutrient deficiency. An objective was to conduct a consumer acceptability test for nutri-dense burfis. Burfis (B-1, B-2, B-3, BC) were prepared using standard methods. Organoleptic evaluation was conducted. Among four variation burfis, two were selected (B-1 and B-3) for consumer acceptability test. A score sheet was prepared and developed burfis were distributed to forty five members *viz.* staff members (35 nos.) and girl students (10 nos.). They were asked to write their opinion about the products. It was evident from the findings that 64 per cent of the respondents found B-1 acceptable, 29 per cent of the respondents neither liked nor dislike and 7 per cent disliked the product. B-3 was liked by 73 per cent, 20 per cent neither liked nor dislike the product and 7 per cent did not find the product acceptable. Thirteen per cent of the respondents felt that the burfi products reminded them of some other burfi and 84 per cent felt that the burfi products was not reminded of any other burfi products. Among the 13 per cent of the consumers, 2 per cent was reminded of coconut burfi, 8 per cent felt that the products reminded them of ground nut burfi and 2 per cent was reminded of cashew nut burfi. Suggestions for improvement of B-1 was asked, and it was found that 22 percent suggested that there was no need for improvement of the product, 13 per cent of the consumers opined the product should be less sweet, 8 per cent opined that the burfi product should be added more of other ingredients, 15 per cent suggested to add more sugar and 56 per cent of the consumers did not responded. Suggestions for improvement of B-3 were 20 per cent responded there was no need for improvement, 18 per cent responded the product should be less sweet. Eight per cent of the respondents opined to add other ingredients, 11 per cent felt that the product should be softer, 4 per cent gave their opinion more sugar was required and others have not 38 per cent not responded. According to the data received, B-3 (73%) was more acceptable than B-1 (64%). However, both of the variations were accepted by the majority in which development of nutri-dense burfi is possible for combating micronutrient deficiency.

Keywords: *organoleptic; nutri-dense; burfi; consumer acceptability*

Introduction
Micronutrient deficiency has profound effects on physical and mental development eroding the quality of human resources. Micronutrients such as vitamin A, iron and zinc are also involved in the function of the immune system, their deficiency can lead to potentially harmful infections, and enhancing vitamin A intake may reduce maternal mortality [1]. Hence, the combination of food groups helps to improve the micro nutrient deficiency. Objective was to conduct consumer acceptability of nutri-dense burfi
Material and methods

Procurement of the materials
Materials were procured from the local market *viz.*, whole wheat flour, sugar, butter, egg, green gram whole, sesame seeds, potato, papaya, sweet potato, banana, cluster bean, capsicum, carrot, sugar, vanaspati, groundnut, beet root. Amaranth was procured from AICRP, underutilised crops, UAS, GKVK.

Pre-preparation for the product development
Pre-preparation of ingredients for preparation of burfi was done by cleaning, dehydrating and grinding them.

Development of the nutri-dense products.
Nutri-dense burfis (B-1, B-2, B-3, BC) were developed by using standard procedure [2, 3]. Organoleptic evaluation was conducted and two variations (B-1 and B-3) were selected for consumer acceptability. Table 1 shows the formulation of nutri-dense burfi.

Table 1: Formulation of Nutri-Dense Burfi

Ingredients	Quantity (g)			
	BC	**B-1**	**B-2**	**B-3**
1. Sugar	35	50	50	50
2. Fat	5	5	5	5
3. Groundnut		10	10	10
4. Green gram flour (germinated)		10	10	10
5. Amaranth flour		15	15	15
6. Sesame seeds		5	5	5
7. Condensed milk	15	15	15	15
8. Carrot powder (dehydrated)		5	-	-
9. Beet root powder (dehydrated)		-	5	-
10.Papaya powder (dehydrated)		-	-	5
11. Cashew nut	35	-	-	-
Total	**115**	**115**	**115**	**115**

Consumer acceptability of the nutri-dense burfis.

A score sheet (table2) was prepared and developed sweet biscuit and burfi was distributed to forty five members viz. staff members (25 nos.) and girl students (10 nos.). They were asked to write their opinions about the products.

Table 2: Score sheet for the acceptability of nutri dense burfi by consumers

1. Name:	**Age:**		
2.Male/ Female	Tick: Students Adult Elderly		
Product	**Like**	**Neither like/ Dislike**	**Dislike**
1. B1 2. B3			
3. Does it remind you of any other burfi? Please mention 4. Your suggestions to improve the biscuits.			

Results and Discussion

Table3 shows the acceptability of burfi products. Consumer acceptability of the products were conducted for 45 respondents of both men, women and students. They were randomly selected. Majority (58%) of the respondents found the biscuit acceptable since they were fond of sugar less products, 27 per cent neither liked nor disliked the product and 15 per cent of the respondents found the product unacceptable because of less sugar. However, eighteen per cent of the respondents answered that the product reminded them of some other biscuits.

Two per cent responded that the product tasted like ragi biscuit, 13 per cent responded that it tasted like marie biscuit and 3 per cent responded that it reminded them of oat meal biscuit. Due to the dry texture and less sugar content, this reminded them of such biscuits.

It was observed from the findings that 15 per cent of the respondents suggested that the product need not be improved since they preferred the way it was, 4 per cent suggested that, some other ingredients like dry nut, coconut, ajwain, elaichi etc. should be added to increase taste and nutrition. Three per cent responded that it should be baked for some more time since they found the product raw and unbaked, 8 per cent of the respondents suggested to make it sweet and salty, 27 per cent responded that, the product should be sweeter whereas 4 per cent, suggested to make it softer since they felt the texture was hard and the remaining 16 per cent did not responded to the question.

It was found that, 64 per cent of the respondents found B1 to be acceptable, 29 per cent of the respondents neither liked nor dislike and 7 per cent disliked B1 since they felt the product was dry and grainy and some were not able to get the taste. In the case of B3, 73 per cent of the respondents liked the product, 20 per cent neither liked nor dislike the product and 7 per cent did find the product acceptable. Thirteen per cent of the respondents answered that, the burfi products reminded them of some other burfi and 84 per cent responded that, the burfi products did not remind them of any other burfi products. Among the 13 per cent of the responders, 2 per cent mentioned that, the products reminded them of coconut burfi, 8 per cent responded that, the products reminded them of ground nut burfi and again 2 per cent responded that, the burfi products reminded them of cashew burfi. Suggestions for B-1 were 22 percent suggested that, there was no need for improvement of the product, 13 per cent respondents suggested the product should be less sweet, 8 per cent suggested that, the burfi product should be added more of other ingredients, 15 per cent suggested to add more sugar and 56 per cent did not responded. Suggestions for B-3 were, 20 per cent responded there was no need for improvement, 18 per cent responded the product should be less sweet. Eight per cent suggested to add other ingredients, 11 per cent suggested to make the product softer, 4 per cent responded to add more sugar and 38 per cent did not responded. [4] reported that, biscuits containing 20 percent wheat bran were selected for mass consumer acceptability. Fifty one percent consumers rated the product as excellent whereas 39 per cent and 10 per cent rated it as very good and good, respectively. However, the result of this study was different from the present study.

Table 3: Acceptability of burfi products by consumers

Sl. No.	Products	Category	Respondents	
			Number	**Percent**
1.	B1	Like	29	64.00
		Neither like nor dislike	13	29.00
		Dislike	3	07.00
2.	B3	Like	33	73.00
		Neither like nor dislike	9	20.00
		Dislike	3	07.00
3.	Does it remind you of any other burfi?	Yes	6	13.00
		No	38	84.00
	If yes, please mention	Coconut burfi	1	02.00
		Groundnut burfi	4	08.00
		Cashew burfi	1	02.00
4.	Your suggestions to improve burfi	B1 – No need	10	22.00
		B1 – Make less sweet	6	13.00
		B1 – Mix other ingredients	4	08.00
		B1 – Improve texture	7	15.00

			Make it sweeter	2	04.00
			No response	25	56.00
		B3	No need	9	20.00
			Make less sweet	8	18.00
			Mix other ingredients	4	08.00
			Improve texture	5	11.00
			Make it sweeter	2	04.00
			No response	17	38.00

Conclusion

Although the products did not receive a 100 per cent positive feedback, it did receive a medium positive feedback implying that combination of food groups is possible to develop kinds of nutri-dense burfis for increase in nutrition and both of the variations were accepted by the majority, therefore, development of nutri-dense burfi is possible for combating micronutrient deficiency.

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