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Studies on Organoleptic Evaluation and shelf life of Paneer Whey Carrot Halwa

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ABSTRACT

A study was undertaken by utilizing different levels of Paneer Whey(i.e. 0.5%, 1%, and 1.5%) for manufacturing of good quality Carrot Halwa. Grated carrot and a mixture of Ghee, Sugar, cardamom, and cashewnut were used as other ingredients. The quality of Halwa was highly influenced by Carrot and their concentration in whey. Whey greatly improved the shelf life of Carrot Halwa. The product was analyzed for organoleptic attributes (colour and appearance, body and texture, flavour and taste) by trained panelist using 9 point hedonic scale. Chemical (Fat, protein, carbohydrate) and microbiological (SPC, Coliform, Yeast & mold count) analysis were done for estimating its nutritional content and shelf life.SPC and yeast and mold count increased during storage but within permissible level. It showed that Paneer whey extend shelf life of the product. As per as product overall acceptability judged by the panelist, the treatment can be rated as T_3>T_2> T_1> T_1.

Keywords:*Paneer Whey, Shelf life, Carrot Halwa.*

INTRODUCTION

Whey is a yellow-green watery liquid that separates from the curd during the cheese making process. It is also a major byproduct of Paneer and Chhana (Indian variety of soft cheese) industry which contains nearly half of all solids found in whole milk. These solids include protein, fat, minerals and lactose. The liquid whey contains approximately 93% water, 0.6% whey protein, 1.05% fat, 0.7% ash, and 4.9% lactose. Whey is available all over India, both for forage and human consumption. It is a by- product of cheese, Paneer or chhana industry. Generally it is wasted or dumped by the dairy industry and not having any direct use (Bhatia, 1997). Carrots are very rich in B-carotene and contains appreciable amount of Thiamin and Riboflavin (Kotecha *et.,al* 1998). Whey is used in the preservation of curries, pickles and sweetmeats. It has a beneficial effect on the kidneys and preventive for brick dust sediments sometimes found in urine (Devaraj, *et.,al*2006).

Carrot is recommended in chronic Diarrhea; a decoction of carrot is a popular remedy for jaundice in Europe and is also considered as a source of sugar (Jayprakasha, and Braeckner 1999). A good stimulating poultice ointment of rasped carrot made with lard is very useful in burns and scalds (Hoffman, 1996). Carrots are exceptionally rich in iron and it is said that they beautify the complexion. It is also a very good appetizer (Manjunatha, *et.,al* 2003). In this study an effort has been made to prepare good quality Carrot Halwa with the help of Paneer Whey using the technique of manufacture as recommended by (Singh, *et.,al* 1994) .

MATERIAL AND METHODS

The carrots are first cleaned with water and then the skin removed. They are subsequently, turned into fine shreds with the help of the coconut shredder. The milk is brought to boil over low fire in a karai. The shredded carrots are added to the boiling milk and stirring continued till the milk get fully condensed and the carrot shreds get fully cooked. In the mean while cashew nuts are cut into small bits and fried with a little ghee.

Almost simultaneously the cane sugar is prepared in a separate vessel by boiling the sugar with about half of its quantity of water till it gets concentrated to a perceptibility sticky consistency. At this stage, the milk cooked carrot is stirred into the sugar, simultaneously adding the ghee fried cashew nut, saffron, cardamom or elaichi (small) powder and mixed with different ratios of paneer whey 1 : 0.5, 1 : 1 and 1 : 1.5 (ratio of grated carrot and Paneer Whey) for T_1, T_2 and T_3 respectively.

Organoleptic Evaluation of the prepared product:

Freshly prepared products were served for evaluation to panel members consisting of 5 experienced persons. 9 point hedonic scale proforma was used as suggested by **Amerine *et.al*. (1965).**

Statistical analysis:

The data obtained on different aspects as per plan were tabulated and statistically analyzed as per **Chandel (1991).**

Table No. 1: Details of different treatments for makingcontrol and paneer whey carrot halwa

Materials(%)	Different treatmentscontrol and Paneer Whey Carrot Halwa			
	T_0	T_1	T_2	T_3
Paneer whey	-	0.5	1.0	1.5

Selection of carrot (shred)
+
Whole milk (Fat 6.0%, SNF 9%)
↓
Cooking carrot with milk
↓
Addition of sugar(45%)
↓
Cooking
↓
Addition of paneer whey
↓
Addition of Ghee fried cashew nut (3.5%)
↓
Addition of Powdered cardamom (0.1%)
↓
Addition of Saffron (0.05%)
↓
Paneer whey carrot halwa

Fig. 1: Flow chart for preparation of control and Paneer Whey Carrot Halwa

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RESULTS AND DISCUSSION

Organoleptic attributes of control and Paneer Whey Carrot Halwa:

Table-2 shows organoleptic attributes of control and paneer whey carrot halwa.

Colour and Appearance:

There were significant differences found among the treatments for colour and appearance.The highest mean for colour and appearance for Carrot Halwa with Paneer Whey was T_1 (7.8), followed by T_0 (7.72), T_2 (7.12) and T_3 (6.9). F Value was 8.70, indicating significant effect of treatment on colour and appearance (Fig.2).The differences among the treatments were significant.

Table No. 2: Organoleptic Parametersof control and Paneer Whey Carrot Halwa

Parameters	Control and Paneer Whey Carrot Halwa				F value	C.D.
	T_0	T_1	T_2	T_3		
Colour and Appearance	7.7	7.8	7.1	6.9	8.70*	0.493
Body and Texture	7.6	7.2	6.7	6.2	12.8*	0.55
Flavour and Taste	7.8	7.5	7.0	6.5	16.52*	0.49

* Significant at 5 % level; ** Non-significant at 5 % level

Body and texture:

The average score for body and texture differed significantly. The highest mean for body and texture in Carrot Halwa was T_0 (7.6), followed by T_1 (7.2), T_2 (6.7) and T_3 (6.2). F Value was 12.8, indicating significant effect of treatment on body and texture (Fig.2). The differences among the treatments were significant.

Flavour and Taste:

There was significant difference found among the treatments for flavour and taste score.The highest mean score for flavour and taste of Carrot Halwa was T_0 (7.8), followed by T_1 (7.5), T_2 (7.0) and T_3 (6.5). F Value was 16.52, indicating significant effect of treatment on flavour and taste (Fig.2). The differences among the treatments were significant.

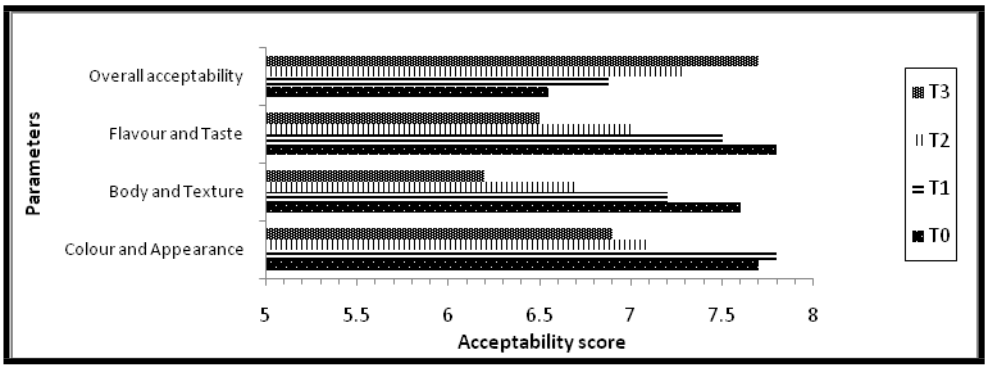

Fig. 2: Average of organoleptic parameters and overall acceptability score controland Paneer Whey Carrot Halwa

Overall acceptability scores for control and Paneer Whey Carrot Halwa:

Table 3 and fig.2 showed the highest mean value for overall acceptability of the product was T_3(7.7), followed by T_2(7.28), T_1(6.88) and T_0(6.55). The differences among the treatments were significantfound in There were significant differences found between the treatments. F Value was 13.31, indicating significant effect of treatment onOverall acceptability.

Table No. 3: The average overall acceptability of control and Paneer Whey Carrot Halwa

Replication	*Control and Paneer Whey Carrot Halwa*				F value	C.D.
	T_0	T_1	T_2	T_3		
1	6.6	7.0	7.2	7.4	13.31*	0.469
2	6.7	6.6	6.9	7.8		
3	5.8	6.3	7.3	7.6		
4	6.4	7.0	7.5	8.0		
5	7.2	7.5	7.5	7.7		
Mean	**6.55**	**6.88**	**7.28**	**7.7**		

* Significant at 5 % level; ** Non-significant at 5 % level

Shelf life of paneer whey Carrot Halwa:

Microbial parameters ofControl and paneer whey carrot halwa (1st day of storage):

The highest SPC (10^3cfu/g) was recorded in Carrot Halwa with Paneer Whey was T_0 (90.80), followed by T_1 (81.80), T_2 (70.60) and T_3 (53.00). F Value was 33.08, indicating significant differences between the treatments. The highest mean for yeast and mold count was found in T_0 (23.4), followed by T_1 (20.20), T_2 (17.80) and T_3 (16.4). F Value was 32.59, indicating significant differences among the treatments. All the samples of Carrot Halwa with Paneer Whey did not show the presence of coliform. Thus the product was proved to be of good quality.

Table No. 4: Microbial parameters ofControl and Paneer Whey Carrot Halwa

Parameters	Control and Paneer Whey Carrot Halwa				F value	C.D.
	T_0	T_1	T_2	T_3		
SPC10^3cfu/gm(1st day)	90.80	81.80	70.60	53.0	33.08*	9.756
SPC10^3cfu/gm(3rd day)	95.20	86.20	76.20	62.20	23.26*	10.11
Yeast and Mold count 10^2cfu/gm(1st day)	23.4	20.20	17.80	16.4	32.59*	1.85
Yeast and Mold count 10^2cfu/gm(3rd day)	25.60	21.80	19.80	19.0	16.68*	2.40
Coliform 10^1cfu/gm	Nil	Nil	Nil	Nil	Nil	Nil

* Significant at 5 % level; ** Non-significant at 5 % level

Microbial parameters ofControl and Paneer Whey Carrot Halwa (3rd day of storage):

The highest SPC (10^3cfu/g) was recorded in Carrot Halwa with Paneer Whey was T_0 (95.20), followed by T_1 (86.20), T_2 (76.20) and T_3 (62.20). F Value was23.26, indicating, significant differences between the treatments. The highest mean for yeast and mold count was found in T_0 (25.60), followed by T_1(21.80), T_2(19.80) and T_3 (19.0). F Value was16.68, indicating significant differences among the treatments. All the samples of Carrot Halwa with Paneer Whey did not show the presence of coliform. Thus the product was proved to be of good quality.

Although, SPC and yeast and mold count increased during storage but within permissible level. It showed that Paneer whey extend shelf life of the product.

CONCLUSION

From the present investigation it may be concluded that an acceptable Carrot Halwa can be prepared with the help of Paneer Whey. The shelf life of Carrot Halwa with paneer whey is longer and its cost of production is comparatively low. So the experimental Carrot Halwa has a good market potential.

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