Biological Forum – An International Journal **14(1): 1154-1156(2022)**

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

Study on Acceptability and Cost Structure of Paneer Whey Soup Blended with Tomato Powder

G.S. Gawad[1], R.R. Shelke[2], K.V. Jadhao[1*], P.A. Kahate[2], S.P. Nage[2] and K.U. Bidwe[3]
[1]M.Sc. Scholar, Department of Animal Husbandry and Dairy Science, PGI, Dr. PDKV, Akola, (Maharashtra), India.
[2]Assistant Professor, Department of Animal Husbandry and Dairy Science, College of Agriculture, Dr. PDKV, Akola, (Maharashtra), India.
[3]Assistant Professor, Office of Director of Extension Education, Dr. PDKV, Akola, (Maharashtra), India.

(Corresponding author: K.V. Jadhao)*
(Received 12 November 2021, Accepted 19 January, 2022)
(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: The present investigation was carried out in the Department of Animal Husbandry and Dairy Science, Dr. PDKV, Akola (Maharashtra) during the year 2020-21, with a view to utilizes Tomato Powder in preparation of Paneer Whey Soup with different combinations of Paneer Whey and Tomato Powder like 95:05, 90:10, 85:15, 80:20 and 75:25 in treatments T_1, T_2, T_3, T_4 and T_5, respectively. The samples of Paneer Whey Soup were subjected to sensory evaluation by panel of judges. The Paneer Whey Soup prepared from combination of 90 per cent Paneer Whey and 10 per cent Tomato Powder was found acceptable with highest score in treatment T_2 (8.66). The cost of most acceptable Paneer Whey Soup prepared with 10 per cent tomato powder was Rs. 70.90 per lit. and Rs. 14.18 for 200 ml bottle.

Keywords: Paneer Whey Soup, Tomato Powder, Overall Acceptability, Cost of Production.

INTRODUCTION

Nutritious diet is a basic component of healthy life style. The role of diet and specific foods for the prevention and treatment of disease and improvement of body functions is being investigated around the world. With increase in life expectation as well as standard of living, people now, not only require convenience but also anticipate health benefits from the foods. Whey is an excellent beverage base and genuine thrust quencher, nutritious and possesses medicinal properties but treated as waste dairy by-product. Paneer whey contains water 93.6 per cent, fat 0.5 per cent, protein 0.4 per cent, lactose 5.1 per cent and ash 0.4 per cent. Tomatoes are good source of vitamin C, the phyto chemical lycopene, vitamin B_1 and ascorbic acid. Lycopene is the carotenoid present in tomatoes, which gives its characteristic colour. Minerals like Ca, P, K, Na and Mg are all present as constituents of whey which are required for normal health and supplementation in case of Gastro-Intestinal disorders (Gandhi *et al.,* 1991). Considering the health benefits to utilize whey and its nutrients for preparation of tomato whey soup/beverage, with main objectives to find out overall acceptability and calculate cost of production.

MATERIALS AND METHODS

The present investigation was conducted in the Department of Animal Husbandry and Dairy Science, Post Graduate Institute, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during 2020-21. The treatment details are as T_1 = 95% of paneer whey + 5% tomato powder, T_2 = 90% of paneer whey + 10% tomato powder, T_3 = 85% of paneer whey + 15% tomato powder, T_4 = 80% of paneer whey + 20% tomato powder, T_5 = 75% of paneer whey + 25% tomato powder. Fresh, clean, whole cow milk was procured from Livestock Instructional Farm of Department of Animal Husbandry and Dairy Science, Dr. PDKV, Akola. Good quality branded Tomato powder purchased from local market and used for the experimental purpose as per treatment. Uniform quality and brand was maintained for all replications. Process line was followed as prescribed by Verma *et al.* (2010) with slight modification. A good quality fresh cow milk was obtained and strained through muslin cloth. Milk was be standardized to be the level of 4.0 percent fat by following Pearson's square method. The standardized milk was transferred to stainless steel vessels and heated to the boiling with continuous stirring. When the boiling of milk was started 2.0 percent citric acid solution was distributed evenly over the surface of boiled milk and stirred till coagulation takes place. The curdled milk was collected in lumps by straining through muslin cloth. The clear drained whey was collected in the vessel. The whey was again heated to a temperature of 100°C for 5 minutes, so as to remove the traces of fat and curd particles. The yellowish green whey was then used for preparation of whey soup. In all

above treatments, the ingredients like Ginger 0.2%, Garlic 0.2%, Onion 1.2%, Corn flour 2%, Vegetable oil 1%, Salt 1.2 % was utilized. Calculated amount of Tomato powder added according to treatments.

RESULT and DISCUSSION

Sensory Evaluation of Paneer Whey Soup. Sensory evaluation of paneer whey soup conducted by panel of judges judged the flavour, consistency, colour and appearance and overall acceptability of soup. The judges were supplied with standard proforma and under suitable conditions for tasting the product. The evaluation of the soup was carried out by a 9-point Hedonic Scale as presented by Pal and Gupta (1985). Sensory quality of Paneer Whey Soup with tomato powder tabulated in Table 1.

Table 1: Sensory quality of Paneer Whey blended with Tomato Powder.

Treatments	Parameter			
	Flavour	**Consistency**	**Colour and appearance**	**Overall acceptability**
T1	6.79	6.73	6.71	8.5
T2	8.9	8.39	8.77	8.66
T3	7.65	7.05	7.63	8.24
T4	5.34	5.71	5.47	7.91
T5	4.84	4.37	4.84	7.74
'F' Test	Sig	Sig	Sig	Sig
S.E.(m)±	0.024	0.009	0.02	0.038
C.D. at 5%	0.074	0.026	0.06	0.116

Flavour. The study conducted pertaining the effect of different level of tomato powder in preparation of paneer whey soup the mean scores of flavour for paneer whey soup were 6.79, 8.90, 7.65, 5.34 and 4.84 for treatments T_1, T_2, T_3, T_4 and T_5, respectively. It indicates that the flavour of paneer whey soup changed as the levels of tomato powder changes. The maximum scores were allotted to the treatment T_2 (8.90) whereas, the lowest treatment (4.84) was allotted for treatment T_5. Treatment T_2 was superior over T_1 and T_3, T_4 and T_5. Treatment T_2 (90 % paneer whey + 10 % tomato powder) showed maximum liking as compared to the rest of the treatments. results were closely in agreement with Shukla *et al.* (2013); Deepa and Krishnaprabha (2014) who observed that the highest score for flavour was found to be more acceptable. These observations supported the present results on flavour of tomato powder incorporation to whey.

Colour and appearance. The study was undertaken to evaluate the effect of different levels of Tomato Powder on Paneer whey, the mean scores of colour and appearance for paneer whey soup were 6.71, 8.77, 7.63, 5.47 and 4.84 for treatments T_1, T_2, T_3, T_4 and T_5 respectively. The highest score (8.77) was obtained for treatment T_2 while, the lowest score (4.84) was obtained for treatment T_5. Treatment T_2 was significant by superior followed by T_3, T_1, T_4 and T_5. Paneer whey soup product prepared from (90 % paneer whey + 10 % tomato powder) T_2. Bhavsagar *et al.* (2010) studied the manufacture of pineapple flavoured beverage from channa whey and found that the average score of pineapple flavoured beverage for colour were 7.5, 7.6, 7.7 and 7.7 for treatments T_0, T_1, T_2 and T_3, respectively in pineapple based channa whey beverage. The earlier work of these researchers is supportive to present investigation.

Consistency. The study conducted pertaining the effect of different level of tomato powder in preparation of paneer whey soup. The increases in tomato powder levels significantly affect the sensory score for consistency. The mean scores for consistency of whey soup were 6.73, 8.39, 7.05, 5.71 and 4.37 under treatments T_1, T_2, T_3, T_4 and T_5, respectively. The highest score (8.39) was recorded in treatment T_2 while, the lowest score (4.37) was obtained by T_5 treatment. Treatment T_2 was significantly superior than T_1, and T_3, and at par with T_4 and T_5. The observations clearly indicate that, the highest liking was toward T_2. These results of consistency are closely agreement Shukla *et al.* (2013) developed a probiotic beverage using whey and pineapple juice and *Lactobacillus acidophilus* as a cultural microorganism. They opined that the highest score for consistency was recorded by the beverage prepared with pineapple juice and whey (35:65).

Overall acceptability. The study was undertaken to evaluate the effect of different levels of Tomato Powder on Paneer, the mean scores for overall acceptability of whey-based soup were 8.50, 8.66, 8.24, 7.91 and 7.74 under treatments T_1, T_2, T_3, T_4 and T_5 respectively. The maximum scores were allotted to the sample T_2 (90 % paneer whey + 10 % tomato powder). Tomato powder based paneer whey soup with treatment T_2 obtained highest score and significantly superior due to its flavour, colour and appearance and consistency as compared to other treatments. finding are agreement with Sakhale *et al.* (2012) reported that a beverage prepared with 30 per cent mango juice and 70 per cent whey had highly acceptable taste and overall acceptability.

Cost of production of paneer whey soup. Results obtained during the present study the cost of production of different treatment combinations was from Rs. 50.47 to Rs. 122.4 per 1000 ml for treatment T_1 to T_5 respectively. The cost of treatment T_2, T_3, and T_4 were as 70.90, 89.56 and 106.66 per 1000 ml, respectively. The highest cost was recorded for treatment T_5 *i.e.*, Rs 106.66 for 25 per cent tomato powder was incorporated. The lowest cost was recorded for treatment T_1 i.e., Rs

50.47. Increased level of tomato powder showed the increasing trend in cost of production of paneer whey soup. The cost of production of paneer whey soup for superior treatment, i.e. treatment T_2 with 10 percent blending of tomato powder in paneer whey was Rs 70.90 per liter. The results are agreement with Bhavsagar *et al.* (2010) determined the cost of production of pineapple chakka whey beverage wereRs 20.32 and 12.60 /lit., respectively. The cost of production of sugarcane juice-based paneer whey beverage (T_4) product was near about the cost recorded by authors mentioned above. The cost of production different beverages was found different.

Table 2 : Cost of production of paneer whey soup prepared by blending with different levels of tomato powder (Rs. /lit.).

Sr. No.	Particulars	Treatment combinations				
		T_1	T_2	T_3	T_4	T_5
1.	Whey (Rs 1/lit.)	5	5	5	5	5
2.	Tomato powder (Rs 500/Kg.)	25	50	75	100	125
3.	Corn Flour (Rs40 /Kg)	1	1	1	1	1
4.	Ginger, Garlic, Onion Paste (1.6%)	2	2	2	2	2
5.	Other (Fuel, Labour, Miscellaneous)	20	20	20	20	20
6.	Total Quantity	1050	1100	1150	1200	1250
7.	Cost (Rs)	53	78	103	128	153
8.	Cost Rs/Lit.	50.47	70.9	89.56	106.66	122.4
9	Cost/200Ml Bowl	10.09	14.18	17.91	21.33	24.48

CONCLUSIONS

Sensory quality of in respect of flavour, colour and appearance, consistency and overall acceptability showed that, 10 per cent of Tomato Powder blended Paneer Whey Soup was acceptable. The cost of Paneer Whey Soup was increased with the increased in level of Tomato Powder in Paneer Whey Soup. The cost of most acceptable Paneer Whey Soup prepared with 10 per cent tomato powder was Rs. 70.90 per lit. and Rs. 14.18 for 200 ml bottle.

FUTURE SCOPE

Such type of research studies will help to prepare good quality nutritional milk product for the health conscious customers.

Acknowledgement. Authors acknowledge their sincere thanks to the Head, Department of Animal Husbandry and Dairy Science, Dr. P.D.K.V., Akola (Maharashtra) for providing laboratory facilities to conduct present research trials.

Conflict of Interest. To produce value added Paneer Whey Soup from Tomato Powder.

REFERENCES

Bhavsagar, M. S., Awaz, H. B., & Patange, U. L. (2010). Manufacture of pineapple flavoured beverage from chhana whey. *Journal of Dairying, Foods and Home Sciences*, *29*(2): 110-113.

Deepa, C. K., & Krishnaprabha, V. (2014). Development and nutrient, antioxidant and microbial analysis of muskmelon and whey water and probiotic incorporated squash. *International Journal of Current Microbiology and Applied Sciences*, *3*(5): 267-271.

Gandhi, D. N. and Rajeev Prasher, C. (1991). Use of Whey based formulation in controlling Gastro-Intestine disorders. *Indian Dairyman, 5*: 266-269.

Pal, D., & Gupta, S. K. (1985). Sensory evaluation of Indian milk products. *Indian dairyman*, *37*(10): 465-467.

Sakhale, B. K., Pawar, V. N., & Ranveer, R. C. (2012). Studies on the development and storage of whey based RTS beverage from mango cv. Kesar. *Journal of Food Processing and Technology*, *3*(3): 148-152.

Shukla, M., Jha, Y. K., & Admassu, S. (2013). Development of probiotic beverage from whey and pineapple juice. *Journal of Food Processing and Technology*, *4*(206), 1-4.

Verma, A., Singh, N., & Chandra, R. (2010). Utilization of paneer whey for the preparation of whey corn flour soup. *Asian Journal of Home Science*, *5*(1): 139-141.

How to cite this article: G.S. Gawad, R.R. Shelke, K.V. Jadhao, P.A. Kahate, S.P. Nage and K.U. Bidwe (2022). Study on Acceptability and Cost Structure of Paneer Whey Soup Blended with Tomato Powder. *Biological Forum – An International Journal*, *14*(1): 1154-1156.