



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; 11(12): 5449-5451
© 2022 TPI

www.thepharmajournal.com

Received: 23-09-2022

Accepted: 22-10-2022

Hanifsha Raupsha

Department of Animal
Husbandry and Dairy Science,
Post Graduate Institute Dr.
PDKV, Akola, Maharashtra,
India

AS Ingole

Department of Animal
Husbandry and Dairy Science,
Post Graduate Institute Dr.
PDKV, Akola, Maharashtra,
India

SD Chavan

Department of Animal
Husbandry and Dairy Science,
Post Graduate Institute Dr.
PDKV, Akola, Maharashtra,
India

RR Shelke

Department of Animal
Husbandry and Dairy Science,
Post Graduate Institute Dr.
PDKV, Akola, Maharashtra,
India

PA Kahate

Department of Animal
Husbandry and Dairy Science,
Post Graduate Institute Dr.
PDKV, Akola, Maharashtra,
India

SR Shegokar

Department of Animal
Husbandry and Dairy Science,
Post Graduate Institute Dr.
PDKV, Akola, Maharashtra,
India

SP Nage

Department of Animal
Husbandry and Dairy Science,
Post Graduate Institute Dr.
PDKV, Akola, Maharashtra,
India

Corresponding Author:

Hanifsha Raupsha

Department of Animal
Husbandry and Dairy Science,
Post Graduate Institute Dr.
PDKV, Akola, Maharashtra,
India

Effect of different herbal preservatives during storage period on sensory quality of herbal paneer

Hanifsha Raupsha, AS Ingole, SD Chavan, RR Shelke, PA Kahate, SR Shegokar and SP Nage

Abstract

The study was planned to prepared herbal paneer the herbal preservatives viz; ginger, cardamom and turmeric powder were used in paneer. The objective of the present study was to find out the optimum level of herbal preservatives in paneer, evaluate the sensory quality, analyze the physico-chemical properties, study the shelf life of paneer and work out the economics. The herbal preservatives was incorporated in the product at the rate of T₁ (control), T₂ (1% ginger powder), T₃ (0.6% cardamom powder), T₄ (0.4%, turmeric powder), T₅ (1% Ginger + 0.6% Cardamom), T₆ (0.4% Turmeric + 0.6% Cardamom), T₇ (0.4% Turmeric + 1% Ginger) and T₈ (1% Ginger + 0.6% Cardamom + 0.4% Turmeric) by weight of yield of paneer. It was observed that, the overall acceptability score during storage period of control sample of paneer shown below acceptable level (5.07) on 15th days of storage and paneer containing turmeric and cardamom powder above the acceptable level (6.87) on 15th day of the storage.

Keywords: Herbal preservatives, storage period, sensory quality, herbal paneer

Introduction

Recently herbal products either in the form of cosmetics or food has become more popular in the world market. Epidemiological data as well as in vitro studies strongly suggest that food containing phyto-chemical with anti-oxidation potential have strong protective effect against major disease risks including cancer and cardiovascular disease (Kaur and Kapoor, 2002) [5]. Spices offer a promising alternative for food safety. Inhibitory activity of spices and derivatives on growth of bacteria, yeasts, fungi and microbial toxins synthesis. Spices have been well known for their medicinal, preservative and antioxidant properties (Souza *et al.* 2005) [13]. They are currently used mainly for enhancing the flavour of foods rather than extending shelf life (Almeida and Regitano 2000) [2].

Paneer represents a South Asian variety of soft cheese prepared by acid and heat coagulated of milk. It is popular throughout South Asia and used in the preparations of several culinary preparations and snacks. It is a rich source of high quality animal protein, fat, minerals and vitamins. Due to availability of different types of milk and variation in milk composition, various techniques have been developed for the production of paneer as per the requirements of the consumers with appreciable improvement in the yield and other quality characteristics (Khan and Pal 2011) [6]. According to the PFA (2010) [9], paneer means product obtained from cow or buffalo milk or combination there by precipitation with sour milk, lactic acid or citric acid. It shall contain no more than 70 percent moisture and the fat content should not less than 50 percent express on dry matter. Paneer is of great value in diet, especially in the Indian vegetarian context, because it contains a fairly high level of fat and proteins as well as some minerals, especially calcium and phosphorous. It is also good source of fat soluble vitamins A and D.

Ginger (*zingiber officinale* Roscoe) is a well-known and widely use spice and condiment, epically in Asia. The potential health benefits on ginger with special reference to photochemical composition and physiological benefits such as anticancer, antimicrobial, antioxidant, hypoglycemic, anti-inflammatory, blood pressure lowering, anti-platelet.

Cardamom belong to the family of Zingiberaceae, is obtained from the seed of *Elettaria cardamomum* maton and it is mostly cultivated in southern India. It is rich in vitamin, thiamine, riboflavin, nicin, vitamin B6, zinc, copper; iron, sodium, manganese, potassium, calcium, magnesium, phosphorus, respectively.

Turmeric is a medicinal plant that botanically belongs to Zingiberaceae family. The curcumin contains vitamins or vitamin precursors which produce vitamin C, beta-carotene as well as polyphenol coupled with fatty acid and essential oil. Turmeric has been used traditionally as a household remedy in curing various diseases such as anorexia, cough, rheumatism and intestine disorder. (Ikpeama *et al.*, 2014)^[4].

Materials and Methods

The material used and methods adopted during the course of this investigation are given in this chapter under the appropriate heads.

Experimental materials

The following ingredient was used for the research work.

In this investigation cow milk was used for conducting the experimental trials. The fresh, clean cow milk was procured from a livestock instructional farm, Department of Animal Husbandry and Dairy Science, Dr. PDKV, Akola. Citric acid was procured from the local market of Akola city, used as per requirement. Good quality Ginger, Cardamom and Turmeric was purchased from the local market of Akola city.

Methodology

Technique for preparation of Herbal paneer

The Herbal paneer was prepared from cow milk as per the method described by Singh and Kanawjia (1992)^[12] with slight modification for addition of different herbs.

Formation of herbal paneer was done by using cow milk with incorporation of different herbal preservatives. The milk was standardized 4.5% fat. The milk used for preparation of paneer was subjected to heating 85°C for 5 minutes. The milk was subsequently cooled to 70°C. Addition of coagulant-Citric acid @ 1% at 70°C. The solution was added with continuous agitation until the coagulation was complete. The curd or milk coagulum was allowed to settle for 10 minutes. Whey was drained through muslin cloth by gentle squeezing with hand and spices were added as per the treatment. Proper mixing of preservative into coagulum. Lining of muslin cloth into block and filling of paneer into block. Pressing (Pilling and repelling). Removal of herbal paneer from block. Cutting of herbal paneer into required size and chilling is done (4°C). Removal of herbal paneer cubes from chilling water and allow to drain water and packaging of paneer is done and stored at refrigerated condition (5-7°C).

Result and Discussion

Effect of storage period on sensory evaluation of herbal paneer

The requisite samples of paneer (control and best treatment) were subjected for sensory evaluation during storage period of different sensory attributes: flavour, body and texture, colour and appearance and overall acceptability.

Flavour

The flavour scores of fresh and refrigerated stored samples of paneer are depicted in Table 1. It is seen from the results that paneer prepared with 0.4% turmeric powder and 0.6% cardamom powder showed the highest score (8.23). It indicates that turmeric and cardamom powder improve the flavour score of paneer. Further, it was noticed that the flavour score of paneer decreases as the storage period increases (0-20 days). The flavour score of the control sample of paneer declined

sharply from the beginning of the storage. The score reduced from (7.73 to 6.69 in 10th days) of storage and later it became unacceptable due to visible yeast and mould growth. It was observed that the flavour score of the sample containing turmeric and cardamom powder remained well above the acceptable level (7.09) even on 15th days of storage.

Table 1: Effect of selected herbal preservatives (0.4% TP+ 0.6% CP) on flavour score of Paneer (max. Score 9)

Treatments	Storage Period (days) mean of six replication				
	0	5	10	15	20
T ₁ (Control)	7.73	7.18	6.69	5.06	S
T ₆ (Preservatives)	8.23	7.95	7.66	7.09	5.25
F test					Sig.
S.E (M) _±					0.162
CD at 5%					0.518

S- Indicates the prepared product was spoiled

The results of the present study were in agreement with Rajarshibhai (2012)^[10], Buch *et al.* (2014) reported that the sensory scores (appearance, flavour, texture) of the paneer significantly decrease with storage.

Body and texture

The effects of selected herbal preservative on the body and texture quality of fresh and refrigerated stored samples of paneer are given in Table 2.

The mean score for body and texture of fresh paneer samples varied from (8.00 to 8.33) on the day of preparation. The control samples of paneer shown a decreasing trend in score of body and texture from 8.00 to 6.80 in 10th days of storage and later it became unacceptable due to yeast and mould growth. Similarly, body and texture score of the sample containing turmeric and cardamom powder remained well above the acceptable level (6.73) even on 15th day of storage.

The results of the present study were in agreement with Buch *et al.* (2014)^[3] conducted study on addition of turmeric in paneer at the rate greater than 0.6% by weight of expected yield of paneer result into sharp decline in sensory score of paneer.

Table 2: Effect of selected herbal preservatives (0.4% TP+ 0.6% CP) on body and texture score of Paneer (max. score 9)

Treatments	Storage Period (days) mean of six replication				
	0	5	10	15	20
T ₁ (Control)	8.00	7.21	6.80	5.59	S
T ₆ (Preservatives)	8.33	7.59	7.13	6.73	5.06
F test					Sig.
SE(M) _±					0.119
CD at 5%					0.381

S- Indicates the prepared product was spoiled

It is indicated that the results obtained in the present investigation were more or less in agreement with Sanyal *et al.* (2000)^[11] reported that the sensory scores (appearance, flavour, texture) of the paneer significantly decrease with storage.

Colour and appearance

The score for colour and appearance for fresh and refrigerated stored samples of paneer are presented in Table 3.

Table 3: Effect of selected herbal preservatives (0.4% TP+ 0.6% CP) on colour and appearance score of Paneer (max. score 9)

Treatments	Storage Period (days) mean of six replication				
	0	5	10	15	20
T ₁ (Control)	7.80	7.15	6.86	5.16	S
T ₆ (Preservatives)	8.37	7.77	7.40	7.15	5.05
F test				Sig.	
S.E (M) _±				0.133	
CD at 5%				0.426	

S-Indicates the prepared product was spoiled

It is indicated from Table 3 that the mean score decreased from (8.37) on 0 days to the score of (7.15) on 15th day. During storage the colour and appearance score decreased significantly at every stage of storage period which might be due to the loss of freshness of the product, sedimentation and decrease in moisture during storage. The colour and appearance score of control sample of paneer declined sharply from beginning of the storage. The score reduced from (7.80 to 6.86 in 10th days) of storage.

The results of present study was in agreement with Buch *et al.* (2014)^[3] conducted study on addition of turmeric in paneer at the rate greater than 0.6% by weight of expected yield of paneer result into sharp decline in sensory score of paneer.

Overall acceptability

The score for the overall acceptability of fresh and refrigerated store sample of paneer are depicted Table 4.

Table 4: Effect of selected herbal preservatives (0.4% TP+ 0.6% CP) on overall acceptability score of Paneer (max. score 9)

Treatments	Storage Period (days) (days) mean of six replication				
	0	5	10	15	20
T ₁ (Control)	8.11	7.43	6.90	5.07	S
T ₆ (Preservatives)	8.35	7.81	7.31	6.87	5.10
F test				Sig.	
S.E (M) _±				0.117	
CD at 5%				0.374	

S- Indicates the prepared product was spoiled

The score for overall acceptability of fresh paneer samples were ranged between 8.11 to 6.90. The score for overall acceptability of paneer containing turmeric and cardamom powder was higher than that of control sample of paneer. Thus addition of turmeric and cardamom improved the overall acceptability of paneer. The overall acceptability score of control sample of paneer shown below acceptable level (5.07) on 15th days of storage and paneer containing turmeric and cardamom powder above the acceptable level (6.87) on 15th day of the storage.

The results of present study was in agreement with Rajarshibhai (2012)^[10] revealed that the rate of addition of essential oils of cardamom, cinnamon and their combination had significant effect on flavour as well as overall acceptability scores of paneer. The flavour as well as overall acceptability scores of paneer significantly decrease when the rate of addition of the essential oils increase from 0.1 to 0.015 per cent. The results of present study was in agreement with Buch *et al.* (2014)^[3] conducted study on addition of turmeric in paneer at the rate greater than 0.6% by weight of expected yield of paneer result into sharp decline in sensory score of paneer.

Conclusion

The incorporation of herbal preservatives was during coagulation temperature of milk sample. The herbal preservative enhanced has enhanced mouth feel and taste of the paneer sample. Paneer prepared with incorporation of 0.4% turmeric powder and 0.6% cardamom powder (T₆) found superior over the rest of the treatments. The shelf of paneer incorporated with herbal preservatives remained well on 15th day of storage as compared to control paneer. Thus addition of turmeric and cardamom improved the overall acceptability of paneer.

References

1. Agrawal AK, Karkhele PD, Sandey KK, Sahu C, Sinha G. Effect of incorporation of ginger juice in various rates on the freezing and thermal properties of ice cream. *Asian J Dairy and Food Res.* 2015;34(2):92-97.
2. Almedia DRF, Regitano AB. Antioxident level of rosemary and oregano ethanol extract in soybean oil under thermal oxidation. *Cienciae Technologic de Alimentos, Campinas.* May/August 2000;20:2. <http://www.scielo.br>.
3. Buch S, Pinto S, Aparnathi KD. Evaluation of efficacy of turmeric as a preservative in paneer. *J Food Sci. Tech.* 2014;11:3226-3234.
4. Ikpeama, Ahamefula, Prof. Onwuka GI, Nwankow Chibuzo. Nutritional Composition of Turmeric (*Curcuma longa*) and its Antimicrobial Properties, *International Journal of Scientific & Engineering Research.* 2014;5:10.
5. Kaur C, Kapoor HC. Anti-oxidant activity and total phenolic content of some Asian vegetables. *Intr. J. Food Sci. and Tech.* 2002 Feb;37(2):153-161.
6. Khan SU, Pal MA. Paneer production: A review. *J Food Sci Technol.* 2011;48(6):645-660
7. Khan SU, Pal MA, Malik AH, Sofi AH. Process optimization for paneer production from milk powder. *Intr. J of Food Nutrition and Safety.* 2012;2:62-71.
8. Pal D, Gupta SK. Sensory evaluation of Indian milk products. *Indian Dairyman.* 1971;10:465.
9. PFA. Prevention of food adulteration rules, 1954 (amended up to 2009). Universal Law Publishing Company Pvt. Ltd, New Delhi; c2010. p. 165-166.
10. Rajarshibhai BA. Evaluation of extracts from selected spices to extended shelf life of paneer. Msc. Thesis Anand Agriculture Univ, India; c2012.
11. Sanyal MK, Yadav PL. Effect of fermented skimmed milk incorporation into buffalo milk on quality of reduced fat paneer. *Indian J Animal Sci.* 2000;70(6): 628-631.
12. Singh S, Kanawjia SK. Technological advances in paneer making. *Indian Dairyman.* 1992;10:45-50.
13. Souza EL, Stamford TLM, Lima EO, Trajano VN, Filho MB. Antimicrobial effectiveness of spices: An approach for use in food conservation systems. *Int. J Brazilian Archives Bio Technol.* 2005;48:549-558.