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Studies on utilization of herbal preservatives in paneer preparation

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Abstract

The study was planned to prepared herbal paneer the herbal preservatives viz; ginger, cardamom and turmeric powder to find out the optimum level in paneer. The herbal preservatives were incorporated in the product at the rate of 0.0 (control), 0.8%, 1%, 1.5%, 2% ginger powder, 0.2%, 0.4%, 0.6%, 0.8% cardamom powder and 0.2%, 0.4%, 0.6%, 0.8% turmeric powder by weight of yield of paneer. The prepared samples of paneer were subjected to sensory evaluation by panel of judges using 9-point hedonic scales.

Keywords: Herbal paneer, yield, ginger, cardamom, turmeric, sensory evaluation

Introduction

Milk has long been recognized as almost complete ideal food in nature. It supplies fat and lactose for energy, proteins and vitamins for body building and health and minerals for bone formation. Milk contains all above nutrient in an easily digestible and assumable form, so it is regarded as most ideal complete food (Bhadekar *et al.* 2008) [2].

Probably, paneer was introduced firstly in India by the Persian and Afghan invaders which is may be the reason for its wide popularity in the North-Western part of India and the southern region of Jammu and Kashmir as the invaders entered and eventually settled in these regions. However, it is only in the last few decades that paneer has been popularized in other parts of India. Paneer is a South Asian Variety of soft cheese obtained by acid and heat coagulation of milk. It is a non – fermentative, non-renneted, non-melting and unripened type of cheese. (De, 2013) [5].

Paneer is of great value in diet, especially in the Indian vegetarian context, because it contains a 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. Paneer is a rich source of animal protein available at a comparatively lower cost and forms an important source of animal protein for vegetarians. Over and above its high protein content and digestibility, the biological value of protein in paneer is in the range of 80 to 86 (Shrivastava and Goyal, 2007) [10].

Ginger (*Zingiber officinale* Roscoe) is a well-known and widely use spice and condiment, epically in Asia. The rhizome of ginger contains several interesting bioactive constituents and possesses health- promoting properties. It has been widely used in Chinese, Ayurvedic, and Unani-Tibbs medicines. The potential health benefits on ginger with special reference to photochemical composition and physiological benefits such as anticancer, antimicrobial, antioxidant, hypoglycaemic, anti-inflammatory, blood pressure lowering, anti-platelet aggregation, cholesterol- lowering and cardio protective properties (Agrawal *et al.* 2015) [1].

Cardamom in Sanskrit known as Ela, Dried fruit of cardamom contains steam volatile oil, pigments, proteins, cellulose, pentosans, sugars, starch, silica, calcium oxalate and minerals. The major constituent of the seed is starch (up to 50 percent) while in the fruit husk it is crude fibre (up to 31 percent) Volatile oil is the most functionally important constituent of cardamom. It is rich in vitamin, thiamine, riboflavin, nicin, vitamin B6, zinc, copper; iron, sodium, manganese, potassium, calcium, magnesium, phosphorus, respectively. (Jadhav, 2018) [6].

Turmeric is a medicinal plant that botanically belongs to Zingiberacea family (Chattopadhyay *et al.*, 2004) [4]. Turmeric is widely used as a spice and colouring agent and is known for its medicinal properties (Luthra *et al.*, 2001) [8]. Components of turmeric is named curcuminoids which 6 include mainly curcumin (diferuloylmwthane, demethoxycurcumin, and bismethoxycurcumin). (Chainani-Wu, 2003) [3]. Curcumin, a potent antioxidant is believed to be the most bioactive and soothing portion of the herb turmeric and possess the antioxidant, anti-inflammatory, anti-platelet, cholesterol lowering, antibacterial and antifungal effect (Peter, 2000) [9].

Materials and Methods

The following ingredient was used for the research work

Cow milk

Fresh, clean whole Cow milk was procured from Livestock Instructional Farm of Department of Animal Husbandry and Dairy Science, Dr. PDKV, Akola.

Citric acid

Citric acid was procured from local market of Akola city, used as per requirement.

Ginger, Cardamom and Turmeric

Good quality Ginger, Cardamom and Turmeric was purchased from local market of Akola city.

Methodology

Treatment details

- PT₀- Control (without spices)
 - PT₁-0.8% ginger powder
 - PT₂- 1.0% ginger powder
 - PT₃- 1.5% ginger powder
 - PT₄- 2.0% ginger powder
 - PT₅- 0.2% cardamom powder
 - PT₆- 0.4% cardamom powder
 - PT₇- 0.6% cardamom powder
 - PT₈- 0.8% cardamom powder
 - PT₉-0.2% Turmeric powder
 - PT₁₀- 0.4% Turmeric powder
 - PT₁₁-0.6% Turmeric powder
 - PT₁₂-0.8% Turmeric powder
- No. of treatment = 13
No. of Replication = 03

Statistical Design – Data generated from the final experiment was analysed by Analysis of Variance Technique.

Technique for Preparation of Paneer

Paneer was prepared from cow milk with slight modifications using the method given by Singh and Kanawjia (1992) [12] as per flow diagram given below,

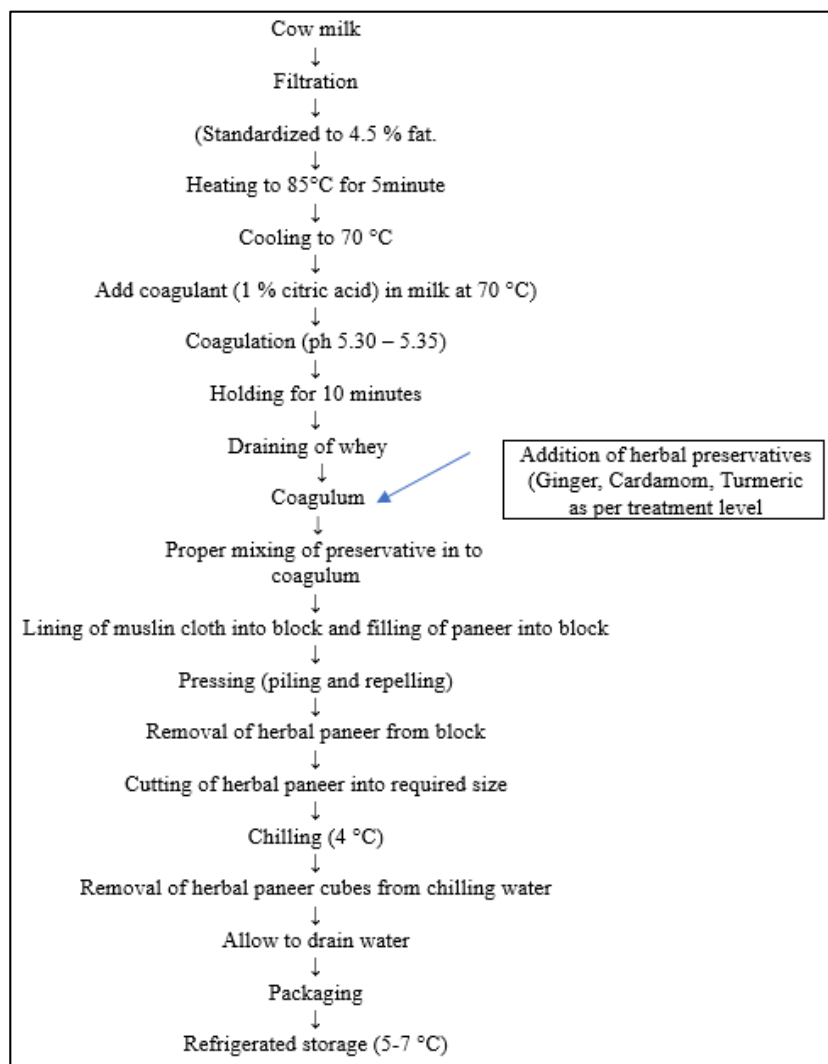


Fig 1: Technique for Preparation of Paneer

Results and Discussion

Sensory evaluation for to find out the optimum levels of herbal preservatives

The paneer prepared with various levels of herbal preservatives was evaluated for sensory attributes and result obtained have been presented in table 1

Flavour

The data pertaining to sensory score for flavour in respect of different levels of spices blended in paneer is presented in Table 1 it is revealed that the score improved on addition of ginger 1%, (8.62), cardamom 0.6% (8.72) and turmeric powder 0.4% (8.55). However, further addition resulted into sharp decline in score. The changes in flavour score of paneer revealed that there was a significant difference between the score of flavour of the paneer, when ginger; cardamom and turmeric powder was added at different levels.

The results of present study were in agreement with Shweta Buch *et al.* (2014) [11] conducted study on addition of turmeric in paneer at the rate greater than 0.6% by weight of

expected yield of paneer resulted into sharp decline in sensory score of paneer.

The results obtained were in agreement with Krishna Kumari (2015) [7] reported that addition of black pepper, cardamom and clove in paneer at the rate greater than 0.6% and cinnamon at the rate greater than 0.4% was found to be acceptable.

Body and texture

The values pertaining to body and texture scores of paneer as affected by increasing the level of ginger, cardamom and turmeric powder in paneer preparation were presented in Table 1 and it is revealed that the score declined sharply on addition of ginger, cardamom and turmeric powder at increasing levels. The score of body and texture score for PT2 (8.37), PT7 (8.62) and PT10 (8.70) has significantly superior to PT0 (7.87), PT9 (7.72), PT6 (7.25), respectively. The results of present study were in agreement with Shweta Buch *et al.* (2014) [11] conducted the 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 1: Effect of various levels of herbal preservatives on the sensory score of Paneer (Max. Score 9)

Treatment	Level of addition (%)	Flavour	Body and texture	Colour and appearance	Overall acceptability
PT ₀	0.0 control	7.62b	7.87bc	8.00a	7.57b
PT ₁	0.8 GP	7.25c	7.00def	7.37b	7.25b
PT ₂	1.0 GP	8.62a	8.37ab	8.37a	8.50a
PT ₃	1.5 GP	6.75de	6.37fg	6.62cd	6.50de
PT ₄	2.0 GP	6.25f	6.12g	6.12de	6.27de
PT ₅	0.2 CP	7.25c	7.62cd	7.25b	7.12bc
PT ₆	0.4 CP	6.87d	7.25cde	7.12bc	6.72cd
PT ₇	0.6 CP	8.72a	8.62a	8.37a	8.25a
PT ₈	0.8 CP	6.50ef	6.75efg	6.25de	6.12e
PT ₉	0.2 TP	7.45bc	7.72bc	7.37b	7.37b
PT ₁₀	0.4 TP	8.55a	8.70a	8.25a	8.62a
PT ₁₁	0.6 TP	6.37f	6.12g	6.87bc	6.55de
PT ₁₂	0.8 TP	6.27f	6.25g	6.00e	6.12e
F test		Sig	Sig.	Sig.	Sig.
SE (M)+		0.122	0.217	0.196	0.167
CD at 5%		0.377	0.669	0.605	0.167

GP – Ginger Powder. CP- Cardamom Powder. TP- Turmeric Powder.

Colour and appearance

The result regarding the score for colour and appearance score of paneer with ginger, cardamom and turmeric powder have been presented in Table 1. The mean score for colour and appearance was between 7.37 to 6.00. The treatments were significantly differed from each other. The highest score PT2 (8.37), PT7 (8.37) and PT10 (8.25) obtained at 1.0%, 0.6% and 0.4% level of ginger, cardamom and turmeric powder then score declined sharply on addition of increasing levels.

The results of present study was in agreement with Shweta Buch *et al.* (2014) [11] conducted the study on addition of turmeric in paneer at the rate greater than 0.6% by weight of expected yield of paneer resulted into sharp decline in sensory score of paneer.

The results obtained were in agreement with. Krishna Kumari (2015) [7] reported that addition of black pepper, cardamom, and clove in paneer at the rate greter than 0.6% and cinnamon at the rate greter than 0.4% was found to be acceptable.

Overall acceptability

The score for overall acceptability is presented in Table 1. and it is revealed that the score declined sharply on increasing the level of ginger, cardamom and turmeric powder. There was a significant difference between the score of overall acceptability of the paneer, when ginger, cardamom and turmeric powder was added at different rates. The score for overall acceptability of the PT10 (8.62), PT2 (8.50) and PT7 (8.25) was superior among all the treatments.

The results of present study were in agreement with Shweta Buch *et al.* (2014) [11] conducted study on addition of turmeric in paneer at the rate greater than 0.6% by weight of expected yield of paneer resulted into sharp decline in sensory score of paneer.

The results obtained were in agreement with Krishna Kumari (2015) [7] reported that the addition of black pepper, cardamom and clove in paneer at the rate greter than 0.6% and cinnamon at the rate greter than 0.4% was found to be acceptable.

Conclusion

The prepared samples of paneer were subjected to sensory evaluation by panel of judges using 9-point hedonic scale. The 1% ginger, 0.6% cardamom and 0.4% turmeric powder added in paneer shown the maximum score for the overall acceptability of paneer samples in the preliminary trials.

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