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## Studies on sensory analysis of black pepper powder incorporated paneer

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#### Abstract

The Study was conducted on the topic “Studies on Effect of Black Pepper on Quality of *Paneer*.” The different levels of black pepper 0.25, 0.50 and 0.75 per cent were tried in *paneer*. The product obtained for organoleptic evaluation by panel of judges. It was observed that colour and appearance scores for the treatments T<sup>1</sup>, T<sup>2</sup>, T<sup>3</sup> and T<sup>4</sup> were 7.13, 7.75, 8.63 and 7.06, respectively. Flavour score was T<sup>1</sup>, T<sup>2</sup>, T<sup>3</sup> and T<sup>4</sup> treatments were 6.69, 7.56, 8.56 and 7.75, respectively. Taste was T<sup>1</sup>, T<sup>2</sup>, T<sup>3</sup> and T<sup>4</sup> treatments were 6.69, 7.56, 8.56 and 7.75, respectively. It was observed that the overall overall acceptability score for sensory was 6.90, 7.53, 8.31 and 7.28, respectively. It was clear that the level of 0.50 black pepper have highest overall acceptability.

**Keywords:** Black pepper powder, incorporated paneer

#### Introduction

*Paneer* is an indigenous coagulated milk product prepared by the addition of permitted organic acids to hot milk and subsequent drainage of whey. *Paneer* consists of entire milk casein part of denatured whey proteins, almost all fat, colloidal salts and soluble milk solids in proportion to the moisture content retained.

The characteristics features of *paneer* is a typical mild acidic flavour with slightly sweet taste and has a firm, cohesive and spongy body and a close knit smooth texture. *Paneer* like other indigenous dairy products, is a highly perishable product and suffers from limited shelf-life, largely because of its high moisture content (approx. 55 per cent) (Khatkar *et al.*, 2017)<sup>[4]</sup>.

Black pepper is used as medicinal agent, a preservative, and in perfumery. Whole Peppercorn of *Piper nigrum* or its active components are being used in different types of foods and as medicine. Pepper is used worldwide in different types of sauces and dishes like meat dishes. It contains major pungent alkaloid Piperine (1-peperoyl piperidine) which is known to possess many interesting pharmacological actions. It is widely used in different traditional systems of medicine like

Ayurvedic and Unani System of medicines. Piperine exhibits diverse pharmacological activities like antihypertensive and antiplatelets, antioxidant, antitumor, antiasthmatics, antipyretic, analgesic, anti-inflammatory, anti-diarrheal, antispasmodic, anxiolytic, antidepressants, hepato-protective, immuno-modulatory, antibacterial, antifungal, 3 anti-thyroids, antiapoptotic, anti-metastatic, antimutagenic, anti-spermatogenic, anti-Colon toxin, insecticidal and larvicidal activities etc. Piperine has been found to enhance the therapeutic efficacy of many drugs, vaccines and nutrients by increasing oral bioavailability by inhibiting various metabolising enzymes. It is also known to enhance cognitive action and Fertility. Piperine also found to stimulate the pancreatic and intestinal enzymes which aid to digestion. Many therapeutic activities of this spice are attributed to the presence of piperine apart from other chemical constituents. The fruits of *Piper nigrum* are used to produce white and green peppers. *Piper nigrum* is also used as a flavouring agent. (Damanhour and Ahmad, 2014)<sup>[2]</sup>.

Black pepper is one of the important spice rich in aromatic and medicinal components along with appreciable levels of several other functional components having health promoting properties. The uses of black pepper in various fields such as food processing, pharmaceutical industry etc., is increasing steadily due to its recognition as an important source of natural antioxidant having anti-carcinogenic activity. It also have bioavailability enhancement nature, carminative property, anti-inflammatory action, cholesterol lowering capacity, immune enhancer ability, anti-pyretic, anti-periodic, antimicrobial and rubefacient activity. On searching out in past two decades research work it was found that there is scarcity of

information on assessment of nutritional, medicinal and functional properties of black pepper and on the other hand, to perform the comparative study of ambient and cryogenic ground black pepper to assess in change in its all above mentioned properties such comprehensive study is required. The present review highlights the nutritional composition, medicinal properties, functional properties, product development and its utilization along with potential application.

## Material and Methodology

### Treatment combinations

Following treatment combinations were considered for preparation of paneer with black pepper.

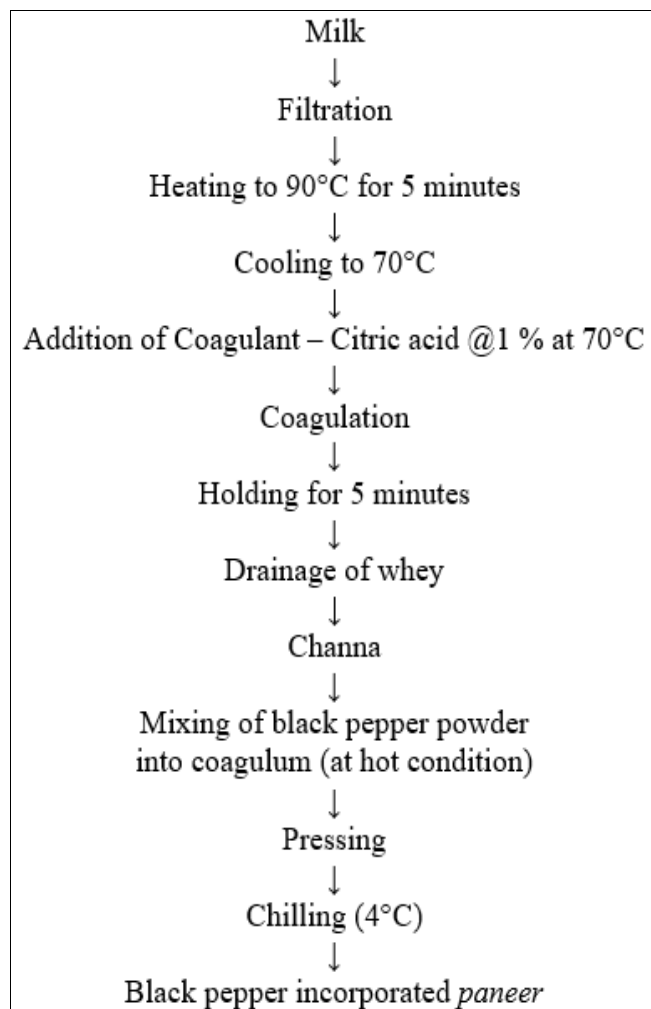
T1= Paneer from Buffalo milk (control)

T2= Paneer with 0.25 per cent of black pepper by weight of buffalo milk

T3= Paneer with 0.50 per cent of black pepper by weight of buffalo milk

T4= Paneer with 0.75 per cent of black pepper by weight of buffalo milk

## Experimental Methodology



Flow chart for preparation of *paneer* (Ref: Badola *et al.* 2018)<sup>[1]</sup>

## Results and Discussion

### Sensory evaluation of black pepper powder incorporated *paneer*

The samples of black pepper powder incorporated *paneer* were subjected for the sensory attributes such as colour and

appearance, flavour, body and texture, mouthfeel and overall acceptability by a semi panel of judges using a “9 point Hedonic scale” and the data so obtained was analyzed by using completely randomized design (CRD). The scores given by judges for different parameters were recorded and subsequently discussed in the foregoing tables and paragraphs.

### Colour and appearance

The mean colour and appearance score for control *paneer* (T<sub>1</sub>) and *paneer* with 0.25, 0.50 and 0.75 per cent black pepper (T<sub>2</sub>, T<sub>3</sub> and T<sub>4</sub>) is presented in table 1. From the results it was observed that *paneer* scores for colour and appearance continued to increase, but the highest score, i.e. 8.63, was found in treatment T3. The developed *paneer* varied from 7.75 to 8.63 for colour and appearance. The results of some other studies as reported by Singh *et al.* (2018)<sup>[5]</sup> also reported the sensory properties of value-added buffalo milk with garlic paste in the *paneer*. In which the colour and appearance scores of buffalo milk and garlic paste applied to the *paneer* were first increased and then there was also some decrease.

### Flavour

From the results it was observed that mean flavour score for black pepper powder incorporated *paneer* showed significant difference. The flavour score ranged from 6.69 to 8.56 in different treatments under study significantly maximum mean flavour scored was recorded treatment T3

8.56 rest of the treatments under study, while remaining treatments were at par with each other with minimum flavour score in treatment T1 (6.69). Singh *et al.* (2018)<sup>[6]</sup> also recorded similar flavour scores for *paneer* prepared with buffalo milk and mint.

### Taste

From the results it was observed that the average scores for mouthfeel of prepared *paneer* increased first and then decreased with increase in level of black pepper per cent. The highest score for developed *paneer* was 8.06 for T3 treatment. The treatments T2, T3 and T4 were on at par with each other. Treatment T1 revealed lowest score for mouthfeel score (7.00). Singh *et al.* (2018)<sup>[6]</sup> also reported similar scores for *paneer* mouthfeel prepared with garlic paste.

### Overall acceptability

The mean overall acceptability scores of the prepared *paneer* continued to increase for T1, T2 and T3 and then decreased for T4. The T3 treatment showed the highest score and the T4 treatment showed the lowest overall acceptability score. The mean overall acceptability scores of the developed *paneer* ranged from 7.28 to 8.31. The overall acceptability score for T4 treatment decreased mainly due to its texture, which was affected by the black pepper powder. J David (2012)<sup>[3]</sup>, also reported the overall acceptability score for *paneer* prepared from buffalo milk blended with coconut milk

It was concluded from the present investigation that the addition of black pepper powder in the preparation of *paneer* @ 0.50 per cent in channa was found to be superior. Black pepper powder could be very well used for palatable, nutritious and health-beneficial *paneer* preparation. The average acceptance score for treatments T1, T2, T3 and T4 was noted to be 6.90, 7.53, 8.31 and 7.28, respectively

**Table 1:** Effect of different levels of black pepper on overall acceptability of *Panner*

Treatment	Colour and appearance	Flavour	Taste	Overall acceptability
T <sub>1</sub>	7.13 <sup>a</sup>	6.69 <sup>a</sup>	7.00 <sup>a</sup>	6.90 <sup>a</sup>
T <sub>2</sub>	7.75 <sup>a</sup>	7.56 <sup>b</sup>	7.50 <sup>b</sup>	7.53 <sup>b</sup>
T <sub>3</sub>	8.63 <sup>b</sup>	8.56 <sup>bc</sup>	8.06 <sup>bc</sup>	8.31 <sup>bc</sup>
T <sub>4</sub>	7.06 <sup>ab</sup>	7.75 <sup>bc</sup>	7.31 <sup>ab</sup>	7.28 <sup>bc</sup>
S.E.	0.320	0.270	0.159	0.118
C.D. at 5%	0.986	0.833	0.490	0.363

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