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Studies on microbial count 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 T¹, T², T³ and T⁴ were 7.13, 7.75, 8.63 and 7.06, respectively. Flavour score was T¹, T², T³ and T⁴ treatments were 6.69, 7.56, 8.56 and 7.75, respectively. Taste was T¹, T², T³ and T⁴ 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: Microbial count, black pepper powder, 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).

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 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 asses 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

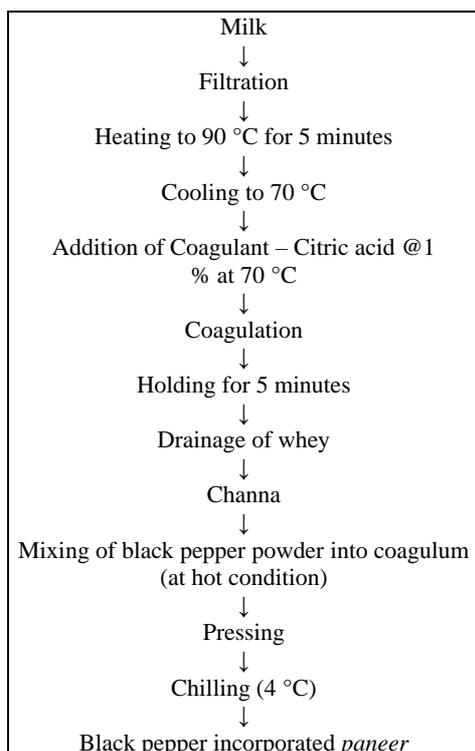


Fig 1: Flow chart for preparation of *paneer* (Ref: Badola *et al.* 2018)

Microbial analysis for black pepper powder incorporated *paneer*:

Microbial analysis

The fresh product prepared was subjected to microbiological analysis with respect to yeast and mould count and coliform count. The microbial analysis of *paneer* was carried out according to Ranganna (1986). One ml of each of the sample was taken and to this 9 ml of 0.5 per cent saline was added and then further diluted to four folds. 1 ml of each from appropriate dilution was plated in required medium and then incubation was carried out. In each count, after incubation, the average count of colonies present on Petri plates were multiplied by dilution factor and expressed as cfu/g of sample.

Yeast and mould count of black pepper powder incorporated *paneer*

Yeast and mould count of *paneer* prepared from black pepper powder blended with buffalo milk. The yeast and mould was found in control treatment only which had count 01 cfu/gm in each. The fresh black pepper powder added *paneer* was blank for yeast and mould. It was seen that the yeast and mould count remained within the limit (maximum 100 c.f.u./gm) prescribed by IS: 9617 (1880). Indicated that all treatments were prepared at hygienic condition and in black pepper

powder added *paneer* samples were found absent for yeast and mould might be effect of black pepper powder contain piperine component this component responsible for anti microbial property (Meghwal and Goswami 2012)

Table 1: Yeast and mould count of fresh black pepper powder incorporated *paneer* (CFU per gm)

| Treatment | Yeast count |
|----------------|-------------|
| T ₁ | 1.25a |
| T ₂ | 0.00b |
| T ₃ | 0.00b |
| T ₄ | 0.00b |
| S.E | 0.204 |
| C.D.at 5% | 0.628 |

Coliform count of black pepper powder incorporated fresh *paneer*

Appropriate sample dilution was developed and transferred to sterile petriplates, pour plating using Mac conkey agar, pH 7.4 was performed; plates were incubated for 48 hours at 37°C. coli type count of the blended *paneer* with black pepper powder. The type of coli was not detected in all treatments. For coli count, of black pepper powder blended *paneer* was blank. Both therapies have been prepared in a hygienic state and at par with each other. Agnihotri and Pal (1995) noticed that from its initial value of 22.01±3.75, Agnihotri and Pal (1995) noticed that from its initial value of 22.01±3.75, freshly prepared *paneer* and found coli type counts (most probable number (MPN) presumptive) reached 1445.40±584.59 on day 7 of storage. In order to kill all the pathogenic and spoiling microorganisms, the heat treatment given to milk is more than enough. It is therefore the handling that is responsible for spoilage, either during or after processing. Since *paneer* could be processed under hygienic conditions, Coli type was found to be absent.

Conclusion

Paneer prepared using black pepper represent hygienic product to containing antimicrobial and antioxidants property for increasing shelf life of product for long time.

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