

Effects on Sensory Attributes of Paneer by Microwave Treatment

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Abstract - The work was planned to enhance the shelf-life of paneer with microwave treatment. Paneer samples were cut into slices of approximately equal size and weight (120-150 gm), treated at different microwave power level for different time and appropriate power level and time combinations was selected on the basis of sensory attributes. Samples immediately after treatment were packed in multilayered Polyethylene pouches (PE) vacuum packed and polystyrene (PS) cups, covered with aluminium foil were kept at room temperature as well as refrigeration temperature up to the period samples were spoiled. Samples were analysed for their sensory, physico-chemical and bacteriological quality at fortnight interval.

Key words: Paneer, Shelf life, Microwave, Polyethylene

1. INTRODUCTION

India is producing largest amount of milk approximately 99 million tones per annum out of which 46% of total milk production is utilized for direct consumption as fluid milk, while remaining portion of milk is diverted for conversion into milk product (Anon, 1991).

Although paneer manufacture involves heating of milk at near boiling temperature under mild acidic condition for coagulation of milk, the bactericidal advantage so gained from thermal processing is quickly lost due to direct exposure to the environment during subsequent manual handling & cooling of coagulum under cold water by pressing of coagulum & manual packing. Paneer is a rich source of good quality protein, fat, valuable minerals like calcium, phosphors & fat soluble vitamins. The nutrients are in excellent form to be easily digested & assimilated. The relatively high protein & low lactose makes it especially suitable in areas of protein malnutrition & lactose intolerance. Paneer serves as important function in Indian dietary where it can be converted into number of culinary dishes.

In recent years, following boom in the production & consumption of paneer. There has been thrust on upgrading the existing technology as well as to enhance the shelf-life. Many workers have tried to enhance the shelf-life by using different chemicals & the recently thermal sterilization of paneer was attempted to enhance the shelf-life of paneer at ambient temperature by Sachdeva (1983) & he reported a shelf-life of over a period of 50 days at room temperature. Under the present study enhance of shelf life through infusion of newly emerging, energy

efficient process i.e. Micro wave heating is chosen. At juncture where the world energy crisis continues, impetus for turning to microwave processing in future perhaps may become inevitable. Keeping in view the above point the study was planned to extend the shelf-life of paneer so that it can be marketed at distant places.

1.2 Material & Methods

1. Procurement of raw material

2. **Milk:** - The full cream buffalo milk was procured from the "Experimental Dairy Plant" of APT department, CCSHAU, Hisar.

3. **Citric acid:** - Citric acid was procured from SRL (Sisco Research Lab Pvt. Ltd.) Mumbai.

4. **Packaging Material:** - The multilayered polyethylene pouches and low density poly styrene cups were procured from the local market of Hisar.

5. **Media:** - Plate Count Agar (Hi-media) was procured.

6. **Equipment:** (Microwave Oven)

Microwave oven of BPL make (Model:800 T BPL microwave cooking system) was used for the microwave **treatment** of paneer.

2. Preparation of paneer:

Paneer was cut into slices of approximately equal size and weight approximately 120-150 gms.

3. Standardization of Microwave power and time combination for the treatment of paneer

Paneer slices were treated at different power levels and for different time till samples found unacceptable by judges on the basis of sensory attributes. The treated samples were offered for sensory evaluation to a panel of six semi trained judges.

4. Packing of Paneer

Immediately after treatment samples were placed in multilayered pouches & polystyrene cups. Pouches were sealed by vacuum packaging machine by creating 100% vacuum, while polystyrene cups were covered manually by aluminum foil.

5. Shelf life Study of Paneer

The selected paneer samples were stored at room & refrigeration temperature. Samples were drawn for analysis at fortnight interval till the spoilage of samples for sensory, Physico-chemical and bacteriological analysis.

Result & Discussion

Table -1: Sensory scores of Paneer Sample treated at different Microwave level.

Treatm ent	Colour & Apperance	Flavor	Texture	Overall acceptibility	Mean
T1	7.80±0.37	7.89±0.69	7.80±0.69	7.80±0.00	7.80±0.00
T2	7.50±0.50	7.30±0.94	7.50±0.76	7.40±0.94	7.42±0.08
T3	7.30±0.47	7.60±0.74	7.50±0.76	7.50±0.12	7.47±0.11
T4	7.20±0.37	7.20±0.69	7.20±0.69	7.20±0.00	7.20±0.00
T5	7.29±0.37	7.60±0.94	7.20±0.69	7.00±0.28	7.00±0.24
T6	7.09±0.82	7.20±0.68	7.30±0.47	7.10±0.15	7.15±0.11
Mean	7.35±0.25	7.28±0.38	7.42±0.21	7.33±0.27	

Values are Mean±SD

T1- 80 W for 8 mins
for 8 min

T₂- 150 W

T₃- 300 w for 7.30 mins
for 3 mins

T₄- 450 W

T₅- 700w for 2.30 mins
for 2 mins

T₆- 800 W

When samples were treated at highest power level (T6) the sensory scores were decreased, even then judges scored the sample above 7.00 for all the sensory attributes which means the judges still “liked paneer moderately”.

From the results it was decided that one lowest power level which had minimal effect on sensory attributes & one highest power level which had maximum effect on sensory attributes was selected for further study.

Conclusion:-

The microwave treatment was given to paneer slices and observed their sensory parameters. From the preliminary study on different microwave power level at different time, it was found out that 80W for 8 minutes (T1)and 800W for 2 minutes (T2) was found suitable for the treatment of paneer.

At 0 day judges scored T1 sample higher than T2 sample for all the sensory attributes and T1 was “liked very much” while T2 sample “liked moderately” by the judges. T2 sample packed in PE pouches and stored at refrigeration temperature was “liked slightly” by the judges at 60th day of storage.

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