Website : www.ssdatmeerut.in
Progressive Research : An International Journal
Vol 16 (1) : 42-44 (January-2021), Print ISSN : 0973-6417, Online ISSN : 2454-6003
Society for Scientific Development in Agriculture and Technology, Meerut (U.P.) India

A study on Development and Evaluation of Brine Paneer Pickles

Seema Vashista*, Apoorva Argade, R.S. Dabur and S.S. Ahlawat
Deptt. of Livestock Products Technology, College of Veterinary Science, L.L.R. University of Veterinary and Animal Sciences, Hisar, Haryana
**Corresponding Author Email : drseemamk@gmail.com*

Abstract

The study was conducted with an objective to develop and evaluate quality parameters of brine paneer pickle. Different levels of NaCl (10%, 15% and 20%) were tried for development of the product. The product was selected on the basis of sensory evaluation and analyzed for proximate composition and physicochemical properties. The brine pickle with 20% salt was highly acceptable by the panelists. The results revealed that moisture, fat, phosphorus and acidity decreased but calcium and ash content was increased significantly. However, protein, peroxide value, shears press, pH, FFA and NPN were almost similar to control statistically. It is concluded that brine paneer pickle can be prepared without much affecting the sensory, physicochemical and microbiological quality of fresh pickle.

Key words *: Milk, paneer, brine, pickle, nutrition.*

Introduction

Appropriate technology needs to be developed for conservation of milk solids available during flush seasons in order to provide security during lean months and natural calamities. Product diversification through value addition and amalgamation of milk solids with various food components need to be done with increase in purchasing power of average Indian consumer and the consequent changes in the taste preferences. There is ample scope for developing new range of dairy products. Paneer an acid coagulated indigenous milk product is widely used for culinary purposes. Pickling is one of the most ancient methods of preserving the food. Pickles are basically prepared by bringing or fermentation using different types of spices, salt vinegar sugar and edible oils.

Materials and Methods

The freshly drawn pooled buffalo milk was obtained from Experimental Dairy plant of Department of Animal Products Technology, CCS Haryana Agricultural University, Hisar, for preparation of paneer. The milk was standardised to 6 % fat and 9 % SNF.

Preparation of raw and paneerpickle : Fresh buffalo milk (5 litres) was standardised to a fat level of 6 %. The standardised milk was heated up to 90°C and coagulated at 70°C using one % solution of citric acid at the same temperature. After complete coagulation the stirring was stopped and the curd was allowed to settle down for 5 minutes. The whey was then drained through a muslin cloth. The curd was collected and filled in hoops. Pressure was applied on the top of the hoop by placing 10 kg weight for 10 minutes. The pressed block of paneer was removed from the hoop, cut into 4 pieces and immersed in chilled water (5°C) for 15 min. After draining excess of water, paneer was packed in polythene bags and kept at 5±1°C till further use. Brine solution of NaCl was prepared with 10, 15 and 20% in distilled water used in paneer pickle.

Sampling of pickles : On the basis of preliminary trials, it was observed that maturing time period required for three days. Sampling for sensory evaluation, proximate composition and microbial quality was followed accordingly and this was considered as zero days in the present study.

Sensory evaluation : The developed paneer pickle formulation selected on the basis sensory evaluation was filled in sterile glass bottle using moisture proof laboratory seal film and lids. Sensory evaluation including color& appearance, odor, body and texture, taste and overall acceptability attributes for fresh as well as stored samples of paneer pickles were evaluated organoleptically for their acceptability by a panel of semi-trained judges using 9-point Hedonic Scale.

Chemical analysis : Samples were analyzed for moisture, protein,fat, ash, titrable acidity, non protein nitrogen, free fatty acid, peroxide value, mineral composition andshear press value. Proximate composition was determined by following the standard methods of (1) by multiplying total nitrogen factor of 6.38 for protein estimation. The moisture, fat and ash content of paneer pickle were determined by methods described in (1) for cheese analysis. Calcium was measured with ortho-cresolphthale in complex one reagent using complex- metric titration method as per (1). Phosphorus in digested sample was determined by (2) at 660 nm. NPN

Received : December-2020 Revised : January-2021 Accepted : January-2021

Table-1 : Standardization of brine paneer pickle.

Pickle treatments	Colour and Appearance	Flavour (odour)	Texture	Taste	Overall acceptability
10% salt	7.10 ± 0.12	6.65 ± 0.49	7.05 ± 0.46	6.65 ± 0.31	6.85 ± 0.50
15% salt	7.35 ± 0.85	6.70 ± 0.50	7.32 ± 0.75	6.80 ± 1.60	7.04 ± 0.66
20% salt	7.65 ± 0.35	7.00 ± 0.50	7.40 ± 0.45	7.05 ± 0.38	7.28 ± 0.78
CD (P 0.05)	N.S.	N.S.	N.S.	N.S.	N.S.

Values aremean ± SE of scores, n=30

Table-2 : Proximate composition of fresh paneer and brinepanner pickles.

Characteristics	Fresh Paneer		Pickled paneer		CD (P 0.05)
Moisture (%)	54.70	0.27	44.74	0.29	1.50
Protein (%)	18.30	0.56	17.43	0.74	N.S.
Fat (%)	28.56	0.56	24.80	0.36	1.42
Ash (%)	1.56	0.19	13.03	0.11	1.13
Calcium (mg/100 g)	386.56	0.19	286.00	0.88	6.29
Phosphorus (mg/100 g)	259.25	0.33	203.33	0.20	9.73

Values are Mean SE. n=6

Table-3 : Physico-chemical properties of fresh paneer and Brine paneer pickle.

Characteristics	Fresh Paneer		Pickled paneer		CD(P 0.05)
NPN (%)	0.20	0.01	0.22	0.02	N.S.
FFA (as % oleic acid)	0.023	0.001	0.028	0.001	0.01
Peroxide value (meq/kg)	0.00	0.00	0.00	0.00	0.08
Acidity (%)	0.26	0.001	0.200	0.006	0.17
pH	5.75	0.050	5.533	0.067	0.24
Shear press value (kg/cm^2)	0.2		0.2		0.1

Value are Mean SE, n=6

content of paneer pickle was determined according to the method described by (3) with some modifications. FFA was determined by the method of (4) and method of (5) was used for peroxide value and titrable acidity of paneer pickle. The shear press value of paneer pickle samples was determined by using (6).

Statistical analysis : The data obtained from the various experiments during standardization process were analyzed statistically by Two-way analysis of variance (ANOVA) technique as described by the (7).

Results and Discussion

Sensory evaluation : Sensory acceptability of all the three types of brine pickles for different attributes were in the range oflike 'moderately' to 'like very much' and differed non-significantly (Table-1). Overall acceptability was 6.85, 7.04 and 7.28 for 10, 15 and 20 % brine strength, respectively and the differences among these scores were observed to be non-significant (P 0.05). Brine pickle with 20 % salt was selected for further studies

Proximate composition of raw and pickled paneer : Moisture content of selected brine pickle was (44.74) significantly lower than moisture content of fresh raw paneer (54.70) as revealed from Table-2. Rani *et al*. (8) also observed that cheese lost water during brining, resulting in surplus dilute brine. Total percentprotein content of fresh paneer was 18.30 and brine pickle was 17.43. Fat content of fresh paneer was 28.56 and brine paneer pickle was 24.80%, which was significantly lower (p 0.05) in comparison to fresh paneer. Low fat values in Brine Picklemight be due to expulsion of fat in to the medium of high ion concentration. Brine pickle contained significantly higher ash content (13.03) as compare to fresh paneer (1.56%). (9) explained that it wasdue to penetration of salt from pickle media into paneer due to diffusion. Ca content was found to be 386 mg/100 g in fresh paneer and 286 mg/100 g in brine pickle. There was significant difference (p 0.05) in Ca content between fresh raw paneerand brine pickled paneer. It might be due to release of both organic Ca (Paracaseinate Bound) as well as inorganic Ca (calcium phosphate) from paneer cubes into media (9). The release of Ca was possible due to solubilisation of Ca as a result of interaction of NaCl with Para casein in the brine pickle. Phosphorus content in fresh paneer was significantly higher (259.25 mg/100 g) as compared to brine pickle 203.33 mg/100 g.

Physicochemical properties of fresh paneerand brine paneer pickle : There was no significant difference in NPN content of fresh paneer (0.20%) and brine paneer (0.22%) pickle (Table-3). Itshowed that there was no protein degradation during processing of paneer pickle. NPN content in this study was within the range (0.20 to 0.22%) as reported by (10, 11). Free Fatty acid (FFA, % oleic acid) was found non-significantly higher (0.023) in brine paneerpickle as comparison to fresh raw paneer (0.028). Peroxide Value was found nil in fresh paneerand brine solution. Acidity was lower in brine pickle (0.20%) as compared in fresh paneer (0.26%). (9) also observed 0.2% acidity in fresh paneer. The pH of fresh paneer was higher (5.75) as compared to brine pickle (5.53). Shear press value of fresh paneer and brine pickle were observed to be similar (0.2 Kg/cm^2) there by indicating soft texture of paneer which remained unchanged during processing of pickle.

Conclusion

From the present study, it is concluded that technology for making brine paneerpickle could be explored and surplus milk can fetch more price as well as it can add variety in market along with convenience to the consumer.

References

1. A.O.A.C. (2007). Official Methods of Analysis. 18th ed. *Association of Official Analytical Chemists*, Washington DC.
2. Fiske C.H. and Subbarow Y. (1925). The colorimetric determination of phosphorus. *J. Biol Chem.*, 66: 375–400.
3. Rowland S.J. (1938). The Determination of the nitrogen distribution in milk. *J. Dairy Res.,* 9(1): 42-46.
4. Thomas W.R., Harper W.J. and Gould I.A. (1954). Free fatty acids content of fresh milk as related to portions of milk drawn. *J. Dairy Sci.*, 37: 717.
5. A.O.A.C. (1980). Official Method of Analysis, Association of Official Analytical Chemists. 16th Ed. Washington, U.S.A.
6. Boutaon P.E., Ford A.L., Harris P.V. and O'shea J.M. (1977). Pressure-heat treatment of postrigor muscle: effects on tenderness. *J. Food Sci.,* 42(1): 132-135.
7. Snedecor G.W. and Cochran W.G. (1994). Statistical Methods, 9th edn. Iowa State University Press, Ames, Iowa.
8. Rani M., Dabur R.S. and Ahlawat S.S. (2014). Application of pickling for preservation of paneer. *Asian J. Dairy food Res.*, 33(3): 183-186
9. Rao K.J. and Patil G.R. (1999). Diffusion of Sodium Chloride and Citric Acid in Raw and Fried Paneer at Different Temperatures. *J. Food. Sci. Technol.*, 36(5): 424-427.
10. Bhattacharya D.C., Mathur D.N., Srinivasan M.R. and Samlik O. (1971). Studies on the method of production and shelf life of paneer. *J. Food. Sci. Technol.*, 8: 117-120.
11. Arora V.K. and Gupta, S.K. (1980). Effect of low temperature storage on paneer. *Indian Dairy Sci.*, 33(3): 374-380.