CONSEQUENCE OF VARIATION IN INGREDIENTS ON SENSORY QUALITY OF CHHANA PODO

S.S. Bankar[1], M. Raziuddin[2] and P. N. Zanjad[3]

Received : 04.12.2014

ABSTRACT

An study was undertaken to prepare acceptable quality of chhana podo after incorporation of different additives and sugar levels. Effects of different additives suji and maida and sugar level viz. 20, 25, & 30 percent on sensory quality of chhana poda. Chhana podo prepared from after incorporation of 5 percent suji exhibited significantly highest sensory score as compare to 5 percent maida. Irrespective of additives significantly highest sensory score for chhana podo made from 2 percent lactic acid after incorporation of 5 percent suji and 5 percent maida as compared to 1 percent lactic acid as a coagulant. As the addition of 25 percent sugar showed significantly higher sensory score for all the attributes as compared to other levels of sugar. However, chhana podo made from 2% lactic acid chhana with incorporation of 25 % sugar rated as excellent quality as compared to 1 percent lactic acid. Further, increase in level of sugar up to 30 percent adversely affects the quality of chhana podo. On the basis of finding it could be concluded that good quality chhana podoa made from 2 percent lactic acid with addition of 5 percent suji with 25 percent sugar.

Accepted : 20.06.2015

Key Words : Cow Milk, Chhana Podo, Suji, Maida, Sugar and Sensory Quality

INTRODUCTION

Channa podo is a channa based Indian delicacy much popular in eastern region of India, which is prepared by baking. It is made from chhana, sugar and semolina (suji)/refined wheat flour (maida). It is often garnished with nuts, cloves and cardamoms. Literature revealed that chhana podo has been served to Lord Jagannath in Puri as offering prasad for hundreds of years. Since the product is presently confined to Orissa, its characteristic taste and appeal may find wider acceptance in other parts of India. Cow milk was more suitable for the production of chhana whereas buffalo milk yielded a harder and chewy coagulum. The quality of chhana depended on type of milk, condition of coagulation, type of coagulants and its strength, thermal treatment given to milk prior to acidification and method of straining (Sahu and Das. 2007).

Chhana podo from some districts in Odisha have a compact and firm body while others have spongy body. The moisture contributed considerably by chhana(about 60% by whole weight basis), comparatively lesser amount by semolina (about 10% by whole weight basis for raw semolina) and negligibly by sugar, plus and added water in the mix (Ghosh et al, 2002).

MATERIAL AND METHODS

Milk: Fresh cow milk was procured from the livestock unit of College of Veterinary and Animal Sciences, Parbhani.

Author attribution: 1-MVSc Scholar, 2-Assistsnt Professor, Department of Livestock Products Technology, 3-Professor (Retired), College of Veterinary and Animal Sciences (MAFSU, Nagpur), Udgir, Maharashtra, India- 413 517. 2Corresponding author: dr_razi@rediffmail.com, Mobile: 7588062558.

Coagulants: Citric acid and lactic acid were used in different concentrations for preparation of chhana.

Chhana making: Chhana was prepared from standardized cow milk (4 % fat) as per the method described by De (1980). Milk was divided into different lots as per the treatment. Each lot of milk was heated to boiling and subsequently cooled to 80^0C. Different coagulants viz. 1% citric acid and 2% lactic acid were tried. Before addition, coagulants were heated at 80^0C and slowly added with continuous stirring till complete coagulation occurred and the clear whey was observed. The coagulated mass was kept undisturbed for 2 min. and then transferred to muslin cloth for drainage of whey. After 20 min. the chhana obtained from each lot was collected and weighed.

Preparation of chhana podo: Chhana podo was prepared from chhana made from standardized cow milk.

a. Preparation of dough: Standardization of dairy ingredients to be incorporated in chhana for making chhana podo was done as under. Chhana dough was made by mixing the weighed quantity of chhana with non dairy ingredients viz. 5 % suji, and 5% maida using 20 per cent sugar. The mixture was kneaded manually till sugar was completely dissolved and latter the different levels of sugar also tried (20, 25 and 30 percent).

b. Baking of dough: The kneaded mixture was spread on a flat, dry and clean pan smeared with ghee to a thickness of about 2cm. The pan was kept in hot air oven maintained at 180 0C for 60 min to obtain a baked product. At the end, a puffed, brown, spongy textured product was obtained which was subsequently cooled to room temperature.

Standardized milk (4% Fat)
↓
Boiling
↓
Cooling (80^0C.)
↓
Addition of coagulant
(1% Citric acid & 2% lactic acid)
↓
Straining of coagulated mass
↓
Channa
↓
Addition of non-dairy ingredients
(5.0 % suji and 25 % sugar)
↓
Kneading
↓
Blending
↓
Moulding
↓
Baking
(180 0C for 60 min)
↓
Cooling
↓
Packaging
↓
Storage

FLOW CHART OF CHANNA PODO PROCESS

Sensory quality: The samples of chhana were evaluated for flavour, body and texture, colour, appearance and overall acceptability on 9 point hedonic scale suggested by Amerine et al. (1965).

Data analysis: The data were subjected to analysis of variance using Completely Randomized Design and standard deviation was computed as described Snedecor and Cochran (1989).

RESULT AND DISCUSSION:

1. Effect of additives (Suji and Maida) on sensory quality:

It is observed from table 1 that sensory quality of chhana podo made with incorporation of various additives in chhana differed significantly. Chhana podo made from both, 1 percent citric acid and 2 percent lactic acid chhana incorporated with 5 % suji recorded significantly higher scores for all the sensory attributes as compare to 5% maida. In both the coagulants chhana podo made from 2% lactic acid chhana incorporated with 5% suji showed significantly higher sensory score for all the sensory attributes as compared to 1 percent citric acid incorporated with 5% suji. However, chhana podo made from both the coagulants after incorporation of 5% suji exhibited significantly higher sensory score as compare to 5% maida indicating that maida used as a additives is not suitable for getting desired quality attributes of chhana podo. Further, irrespective of additives used, chhana podo made from 2% lactic acid exhibited significantly higher sensory scores for all the attributes of additives as compare to 1% citric acid. Incorporation of 5% maida in 1 percent citric acid coagulated chhana exhibits lower sensory scores for all the attributes in chhana poda. The observation are in partial agreement with Ghosh et al. (2002) who reported that suji helps in improving body and textural attributes of chhana podo.

Table 1: Effect of Additives on Sensory Quality of Chhana Podo

Type of chhana	Additives	Colour & Appearance	Body & Texture	Flavour	Overall Acceptability
1% Citric acid	5 % Suji	8.60^{a}	8.52^{b}	8.24^{b}	8.24^{b}
	5 % Maida	8.40^{c}	8.04^{c}	7.84^{c}	8.08^{c}
2% Lactic acid	5% Suji	8.60^{a}	8.64^{a}	8.32^{a}	8.28^{a}
	5% Maida	8.56^{bc}	8.20^{bc}	8.20^{bc}	8.28^{a}

Common superscripts indicate treatments are not significant at 5 per cent and 1 per cent level of probability

2. Effect of sugar levels on sensory quality:

The observations on the sensory quality of chhana podo made with 5 % suji and different sugar levels are presented in table 2. It is seen that comparatively higher sensory scores for all attributes are recorded for chhana podo made from 2% lactic acid chhana that made from 1% citric acid, indicating its superiority over citric acid coagulant.

Irrespective of type of chhana, addition of 25 % sugar in chhana for making chhana podo exhibited significantly higher score for all the sensory attributes over 30 % sugar. This indicates that addition of higher levels of sugar (30 %) adversely affected the quality. Though the difference in score particularly in respect of colour, body and texture and flavour of chhana podo made with addition of 20 and 25 % sugar were not significant but regards to overall acceptability, chhana podo made from 2% lactic acid chhana with addition of 25 % sugar rated as excellent. This clearly shows that 25 % sugar level was optimum for getting desired sweetness in chhana podo. It is further, noted that the sensory score for all the attributes declined significantly with increase in sugar level to 30 %. Lower sensory scores for the product with addition of 30 % sugar might be due to

adverse effect on colour which might have resulted in increased caramalization and much cooked flavour thus the quality attributes with respect to colour, flavour and overall acceptability were deteriorated. Present findings are close to Dash et al. (1999) who also reported that 25 % sugar was optimum for getting chhana podo with soft body, slight hard surface and better slicing properties.

Table 2: Effect of sugar levels on sensory quality of chhana podo made from chhana using different coagulants

Type of chhana	Sugar (%)	Colour & appearance	Body & texture	Flavour	Overall acceptability
1% Citric acid	20	8.36^{b}	8.44^{a}	8.28^{b}	8.48^{ab}
	25	8.56^{ab}	8.56^{a}	8.40^{b}	8.62^{ab}
	30	7.44^{c}	7.56^{b}	7.76^{c}	7.52^{c}
2% Lactic acid	20	8.52^{ab}	8.48^{a}	8.48^{ab}	8.36^{b}
	25	8.64^{a}	8.64^{a}	8.68^{a}	8.68^{a}
	30	7.56^{c}	7.80^{b}	7.76^{c}	7.76^{c}

Common superscripts indicate treatments are not significant at 5 per cent and 1 per cent level of probability

CONCLUSION:

2% lactic acid chhana is highly suitable for preparation of chhana podo after incorporation of 5 % suji with 25 % sugar and baked at 180 ºC for 60 min. resulted in acceptable quality chhana podo.

REFERENCES

A.O.A.C. (1995), Methods of Analysis. 13th edn. Association of Official Analytical Chemists, Washington, D.C.

Amerine, M.A., Pangborn, E.B. and Roessler, E.B. (1965), Principles of sensory evaluation of food. Academic Press, New York.

Dash, D.K., Ghatak, P.K. and Das, A. (1999). Laboratory made chhana podo. J. Dairying, Food and Home Sci. 18(2): 127-129.

De, S. (1980). Outlines of Dairy Technology, Oxford Univ. Press, New Delhi, pp.517.

Ghosh B. C., Rao, J. K., Balasubramanyam, B. V., and Kulkarni, S. (2002). Market Survey of of Chhana Podo sold in Orissa, its Characterisation and Utilization. Indian Dairyman, 54, 6, 37-41.

IS: SP-18 Part XI (1981) ISI Handbook for food analysis. Bureau of Indian Standerds, Manak Bhavan, New Delhi.

Sahu, J. K., and Das.H. (2007) Chhana Manufacturing Monograph of IDA.

Snedecor, G.W. and Cochran, W.G. (1989). Statistical Methods, 8th Edition, IOWA State University Press, Amer Ioxa.