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Effect of storage periods on the microbial quality of Rasogulla preparing from Moringa Chhana

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Abstract
The current study was conducted at the Department of Animal Husbandry and Dairy (Dairy Technology), C.S.A. University of Agriculture and Technology, Kanpur. The purpose of the study is to analyze microorganisms by counting SPC, Coli form count, yeast, and mold at various storage times. The study found that Rasogolla made from Moringa chhana had good microbiological quality.

Keywords: Moringa leaves extract, SPC, yeast & mould counts, *E. coli*, plate count agar medium, potato dextrose agar medium, violet red bile agar medium, petri plate

Introduction
Calcium, phosphorus, vitamin D, and protein are minerals found in milk that are crucial for healthy bones. Milk consumption hasn't been linked to a reduction in hip fractures, either. Your body needs calcium to maintain strong bones, a healthy heartbeat, and a healthy neurological system. Chhana is a product made from cow or buffalo milk, or a combination of the two, and is precipitated with lactic acid, citric acid, or sour milk. It should have a moisture content of no more than 70% and a milk fat content of no less than 50% on a dry matter basis (total solids). In accordance with the Prevention of Food Adulteration Rules (1976) [10]. According to a survey by GCMMF-TCF, the projected demand for Rasogolla in the year 2009 was 6000 metric tons (Karunanithy *et al*. 2007; and Bando Upadhyay, 2016) [6, 1]. The production of Rasogolla is growing at a rate of 67%/year (Anon, 1994) [12], and it has reached a yearly production of 60,000 tonnes. *Moringa oleifera* known as moringa from North India but now available worldwide. Moringa is also known as HORSE - radish and mother's best friend. All parts of the tree can be used in different ways. It helps clean dirty water. The leaves have 7 times more vitamin C than oranges and 15 times more potassium than bananas. It also has calcium, protein, iron. Which helps our body heal and muscles. It's also loaded with antioxidants, substances that can protect cells from damage and can boost our immune system. Leaves fall from December to January of the year and new growth begins in February to March. Moringa produces a cream colored flower when it is 8 months old. The fruits ripen from April to June and the pods are triangular in cross section, 30 to 50 cm long and contain oily, black winged seeds. All parts of the tree can be used in different ways. Moringa is full of nutrients and vitamins. It helps clean dirty water. The leaves are low in fat and carbohydrates and rich in minerals, iron and vitamin B. The seed powder can be used as a quick and effective method to purify dirty river water, as powdered Moringa seeds, when added to cloudy water, act as a coagulant. Binding to bacteria and sludge at the bottom of the container (Makkar and Becker, 2005) [8].

Methodology for microbiological analysis
Cow milk obtained from dairy of the Department of Animal Husbandry and Dairying situated at Kanpur Campus for entire experimentation. Rasogolla manufacturing technique was standardized on the basis of various parameters under study and final product was evaluated microbiological qualities.

Total plate count (live count)

Total plate counts were performed on plate count agar using 1:1000, 1:10000, 1:100000 dilutions. One ml of the diluted sample was transferred in duplicate sterilized Petri dishes. 10 ml of molten agar was poured into each Petri dish. After mixing, the plates were left on the table for some time to solidify the medium, all necessary precautions were taken to avoid external contamination during plating. The inverted plates were incubated in an incubator maintained at 32+10 °C for 48 hours. After the incubation period; colonies formed by bacteria on the plate were counted using a colony counter. The total number of bacteria was calculated by multiplying the dilution factor by the number of colonies counted.

Yeasts and moulds count

Yeast and mold counts were also estimated according to the procedure prescribed in Standard Methods for the Examination of Dairy Products (1978), using a 1:10 dilution and "Potato Dextrose Agar" medium. The plates were processed in duplicate after mixing, the sample medium in the dishes was left on the table for some time to solidify the medium. All necessary precautions were taken to avoid external contamination during plate application. The inverted plates were incubated in an incubator maintained at 22+10 °C for 3-5 days after the incubation period, colonies formed by yeasts and molds on the plates were counted using a colony counter.

Coliform count

Coli counts were performed using the procedure recommended in the Standard Method for the Examination of Dairy Products (1978) for coli counts of 1 ml of a diluted sample (1:10) was transferred in duplicate sterilized Petri dishes along with 10 ml of dissolved "violet". Red Bile Agar" medium. After mixing, the plate was left on the table for some time to solidify the medium. All necessary precautions were taken to avoid external contamination during plating. The inverted plate was incubated in an incubator maintained at 32 10 °C for 24 hours, after the incubation period the colonies were counted using a colony counter.

Results and Discussion

The results of this investigation warrant “Technology of preparation of Rasogolla from Moringa Chhana and its shelf life” was made from cow's milk and four different levels of Moringa extract and three different levels of sugar syrup were used to prepare Rasogolla. Examination of the quality of Rasogolla, various observations and analyzes of microbiological characteristics were recorded. SPC (CFU/gm ×104) in Moringa Chhana Rasogolla sample using cow's milk and four different levels of Moringa extract and three different levels of sugar syrup were used to prepare Rasogolla and storage times are monitored in the laboratory. Yeast and mold counts (CFU/gm) in a sample of Channa-based cheese spread using cow's milk and four different levels of Moringa extract and three different levels of sugar syrup were used to prepare Rasogolla.

Table 1: Microbial evaluation of rasogolla preparing from moringa chhana

Storage period	SPC (10^4 cfu/g)	Yeasts &Moulds count(10^1 cfu/g)	Coliform count(10^1cfu/g)
D_1	0.57	0.00	Nil
D_2	5.20	2.20	Nil
D_3	11.10	4.20	Nil
D_4	24.17	6.20	Nil
D_5	51.17	10.20	Nil
D_6	103.10	15.20	Nil

(D_1= 0 days) (D_2= 7 days**)** (D_3 = 14 days**)** **(**D_4 = 21 days) (D_5 = 28 days) (D_6 = 35 days).

In case of storage periods (D), the maximum Standard Plate Count (SPC) (103.10×104) in Rasogolla from Moringa Chhana was observed in D6 samples and minimum Standard Plate Count (SPC) (0.57) in D1 samples. It shows significant difference at 5% in storage periods. The finding was agreed with the result of Chavan *et al*. (2009) [2]. In case of storage periods (D), the maximum yeast and mould count (15.20) in Rasogolla from Moringa Chhana was observed in D6 samples and minimum yeast and mould count (0.00) in D1 samples. It shows significant difference at 5% in storage periods. The result was corroborated with the finding of Sarkar *et al*. (2021) [13].

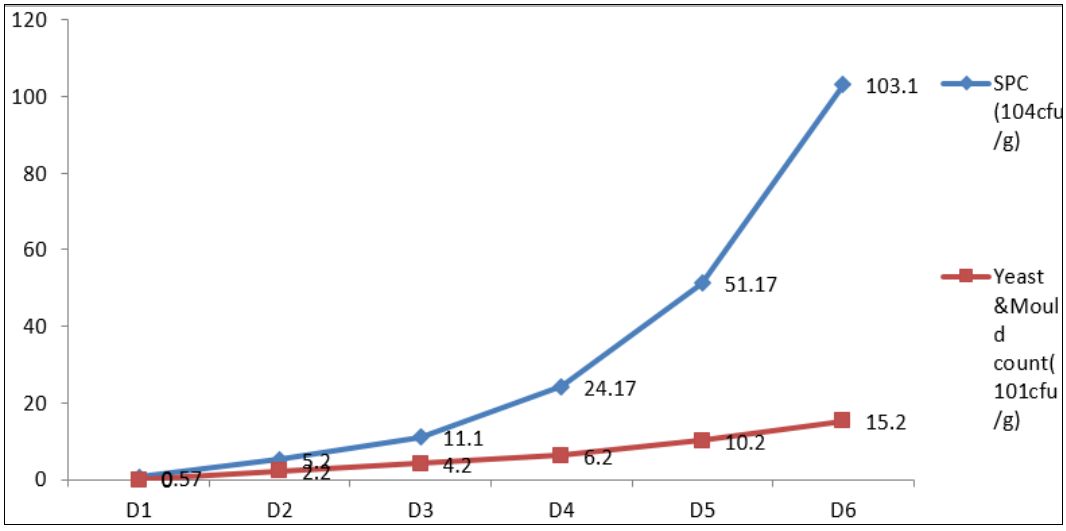

Fig 1: Show the different of SPC and Mould count

Conclusion

All the microbial parameters investigated, i.e. Standard Plate Count (SPC), yeast and mould counts increased during storage. This study revealed that there was a sudden increase in SPC at different storage time From D1 to D2 it was almost double at different storage time on day 28 when SPC exceeded the maximum permissible limit. (i.e. 50 cfu/g) according to FSSAI (2015), while a gradual increase in the number of yeasts and molds was observed from D1 to D2 at different time intervals, coliforms were absent throughout the storage period.

References

1. Bandhopadhyay M, Mukherjee RS, Chakraborty Chaudhary R. A survey on the formulation and processing techniques of some special Indian traditional sweet and herbal sweets. Indian milkman. 2016;58(5):23-35.
2. Chavan RS, Prajapati PS, Khedkar. Production and shelf life study of Indian Dietetic and Diabetic Rosogolla. International Journal of Dairy Science. 2009;4:129-141.
3. Dabur RS, Prakash B. Utilization of whey for the preparation of sugar-free rasogolla. International Conference on Traditional Dairy Foods. NDRI, Karnal; c2005. p. 168.
4. Hickey CD, Sheehan JJ, Wilkinson MG, Auty MAE. Growth and location of bacterial colonies in dairy foods using microscopic techniques. 2015;6:99.
5. ISI. Specification for preserved Rasogolla. Indian Standards Institution. Manak Bhawan, New Delhi; c1967.
6. Karunanithy C, Varadharaju N, Tiwari BD. A study of chhana kneader and ball shaper development in rasogolla production. Journal of food engineering. 2007;80:961-965.
7. Mohammed, Salama. Use of Natural Antimicrobial and Antimicrobial Extract of Moringa Oleifera Leaves in Cream Cheese Production, Journal of Biological Science. 2018;18(2):92-106.
8. Makkar HPS, Becker K. Nutrients and antioxidants in different morphological parts of Moringa oleifera tree. J Agr. Sci. Cambridge. 2005;128(31):1-22.
9. Sachan P, Khan BL, Yadav MPS, Sonkar S. Effects of Moringa Leaf Extract on the Nutritional Quality of Moringa Paneer Prepared from Different Mixtures of Cow's Milk and Leaf Extract: Progressive Agriculture. 2010;10(1):98-101.
10. Rules for the Prevention of Food Adulteration; c1976.
11. Yeturi Gayatri, Ananadakumar SA. Microbiological analysis of preserved rasogollas. Indian Journal of Biochemistry. 2013;7(2):45-46.
12. Anon MC. Relationship between the method of obtention and the structural and functional properties of soy protein isolates. 2. Surface properties. Journal of Agricultural and Food Chemistry. 1994;42(10):2170-6.
13. Sarkar R, Chen W, Cutler M, Cooper D. Neutralizing activity of BNT162b2-elicited serum. New England Journal of Medicine. 2021;384(15):1466-8.