

Suitability of Packaging Material on Microbiological Characteristics of Chakka

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ABSTRACT: Four trials were conducted to judge the microbial quality of Chakka prepared from whole buffalo milk (M_1) and buffalo skim milk blended with cow skim milk (M_2) in 1:1 proportion presented in butter paper (P_1) and polythene bags (P_2) at 0, 4 and 10°C for 21 days. The microbial quality on the basis of packaging in respect of SPC for P_1 and P_2 was 28.39, 27.53 proteolytic count for P_1 and P_2 13.89, 13.07 yeast and mould for P_1 and P_2 was 21.28, 20.41 respectively.

INTRODUCTION

Dairying in India is one of the important subsidiary business in the rural areas next only to agriculture, Buffalo and Cattle are played a vital role as provide the prime source of milk and required motive power for agriculture. Today India rank first position for milk production among the different countries. India's current milk production estimated to be 91.5 million tones (*Indian Dairyman*, 2006). Out of 46% milk is utilized as fluid milk and 54% remaining milk is used for conversion of different milk products large quantity of milk is used for making Ghee (33%) and 12% milk is used for the preparation of Chakka (*Jain et al.* 1996).

Chakka is the base product for shrikhand making. It have got strong therapeutic value and preservative potentials. Chakka whey is used for making of soft drinks. Especially in summer season.

It is very popular in Gujarat and Maharashtra State. Milk and milk products are very perishable means it gets spoil soon so for improving the it shelf life packaging materials performed the well-known role for maintaining the good quality of Chakka. It is necessary to check suitability of packaging material in respect of its microbial quality. Adoption of bio degradable material is recommended for packaging of milk and milk products (*Indian Dairyman*, 1999)

MATERIAL AND METHODS

Chakka was prepared from whole buffalo milk (M_1) and buffalo skim blended with cow skim milk (M_2). It was packed in butter paper and polythene bags and stored at three different temperatures *i.e.* 0°C, 4°C and 10°C for 21 days. Fresh samples were judged and analyzed for their microbial quality in respect of SPC, proteolytic count and yeast and mould count and subsequently at an interval of 3 days. The sensory quality score was the criteria to judge the spoilage or rejection of samples. The samples were considered spoiled when they scored less than 50% of the total score. At this stage microbial analysis of the sample was discontinued.

RESULT AND DISCUSSION

With regards to influence of packaging material on the total microbial count of Chakka. It was observed that irrespective of types of milk used, storage

Table 1
Pooled means for standard plate count prepared from different types of milk stored in different packaging materials.

Factory	SPC ($10^5/g$)
Type of Packaging	
Butter Paper (P_1)	28.391
Polythene paper (P_2)	27.531
SE (m)	0.082
CD at 5%	0.227

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Table 2
Pooled means for yeast and mould counts from different types of milk stored in different packaging materials.

Factory	Yeast and Mould ($10^5/g$)
Type of Packaging	
Butter Paper (P_1)	21.28
Polythene paper (P_2)	20.41
SE (m)	0.078
CD at 5%	0.212

temperature and storage period mean value for SPC of Chakka stored in butter paper was significantly higher than samples stored in polythene bags. Polythene bag were rubber band after the filling of Chakka in it. Chakka was wrapped in butter paper. Availability of more oxygen through butter paper might have promoted the growth samples of polythene bags. Permeability of oxygen through packaging material was the cause to promote the growth and multiplication of microorganism in the product. (Kumar and Shrinivasan (1983), Goyal and Shrinivasan (1988)).

The result on the valuation of packaging material in relation to yeast and mould of Chakka showed that the samples stored in butter paper exhibited significantly more count (21.28) than that of polythene bags (20.41). Mallotra and Prasad (1999) pointed out that variation in yeast and mould count was depending upon the number of factor and packaging material is one of them.

The Chakka stored in butter paper exhibited significantly more proteolytic count irrespective of storage temperature and storage interval than that of Chakka samples packed in polythene bags. This indicates suitability of polythene bags to the stored Chakka over butter paper in terms of controlling growth of proteolytic organism and thereby preventing the protein degradation of the products. The samples stored in Butter paper exhibited

Table 3
Pooled means for proteolytic count of Chakka from different types of milk stored in different packaging materials.

Factory	Proteolytic Count ($10^5/g$)
Type of Packaging	
Butter Paper (P_1)	13.89
Polythene paper (P_2)	13.07
SE (m)	0.074
CD at 5%	0.205

significant more count (13.89) over the polythene sample stored in polythene bags (13.07)

CONCLUSION

After studying the above result it can be concluded that the polythene bags as packaging material are more suitable than the butter paper as microbial growth observed more in samples stored in butter paper.

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