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Production of Mozzarella Cheese with Mint Flavour Using Buffalo Milk

By

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Declaration

"The work described in this thesis was carried out by me under the supervisionDrK.K.D.S.Ranaweera and Professor. A.Bamunuarachchi and a report on this thesis has not been submitted in whole or in part of any University or any other institution for another Degree/diploma"

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We Dr K.K.D.S.Ranaweera and Prof.A.Bamunuarachchi certify that the above statement made by the candidate is true and that this thesis is suitable for submission to the university for the purpose of evaluation.

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Abbreviations

BC	Before Christ
Cm	Centi metre
^{0}C	Degree Celsius
CF	Correction factor
D O P	Denomination of Protected Origin
F A O	Food and Agriculture Organization
g	Grams
Kg	Kilo grams
KJ	Kilo joules
K cal	Kilo calories
mg	Mili grams
ml	Mili litre
PER	Protein efficiency ratio
P/F	Protein: Fat ratio
SLS	Sri Lankan standards
Sec	Seconds
SS (T)	Total sum of squares
SS (Tr)	Treatment sum of squares
SS (P)	Panelists sum of squares
SS (E)	Error sum of squares
(T)	Total degree of freedom

(Tr)	Treatment degree of freedom
(P)	Panelists degree of freedom
df (E)	Error degree of freedom
MS (Tr)	Treatment mean square
MS (P)	Panelist mean square
MS (E)	Error mean square

PRODUCTION OF MOZZARELLA CHEESE WITH MINT FLAVOUR USING BUFFALO MILK

By Mythily Ratnasingh

ABSTRACT

Buffalo milk, which is of high nutritive value, has a very low utilization especially in Asia. Production of diversified products with a preferable flavour is the main objective.

Even though there are different types of cheese made using different type of milk sources mozzarella is the ideal cheese, which could be made out of buffalo milk.

Mozzarella, which is a semi hard cheese variety, is the product developed during the study. After the conduction of preliminary tests of milk, mozzarella cheese is produced using rennet and citric acid. When curdling process was in progress an extraction of mint leaf was added. Since mozzarella is mainly used in pizza mint flavour would be a suitable combination. The final product was having a mild mint flavour with a desirable off white colour. Curd obtained is separated from the whey by the process of cutting and subjected to heat treatment and at proper $P^{H.}$ Mozzarella cheese with a proper stretchability is obtained

After subjecting to brining the organoleptic properties of the developed product was analyzed. The final product obtained had a pleasant desirable mint flavour which was creamy white in colour, and tasted sweet. It had a pleasant odour.

The activity of enzyme papain was also analyzed during this study. Papain alone did not coagulate the milk protein.

During microbial test the milk which was used to prepare the cheese was of good quality .The final product obtained was of good acceptability ,had a good appearance ,aroma and taste but the texture was not preferred when compared with the commercially available product.

CHAPTER 1

INTRODUCTION

Milk is a highly unstable food as it is a very good medium for the growth of many microorganisms. Fermentation of milk is primarily aimed at preservation by conversion into more stable, nutritious and desirable products such as cheese.

According to the definition given in SLS standards cheese can be described as the

"Fresh matured product obtained after coagulation of milk, cream, skimmed or partially skimmed milk, buttermilk or a combination of these products".

Coagulation of casein, (milk protein) is brought about by enzymes usually rennet, a mixture of proteases consisting both chymosin and pepsin. Chymosin brings about curdling or clotting of milk and pepsin is used for curdling. These are proteolytic enzymes.

The activity of papain, which is also a proteolytic enzyme, was also tested in cheese making. This resulted in inferior results. Papain alone did not coagulate the milk protein

During the product development a desirable flavour that is mint extract is added in order to add value to the product. The shelf life of the product was analyzed using microbial plating methods and staining techniques.

Objectives

- To prove the ability to produce diversified processed products using buffalo milk.

- Addition of a desired flavour to the product –Mint flavour.

- To experiment alternative proteolytic enzyme such as papain in protein coagulation.