

Manufacture of Fruit cheese from Buffalo Milk and Papaya Pulp

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“ The work described in this Thesis was carried out by me under the supervision of Prof.A.B.Bamunuarachchi and a report on this has not been submitted in whole or in part to any university or any other institution for another Degree/ Diploma.”

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Students Signature

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Date

“ I 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.”

A handwritten signature in blue ink, consisting of stylized initials and a surname, positioned above a horizontal dotted line.

Prof.A.B.Bamunuarachchi

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by Nilmini Mahanama

ABSTRACT

Buffalo milk is rich in protein and fat compare to cow's milk. Buffalo milk is widely available in Kesbewa area. It can be easily used for the value added products like cheese, but currently rarely or almost not using buffalo milk for cheese industry in this area.

Cheese samples were prepared using buffalo milk collected from farms of the DS area Kesbewa. Papaya pulp was added to the cheese to produce a fruit cheese. It also improves the color, flavor and the nutritional value of the cheese.

Moisture, Protein and Fat content of the product, microbial and sensory properties were analyzed.

Average moisture level of the cheese is 75.06%, crude protein is 9.7%, Fat is 14.03% (dry basis), Dry matter is 23.73%.

Recommended range of moisture is 55-80%, Dry matter is 20-45% for the soft cheese. Average moisture level and dry matter percentage was with in the acceptable range.

Microbial analysis was also with in the satisfactory level.

Sample number 01 was selected as the best sample from the sensory evaluation.

(V II)

CHAPTER 01

1. Introduction

1.1. General

Milk is a valuable source of nutritional substances. It is considered as the most complete of food. Through the centuries, man has wisely learnt how to use this food source in two ways.

- as a foodstuff: for direct consumption (milk as a drink) ;
- transformed: as an element from which it is possible to obtain dairy products (cheese, butter, yoghurt, etc.)

Buffalo Milk

Buffalo cows start producing milk after giving birth. The first liquid secreted by the udder is the colostrums, which is only used for the feeding of the calf; it is not collected as it cannot be used for the production of dairy products. The colostrums is much richer than normal milk in vitamins and immungobins, a class of proteins with an immune defensive function. After about 6 days from calving, the colostrums changes in to milk.

Buffalo cows are milked twice a day for 10 months; this period is known as the lactation period. When the buffaloes stop producing milk , it means they have entered the “dry period”.

The chemical composition of milk depend on various factors: species, breed, age of the animal, feeding, health condition, environmental factors and lactation period. Water, proteins, fat, sugars, mineral salts, vitamins and enzymes are the substances we usually find in milk.

Table-1 – Average Chemical Composition of milk of different species

Species	Water	Protein	Fat	Lactose	Mineral Salts
Buffalo	82.2	4.8	7.5	4.7	0.8
Goat	86.5	3.9	4.3	5.8	0.8
Ewe	80.9	6	7.5	5.4	1.1
Cow	87.5	3.2	3.7	4.6	1.0

If we compare buffalo milk with cows milk, we can draw the following conclusions;

Buffalo milk is richer in fat than cows milk. The buffalo compared to the cow, produces a milk with higher percentage of proteins.

Buffalo milk is the raw material from which buffalo Mozzarella cheese is traditionally produced.

The raw material, milk (a short life commodity) is used by cheese industry to be converted in to cheese which according to variety and storage, has a shelf life from 4-5 days up to 5-10years. The cheese industry therefore provides a useful service in extending the life of a valuable human foodstuff.

The cheese maker must consider nutrition, consumer reactions (including medical opinions) taste, aroma, texture and appearance if the cheese is to have continued marketability.

A part from water, man requires four major groups of nutrients in food, which in the past were often quoted as fat, protein, carbohydrate and salts. Modern nutritional standards are more demanding in respect of many minor components such as vitamins minerals. etc.

Divisional Secretarial area Kesbewa (Veterinary range of Kesbewa) is popular for buffalo farming and for highbred buffaloes because of that large quantities of buffalo milk is produced in this area. Most of the buffalo milk produced in this area are used for the production of curd, surplus is sold to the milk collecting centers. (eg:- "Milco") specially during the rainy seasons. The shelf life of a curd pot is for seven days in room temperature and in refrigerated conditions (at 4⁰C) it can be kept for about 14 days. But a product like cheese can be kept for longer time than curd. Cheese is an expensive product in local market. Because of that converting milk in to cheese is one method of dealing with surplus and it will provides an incentive for improving dairying as well as