

**INCIDENCE OF COLIFORM, YEAST AND
MOULDS IN YOGHURT AND ITS RELATIONSHIP
TO SHORTENING OF SHELF LIFE**

BY

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YOGHURT AND ITS RELATIONSHIP TO SHORTENING
OF SHELF LIFE**

By

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The work described in this thesis was carried out by me under the supervision of Prof A .Bamunuarachchi and report on this has not been submitted in whole or in part to any University or any other institution for another Degree.

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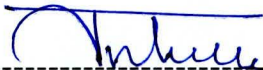


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DECLARATION

I / We 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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TABLE OF CONTENTS

	Page
Table of content	1
List of Tables	V
List of Figures	VI
List of Abrevations	VIII
Acknowledgement	XI
Abstract	X
1. INTRODUCTION	01
2. LITERATURE REVIEW	03
2.1 Milk	03
2.2 Chemical properties of Milk	05
2.2.1 Milk Lipids	05
2.2.2 Milk	05
2.2.3 Vitamins	06
2.2.4. Minerals	07
2.2.5 Enzymes	09
2.2.6 Lactose	09
2.3 Food and nutritive value of milk	10
2.4 Fermented dairy products	10
2.4.1Yoghurt	11
2.4.2 Yoghurt Starter culture	12
2.4.3 Manufacturing Method	12
2.4.4 Other Yogurt Products	15

2.5 Nutritional Highlights of yoghurt	18
2.6 Yoghurt and health	19
2.7 Microorganisms of milk	19
2. 2.7.1 Bacteria	19
2.7.1.1. Coliform	20
2.7.2 Yeast and Moulds	21
2.8 Safe food handling	22
2.9 Shelf life and dating of food	22
2.10 Quality assurance	24
2.11 Cleaning of Dairy Equipment	24
3.0 Material and Methods	26
3.1 Material	26
3.2 Method	27
3.2.1 Media preparation for microbiological test	27
3.2.1.1 Peptone dilution	27
3.2.1.2 Potato dextrose agar	28
3.2.1. 3. Tartaric acid	28
3.2.1.4 MacConkey broth(purple)	28
3.2.1.2 Milk agar	28
3.2.2 Chemical tests	29
3.2.2.1 Test for acidity	29
3.2.3 Microbiological testing procedures	29
3.2.3.1 Procedure for Yeast and Moulds	29
3.2.3.2 Total colony count	30
3.2.3.3 Presumptive coliforms	30

3.2.3.4 Procedure of Exposed plates counts test	31
3.2.3.5 PH	31
3.2.4 Project work	31
4.0 Result and discussion	34
4.1. Initial yeast count	34
4.2. Initial moulds count	34
4.3 .1 Effect of Temperature on the growth of yeast	35
4.3.2 Effect of Temperature on the growth of Moulds	36
4.4 PH development of yoghurt with time at two different storage temperatures	36
4.5 Indication of coliforms	37
4.7 Investigation of yeast and mould count in different points of production line	38
4.8 Investigation of Total bacterial colony count in different points of production line	39
4.9 Investigation of presumptive coliforms in different point of production process	40
4.10 Exposed plates to check the environment of the production section	41
4.11 Personal hygienic condition	41
4.12 Effect of Mix storage temperature and time	42
4.13 Investigation of packing material	43
4.14 Investigation of Raw material	43
4.15 Evaluation of yoghurt production process , the production environment after take the corrective actions	45

4.15.1 Additional fumigation treatments in order to control yeast and moulds	45
4.16 Bacterial count variation after correct the critical points	47
4.17 Investigation of the yeast and mould count in different points of production line in the new system	48
4.18 Investigation of the final product	49
4.19 Changes in PH with 2 storage temperatures	50
4.20 Changes of yeast count in two different temperatures	50
5.0 Conclusion	52
6.0 Reference	54

LIST OF TABLES

Table	Page
2.1. Composition of Milk	04
2.2.1 The concentration of proteins in milk:	05
2.2.3 The vitamin content of fresh milk	07
2.2.4. The mineral content of fresh milk	08
2.3 Energy value of individual milk constituent	10
2.4.3 Composition of plain yoghurt	14
2.5 Nutritional highlights of yoghurt	18
4.6 Relation ship with Yeast ,Mould and coliforms with colour separation	38
4.9 Investigation of presumptive coliforms in different points of production process	40
4.10 Indication of coliforms	40

LIST OF FIGURES

Figure	Page
2.1 Flow diagram of production process of yoghurt	14
4.1. Yeast count in several yoghurt batches	34
4.2. Mould count in several yoghurt batches	34
4.3.1 Effect of storage temperature for growth of yeast	35
4.3.2 Effect of storage temperature for growth of moulds	36
4.4. PH change under 2 different storage temperature with time	36
4.5 : Percentage of coliform positive and negative samples	37
4.7 : Changes of yeast and mould count in different points of production process	38
4.8 Total bacterial count variation in different processing points	39
4.10 Yeast and mould colonies variation in different production points	41
4.11 Percentage of coliform positive and negative samples	41
4.12 Changes of Total colony count with time	42
4.13 Yeast and mould count in filling cups	43
4.14 Yeast and mould count in Raw material	43
4.15.1 Changing of yeast count in different places in factory premises	45
4.15.2 Changes of the moulds count in different places in factory premises	46
4.16 Changes of the bacterial count in different points of the process	47
4.17 Changes of the yeast and mould count in different points of the process	48
4.18 Yeast count in different yoghurt batches	49
4.19 Changes of PH of the yoghurt with time, in two different storage temperatures	50
4.20 Changes of yeast count in two different temperatures.	51

List of Abbreviations

1. T.C.C Total Colony Count
2. .PDA Potato Dextrose Agar
3. .PHE Plate Heat Exchanger
4. HTST High Temperature Short Time
5. SNF Solids Not Fat

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ABSTRACT

Milk is a highly perishable commodity because of its high nutritive value and its liquid state provides an ideal medium for the growth of spoilage micro organisms. The hot climate in Sri Lanka too increases the spoilage. So the processing of fresh milk into more stable forms has to be done as fast as possible with maximum preservation of the nutrient originally present.

Yoghurt is one of the products which is very famous not only in Sri Lanka but all around the world. In Sri Lanka, Milco (Pvt) Limited is one of the leading companies which supplies more than 50 % of the yoghurt demand in the market. This study was carried out at Milco (Pvt) Ltd, No 45 Nawala Road, Narahenpita, Colombo 05.

This research was carried out to find out the incidence of coliform, yeast, and moulds in yoghurt and its relationship to shortening of shelf life of the product.

The shelf life of yoghurt is 15 days after the production date. Without adding any preservatives the shelf life can be further increased if the product is produced without any micro organism contamination

In this system, coliform contamination mainly occur due to unhygienic practices of the workers and due to lapses in the sanitization practices. Sanitization procedures of the production process should be properly followed and monitored to minimize the bacterial contamination

Yeast and moulds contamination taken place mainly due to environmental lapses. More than Moulds ,Yeast is the most common spoilage found in yoghurt. There is no relationship with Yeast and Moulds count with colour separation. When Yeast count increases yoghurt bloats. The indication of the presence of coliform has no relationship to the colour separation. Initial bacterial count is very high in raw milk >30000 cfu/ml.

By using proper pasteurization time, temperature combinations for raw milk (76°C-14seconds) and for yoghurt mix pasteurisations (95° C – 5 Min) the microbial count can be reduced. Also the storage temperature is very critical, for the growth of Microganism. By maintaining the cold chain (<5 ° C) through out the production process the microbial spoilage can be minimized.

01. Introduction

Milk is secreted by mammals for the nourishment of their young and the milk of all species are complex biological fluids containing a wide variety of different constituents and possessing unique physical characteristics.

The major constituent of cow's milk is water the remainder consists largely of lipids, proteins and carbohydrates ,vitamins and minerals also present in smaller quantities.

Milk is also regarded as being nature's most complete food, because it provides many of the nutrients which are essential for the growth of the human body .However the high moisture content , abundant supply of nutrients together with the almost neutral acidity and temperature of raw milk make it particularly prone to spoilage by micro organisms either originally present or introduced during handling

Therefore, necessary steps must be taken to extend the shelf life of raw milk The forms in which milk is processed range from liquid like pasteurized milk ,sterilized milk and to products like yoghurt, butter ,cheese ,ice cream etc .

Yoghurt (also spelled yogurt or yoghurt) is a semi-solid fermented milk product which originated centuries ago in Bulgaria. It's popularity has grown and is now consumed in most parts of the world. Although the consistency, flavour and aroma may vary from one region to another, the basic ingredients and manufacturing are essentially consistent. Two types of bacteria are involved in fermentation of yoghurt.

Streptococcus thermophilus /*Lactobacillus bulgaricus*.

Streptococcus thermophilus.is responsible for the pleasant aroma present in the yoghurt.*L.bulgaricus* sets the yoghurt by developing an acidic condition in the conversion of lactose in milk to lactic acid.

The milk industries of Lanka Co Limited (MILCO) plays a major role in milk collection and processing in Sri Lanka. It owns 3 processing plants located in Ambewella, Colombo and Kandy. The products of Milco Pasteurised milk, Sterized milk, Powdered milk yoghurt, Ice cream and cheese. In Sri Lanka Milco company (successors to National Milk Board) is one of the leading companies involved in yoghurt production. The company started yoghurt manufacturing in 1970's. Current average production of yoghurt/day ranges about 150 000 cups per day.

Presently MILCO company is involved in the production of set yoghurt, flavoured yoghurt and stirred type drinking yoghurt.

However there are many problems regarding the shelf life of yoghurt. Recently the company approves 15 days of shelf life for their set yoghurts. There are many reasons which result in a short shelf life. They are,

Acidity development, Blotting, colour separation of yoghurt .

Yeast , mould and coliform and the initial bacterial count affect the yoghurt shelf life. Therefore studying the incidence of coliform, yeast and mould in yoghurt is important, and also it is important to find out the relationship to shortening the shelf life. The expansion of shelf life of yoghurt is important to fulfil the high demand, minimize wastage, reduce transport costs and finally to increase the productivity and profitability in yoghurt manufacturing. This project was carried out to investigate the incidence of coliform , yeast and mould contamination in yoghurt and its relationship to shortening the shelf life of the product. This was in order to develop procedures to evaluate the keeping quality or shelf life of yoghurt.