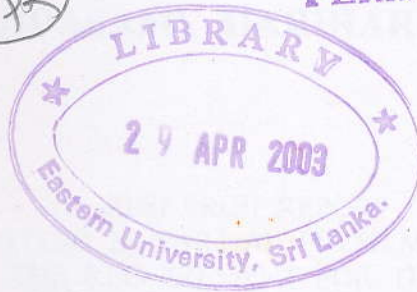


**A STUDY ON THE EFFECT OF CHEMICAL
PRESERVATIVES ON THE QUALITY AND
SHELFLIFE OF MILK AT SELECTED AREAS IN
THE BATTICALOA DISTRICT**

b37.140 F2
HAR

PR



PERMANENT REFERENCE

BY

KANDASAMY HARIHARARAJ



FAG146



Project Report
Library - EUSL

50199

FACULTY OF AGRICULTURE

EASTERN UNIVERSITY

SRI LANKA

PROCESSED
Main Library, EUSL

ABSTRACT

Through history, hunger and malnutrition, caused by lack of nutrients or by poor health, particularly infection disease, which prevent the body from absorbing and utilizing food efficiently.

Addition of hydrogen peroxide into the milk is cheap and commonly used in dairy involved farmers that is a method for preservation. Experiments were conducted to study the changes in the hydrogen peroxide content in milk after various added hydrogen peroxide concentrations, volumes, and heat treatments along with storage times.

Persistency of hydrogen peroxide in milk increased with concentrations of added hydrogen peroxide to milk even at the room temperature (37°C). No residual hydrogen peroxide persisted after 4 hours of storage. At the recommended concentration (0.05%) hydrogen peroxide per 100ml of milk, residual hydrogen peroxide was still available in milk even after keeping for 4 hours at the room temperature, but the residues were totally destroyed when boiled for 2 minutes, suggesting the consumer safety after the heat treatment.

Both products, yoghurt and curd, prepared from hydrogen peroxide added milk preserved for 5 hours exhibited similar behaviour. The persistency of residual hydrogen peroxide increased with increasing hydrogen peroxide concentration added to milk and decreased with storage time. No residual hydrogen peroxide was found in both products of the concentration of 0.05% even on the first day of preparation indicating the consumer safety of the products.

Milk, which is the lacteal secretion of mammal for the nourishment of their young offspring, is also considered as a good food source for all. In that context quality of milk is the basic principle to attain above certification. Having acceptable physical chemical and other organoleptic characters upto its optimum is the major requirement for developing dairy industry too. Presence of undesirable micro organisms in milk directly affect the above quality characters. Therefore, proper heat treatment and minimal contamination during processing has to be exercised to produce high quality processed milk products.

From the study, it appears that the dairy industry in the district is operating profitably, but it has some limitations such as lack of processing, storage, transport and marketing facilities. If the limitations can be overcome and adequate extension facilities are provided, the dairy industry will be more profitable in the future.

TABLE OF CONTENTS

	<u>PAGE</u>
ABSTRACT	i
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	x
ABBREVIATIONS	xi
CHAPTER 1	
1.0 INTRODUCTION	1
CHAPTER 2	
2.0 REVIEW OF LITERATURE	7
2.1 DAIRY SCIENCE AND IMPORTANCE	7
2.1.1 Milk	7
2.1.2 Milk Composition	7
2.1.2 Milk Constituents	9
2.2 MILK AND MILK PRODUCTS	11
2.2.1 Type of Milk Products	13
2.2.1.1 Market Milk	13
2.2.1.2 Cheese	14
2.2.1.3 Butter	14
2.2.1.4 Ice-cream	14
2.2.1.5 Curd	14
2.2.1.6 Ghee	14
2.2.1.7 Condensed Milk	15
2.2.1.8 Powdered Milk	15

2.3 PRESERVATION OF MILK	16
2.4 USES OF HYDROGEN PEROXIDE IN DAIRY INDUSTRY	16
2.4.1 Milk Preservative	17
2.5 EFFECT OF HYDROGEN PEROXIDE NUTRITIONAL AND SENSORY QUALITY OF MILK	20
2.5.1 Taste	20
2.5.1.1 True Protein	21
2.5.1.2 Whey Proteins	23
2.5.2 Enzymes	25
2.5.3 Vitamins	26
2.5.4 Minerals	27
2.5.5 Sugar	27
2.5.6 Fat	27
2.5.6. Overall Nutritive Value of Milk	28
2.6 HEAT STABILITY OF PROTEINS IN HYDROGEN PEROXIDE TREATED MILK	29
2.7 BACTERIA PRESENCE IN MILK	30
2.7.1 Bacteriological Quality	31

CHAPTER 3

3.0 MATERIALS AND METHODS	34
3.1 MATERIALS	34
3.2 DESCRIPTION OF THE STUDY AREA	34
3.2.1 Location and Physical features	35
3.2.2 Land Use	35
3.2.3 Population	35
3.2.3 Economy	35

3.3 COLLECTION OF SAMPLES	37
3.3.1 Mixing of Milk	37
3.3.2 Preparations the dilutions	37
3.3.3 Nutrient agar for Bacteria	39
3.3.4 Preparing the Plates	39
3.3.5 Counting the colonies	39
3.3.5 Limitations of the method	40
3.3.6 Direct microscopic count of milk	41
3.4 METHODOLOGY	42
3.4.1 Examination of Total Colony forming units	42
3.5 DETECTION OF HYDROGEN PEROXIDE IN MILK	43
3.6 STATISTICAL ANALYSIS	43
CHAPTER 4	
4.0 RESULTS AND DISCUSSION	44
4.1 MILK QUALITY	44
4.2 PERSISTENCY OF HYDROGEN PEROXIDE IN MILK	46
4.2.1 Various treatments persistency of Hydrogen Peroxide	46
4.3 MICROBIOLOGY OF MILK	49
4.3.1 Sources of Microorganisms in Milk	50
4.3.2 The udder of the cow	50
4.3.3 Microorganisms Commonly Found In Milk and Milk Products	51
4.3.4 Change of the Microflora of Milk during its Storage	51
4.4 BACTERIAL STAGE	52
4.4.1 Milking Utensils	52
4.4.2 Feeds	53
4.4.3 Air of the stable	53
4.4.4 Hands of the milkers	53
4.4.5 Changes due to microbial contamination in milk	54
4.5 PASTEURIZATION	58