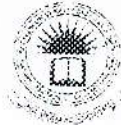


**EVALUATION OF CHEMICAL, PHYSICAL,
MICROBIAL AND SENSORY PROPERTIES OF GARLIC
BUTTER BY USING COW MILK**



W.M SUMITHRA NAYANANGANI



FAG600

Library,
Eastern University, Sri Lanka

FACULTY OF AGRICULTURE

EASTERN UNIVERSITY

SRI LANKA

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ABSTRACT

Butter is a popular dairy product composed of mainly milk fat and other minor components such as water, vitamins, enzymes and minerals which beneficial for health. The aim of this present study was to investigate the effect of garlic (*Allium sativum*) powder addition on the chemical, physical, microbial, sensory properties of butter, incorporated with garlic the rate of 2% garlic chips and 2% garlic powder (w/w) and 2% garlic chips and 4% garlic powder (w/w). Butter samples were analyzed for physical, chemical, microbial and sensory properties during refrigerated storage at 7 °C. The physico-chemical (moisture, total solids, fat, free fatty acids, titratable acidity, pH), microbial and sensory characteristics (texture, taste, mouth feel, after taste, appearance, colour, aroma and overall acceptability) were analyzed, at day 1, week 1, week 2, week 3, week 4, week 5, week 6 and week 7 of storage.

Moisture, total solids, fat, free fatty acids, titratable acidity and pH were significantly difference ($p < 0.05$) among the treatments at day one. The results of this study revealed that, the moisture ($14.09 \pm 0.10\%$) and total solids ($85.91 \pm 0.10\%$) content were significantly ($p < 0.05$) higher in butter without incorporated garlic chips and powder. Fat content ($80 \pm 0.00\%$) was significantly ($p < 0.05$) lowest in butter incorporated with 2% garlic chips and 4% garlic powder. And free fatty acids was significantly ($p < 0.05$) highest in butter incorporated with and 2% garlic chips and 4% garlic powder and lowest in butter without added garlic chips and powder. pH ($6.09 \pm 0.03\%$) was significantly ($p < 0.05$) lowest in butter incorporated with 2% garlic chips and 4% garlic powder. And titratable acidity ($0.13 \pm 0.02\%$) was significantly ($p < 0.05$) lower in butter without added garlic chips and powder. 2% garlic chips and 4% garlic powder added butter showed the highest (48.75 ± 1.18) antioxidant activity.

During storage, the pH value was significantly ($p < 0.05$) decreased and fat content and hardness of butter was not significantly ($p > 0.05$) different during 7 weeks of storage period. pH content was significantly ($p < 0.05$) decreased and titratable acidity was increasing with the storage period. During storage period of 7 weeks, the cohesiveness, gumminess and springiness were significantly ($p < 0.05$) increased. 2% garlic chips and 4% garlic powder treated samples showed the lowest yeast/mould and coliform counts. Organoleptic properties were evaluated through the panel of 30 members. As a result of organoleptic characteristics revealed that, 2% garlic chips and 4% garlic powder added butter had the highest mean score of overall quality of all sensorial properties namely, texture, taste, mouth feel, after taste, appearance, colour, aroma and overall acceptability. Results revealed that most of the panelist accepted, which butter made from 2% garlic chips and 4% garlic powder than other types of butter.

TABLE OF CONTENTS

ABSTRACT	I
ACKNOWLEDGEMENT	III
TABLE OF CONTENTS.....	VI
LIST OF TABLES.....	X
LIST OF FIGURES.....	XI
ABBREVIATIONS.....	XII
CHAPTER 01.....	1
1.0 Introduction.....	1
CHAPTER 2.....	4
2.0 Literature Review.....	4
2.1 Milk.....	4
2.1.1 Definition.....	4
2.1.2 Current Status of Dairy in Sri Lanka.....	4
2.1.3 Importance of milk in nutrition.....	5
2.1.4 Composition of milk.....	5
2.1.4.1 Fat.....	6
2.1.4.2 Proteins.....	6
2.1.4.3 Whey protein.....	7
2.1.4.4 Lactose.....	7
2.1.4.5 Solid Non Fat (SNF).....	8
2.1.4.6 Total solids (TS).....	8
2.2 Butter.....	8
2.2.1 Definition.....	8
2.2.1.1 Cream.....	8
2.2.1.2 Butter.....	8
2.2.2 Background of butter.....	9
2.2.3 Classification of butter.....	11
2.2.3.1 Based on acidity of cream used for butter making.....	11
2.2.3.2 Based on salt content.....	11
2.2.3.3 Based on end use.....	12

2.2.3.4 Based on the manufacturing practice	12
2.2.4 Butter standards	12
2.2.4.1 U.S. Grade AA.	12
2.2.4.2 U.S. Grade A.	13
2.2.4.3 U.S. Grade B.	13
2.2.4.4 General.	13
2.2.5 Industrial butter making	14
2.2.5.1 Churning method of butter manufacture	14
2.2.6 Butter manufacturing process	16
2.2.7 Microbial activity of butter	17
2.3 Garlic	17
2.3.1 Botanical feature of garlic.....	17
2.3.2 Chemistry of garlic	18
2.3.3 Health effect of garlic	18
2.3.3.1 Antimicrobial Activity	19
2.3.3.1.1 Anti-bacterial effect.....	19
2.3.3.1.2 Anti-fungal.....	19
2.3.3.1.3 Anti- viral	20
2.3.3.1.4 Anti-parasitic	20
2.3.3.2 Cardiovascular effects.....	20
2.3.3.2.1. Antihypertensive.....	20
2.3.3.3 Anti-cancer effect.....	20
2.3.3.4 Anti-oxidant effect	20
2.3.3.5 Adverse effects of garlic	21
2.3.4 Forms of Garlic	21
2.4 Sunflower oil	22
2.5 Shelf life	22
2.5.1 Definition	22
2.5.2 Rancidity	22
CHAPTER 03.....	23
3.0 Methodology	23
3.1 Location and study area.....	23
3.2 Materials	23

3.3 Treatment framework	23
3.4 Milk analysis.....	24
3.4.1 Organoleptic test	24
3.4.2 The Alcohol Test.....	24
3.4.3 Clot on Boiling (C.O.B) Test.....	24
3.4.4 Acidity test.....	24
3.4.5 Resazurin test.....	24
3.4.6 Determination of milk density	25
3.4.7 Alkaline test of milk.....	26
3.4.8 Sugar test of milk	26
3.4.9 Salt test of milk	26
3.4.10 Starch test of milk	26
3.4.11 Dextrose test of milk.....	27
3.4.12 Urea test of milk.....	27
3.5 Procedure of garlic chips processing	27
3.6 Procedure for butter preparation.....	28
3.7 Nutritional analysis.....	29
3.7.1 PH value of garlic powder, soaked garlic chips and fried garlic chips....	29
3.7.2 Ash content of garlic powder, soaked garlic chips and fried garlic chips	29
3.7.3 Determination of moisture content of butter.....	29
3.7.4 Determination of pH value.....	30
3.7.5 Determination of fat content	30
3.7.6 Determination of free fatty acid of butter	31
3.7.7 Determination of titratable acidity of butter	31
3.7.8 Determination of antioxidant activity	32
3.8 Physical analysis.....	32
3.8.1 Determination of physical factors	32
3.9 Microbial analysis.....	33
3.9.1 Total colony count	33
3.9.2 Coliform count.....	33
3.9.3 Yeast/ Mold count.....	34
3.10 Sensory analysis	34
3.11 Statistical analysis.....	35

CHAPTER 04.....	36
4.0 Results and Discussion.....	36
4.1 Chemical attributes of fresh cow milk.....	36
4.2 Preliminary study of finding the best concentration levels for manufacturing of garlic butter	38
4.3 physicochemical variation of butter manufactured with different concentrations of garlic chips and powder at day one.....	41
4.4 physicochemical variation of butter manufactured with different concentrations of garlic chips and powder during storage period.....	42
4.4.1 Moisture content and Total Solids in butter during storage period	42
4.4.2 pH value and Titratable acidity variation in butter during storage period	46
4.4.2.1 pH value	46
4.4.2.2 Titratable acidity	46
4.4.3 Fat content variation in butter during storage period.....	49
4.4.4 Free fatty acid content variation in butter during storage period.....	50
4.4.5 Antioxidant activity of butter in butter during storage period	52
4.4.6 Microbial activity variation in butter during storage period.....	53
4.4.7 Physical parameters of butter during storage period.....	58
4.4.8 Sensory qualities of butter	59
4.4.8.1 Sensory attributes variation at day one evaluation.....	59
4.4.8.2 Sensory attributes variation at week one evaluation	61
4.4.8.3 Sensory attributes variation at week two evaluation.....	62
4.4.8.4 Sensory attributes variation at week three evaluation.....	63
4.4.8.5 Sensory attributes variation at week four evaluation	64
4.4.8.6 Sensory attributes variation at week five evaluation.....	64
4.4.8.7 Sensory attributes variation at week six evaluation	65
4.4.8.8 Sensory attributes variation at week seven evaluation.....	66
CHAPTER 5	68
5.0 CONCLUSION.....	68
SUGGESTIONS	69
REFERENCES.....	70
APPENDIX I.....	81