

# بسم الله الرحمن الرحيم





# شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم





# جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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**IMPROVEMENT OF ULTRAFILTERED FETA  
CHEESE FACILITATES AS A SPECIAL  
HEALTHY FOOD**

By

**AHMED MOHAMED MOHE ELDEIN AZEHARY**

B.Sc.Agric. Sc. (Dairy Sc. & Tech.), Fac. of Agric. Cairo Al-Azhar Univ., 2006

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## **ABSTRACT**

**Ahmed Mohamed Mohe Eldin Azhart. Improvement of Ultrafiltered Feta Cheese Facilitates As a Special Healthy Food. Unpublished M.Sc. Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University, 2020.**

The present study was aimed to experiment the combination between milk fat and NaCl substitution for reducing calories and sodium ion to find out to what extent they would maintain their physical properties and sensory acceptance of cast Feta cheese made using dried milk protein concentrated previously, indeed by the ultrafiltration technique.

Cast Feta cheese, *i.e.* it was filled in the liquid phase before coagulation without whey drainage, whereas skimmed milk powder was arithmetically mixed with dried milk protein concentrate and reconstituted with warm tap water at 45°C providing that the final formulation should be contained the total solids of 21% and 12% protein. In the base of full cream Feta cheese, the fat content was adjusted to 16% using butter oil (the control). For other treatments, butter oil was replaced with maltodextrin at the level of nil, 25, 50, 75 or 100%. All formulas were heat treated at 72° C for 2 min., at which they were homogenized at 200 bar then cooled to the suitable renneting temperature (at 40° C). Potassium sorbate was added at the level of 0.015% and salted to 2.5% table salt (NaCl), whether alone or replaced with KCl at the level of nil, 25, 50 or 75%. Glucono delta lactone was added at the level of 2.5% then rennet solution was added at the rate of 2 ml /10 Kg pre-cheese, which was packaged into plastic containers and incubated at the same temperature for the complete coagulation (within 30 min.). All cheese containers were cold stored at 5±1° C for 3 months.

The results indicated that, although all differences in all cheese criteria were significant, most of which did not explain any clear trending.

The proportional fat replacement with maltodextrin led to gradual reduction in the dry matter (DM) and ash contents of resultant cheese. The repining indices; titratable acidity, water soluble nitrogen (WSN) on total nitrogen (TN) and non-protein nitrogen / TN contents increased as the fat was more replaced. Both of hardness, chewiness and gumminess of cheese increased while cohesiveness decreased by fat replacement. Total bacterial count (TBC) increased while, yeasts and molds (Y&M) count decreased as the fat was replaced by maltodextrin. All judging scores of cheese sensory attributes, especially consistency and flavor were decreased as the fat was replaced more than 75%. The substitution of NaCl with KCl in cheese salting heightened the DM and protein contents. Cheese hardness was weakened while gumminess was strengthened by NaCl replacing with KCl which caused gradual reduction in TBC and Y&M count. Nevertheless, all scores of cheese sensory properties were declined by NaCl substitution more than 50%. During cold storage period (CSP) of cheese both of TA, WSN\TN and NBN\TN contents as well as Y&M count increased while pH value lowered. All rheological texture parameters and organoleptic attributes' scores of cheeses decreased by prolonging the CSP but still keeping their acceptable panelist quality until the end of experimental CSP, provided that the level of fat replacement does not exceed 75% and that the level of replacement of sodium chloride does not increase more than 50%.

As a conclusion it could be successfully Feta cheese production with fewer calories and sodium content to meet the needs of some special health purposes while maintaining good chemical, rheological and microbiological properties, provided that the percentage of fat replacement does not exceed 75% and that the percentage of sodium chloride replacement does not exceed 50%.

**Key words:** Chemical composition, Repining indices, Microbiological quality, Texture profile

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## CONTENTS

No.		Page
	<b>LIST OF TABLES</b>	III
	<b>LIST OF FIGURES</b>	IV
	<b>LIST OF ABBREVIATIONS</b>	V
<b>I</b>	<b>INTRODUCTION</b>	1
<b>II</b>	<b>REVIEW OF LITERATURE</b>	4
1	Milk fat in cheese	4
1.1	Significance of milk fat in cheese	4
1.2	Fat induced health risks	5
1.3	Flatness occurred in cheese palatability due to fat absence	6
1.4	Fat replacer	8
1.4.1	Fat substitute	8
1.4.2	Fat mimetic	9
1.4.2.1	Proteinous-origin fat mimetic	10
1.4.2.2	Carbohydratic- origin fat mimetic	10
1.4.2.2.1	Maltodextrin as a carbohydrate based fat mimetic	11
2	Sodium salt in cheese	12
2.1	Technical role of sodium salt in cheese industry	12
2.2	Sodium salt induced health impacts	13
2.3	Strategies for reducing sodium salt in cheese	14
2.4	Substitution of sodium chloride in cheese making	15
3	Feta as a verity of brined full cream cheese	16
<b>III</b>	<b>MATERIALS AND METHODS</b>	20
1	Materials	20
1.1	Skimmed milk powder	20
1.2	Milk Protein Concentrate	20
1.3	Maltodextrin	20
1.4	Butter oil	20
1.5	Rennet	20

<b>No.</b>		<b>Page</b>
1.6	Glucono delta lactone	20
1.7	Toble salt	21
1.8	Potassium chloride	21
1.9	Potassium sorbate	21
2	Experimental procedures	21
2.1	Preparation of rennet solution	21
2.2	Preparation of Feta cheese without whey drainage	21
.3	Analytical Methods	22
3.1	Determination of gross composition contents	22
3.2	Determination of titratable acidity	22
3.3	Measurement of pH value	22
3.4	Water soluble nitrogen	24
3.5	Non protein nitrogen	24
3.6	Texture profile analyses	24
3.7	Microbiological analyses	24
3.7.1	Total bacterial count	24
3.7.2	Yeasts and Molds count	24
3.8	Organoleptic evaluation	24
3.9	Statistical analysis	25
<b>IV</b>	<b>RESULTS AND DISCUSSION</b>	26
1	Chemical composition of cast Feta cheese	26
2	Titratable acidity and pH value of cast Feta cheese	32
3	Water soluble nitrogen and non-protein nitrogen of cast Feta cheese	36
4	Texture profile of cast Feta cheese	40
5	Microbiological profile of UF-Feta cheese	50
6	Organoleptic quality of cast Feta cheese	54
<b>V.</b>	<b>SUMMARY AND CONCLUSION</b>	61
<b>VI.</b>	<b>REFERENCES</b>	64
<b>VII.</b>	<b>ARABIC SUMMARY</b>	

## LIST OF TABLES

NO		Page
1	Chemical composition of fresh cast Feta cheese as affected by fat and / or NaCl replacement	27
2	Analysis of variance of data given in Table (1)	28
3	Titratable acidity (TA) % and pH value of cast Feta cheese as affected by fat and / or NaCl replacement during cold storage period.	32
4	Analysis of variance of data given in Table (3)	33
5	Water Soluble nitrogen (WSN) % and non protein nitrogen (NPN) % expressed on total nitrogen (TN) of cast Feta cheese as affected by fat and / or NaCl replacement during cold storage period	36
6	Analysis of variance of data given in Table (5)	37
7	Texture profile of cast Feta cheese as affected by fat and /or NaCl replacement during cold storage period	42
8	Analysis of variance of data given in Table (7)	44
9	Microbiological quality of cast Feta cheese as affected by fat and / or NaCl replacement during cold storage period	53
10	Analysis of variance of data given in Table (9)	54
11	Organoleptic judging score of cast Feta cheese as affected by fat and / or NaCl replacement during cold storage period	50
12	Analysis of variance of data given in Table (11)	51



**LIST OF FIGURES**

<b>NO</b>		<b>Page</b>
1	Flow diagram of cast Feta cheese from skimmed milk powder (SMP) and dried milk protein concentrate (DMPC) with fat and/or NaCl replacement	22