

**THE EFFECT OF USING WHEY PROTEIN CONCENTRATE
ON THE QUALITY OF FRESH CHEESE**

By

MAHMOOD AHMED MOHIELDIEN HASHIM

B.Sc. Agric. (Dairy), Faculty of Agric., Kafrelsheikh University, 2009

THESIS

Submitted in Partial Fulfillment of the Requirements

for

the Degree of

MASTER OF SCIENCE

IN

AGRICULTURAL SCIENCE

(DAIRY)

TO

Dairy Science Department,

Faculty of Agriculture,

Kafrelsheikh University

2016



APPROVAL SHEET

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By

MAHMOUD AHMED MOHIELDIEN HASHEM

This Thesis M.Sc. Degree has been approved by:

Prof. Dr.: Nabil M. Mehanna

Prof. Dr.: Zakaria M. Hassan

Prof. Dr.: Nasr M. Hanafy

Committee in charge,

20/12/2016

SUPERVISION COMMITTEE

Prof. Dr

NASR MOAWAD HANAFY

Professor, Head of Dairy Department,
Faculty of Agriculture,
Kafrelsheikh University

Prof, Dr.

AHMED MOHAMED HASSANEN

chief Researcher,
Food Technology Research Institute,
Agriculture Research Center

Dr.

MOHAMED ABED GHANIMAH

Lecturer, Dairy Department,
Faculty of Agriculture,
Kafrelsheikh University

ABSTRACT

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Fat consumption has been shown to be associated with an increased risk of obesity, atherosclerosis, coronary heart disease, elevated blood pressure and tissue injury diseases associated with lipid oxidation. This association has created an increased awareness and a dramatic increase in the demand and supply for, low-fat foods, including cheese varieties. Whey Protein Concentrate (WPC) has been considered an interesting fat replacer ingredient due to its functional and technological properties, as well as its nutritional value since it contains high concentrations of bioactive proteins. So, the present study aimed to improve the quality of nonfat fresh soft cheese manufactured by enzymatic or acidic coagulation using whey protein concentrate in the presence of different levels of sodium chloride. Water extract of chili pepper added to the resultant enzymatic cheese in different levels to extend the shelflife of the resultant cheese. The study included three parts:

Part I:

The effect of whey protein concentrate (WPC) as a fat replacer on some chemical, physical and sensory properties of nonfat fresh cheese was investigated. Rennet and acid cheeses were made from reconstituted skim milk without and with adding 2, 4 and 6 % WPC. The results showed that addition of WPC significantly increased the yield, titratable acidity and decreased pH of the resultant cheese samples. Rennet cheese treated with 2% and acid cheese treated with 6% WPC had highest total solids, protein and the lowest moisture content. Hardness, adhesiveness, gumminess and chewiness of rennet cheese were significantly affected by WPC addition. The same impact was observed on such parameters of WPC-treated acid cheese except gumminess. The sensory evaluation indicated that adding WPC improved body& texture and flavor of nonfat cheese. Rennet cheese treated with 4% WPC and acid cheese treated with 2% WPC ranked higher total scores than control and other WPC-treated cheeses.

Part 2:

The aim of this part was to determine the best quantity of salt to be added to WPC-treated cheeses made by enzymatic or acidic coagulation which improves the keeping quality of low-fat fresh cheese and during cold storage. Three levels of salt 2, 4 and 6% were used and the results of sensory evaluation showed that cheese with 2% sodium chloride was the best one manufactured by the acidic coagulation and 4% sodium chloride was the best ratio of salt added to the cheese manufactured by enzymatic coagulation.

Part 3:

The aim of this part was to study the effect of adding chili pepper water extract to the cheese milk on the chemical, microbial and organoleptic properties of the resultant cheese. The results of the sensory evaluation showed that cheese with 2% water extract of chili pepper scored the highest points.

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