STUDIES ON WHEY PROTEIN FRACTIONS

By

ENAS ALI MOHAMED EID BAKER

B.Sc. Agric. Sci. (Dairy Science), Fac. Agric., Cairo Univ., 1998
M.Sc. Agric. Sci. (Dairy Science), Fac. Agric., Cairo Univ., 2008

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SUPERVISION SHEET

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ENAS ALI MOHAMED EID BAKER

B.Sc. Agric. Sci. (Dairy Science), Fac. Agric., Cairo Univ., 1998
M.Sc. Agric. Sci. (Dairy Science), Fac. Agric., El-Azhar Univ., 2008

SUPERVISION COMMITTEE

DR. MONIER MAHMOUD EL-ABD
Professor of Dairy Science, Fac. Agric., Cairo University

DR. FATMA MOHAMED SALAMA
Professor of Dairy Science, Fac. Agric., Cairo University

DR. MOSTAFA ABD EL-MONEAM ZEDAN
Head Research of Dairy Science, Food Technology Institute, Agricultural Research Center. Ministry of Agriculture

Name of Candidate:Enas Ali Mohamed **Degree:** Ph.D.
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Supervisors: Prof. Dr.Monier Mahmoud EL-Abd
Prof.Dr.Fatma Mohmed Salama
Prof. Dr. Mostafa Abd –EL-Monam Zedan
Department: Dairy Sciences **Branch:**
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ABSTRACT

The present investigation was carried out to study some important functional properties of whey protein Concentrate (WPC), β-lacto globulin (β -lg) and α-lactalbumin(α-la) such as foaming, emulsifying, water absorption capacity and oil absorption capacity. These properties are those physico-chemical characteristics which affect their behavior in food so they are very important during process and production of most commercial food products .Whey Protein Concentrate (WPC), β-lactoglobulin (β -lg) and α -lactalbumin (α -la) were used as as foaming and emulsifying agent in manufacturing Ice milk by partial replacing of the skimmed milk powder(SMP) .While 2% of SMP, WPC,β –lg and α –la were added individually in manufacture of whipped cream. The effect of these fractions on the resultent products

Key words: whey protein concentrate ,β-lactoglobulin , α-lactalbumin , Function properties , Ice milk , Whipped cream

APPROVAL SHEET

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APPROVAL COMMITTEE

DR . MAHMOUD SAMI SHEHATA EL-GHANAM . ….. ……..
Professor of Dairy Science, Fac. Agric., Alexandria University

DR . SANAA MOHAMED ABD EL-BAKI BADRAN … ….. …..
Professor of Dairy Science, Fac. Agric., Cairo University

DR . FATMA MOHAMED SALAMA ……..…….. …… ….. ……
Professor of Dairy Science, Fac. Agric., Cairo University

DR . MONIER MAHMOUD EL-ABD ….....…. …… …..
……**Professor of Dairy Science, Fac. Agric., Cairo University**

Date : / /

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INTRODUCTION

Whey is a by-product during the manufacture of cheese .In 2006,world production of whey reached to about 73 million tons (Debra,2006) . It mainly usedin theproduction of lactose and whey protein preparations e.g. Whey Protein Concentrate (WPC) ,Whey Protein Isolate (WPI) and their fractions. In recent years, particular attention has been dedicated to the production of functional foods. The main aim of "functional foods" is to introduce beneficial compounds through daily dietary intake.

Whey represents a rich and heterogeneous mixture of proteins with wide ranging nutritional, biological and food functional attributes Chatterton *et al*.(2006) Therefore, the use of whey derivatives and whey hydrolysates in the food and pharmaceical industry has been increase during the last 30 years Saito *et al.* (2000).

The functionality of milk proteins is essential for the process and production of most commercial food products Augustin (2000). reported that the proteins in milk have a range of physical functional properties, such as solubility,gelation, emulsification,water absorption, and foaming.

Functionalproperties of proteins are those physico-chemical properties which affected their behaviour in food during preparation, processing, storage and consumption. Therefore, functional properties are of the most impotence one in determining the usefulness of protein in food. Those Functional properties of Whey Protein Concentrate are the sum of the properties of their fractions Thus, expanded utilization

will depend on exploitation of individual whey proteins and their derivatives as products with increased nutritional, functional, and biological value and, thus, increased commercial value to the dairy industry. The two major components of whey proteins are β-lactoglobulin (β -lg) and α-lactalbumin (α -la), which represent approximately 70-80 % of total whey proteins.

Whey Protein Concentrate (WPC) is rich in essential amino acids such as lysine, tryptophan, cystine and methionine. Whey solids possess nutritionally and functionally biologically active superior proteins and their incorporation in the ice cream mix would result in superior product besides increasing the protein content of the ice cream. It also add improved creaminess, smoothness and flavour of the ice cream Pandiyan *et al.* (2010).

In this work functional properties of whey Protein Concentrate (WPC), β-lactoglobulin (β -lg) and α -lactalbumin (α -la)were studied In addition, these milk proteins were used in manufacturing Ice milk and whipped cream; which are two of the favourite dairy products; to investigate their impact on the properties of the resultant products.

The study included the following topics

- Study some the functional properties of whey Protein Concentrate (WPC), β-lactoglobulin (β -lg) and α -lactalbumin(α -la)
- Use Whey Protein Concentrate (WPC), β-lactoglobulin (β -lg) and α – lactalbumin (α -la) as nutritional and functional ingredients in Ice milk

by partial replacing of the skimmed milk powder to study the effect of this replacement on the properties of the resultant products.

- Add 2% of SMP, WPC, β –lg and α –la individually in the manufacture of whipped cream and investigate their effect of the resultant products.

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