سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

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التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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سامية محمد مصطفى

شبكة المعلومات الجامعية

بعض الوثائق الأصلية تالفة

سامية محمد مصطفى

بالرسالة صفحات لم ترد بالأصل

STUDIES ON SOFT CHEESE

BY

ROWIDA SHAZLY ABD EL-KADER
B.Sc., Agric. Sci., Dairy Sci. and Tech. (1993)
Faculty of Agriculture, Cairo University

Thesis
Submitted in Partial Fulfilment
of the Requirements for the Degree
of
Master of Science
In
Agricultural Science
(Dairy Science and Technology)

To

Dairy Science and Technology Department
Faculty of Agriculture
Cairo University

2001

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Abstract

The aim of this study was to use some stabilizers to improve the yield and properties of Domiati cheese. This is in addition to the use of some LAB for enhancing the keeping quality and organoleptic properties of low salt Domiati cheese. The obtained results can be summarized as follows :-

Part I- Effect of using some stabilizers on the yield, properties and ripening of Domiati cheese :

Domiati cheese treated with Lacta-810 at 0.25% scored higher yield and minimum loss of weight during storage at room temperature, while Lacta-815 at 0.25% gave minimum loss of weight at refrigerator temperature. The moisture content of all treated cheese increased as compared with the control when fresh and during storage and this was higher at refrigerator than at room temperature. The fat and T.N increased and the salt content decreased with a decrease in moisture content. The T.A, S.N, T.V.F.A increased with extended pickling in all cheese samples but treated cheese had higher than that of control and the rate of increase was higher at room than at refrigerator temperature. It was found that small differences were observed in numbers of T.B.C, proteolytic and lipolytic bacteria of cheese samples either when fresh or during pickling. Cheese treated with 0.2 and 0.25% of Lacta-810 or Lacta-815 had highest scores at both temperatures throughout pickling.

Part II- Effect of some lactic acid bacteria on the properties of low salt Domiati cheese :

Addition of starter cultures reduced the coagulation time and decreased the yield and moisture content of fresh cheese and they were clearly noticed in the cheese treated with 3% salt than 5%. The fat, T.N and salt contents had an opposite relationship with moisture content. They all decreased at the first 15 days of pickling and slightly increased thereafter. The T.A, S.N and T.V.F.A were higher in treated cheese than the control at both salt levels. The total bacterial count, lactic acid bacteria and proteolytic bacteria in all cheese treatments were higher than the control, while the coliform, M&Y, sporeformers and staphylococci in all cheese treatments were lower than the control at both levels of salt when fresh and during pickling. Low salt Domiati cheese (3% salt) made by the mixed culture of mesophilic *lactococci* and *L. casei* (T8) had higher scores and the best keeping quality than control.

M. M. EL ABI

ACKNOWLEDGEMENT

The author would like to express her deep gratitude and sincere appreciation to **Prof. Dr. Mounir Mahmoud El-Abd**, Professor and vice-dean for students affairs, Faculty of Agriculture, Cairo University, for his supervision, valuable advice, guidance and kind help through this course of investigation.

The author is also indebted to **Dr. Alaa Mohamed Abd El-Fattah Mohamed**, Assistant Professor of Dairy Science and Technology, Dairy Science and Technology Department, Faculty of Agriculture, Cairo University, for his supervision, kind advice and continuous encouragement during the preparation of the manuscript.

The author is also indebted to **Prof. Dr. Sharawy Gamal Osman**, Professor and head of Dairy Technology Department, Food Technology Research Institute, Agricultural Research Center, Ministry of Agriculture, for his supervision, valuable advice and every possible help during the preparation of the manuscript.

The author wishes to Thank Dr. Samia El-Deeb, Assistant Professor of Dairy Science and Technology Department and Dr. Mohamed Azzam, Lecturer of Dairy Science and Technology, Dairy Science and Technology Department, Faculty of Agriculture, Cairo University for their helpful advice during this work.

Thanks also for all staff members of the Department of Dairy Science and Technology, Faculty of Agriculture, Cairo University and Department of Dairying, Food Technology Research Institute, Agricultural Research Center, Ministry of Agriculture, for every possible help and facilities offered to make this work be possible.

CONTENTS

INTRODUCTION

INTRODUCTION

White soft cheese is the most popular type of cheese which is craved for by all socio-economic classes in Egypt. It is also widely produced in many Mediterranean and Balkan countries. In Egypt, it is known as "Domiati" cheese and is manufactured from buffalo or cow milk or a mixture of both and is consumed either fresh or after pickling in salted whey for few months.

Many trials have been carried out to improve the manufacturing process, ripening, yield and sensory properties of Domiati cheese. Chemical composition, microstructure, microbiology of cheese as well as consumer safety are also considered.

The weight loss of this type of cheese is usually attributed to biochemical changes that result in curd contraction and expulsion of moisture and soluble constituents in pickling brine. Several investigators had approached the problem of weight loss of Domiati cheese (**Teama, 1967;** and **El-Shibiny *et al.*, 1973-a**). However, their trials failed to improve the yield of cheese considerably during pickling. Many additives were tried to improve cheese yield; for example : whey proteins (**El-Shibiny *et al.*, 1973-b**); agar, cremodan, gelatin, pectin and starch (**Ghaleb, 1977-a, b and c**) and CMC (**Abd El-Baky *et al.*, 1981**). The action of these stabilizers depends on their chemical structure, rheological properties and ability to interact with milk proteins.

Another problem that faces the Domiati cheese manufacturers is the high salt levels which were originally used when it was usually manufactured from raw milk as a preservative to be added directly to the milk in order to prevent gassing and other problems during manufacture or pickling. These levels reach up to 12% during summer and 8-10%

during winter. However, new regulations are now in force which necessitate application of pasteurization for the manufacture of Domiati cheese. The high levels of added salt prolong coagulation time, salty taste and hinder protein degradation and hence delay ripening. It also produces vast amounts of salted whey which is very difficult to utilize and therefore, constitutes a major source of environmental pollution.

High sodium intake is also claimed to be a major contributer to development of hypertension and cardiovascular diseases (**Albernetly, 1979**). Therefore, low levels of sodium intake is highly recommended and desired by all health conscious consumers, particularly those who suffer from high blood pressure and liver diseases. However, the keeping quality of low salt cheese could be a problem encountered by research workers which needs to be solved. Among recommended remedies are the use of high quality and hygienically produced milk for cheese manufacture as well as pasteurization and manufacturing, storage and handling under hygienic conditions. Among other solutions included is the partial replacement of sodium chloride by KCl without affecting the preservative and functional properties of the produced cheese (**Fitzgerald and Buckley, 1985; El-Neshawy *et al.*, 1988** and **Ramadan, 1995**). However, the use of KCl is often accompanied by a change in the organoleptic properties, particularly the appearance of an undesirable chemical taste. Therefore, other remedies should be considered.

The use of lactic acid bacteria (LAB) as a starter is widely used in the manufacture of many dairy products. A part from their fundamental roles is the formation of organoleptic and rheological characters during the transformation of milk to cheese, yoghurt .....etc.. LAB also account for their preservative and therapeutic potentials of these foods; and hence, their use might enhance the keeping quality of the