STUDIES ON SOME FUNCTIONAL FROZEN DAIRY PRODUCTS

By

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B.Sc. Agric. Sc. (Dairy Science and Technology), Cairo University, 1987

M.Sc. Agric. Sc. (Dairy Science and Technology), Cairo University, 2002

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ABSTRACT

Amal Ibrahim Abdel-Mohsen El-Dardiry: Studies on some functional frozen dairy products. Unpublished Ph.D. Thesis, Department of Food Science, Faculty of Agriculture, Ain Shams University, 2010.

Functional foods has became a very popular and preferred for consumers all over the world. Dairy foods can play a key role as functional products to enhance consumers health Therefore, this study was planned in 3 parts to offer different recipes of frozen dairy desserts fortified with natural resources and enriched of healthy components. In first part the performance of sugar beet and Jerusalem artichoke as a source of dietary fiber were investigated. Sugar beet pulp either fresh or cooked was added in ratios 15, 20, 25% to the base formula while Jerusalem artichoke used in ratios 5, 10 and 15%. The functional components (fiber, Vit.C and flavonoids) increased by adding sugar beet or Jerusalem artichoke in the blend being highest with fresh sugar beet. All functional ice cream produces with high fiber contents produced by adding sugar beet(fresh, cooked) or Jerusalem artichoke were acceptable, being highly acceptable with the formula contains 15% cooked sugar while that of 10% Jerusalem artichoke was the best. The seconed part of study was planned to investigate the production of functional frozen dairy dessert with high natural antioxidant contents. Guava and apple pulps were used in ratios 15, 20,25% as a natural sources of antioxidants. The seconed part results showed that diatary fibers, ascorbic acid (Vit.C) and total flavonoids values were increased in functional ice cream fortified with guava or apple pulp. All functional frozen ice cream treatments with good flavour, body& texture, appearance and melting quality were obtained by using guava or apple pulps. From the obtained results, a

highly quality attributes and consumer acceptability ice cream with high antioxidant contents can be produced by adding guava pulp up to 20% or apple pulp at low level 15% which scored the best. Production of functional frozen yoghurt with high lactulose contents and probiotic starter cultures was investigated in the third part of this study. Three yoghurt treatments were made using HLP and inoculated with 1.5% yoghurt culture (YC) + 1.5% *L. acidophilus* (T_1), or *L. casei* (T_2) or *B. bifidum* (T_3). Control treatment was made using HLP inoculated with 3% YC, and another control treatment using regular untreated permeate (RP) inoculated with 3% YC. Resultant frozen yoghurt became more smooth with less iceness by increasing lactulose content in the base mix. Functional synbiotic frozen yoghurt samples with HLP were more preferable to panilests than that of RP being the best with starter culture containing *L. acidophilus* or *B. bifidum* which gained the highest score.

Key words: Functional, fiber, antioxidants, lactulose, probiotic, sugar beet, Jerusalem artichoke, guava, apple, ice cream, frozen yoghurt.

CONTENTS

LIST OF TABLES

LIST OF FIGURES