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التوثيق الالكتروني والميكروفيلم

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التوثيق الإلكتروني والميكروفيلم

قسم

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شبكة المعلومات الجامعية

بالرسالة صفحات لم ترد بالأصل

PRODUCTION OF BIO-PRESERVATIVES FROM DAIRY BY-PRODUCTS

By

RADWA ELMAGHRABY NOURELDEIN

B.Sc. Agric. Sc. (Biochemistry), Fac., Agric., Cairo University, 2008.

A Thesis Submitted in Partial Fulfillment
Of
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Approval Sheet

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ABSTRACT

The present study was designed to evaluate sweet whey low-cost by- product of dairy manufacture as a substrate for the selection of lactic acid bacteria (LAB) with proven antibacterial activity to be used as bio-preservatives for fermented dairy product.

A number of 32 isolates were obtained from raw cow milk (16 isolates), goat milk (9 isolates) and cottage cheese (7 isolates) using the specific De Man-Regosa-Sharp medium (MRS) for the isolation of LAB, these isolates were identified up to genus as strains of *Lactobacillus* spp.

Sweet whey (sw) proved to be suitable medium alternative to the expensive commercial MRS medium for the growth and production of antibacterial substances by our *Lactobacillus* isolates. Therefore, these isolates were used throughout the present work.

Antibacterial activities of *Lactobacillus* isolates grown on sweet whey broth were tested against seven pathogens using disc diffusion assay. The majority of isolates (24 isolates) showed maximum activities antagonizing all tested Gram negative and positive pathogens. These isolates were also good acid producers causing a drop in pH of cell free supernatants (CFS) to a range between 3.7 to 4.9.

Furthermore, only five of them showed high residual antibacterial activities after pasteurization. Isolate number C7 isolated from raw cow milk exhibited the broadest antibacterial spectrum, strongest activities, and showed highest residual activities after pasteurization against all tested pathogens, and was completely identified up to species as strain of *Lactobacillus brevis* 200217-029 and described as heterofermentative to produce CO_2 and variety of organic acids were propionic acid, lactic acid, citric acid, formic acid, sorbic acid and butyric acid.

Cell free supernatant of this strain exhibited strong heat-stability, remained active at pH 3.7, tolerated salt stress of 6.5% NaCl, unaffected in the presence of solvents and detergents. These characteristics together

with its strong antibacterial activity against Gram negative and positive foodborne organisms and pathogens recommend its further use as a preservatives of food products.

Keywords: *Lactobacillus* spp., Dairy products, Sweet whey, Phenotypic identification, Bio-preservatives, Pathogenic bacteria, Antibacterial activity, Disc diffusion method, 16s DNA gene, High performance liquid chromatography, Stability, Taguchi design, Central composite design.

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