بسم الله الرحمن الرحيم

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شبكة المعلومـــات الجامعية

التوثيق الالكتروني والميكروفيلم

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قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بالرسالة صفحات

لم ترد بالأصـــل

بعض الوثائق الأصلية تالفة

MICROBIAL PRODUCTION OF POLYSACCHARIDES FROM MILK PERMEATE

BY

BARAKA ABOU AL-YAZIED ABD EL-SALAM
B. Sc. Agric., (Dairy Science and Technology), Ain Shams Univ. 1995

A thesis submitted in Partial Fulfillment

of

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ABSTRACT

Baraka Abou Al-Yazied Abd El-Salam, Microbial production of polysaccharides from milk permeate, Unpublished M.Sc. Thesis, Ain Shams University, Faculty of Agriculture, Food Science Department, 2000.

Milk permeate was utilized as a substrate to produce polysaccharide using lactose fermenting strains. Two strains, *Bifidobacterium longum* ATCC 15707 and *Lactobacillus casei* ssp. *casei* NCIB 4114, have been examined for their exopolysaccharide [EPS] production capacity under anaerobic conditions from milk permeate after incubation at 30°C for 48h with two different inoculum volume [1 and 10% (v/v)]. *B. longum* was found to be efficient producer of EPS and hence selected as a representative, high level producing strain. The fermentation conditions, i.e. temperature, pH, time, inoculum volume, sources of carbon and nitrogen at different concentration and C/N ratio affecting EPS production by *B. longum* were investigated. Maximum viscosity (8.67 mPa.s) and production of EPS (7.39 g/l) by *B. longum* was obtained from milk permeate containing 49 g/l initial lactose, 15 g/l glucose, 5 g/l Ammonium sulphate with initial pH7, inoculum volume of 10% at 30°C and 48h of incubation.

The composition of EPS produced by *B. longum* under optimum condition was examined. The obtained results revealed that EPS containing of 55% total carbohydrate, 30.2% ash, 2.3% protein and 0.5% fat. The structural components of the EPS identified were galactose and glucose in an ratio of 3.4 :1 as neutral sugars. EPS rheology Showed increasing viscosity with EPS concentration and pH (but not more than pH 8). Viscosity

varied inversely with shear rate, temperature and concentration of NaCl and sucrose.

The partial replacement of typical stabilizer blend (0.2% CMC, 0.06% LBG and 0.04% CAR) with EPS produced by *B. longum* in ice cream industry was tested. Similar results to the control treatment were obtained when the CAR and LBG replaced with EPS, individually.

Key words: Milk permeate, *Bifidobacterium longum, Lactobacillus casei* ssp. *casei*, Lactose, Exopolysaccharide, fermentation conditions, composition, rheology, stabilizer, ice cream

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