بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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MONA MAGHRABY

Faculty of science
Microbiology Department

Microbial Production of Riboflavin Using Fungal Isolates

A Thesis

Submitted in partial fulfillment of the requirement for

M.Sc. Degree in Microbiology

Presented by

Hassan Sobhi Hassan

B.Sc. (Microbiology-Chemistry, 2008)

Department of Microbiology

Faculty of Science

Ain Shams University

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Prof. Dr. Yousseria M. Hassan Shetaia
Professor of Microbiology (Mycology)
Microbiology Department, Faculty of Science, Ain Shams University

Prof. Dr. Mona Sayed Shafei
Professor of Chemistry of Natural and Microbial Products
Department of Chemistry of Natural and Microbial Products, National Research Centre, Cairo, Egypt

Prof. Dr. Mahmoud M. Elaasser
Professor of Microbiology
The Regional Center for Mycology and Biotechnology, Al-Azhar University

Department of Microbiology
Faculty of Science
Ain Shams University
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Dedication

I would like to dedicate this thesis to my mother, my father, my wife, sisters and my sons. To everyone who encouraged and supported me.
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Abstract

Riboflavin that commonly known as vitamin B2, is an important B vitamin for maintaining human health and it has been widely used in the fields of feed and food additives and pharmaceuticals. Certain microorganisms have the potential for natural production of vitamins and some fungi, bacteria and yeasts can produce riboflavin. So, the main purpose of current study was selection of the yeasts or fungi which are capable of producing riboflavin and then improving riboflavin production through utilization of different factors. Microorganisms are capable of producing vitamins, which are essential nutrients in the energy production. So, in this study, different strains were collected and cultivated in an enrichment medium for growth of yeasts and fungi. After purification, all colonies were examined for riboflavin production. Based on spectrophotometer and chromatographic analysis, 2 isolates could produce riboflavin. *Rhodotorula glutinis* isolate was selected as the best riboflavin producers by 49.313µg/ml. Then *Rhodotorula glutinis* isolate was selected to study on the effect of physiological and biochemical factors on production.

The production of Riboflavin was optimized by applying two factorial experiments. The first (Plakett Burman design) was to reflect the relative importance of fermentation medium components. The second (Box-Behnken design) was to optimize the physical factors affecting Riboflavin.

Immobilization of Riboflavin was performed by two methods namely: Covalent binding and Gel entrapment. The most

obvious benefit of the immobilization technique is the ability of continuous cycling, which provides a way to use them in continuous culture maintaining high cell population to achieve fast reaction rates.

Ultra Violet irradiation was chosen to improve the production of riboflavin using *Rhodotorula glutinis.*

Key words: Riboflavin, *Rhodotorula glutinis*, Plakett Burman design, Box-Behnken design, Immobilization and Ultra Violet irradiation.

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