

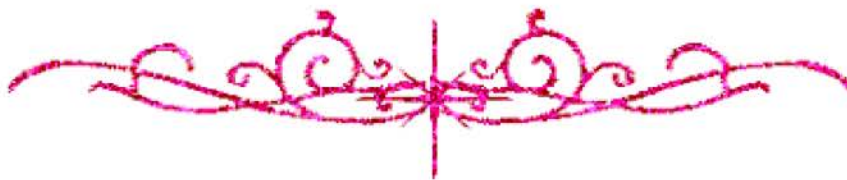
بسم الله الرحمن الرحيم



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شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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



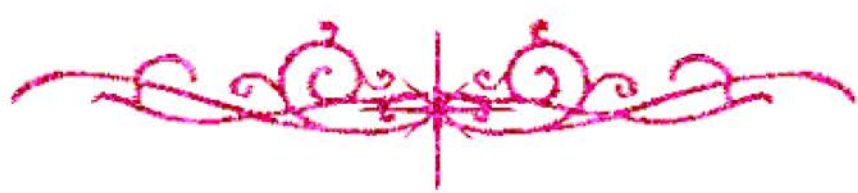
يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

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بعض الوثائق الأصلية تالفة



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بالرسالة صفحات

لم ترد بالأصل



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**EFFECT OF NATURAL ANTIOXIDANTS IN GRAPES
AND CARROTS ON CHOLESTEROL LEVEL**

BY

ABBER MOHAMED NASSER HAROUN EL-DAKAK

B.Sc. Agric. (Food Sci. & Tech.), Ain-Shames University, 1992

M.Sc. Agric. (Food Sci & Tech.), Cairo University, 1998

THESIS

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OF

DOCTOR OF PHILOSOPHY

IN

Food SCIENCE AND TECHNOLOGY

DEPARTMENT OF Food SCIENCE

FACULTY OF AGRICULTURE

CAIRO UNIVERSITY

2004

1919



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2004

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APPROVAL SHEET

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AND CARROTS ON CHOLESTEROL LEVEL

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Committee in charge

Date: 17 / 6 / 2004

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Name of candidate : Abeer Mohamed Nasser Haroun El-Dakak Degree : Doctor
Title of Thesis : Effect of natural antioxidants in grapes and carrots on
Cholesterol level.
Supervisors : Prof. Dr. Mona Mohamed Abd El-Magied
Prof. Dr. / Hosny Hemeda Prof. Dr. Saeb A. Hafez .
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ABSTRACT

This investigation was carried out to study the utilization of anthocyanins and β -carotene as natural antioxidants as well as synthetic antioxidant BHT in sunflower oil. The study was extended to elucidate the effect of these antioxidants as hypocholesterolemic agents through the biological evaluation on rats . **The obtained results could be summarized as follows:** **Extraction and determination of anthocyanin and β -carotene pigments:** Fractionation by HPLC for the extracted and lyophilized anthocyanins pigment showed the presence of 7 fractions. Malvidin 3-*O*-glucoside (Mv-Gl) was recorded the highest concentration. **Utilization of anthocyanins, β -carotene and BHT as antioxidants in sunflower oil:** The oxidative stability of sunflower oil based on Rancimat method was used. The different antioxidants "anthocyanins, β -carotene and BHT were tested either individually or as mixtures in different concentrations. The induction period of sunflower oil with anthocyanin was shorter than sunflower oil containing that for BHT. Meanwhile the highest induction period was with 100ppm of β -carotene. So anthocyanins and β -carotene can react as antioxidants which delayed the onset of oxidation.

Biological evaluation of rats fed with different tested diets with or without natural or synthetic antioxidant : Ten groups of Wistar male rats (185-195g) each containing 6 rats were fed with different tested diets for 10 weeks. G1 fed with basal diet, G2 fed with high fat diet containing 1% cholesterol (HDF + Chol). G3, G4, G5 fed with HFD + Chol, and had anthocyanins daily as 0.71, 1.0, 1.43 mg/ 200g rat/ day respectively. G6, G7, G8 fed with HDF + Chol and had β -carotene daily as 2.5, 5, 10 mg rat/ day. G9 and G10 fed with HFD + Chol and had



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77:1572 (1955)

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BHT as 2, 4 mg/ 200g rat/ day. Serum total cholesterol for G3, G4, and G5 had the lowest concentration of total cholesterol. For example G5 recorded cholesterol concentration of (56.31 mg/ dL), which was nearly to that of G1 (61.38 mg/ dL). LDL concentration in rats serum reflect the effectiveness of anthocyanins as natural antioxidant especially G5 which lowered LDL to the largest extent (23.57 mg/ dL). The lowest level of HDL was with G2 (control positive) which recorded (9.51 mg/ dL). Meanwhile G4, G5 and G10 which had 1 mg or 1.43 mg anthocyanins or 4 mg BHT were recorded the highest concentration of HDL (23.06, 25.52 and 23.9 mg/ dL) respectively. β -carotene was more effective than anthocyanin on lowering total cholesterol, total lipids and triglyceride in heart and liver. Rats fed with diet containing β -carotene had the lowest total cholesterol, total lipids and triglyceride. GSH-PX activity in blood of G2 rats recorded only 26.02 U/ ml. Meanwhile, it was 65.78 U/ ml for G1. Groups had anthocyanin was more effective than those had β -carotene. The highest value of malondialdehyde (MDA) was located for G2 of rats which recorded 28.20 nmol/ ml. The groups of rats fed HFD + chol with anthocyanin, β -carotene or BHT were in less values of MDA which appeared the importance of these antioxidant as lowering lipid peroxidation. The natural antioxidants anthocyanins or β -carotene were affected as positive action for reducing the activity of AST or ALT. Meanwhile, synthetic antioxidants showed negative action for these enzymes.

