

**BIOCHEMICAL STUDIES OF SOME ANTIOXIDANT
AGENTS IN CERTAIN PHYSIOLOGICAL
CHANGES ACCOMPANYING WITH
PREGNANT WOMEN**

Thesis submitted by

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**For the fulfillment of Ph .D in (Biochemistry)
B.Sc of chemistry-zoology (1998)
M.Sc of Biochemistry (2006)
Cairo University**

**Faculty of science
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2010**

"تأثير التغيرات الفسيولوجية المصاحبة للحمل البشرى على مضادات الاكسدة"

رسالة مقدمة للحصول على درجة دكتوراة الفلسفة فى العلوم
(كيمياء حيوية)

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ABSTRACT

Name: Taghreed Rafat El Maghwry El Rasheedy.

Title of Thesis: “Biochemical studies of some antioxidant agents in certain Physiological changes accompanying with pregnant women.

Degree: (Ph.D) of Science Thesis, Faculty of Science, Cairo University, 2008.

The aim:- to elucidate the biochemical changes of some antioxidant agents in certain physiological variations accompanying with pregnant women. Also to evaluate the significant of erythrocytes activity of superoxide dismutase (E-SOD), glutathione peroxidase (E-GPx) and plasma catalase, as possible markers for endothelial dysfunction.

Patients:- pre-eclampsia group (G2) and premature rupture of the fetal membranes pregnant women (PROM) (G3).

Method: - (E.SOD), (E.GPx) and Catalase were measured by using spectrophotometer method. Sera selenium was measured as one of the trace element dependant antioxidant in pregnancy by using Atomic Absorption Spectrometer. Finally all the results were statistically analyzed and compared with control group (G1).

Result: - (E.SOD), (E-GPx) and Catalase are considered good diagnostic enzymes in certain physiological changes accompanying pregnant women.

Key words :(1) Erythrocyte superoxide dismutase (2) Erythrocyte glutathione peroxidase (3) catalase (4) pre-eclampsia (5) PROM.

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.

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الاسم : تغريد رأفت المغاوى الرشيدى

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الدرجة : دكتوراة الفلسفة فى العلوم – جامعة القاهرة (كيمياء حيوية) - ٢٠١٠.

تم اجراء هذه الدراسة على عدد ٧٠ سيدة حامل وقسموا الى ثلاث مجموعات رئيسية. المجموعة الاولى :- المجموعة الضابطة، المجموعة الثانية:- السيدات الحوامل اللاتى يعانين من متلازمة تسمم الحمل و المجموعة الثالثة:- السيدات الحوامل اللاتى يعانين من الانفجار المبكر لجيب المياه وتم تقدير وقياس الاختبارات التالية: انزيمات مضادات الأكسدة (١) سوبر اوكسيد ديسميوتاز (٢) جلوتاثيون بيرأوكسيداز (٣) كاتاليز. وتم قياس عنصر السيلينيوم وكذلك تم قياس ضغط الدم وتقدير حامض البوليك والبروتين النشط (C) والكرياتينين ونسبة الهيموجلوبين فى المجموعات محل الدراسة. وظهرت النتائج بعد تحليلها تحليل احصائى أن انزيمات سوبر اوكسيد ديسميوتاز ،جلوتاثيون بيرأوكسيداز وكاتاليز تعتبر من الانزيمات الهامة كأدوات لها دلالة تشخيصية فى فترة الحمل البشرى وما يصاحبها من مشاكل .

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- (١) مضادات الاكسدة. (٢) سوبر أوكسيد ديسميوتاز. (٣) جلوتاثيون بيرأوكسيداز. (٤) كاتاليز. (٥) متلازمة تسمم الحمل . (٦) الانفجار المبكر لجيب المياه.

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LIST OF ABBREVIATION

aEC-SOD	: active extracellular superoxide dismutase
EC-SOD	: Extracellular superoxide dismutase
AGT	: angiotensinogen
ALT	: Alanine transaminase
AOA	: Antioxidant activity
AST	: Aspartat transaminase
ATP	: Adenosine triphosphate
BMI	: Body mass index
BUN	: Blood urea nitrogen
CAT	: Catalase
cGPx	: Classic Glutathione peroxidase
CRP	: C- reactive protein
Cu/Zn SOD	: Cupper/Zinc superoxide dismutase.
DMSO	: Dimethyl-sulphoxide
EDTA	: Ethylene diamine tetra acetate
E-GPx	: Erythrocyte glutathione peroxidase
e-GPx	: Extracellular or plasma glutathione peroxidase
ELISA	: Enzyme-linked immunosorbent assay.
E-SOD	: Erythrocyte superoxide dismutase
Fe-SOD	: Iron-superoxide dismutase
GFR	: Glomerular filtration rate
GI-GPx	: Gastrointestinal glutathione peroxidase
GPx-1	: Classical cellular glutathione peroxidase
GPx-2	: Gastrointestinal tract glutathione peroxidase