Ain Shams University
Faculty of Women
for Arts, Science and Education
Zoology Department

Ameliorative Effect of Rosemary Extract Against Aspartame Induced Oxidative Stress and Apoptotic Damage in Male Rats

A Thesis submitted

In partial fulfillment for requirement of the Degree of Master of Science (M.Sc.) in Zoology

By

Manar Salah Sayed Ebeid

Supervised by

Prof.Dr. Samiha M. Abd El-Dayem
Prof. of Physiology
Zoology Department, Faculty of Women For Arts, Science and Education, Ain Shams University

Prof. Dr. Mahmoud M. Arafa
Prof. of Biochemistry and Toxins & Nutritional Deficiencies,
Animal Health Research Institute

Dr. Nawal Zakaria Mahmoud Haggag
Lecturer of Physiology
Zoology Department,
Faculty of Women For Arts, Science and Education,
Ain Shams University

2019


وَقُل رَّبِّ زِدْنِي عِلْمًا

Qualification

Name : Manar Salah Sayed Ebeid.

Scientific Degree: B. Sc. in Entomology & Chemistry.

Department : Entomology Department.

College : Faculty of Science.

University : Ain Shams University.

Graduation Year: 2010.

Courses

Courses studied by the candidate in partial fulfilment of the requirements for the Degree of M.Sc.

1- **Advanced Physiology**
2- **Advanced Histology**
3- **Microanalysis**
4- **Basic Immunology**
5- **Toxicology**
6- **Cell Physiology**
7- **Writing Scientific Research**

Ain Shams University
Faculty of Women for
Arts, Science and Education
Zoology Department

Approval sheet

Name: Manar Salah Sayed Ebeid

Title: Ameliorative Effect of Rosemary Extract Against Aspartame Induced Oxidative Stress and Apoptotic Damage in Male Rats

Scientific Degree: B.Sc. in Entomology & Chemistry.

Supervised by

Prof.Dr. Samiha M. Abd El-Dayem
Prof. of Physiology
Zoology Department, Faculty of
Women for Arts,Science and Education,
Ain Shams University

Prof. Dr. Mahmoud M. Arafa
Prof. of Biochemistry and Toxins
& Nutritional Deficiencies
Animal Health Research Institute

Dr. Nawal Zakaria Mahmoud Haggag
Lecturer of Physiology
Zoology Department, Faculty of
Women for Arts, Science and Education, Ain Shams University

ACKNOWLEDGEMENT

First of all thanks to Allah for giving me the capability to start and finish this work.

I wish to express my gratitude and thanks to **Prof**. **Dr. Samiha M. Abd El-Dayem**, Prof. of Physiology, Zoology Department, Faculty of Women for Arts, Science and Education, Ain Shams University, for suggesting and planning the point of research , supervising this work, tutorial guidance, writing and critically reading the thesis.

My deepest thanks and gratitude to **Prof. Dr. Mahmoud M. Arafa,** Prof. of Biochemistry and Toxins & Nutritional Deficiencies**,** Animal Health Research Institute for active supervision, valuable support, providing all the required facilities in the biochemical analysis and his fruitful advices and guidance.

All my deepest thanks and gratitude to **Dr. Nawal Zakaria Mahmoud Haggag**, Lecturer of Physiology, Zoology Department, Faculty of Women for Arts, Science and Education, Ain Shams University for her sharing in the planning of this research, her facilities, sincere encouragement, advices and guidance and for all her support helps during the experiments and her great support in writing and the production of this work.

My deepest thanks and gratitude to **Animal Health Research Institute** and all professors of Biochemistry and Toxins & Nutritional Deficiencies**,** for their help to make this letter providing all the required facilities in the biochemical analysis.

All my deepest thanks to **my Husband** for his deep support, facilities advices. Also, my thanks to my family, specially **my father** and **my mother**.

ABSTRACT

ABSTRACT

Aspartame (ASP) is a dietary low-calorie artificial sweetener and is widespread used in more than 6,000 products. Its metabolites amino acids, phenylamine, aspartic acid and methanol in the gastrointestinal tract can be toxic, and it is considered as a multi-potential carcinogenic agent. There is a growing interest in using natural antioxidants to treat various pathological tissue conditions considering the role of oxidative stress in their pathogenesis. Rosemary (*Rosmarinus officinalis L., Lamiaceae*) is a woody perennial herb and has been considered as one of the most effective anti-oxidative stress and anti-inflammatory activity. This study aimed to evaluate the possible protective role of aqueous extract of rosemary against aspartame-induced injury in liver of adult albino rats. Sixty male albino rats were distributed into 6 equal groups; **Con** (Control, without treatment), **Rose** (125 mg/ kg b.wt daily oral dose of rosemary), **ASP** (250 mg/ kg b.wt daily oral dose of aspartame), **Rose + Asp** (Rosemary with aspartame for the same previous doses and route), **Rose then Asp** (Rosemary for one month then aspartame for one month) and **Asp then Rose** (Aspartame for one month then rosemary for one month). After two months, all rats were sacrificed, serum was obtained from blood samples, liver specimens were processed for biochemical