EFFECT OF SOME PLANT EXTRACTS ON RENAL FUNCTIONS IN EXPERIMENTAL ANIMALS

By

REDA NEAMAT ALLAH MOHAMED ELFADL
B.Sc. Agric. Sc. (Agric. Biochemistry), Ain Shams University, 2000

A Thesis Submitted in Partial Fulfillment
Of

The Requirements for the Degree of

MASTER OF SCIENCE
in

Agricultural Sciences
(Agricultural Biochemistry)

Department of Agricultural Biochemistry
Faculty of Agriculture
Ain Shams University

2018

Approval sheet

EFFECT OF SOME PLANT EXTRACTS ON RENAL FUNCTIONS IN EXPERIMENTAL ANIMALS

By

REDA NEAMAT ALLAH MOHAMED ELFADL
B.Sc. Agric. Sc. (Agric. Biochemistry), Ain Shams University, 2000

This thesis for M.SC. degree has been approved by:

Dr. Mahmoud Abd El-Razek Doheim
Prof. Emeritus of Biochemistry, Faculty of Agriculture, Zagazig University

Dr. Abd El-Moneim El-Sayed El-Aasar
Prof. Emeritus of Biochemistry, Faculty of Agriculture, Ain Shams University

Dr. Magdy Fouad Tawfik
Associate Prof. of Biochemistry, Faculty of Agriculture, Ain Shams University.

Dr. Mamdouh Abo Mosallam Tag El-Din
Prof. of Biochemistry, Faculty of Agricultue, Ain Shams University.

Date of examination: / / 2017

EFFECT OF SOME PLANT EXTRACTS ON RENAL FUNCTIONS IN EXPERIMENTAL ANIMALS

By

REDA NEAMAT ALLAH MOHAMED ELFADL

B.Sc. Agric. Sc. (Agric. Biochemistry), Ain Shams University, 2000

Under the supervision of:

Dr. Mamdouh Abo Mosallam Tag El-Din

Prof. of Biochemistry, Department of Agricultural Biochemistry, Faculty of Agriculture, Ain Shams University (Principal Supervisor)

Dr. Magdy Fouad Tawfik

Associate Prof. of Biochemistry, Department of Agricultural Biochemistry, Faculty of Agriculture, Ain Shams University

Dr. Hemmat Abdel Fattah Ibrahim

Associate Prof. of Biochemistry, Department of Agricultural Biochemistry, Faculty of Agriculture, Ain Shams University

ABSTRACT

REDA NEAMAT ALLAH MOHAMED ELFADL: Effect of some Plant Extracts on Renal Functions in Experimental Animals. Unpublished M.Sc. Thesis, Department of Agricultural Biochemistry, Faculty of Agriculture, Ain Shams University, 2018.

Acute renal failure (ARF) was induced by glycerol or paracetamol in experimental rats to evaluate the curative effects of gum Arabic and *Boswellia* sp. through different blood biochemical assays and hematological analyses. Results revealed presence of significant ($P<0.05$) increases in the levels of urea, creatinine, potassium (K^+), sodium (Na^+), chloride (Cl^-) and blood acidity (H^+), and significant ($P<0.05$) decreases in the levels of calcium (Ca^{+2}) and bicarbonate (HCO_3^-) in serum of rats treated only with glycerol or paracetamol in the positive control groups compared to the negative control group. These results indicated that glycerol or paracetamol caused ARF in these groups of rats whereas the blood analyses illustrated ARF symptoms such as increasing of urea and creatinine, hyperkalemia, hypocalcemia, hypoglycemia, blood acidosis and anemia occurring in the positive control groups. The blood analyses also illustrated recovery of these symptoms in the treated rats with gum Arabic and *Boswellia* sp. in drinking water (10% w/v) for 30 days. This indicated the curative effects of gum Arabic and *Boswellia* sp. against ARF induced by glycerol or paracetamol as evidenced by restoring the kidney function tests such as urea, creatinine, blood electrolytes and other parameters like serum glucose, proteins and hematological indices to their normal values during the experiment period. The therapeutic effects of both plants against ARF may be due to their antioxidant and/or anti-inflammatory activity.

Keywords: Acute Renal Failure, *Boswellia sp.*, Glycerol, Gum Arabic, Paracetamol, Rats.

ACKNOWLEDGMENT

First of all, great thanks and praises to **ALLAH** who gave me strength and patience to accomplish this work. Really, no word can express how grateful I am to **ALLAH**.

Foremost, I would like to express my deepest and sincere gratitude to **Prof. Dr. Mamdouh Abo Mosallam Tag El-Din** Prof. of biochemistry, Faculty of Agriculture, Ain Shams University for his guidance, patience, motivation, and assistance in preparing the manuscript and for supporting me to grow as a scientist. Also, I would like to express my appreciation to **Dr. Magdy Fouad Tawfik** Associate Prof. of biochemistry, Faculty of Agriculture, Ain Shams University for his efforts in providing all facilities required to successfully finish this work. Moreover, I would like to thank **Dr. Hemmat Abd El Fattah Ibrahim** Associate Prof. of biochemistry, Faculty of Agriculture, Ain Shams University for his supervision, encouragement, valuable help and priceless advices in preparing the manuscript.

Thanks are also extended to **Dr. Abd El-Hady Mohamed Hamada** Prof. of clinical pathology, Faculty of Medicine, Ain Shams University for his efforts in providing all facilities required to successfully finish this work.

Finally, words are not enough to express how I am grateful to my parents and my all family who pushed me to accomplish success in my life.

CONTENTS

LIST OF TABLES

LIST OF FIGURES