AIN SHAMS UNIVERSITY
FACULTY OF SCIENCE

HISTOLOGICAL AND ULTRASTRUCTURAL STUDIES ON THE EFFECT OF CERTAIN NONSTEROIDAL ANTI - INFLAMMATORY DRUGS ON THE TESTES AND SPERMATOZOA OF MICE

A THESIS
SUBMITTED
BY

OLFAT MOHAMED HUSIEN YOUSSEF
(B. Sc., Ed. B. Sc. & M.Sc.)

ASSISTANT LECTURER OF ZOOLOGY,
FACULTY OF EDUCATION, AIN SHAMS UNIVERSITY

FOR

THE AWARD OF THE DEGREE OF
DOCTOR OF PHILOSOPHY IN *ZOOLOGY*

TO

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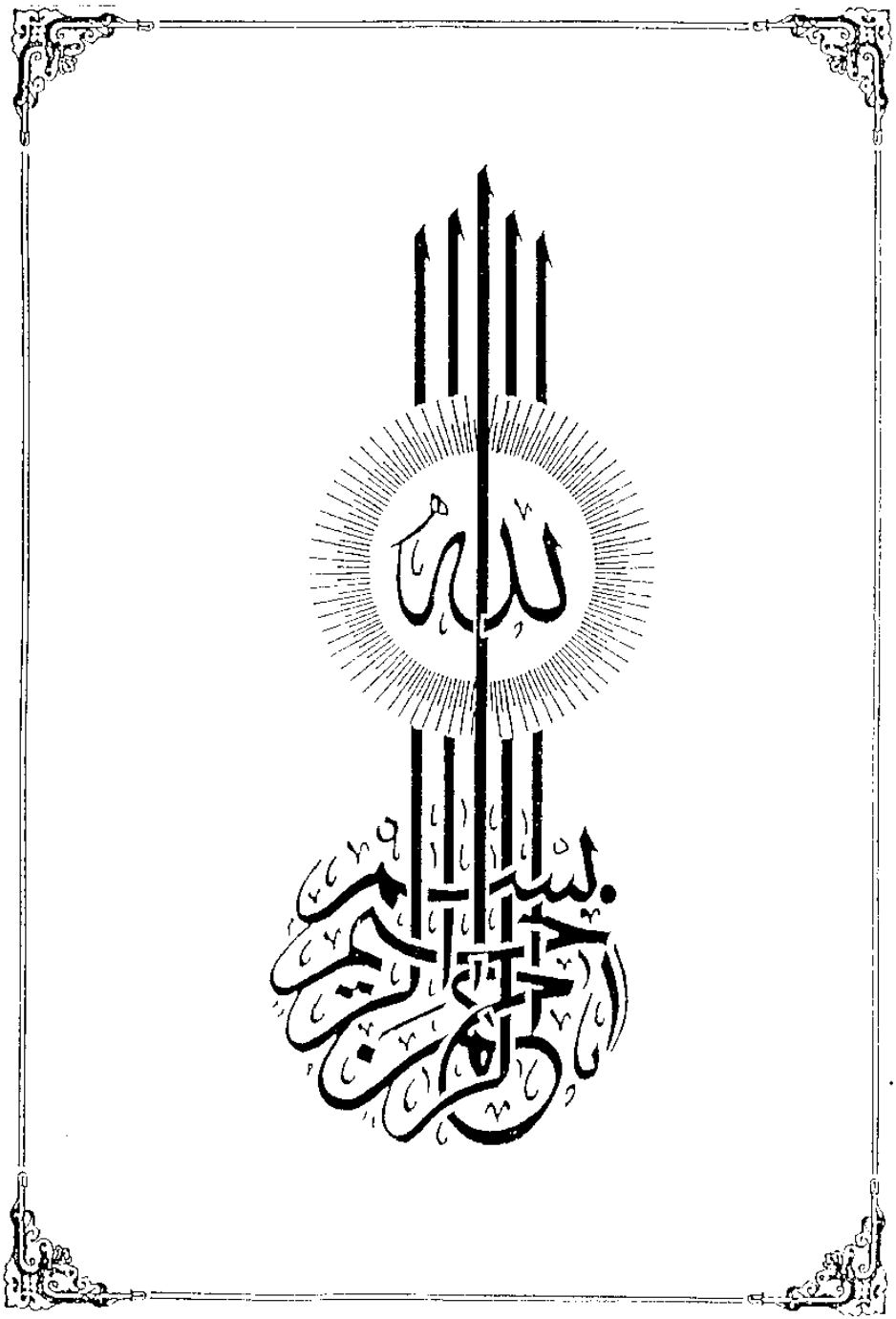
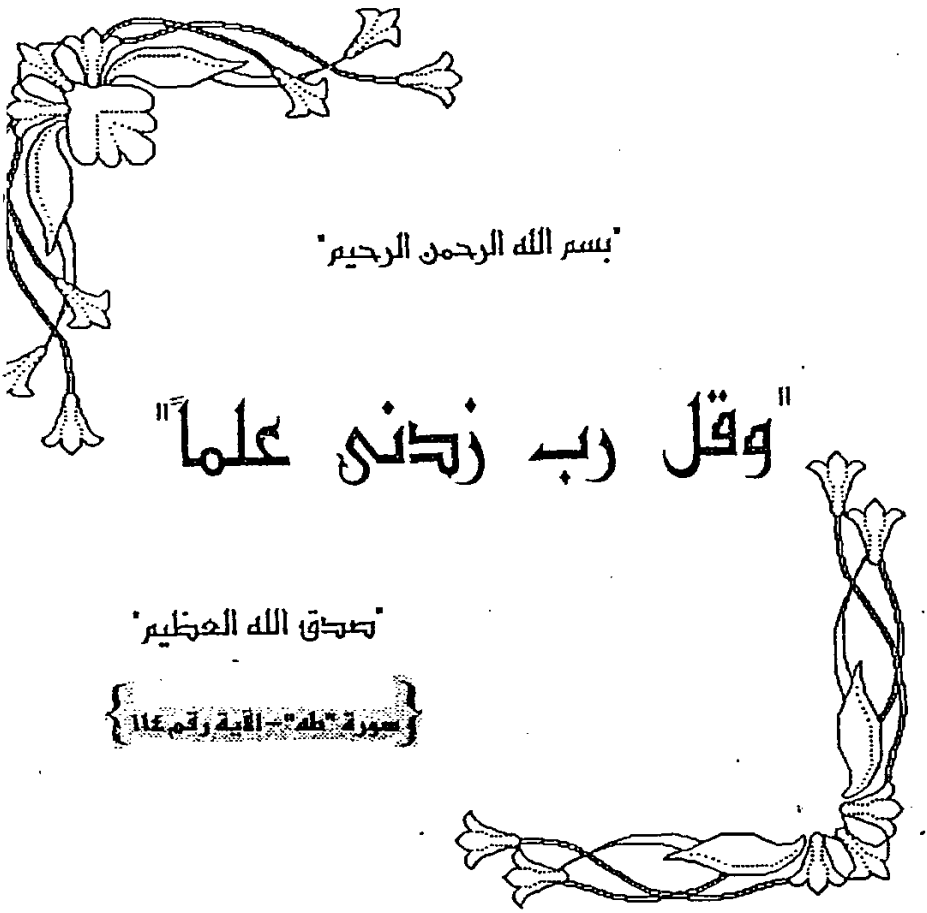




"بسم الله الرحمن الرحيم"

"وقل رب زدني علما"

"صدق الله العظيم"

{ سورة "طه" - الآية رقم ١١٤ }

THIS DISSERTATION HAS NOT PREVIOUSLY BEEN SUBMITTED FOR ANY DEGREE, AT THIS OR ANY OTHER UNIVERSITY. THE REFERENCES CITED, SHOW THE EXTENT TO WHICH I HAVE AVAILED MYSELF OF THE WORK OF OTHER AUTHORS.

OLFAT HUSIEN

We apologize for any errors we have inadvertently allowed into print

A WORD OF THANKS,

A WORD OF PRAISE,

➢ **FOR MY**

"MOTHER, HUSBAND, SON AND DAUGHTERS"

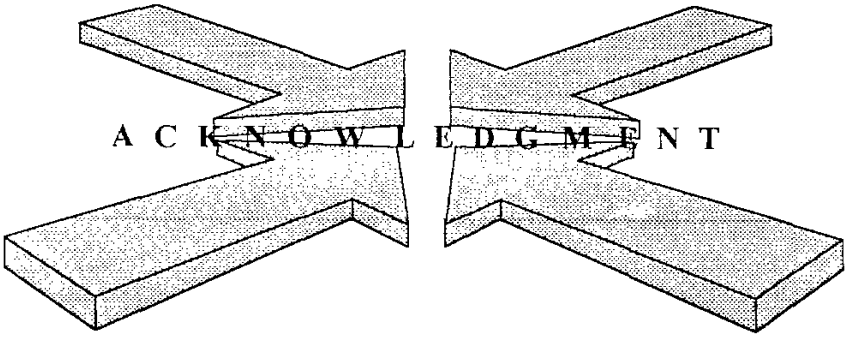
FOR BEING SO GREAT IN MANY WAYS

THAT PUSHED ME FOREWARD.

THEY SKILLFULLY AWAKENING MY MOTIVITY TO WORK.

OLFAT

27/02/00



First of all, thanks to ALLAH, who enabled me to overcome all problems which faced me throughout the work.

I am grateful to Dr. Fahmy I. Kattab, Professor of Cell Biology, Department of Zoology, Faculty of Science, Ain Shams University and Dr. Mohamed A. Shahin, Professor of Vertebrates and Embryology, Department of Biological Sciences & Geology, Faculty of Education, Ain Shams University, for suggesting the point, superwising the work, helpful advice and reading the manuscript. Also deepest thanks for continuous guidance and encouragement throughout the work. The author wishes to express her deepest thanks to Dr. Ilham I. Seif, Professor of Pathology, Faculty of Medicine, Ain Shams University for helpful advice and reading the manuscript.

Sincere gratitude to Prof. Dr. Nahed Hussien, Head of Zoology Department, Faculty of Science, Ain Shams University, for providing valuable facilities and encouragement.

Sincere thanks are also afford to Prof. Dr. Mohamed Gharieb, Head of Biological Sciences & Geology Department, Faculty of Education, Ain Shams University, for his advice, providing valuable facilities and encouragement.

I wish to express my deepest appreciation to all members of the Biological Sciences & Geology Department, Faculty of Education and Zoology Department, Faculty of Science, Ain Shams University, for their help and cooperation.

ABSTRACT

HISTOLOGICAL AND ULTRASTRUCTURAL STUDIES ON THE EFFECT OF CERTAIN NONSTEROIDAL ANTI-INFLAMMATORY DRUGS ON THE TESTES AND SPERMATOZOA OF MICE.

Light microscopical and ultrastructural studies were conducted to assess the effect of the two nonsteroidal anti-inflammatory drugs, voltaren (diclofenac sodium, 9.4 mg/kg b. wt.), and feldene (piroxicam, 2.5mg/kg b. wt) on the testes and spermatozoa of mice. The two applied drugs caused a decrease in the diameter of the seminiferous tubules, disorganization of the germinal epithelium, maturation arrest at various stages of spermatogenesis, formation of multinucleate giant cells and various degrees of degeneration of spermatocytes and spermatids. Ultrastructural results showed spermatocytes, spermatids and Sertoli cells with disintegrating organelles, particularly mitochondria and endoplasmic reticulum, whereas the cytoplasm exhibited a vacuolated appearance. The drugs caused thickening and folding of the peritubular tissue. The common types of abnormalities observed in sperms of treated mice were amorphous heads and coiled tails. Diclofenac sodium caused a marked increase in the percentage of total sperm abnormalities as compared to piroxicam. Ultrastructural observations revealed malformed heads and degenerative changes of the acrosome, the connecting piece and the middle piece. Moreover, confused arrangement of the mitochondrial sheath and disorganization of the components of the axial filament complex of the middle piece were detected.

- **In conclusion**, diclofenac sodium and piroxicam induced variable time-dependent deleterious effects in the testicular tissue and spermatozoa of mice.

Key words:

Anti-inflammatory drugs, Diclofenac sodium, Piroxicam, Testes, Spermatozoa, Histopathology, Ultrastructure.

CONTENTS

ABBREVIATIONS

AC	Acrosomal cap
AF	Axial filament
AG	Acrosomal granule
AN	Annulus
AT	Articular surface
AV	Acrosomal vesicle
Bl	Basal lamina
BT	Boundary tissue
C	Centriol
CB	Chromatoid body
CD	Cytoplasmic droplet
CF	Central fibrils
CP	Connecting piece
CV	Coated vesicle
DB	Dense bodies
DC	Degenerated cells
DF	Dense fibers
Dg	Degenerative germ cell
DPP	Distal principal piece
EP	End piece
FS	Fibrous sheath
G	Golgi apparatus
Hd	Head
Hk	Hook

SS	Secondary spermatocyte
ST	Seminiferous tubule
TU	Tunica albuginea
V	Vacuole
Z	Spermatozoa