THE EFFECT OF ALCOHOL AND NICOTINE ON FERTILITY, PREGNANCY AND DEVELOPMENT IN ALBINO MICE

A Thesis Submitted
For
(Ph.D) Degree in Zoology

By

Mona Ibrahim Eissa Mohamed
(B.Sc., M.Sc.)
Department of Biological Science & Geology
Faculty of Education, Ain Shams University

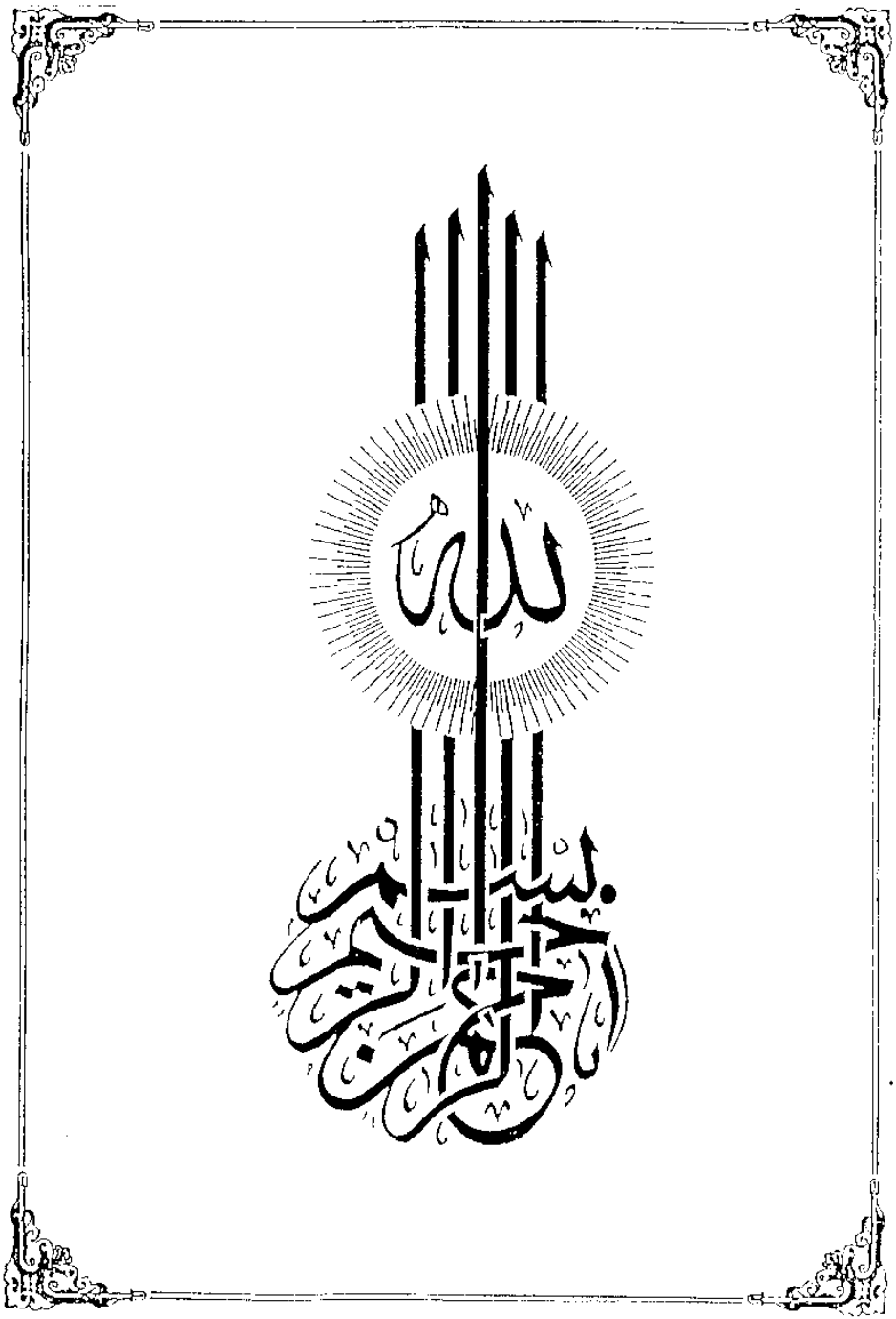
Supervised
By

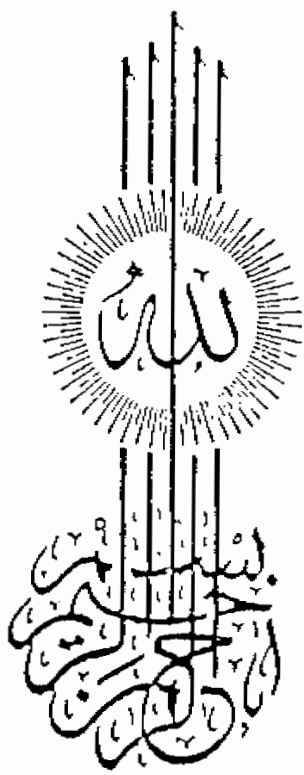
Prof. Dr. Fawzy Ibrahim Amer
Prof. of Vertebrates and Embryology
Department of Zoology
Fac. of Sci., Ain Shams University

Prof. Dr. Hamza A. EL-Shabaka
Prof. of Vert. & Embryology
Department of Zoology
Fac. of Sci.,Ain Shams Univ.

Prof. Dr. Mohamed A. Shahin
Prof. of Vert.& Embryology
Dept. of Biol. Sci. & Geology
Fac.of Educ.,Ain Shams Univ.

To
DEPARTMENT OF ZOOLOGY
FACULTY OF SCIENCE
AIN SHAMS UNIVERSITY
1996





قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا
عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ.

صَدَقَ اللهُ الْعَلِيُّ
البقرة - ٣٢ -

TO

MY HUSBAND

AND

MY FAMILY

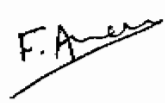
APPROVAL SHEET

Name : *Mona Ibrahim Eissa Mohamed*

Title : THE EFFECT OF ALCOHOL AND NICOTINE ON FERTILITY, PREGNANCY AND DEVELOPMENT IN ALBINO MICE

SUPERVISORS ***APPROVED***

Prof. Dr. Fawzy Ibrahim Amer
Professor of Vertebrates and Embryology,
Department of Zoology,
Faculty of Science - Ain Shams University.



Prof. Dr. Hamza Ahmad EL-Shabaka
professor of Vertebrates and Embryology,
Department of Zoology,
Faculty of Science-Ain Shams University.

Prof. Dr. Mohamed Bbd EL-Hamid Shahin
Professor of Vertebrates and Embryology,
Department of Biological Sciences and Geology
Faculty of Education-Ain Shams University.

Head of Zoology Department

Prof. Dr. Abdalla M. Ibrahim

ACKNOWLEDGMENT

*First of all, cordial thanks to **"ALLAH"** who enabled me to overcome all problems that faced me throughout the work.*

I would like to express my utmost gratitude and indebtedness to Prof. Dr. Fawzy I. Amer, Prof. Dr. Hamza A. El-Shabaka, Professors of Vertebrates and Embryology, Department of Zoology, Faculty of Science, Ain Shams University, and Prof. Dr. Mohamed A. Shahin, Professor of Vertebrates and Embryology, Department of Biological Sciences and Geology, Faculty of Education, Ain Shams University, for suggesting the topic, their constructive guidance during the lay out of the practical work and their illuminating criticism in reading the manuscript.

My grateful thanks are due to Prof. Dr. Abdalla M. Ibrahim Head of Zoology Department, Faculty of Science, Ain Shams University, for his advice and encouragement.

Deep thanks are extended to Prof. Dr. Mostafa E. Abdalla Head of the Department of Biological Sciences and Geology, Faculty of Education, Ain Shams University for providing valuable facilities and Support.

Finally, my sincere thanks are due to the staff members of the Department of Biological Sciences and Geology, Faculty of Education, and Zoology Department, Faculty of Science, Ain Shams University, for their help and cooperation.

ABSTRACT

The present work deals with the effect of combined treatment of mice with nicotine and alcohol on the fertility, pregnant mothers and their newborn. The drugs were injected intraperitoneally in daily doses equivalent to 2.5 mg/kg body weight of nicotine and 0.015 ml/g body weight of 25% (V/V) ethyl alcohol. The males were treated daily with nicotine and alcohol doses for 30 successive days before mating. Females were treated for the same period before mating and/or throughout pregnancy. The combined treatment with nicotine and alcohol before mating did not affect fertility of either males or females. Injection of nicotine and alcohol caused a significant decrease of body weight. Abortions and mortality were recorded among mothers of control and all experimental groups. Injection of nicotine and alcohol to mothers before mating and/or throughout gestation period also caused a significant decrease in body weight and body length, and in the number, of the newborn of all treated groups. Skeletons of newborn mice of different treated groups exhibited extreme retardation in the formation of skeletal elements. The effect of nicotine and alcohol on liver of treated mothers and newborn was manifested by marked congestion of blood vessels, cloudy swelling, degeneration, cellular necrosis and inflammatory cell infiltration. The kidneys of treated mothers and newborn showed venous congestion of the glomerular tuft and blood vessels, beside degenerative changes and cellular necrosis in the convoluted tubules, Henle's loops and collecting tubules. The lungs of both mothers and delivered newborn showed pulmonary edema, thickening of the interalveolar septa and congestion of the blood vessels. The pathological alterations in the testis of treated adult

and parentally treated newborn included disorganization of the germinal epithelium, degeneration of the germ cells especially spermatogonia and spermatocytes and increase in the intertubular spaces. In the interstitial tissue the most marked changes were hemorrhage, edema and the congestion of some blood vessels, besides the various degrees of degeneration of Leydig cells. The ovary of treated mothers and their newborn showed reduction in the number of ovarian follicles, increase in the number of degenerated (atretic) follicles, congestion of blood vessels and the presence of hemorrhagic areas in the cortical and medullary regions. Vacuolation and degeneration in the granulosa of the follicular and stromal cells were noticed. The present results were thoroughly discussed with those of previous investigators.

Key words : Nicotine, Alcohol, Fertility, Morphology, Skeleton, Histology, Mice, Newborn.

CONTENTS