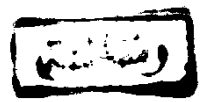
STUDIES ON THE OESTROGENIC ACTIVITY OF OILS OF SOME PLANTS GROWN IN EGYPT WITH SPECIAL REFERENCE TO ITS EFFECT ON PREGNANCY

THESIS

Presented to the Faculty of Girls
Ain Shams University



By

SANAA EL SAYED MOSTAFA
Animal House Laboratory
National Research Centre

In

Partial fulfilment of the Requirements for the Degree of

MASTER OF SCIENCE

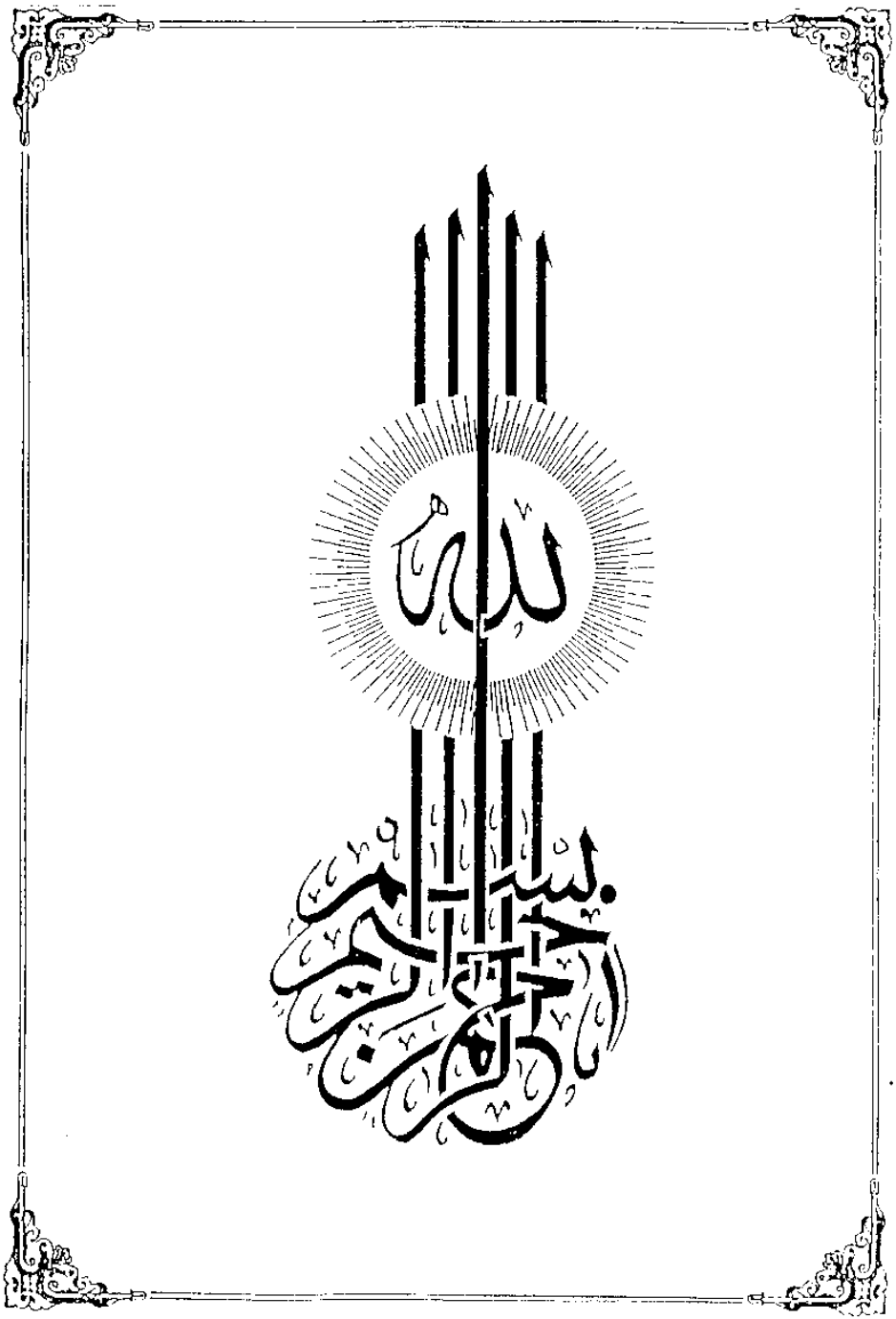
(In Zoology)

1990

To

My Family

With all Affection and Respect



ACKNOWLEDGEMENT

The author wishes to express her deepest gratitude *and sincerest thanks to* ***Prof. Dr. MOREAD YANNI*** *Professor of Physiology, Department of Zoology, Faculty of Girls, Ain Shams University for his capable supervision, encouragemet endless help and valuable guidance.*

My deepest thanks and immense gratitude are due to ***Dr. MAHMOUD ARBID*** *Asst. Prof. of Pharmacology and Head of Animal House Laboratory, National Research Centre for his unceasing encouragement, inestimable advice and powerful support.*

I wish to express my deepest thanks to ***Dr. WAFAA ABD EL AAL*** *Researcher of Pathology at National Research Centre for her valuable guidance and indispensable help in the histopathological study.*

STUDIES ON THE OESTROGENIC ACTIVITY OF OILS OF SOME PLANTS GROWN IN EGYPT WITH SPECIAL REFERENCE TO ITS EFFECT ON PREGNANCY

BOARD OF SCIENTIFIC SUPERVISION

Professor Dr. MOREAD YANNI
Professor of Physiology,
Department of Zoology,
Faculty of Girls,
Ain Shams University,
Cairo, Egypt.

Dr. MAHMOUD SAYED SOLIMAN ARBID
Assistant Professor of Pharmacology,
Head of Animal House Laboratory,
National Research Centre,
Giza, Egypt.

Head of Zoology Dept.

STUDIES ON THE OESTROGENIC ACTIVITY OF OILS OF SOME PLANTS GROWN IN EGYPT WITH SPECIAL REFERENCE TO ITS EFFECT ON PREGNANCY

COURSES

Studied by the candidate in partial Fulfilment of the Requirements for the Degree of M.Sc.

1. Physiology
2. Histology and Experimental Histology
3. German language

CONTENTS

INTRODUCTION

INTRODUCTION

A large number of plant extracts show some oestrogenic activity. The compounds present in plants closely resemble the natural animal oestrogens (Sharaf, 1966). Some of these plants have long been known to produce strong stimulatory effects on the uterine musculature and some of them possess abortifacient action. These plants may grow in fields and used by animals and some of them are used by human therefore their study is important to elucidate their danger on pregnancy. Oils are the fractions of the plant which are considered to contain the oestrogenic active substance. Allen and Doisy (1923) established a vaginal smear test in mice for estrogens. based on the cornification of the vaginal epithelium-that occurs in animals in response to estrogen stimulation. Zondek (1938) found that the Anise oil had an estrogenic activity. Aglibut (1963) found that soya bean showed a high oestrogenic activity. Sharaf (1965) found that the pimpinella seed oil (anise oil) had an estrogenic activity manifested by cornification of the vaginal cells. The effect was also tested on the uterine weight in ovariectomised rats. Sharaf (1973) found that

the zea mays oil produce vaginal cornification in ovariectomised adult rats and mice. uterine growth in rats. Negm (1974) isolated the B-sito sterol from the zea mays oil and found that it possesses a high significant estrogenic activity.

The aim of this study is to investigate further the oestrogenic effect of the different oils of these plants and their effects on pregnancy on rats.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Historical :

The need for finding inexpensive and harmless oral substances capable of controlling human and animal fertility led to different investigations in the field of hormonal properties of plant materials, particularly those used as food. It may be profitable, in this respect, to consider the information acquired by primitive and ancient people concerning the use of herbs and various plant material for fertility control purposes. Such knowledge is almost completely unevaluated and needs, therefore, screening of naturally occurring agents to find out those with the optimum hormonal characteristics specially vegetable substances affecting the generative organs to elucidate their capability in controlling fertility. This will be a guide to the separation and synthesis of the most active plant substances for clinical application on one hand, and utilization of the proper vegetable foods on the other.

Dohrn et al. (1926)was the first who demonstrated the occurrence of substances in plants capable of inducing animals estrus.

Hassan and Abou El Wafa (1947) stated that there is a biological active oestrogenic substance in the pollen grains of the palm plant.

Bartlett et al. (1948) examined the extracts from grass. They were tested for estrogenic activity by the effect on the weight of the uteri of immature mice. Also, cows, grazing pastures showed moderate increases in milk yield. This was due to the presence of estrogen.

Curnow et al. (1948) found that extracts of dried subterraneum clover contain an estrogenic factor which produces physiological effects similar to those of known estrogens.

Robinson (1949) demonstrated a method for the assay of subterranean clover estrogens with the increase of uterine weight in immature mice. All samples of Dwalganup subterranean clover showed appreciable estrogenic activity. Also, activity was observed in samples of Mount Barker strain of subterranean clover and in one sample of

strawberry clover. No significant activity was observed in burrc medic and white clover.

East (1950) suggested that ingestion of Dwalganup subterranean clover caused an increase in the nipple length of guinea pigs over the castrate condition. The subterranean clover had the same action of the stilbestrol on the mammary development.

Legg et al. (1950) reported that estrogens occur in British pastures plants in concentrations which vary with the species. Estrogenic activity has been found both in grasses and clover. There is considerable seasonal variations and the various plant organs do not show maximal concentrations simultaneously.

Dohan et al. (1951) found that extracts of spring rye grass and spring clover possessed estrogenic activity which was measured in mice but no estrogenic activity is present in extracts of fall rye, spring alfalfa, blue grass, spring wheat and orchard grass.

Alexander and Watson (1951) showed that consumption of subterranean clover by spayed guinea pigs is followed by an increase in the weight of uterus and this is due to

its estrogenic activity.

Bennett and Underwood (1951) stated that the uterine atrophy which is found in castrated ewes can be prevented by the ingestion of green Trifolium subterraneum. The estrogenic material in this variety of clover functions like a natural estrogen. Only the green clover contains the active principle while the dry clover has little potency.

Cheng et al. (1953 a) demonstrated that the potency of estrogenic activity in clover and alfalfa hays varied from 0.8 to 2.7 mg of stilbestrol activity per 1 Lb of hay. Blue grass, ladino clover, immature wheat plants, corn and wheat grains and soybean oil meal did not show estrogenic activity.

Cheng et al. (1954) reported that the isoflavones genistein, biochanin A, daidzein and formononetin are estrogenic in nature. Daidzein appears to be the most active substance. Genistein and Biochanin A have equal activity and Formononetin showed the least estrogenic activity.