



Ain Shams University
University College for Women (Arts, Science and Education)
Zoology Department
Cairo, A.R.E.

STUDIES ON AGE-RELATED CHANGES AND THE PROSPECTIVE ROLE OF GENISTEIN AND VITAMIN E IN ALBINO RATS

**A Thesis Submitted
for**

**(Ph.D.) Degree in
Zoology**

By

Nora El-Hoseany Mohamed Shaheen

B.Sc. & M.Sc. Zoology

**Assist. Lecturer, Zoology Department, College for Women
(Arts, Science and Education), Ain Shams University**

Supervisors

Prof. Dr.

**Rokaya Mohamed Ali Saeed
Professor of Physiology, Zoology
Department, College for Women,
Ain Shams University**

Prof. Dr.

**Zaki Tawfiek Zaki
Professor of Histology and
Histochemistry, Zoology
Department, Faculty of Science
Al- Azhar University**

Assist. Prof. Dr.

**Mohamed Ebraheem Rady
Assist. Professor of Histology and Histochemistry, Zoology
Department, Faculty of Science Al- Azhar University**

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Abstract

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The expected effect with aging and the possibility of treatment with one of isoflavones such as genistein and/or vitamin E on several parameters related to the growth rate, liver function, heart function and bone turn-over were investigated. The morphological, biochemical and histological changes are mainly concerned in this investigation. .

In this study, female rats were divided into ten groups. The first group served as a control adult intact (G I), the second ,used as essential control senile intact (G II), the third group was injected with sodium carbonate (G III), the fourth was injected with vitamin E, the fifth, sixth and seventh groups (GV, G VI and GVII) used as treatment groups with different doses of genistein (25,50,and 75 μ g/100gm b.wt) and (G VIII, G IX and G X) groups were treated with genistein (25,50,and 75 μ g) plus 0.5 mg of vitamin E/100gm b.wt.

Body weight, liver and uterus relative weights increased with aging and enhanced after treatment with genistein and/or vitamin E. Femur and lumbar vertebrae relative weights declined with aging and a clear improvement was achieved after treatment with genistein and/or vitamin E.

Calcium, phosphorus and magnesium contents in serum and bones declined with aging in female senile rats. With genistein and/or vitamin E a clear improvement was achieved. Sodium and potassium content increased in serum and bones, after treatment this increase was continuously through 8 weeks

except for potassium in bones enhanced with different extents after treatment.

Parathyroid hormone concentration increased and oestradiol hormone reduced with aging, but after treatment with genistein and/or vitamin E a decrease was observed in PTH, but oestradiol increased significantly after treatment with genistein plus vitamin E.

A highly increase in serum total cholesterol, HDL, LDL and triglycerides was observed in female senile. Therapy with genistein and/or vitamin E revealed a clear improvement. Concentrations of ALT and AST increased with aging and an improvement was achieved after treatment of genistein and/or vitamin E. A highly decrease was observed in alkaline phosphatase, total protein and albumin contents in female senile and ameliorated after treatment. Electrophoretic investigation of serum protein in female senile rats showed clear changes and after treatment some new bands were appeared.

The histological finding in the present study advocated that senility affect bone greatly, liver and kidney structure in control female senile rats and some amelioration was achieved after treatment with genistein and/or vitamin E, especially at high dose.

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و هم (1 أ.د. / رقية محمد على.

(2 أ.د. / زكي توفيق زكي.

(3 د. / محمد إبراهيم راضي.

ثم الأشخاص الذين تعاونوا معي في البحث

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رسالة دكتوراه

اسم الطالبة : نورة الحسيني محمد شاهين

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لجنة الإشراف

1- الاسم : أ.د. رقية محمد علي الوظيفة : أستاذ الفسيولوجي

2- الاسم : أ.د. زكي توفيق زكي الوظيفة : أستاذ الأنسجة وكيمياء

الأنسجة

3- الاسم : د. محمد إبراهيم راضي الوظيفة : أستاذ مساعد

الأنسجة و كيمياء

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قسم علم الحيوان

اسم الطالبة : : نورة الحسيني محمد شاهين.

الدرجة العلمية : ماجستير.

القسم التابع له : علم الحيوان.

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List of Abbreviations

R = resting zone
P = proliferation zone
H = hypertrophy zone
C.V. = central vein
H.C. = hepatic cords
C. = calcification zone
B.S. = blood sinusoids
E.C. = endothelial cells
K.C. = Kupffer cells
O. = ossification zone
D.B. = dilated blood vessels
M. = macrophages
B.S. = blood sinusoids
G. = glomerulus's
B.S. = Bowman's space
B.S. = Bowman's capsule
P. = proximal tubule
D. = distal tubule
L. = tubular lumens

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