

MOLECULAR AND BIOCHEMICAL STUDIES ON *COCCULUS PENDULUS* FROM THE EASTERN DESERT

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By
El-Shimaa Saad El-Demerdash
M.Sc. (Biochemistry), 2007

Supervised By

Prof. Dr. Shadia Abd-Elhamid Fathy
Professor of Biochemistry,
Biochemistry Department,
Faculty of Science,
Ain Shams University

Prof. Dr. Abdel Naser B. Sengab
Professor of Pharmacology & Dean,
Faculty of Pharmacy,
Ain Shams University

Dr. Naglaa Mostafa Sherif
Assistant professor
Biochemistry Department
Faculty of Science,
Ain Shams University

Prof. Dr. Fareida M. El-Saied
Professor of Genetics,
Genetic Resources Department,
Desert Research Center

Prof. Dr. Ahmed Morsi Osman
Professor of ecophysiology
Plant Ecology and Range
Management Department,
Desert Research Center

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تحت إشرافه

أ.د. شادية عبد الحميد فتحى
أستاذ الكيمياء الحيوية - قسم الكيمياء الحيوية
كلية العلوم - جامعة عين شمس

أ.د. عبدالناصر بدوى سنجاب
أستاذ العقاقير وعيد كلية الصيدلة
جامعة عين شمس

د. نجلاء مصطفى شريف

أستاذ مساعد الكيمياء الحيوية
قسم الكيمياء الحيوية
كلية العلوم-جامعة عين شمس

أ.د. أحمد مرسى عثمان

أستاذ فسيولوجيا البيئة
قسم البيئة والمراعى
مركز بحوث الصحراء

أ.د. فريدة محمد السعيد

أستاذ الوراثة قسم الأصول الوراثية
مركز بحوث الصحراء

جامعة عين شمس
كلية العلوم

رسالة دكتوراه الفلسفة فى العلوم

اسم الطالبة / الشيماء سعد الدمرداش

عنوان الرسالة / الدلائل الوراثية لبعض النباتات المحتملة للجفاف فى
الصحراء الشرقية.

لجنة الإشراف

- (1) أ.د. شادية عبد الحميد فتحى أستاذ الكيمياء الحيوية قسم الكيمياء الحيوية جامعة عين شمس
- (2) أ.د. عبد الناصر بدوى سنجاب أستاذ العقاقير وعميد كلية الصيدلة جامعة عين شمس
- (3) أ.د. فريدة محمد السعيد أستاذ الوراثة - قسم الأصول الوراثية - مركز بحوث الصحراء
- (4) د. نجلاء مصطفى شريف أستاذ مساعد الكيمياء الحيوية كلية العلوم - جامعة عين شمس
- (5) أ.د. أحمد مرسى عثمان أستاذ فسيولوجيا البيئة - مركز بحوث الصحراء

لجنة المناقشة

أ.د.
أ.د.
أ.د.
أ.د.

الدراسات العليا

تاريخ البحث: / / أجازت الرسالة بتاريخ: / / 2014

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موافقة مجلس الجامعة

موافقة مجلس الكلية

شكر

أشكر السادة الأساتذة الذين قاموا بالأشراف و هم :

- (1) أ.د. شادية عبد الحميد فتحى أستاذ الكيمياء الحيوية - قسم الكيمياء الحيوية جامعة عين شمس
- (2) أ.د. عبدالناصر بدوى سنجاب أستاذ العقاقير وعميد كلية الصيدلة جامعة عين شمس
- (3) ا. د. فريدة محمد السعيد أستاذ الوراثة - قسم الأصول الوراثية- مركز بحوث الصحراء
- (4) د. نجلاء مصطفى شريف أستاذ مساعد الكيمياء الحيوية -كلية العلوم-جامعة
- (5) أ.د. أحمد مرسى عثمان أستاذ فسيولوجيا البيئة - مركز بحوث الصحراء

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كلية العلوم

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ABSTRACT

El-Shaimaa Saad El-Demerdash: MOLECULAR AND BIOCHEMICAL STUDIES ON *COCCULUS PENDULUS* FROM THE EASTERN DESERT.

Biochemistry Department, Faculty of Science, Ain Shams University.

The present study is devoted to molecular and biochemical investigations of *Cocculus pendulus*. Abiotic and biotic factors of the study area are defined through climatic data, soils and plant studies. Aerial parts of *C. pendulus* were collected from three major wadis adjacent to Gebel Elba, South Eastern Desert, Egypt. DNA fingerprinting of young leaves using amplified fragment length polymorphism (AFLP) technique was carried out using four primer combinations and it was found that the combination E-AGG/M-CAC was more efficient and informative and the AFLP marker gives a complete and highly discriminative picture about *C. pendulus* as shown by PIC. The elemental composition of leaves and stems reveals the macronutrients, micronutrients and heavy metals contents and the plant is not polluted, reflecting the safe environment. With regard to the biochemical components of the aerial parts, the moisture content varies within narrow limits, ash content is relatively higher in leaves, total carbohydrates and protein are quite higher in leaves relative to stems. Total lipids are almost the same for stems and leaves and crude fiber is much higher in stems. Total amino acids showed that in both leaves and stems, the acidic ones (aspartic and glutamic) are the most predominant while the least abundant are the cyclic and basic (tyrosine and histidine). Aristolochic acid was extracted and determined showing that all stems samples of plant contain relatively higher amounts of aristolochic acid if compared to leaves. The biological assay was conducted on 108 male Swiss albino mice treated individually with four increasing concentrations of leaves and stems crude alkaloidal extracts through 48 by 48 intraperitoneal injection and the mice were sacrificed after 2, 4, 6 and 8 doses, then the blood sera samples were used for determination of blood biomarkers of liver and kidney functions which were found to be within the normal ranges, indicating the safety use of *C. pendulus* alkaloidal extract in the traditional system of medicine for various ailments.

AIM OF THE WORK

The aim of this study is to characterize *Cocculus pendulus* plant species from the biochemical and molecular points of view and to define the role of prevailed environments in biochemical and molecular variations. Also, a part of the study points to the safety use of the aerial plant parts in pharmaceutical industries and contemporary medicine.