



Sudan University of Science and Technology

College of Graduate Studies



Antimicrobial Activity of Oils From Some Medicinal Plants

**تحليل الكروماتوغرافيا الغازية- طيف الكتلة والنشاط المضاد للميكروبات
لزيوت بعض النباتات الطبية**

A Thesis Submitted in Fulfillment for the Requirements of the
Ph.D. Degree in Chemistry

by

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استهلال

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَقُلِ اعْمَلُوا فَسِيرَی اللَّهِ عَمَلِكُمْ وَرَسُولِهِ وَالْمُؤْمِنُونَ وَسُردُّوْنَ
إِلَىٰ عِلْمِ الْغَيْبِ وَالشَّهَادَةِ فَيُنَبِّئُكُمْ بِمَا كُنْتُمْ تَعْمَلُونَ ﴿١٠٥﴾

(التوبة-105)

صَدَقَ اللَّهُ الْعَظِيمُ

Dedication

To....

The soul of my dear father

my mother

husband

brothers and sisters

Acknowledgement

First of all, I would like to thank **Allah Almighty** for giving me the ability and strength to accomplish this work.

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Abstract

In this research five plants used in Sudanese system of medicine have been investigated. The oils of the targeted species have been extracted by maceration and the constituents of the oils have been characterized by GC-MS. Furthermore the antimicrobial potential of the oils has been evaluated. GC-MS analysis of *Acacia nubica* oil gave 24 components dominated by: 9,12-octadecanoic acid methyl ester (31.54%) and 9-octadecanoic acid methyl ester (15.86%). The oil of *Foeniculum vulgare* was investigated by GC-MS. The analysis revealed 53 components. The oil contained fatty acids (87.83%). *Cordia Africana* oil gave 27 components dominated by 9,12-octadecadienoic acid (Z,Z)-, methyl ester (37.02%) and hexadecanoic acid, methyl ester (18.02%). GC-MS analysis of *Lens culaniris* oil gave 26 constituents dominated by 9,12-octadecadienoic acid methyl ester (37.49%) and hexadecanoic acid methyl ester (20.28%). Analysis *Acacia polycantha* oil showed 32 constituents. Major components are: 9,12-octadecadienoic acid methyl ester (27.95%) and methyl stearate (17.13%). The oils have been evaluated for their antimicrobial activity and different antimicrobial responses have been detected.

المستخلص

فى هذا البحث تمت دراسة خمسة نباتات مستخدمه فى الطب الشعبى بالسودان حيث تم الكشف عن مكونات الزيوت المستخلصه من هذه النباتات بتقنيه الكروموتوغرافيا الغازيه- طيف الكتله. ايضا اجرى اختبار مضاد الميكروبات لهذه الزيوت. اعطى زيت اللعوت 24 مكونا اهمها :

9,12-octadecanoic acid methyl ester (31.54%)
9-octadecanoic acid methyl ester (15.86%)

اما زيت الشمار فقد كان به 53 مركبا حيث بلغت نسبه الحموض الدهنيه (87.83%). احتوى نبات القميل على 27 مركبا اهمها : 9,12-octadecadienoic acid (Z,Z)-, methyl ester (37.02%) and hexadecanoic acid, methyl ester (18.02%).

اما نبات العدس فقد اعطى 26 مركبا اهمها : 9,12-octadecadienoic acid methyl ester (37.49%) and hexadecanoic acid methyl ester (20.28%).

احتوى نبات الكاموت على 32 مركبا اهمها : 9,12-octadecadienoic acid methyl ester(27.95%) and methyl stearate(17.13%).

اجرى اختبار مضاد الميكروبات للزيوت المستخلصه حيث اعطت فعاليه متفاوتة.

