Dedication

Dedicated To

My Parents

Wife

Sisters and Brothers

Acknowledgments

First, I would like to thank Almighty Allah for helping me in finishing this work.

I would like to express my deepest gratitude to my supervisor, Prof. Mohammed Abdelkarim Mohmmed for his support, inspiring guidance, valuable advice and continuous encouragement throughout this study and thank him for his patience during the writing up. I must acknowledge my family my parents, my wife, and my friends for their continual support. I would like also to thank Bahri University for providing the financial support. I would like also to acknowledge the staff of Chemistry Department,College of Science, International Cooperation and Exchange Office, International Islamic University Malaysia for their valuable assistance and help.I would like to acknowledge all the staff of laboratory for infinite support.

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Abstract

The roots of Sudanese *Albizia Amara* were collected from the Al-Fulla forest in January, 2013 and Barks of *Acacia mellifera* were collected from Niala at west of the Sudan during October, 2013. *Albizia Amara* roots were extracted with 95% ethanol. Sequential solvent extraction using a number of solvents of varying polarity was used for the preliminary separation of flavonoids. Preliminary phytochemical screening of *Albizia Amara* roots indicated the presence of many phyto - components. All fractions showed positive test for alkaloids, saponins, phenolics, carbohydrate and flavonoids. The analysis of the volatiles of the crude and fractions was performed via Gas Chromatography - Mass Spectrometry (Volatile substances varied according to solvent).The ethyl acetate fraction yielded the highest amount of volatile components. In the cup plate agar diffusion assay, all fractions from *Albizia Amara* roots showed inhibitory activity against the *Streptococcus mutans* and *Lacto bacillus*.The ethyl acetate extract showed significant activity on *Streptococcus mutans*, while the n-butanol extract showed high activity on *Lacto bacillus*.Total antioxidant activity and total phenolic content of fractions were measured by different techniques: Ferric reduction activity potential (FRAP),Total antioxidant capacity (TPC), 2, 2 - diphenyl-1-picrylhydrazyl (DPPH), and Cupric reducing antioxidant capacity (ORAC) methods.The results showed that the ethyl acetate fraction has significant antioxidant activity at a mean of (DPPH), 771.83 µg/g; (TPC), 3825.47 mg/g; (CUPRAC) 1902.686m µg/g. (FRAP), 538.09 µg/g .The chloroform fraction gave the lowest antioxidant activity at mean of: (DPPH) µg/g 24.28; (TPC) 719.48 µg/g, (CUPRAC)75.79 µg/g ; (FRAP) 132.35 µg/g**.** The ethyl acetate fraction of *Albizia Amara* and n-butanol fraction of *Acacia mellifera* were fractionated by paper chromatography and thin layer chromatography. These four compounds (three from *Albizia Amara* and one from *Acacia mellifera*) were isolated.The structures of these

isolates were elucidated via a combination of spectral techniques: UV, ^{1}H-NMR and Mass speectroscopy.Furthermore, the four compounds were evaluated for their biological activity.The antibacterial activity was determined by the Well diffusion method against two human pathogens(*Streptococcus mutans, Lacto bacillus*).The anti-oxidant capacity was evaluated via two techniques (DPPH and FRAP) and significant results were obtained.

الخلاصة

تم جمع جذور شجرة العرد من الفولا في شهر يناير لعام 2013 اما عينة الكتر من منطقة نيالا في شهر اكتوبر لعام 2013 في غرب السودان.استخلصت جذور شجرة العرد بالايثانول ثم اجرى مسح فيتوكيميائ اوضحت نتائجه وجود القلويدات ، الفينولات، الفلافونيدات ،الكربوهيدرات والصابونينات.

تمت دراسة المواد المتطايره فى مستخلصات: الكحول،ايثيل اسيتات ، بيوتانول ، الايثر والكلوروفورم واتضح ان مستخلص ايثيل اسيتات يحتوى اكبر عدد من المواد المتطايره .

اخضعت جميع المستخلصات للاختبار ضد نوعان من البكتريا واتضح ان لمستخلص ايثيل اسيتات فعاليه عاليه ضد البكتريا. ثم اختبرت المستخلصات كمضادات اكسده ،حيث اعطى مستتخلص ايثيل اسيتات مقدره عاليه على منع الاكسده التى اختبرت بعدة تقنيات.اما مستخلص الكلوروفورم فقد اعطى اقل فعاليه للاكسده.

اخضع مستخلص ايثيل اسيتات لعينه العرد ومستخلص بيوتانول لعينة الكتر للفصل الكروموتوغرافى بكروموتوغرافيا الورق حيث تم فصل ثلاثه مركبات من عينه العرد ومركب اخر من نبات الكتر ومن ثم تم تحديد البنية التركيبيه لهذه النواتج بعدد من التقنيات المطيافيه(طيف الاشعه فوق البنفسجيه ، طيف الرنين النووى المغنطيسى وطيف الكتله).ثم اختبرت المركبات التي تم التعرف عليها ضد الاكسدة والبكتريا و اعطت نتائج جيده جدا.

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Abbreviations

DDPH	2, 2 - diphenyl-1-picrylhydrazyl
FRAP	Ferric reduction activity potential
ROS :	Reactive oxygen species
EGCG:	epigallocatechin gallate
TSP :	Thermal separation probe
NIST :	National Institute of Standards
TPC :	Total phenolic content
CUPRAC :	Cupric reducing antioxidant capacity
MHA :	Mueller-Hinton Agar
TAC:	Total antioxidant capacity.
TE :	Trolox equivalents .
GA:	Gallic acid equivalents.