قال تعالي:

(لاَ يُكلِّفُ اللهُ نَفْساً إِلاَّ وُسْعَهَا لَهَا مَا كَسَبَتْ وَعَلَيْهَا مَا اكْتَسَبَتْ رَبَّنَا لاَ تُؤَاخِذْنَا إِن نَسِينَا أَوْ أَخْطَأْنَا رَبَّنَا وَلاَ تَحْمِلْ عَلَيْنَا إِصْراً كَمَا حَمَلْتَهُ عَلَى الَّذِينَ مِن قَبْلِنَا وَلاَ تَحْمِلْ عَلَيْنَا إِصْراً كَمَا حَمَلْتَهُ عَلَى الَّذِينَ مِن قَبْلِنَا رَبَّنَا وَلاَ تَحْمِلْ عَلَيْنَا إِصْراً كَمَا حَمَلْتَهُ عَلَى الَّذِينَ مِن قَبْلِنَا رَبَّنَا وَلاَ تُحْمِلْنَا مَا لاَ طَاقَةَ لَنَا بِهِ وَاعْفُ عَنَّا وَاغْفِرْ لَنَا وَارْحَمْنَا أَنتَ مَوْلاَنَا فَانصُرْنَا عَلَى الْقَوْمِ الْكَافِرِينَ (وَارْحَمْنَا أَنتَ مَوْلاَنَا فَانصُرْنَا عَلَى الْقَوْمِ الْكَافِرِينَ (286))

صدق الله العظيم

سورة البقرة: الآيات (286)

Dedation

This work is dedicated to

M yparents

M yfriends

A ndto

Whom respect

Acknowledgment

Thanks to Allah the most gracious, the compassionate for giving me strength and health to complete this work.

Iam deeply grateful to my supervisor prof Mohamed Abd Elkareem for his fruitful guidance.

Ialso wish to express my warm gratitude to my colleges Ahmed&Manal.

My thanks are extended to all those who assisted me in information collection, and laboratories tests in Sudan university, especially my colleagues.

My friends are greatly acknowledged for their assistance and help.

Abstract

Phytochemical screening of the alcoholic extract of the fruits of *tamrindus indica* indicated the presence of flavonoids .

The crude product obtained from the alcoholic extract was analysed by thin-layer chromatography, which indicated the presence of a single flavonoid. This flavonoid was obtained in the pure state by preparative thin-layer chromatography.

The behavior of the flavonoid under UV light as well as its colour reactions indicated that it was a dihydrochalcone.

The dihydrochalcones was subjected to spectral studies with shift reagent and the compound was found to be dihydrochalchone without any hydroxylation in 3-, 4'-, 5- and 7- OH and it is devoided of catechole.

الخلاصة

اجريت اختبارات كيميائية للمستخلص الكحولي لثمار العرديب حيث اتضح انه يحتوي علي فلافونيدات.

بدأت دراسة تفصيلية للفلافونيدات التي يحتويها النبات لوفرتها بالنبات ولأهميتها الطبية,حيث استخلصت من الثمار بالكحول.ثم استخدمت كروماتوغرافيا الطبقة الرقيقة لفصل الفلافونيدات الموجودة في النبات. وتم فصل الفلافونيد الوحيد - مركب آ - في الهيئة النقية واثبت طيف الأشعة فوق البنفسجية أنه عبارة عن ثنائي شالكون.

اجريت دراسات طيفيه لهذا المركب باستخدام كواشف الإزاحة والتي أوضحت أن مركب 1 عبارة عن ثنائي شالكون غير معوض في المواقع 3- و 4- 5- 7- ولا يحوى اى نظام كاتيكول .

List of Contents

اية	וצ	i			
De	Dedicationii				
Ac	Acknowledgmentiii				
Al	Abstractiv				
		v			
		contentvi			
Li	st of t	ablesix			
Li	st of f	iguresx			
	Int	roduction-1			
1.1-	_	General approach	1		
1.2		Isoflavonoids	2		
1.3	-	Neoflavonoids	3		
1.4	-	Minor Flavonoids	4		
1.5	-	1Synthesis of Flavonoids	4		
1.5.1	-	Chalcones, Dihydrochalcones, and Racemic Flavonoids	4		
1.5.2	-	Flavan-3-ols and Flavan-3, 4-iols	5		
1.5.3	-	Isoflavanones	6		
1.5.4	-	α and β -Hydroxydihydrochalcones	7		
1.5.5	-	Dihydroflavonols	7		
1.6	-	Enzymatic Stereospecific Biosyntheses of Flavonoids	7		
1.7	-	Flavonoids as Nutraceuticals	8		
1.8	-	Antioxidant Activity	9		
1.8.1	-		9		
1.8.2	-	Reactive Nitrogen Species and Inducible Nitric Oxide Synthase	9		
1.8.3	-	Protective Effects of Flavonoids	10		
1.9	-	Anticarcinogenesis3	11		
1.9.1	-	Quercetin	11		
1.9.2	-	Genistein and Daidezin	12		
1.9.3	-	Anthocyannines	12		
1.9.4		Tea and Tea Poly Phenols	13		
1.10	_	Flavonoids Benefits to Plants	13		

1.10.1	-	Plant–Plant Interactions	14
1.10.2	-	Plant–Animal Interaction	14
1.10.3	-	Plant–Fungal Interactions	14
1.11	-	Isolation and Identification of Flavonoids	15
1.11.1	-	Isolation of Flavonoids and their Conjugates from Biological Materials	15
1.11.2	-	Preparation of Plant or Animal Tissue and Foodstuffs for Flavonoid	16
		Analysis	
1.11.3	-	Preparation of Body Fluids	17
1.12	-	Seperation and Quantification of Flavonoids	17
1.12.1	-	Sample Preparation	17
1.12.2	-	Extraction	18
1.12.3	-	1	19
1.12.3.1	-	Preliminary Purification	19
1.12.3.2	-	Preparative Methods	19
1.12.3.3	-	High-Performance Liquid Chromatography	21
1.12.3.4	-	Medium-Pressure Liquid Chromatography	22
1.12.3.5	-	Centrifugal Partition Chromatography	22
1.12.3.6	-	Thin-Layer Chromatography	23
1.12.3.7	-	High Performance Liquid Chromatography of Flavonoids	26
1.12.3.8	-	High-Performance Liquid Chromatography –Mass .Spectrometry	26
1.12.3.9	-	High-Performance Liquid Chromatography-Nuclear Magnetic	27
		Resonance	
1.12.3.1	-	Capillary Electrophoresis	27
0			
1.13	-	Ultraviolet – Visible Spectroscopy of Flavonoids	28
1.13.1	-	The UV Spectra of Flavones and Flavonols	28
1.13.2	-	,	29
1.13.3	-	Chalchones and Aurones	30
1.13.4	-	Anthocyanidins and Anthocyanins	30
1.13.5.	-	8	31
1.13.5.1	-	Flavones and Flavonols	31
1.13.5.2	-	Isoflavones, Flavanones and Dihydroflavonols	31
1.13.5.3	-	Chalcones and Aurones	31
1.13.5.4	-	Anthocyanidins and Anthocyanins	31
1.13.6	-	The Structural Significance of Sodium Acetate Induced –Shifts	32
1.13.6.1	-	Flavones and Flavonols	32
1.13.6.2	-	Isoflavones, Flavanones and Dihydroflavonols	32
1.13.6.3	-	Chalcones and Aurones	32
1.13.7	-	The Structural Significance of Borate Induced -Shifts	32
1.13.8	-	The Structural Significance of Aluminum Chloride Induced Shift	33
1.13.8.1	-	Flavones and Flavonols	33
1.13.8.2	-	Isoflavones, Flavones and Dihydroflavonols	33
1 13 8 3		Aurones and Chalcones	33

Experimental -2

4- References

2.1-Collection of Plant Material	34
2.2-Preparation of Test Reagents for Phytochemical Screening	34
2.2.1 -Flavonoid Test Reagent	34
2.3 - Preparation of Plant Extract for Phytochemical Screening	34
2.4 - Phytochemical Screening	34
2.4.1 - Test for Flavonoids	35
2.5 - Extraction of Flavonoids from the fruit of Tamrindus indica	35
2.6 - Thin – Layer Chromatography of the Crude Product	35
2.7- Preparative Thin – Layer Chromatography	36
2.8-Preperation of Stock Solution	36
2.9 -UV Shift Reagents	36
2.10 - The UV Spectrum of Compound I	37
2.10.1 -The UV Spectrum of Compound I in Presence of Sodium	ı 37
Methoxide	
2.10.2 - The UV Spectrum of Compound I in Presence of Sodium	n 37
Acetate	
2.10.3 -The UV Spectrum of Compound I in Presence of	37
Aluminum Chloride	
2.10.4- The UV Spectrum of Compound 1 In Presence of Sodium	n 37
Acetate	
Result and Discussion-3	
3.1 Spectral Data of compound I	38

List of tables

Table 1.1 Reagents for the Detection of Flavonoids on Thin – Layer Plates Spi	ay 25
Table 3.1 Colour reaction of compound I	42
Table 3.2 Colour reaction of Flavanone	42

List of figures

Fig.1- The IR Spectrum of Compound I40
Fig.2 -The UV Spectrum of Compound in Methanol
Solution41
Fig.3 -The UV Spectrum of Compound I with Sodium Methoxide44
Fig.4 -The UV Spectrum of Compound I with Sodium Acetate45
Fig.5 -The UV Spectrum of Compound I with Sodium
Acetate and Boric acid46
Fig.6 -The UV Spectrum of Compound I with Aluminum Chloride47
Fig.7 -The UV Spectrum of Compound I with Aluminum Chloride and
Hydrochloric Acid48

