

**(Aucubin)**  
**(PLANTAGO MAJOR L.)**

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**(NJC)**

(Received on 9/3/2008)

(Accepted for publication 31/8/2008)

(Gel Filtration Chromatography)

(Plantago Major)

(Aucubin)

.(Plantaginaceae)

Sephadex )

.( )

(Tris HCl pH=8

Tris HCl pH=7

)

(G-25

UV-Visible Molecular )

.(TLC) Thin Layer Chromatography

(Absorption

**Abstract**

The aim of this study is to devising a Novel Method (Gel Filtration) to isolate the bioactive component Aucubin from Plantago Major plant (one of Plantaginaceae family) which grows in Iraq.

Different extracts of leaves and stems of Plantago Major plant were prepared. These extracts include: cold and hot water and ethanolic extracts for fresh and dried samples of plant for each of these solvents.

The separation technique includes gel filtration using a column of Sephadex G-25 with three mobile phases (water, Tris HCl pH=7 and Tris HCl pH=8). While the identifications are completed by molecular absorption spectrophotometer and thin layer chromatography (TLC).

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\*

## (Glycosides)

(1)

(10)

cyclopentanoid ,

monoterpene

nonirodid Irodid glycoside <sup>(11)</sup>

bisiridoids secoiridoids glycoside

<sup>(12)</sup>(2) (Aucubin)

<sup>o</sup>182  
*Aucuba Japonica* (1905)

(1)

(Alzheimer's disease)

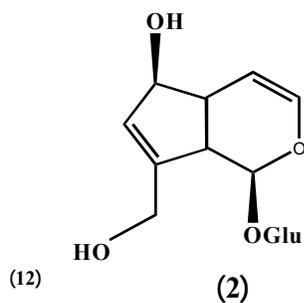
<sup>(2)</sup>(Dementia)

(4,3)

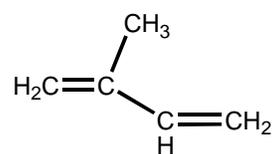
<sup>(5)</sup>(Wilson's disease)<sup>(13)</sup>(346)(C<sub>15</sub>H<sub>22</sub>O<sub>9</sub>)

(8,7,6)

(11)



(9)



2-Methyl-but-1,3-diene

(1)

(17)

(14)

( )

Micellar Electrokinetic )

<sup>(18)</sup>(MECC) (Capillary Chromatography

(18)

(15)

*Diaporthe adunca*

(16)

(3:2) ( - : (20)  
 (17) (21)(HPLC)  
 (Soxhlet  
 Rotary ) apparatus)  
 (Evaporator  
 15 (GBC,  
 100 Cintra 5-Japan)  
 (Autoclave) (Incubator)  
 : )  
 (Sp.Gr. = 1.84, %=96%) HR 200, A&B )  
 (18:1:1) ( TLC ( Company Lmt.  
 (17) 7.5 x2.5 0.25  
 25) Merck  
 .( 19x  
 ( ) -1  
 ( ) 6 Merck-)  
 ) 50 BDH-England Switzerland  
 ( LAB Scan- Fluka-Switzerland  
 18 (England  
 Sephadex G-25 Particle size :20-  
 80µ , Bed volume per gram of  
 (dry gel:4-6 ml  
 °50-40 .(Pharmacia Fine- Switzerland)  
 °70-60  
 Trim-Hill ) -  
 (Color Test  
 (Crude Extract) 10ml )  
 conc. Acetic acid(Sp. Gr. =1.05,  
 %=99.5%) + 1ml 0.2% CuSO<sub>4</sub> + 0.5ml  
 (conc. HCl(Sp. Gr.=1.18, %=35%)  
 (17)  
 Soxhlet -2  
 .(7 ) - )  
 35 (Sp.Gr. :  
 200 ( : =1.05; %=99.5%)  
 ) (5:1:4)

(0.0 M) *Continuous* )  
 ) 50 (*Extraction Soxhlet*  
 ( °30  
  
 4  
 24 (21)  
 5 (5000 r/m) -3  
 0.1 (8 )  
 (17) 6  
 (9 -1) 50  
 ( 10) °70  
 °4 30  
 (1) (Wahman No.1)  
 100 )  
  
  
 (22)  
 -4  
 (9 )  
 100  
  
 %2 10  
 ( )

( 1)

( <sup>0</sup> 50-40)	( <sup>0</sup> 70 -60)	50	( ) 6	1
( <sup>0</sup> 50-40)	( <sup>0</sup> 70 -60)	50	( ) 6	2
( <sup>0</sup> 50-40)	( <sup>0</sup> 50-40)	50	( ) 6	3
( <sup>0</sup> 50-40)	( <sup>0</sup> 70 -60)	50	( ) 6	4
( <sup>0</sup> 50-40)	( <sup>0</sup> 70 -60)	50	( ) 6	5
( <sup>0</sup> 50-40)	( <sup>0</sup> 50-40)	50	( ) 6	6
( <sup>0</sup> 50-40)	( <sup>0</sup> 50-40)	200	35 ( )	7
		12 12	( ) 6	8
		%2 10	100	9

( )

5

(9 )

)

(

*TLC*

-

)

7.5 × 2.5

0.25

( -

. (17)(2) (1)

*(Gel Filtration)**.Iridoids Glycoside*

1

%1

5

)

0.1

4

(23)

(G25

-

1

. (17)

5 a

b

(6,5,4)

(d c) ( / ) %1

7 *Tris HCl*  
(pH=7)

5 (f e) *Tris HCl* 5 5  
*Tris HCl* *Tris HCl* (0.01M) (pH=7)  
(pH=8) 8 (0.01M) (pH=8)

°4

( ) (24,20)

( - - )

( 203)

2 (24) 25-15 0.5

4

(2)

+		-		1
+				2
+				3

( )

( )

R<sub>f</sub> (3) (21)

203

R<sub>f</sub> (25,20)  
 (17)(3)  
 800-180 1

2

R<sub>f</sub>

(17)( ) 2 1 (3)  
 2 1

		(R <sub>f</sub> *100)		( )	
2	1	2	1		
		90	51	(Asperulin)	1
		78	38	(Aucubin)	2
	-	79	32	(Catalpol)	3
			34	(Harpagide)	4
		93	63	(Loganin)	5

(100 × R<sub>f</sub>)

2 9  
 80.5 81.1 78.8

3

78

1

7.5×2.5

.2

2 1

(100 × R<sub>f</sub>)

37.9

(1)

1

2

7.5×2.5

.38

1.243

(2 )

(17)

(3 )

$$38 = (100 \times R_f)$$

203

0.068

( ) 2

203

)  
(

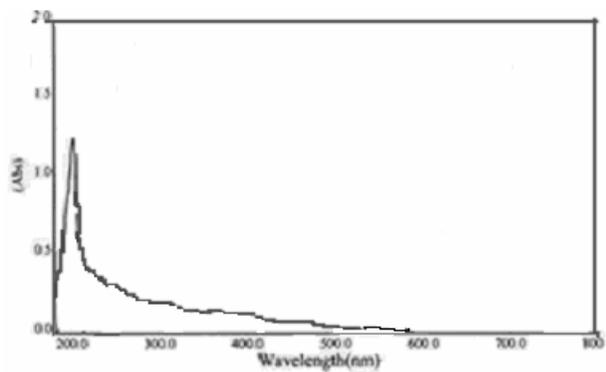
(25,20)

1

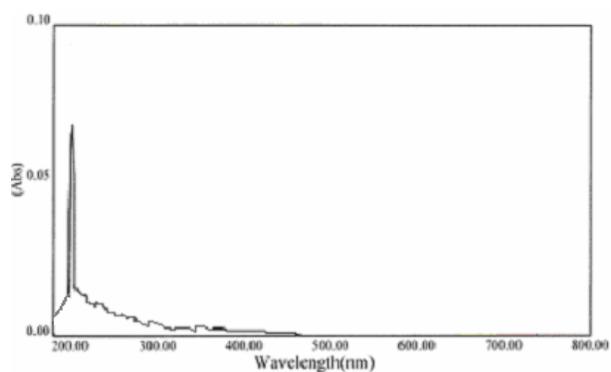
1)

(2

203



:(2)



:(1)

)

pH=8

(6 5 4

) (800-180)

25-

.(4

(4)

(6 5 4)

50

%1

1

10

185

0.022

(6 5 4)

1.754

1

.10

199

5

( / 1 )

11

1.984

203

(3)

(25,20)

5

5

Tris HCl

(4)

pH=7

5/ 5

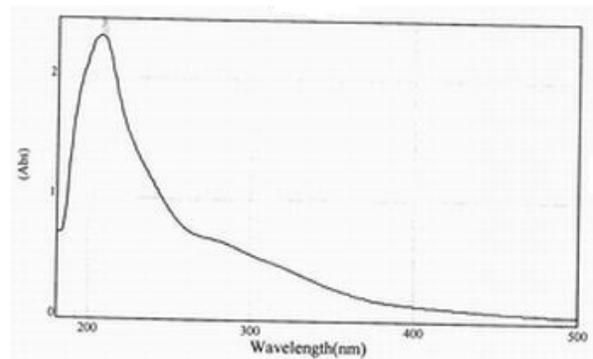
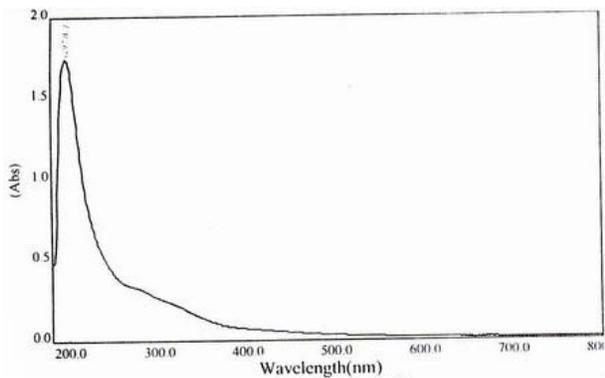
5

11

Tris HCl pH=8

5

Tris HCl



. ( / 11)

:(4)

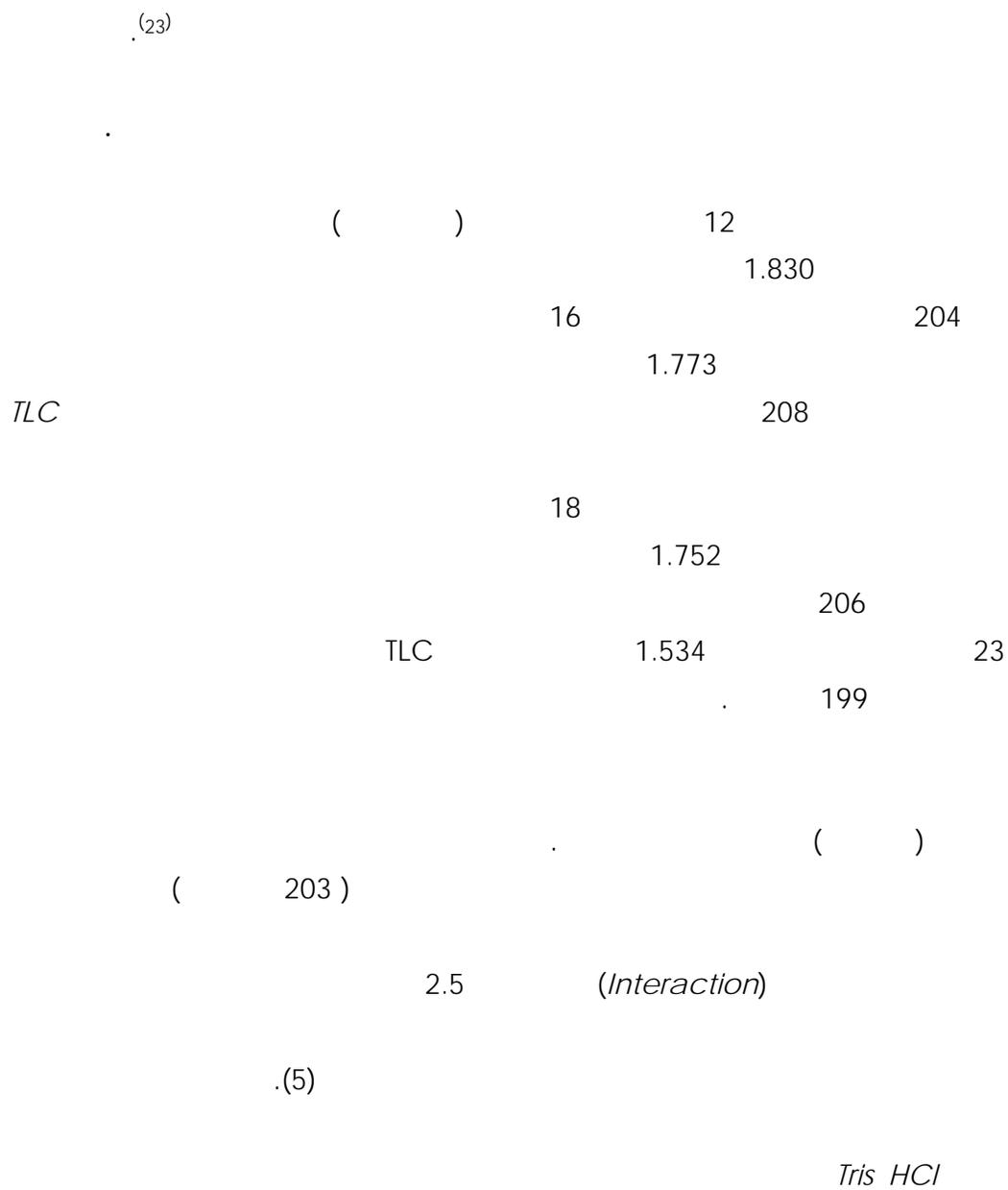
5

:(3)

:(4)

.5

2		1			
a2	(nm) $\lambda$ 2	a1	(nm) $\lambda$ 1		
-	-	1.932	197	5	0
-	-	0.022	185	1	1
-	-	0.026	185	2	2
-	-	0.032	185	3	3
-	-	0.041	186	4	4
-	-	0.058	186	5	5
-	-	0.247	187	6	6
-	-	0.580	189	7	7
-	-	0.93	190	8	8
-	-	1.354	193	9	9
-	-	1.754	199	10	10
-	-	1.984	203	11	11
-	-	1.830	204	12	12
		1.825	205	13	13
		1.80	205	14	14
		1.773	207	15	15
		1.768	208	16	16
		1.764	208	17	17
0.1062	376	1.752	206	18	18
-	-	1.740	206	19	19
0.0717	390	1.732	201	20	20
0.0596	412	1.717	200	21	21
-	-	1.685	200	22	22
-	-	1.534	199	23	23
					:1a
					:2b



:(5)

	( )						
a	1-0.5	25		1	4	17-8	1
b	1-0.5	25		2	5	19-10	2
c	1-0.5	20	Tris pH=7	4	5	12-5	3
d	1-0.5	20	Tris pH=7	4	5	20-13	4
e	1-0.5	20	Tris pH=8	5	5	17-10	5
f	1-0.5	15	Tris pH=8	5	5	23-18	6
2.5							*
° 65-60							*

e *TLC*

100×R<sub>f</sub>                      2    12-3

.(38)    f d,c,b,a

100×R<sub>f</sub>

*TLC*    :(6)

	100×R <sub>f</sub>	( )			
	39.0	2.5	6.4	a	1
	36	2.3	6.4	b	2
	38.7	2.4	6.2	c	3
	37.1	2.3	6.2	d	4
	38.1	2.4	6.3	e	5
	39.7	2.5	6.3	f	6
( / ) (4:1:5) - : : :1 - ( : : :2 - .( / ) (18:1:1)					

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