

(*Physalis alkekengy*)

2

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86/9/24 :

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(3:7) :

D F

FT-IR UV NMR

Extraction, Separation and Identification of Physalins from *Physalis alkekengy* Grown in Azarbayjan

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Abstract

In the present work, various extraction procedures including extraction with water and subsequently with chloroform, continuous extraction with chloroform, methanol and acetone were tested for the

extraction of physalins from *Physalis alkekengi* grown in Eastern Azarbaijan (Kaleibar). It was found that continuous extraction with acetone gives the best results in terms of amount of crude extract. After the preparative extraction, primary separation was carried out by column chromatography using silica gel as stationary phase and ethyl acetate: benzene (7:3) as solvent. In the second step, after choosing suitable solvent systems, the mixtures of physalins from previous step were separated by column and thin layer chromatography. Finally, physalins F and D together with a new compound were identified by using several spectroscopic techniques such as NMR, FT-IR and UV spectroscopy. An appropriate chemical structure based on the spectroscopic data proposed for the new compound.

Key Words: Physalin, *Physalis alkekengi*, Plant steroids

1988 1987

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(1992b 1992a

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¹

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16·24

.(1368)

13·14

- .(1969

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T A

,1969

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,1980

,1970

1969

2000 1993 ,1992 ,1987

.(1995 1992

(B F

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¹*Physalis alkekengi*

²Solanaceae

2/26

0/61

(1992)

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(

)

1381

(TLC)

5*5 2*5

(9:1

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(7:3

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UV-Visible

UV

UV-1650 PC

Bruker-spectra spin,

NMR

NMR

Avance-400

Bruker, Tensor 27

FT-IR

.IR

1

20

370

4

750

5

180

75*3

(1998

)

5

(3:7

340

12

TLC

360

(

17/0651)

240

(1988

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3

(II)

240

2

49 60

0/1

240

4

2 1

1

40

50×3

56

(9:1)

.(1988)

2 1

1

pH

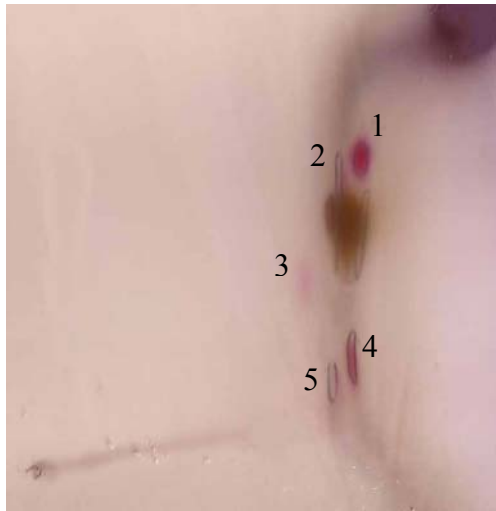
	(g)	(ml)		
0/40	0/040	100	30	1
0/46	0/046	100	28	2

2

	(g)	(g)	
0/54	0/054	0/36	1
0/61	0/061	0/41	2
0/40	0/040	0/27	3
0/49	0/049	2/29	4

(TLC)

3 1



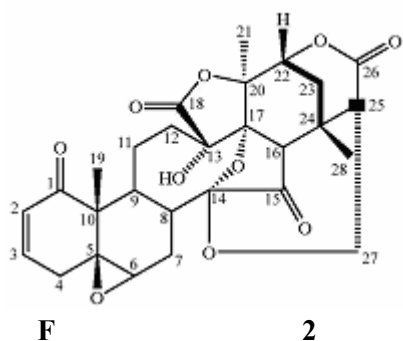
(1:9) : → (3:7) : _____ ↑

1	3
(3 7)	R_f
	1 48
0/77	2 1 49 60
	3 2 1 61 137
	3 2 138 141
0/36	3 142 181
	4 3 182 249
0/24	4 250 249
	5 4 293 338

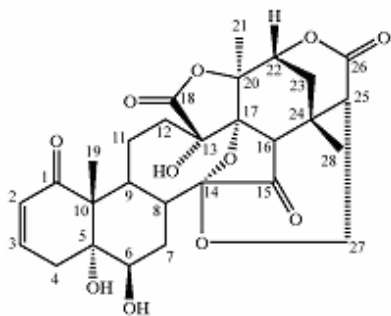
4 3 3
 182 242 181 4
 TLC 293 338 3 250 249 142
 (1:9) : _____ 138 141
 0/033 0/011

5 γ 13 1
 δ 49 60 2
 (2)
 1969) TLC
 H-NMR F (1988 - : :
 4/54 C₁₄-O-C₂₇ 27 5:1:9
 22 3/75 2 2 1
 3/27 6 4/52
 - 3/01 4 4
 4/0329 13 OH
 6/88 6/01 2 4
 3 2

F
 5 1 ¹³C-NMR
 F
 1969)
 (1988
 UV
 190 300nm
 1
 F
 6
 1 24
 1 23 46
 2 1 47 53
 80 46 23
 0/091



CDCl₃ NMR
 (F) 1
 1 FT-IR
) 1655/47 1746/13 1784/78 3420/23
 OH (cm⁻¹)



D

3

)

D

(D) 3

3443/58

3

FT-IR

1736/88

1762/72

1783/31

OH

 γ δ

5

1665/56

.(1969

H-NMR

OH

5/92 6/67

4

() 4

22

4/30

13

27

4/52

4/55

C₁₄-O-C₂₇

27

debt NMR

¹³C-NMR

3/8

3/76

6

90

135

45

B

3/35

4

¹³C-NMR

3/11

5

D

UV

300 nm 190

10

4

7

7

D

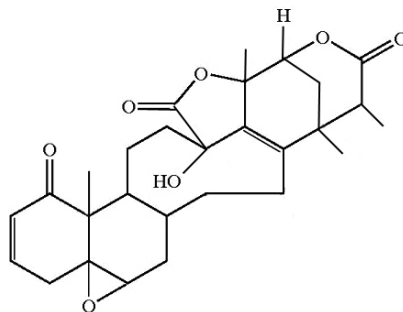
2

4

6

(5) ¹³C-NMR

4



¹³C-NMR 15

4

27 18 1

165/630 175/769 204/050

FT-IR

20 17 13

3536/05

79

OH

OH

6

1700/27 1779/11

γ

δ

1660/94

5

F

H-NMR

H-NMR

C₁₄-O-C₂₇

A

F

B

13

OH

4/36

22

4/16

3/21

6/84

F

3 2

6/01

H-NMR

¹³C-NMR

121/406 128/935 144/611 149/672

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(ppm) CDCl ₃			¹³ C-NMR			5
	F	D		F	D		
C-1	205/962	206/785	204/050	C-15	207/492	208/275	42/010
C -2	127/717	127/798	128/935	C -16	56/210	54/305	121/406
C -3	146/268	143/117	144/611	C -17	79/981	80/486	149/672
C -4	33/359	35/717	33/090	C -18	172/112	172/204	175/769
C -5	61/671	76/705	61/562	C -19	15/667	14/109	14/991
C -6	64/909	73/770	63/888	C -20	80/949	80/987	100/796
C -7	32/956	27/163	30/513	C -21	21/422	21/452	20/669
C -8	37/374	38/409	44/829	C -22	77/015	77/225	76/710
C -9	34/166	30/188	43/162	C -23	24/774	32/902	27/070
C -10	50/0464	53/756	49/653	C -24	31/069	31/083	74/953
C -11	23/568	25/916	25/802	C -25	50/790	50/847	52/457
C -12	25/659	26/501	27/537	C -26	166/669	167/007	165/630
C -13	79/407	76/900	84/872	C -27	60/671	60/706	12/150
C -14	107/000	107/470	14/702	C -28	26/516	25/167	24/471

6

(2:1)	:	R _f	(7:3)	:	R _f	(°C)
0/69			0/77			296 295/5 F
0/38			0/36			286 288 D
0/34			0/24			248/5
						248/2

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