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New Dopamine Derivative from *Lycium Barbarum*

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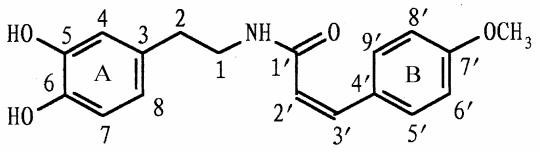
Abstract: A new dopamine derivative, lyciumide A, was isolated from the fruits of *Lycium barbarum*. Its structure was elucidated as *p*-methoxy-*cis*-cinnamoyl dopamine by spectral methods.

Keywords: *Lycium barbarum*; lyciumide A.

In continuation of our work on cyclic peptides and amides[1-2], we tested extracts of the fruits of *Lycium barbarum* which was used as a tonic and sedative in traditional Chinese medicine and found the extracts contained constituent which showed positive reaction with ninhydrin after hydrolysis. Thus we investigated the plant and a new dopamine derivative **1** named lyciumide A was isolated.

Figure 1. The structure of lyciumide A



Lyciumide A **1** was obtained as colorless gum. It could be deduced as an amide since the compound showed negative reaction with ninhydrin but positive after hydrolysis with hydrochloric acid. The high resolution FAB^+-MS showed $[M+1]^+$ at 314.1480, consistent with $C_{18}H_{24}NO_4$ (calc. 314.1392). The ^1H NMR (400M Hz, CD_3OD) spectrum showed a methoxy at δ 3.82 (3H, s), two methylene protons at δ 2.68 (2H, t, J=7.5Hz) and 3.38 (2H, t, J=7.5Hz), two *cis* olefinic protons at δ 5.80 (1H, d, J=12.6Hz) and 6.60 (1H, d, J=12.6Hz). In additon, seven aromatic protons were observed which could be assigned to two benzene rings: δ 6.68 (2H, d, J=8.4Hz) and 6.99 (2H, d, J=8.4Hz); δ 6.79 (1H, d, J=8.2Hz), 6.92 (1H, dd, J=8.2, 2.0Hz) and 7.36 (1H,d, J=2.0Hz). The ^{13}C NMR spectrum gave eighteen carbon signals including a CH_3, two CH_2, nine CH and six quaternary carbons determined by DEPT method (shown in **Table**

1). A *p*-methoxycinnamoyl moiety [δ 170.3 (C-1'), 114.1 (C-2'), 138.3 (C-3'), 128.6 (C-4'), 130.7 (C-5', 9'), 116.3 (C-6',8'), 156.9 (C-7'), 56.5 (OCH_3)] and a dopamine moiety [δ 42.3 (C-1), 35.2 (C-2), 131.3 (C-3), 115.9 (C-4), 148.6 (C-5), 142.0 (C-6), 121.9 (C-7), 124.8 (C-8)] could be deduced from the ^{13}C NMR data. According to above findings the structure of **1** was proposed as *p*-methoxy-*cis*-cinnamoyl dopamine and EI-MS confirmed the elucidation.

Table 1. NMR spectral data of lyciumide A

C		H	
1	42.3 (t)	1	3.38 (2H, t, J=7.5Hz)
2	35.2 (t)	2	2.68 (2H, t, J=7.5Hz)
3	131.3 (s)		
4	115.9 (d)	4	7.36 (1H, d, J=2.0Hz)
5	148.6 (s)		
6	142.0 (s)		
7	121.9 (d)	7	6.78 (1H, d, 8.2Hz)
8	124.8 (d)	8	6.92 (1H, dd, J=8.2, 2.0Hz)
1'	170.3 (s)		
2'	114.1 (d)	2'	5.80 (1H, d, J=12.6Hz)
3'	138.2 (d)	3'	6.60 (1H, d, J=12.6Hz)
4'	128.6 (s)		
5', 9'	130.7 (d)	5', 9'	6.99 (2H, dd, J=8.4, 2.0Hz)
6', 8'	116.3 (d)	6', 8'	6.68 (2H, dd, J=8.4, 2.0Hz)
7'	156.9 (s)		
OCH_3	56.5 (q)	OCH_3	3.82 (3H, s)

References

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