

## A New Oligostilbene from the Roots of *Vitis Amurensis*

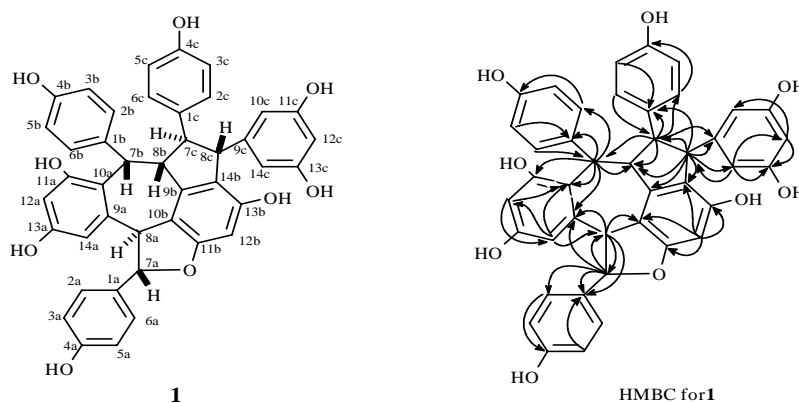
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**Abstract:** A new resveratrol trimer, amurensin G (**1**), was isolated from the roots of *Vitis amurensis* Rupr. Its structure and relative configuration were established on the basis of spectral evidence, especially on HMBC spectrum and NOE difference experiments.

**Keywords:** *Vitis amurensis*, Vitaceae, oligostilbene, amurensin G, resveratrol.

Our continuous research on chemical constituents of the roots of *Vitis amurensis* resulted in the isolation of another new oligostilbene amurensin G (**1**), besides oligostilbenes we reported before<sup>1</sup>. In this paper, we report the structure determination of **1**, including 2D-NMR studies.



Amurensin G (**1**) was isolated as colorless amorphous powder,  $[\alpha]_D^{19} = +20.1$  (c 0.072, MeOH). Its molecular formula  $C_{42}H_{32}O_9$  was determined on the basis of FAB-MS ( $m/z$  681  $[MH]^+$ ) and  $^1H$ ,  $^{13}C$ -NMR data, which indicated that it should be a resveratrol trimer. The  $^1H$ -NMR spectrum of **1** displayed the following features: In lower field, there were three sets of signals for 4-hydroxybenzene moieties, one set of signals for a 3,5-dihydroxybenzene moiety, two *meta*-coupled doublets due to two aromatic protons and a singlet of an aromatic proton. In higher field, there were signals

for six aliphatic protons. The  $^1\text{H}$ -NMR and  $^{13}\text{C}$ -NMR data of **1** were similar to those of ampelopsin C<sup>2</sup>, but in the HMBC spectrum of **1**, the long range couplings between H-8c and C-10(14)c, H-10(14)c and C-8c suggested that the 3,5-dihydroxybenzene group should be attached to C-8c position; meanwhile, the long range couplings between H-7c and C-2(6)c, H-2(6)c and C-7c indicated that the 4-hydroxybenzene group should be attached to C-7c position, thus the planar structure of amurensin G was determined as **1**, a stereo-isomer of suffruticosol A and B<sup>3</sup>. Its  $^1\text{H}$  and  $^{13}\text{C}$ -NMR data were assigned as **Table 1**.

To clarify the relative stereochemistry of **1**, NOE difference experiments have been carried out. Irradiation of H-8a signal enhanced H-2(6)a and H-2(6)b signals, suggesting the *trans* orientation for H-8a and H-7a, as well as for H-8a and H-7b. The significant NOEs between H-7b and H-8b, H-8b and H-8c indicated the *cis* orientation of H-7b, H-8b and H-8c, the H-7c situated in *trans* position to them was demonstrated by the NOEs between H-7c and H-2(6)b, H-7c and H-10(14)c, H-8b and H-2(6)c, therefore the relative stereochemistry of amurensin G was determined as shown in structure **1**, which was different from suffruticosol A or B.

Table 1.  $^1\text{H}$  and  $^{13}\text{C}$ -NMR data for **1** in  $\text{CD}_3\text{COCD}_3$  (500MHz,  $\delta$  in ppm, J in Hz)<sup>§</sup>

No.	$^1\text{H}$	$^{13}\text{C}$	No.	$^1\text{H}$	$^{13}\text{C}$
1a		130.7	8b	3.59 dd (11.8, 3.4).	52.4
2(6)a	7.23 d (8.6)	130.1	9b		144.0
3(5)a	6.77 d (8.6)	116.1	10b		116.0
4a		158.6	11b		159.4
7a	5.80 d (11.8)	90.6	12b	6.13 s	96.5
8a	4.43 d (11.8)	48.9	13b		154.7
9a		141.6	14b		121.1
10a		124.7	1c		132.6
11a		155.9 <sup>++</sup>	2(6)c	6.96 d (8.6)	129.9
12a	6.33 d (2.0)	101.7	3(5)c	6.69 d (8.6)	115.8
13a		156.8 <sup>+</sup>	4c		156.7 <sup>+</sup>
14a	6.13 d (2.0)	105.8	7c	3.73 dd (11.8, 9.7)	61.7
1b		133.3	8c	4.20 d (9.7)	57.4
2(6)b	7.14 d (8.6)	130.5	9c		146.8
3(5)b	6.65 d (8.6)	115.4	10(14)c	6.17 d (2.2)	107.4
4b		155.8 <sup>++</sup>	11(13)c		159.2
7b	5.23 d (3.4)	37.5	12c	6.16 t (2.2)	101.7

<sup>§</sup> All assignments were confirmed by 2D  $^1\text{H}$ - $^1\text{H}$  COSY,  $^1\text{H}$ - $^{13}\text{C}$  COSY, HMBC spectra.

<sup>+</sup>, <sup>++</sup>: Maybe interchangeable

## References

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