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A New Compound from the Root of *Salvia przewalskii* Maxim

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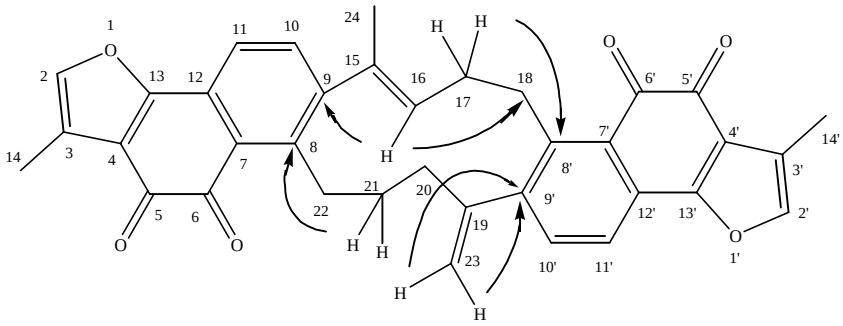
Abstract: Neo-przewaquinone A was isolated from the root of *Salvia przewalskii* Maxim. The structure elucidation and ^{1}H, ^{13}C NMR assignments were achieved by spectroscopic method.

Keywords: *Salvia przewalskii* Maxim., neo-przewaquinone A.

We report here the isolation and structural elucidation of neo-przewaquinone A **1** (**Scheme**) from the 80% EtOH extract of the root of *Salvia przewalskii* Maxim.

Scheme The HMBC correlation of compound **1**



The 80% EtOH extract of the root of *S. przewalskii* was concentrated in vacuum to yield extract (SPE). The SPE was suspended in H_2O and stilled for 24 h. The deposit was fractionated by silica gel column chromatography to afford compound **l**. **1** was isolated as red-purple needle crystals, mp 188-189°C. UV λ_{max} (MeOH) nm: 225, 289. FAB-MS *m/z*: 556 (M^+), 579(M^++Na), 595(M^++K), EI-MS *m/z*: 278[M^+/2]. According to the data of the NMR spectra, the molecular formula was deduced to be $C_{36}H_{28}O_6$. Its IR spectrum showed the presence of carbonyl groups (1665 cm^{-1}). In the ^{1}H-NMR spectrum of **1**, the signals at δ 7.78 (d, 1H, J=7.9 Hz), 7.45 (d, 1H, J=7.9Hz), 7.42 (d, 1H, J=7.9 Hz), 7.33 (d, 1H, J=7.9 Hz) indicated that there were two pairs of *o*-aromatic protons. While the signals at δ 7.20(d, 1H, J=1.2 Hz), 7.18(d, 1H, J=1.2 Hz), δ 6.00 (m, 1H), 5.50(s, 1H), 5.00(s, 1H) indicated that there were four double bonds at least.

The ^{13}C-NMR spectrum gave thirty-six carbon signals. The DEPT spectrum

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revealed twenty quaternary carbons, seven tertiary carbons, six secondary carbons and three primary carbons.

Compared with NMR spectra of tanshinone II-A[1], it was found that **1** should be composed of two tanshinone II-A without cycle A. The detailed data of NMR spectrum see **Table 1**.

Table 1 NMR spectra data of **1** ($CDCl_3$)

No.	δ_H ppm	J_{Hz}	δ_C ppm	No.	δ_H ppm	J_{Hz}	δ_C ppm
2	7.18(d)	1.2	141.6d	2′	7.20(d)	1.2	141.2d
3			120.7s	3′			120.1s
4			121.3s	4′			121.2s
5			176.2s	5′			175.5s
6			184.2s	6′			183.3s
7			126.5s	7′			126.2s
8			144.4s	8′			144.6s
9			139.0s	9′			138.5s
10	7.33(d)	7.9	128.2d	10′	7.42(d)	7.9	130.8d
11	7.45 (d)	7.9	120.7d	11′	7.78(d)	7.9	120.3d
12			127.3s	12′			129.0s
13			161.6s	13′			161.3s
14	2.20(s)		8.8q	14′	2.20(s)		8.8q
15			131.0s				
16	6.00(m)		128.6d				
17	2.22(m)		22.5t				
18	3.28(t)	7.9	24.9t				
19			143.3s				
20	2.47(t)	6.4	32.1t				
21	1.85(m)		23.3t				
22	3.21(t)	6.4	29.4t				
23	5.50(s, α), 5.00(s, β)		110.5t				
24	2.00(d)	1.6	19.8q				

In the ^1H-^{13}C COSY spectrum, signal at δ_C110.5 was correlated with the signal at δ_H 5.50 and 5.00，δ_C128.6 with δ_H 6.00. In the ^1H-^1H COSY spectrum, correlation among the signal at $_H$1.85 and $_H$3.21, 2.47, the signal at δ_H 2.22 and δ_H6.00, 3.28 indicated that there should be the $-CH_2CH_2CH_2-$ moiety, and $\diagdown\!\!\diagup C{=}CHCH_2CH_2-$ moiety.

In the HMBC spectrum, the signal at δ_H1.85 was correlated with δ_C143.3 and 144.4, δ_H2.00 with δ_C128.6 and 139.0, δ_H6.00 with δ_C19.8, 24.9 and 139., δ_H 5.50 and 5.00 with δ_C32.1 and 138.5. The NOESY spectrum showed that the signal of δ_H2.00 was correlated with the signal at δ_H7.33, δ_H5.50 with 7.78. Above data mentioned suggested further that a cycle composed of twelve carbons existed. It was the ring that combined the two moieties of tanshinone II-A without cycle A.

From these evidences, **1** is identified as neo-przewaquinone A.

References

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