

A New Sesquiterpene Lactone of *Notoseris henryi*

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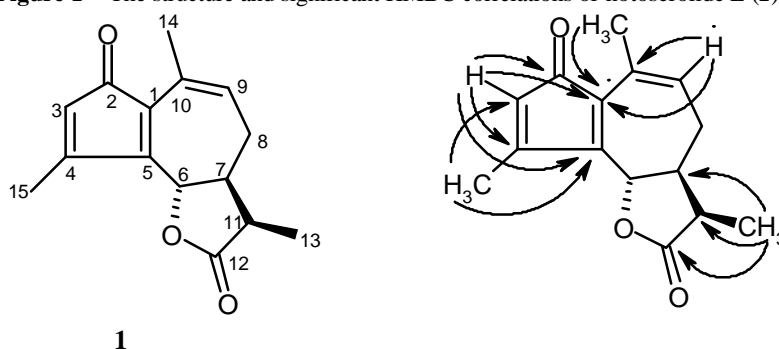
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Abstract: A new guaianolide, notoserolide E, along with nine known compounds was isolated from the Chinese endemic plant of *Notoseris henryi* (Dunn) Shih and its structure was elucidated by means of spectroscopic evidence.

Keywords: *Notoseris henryi*, guaianolide, notoserolide E.

In the previous papers^{1,2,3}, we reported four new guaianolides, notoserolides A~D, from Chinese endemic genera plants of *N. porphyrolepis*, *N. psilolepis* and *N. rhombiformis*. As a continuation of that study, another new sesquiterpene lactone, notoserolide E, together with nine known compounds were isolated from the whole plant of *N. henryi* (Dunn) Shih. Here we present a full account of the structure elucidation of the new one.

Figure 1 The structure and significant HMBC correlations of notoserolide E (**1**)



Notoserolide E (**1**) was obtained from ethanolic extract as an amorphous powder by repeated column chromatography (MCI gel, normal and reversed phase silica gel). Its molecular formula was assigned as $C_{15}H_{16}O_3$ by HR-ESIMS ($[M + H]^+$ m/z 245.1172, calcd. 245.1178). The 1H NMR spectrum exhibited a methyl doublet at δ 1.34, two vinyl methyl signals at δ 2.16 and 2.46 and two olefinic proton signals at δ 5.86 and 6.12.

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The ^{13}C NMR spectrum and biogenesis suggested a guaianolide-type skeleton with three olefinic links and a carboxyl group (δ 194.9) which was conjugated with an unsaturated linkage of the molecule. The ^1H and ^{13}C NMR spectra were similar to those of achillin and leukodin⁴ except for one more carbon-carbon double bond in the ring structure of **1**. The long-range ^1H - ^{13}C correlations in HMBC spectrum (**Figure 1**) showed the carboxyl group was located at C-1 and three double bonds at C-1(C-5), C-3 and C-9, respectively. The coupling value of $J_{7\alpha,11\alpha} = 7.5$ Hz is in accordance with the α -orientation of H-11 for **1**. Therefore the structure of **1** was determined as shown in **Figure 1**. Analysis of ^1H - ^1H COSY, HMQC and HMBC spectra allowed proton and carbon signals of **1** to be assigned as in **Table 1**.

Table 1. ^1H and ^{13}C NMR spectra data of notoserolide E (**1**)
(400 MHz for ^1H and 100 MHz for ^{13}C in CDCl_3 , δ ppm)

No.	δ_{C}	δ_{H}	No.	δ_{C}	δ_{H}	No.	δ_{C}	δ_{H}
1	145.7		6	77.8	4.56 m	11	39.1	2.98 m
2	194.9		7	45.9	3.26 m	12	178.5	
3	131.9	6.12 s	8	44.6	2.93, 3.11 m	13	11.3	1.34 s
4	161.4		9	117.3	5.86 br.s	14	21.4	2.46 s
5	140.7		10	127.2		15	14.1	2.16 s

Nine known compounds were also isolated from this endemic plant for the first time. Their structures were identified as notoserolide A¹, notoserolide B¹, austriacin³, jacquelinein³, crepidiaside A⁵, crepidiaside B⁵, 3,4-dihydroxycinnamic acid, 6,7-dihydroxycoumarin⁵ and luteolin-7-*O*- β -*D*-glucopyranoside⁵, respectively, by spectral evidence and comparison TLC with authentic samples.

Acknowledgment

This work was financially supported by the Special Project of Biological Science and Technology of the Chinese Academy of Sciences (STZ 97-3-08).

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Received 22 October, 2001