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A New Sesquiterpene Lactone of *Notoseris henryi*

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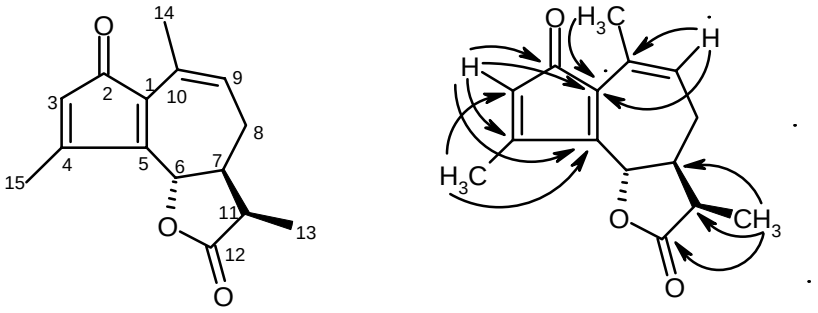
Abstract: A new guaianolide, notoserolide E, along with nine known compounds was isolated from the Chinese endemic plant of *Notoseris henryi* (Dunn) Shih and its structure was elucidated by means of spectroscopic evidence.

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**)



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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 ^{1}H and ^{13}C NMR spectra were similar to those of achillin and leukodin[4] except for one more carbon-carbon double bond in the ring structure of **1**. The long-range ^{1}H-^{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 ^{1}H-^{1}H COSY, HMQC and HMBC spectra allowed proton and carbon signals of **1** to be assigned as in **Table 1**.

Table 1. ^{1}H and ^{13}C NMR spectra data of notoserolide E (**1**)
(400 MHz for ^{1}H 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 A[1], notoserolide B[1], austricin[3], jacquinelin[3], crepidiaside A[5], crepidiaside B[5], 3,4-dihydroxycinnamic acid, 6,7-dihydroxycoumarin[5] and luteolin-7-*O*-β-*D*-glucopyranoside[5], respectively, by spectral evidence and comparison TLC with authentic samples.

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