

Eremophilanes from *Senecio desfontainei*

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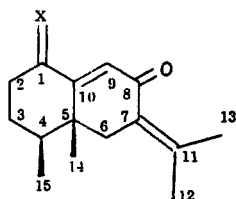
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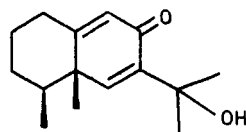
ABSTRACT.—Four eremophilanes have been isolated from the aerial parts of *Senecio desfontainei*, including a new one, 11-hydroxyeremophil-6(7),9(10)-dien-8-one [4]. The structures were established by high field nmr spectroscopy.

The genus *Senecio* is rich in eremophilanes, furoeremophilanes, and pyrrolizidines, as well as other classes of natural products (1–4), and several compounds have been reported from *Senecio desfontainei* Druce (= *S. coronopifolius* Desf.) (Compositae) (5–7). Reinvestigation of this species afforded a new eremophilane 4, in addition to three previously reported compounds 1–3.

The ^1H -nmr data of 4 differed from those of 1–3; the downfield chemical shift of H-12 and H-13 at δ 1.46 and their presence as a singlet indicated that C-11 must bearing a hydroxyl function. This was verified by an ir absorption at 3550 cm^{-1} as well as a ^{13}C -nmr signal at δ 71.8 (C-11). Spin decoupling allowed the assignment of H-1, H-1', and H-4. The narrow doublet at δ 6.07 (H-9) showed a long range coupling with a multiplet at δ 2.37 (H-1), while irradiation of H-15 changed the signal at δ 1.56 (H-4). The mass spectrum exhibited peaks at m/z 234 for the molecular ion and at m/z 219 and 201 indicating loss of a methyl group followed by elimination of H_2O . ^{13}C -nmr data (see Experimental) also supported the proposed structure.



- 1 X=H
- 2 X=βOH,H
- 3 X=αOH,H



4

EXPERIMENTAL

PLANT MATERIAL.—The aerial parts of *S. desfontainei* were collected from Bourg El-Arab, Alexandria, Egypt, in March 1987. A voucher specimen (A 319) is deposited in the Department of Botany, El-Minia University.

EXTRACTION AND ISOLATION OF TERPENOIDS.—The air-dried aerial parts (1 kg) of *S. desfontainei* were extracted with Et_2O -MeOH-petroleum ether (40–60°) (1:1:1) at room temperature as reported previously (8). The fraction eluted with Et_2O -petroleum ether (1:3) was further separated by hplc [RP 8, MeOH- H_2O (6:4)] to give 1 (30 mg), 2 (17 mg), 3 (19 mg), and 4 (9 mg). The spectral data of the known compounds 1 (9), 2 (10), and 3 (10) were identical to those reported in literature.

11-HYDROXYEREMOPHIL-6(7),9(10)-DIEN-8-ONE [4].— $[\alpha]^{24}_{\text{D}} - 15.0$ ($c = 2$, CHCl_3); ν_{max} (CHCl_3) cm^{-1} 3550, 3000, 1650, 1600; m/z (rel. int.) $[\text{M}]^+ 234$ (65), $[234 - 15]^+ 219$ (100), $[219 - 18]^+ 201$ (85); ^1H nmr (400 MHz, CDCl_3 , TMS as internal standard) δ 6.94 (1H, s, H-6), 6.07 (1H, d, $J = 1.5$ Hz, H-9), 2.37 (1H, m, H-1), 1.99 (1H, m, H-1'), 1.56 (1H, m, H-4), 1.46 (6H, s, H-12 and H-13), 1.13 (3H, s, H-14), and 1.08 (3H, d, $J = 7$ Hz, H-15); ^{13}C nmr (400 MHz, CDCl_3 , C-1 to C-15) δ 32.5, 30.1, 28.0, 41.7, 43.6, 124.6, 169.4, 188.1, 149.5, 141.1, 71.8, 28.8, 28.9, 17.0, 16.3. (Signals for C-1–C-3, C-7–C-10, and C-12 and C-13 may be interchanged.)

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