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A NEW GLAUCOLIDE FROM *VERNONIA ERDVERBENGII*

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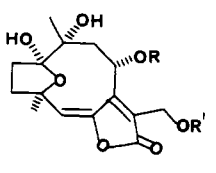
From the large genus *Vernonia* (Compositae, tribe Vernoniae) many species have already been studied chemically, and highly oxygenated germacranolides like the glaucolides and hirsutinolides are very common. We have now investigated *Vernonia edverbengii* Gray. In addition to lupeol and its acetate, the more polar fractions gave five sesquiterpene lactones, the hirsutinolides **1** (1), **2** (2), and **3** (3), glaucolide A (**4**) (2), and a new compound. The structures of compounds **1-4** were determined by ^{1}H-nmr spectroscopy and by comparing the spectral data with those reported in the literature or by direct comparison with the data of authentic material. Hrms of the new compound led to the molecular formula $C_{24}H_{30}O_{10}$. The ^{1}H-nmr signals were highly broadened at room temperature, but at elevated temperature most signals could be assigned by spin decoupling. The presence of a tiglate with two additional acetoxy groups was visible, together with a pair of doublets at δ 4.86 and 4.82, which indicated the presence of an acetoxy group at a methylene function linked to a lactone moiety as in glaucolide A. The remainder of the ^{1}H-nmr spectrum was similar to that of glaucolide A (**4**), and all data, therefore, agreed well with the structure of 8-desacylglaucolide A-tiglate (**5**). The isolated compounds are typical for *Vernonia* species where triterpenes and highly oxygenated germacranolides are widespread. These compounds are present in New World species but also in those from South Africa where hirsutinolides are common (4), but these lactones are also widespread in species from America.

EXPERIMENTAL

PLANT MATERIAL.—The aerial part of *V. edverbengii* was collected in Cerro del Potosí, N.L., México. A voucher specimen (no. 7961) is on deposit in the Herbarium of Instituto Tecnológico de Monterrey at Monterrey. The air-dried aerial parts (1 kg) were extracted at room temperature for 4 days with a mixture of hexane-isopropylether-MeOH (1:1:1 v/v). The solvent mixture was evaporated in vacuo leaving a brownish extract (32 g).

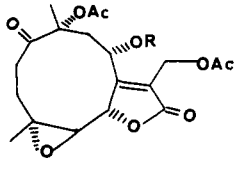
The extract was first separated by cc (Si gel). The non-polar fraction gave by preparative tlc (SiO_2, PF 254) 180 mg lupeyl acetate and its Δ^9 isomer and 200 mg of the free lupeol. The polar fractions (Et_2O and Et_2O-MeOH, 10:1) gave



1 R=H_2C=C(CH$_3$)-CO, R′=CH_3CO

2 R=H_2C=C(CH$_3$)-CO-, R′=H

3 R=H_3C(H)>C=C(CH$_3$)-CO, R′=CH_3CO



4 R=H_2C=C(CH$_3$)-CO

5 R=CH_3(H)>C=C(CH$_3$)-CO-

after repeated preparative tlc (CH_2Cl_2-C_6H_6-Et_2O, 1:1:1) 10 mg of **4**, 15 mg of **2**, 12 mg of **2**, 7 mg of **3**, and 5 mg of **5** (Rf 0.6); colorless oil; ir ν max (CCl_4) cm^{-1} 1175 (γ-lactone), 1750 (OAc), 1720 C=O); ms *m/z* (rel. int.) 478.184 M^+ (0.3) (calcd for $C_{30}H_{30}O_{10}$: 478.184) 418 $[M\text{-}HOAc]^+$ (0.5), 335 $[418\text{-}CH_2OAc]^+$ (0.6), 334 $[334\text{-}RCO_2H]^+$ (6), 83 $[C_4H_7CO]^+$ (100), 55 $[83\text{-}CO]^+$ (52); ^1H nmr ($CDCl_3$, 70°, 400 MHz, TMS as internal standard) 2.90 (m, H-2), 2.73 (d, H-5), 4.88 (d, H-6), 4.87 (d, H-8), 2.80 (dd, H-9), 2.36 (br d, H-9), 4.86 and 4.82 (d, H-13), 1.67 (s, H-14), 1.60 (br s, H-15), 2.06 and 2.05 (s, OAc), Otigl 6.90 br q, 1.83 br s (*J*[Hz]:5,6=9; 8,9=7; 9,9′=15; 13,13′=12).

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