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Terpenoids from *Conyza Linifolia*

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From the terpenoid extract of *Conyza linifolia* a rare daucane, an eudesmanolide and a triterpene were isolated.

Conyza (Family Asteraceae, tribe Astereae) is a genus with about 50 species and is distributed in the tropical regions[1]. It has been placed in the subtribe *Conyziinae* and close to *Microglossa* and *Nidorella*. The genus is known to produce acetylenes and diterpenes[2–4]. While triterpenes, flavones and coumarins were reported from some species[5]. Previously, we reported a new glucoside form *Conyza linifolia*[6], and reinvestigation of the species afforded a sesquiterpene with a rare skeleton, an eudesmanolide and a triterpene.

The present paper reports the isolation and structural elucidation of three terpenoid compounds from the leaves of *C. linifolia*. The structures were established by spectroscopic techniques as 10-oxo-isodauc-3-ene-15-al (**1**), taurin (**2**) and 23-hydroxyerthrodiol (**3**).

The aerial parts of *C. linifolia* (Willd.) Tackh. (= *Erigeron bonariensis* L.) were collected from El-Minia University campus in April 1987. A voucher specimen was deposited in the Herbarium of the University of Egypt. The ground aerial parts (600 g) were extracted with MeOH:Et_2O:PE (1:1:1) and the extract was separated by CC (Silica gel), TLC and HPLC to give 10 mg **1**, 15 mg **2** and 6 mg **3**.

Compound (1)

The structure of **1** was deduced from the ^{1}H-NMR spectrum. The aldehydic proton appeared as a sharp singlet at δ 9.34. Spin decoupling allowed the assignment of all signals. The olefinic double doublet at δ 6.63 which is assigned to H-4 showed a coupling with a signal at δ 2.53, H-5, and a small coupling with H-2 at δ 2.45. In addition the multiplet at δ 2.71 was typical for a methylene group adjacent to a keto group. The other signals agreed with a compound previously isolated from *Chromolaena laevigata*[7]. The structure of **1** was further supported by ^{13}C-NMR which is reported for the first time.

10-Oxo-isodauc-3-ene-15-al **1**: IR $\nu_{max}^{CHCl_3}$ cm^{-1}: 2750, 1670, 1700. MS m/z (rel. int.) 243 $[M]^+$ (50), 219 $[M—CH_3]^+$ (22), 191 $[M—C_3H_7]^+$ (100), 163

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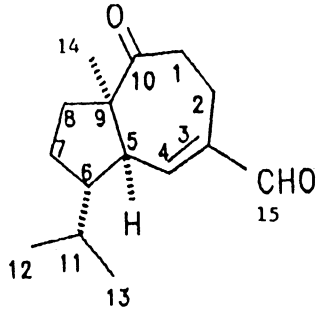
[191—CO]$^+$ (83), 151 (95). ^{1}H-NMR (400 MHz, $CDCl_3$, δ-values: 9.34 (S, H-15), 6.63 (1H, dd, J = 6 and 1.5 Hz, H-4), 2.8–2.71 (2H, m, H-1), 2.53 (1H, dd, J = 9 and 5 Hz, H-5). 2.45 (2H, m, H-2), 2.20 (1H, ddd, J = 6, 10 and 14 Hz, H-8), 1.86 (1H, m, H-7), 1.82 (1H, ddd, J = 7, 7 and 9 Hz, H-6), 1.65 (1H, m, H-11), 1.43 (1H, m, H-7), 1.42 (1H, m, H-8), 1.31 (3H, S, H-14), 0.93 (6H, d, J = 7 Hz, H-12 and H-13). ^{13}C-NMR (100.6 MHz, $CDCl_3$, δ-value): 38.9 (C-1, t), 35.1 (C-2, t), 143.7 (C-3, s), 158.5 (C-4, d), 55.4 (C-5, d), 53.2 (C-6, d), 19.7 (C-7, t) 26.7 (C-8, t), 59.6 (C-9, s), 212.1 (C-10, s), 32.3 (C-11, d), 21.9 (C-12, q), 19.4 (C-13, q), 25.0 (C-14, q), 192.7 (C-15, d), some signals may be



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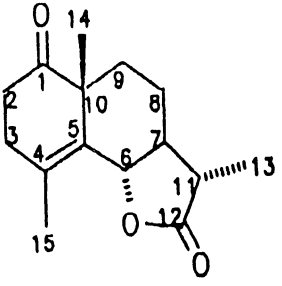

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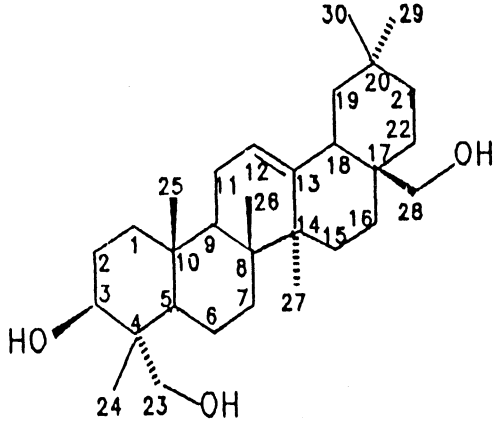

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interchangeable.

Compound (2)

The ^{1}H-NMR of **2** suggested that we were dealing with eudesmanolide skeleton. The IR, MS and ^{1}H-NMR spectral data were consistent with taurin[8].

Taurin **2**: IR $\nu_{max}^{CHCl_3}$ cm^{-1}: 1770, 1700, 1200, 1480, MS m/z (rel. int.) 248

$[M]^+$ (35), 233 $[M—CH_3]^+$ (10), 220 $[M—CO]^+$ (16), ^{1}H-NMR (400 MHz, $CDCl_3$, δ-value): 4.59 (1H, brd, J = 12 Hz, H-6), 2.63 (1H ddd, J = 6, 7 and 13 Hz, H-2), 2.49 (1H, ddd, J = 7, 7 and 13 Hz, H-2'), 2.40–2.35 (2H, m, H-3), 2.30 (1H, m, H-11) 2.00 (1H, m, H-8), 1.96 (3H, br.s, H-15), 1.86 (1H, ddd, J = 4, 4 and 13 Hz, H-9), 1.73 (1H, dddd, J = 3.5, 12, 12 and 13 Hz, H-7), 1.61 (1H, m, H-8), 1.53 (1H, ddd, J = 4.5, 4.5 and 13 Hz), 1.32 (3H, s, H-14), 1.24 (3H, d, J = 7 Hz, H-13).

Compound (3)

Compound **3** showed a molecular ion at m/z 458 ($C_{30}H_{50}O_3$), indicating an oleanane triterpene with two hydroxylated methyl groups. The fragmentation pattern of MS and ^{1}H–NMR spectrum suggested that **3** is 23-hydroxyerthridiol[9].

23-Hydroxyerthridiol 3: IR$\nu_{max}^{CHCl_3}$ cm^{-1} 3510, 3460, 3430, 1725, 1340, MS m/z (rel. int.): 458 $[M]^+$ (5), 440 $[M—H_2O]^+$ (5) 427 $[M—CH_2—CH_2—OH]^+$ (3), 409 $[440—CH_2—OH]^+$ (6), 205 (15), 203 (30) 149 (70). ^{1}H-NMR (400 MHz, $CDCl_3$, δ-value): 5.26 (1H, t, J = 3.5 and 3.5 Hz, H-11) 3.74 (1H d, J = 10 Hz, H-23), 3.65 (1H, dd, J = 7 and 9 Hz, H-3), 3.55 (1H, d, J = 11, Hz, H-28), 3.44 (1H, d, J = 10 Hz, H-23), 3.21 (1H, d, J = 11 Hz, H-28), 1.15 (3H, s), 0.98 (3H, s), 0.94 (3H, s), 0.91 (3H, s), 0.88 (3H, s), 0.87 (3H, s).

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