TERPENOIDS AND TRIYNEPOXIDE FROM THE AERIAL PART OF *Rhantherium adpressum*

M. Bouheroum,[1] S. Benayache,[1] F. Benayache,[1] L. Zaiter,[1] J. M. Barrera,[2] and L. Francisco[1]

UDC 547.913

Rhantherium adpressum (*Compositae*) is an endemic and desert plant found in north algerian sahara (Ouargla Algeria) [1], commonly known as Aarfadj and used in folk medecine as an anti-diuretic. Herein, we present the study results on the chemical composition of this plant, which has not been investigated previously. The aerial parts of *Rhantherium adpressum* (flowers and leaves) were collected in the region of Ouargla on May 2003 and was authenticated by Pr. A. Kaabeche (Biology department, University of Setif Algeria), dried, and (950 g) extracted with MeOH/H_2O (80/20, v/v) three times during twenty four hours. The solution was concentrated and extracted with solvents starting with $CHCl_3$, AcOEt, and *n*-BuOH.

A 12 g portion of the chloroform extract chromatographed on a silica gel (230–400 mesh) column using hexane–AcOEt as eluent yielded 24 fractions. The isolated compounds were purified on silica gel TLC plates using as eluents hexane–AcOEt, PhMe–$CHCl_3$, PhMe–AcOEt, and hexane–CH_3COCH_3.

***β*-Eudesmol (1)**, $C_{15}H_{26}O$, mp 58–59°C ([2]: 58–59°C), ^{1}H NMR (400MHz, $CDCl_3$, δ, ppm, J/Hz): 1.98 (H_a, m, H-3), 2.30 (H_b, m, H-3), 4.40 (H_a, m, H-15), 4.70 (H_b, d, J = 1.5, H-15). ^{1}H NMR spectra corresponds to the one described in [3].

^{13}C NMR (100 MHz, $CDCl_3$): 16.3 (C-14), 22.4 (C-8), 23.5 (C-2), 25.0 (C-6), 27.2 (12 or C-13), 35.9 (C-3), 36.9 (C-10), 41.2 (C-1 or C-5), 72.9 (C-11), 105.3 (C-15). ^{13}C NMR spectra as described in [3, 4].

Mass spectrum (EI, 70 eV), *m/z* (I_{rel}, %): 222.20 $[M]^+$ (4.55), 204 $[M-18]^+$ (5.76), 189 $[M-33]^+$ (9.27), 164 $[M-58]^+$ (45.17), 149 (65.05), 59 (100%) as described in [3, 4].

16*β*-Hydroxylupeolyl-3-hexadecanoate (2), $C_{46}H_{80}O_3$ mp 70–72°C, ^{1}H NMR (400 MHz, $CDCl_3$, δ, ppm, J/Hz): 1.70 (3H, s, CH_3), 2.32 (2H, t, J = 7.5, CH_2), 3.62 (H, dd, J = 4.6, J = 10.5, H-16), 4.48 (H, dd, J = 4.6, J = 11.1, H-3), 4.52 (H, dd, J = 1.1, J = 2.5, CH), 4.63 (H, d, J = 2.5, CH). ^{1}H NMR spectra corresponds to the one described in [5].

^{13}C NMR (100 MHz, $CDCl_3$) as described in [5], 77.11 (C-16), 80.93 (C-3), 110.121 (C-29), 50.36 (C-20), 174.25 (C-1′).

Mass spectrum (EI, 70 eV), *m/z* (I_{rel}, %): 680.78 $[M]^+$, 424.5 $[M-256]^+$ (28.18), 216.2 (33.33), 203.18 (54.32), 189.16 (98.14), 109.09 (77.72), 95.08 (88.43), 69.08 (100).

Stigmasterol (3), $C_{29}H_{48}O$, mp 162–164°C ([6]: 163–164°C), The ^{1}H NMR (400 MHz, $CDCl_3$, δ, ppm, J/Hz) as described in [7]: 1.00 (3H, s, CH_3-19), 1.16 (2H, m, H_2-28), 1.56 (H, m, H-25), 1.82 (H, m, H-24), 2.02 (H, m, H-20), 3.52 (H, m, H-3) 5.04 (H, dd, J = 8.2, J = 15.18, H-23), 5.18 (H, dd, J = 8.2, J = 15.18, H-22), 5.35 (H, dd, J = 7.6, br.s, H-6).

^{13}C NMR (100 MHz, $CDCl_3$) as described in [7]: 11.2 (C-18), 11.8 (C-26 or C-27), 12.0 (C-29), 18.7 (C-21), 20.8 (C-19), 21.0 (C-28), 24.1 (C-15), 28.7 (C-16), 31.4 (C-25), 36.3 (C-20), 39.4 (C-12), 42.0 (C-4), 49.9 (C-24), 56.6 (C-14), 77.2 (C-3), 121.5 (C-23), 129.0 (C-22).

Mass spectrum (EI, 70 eV), *m/z* (I_{rel}, %) in comparison with [6]: 412.35 $[M]^+$ (65.70), 369.35 (17.05), 351.29 (22.66), 314.25 (9.36), 300.23 (24.88), 255.20 (72.21), 55.02 (100).

(+)-3-[3′-(Nona-1″-en-3″,5″,7″-trynyl)oxiran-2′-yl] propan-2-ol (4) as in [8], $C_{14}H_{14}O_2$, mp 94–95°C, $[\alpha]_D^{25}$ +16°. The IR (cm^{-1}): 1620 (C=C), 2221.6 (C≡C), 3269.0, 3330.8 (C=C–C), 3409.9 (C–OH).

^{1}H NMR (400 MHz, $CDCl_3$, δ, ppm, J/Hz): 1.46 (H_a, m, H-3), 1.69 (2H, m, H-2), 1.97 (3H, s, CH_3-9″), 2.11 (H_b, m, H-3), 3.35 (H_a, m, CH_2), 3.37 (H, m, H-2′), 3.55 (H, m, H-3′), 3.85 (H_a, m, H-1), 3.94 (H_b, m, H-1), 5.80 (H, ddd, J = 0.53, J = 1.57, J = 16.06, H-2″), 6.48 (H, dd, J = 5.47, J = 16.04, H-1″).

1) VAREN Laboratory, University Mentouri of Constantine, route Ain El Bey, Constantine Algeria, tel/fax: 213 31 81 88 83, e-mail: bouheroum@hotmail.com; 2) Intituto de Productos Naturales y Agrobiologia, University of Laguna, Tenerife, Spain. Published in Khimiya Prirodnykh Soedinenii, No. 1, p. 92, January-February, 2007. Original article submitted November 22, 2005.

 0009-3130/07/4301-0110

^{13}C NMR (100 MHz, $CDCl_3$): 4.5 (C-9″), 25.2 (C-3), 32.4 (C-2), 59.0 (C-3′), 64.9 (C-2′), 67.3 (C-1), 67.4 (C-5″), 70.0 (C-8″), 73.6 (C-7″), 75.4 (C-3″), 78.2 (C-4″), 81.9 (C-6″), 110.1 (C-2″), 145.7 (C-1″).

Mass spectrum (EI, 70 eV), *m/z* (I_{rel}, %): 214.08 $[M]^+$ (38.71), 143.06 $[M-70]^+$ (58.74), 115.07 $[M-99]^+$ (96.61), 100.06 (100), 71.03 (76.26).

ACKNOWLEDGMENT

Thanks are due to Drs. J. Bermejo Barrera and Francisco Leon of the Instituto de Productos Naturales y Agrobiologia at the University of Laguna (Tenerife, Spain) for their precious help.

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