

N, 4.56%). No m.p. depression was observed upon admixture with authentic candicine iodide. R_f s (System 2) and IR spectra (KBr discs) were identical, with strong absorption at 3300–3200 (phenolic O–H), 1220 (amine C–N), 1200 (C–OH), and 835 cm^{-1} (1,4-disubstituted benzene ring).

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Key Word Index—*Trichocereus chilensis*; Cactaceae; alkaloids; candicine.

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COMPOSITAE

TERPENOIDS OF *CENTAUREA AMERICANA**¹

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Plant. *Centaurea americana*. **Uses.** In folk medicine. **Previous work.** On sister species.^{1–6} **Aerial parts.** From 700 g of the aerial part of *C. americana*: 21 g of resinous material were extracted with CHCl_3 , this solution was chromatographed on an inverted column. The elution of each fraction was with successive portions of CHCl_3 , acetone and ethanol. The NMR of the CHCl_3 extract exhibited the typical signals of a germanicrol type of sesquiterpenelactone. The following compounds were obtained.

β -Sitosterol. Identified by mixed m.p. IR, UV, NMR and co-TLC, of the sterol and its acetate. Acetate of a triterpene of the β -amyrin type; $\text{C}_{32}\text{H}_{52}\text{O}_2$ (M^+ 468 by mass spectroscopy). Found, C, 80.18; H, 10.84; O, 8.18; Calcd. C, 81.99; H, 11.18, O, 6.83, m.p. 183°, $[\alpha]_{589} + 84.5^\circ$; $[\alpha]_{546} + 102.4^\circ$; $[\alpha]_{436} + 176.4^\circ$; (Chl) L-B negative, TNM; positive, IR, 2940, 2880, 1740, 1630, 1460, 1440, 1375–1365, $(\text{CH}_3)_2\text{C}$, 1250, 1020, cm^{-1} . On saponification, alcohol, m.p. 138–140°. $[\alpha]_{589} + 28.8^\circ$; $[\alpha]_{578} + 34.8^\circ$, $[\alpha]_{546} + 37.8^\circ$ (Chl) IR, 2920, 2840, 1630, 1450; 1380, 1360, 1040 cm^{-1} . On oxidation of the alcohol, a ketone was obtained, m.p. 222–226°. IR, 2920, 2850, 1690 ($\text{C}=\text{O}$) 1460, 1385 and 1375 cm^{-1} .

New compound: $\text{C}_{28}\text{H}_{38}\text{O}_{10}$. Found, C, 62.65; H, 6.65; H, 6.92; O, 30.14; Calcd. C, 62.91; H, 7.17; O, 29.93. m.p. 355–360°, IR, 3450, 2930, 2850, 1755, 1720, 1640, 1450, 1430, 1390, 1260, 1145, 1050–1010, 950, 900, 800, 750 cm^{-1} . NMR, 6.6 (m) S.

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Key Word Index—*Centaurea americana*; Compositae; sterols; β -sitosterol.

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FLAVONE-C-GLYCOSIDES IN A COASTAL RACE OF *GAILLARDIA PULCHELLA*

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Plant. *Gaillardia pulchella* Foug. (coastal race). **Source.** Collected by Dr. McDaniel in 1967; highway A1A, South of St. Augustine, Florida. **Previous work.** None on flavonoids, sesquiterpene lactones and sesquiterpene lactone alkaloids.¹

Compounds isolated. Swertisin (7-*O*-methylsaponaretin), saponaretin, vitexin and orientin were isolated from the methanolic extracts of the plant by the methods described previously² and identified by direct comparison with authentic material by mixed m.p., co-chromatography (TLC, 3 solvents), UV and IR analysis.

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Key Word Index—*Gaillardia pulchella*; Compositae; flavone-C-glycosides; swertisin; isovitexin; vitexin; orientin.

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EUPHORBIACEAE

FRIEDELIN DERIVATIVES FROM *PHYLLANTHUS MUELLERIANUS*

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