ECDYSTEROIDS AND IRIDOIDAL GLYCOSIDES FROM *Vitex agnus-castus*

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The isolation from plants of the *Vitex* genus of ecdysteroids and iridoids has been reported [1-6]. We studied leaves (2 kg) of *Vitex agnus-castus*. The air-dried ground leaves were extracted with ethanol.

The alcohol extracts were condensed, diluted with water (0.5 L), and treated successively with $CHCl_3$ and ethylacetate (6 × 500 mL) and then butanol (4 × 300 mL). The ethylacetate fraction after removal of solvent was chromatographed over a column of Al_2O_3 by $CHCl_3$:CH_3OH (9:1) to afford compounds **1** and **2**.

Compound 1, $C_{29}H_{46}O_8$, mp 196-198°C (acetone), $[\alpha]_D^{22}$ +59.8° (methanol). The IR spectrum of **1** contains absorption bands (cm^{-1}) at 3430 (OH), 1670 (7-en-6-ketone), and 1730 and 1275 (ester).

The PMR spectrum of **1** exhibits a signal for the acetyl methyl at 1.79 ppm.

Comparison of the PMR, IR, and mass spectra with those in the literature and the R_f value on TLC with an authentic sample identified **1** as viticosterone E [1, 2].

Compound 2, $C_{27}H_{44}O_6$, mp 241-242°C (acetone), $[\alpha]_D^{22}$ +63.2° (methanol).

The IR spectrum of **2** contains absorption bands (cm^{-1}) characteristic of ecdysteroids at 3470 (OH) and 1665 (7-en-6-ketone). The UV spectrum of **2** has a maximum at 245 nm (log ε 4.15).

The mass spectrum of **2** exhibits peaks for ions with *m*/*z* 462 [M - H_2O], 444, 426, 408, 363, 345, 327, 309, 300, 99, 81, and 69, the mass numbers of which coincide with fragments of ecdysterone [7].

The physicochemical constants and spectral properties of **2** indicate that it is identical to ecdysterone [8-10].

Further elution of the column with $CHCl_3$:CH_3OH:H_2O (4:1:0.1) produced compounds **3** and **4**.

Compound 3, $C_{17}H_{26}O_{11}$, mp 154-156°C, $[\alpha]_D^{20}$ -131° (methanol). The IR spectrum of **3** showed absorption bands (cm^{-1}) at 3400-3500 (OH), 1650 (C-3—C-4 double bond), and 1710 (ester).

The physicochemical constants and spectral (PMR and ^{13}C NMR) properties of **3** indicate that it is identical to 8-O-acetylharpagide [5].

Compound 4, amorphous, $[\alpha]_D^{20}$ -154°. The IR spectrum contains absorption bands (cm^{-1}) at 3300-3500 (OH) and 1655.

Comparison of the constants and spectral (PMR and ^{13}C NMR) properties with the literature [9, 10] identified it as harpagide [6].

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