

PHYTOECDYSTEROIDS FROM *Serratula coronata* AND *Silene longicalycina*

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UDC 547.926

In continuation of research on the phytoecdysteroid content of plants, we studied the aerial parts of *Serratula coronata* (Compositae) collected in Alma-Ata during budding [1, 2] and *Silene longicalycina* Kom. [3].

Pure compounds from *Serratula coronata* were isolated after the usual workup of the methanol extract and chromatographic separation. Four pure compounds were isolated. Their IR spectra had characteristic absorptions for ecdysteroids at 3400 (OH) and 1670 (7-en-6-ketone).

Compound 1, C₂₉H₄₆O₈, mp 195-196°C, [α]_D²⁰ +59°.

Compound 2, C₂₇H₄₄O₆, mp 236-238°C (methanol:water), [α]_D²⁰ +63.6° (methanol). Mass spectrum (*m/z*): 464 [M]⁺, 446, 431, 428, 413, 410, 395, 377, 359, 348, 330, 315, 301, 300, 99, 81.

Compound 3, C₂₇H₄₄O₈, mp 152-154°C, [α]_D²⁰ +93.2° (methanol). Mass spectrum (*m/z*): 478 [M - H₂O]⁺, 460, 442, 424, 379, 361, 343, 325. These are consistent with four hydroxyls in the steroid core [5].

The chemical shifts in the PMR spectrum agree with those for polypodine B.

Compound 4, C₂₇H₄₄O₇, mp 241-242°C (acetone), [α]_D²² +63.2° (methanol). UV spectrum (λ_{max}, nm): 245.

Comparison of the PMR, IR, and mass spectra with those in the literature and *R_f* values (TLC) with authentic samples of **1-4** identified them as viticosterone E [1], α-ecdysone, polypodine B [4, 5], and ecdysterone, respectively.

Polypodine B was isolated for the first time from *S. coronata*.

Ground leaves (500 g) of *Silene longicalycina* Kom. were extracted with ethanol. The alcohol extract was condensed, diluted with water (0.2 L), and treated successively with CHCl₃ and ethylacetate (6 × 200 mL). The ethylacetate fraction was evaporated and chromatographed over an Al₂O₃ column with elution by CHCl₃:CH₃OH (15:1) to afford **5-7**.

The IR spectra of **5-7** exhibited characteristic absorptions of ecdysteroids at 3470 (OH) and 1665 cm⁻¹ (7-en-6-ketone).

Compound 5, C₂₇H₄₄O₅, mp 235-236°C (aqueous ethanol). UV spectrum (λ_{max}, nm, EtOH): 245 [3].

Compound 6, C₂₄H₄₄O₆, mp 254-255°C (aqueous ethanol) [3]. UV spectrum (λ_{max}, nm): 246.

Compound 7, C₂₇H₄₄O₆, mp 241-242°C (acetone). Mass spectrum (*m/z*): 462 [M - H₂O]⁺, 444, 426, 408, 363, 345, 327, 309, 300, 99, 81, 69.

Comparison of IR and mass spectra with those in the literature and *R_f* values (TLC) with authentic samples identified **5** as 2-deoxy-α-ecdysone [3]; **6**, 2-deoxyecdysterone [3]; and **7**, ecdysterone [4, 6]. Compounds **5** and **6** were isolated from this plant for the first time.

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