

The flowers of *Centaurea cyanus* (cornflower centaurea) are used in medicine as a diuretic and, in addition, they possess antiinflammatory, antimicrobial, and slight cholagogic properties [1].

In studying the chemical composition of the flowers of cornflower centaures, we detected in them a considerable amount of phenolcarboxylic acids. There is no information in the literature on the presence of these compounds in cornflower centaurea, and we have therefore investigated the compounds of this group.

The comminuted flowers of cornflower centaurea gathered in July, 1984, were exhaustively extracted with 80% ethanol. The extract obtained was concentrated in vacuum and treated with ether, and then the phenolcarboxylic acids were extracted with ethyl acetate.

The ethyl acetate extracts were evaporated to an aqueous residue and deposited on a column of polyamide sorbent, the eluents used being distilled water and aqueous ethanol of various concentrations. All the substances isolated gave positive reactions for phenolcarboxylic acids [3-5].

Substance (I) - $C_{16}H_{18}O_9$, mp 204-207°C; $[\alpha]_D^{20}$ -31.6° (c 1.00; methanol); R_f 0.73 [system 1 - butan-1-ol-acetic acid-water (4:1:5)], 0.56 (system 2 - 2% CH_3COOH), 0.55 (system 3 - 0.1 N hydrochloric acid). UV spectrum: λ_{max} 245, 325 nm.

On fusion with KOH, protocatechuic acid was formed [2]. Alkaline hydrolysis [2] gave caffeic and D-quinic acids, which were present in equimolar amounts. A mixed melting point of substance (I) with an authentic sample of chlorogenic acid showed no depression.

Substance (II) - $C_{16}H_{18}O_9$, amorphous; $[\alpha]_D^{20}$ +3.8° (c 1.00; methanol); R_f 0.67 (system 1), 0.75 (system 2), 0.70 (system 3). UV spectrum: λ_{max} 245, 328 nm. Fusion with KOH formed protocatechuic acid. Alkaline hydrolysis yielded caffeic and D-quinic acids in equimolar amounts. When it was chromatographed on paper in various solvent systems with an authentic sample of neochlorogenic acid a single spot was obtained.

Substance (III) - $C_9H_8O_4$, mp 194-196°C; R_f 0.81 (system 1), 0.29 (system 2), 0.32 (system 3). UV spectrum: λ_{max} 245, 325 nm. Fusion with KOH formed protocatechuic acid [3]. A mixture of substance (II) with an authentic sample of caffeic acid showed no depression of the melting point.

This is the first time that phenolcarboxylic acids have been detected in the flowers of cornflower centaurea.

LITERATURE CITED

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