PHENOLIC COMPOUNDS OF Cicer arietinum

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The isolation from the epigeal part of Cicer arietinum L. (gram chickpea, family Fabaceae) of flavones, flavonols, and isoflavones and their glycosides has been reported previously [1]. In the present communication we give the results of a further chemical study of gram chickpea growing as a crop within Krasnodarsk Territory.

The comminuted herbage was exhaustively extracted with 70% alcohol in an apparatus of the Soxhlet type. The alcoholic extract was evaporated to an aqueous residue and was treated successively with chloroform and ethyl acetate. The concentrated chloroform and ethyl acetate extracts were chromatographed on columns of polyamide sorbent with the use as eluents of chloroform–ethanol and water–ethanol mixtures having increasing concentrations of the latter component. This led to the isolation from the chloroform fraction and identication of substances (I) and (II) and from the ethyl acetate fraction of substances (III) and (IV).

Substance (I) – scopoletin, $C_{10}H_8O_4$, mp 202-204°C, λ_{max} 345, 299, 256, 230 nm [2].

Substance (II) – umbelliferone, $C_9H_6O_3$, mp 228-230°C, λ_{max} 330, 250 nm [2].

Substance (III) – ferulic acid, $C_{10}H_{10}O_4$, mp 168-170°C, λ_{max} 320, 235 nm [3].

Substance (IV) – isorhamnetin 3-O-β-D-glucopyranoside, $C_{22}H_{12}O_{12}$, mp 170-172°C, $[\alpha]_D^{20}$ −26.3° (c 0.5; ethanol), λ_{max} 360, 254 nm [4].

The structures of the compounds detected for the first time in a cultivated chickpea species were confirmed by the results of elementary analysis, UV and IR spectroscopies, and a study of the products of acid and enzymatic hydrolyses, and also by comparison with authentic samples.

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