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An investigation has been made of a free-flowing dark-colored water-soluble dry extract, possessing pronounced biological activity, of the epigeal part of *Odontites serotina* (Lam.) Dum. (red bartsia), family Scrophulariaceae. The plant was collected in the flowering phase in the environs of Ulan-Ude. A phytochemical study of this plant growing in the environs of Zaporozh'e has been made previously [1].

Two-dimensional paper chromatography in the solvent systems BAW (4:1:2) (1st direction) and 15%  $\text{CH}_3\text{COOH}$  (2nd direction) established the presence in the extract under investigation of more than 10 flavonoid glycosides consisting of flavone derivatives. When 2%  $\text{CH}_3\text{COOH}$  was used as the solvent system in the second direction, the presence of not less than five hydroxycinnamic acids was shown.

In addition to phenolic compounds, one-dimensional paper chromatography of the extract in the solvent system BAW (4:1:2) showed the presence of not less than ten iridoids, certain of them showing a strong blue-green coloration with the Stahl reagent and others a yellow-orange color with a lemon-yellow fluorescence in UV light after treatment with the Bacon-Edelman reagent.

By fractional extraction with ethyl acetate, column chromatography on Kapron using mixtures of water and ethanol and chloroform and ethanol for elution, and preparative chromatography we isolated eight substances (I-VIII) in the individual state.

Substance (I),  $\text{C}_9\text{H}_8\text{O}_4$ , mp 195-197°C (aqueous methanol) gave positive color reactions and the absorption in the UV region that are characteristic for hydroxycinnamic acids. In UV light compound (I) fluoresced blue before treatment with ammonia vapor and brighter blue afterwards. Comparison with an authentic sample in the solvent systems BAW (4:1:2) ( $R_f$  value 0.81), 0.1 N HCl (0.30), and 2%  $\text{CH}_3\text{COOH}$  (0.28) enabled compound (I) to be identified as caffeic acid. Substance (II)  $\text{C}_{15}\text{H}_{10}\text{O}_5$ , mp 347-349°C, and substance (III),  $\text{C}_{15}\text{H}_{10}\text{O}_6$ , mp 328-330°C, were identified as apigenin and luteolin.

Compound (IV) and (V) consisted of monoglycosides of substances (II) and (III). The products of acid hydrolysis and of enzymatic hydrolysis with a preparation of the fungus *Aspergillus oryzae* of substances (IV) ( $\text{C}_{21}\text{H}_{20}\text{O}_{10}$ , mp 255-257°C) and (V) ( $\text{C}_{21}\text{H}_{20}\text{O}_{11}$ , mp 252-254°C) showed the presence of apigenin and luteolin, respectively, and of D-glucose in both cases. On the basis of the results of investigations in the UV region with the addition of diagnostic reagents, substance (IV) was characterized as apigenin 7- $\beta$ -D-glucoside and (V) as luteolin 7- $\beta$ -D-glucoside.

It must be mentioned that apigenin and luteolin glycosides predominate in the preparation. In addition to these, glycosides of another two, unidentified, aglycones were detected in minor amounts. As a result of physicochemical investigations, substances (VI),  $\text{C}_{15}\text{H}_{22}\text{O}_9$ , mp 180-182°C (ethanol-acetone (1:3)), (VII),  $\text{C}_{24}\text{H}_{28}\text{O}_{11}$ , mp 145-147°C, and (VIII),  $\text{C}_{15}\text{H}_{22}\text{O}_{10}$ , mp 203-205°C (methanol) were identified as aucubin, aucubin 6-p-hydroxycoumarate, which has previously been named odontoside [1], and catalpol, respectively.

No fundamental differences were observed between the set of phenolic and iridoid compounds of the epigeal parts of populations of red bartsia growing in the environs of Zaporozh'e and of Ulan-Ulé.

## LITERATURE CITED

1. A. V. Degot', A Phytochemical Investigation of Some Representatives of the Family Scrophulariaceae [in Russian], Author's Abstract of Candidate's Dissertation, Karkhov (1971).

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