THE FLAVONOIDS OF Scutellaria galericulata

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The results of investigations of the chemical composition of *Scutellaria galericulata* L. are extremely contradictory [1-4].

We have studied specimens collected in the flowering phase (June-July, 1972-1973) in the environs of Ogre and of Tukums and in the Ventspils region of the Latvian SSR (roots, stems, leaves, and flowers). The chemical composition of the phenolic compounds was analyzed by paper chromatography of the individual purified fractions before and after acid hydrolysis. The substances were separated by fractionation according to their solubility in water and in mixtures of ethyl acetate with ethanol, in dimethylformamide and mixtures of it with water, and in ethyl acetate, and also by column chromatography on polyamide. A total of nine flavonoid aglycones (I-IX) and nine of their glycosides (X-XVIII) were detected, isolated, and identified. The main procedures that we used have been described in previous papers [1, 2, 5, 6].

Flavonoid aglycones and glycosides: chrysin (I), C15H1004, mp 288-290°C; chrysin 7glucuronide (X), C₂₁H₁₈O₁₀, mp 222-224°C, [a]²⁰ -56° (c 0.5; dimethylformamide); baicalein grucuronide (A), $C_{21}H_{18}O_{10}$, mp 222-224°C, $[\alpha]_D^{2\circ} \rightarrow 56^{\circ}$ (c 0.5; dimethylformamide); baicalein (II), $C_{15}H_{10}O_5$, mp 260-262°C; baicalein 7-glucuronide (XI), $C_{21}H_{18}O_{11}$, mp 226-228°C, $[\alpha]_D$ -145° (c 0.5; dimethylformamide); oroxylin (III), $C_{16}H_{12}O_5$, mp 195-197°C; oroxylin 7-glucur-onide (oroxyloside) (XII), $C_{22}H_{20}O_{11}$, amorphous, $[\alpha]_D$ -15° (c 0.5; DMFA); wogonin (IV), $C_{16}H_{12}O_5$, mp 201-203°C; wogonin 7-glucuronide (wogonoside) (XIII), $C_{22}H_{20}O_{11}$, mp 194-196°C, $[\alpha]_D$ -14° (c 0.5; DMFA); apigenin (V), $C_{15}H_{10}O_5$, mp 345-347°C; apigenin 7-glucuronide (XIV), C₂₁H₁₈O₁₁, amorphous; scutellarein (VI), C₁₅H₁₀O₆, mp 348-350°C; scutellarein 7-glucuronide (scutellarin) (XV), C21H18O12, melting point not determined, recrystallization and decomposition being observed at 200-210°C, $[\alpha]_D$ -80° (c 0.5; DMFA); luteolin (VII), C₁₅H₁₀O₆, mp 327-329°C; luteolin 7-glucuronide (XVI), C21H18012, amorphous; 6-hydroxyluteolin (VIII), C15H1007, amorphous; 6-hydroxyluteolin 7-glucuronide (XVII), C21H18013, amorphous; dihydrobaicalein (IX), $C_{15}H_{10}O_5$, amorphous; and dihydrobaicalein 7-glucuronide (XVIII), $C_{21}H_{20}O_{11}$, amorphous. These substances are distributed in the organs in the following way: in the roots - predominantly (I), (X), (II), (XI), (III), (XII), (IV), and (XIII); in the stems their composition is close to that in the roots, but (V), (XIV), (VI), and (XV) were also detected; in the leaves the whole complex exists with the exception of the methylated derivatives (III, IV, XII, and XIII); and the leaves contain mainly (V), (VII), (XIV), and (XVI), together with an appreciable amount of (I) and (X). From the epigeal part we isolated preparatively about 5% of flavonoid glucuronides, the content of substances extracted by water being about 40%. After separation on chromatograms, in the epigeal part of S. galericulata we found spectrophotometrically, as described previously [7], about 2% of (X) and 3% of (XI).

Thus, the *S. galericulata* from the Baltic region contains chrysin 7-glucuronide. However, in addition to this glycoside there is a whole complex of other flavonoids that have not been reported for this species.

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