

## PHENOLIC COMPOUNDS OF *Scutellaria iscanderi*

A. I. Ismailov, A. K. Karimdzhanov, T. Khudaibergenov,  
V. I. Latvinenko, and T. P. Popova

UDC 547.972

The genus *Scutellaria* (skullcap) from the family Labiatae is extremely numerous and has a wide area of distribution. Flavonoid compounds have been isolated from various skullcap species [1, 2].

We are the first to have made a chemical study of the phenolic compounds of *Scutellaria iscanderi* fuz. We investigated the leaves, stems, and roots of this plant collected in 1991.

In the roots we found 15.4%, in the stems 15.7%, and in the leaves 22.1% of extractive substances. Flavonoids were extracted from the finely ground plant with 70% aqueous acetone. The extract obtained was evaporated under vacuum, and the flavonoid aglycons and their glycosides were separated by chromatography on columns of polyamide sorbent, using as eluents chloroform, ethanol, and mixtures of them in various ratios.

By chromatographing the total flavonoids of *Sc. iscanderi* we isolated in individual form five aglycons (compounds (1)-(5)). From the roots we isolated compound (1) with mp 260-262°C, C<sub>15</sub>H<sub>10</sub>O<sub>5</sub>, compound (2) with mp 201-203°C, C<sub>16</sub>H<sub>12</sub>O<sub>5</sub>, and compound (3) with mp 195-197°C, C<sub>16</sub>H<sub>12</sub>O<sub>5</sub>; from the stems, in addition to compounds (1)-(3), we isolated compound (4) with mp 345-347°C, C<sub>15</sub>H<sub>10</sub>O<sub>5</sub>; and from the leaves, compound (4) and compound (5) with mp 328-330°C, C<sub>15</sub>H<sub>10</sub>O<sub>6</sub>.

The structures of the compounds isolated were established by chemical investigations: (1) — 5,6,7-trihydroxyflavones (baicalein), (2) — 5,7-dihydroxy-8-methoxyflavone (wogonin); (3) — 5,7-dihydroxy-6-methoxyflavone (oroxylin); (4) — 4',5,7-trihydroxyflavone (apigenin); and (5) — 3',4',5,7-tetrahydroxyflavone (luteolin).

In addition to these aglycons, from the roots of *Sc. iscanderi* we isolated three glycosides: compound (6) with mp 226-228°C, C<sub>21</sub>H<sub>18</sub>O<sub>11</sub>, [α]<sub>D</sub><sup>20</sup> -147° (c 1; DMFA); (7) with mp 194-196°C, C<sub>22</sub>H<sub>20</sub>O<sub>11</sub>, [α]<sub>D</sub><sup>20</sup> -10° (c 1; DMFA); and (8) with mp 200-202°C, C<sub>22</sub>H<sub>20</sub>O<sub>11</sub>, [α]<sub>D</sub><sup>20</sup> -15.0° (c 1; DMFA). From the stems, in addition to compounds (6)-(8) we isolated another two glycosides: compound (9) with mp 173-176°C, C<sub>21</sub>H<sub>18</sub>O<sub>11</sub>, [α]<sub>D</sub><sup>20</sup> -115° (c 1; DMFA) and compound (10) with mp 192-195°C, C<sub>21</sub>H<sub>18</sub>O<sub>12</sub>, [α]<sub>D</sub><sup>20</sup> -98° (c 1; DMFA). Compounds (9) and (10) were also isolated from the leaves.

Compound (6) was baicalein 7-O-glucuronide (baicalin); (7) — wogonin 7-O-glucuronide (wogonoside); (8) — oroxylin 7-O-glucuronide (oroxyloside); (9) apigenin 7-O-glucuronide; and (10) — luteolin 7-O-glucuronide.

Flavonoids were determined quantitatively by spectrophotometry at λ 275 nm and were calculated as baicalin, taken as standard.

## REFERENCES

1. N. P. Beshko, É. V. Gella, V. I. Litvinenko, and I. L. Kovalev, *Khim. Prir. Soedin.*, 514 (1979).
2. R. M. Murodov, Sh. V. Abdullaev, T. P. Popova, and V. I. Litvinenko, *Khim. Prir. Soedin.*, 546 (1990)

---

Institute of the Chemistry of Plant Substances, Academy of Sciences of the Republic of Uzbekistan, Tashkent, fax (3712) 89 14 75. Translated from *Khimiya Prirodnikh Soedinenii*, No. 3, pp. 500-501, May-June, 1995. Original article submitted November 7, 1994.