

## BASE FROM TELEKIA SPECIOSA

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From the epigeal parts of Telekia speciosa (Schreb.) Baumg. (family Compositae) collected in Georgia, 25-27 August we have isolated what is apparently a new alkaloid and have called it telekine.

The plant was extracted with 1% sulfuric acid. The acid extract was purified with ether. The mother liquor was made alkaline with 25% ammonia; the alkaloids were extracted successively with ether and chloroform. The bulk of the total alkaloids was obtained after the ethereal extract had been distilled.

The total alkaloids were dissolved in acetone and precipitated with ether (1:20). The precipitate was filtered off, washed, filtered with ether, and recrystallized from a mixture of acetone and ether (1:15). The plant contained 0.02% of telekine (on the weight of the dry plant), mp 170-171°C,  $R_f$  0.34 (on a paper chromatogram in the butanol-5% acetic acid system). IR spectrum:  $\lambda_{\max}$  3430 (s.)  $\text{cm}^{-1}$ , 2950 (s.), 2860 (s.), 1765 (s.), 1710 (w.), 1640 (s.), 1464 (s.), 1382 (s.), 1320 (w.), 1270 (w.), 1225 (w.), 1110 (w.), 980 (w.), 830 (w.), 790 (w.)  $\text{cm}^{-1}$ .

Found, %: C 62.64; 62.45; H 8.06; 7.86; N 3.36. Calculated for  $\text{C}_{22}\text{H}_{33}\text{O}_7\text{N}$ , %: C 62.41; H 7.89; N 3.31.

Telekine is readily soluble in acetone and hot ethanol and very sparingly in ether.

Telekine picrate, mp 150-151°C.

Found, %: N 8.35. Calculated for  $\text{C}_{22}\text{H}_{33}\text{O}_7\text{N} \cdot \text{C}_6\text{H}_2\text{OH}(\text{NO}_2)_3$ , %: N 8.51.

The ethereal mother liquor from the precipitation of telekine yielded an amorphous alkaloid (0.003% on the weight of the dry plant) with  $R_f$  0.86. Its picrate had mp 143-144°C.

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## AN INVESTIGATION OF THE ALKALOIDS OF THE FRUIT OF HAPLOPHYLLUM FOLIOSUM

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Continuing our study of the alkaloids of the plant H. foliosum Vved. (family Rutaceae), we have investigated the fruit of this plant at the stage of full ripeness collected on 29 July 1964 in the surroundings of the village of Alimtai (Tadzhik SSR).

For defatting, the comminuted fruit was steeped in gasoline, whereupon 0.3% of the total alkaloids passed into the solvent; these were shown to be a mixture of foliosidine and skimmianine, previously isolated from the epigeal part of this plant [1]. Since these alkaloids were extracted from the fruit without its being treated with ammonia they are apparently present in the seeds in the free state.

Then the fruit was treated with 8% ammonia and the alkaloids were exhaustively extracted with chloroform (18 decantations). The usual working up process gave 1.61% of a mixture of bases. Thus, the fruit contained 1.91% of total alkaloids.

The chloroform mixture of bases was separated into a phenolic and a nonphenolic fraction. Separation of the nonphenolic total alkaloids on alumina gave skimmianine, foliosidine, foliosine, and a base with mp 118-119°C which crystallized from acetone and ethyl acetate. The base gave a hydrochloride with mp 228-229°C, and a picrate with mp 175-176°C. When this base was dried in vacuum at 100°C for 8 hrs, its melting point rose to 141-142°C. The IR spectrum of the base lacked the band of a hydroxy group but had a band at 1625  $\text{cm}^{-1}$  with a low integral intensity, which is characteristic for derivatives of 4-quinolone [2]. Its NMR spectrum (taken by M. R. Yagudaev on a JNM-4H-100/100 MHz instrument in deuterochloroform) showed four signals with relative intensities of 1:8:1:3. In the weak-field region there was

a one-proton signal at  $\tau$  1.60 which is typical for H-5 (quadruplet  $J_{\text{ortho}} = 9$  Hz;  $J_{\text{meta}} = 2$  Hz) and a multiplet due to eight aromatic protons at  $\tau$  2.55. The large difference between the chemical shifts of the H-5 proton and the other aromatic protons ( $\Delta\tau$  95 Hz) shows that this compound is a derivative of 4-quinolone [3]. The presence in the spectrum of a one-proton singlet at  $\tau$  3.81 corresponding to the H-3 proton of the 4-quinolone nucleus [4] and of a three-proton singlet at  $\tau$  6.94 (N-CH<sub>3</sub> group) and also the absence of other signals from the spectrum, shows that the alkaloid has the structure of 1-methyl-2-phenyl-4-quinolone, which has been isolated from the plant Balfourodendron riedelianum [5] and obtained from 4-methoxy-2-phenylquinoline by an isomerization reaction [6].

The UV spectrum of the base that we isolated and its melting point correspond to those published for 1-methyl-2-phenyl-4-quinolone [6].

From the phenolic fraction of the total bases we isolated haplofoline and haplopine, which are present in the epigeal part of H. foliosum.

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#### THE ALKALOIDS OF THALICTRUM

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We have studied the fraction of quaternary bases obtained from the roots of four species of *Thalictrum*. The raw material was moistened with 10% ammonia and extracted with chloroform and then repeatedly with methanol. The methanolic extract was dried in vacuum and a solution of potassium iodide was added to the residue. The berberine iodide that deposited was separated off, and magnoflorine iodide was isolated from the mother liquor (table).

| Plant                                | Site and date of collection                   | Vegetation period | Content of alkaloid, %    |                  |                     |
|--------------------------------------|---|-------------------|---------------------------|------------------|---------------------|
|                                      |   |                   | sum of the tertiary bases | berberine iodide | magnoflorine iodide |
| <i>Th. foetidum</i> L.               | Susamy, 9 August 1965                         | Fruit-bearing     | 0.20                      | +                | 0.10                |
| <i>Th. isopyroides</i> C. A. M.      | Kyzylkumy, Kokchatau, 22 May 1964             | Necrosis          | 1.2                       | —                | 0.5                 |
| <i>Th. longipedunculatum</i> E. Nik. | Karkara, KirgSSR, 18 June 1967                | Flowering         | 0.5                       | 0.04             | 1.8                 |
|                                      | Nuratatau, 19 May 1967                        | Budding           | 1.1                       | 0.26             | +                   |
| <i>Th. minus</i> L.                  | Lyashkarak Tashkent oblast, 10 September 1964 | Necrosis          | 0.8                       | —                | 1.07                |
|                                      | Darbaz range, Pamirs, 18 June 1966            | Flowering         | 0.8                       | 0.1              | 1.4                 |

\*detected chromatographically

On the basis of our results and those given in the literature, we came to the conclusion that berberine and magnoflorine are characteristic for plants of the genus *Thalictrum*.

From the epigeal part of *Th. longipedunculatum* we isolated a small amount of thalictrinine [1, 2]. Recently, Bulgarian workers [3] have reported the isolation and the establishment of the structure of the new alkaloid thalfoetidine