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ALKALOIDS OF Thalictrum minus

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Continuing a study of the alkaloid composition of Thalictrum minus, we have investigated the roots, stems, seeds, and epigeal part of Th. minus L. from various growth sites. To isolate the individual bases we used column and thin-layer chromatography, and in addition to the alkaloids obtained previously [1] we isolated aromoline, thalbadenzine, corunnine, thalicsimidine, and N-methylargemonine. The results of the investigation are given below:

Site and date of collection	Plant organ	Total alkaloids, % on the weights of the dry raw material	Alkaloids
TadzhSSR, gorge of the R. Sagirdasht, July 10, 1974	Roots	0,71	Thalicsimidine
KirgSSR, Fergana range, May 29, 1975	Epigeal part	0,19	Thalicmine
TadzhSSR, gorge of the R. Sagirdasht, June 7, 1976	"	0,23	Thalmine, O-methyl-thalicberine
UzSSR, Tashkent province, Bol'shoi Chimgan, July 1976	Seeds	0,03	"
Ibid., May 24, 1977	Flowers	0,53	"
"	Roots	0,66	Thalicsimidine, glaucine, berberine, magnoflorine
TadshSSR, gorge of the R. Sagirdasht, June 17, 1977	"	0,39	Corunnine, thalicmidine
UzSSR, Tashkent province, valley of the R. Angren, May 31, 1979	Roots	1,00	Thalicminine, corunnine
UzSSR, Tashkent province, valley of the R. Angren, May 10, 1978	Epigeal part	0,86	Thalicmidine, thalmine, thalbadenzine, O-methyl-thalicberine
Ibid, May 31, 1979	Stems	0,06	O-Methyl-thalicberine, berberine
UzSSR, Dzhizak province, gorge of the R. Uvobsai, May 25, 1980	Epigeal part	0,74	Thalmine, thalbadenzine, O-methyl-thalicberine
TSSR, Kara-Kala region, June 1, 1980	Stems	0,08	Thalmethine
"	Epigeal part	0,70	Thalmethine, argemonine, base (I), base (II)

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The bases isolated were identified by direct comparison with authentic samples, with the exception of (I) and (II). Base (I) was obtained by chromatographing the phenolic fraction of the total material on a column of alumina (with elution by chloroform-methanol (95:5)), mp 189-190°C (chloroform). UV spectrum; $\lambda_{max}^{ethanol}$ 287 nm; $\lambda_{max}^{ethanol+OH^-}$ 295 nm. PMR spectrum of (I) ($CDCl_3$ + CD_3OD, ppm, δ scale, HMDS = 0): 2.45 (s, 6 H, 2× NCH_3); 3.48 and 3.72 (2× OCH_3); 6.23-7.27 (10× ArH). The mass spectrum contained the peaks of ions with m/z 594 (M^+), 593, 487, 403, 381, 192, 191, 190, 174, 168. On the basis of the results of a comparison of the properties of (I) with those of aromoline [2] it was established that they were identical. The fraction eluted by ethyl acetate containing 15% of ethanol yielded base (II) with mp 203-205°C, $[\alpha]_D$ −185° (methanol). UV spectrum of (II): $\lambda_{max}^{ethanol}$ 2.88 nm. PMR spectrum of (II) (deuteropyridine), ppm: 3.49 (s, 12 H, $N(CH_3)_2$; 2× CH_3); 3.59 (s, 6 H, 2× OCH_3); 6.45 and 6.94 (singlets, 2 H each, 4× ArH); broadened two-proton doublet with its center at 5.33 ppm. The mass spectrum of (II) showed the peaks of ions with m/z 355, 354, 340, 324, 205, and 204 (100%). A comparison of the results obtained with the literature permitted base (II) to be identified as N-methylargemonine [3].

Thus, fifteen bases have been isolated from Th. minus, and of these aromoline, N-methylargemonine, thalbadenzine [4], corunnine [5], and thaliximidine [1] have been detected in this plant for the first time.

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ALKALOIDS OF Thalictrum foetidum

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The stems, seeds, roots, and epigeal part of Thalictrum foetidum L. have been investigated for the presence of alkaloids:

Collection site	Plant organ and vegetation period	Total alkaloids, % on the dry raw material	Alkaloids
TadzhSSR, environs of the village of Sagirdasht	Roots, flowering	0.66	Magnoflorine, isoboldine, glaucine, corunnine, thalicmidine, and base I
KirgSSR, Susamyr	"	0.3	Thalfine, thalfinine, berberine, magnoflorine, base II
"	Stems, budding	0.15	Fetidine, berberine
"	Epigeal part, budding	0.23	Fetidine, isoboldine
"	Seeds, fruit-bearing	0.26	Fetidine

The total bases, obtained by the usual method, were separated into phenolic (fraction A) and nonphenolic (fraction B). By chromatography on columns of alumina and silica gel, bases (I) and (II) were obtained, in addition to those isolated previously [1, 2]. Both substances were obtained by chromatographing fraction B on a column of alumina. Base (I) (eluent ethyl acetate) had mp 219-221°C (decomp.), and its UV spectrum [$\lambda_{max}^{C_2H_5OH}$ (nm) 243, 272, 290 (inflection), 353, 433; $\lambda_{max}^{C_2H_5OH+H^+}$ (nm) 254, 285, 383, 495] was characteristic for oxoaporphine alkaloids [3].

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