In experiments on frogs it was established that N-tert-adamantyliminostrophanthidin was approximately four times less cardiotonically active than strophanthidin.

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ALKALOIDS OF *Vinca major* INTRODUCED INTO GEORGIA

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UDC 547.944.945

Continuing a study of the alkaloids of the epigeal organs of *Vinca major* L. introduced into an experimental field of the I. G. Kutateladze Institute of Pharmacochemistry of the Academy of Sciences of the Georgian SSR, we have isolated another six bases [1]. The herb was extracted with acidified methanol. After the methanol had been distilled off, the acid solutions were brought to pH 9-10 and the alkaloids were extracted with ethyl ether. The combined material obtained was separated by the usual method into phenolic (A) and nonphenolic (B) fractions [2]. By distributing fraction B according to basicity with the aid of citrate-phosphate buffers having pH 7, 6, 5, 4, 3, and 2.2, five alkaloids were isolated.

Alkaloid B_1, $C_{21}H_{24}N_2O_3$, was obtained from the pH 7 buffer; mp 263-264°C (methanol), $[\alpha]_D$ +14° (c 1.0; methanol). UV spectrum, λ_{max} 243, 294 nm (log ε 3.69, 3.25). IR spectrum, cm^{-1}: 3350, 3060 (—OH, >NH groups); 1720, 1245 (—$COOCH_3$); 750 (disubstituted benzene ring). Alkaloid B_1 was identified as vincarine [3].

Alkaloid B_2, $C_{21}H_{26}N_2O_2$, mp 227-229°C (methanol), was obtained from the pH 6 buffer. Its UV spectrum was characteristic for indoline derivatives. The IR spectrum included the following bands (cm^{-1}): 3340 (—OH), 1620 (indoline ring), 815 (trisubstituted benzene ring). The mass spectrum confirmed the composition of the molecule: M^+ 338. Alkaloid B_2 was assumed to be vincamajorine [4].

Alkaloid B_3, $C_{23}H_{28}N_2O_6$, mp 185-186°C (methanol), $[\alpha]_D$ −150° (c 0.2; chloroform) was obtained from the pH 5 buffer. UV spectrum, λ_{max}: 225 nm (log ε 4.55). IR spectrum (cm^{-1}): 3340 (>NH); 1730, 1275 (—$COOCH_3$); 720, 775, 795 (tetrasubstituted benzene ring). Alkaloid B_3 was majdine [5].

Alkaloid B_4, $C_{21}H_{26}N_2O_3$, mp 233°C (methanol), $[\alpha]_D^{20}$ −5° (c 1.0; chloroform) was isolated from the pH 3 buffer. UV spectrum, λ_{max}: 225, 280 nm (log ε 4.50, 3.95). IR spectrum (cm^{-1}): 3580 (—OH); 1740, 1250 (—$COOCH_3$); 750 (disubstituted benzene ring). Alkaloid B_4 was identified as vincamine [6].

Alkaloid B_4, $C_{22}H_{26}N_2O_3$, mp 215°C (ethyl ether) was obtained from the pH 3 and pH 2.2 buffers. UV spectrum, λ_{max}: 243, 293 nm (log ε 3.93, 3.53). IR spectrum (cm^{-1}): 3100-3200 (—OH); 1740, 1248 (—$COOCH_3$); 760 (disubstituted benzene ring). The mass spectrum confirmed the composition of the molecule: M^+ 366. The alkaloid was identified as vincamajine [7].

Alkaloid A_1, $C_{22}H_{26}N_2O_4$, mp 279-280°C (methanol), $[\alpha]_D$ −140° (c 2.0; chloroform) was isolated from the combined material A by crystallization from ethyl ether. UV spectrum: λ_{max} 244, 312 nm (log ε 3.88, 3.60). IR spectrum (cm^{-1}): 3300 (—OH); 1740, 1640 (—$COOCH_3$), 780, 760, 725 (trisubstituted benzene ring). Alkaloid A_1 was characterized as akuammine [8].

I. G. Kutateladze Institute of Pharmacochemistry, Academy of Sciences of the Georgian SSR, Tbilisi. Translated from Khimiya Prirodnykh Soedinenii, No. 4, pp. 533-534, August-September, 1984. Original article submitted January 26, 1984.

0009-3130/84/2004-0509$08.50

The structures of the alkaloids isolated were confirmed by literature information, by UV, IR, NMR, and mass spectroscopy, and also by comparison with authentic samples.

According to the results of pharmacological trials, one of the main alkaloids of *Vinca major* L. — vincamajine — exhibits a specific activity.

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TANNING SUBSTANCES OF *Geranium rectum*

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UDC 547.56+547.985

Continuing a study of the composition of the polyphenols of *Geranium rectum* Trautv. [1-4], by extraction with 70% aqueous acetone followed by the evaporation of the acetone, treatment of the aqueous residue with ethyl acetate, drying the ethyl acetate extract, concentration, and the addition of petroleum ether to the concentrated extract, a preparation of tanning substances with a tannide content (TC) of 84% and a quality (D) of 88% (VEM) [5] was obtained.

When the preparation obtained was chromatographed on paper in the butan-1-ol—acetic acid—water (40:12:28) system, a number of substances of phenolic nature was revealed, four of which were predominating. To separate them we used column chromatography on rawhide powder. The column was washed successively with water, pure acetone, and 50% aqueous acetone.

The fractions eluted by water contained mainly two substances, with R_f 0.78 and 0.68, and of trace amounts of a substance with R_f 0.42 and had TC 48%, D 58%. The yield was 8% on the total amount of polyphenols eluted from the column.

The acetone fraction contained three substances, with R_f 0.68, 0.45, and 0.40, and also traces of a substance with R_f 0.42. The TC value of this fraction was 80% and the D value 84%. The yield was 47% of the total amount of polyphenols eluted from the column.

The aqueous acetone fraction with TC 92% and D 97.5% contained only two substances, with R_f 0.45 and 0.40 (yield 45%).

Thus, the substances with R_f 0.45 and 0.40 are the main tannins of *Geranium rectum*.

After further chromatography of the aqueous fraction on a column of polyamide (the eluents being mixtures of chloroform and methanol in various proportions), flavonols —

Institute of Bioorganic Chemistry, Academy of Sciences of the Uzbek SSR, Tashkent. Translated from Khimiya Prirodnykh Soedinenii, No. 4, pp. 534-535, August, September, 1984. Original article submitted December 20, 1983.

0009-3130/84/2004-0510$08.50