

ALKALOIDS OF GALANTHUS NIVALIS

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We have studied the alkaloids of the epigeal and subterranean parts of G. nivalis L. collected in 1968 in a beechwood near L'vov in the period of mass flowering. From the epigeal part (leaves with peduncles and flowers) chloroform extraction yielded 0.41% total alkaloids and from the subterranean part (bulbs with roots) extraction with 2% H₂SO₄ solution gave 38% (based on the weight of the absolutely dry raw material). By thin-layer chromatography [silica gel with 5% gypsum in ether-acetone-diethylamine (80 : 20 : 5), ether-methanol-diethylamine (90 : 5 : 5), n-hexane-chloroform-diethylamine (50 : 40 : 10), and benzene-chloroform-acetone-diethylamine (80 : 25 : 30 : 5) systems] we detected six alkaloids in the epigeal part (including the known lycorine, galanthamine, nivalidine, and hippeastrine), and seven in the subterranean part (including the known lycorine, galanthamine, nivalidine, and tazettine). The combined alkaloids were chromatographed in the solvent systems mentioned above in the presence of pure samples (0.1% chloroform solutions) of lycorine, galanthamine, galantine, tazettine, nivalidine, and other alkaloids from plants of the family Amaryllidaceae.

By treating the combined alkaloids from the epigeal and subterranean parts with acetone, we obtained, respectively, 0.016 and 0.023% (based on the weight of the dry raw material) of lycorine, which was identified by thin-layer chromatography and by a mixed melting point test [1].

By chromatographing the combined alkaloids on alumina (activity grade II with chloroform and chloroform-5% methanol as eluents), from the subterranean part we extracted 0.059% of galanthamine, 0.030% of tazettine [2, 3], 0.060% of nivalidine [4], and 0.030% of narwedine [5], and from the epigeal part 0.058% of galanthamine, 0.048% of nivalidine, 0.062% of hippeastrine, and 0.028% of narwedine (based on the weight of the dry raw material). These alkaloids were identified by thin-layer chromatography and by mixed-melting points and by comparing their constants with literature data.

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