For measuring the constants we used Bruker AM-400 and AC-200 spectrometers, a 50%-by-volume solution of 3-carene in acetone-d_6, and a 5 mm ampul. The assignment of the signals in the ^{13}C and ^{1}H NMR spectra was taken from the literature [3, 6].

LITERATURE CITED

1. H. Kalinowski, S. Berger, and S. Braun, Carbon-13 NMR Spectroscopy, Wiley, Chichester (1988).
2. R. Aydin and H. Günther, Magn. Reson. Chem., 28, 448 (1990).
3. A. Yu. Denisov, A. V. Tkachev, and V. I. Mamatyuk, Khim. Prir. Soedin., No. 6, 853 (1989).
4. A. Bax and R. Freeman, J. Am. Chem. Soc., 104, 1099 (1982).
5. V. A. Chertkov, in: Abstracts of Lectures at an International School on Magnetic Resonance [in Russian], Novosibirsk (1987), p. 133.
6. R. J. Abraham, M. A. Cooper, and D. Whittaker, Org. Magn. Reson., 5, p. 515 (1973).

STRUCTURE OF ARGRACIN — A NEW SESQUITERPENE LACTONE FROM Artemesia gracilescens

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UDC 547.314

Continuing a chemical study of the epigeal part of Artemisia gracilescens Krasch. et Iljin., gathered in the valley of the R. Tundyk, Karaganda province, Kazakhstan [1-3], by the chromatographic separation of an acetone extract with elution of the column by benzene-ether (9:1) we have isolated a colorless crystalline substance with the composition $C_{17}H_{22}O_4$, mp 210-212°C (ethanol; decomp.) — a new sesquiterpene lactone, which we have called agracin. Its IR spectrum contained bands at (cm^{-1}) 1760 (carbonyl of a γ-lactone); 1725, 1250 (ester group); and 1670 (C=C).

In the PMR spectrum (Bruker WP 200 SY; $CDCl_3$; 0 — TMS) singlets at (ppm) 1.45 and 1.71 (3 H each) characterized the presence of methyl groups at double bonds. A doublet at 4.63 (1 H; J = 10 Hz) and a multiplet with its center at 5.19 ppm (1 H) was assigned to olefinic protons, and doublets at 5.54 and 6.27 (1 H each, with J = 3 and 3.5 Hz, respectively) to the protons of an exomethylene group conjugated with the carbonyl of a γ-lactone. Consequently, there are three double bonds in the argracin molecule. A comparison of the chemical shifts of its PMR spectrum with those of germacranolides of the costunolide series (11,13-dihydrocostunolide, dihydronovanin, tulipinolide, epitulipinolide, herbolide B, and tamaulipin B acetate) [4-8] permitted a germacra-trans-1,trans-5-dienolide structure to be proposed for argracin.

A doublet of doublets at 4.50 ppm could be assigned to the lactone proton (H-6) interacting with H-5 (J = 10 Hz) and H-7 (J = 8.5 Hz). Such a value of the SSCC showed the trans-linkage of the lactone ring in relation to the main carbon skeleton.

A singlet at 2.04 ppm (3 H) indicated the presence of an acetyl group in the structure of argracin, while the signal of a gem-acyl proton — a doublet of doublets at 5.19 ppm with J = 10.5 and 3 Hz — showed its interaction with two vicinal protons located on one and the same carbon atom. The chemical shift of the gem-acyl proton and its SSCC enabled us to consider the possibility of the location of the acetyl group at C-3 or at C-9. A correlation of the chemical shift of the gen-acyl proton in the spectrum of argracin with the literature [9] showed its identity with that of haagenolide acetate; i.e., the acetoxy group was present at C-9.

Thus the argracin molecule has the structure 9β-acetoxy 6β, 7α(H)-germacr-1(10), 4(5), 11(13)-trien-6, 12-olide (I).

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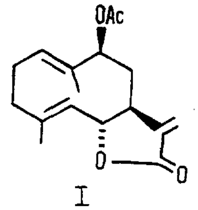

I

LITERATURE CITED

1. S. M. Adekenov, M. N. Mukhametzhanov, and A. N. Kupriyanov, Khim. Prir. Soedin., 668 (1981).
2. S. M. Adekenov, M. N. Mukhametzhanov, A. D. Kagarlitskii, and A. Zh. Turmukhambetov, Izv. Akad. Nauk KazSSR, Ser. Khim., 81-82 (1983).
3. A. Zh. Turmukhambetov, S. M. Adekenov, K. M. Turdybekov, and Yu. V. Gatilov, Khim. Prir. Soedin., 339-343 (1991).
4. J. F. Sanz, G. Castellano, and A. J. Marco, Phytochemsitry, 29, No. 2, 541-545 (1990).
5. M. A. Irwin and T. A. Geissman, Phytochemistry, 12, 875-878 (1973).
6. R. W. Doskotch and F. S. Feraly, J. Org. Chem., 35, 1928 (1970).
7. R. Segal, S. Sokoloff, B. Sharak, D. V. Zaitschek, and D. Lichtenberg, Phytochemistry, 16, No. 8, 1237-1241 (1977).
8. H. Yoshioka et al., Phytochemistry, 9, No. 4, 813-843 (1970).
9. W. Kisiel, Phytochemistry, 17, No. 6, 1059-1060 (1978).

ALKALOIDS OF THE MONGOLIAN FLORA

I. ALKALOIDS OF THE EPIGEAL PART OF Aconitum barbatum

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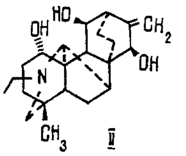
UDC 547.944/945

Continuing the separation of the total alkaloids of the epigeal part of Aconitum barbatum Pers. [1, 2], we have isolated three bases.

Alkaloid (I), with the composition $C_{25}H_{41}NO_7$, was identified on the basis of a study of its spectral characteristics and comparison with an authentic specimen as delsoline [3].

Alkaloid (II) had the composition $C_{22}H_{33}NO_3$, mp 191-193°C (acetone). On acetylation it gave a triacetyl derivative. A study of the spectral characteristics of the alkaloid and of its triacetate enabled us to suggest a structure [4] coinciding with that of the alkaloid lepenine [5]. A direct comparison of the IR spectra of lepenine and of the alkaloid that had been isolated showed their identity. A study of the ^{13}C NMR spectrum of lepenine, which was not taken into consideration in the proof of its structure [5], agreed with this. The multiplicities of the signals were determined from the "off-resonance" spectrum, and the assignment of the signals was made by comaprison with the spectrum of 11-acetyl-1,19-epoxydenudatine (III) [2].



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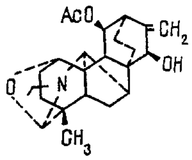

III

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