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ALKALOIDS. PLANTS, STRUCTURE, PROPERTIES*

R. Shakirov, M. V. Telezhenetskaya, I. A. Bessonova,
S. F. Aripova, I. A. Israilov, M. N. Sultankhodzhaev,
V. I. Vinogradova, V. I. Akhmedzhanova, T. S. Tulyaganov,
B. T. Salimov, and V. A. Tel'nov

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Chapter 2 of this review, which begins in this issue and ends in issue No. 6 of this volume, contains information on 1294 alkaloids arranged in alphabetical order† with details of their producing plants and of the structure, composition, and melting points of the alkaloids and their derivatives, specific rotations, solubilities, spectral characteristics (UV, IR, PMR, ^{13}C NMR, etc.), information on pharmacology, and references to original papers and to unpublished investigations. UV spectra were taken in ethanol (λ_{max}, nm; log ε); IR spectra, as a rule, for molded tablets with KBr (cm^{-1}), and ^{1}H and ^{13}C NMR spectra in deuterochloroform (δ scale, ppm, values of J in Hz), except where otherwise mentioned.

Abbreviations of the literature sources encountered most frequently are given in Chapter 1 of this review.

Conventional symbols and abbreviations used in the review:

{} — the melting points of characteristic derivatives are given within braces; ac. — acetone; alc. — ethyl alcohol; anh. — anhydrous; b-chl. — butyl chloride derivative; br.s. — broadened singlet; bz. — benzene; chlf. — chloroform; chl-aur. — chloroaurate; chl-plat. — chloroplatinate; chx. — cyclohexane; dec. — decomposes; dil. — dilute; e-a. — ethyl acetate; e-chl. — ethochloride; e-i. — ethiodide; eth. — diethyl ether; h-b. — hydrobromide; h-chl. — hydrochloride; h-i. — hydriodide; hx — hexane; i/p — intraperitoneal(ly); i.s. — insoluble; i/v — intravenous(ly); m-chl. — methochloride; meth. — methanol; meth. chl. — methylene chloride; m-i — methiodide; nitr. — nitrate; org. solvs. — organic solvents; p-chl. — perchlorate; pharm. — pharmacological properties; picr. — picrate; picrol. — picrolonate; pr-chl. — propyl chloride derivative; pr-i. — propyl iodide derivative; pyr. — pyridine; r-sol. — readily soluble; s/c. — subcutaneous(ly); sh — shoulder, inflection; sol. — soluble; sol-y. — solubility; sp. sol. — sparingly soluble; sulf. — sulfate; unpub. — unpublished results.

*For Chapter 1 of this review, see Khim. Prir. Soedin., No. 1, 118 (1996).

†The alkaloids are presented in Russian alphabetical order. To aid the reader in locating them, a list of the alkaloids covered in each issue is presented in English alphabetical order, together with the page number where the alkaloid appears.

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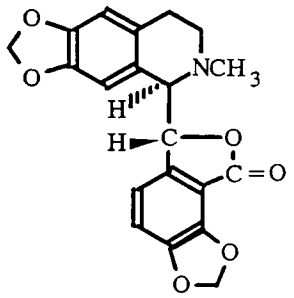
CHAPTER 2

PHYSICAL CONSTANTS, SPECTRAL CHARACTERISTICS, AND PHARMACOLOGICAL PROPERTIES OF ALKALOIDS AND THEIR DERIVATIVES



ADLUMIDINE

Corydalis alpestris, C.caucasica, C.emanuelii, C.gigantea, C.gortschakovii, C.ledebouriana, C.marschalliana, C.paniculigera, C.pseudoadunca, C.remota, C.rosea, C.stricta, C.vaginans, Fumaria capreolata, F.officinalis, F.parviflora, F.schleicheri, F.vaillantii, Glaucium corniculatum

$C_{20}H_{17}NO_6$: 367.1056

mp: 220-221° (meth.-chlf.)

$[\alpha]_D$–100° (chlf.)

UV: 225, 295, 325

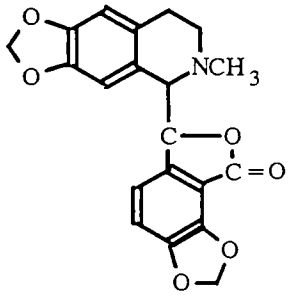
IR: 1750, 1615, 1505, 1040, 1030, 935

Mass: 190

PMR: 2.45(3H, s, NCH_3), 5.76, 6.00 (2H, s, $2\times CH_2O_2$), 6.31, 6.58 (1H, s, p-H–Ar), 6.84, 7.06 (1H, d, J=8, o-H–Ar)

Abs. conf.: 1R, 9R [2]

1. Ibragimova M.U., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 438.
2. Moiseevaa G.P., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 103.



(±)-ADLUMIDINE

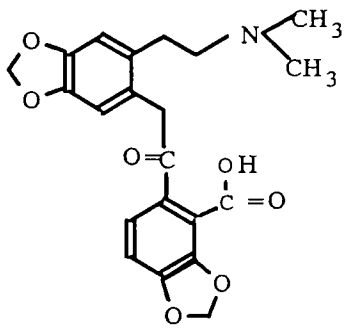
Corydalis rosea

$C_{20}H_{17}NO_6$: 367.1056

mp: 184-185°

$[\alpha]_D$ 0°

1. Margvelashvili N.N., Author's Abstract of Candidate's Dissertation, 1979.



ADLUMIDICEINE

Corydalis sewerzowii, Fumaria parviflora, F.schleicheri, F.vaillantii

$C_{21}H_{21}NO_7$: 399.1318

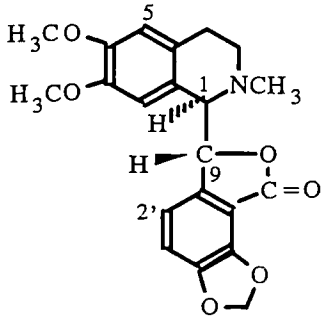
mp: 209-210° (meth.)

IR: 1700, 1610, 1505, 1050, 920

Mass: 399, 381, 336, 58(100)

PMR: 2.67 (6H, s, $N(CH_3)_2$), 2.90-3.64 (6H, m), 5.47, 5.70 (2H, s, $2\times CH_2O_2$), 6.15, 6.30 (1H, s, p-H–Ar), 6.66, 6.92 (1H, d, J=8, o-H–Ar) [1]
HPLC: [2]

1. Alimova M., Israilov, I.A., Khim. Prir. Soedin., 1981, 602.
2. Valka I., Simanek V., J. Chromatogr., 1988, **445**, 258.



(–)-ADLUMINE

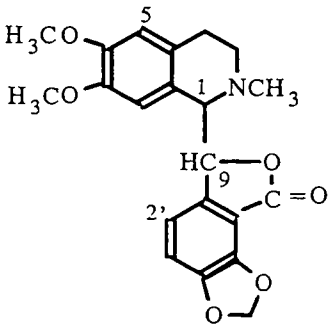
Corydalis alpestris, C.caucasica, C.gigantea, C.gortschakovii, C.ledebouriana, C.paniculigera, C.rosea, C.rosea-purpurea, C.stricta, C.vaginans, Fumaria capreolata, F.officinalis, F.parviflora, F.vaillantii
$C_{21}H_{21}NO_6$: 383.1369
mp: 179-180° (meth.-chlf.) [1]
$[\alpha]_D$–51° (chlf.) [1]
UV: 224, 286, 324 [2]
IR: 1775, 1620, 1500, 1040, 940 [2]

Mass: 206 [2]
PMR: 2.67(3H, s, NCH_3), 3.77, 3.83 (3H, s, $2\times OCH_3$), 4.08, 5.68 (1H, d, J=4), 6.07 (2H, s, CH_2O_2), 6.38, 6.70 (1H, s, p-H–Ar), 6.87, 7.17 (1H, d, J=8, o-H–Ar) [3]
^{13}C NMR [4]

C-1	65.7	C-8	110.0	C-4′	148.8
3	51.7	8a	128.4	5′	144.1
4	29.1	9	82.1	6′	109.7
4a	123.9	10	167.7	NCH_3	44.9
5	111.0	1′	140.9	6-OCH_3	55.6
6	147.4	2′	116.1	7-OCH_3	55.9
7	146.9	3′	112.8	4′,5′-OCH_2O	103.1

Abs. conf.: 1R, 9R [5]

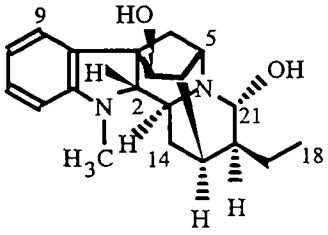
1. Ibragimova M.U., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 438.
2. Israilov I.A., Unpub.
3. Seitanidi K.L., Yagudaev M.R., Israilov I.A., Yunusov M.S., Khim. Prir. Soedin., 1978, 465.
4. Hughes D.W., Holland H.L., McLean D.B., Can. J. Chem., 1976, **54**, 2252.
5. Moiseeva G.P., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 103.



(±)-ADLUMINE

Corydalis rosea
$C_{21}H_{21}NO_6$: 383.1369
mp: 175°
$[\alpha]_D$ 0°

1. Margvelashvili N.N., Kir'yanova A.T., Tolkachev O.N., Khim. Prir. Soedin., 1972, 127.



AJMALINE

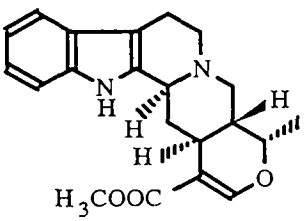
Rauwolfia cambodiana, R.canescens, R.serpentina, R.verticillata, R.vomitoria
$C_{20}H_{26}N_2O_2$: 326.1994
mp: 205° (meth.) [1], 200-202° [2]
[α]+130° (chlf.) [3]

UV: 248, 291 (3.96, 3.50) [3]
IR($CHCl_3$): 3620, 2960, 1612, 1468, 1358, 1068, 985 [4]
Mass: 326(M^+, 42), 311(11), 308(9), 298(4), 297(7), 237(4), 200(18), 183(49), 182(60), 168(33), 160(16), 158(35), 144(100), 131(35) [5]
^{13}C NMR (DMSO–d_6): [6]

C-2	79.4	C-10	118.5	C-17	76.3
3	44.6*	11	126.7	18	12.3
5	52.5*	12	109.1	19	25.5
6	35.3	13	154.0	20	42.2
7	55.5	14	31.6	21	87.6
8	134.5	15	28.4	NCH_3	34.3
9	123.1	16	48.7*		

HPLC: [7]
Pharm.: LD_{50} 130, 206 mg/kg (i/p, mice, s/c, rats). Pronounced antiarrhythmic and hypotensive action. Used in medicine as an antiarrhythmic agent [8].

1. Belikov A.S., Khim. Prir. Soedin., 1969, 64.
2. Anet F.A.L., Chakravarti D., Robinson R., Schlitter E., J. Chem Soc., 1954, 1242.
3. Orazi O.O., Corall R.A., Stoichevich M.E., Can. J. Chem., 1966, **44**, 1523.
4. Holubek, No. 8.
5. Biemann K., Bommer P., Burlingame A.L., McMurray W.J., J. Am. Chem. Soc., 1964, **86**, 4624.
6. Chatterjee A., Chakrabarty M., Ghosh A.K., Hagemann E.W., Wenkert E., Tetrahedron Lett., 1978, 3879.
7. Duez P., Chamart S., van Haelen M., van Haelen-Fastre R., Hanocq M., Molle L., J. Chromatogr., 1986, **356**, 334.
8. Sadritdinov, p. 20; Mashkovskii, Vol. 1, p. 407.



AJMALICINE

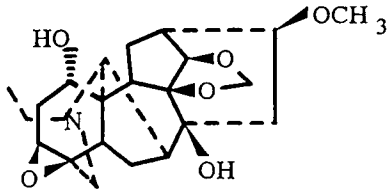
Rauwolfia canescens, R.verticillata, R.vomitoria, Vinca rosea
$C_{21}H_{24}N_2O_3$: 352.1787
mp: 256-257° [1]
$[\alpha]_D$–49° (meth.) [1]
{h-chl. 283°} [1]

UV: 227, 282, 290(4.67, 3.92, 3.85) [2, 3]
IR: [2]
Mass: 352(M^+, 100), 351(61), 337(5), 321(5), 225(8), 223(3), 208(4), 170(10), 169(16), 156(63) [4]
PMR: [2]
ORD: [3], stereochemistry: [3, 5, 6]
HPLC: [7]
Pharm.: Hypotensive, cardiotonic, adreno- and sympatholytic action [8].

1. Abdurakhimova N., Yuldashev P.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 224.
2. Beckett A.H., Shellard E.J., Phillipson J.D., Lee C.M., Planta medica, 1966, **14**, 277.
3. Finch N., Taylor W.I., Emerson T.R., Klyne W., Swan R.J., Tetrahedron, 1966, **22**, 1327.

4. Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 346.
5. Wenkert E., Wickberg B., Leicht C.L., J. Am. Chem. Soc., 1961, **83**, 5037.
6. Shamma M., Richey J.M., J. Am. Chem. Soc., 1963, **85**, 2507.
7. Auriola S., Naaranlahti T., Lapinjoki S.P., J. Chromatogr., 1991, **554**, 227.
8. Sadritdinov, p. 23.

AKIRINE

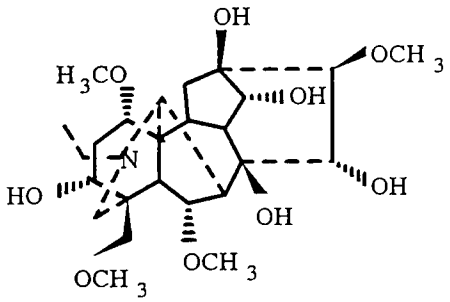


Aconitum kirinense
$C_{22}H_{31}NO_6$: 405.2151
mp: 214-217° (ac.)
IR: 3515, 3200, 1100

Mass: 405(M^+, 100), 390(60), 388(43), 377(11), 375(15), 374(60), 362(15), 360(7), 358(6), 356(4), 350(9), 346(6), 344(5), 334(9), 332(6), 330(5), 328(5), 319(11), 316(5), 303(14), 235(27), 218(8), 208(8), 207(7), 206(8), 190(6)
PMR: 1.02(3H, t, NCH_2CH_3), 3.24(3H, s, OCH_3), 3.46(1H, s), 3.94(1H, s), 5.03, 5.24 (1H, s, CH_2O_2)
X-ray spectral analysis

1. Nishanov A.A., Tashkhodzhaev B., Yusupova I.M., Sultankhodzhaev M.N., Khim. Prir. Soedin., 1992, 534.

ACONINE

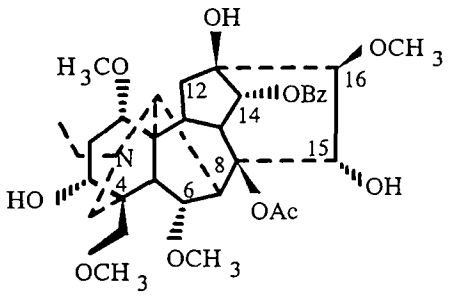


Aconitum soongaricum
$C_{25}H_{41}NO_9$: 499.2781
mp: 132° [1]
$[\alpha]_D$+23°
IR: 3440, 1100 [2]

Mass: 499(M^+, 5), 484(7), 482(4), 468(100), 454(11), 452(8), 450(17)
PMR: 1.02(3H, t, NCH_2CH_3), 3.14, 3.20, 3.23, 3.57(3H, s, 4×OCH_3) [2]
^{13}C NMR: [1]

C-1	84.1	C-10	42.4	C-18	77.4
2	35.5	11	50.5	19	48.3
3	71.9	12	37.4	NCH_2	46.2
4	43.2	13	78.8	CH_3	13.4
5	49.0	14	80.6	C-1′	55.7
6	83.0	15	78.5	6′	58.0
7	51.3	16	91.8	16′	61.9
8	76.4	17	60.8	18′	59.1
9	50.1				

1. Pelletier S.W., Mody N.V., Sawhney R.S., Can. J. Chem., 1979, **57**, 1652.
2. Zhamierashvili M.G., Author's Abstract of Candidate's Dissertation, Tashkent, 1982.



ACONITINE

Aconitum altaicum, A.baicalense, A.chasmanthum, A.nasutum, A.soongaricum, A.tauricum, A.turczaninowii, A.volubile, Atragene sibirica

$C_{34}H_{47}NO_{11}$: 645.3149

mp: 202-203° [1, 2]

$[\alpha]_D$+19°(chlf.) [1, 2]

{h-chl.159°, h-b. 210°, h-i. 204°, p-chl. 224°}

IR: 3580-3490, 1730, 1720, 1610, 1500, 1460, 1405, 1383, 1325, 1285, 1244, 122, 1204, 1186, 1115, 1025, 987, 960, 925, 900, 842, 770, 730, 720 [1, 2]

Mass: 585(6), 570(5.5), 554(100), 536(9) [1, 2]

PMR: 1.15 (3H, t, J=7, NCH_2CH_3), 1.44(3H, s, Ac), 3.29, 3.38, 3.42, 3.88 (3H, s, 4×OCH_3), 5.04 (1H, d, J=5, H-14β), 7.67-8.25(H-Ar) [1, 2]

^{13}C NMR: [3]

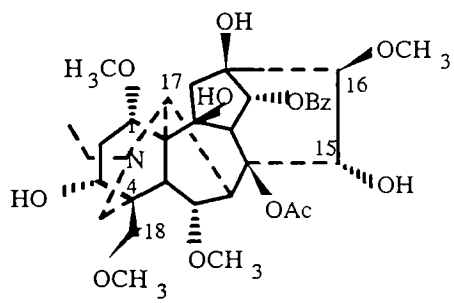
C-1	83.4	C-13	74.0	C-16′	60.7
2	36.0	14	78.9	18′	58.9
3	70.4	15	78.9	CO	172.2
4	43.2	16	90.1	CH_3	21.3
5	46.6	17	61.0	Ar–C=O	165.9
6	82.3	18	75.6	Ar C-1	129.6
7	44.8*	19	48.8	2	128.6
8	92.0	NCH_2	46.9	3	129.8
9	44.2*	CH_3	13.3	4	133.2
10	40.8	C-1′	55.7	5	129.8
11	49.8	6′	57.9	6	128.6
12	34.0				

X-ray spectral analysis: [4]

HPLC: [5]

Pharm.: LD_{50} 0.12 (i/v, mice). Causes shanges in the CNS and the cardiovascular and respiratory systems, and produces cardiac arrhythmia. Used in experimental medicine for creating a model of arrhythmia [6].

1. Sultankhodzhaev M.N., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1973, 127.
2. Wiesner K., Gay E.W., Gay L., Tetrahedron Lett., 1971, 867.
3. Przybylska M., Marion L., Can. J. Chem., 1959, **37**, 1843.
4. Pelletier S.W., Djarmati Z., J. Am. Chem. Soc., 1976, **98**, 2626.
5. Kulanthaivel P., Pelletier S.W., J. Chromatogr., 1987, **402**, 366.
6. Tulyaganov N., Dzhakhangirov F.N., Sadritdinov F., Khamdamov I., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p.76.



ACONIFINE

Aconitum karakolicum

$C_{34}H_{47}NO_{12}$: 661.3098

mp: 195-197° (ac.)

$[\alpha]_D$+15° (meth.)

{h-chl. 184°}

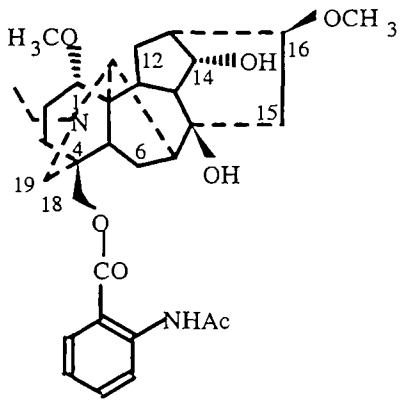
IR: 3590, 3520, 1740, 1720, 1600, 1500, 1100

PMR: 0.96 (3H, t, J=6, NCH_2CH_3), 1.26(3H, s, Ac), 3.00, 3.14, 3.61(3H, 6H, 3H, s, 3×OCH_3), 5.24(1H, d, J=5, H-14β), 7.39-7.87(H-Ar)^{13}C NMR: [1]

C-1	79.8	C-12	48.9	C-6′	58.2
2	33.5	13	77.0	16′	61.2
3	71.6	14	77.3	18′	59.1
4	43.1	15	78.7	CO	172.1
5	42.8	16	90.1	CH_3	21.5
6	83.6	17	61.2	Ar-CO	166.1
7	44.7	18	74.9	Ar-C	130.2
8	89.7	19	47.7	C	129.7
9	54.0	NCH_2	47.2	C	128.6
10	78.6	CH_3	13.3	C	133.2
11	55.9	1′	55.4		

Pharm.: LD_{50} 0.22, 1.15 mg/kg (i/v, s/c, mice). Causes a disturbance in the rhythm of cardiac contractions. Can be used for creating a model of cardiac pathology with a disturbance of the rhythm [2].

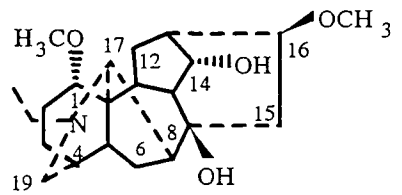
1. Sultankhodzhaev M.N., Beshitaishvili L.V., Yunusov M.S., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 665.
2. Tulyaganov N., Dzhakhangirov F.N., Sadritdinov F.C., Khamdamov I., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, 76.



ACONORINE

Aconitum orientale
$C_{32}H_{41}N_2O_7$: 568.3149
mp: amorph.
{p-chl. 237° (boil.)}
IR: 3560, 3455, 1695, 1595.
Mass: 568(M^+), 553, 551, 550, 537(100)
PMR: 1.03(3H, t, J=7.5, NCH_2CH_3), 2.19(3H, s, Ac), 3.24, 3.31(3H, s, 2×OCH_3), 3.96(2H, narrow s, H-18), 4.11(1H, t, J=4.5, H-14β), 6.90-8.70(H–Ar).

1. Tel'nov V.A., Yunusov M.S., Yunusov S.Yu., Ibragimov B.T., Khim. Prir. Soedin., 1975, 814.



ACONOSINE

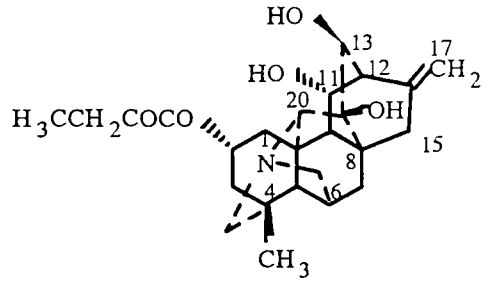
Aconitum arcuatum, A.fischeri, A.nasutum
$C_{22}H_{35}NO_4$: 377.2566
mp: 148°(hx.)
$[\alpha]_D$–21° (meth.)

Sol-y.: sol.chlf., meth., ac.
IR: 3630, 3460, 1100
Mass: 377(M^+), 362, 360, 346(100)
PMR: 1.03(3H, t, J=7.5, NCH_2CH_3), 3.20, 3.28 (3H, s, 2×OCH_3), 4.09 (1H, t, J=4.5, H-14β) [1]

^{13}C NMR [2]

C-1	86.3	C-9	47.8	C-17	63.0
2	26.6	10	39.1	18	–
3	30.3	11	49.0	19	50.8
4	46.5	12	28.2	NCH_2	49.8
5	37.0	13	45.7	CH_3	13.8
6	29.8	14	76.0	1′	55.8
7	46.2	15	40.0	16′	56.0
8	73.2	16	82.7		

1. Murav'eva D.A., Plekhanova T.I., Yunusov M.S., Khim. Prir. Soedin., 1972, 128.
2. Edwards O.E., Kolt R.J., Purushothaman K.K., Can. J. Chem., 1983, **61**, 1194.



ACORIDINE

Aconitum coreanum
$C_{23}H_{31}NO_5$: 401.2202
mp: 204-206°
$[\alpha]_D$+16° (meth.)
sol-y.: sol.chlf., meth., alc.
IR: 3370, 1730.

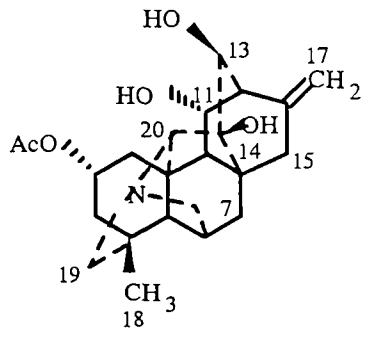
Mass: 401(M^+, 100), 384(72), 373(72), 356(86), 345(54), 328(75), 312(43), 310(18), 300(18), 272(14), 146(21), 105(21), 94(14), 91(20), 79(12).

PMR: 0.86(3H, s, 18-CH_3), 1.07(3H, t, J=7.5, CH_2–CH_3), 1.33(1H, dd, J=14; 3, H-7), 1.48(1H, s, H-5), 1.64(1H, dd, J=15.5; 4, H-3β), 1.70-1.90(3H, m, H-1β, H-3α, H-7), 1.90-2.00(3H, H-9, H-15α, H-15β), 2.28(2H, q, J=7.5, CH_2–CH_3), 2.42(1H, narrow s, H-12), 2.84(1H, d, J=16, H-1α), 2.48, 2.91(1H, d, J=12, H-19α, H-19β), 3.05(1H, narrow s, H-6), 3.46(1H, s, H-20), 3.98(1H, narrow s, H-13α), 4.15(1H, d, J=9, H-11), 4.60, 4.99 (1H, s, =CH_2), 5.08(1H, narrow s, H-2β)

^{13}C NMR

C-1	31.2	C-9	53.6	C-17	108.2
2	69.9	10	46.5	18	29.7
3	36.8	11	76.0	19	63.1
4	37.7	12	52.7	20	69.2
5	60.1	13	79.9	1′	174.0
6	63.1	14	80.4	2′	28.3
7	32.1	15	31.2	3′	9.2
8	44.4	16	144.9		

1. Bessonova I.A., Samusenko L.N., Yunusov M.S., Yagudaev M.R., Kondrat'ev V.G., Khim. Prir. Soedin., 1991, 91.



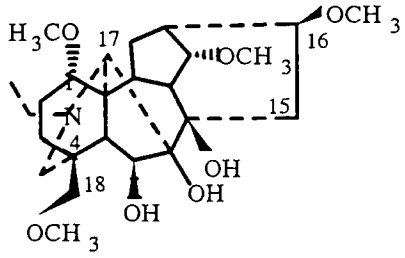
ACORINE (GUAN-FU BASE Y)

Aconitum coreanum
$C_{22}H_{29}NO_5$: 387.2046
mp: 214-215° (ac.)
$[\alpha]_D$+9° (meth.)
sol-y.: sol. meth., chlf.
IR: 3400, 1745
Mass: 387(M^+, 95), 370(100), 359(87), 342(97), 328(64)

PMR: 0.96(3H, s, 18-CH_3), 1.32(1H, dd, J=13.9; 2.4, H-7), 1.48(1H, s, H-5), 1.53(1H, dd, J=15.5; 4.5, H-3β), 1.99(3H, s, Ac), 1.64-2.60(6H, m, H-15α, H-15β, H-1β, H-7, H-3α, H-9), 2.40-2.60(1H, m, H-12), 2.86(1H, d, J=16, H-1α), 2.48, 2.92(1H, d, J=12, H-19β, H-19α), 3.06(1H, narrow s, H-6), 3.48(1H, s, H-20), 4.00(1H, narrow s, H-13), 4.18(1H, d, J=9, H-11), 4.64, 4.83(1H, narrow s, =CH_2), 5.09(1H, m, H-2)
^{13}C NMR

C-1	31.2	C-9	53.6	C-16	144.8
2	70.1	10	46.4	17	108.2
3	36.6	11	76.2	18	29.7
4	37.5	12	52.7	19	63.1
5	60.1	13	80.0	20	69.2
6	63.1	14	80.3	CO	171.2
7	32.0	15	31.2	CH_3	21.6
8	44.2				

1. Bessonova I.A., Yunusov M.S., Kondrat'ev V.G., Shreter A.I., Khim. Prir. Soedin., 1987, 690; Reinecke M.G., Minter D.E., Chen D.C., Yan W.M., Tetrahedron, 1986, **42**, 6621.



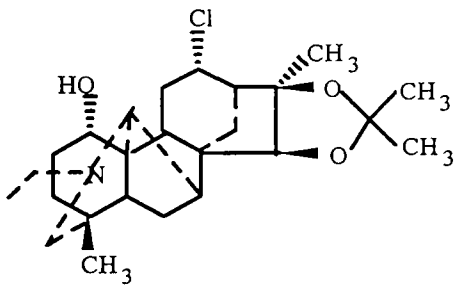
ACOSANINE

Aconitum sajanense
$C_{25}H_{41}NO_7$: 467.2883
mp: 78–80° (petr. eth.)
sol-y.: sol. chlf., ac., alc.; sp. sol. eth.
IR: 3600-3300, 1100

Mass: 467(M^+, 4.6), 452(4), 450(2), 449(2), 337(30), 436(100), 420(6), 418(4.5), 71(1.5), 58(2)
PMR: 1.00(3H, t, J=7, NCH_2CH_3), 3.15, 3.24, 3.31(3H, 6H, 3H, s, OCH_3), 3.62(1H, t, J=4.5, H-14β), 4.22(1H, s, H-6α)
^{13}C NMR:

C-1	84.3	C-10	37.3	C-19	53.6
2	25.7	11	48.3	NCH_2	51.6
3	32.0	12	29.0	CH_3	14.6
4	38.5	13	45.7	C-1′	55.7
5	44.1	14	84.3	14′	57.8
6	80.7	15	36.3	16′	56.2
7	87.5	16	82.4	18′	59.5
8	78.7	17	65.8		
9	54.4	18	79.2		

1. Vaisov Z.M., Bessonova I.A., Yunusov M.S., Shreter A.I., Khim. Prir. Soedin., 1992, 247.

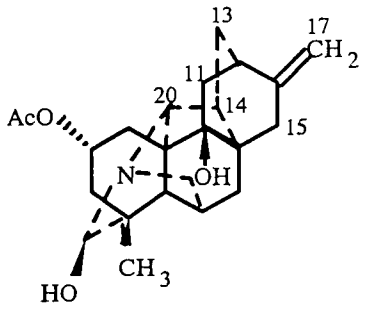


ACOFINE

Aconitum karakolicum
$C_{25}H_{38}NO_3Cl$:
mp 159-160° ($(CH_3)_2CO$)
{h-chl. 274-286° (dec.)}
IR: 3250

Mass: 435(M^+, 100), 420(63), 418(12), 400(63), 376(31), 377(33), 362(10), 342(94), 320(31), 318(15), 300(31), 286(47), 284(42), 242(42), 185(63)
PMR: 0.66(3H, s, 18-CH_3), 0.99(3H, t, J=7, NCH_2CH_3), 1.35, 1.39, 1.44 (3H, s, 3×CH_3), 3.23(1H, narrow s.), 4.17 (1H, q, J=10; 7, H-1β)
X-ray spectral analysis

1. Tashkhodzhaev B., Sultankhodzhaev M.N., Yusupova I.M., Khim. Prir. Soedin., 1993, 267.



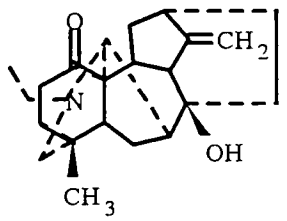
ACSINATINE

Aconitum leucostomum
$C_{22}H_{29}NO_4$: 371.2097
mp: 251-253° (eth.-meth.)
sol-y.: sol. chlf., meth.
IR: 3540, 3455, 1735, 1380, 1260, 1160, 1076, 978, 935, 880
Mass: 371(M^+), 354, 327, 311(100)

PMR: 1.01(3H, s, 18-CH_3), 1.98(3H, s, Ac), 2.72(1H, narrow s), 3.45(1H, narrow s), 4.51(2H, narrow s), 4.61(1H, narrow s), 5.17(1H, narrow s, H-2β)
^{13}C NMR:

C-1	31.8	C-9	78.8	C-16	152.1
2	70.7	10	50.4	17	104.3
3	37.8	11	39.0	18	23.0
4	42.2	12	36.9	19	92.0
5	55.1	13	34.3	20	70.1
6	60.8	14	43.9	CO	169.6
7	29.6	15	31.7	CH_3	21.7
8	42.1				

1. Tel'nov V.A., Usmanova S.K., Abdullaev N.D., Khim. Prir. Soedin., 1993, No. 3.

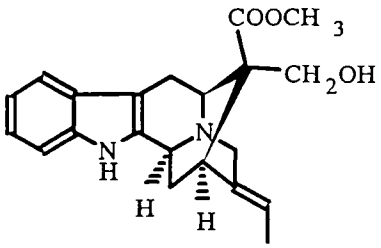


ACTALINE

Aconitum talassicum
$C_{22}H_{31}NO_2$: 341.2355
mp: 125-127° (hx.)
IR: 3475, 1680.

Mass: 341(M^+, 45), 326(100), 324(4), 323(4), 322(3), 258(3), 284(3.5), 267(26), 266(2), 149(4.5)
PMR: 0.80(3H, s, 18-CH_3), 1.03(3H, t, J=7, NCH_2CH_3), 3.20(1H, s), 4.51, 4.53(1H each, narrow s, $=CH_2$)
X-ray spectral analysis

1. Nishanov A.A., Tashkhodzhaev B., Sultankhodzhaev M.N., Ibragimov B.T., Yunusov M.S., Khim. Prir. Soedin., 1989, 39.

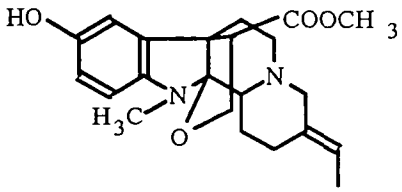


AKUAMMIDINE

Vinca erecta
$C_{21}H_{24}N_2O_5$: 352.1787
mp: 242-243° (meth.) [1]
$[\alpha]_D$+27° (meth.) [1]
{O–Ac. 254° (dec.)} [1]

UV: 227, 281(4.54, 3.93) [1]
IR: 1720, 1640 [1]
Mass: 352(M^+, 100), 351(73), 335(11), 334(6), 321(45), 293(19), 249(65), 183(11), 169(59), 168(42) [2, 3]
Pharm.: LD_{50} 391, 550 mg/kg (i/v, s/c, mice) [4]. Hypotensive and sedative action [4, 5].

1. Malikov V.M., Yuldashev P.Kh., Yunusov S.Yu. Khim. Prir. Soedin., 1966, 338.
2. Clayton E., Reed R.I., Wilson J.M., Tetrahedron, 1962, **18**, 1449.
3. Lhoest G., De Neys R., Defay N., Seibe J., Pecheret R.H., Martin J., Bull. Soc.Chim. Belges., 1965, **74**, 534.
4. Sadritdinov, p. 24.
5. Akhmedkhodzhaeva Kh., Kurmukov A.G., in: The Pharmacology of Alkaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, p. 30.

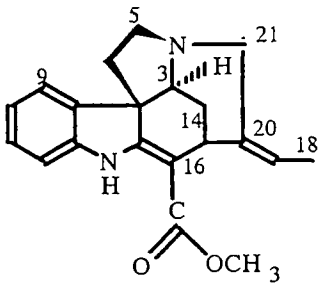


AKUAMMINE

Rauwolfia vomitoria, Vinca erecta, V.herbacea, V.major
$C_{22}H_{26}N_2O_4$: 382.1893
mp: 250-252° (ac.) [1]
$[\alpha]_D$–103° [1], –140° [2]

UV: 244, 312(3.87, 3.60) [1]
IR: 3280, 1255, 780, 760, 750, 720 [2]
Mass: 382(M^+, 100), 255(37), 254(32.6), 196(20), 178(6), 174(28), 166(13), 161(15) [2]
Pharm.: Hypotensive and ganglioblocking action [3].

1. Abdurakhimova N., Yuldashev P.Kh., Yunusov S.Yu., DAN UzSSR, 1964, No. 4, 33.
2. Asatiani V.S., Mudzhiri M.M., Mudzhiri K.S., Soobsh. AN GSSR, 1971, **64**, 341.
3. Kurmukov A.G., in: The Pharmacology of Natural Substances [in Russian], Fan, Tashkent, 1978, p. 32.



AKUAMMICINE

Vinca erecta, V.herbacea, V.major, V.minor
$C_{20}H_{22}N_2O_2$: 322.1681
mp: 186° [1]
$[\alpha]_D$–735° (alc.) [1], –580° (chlf.) [2]

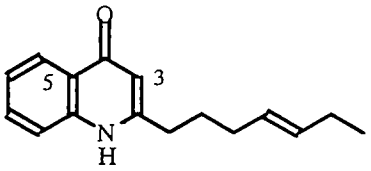
UV: 227, 300, 330, (4.09, 4.07, 4.24) [1]
IR: 3382, 1667, 1603 [1]
Mass: 322(M^+), 307(10), 263(20), 121(100) [3]

^{13}C NMR: [4]

C-2	167.5*	C-10	120.3	CO	167.7*
3	61.7	11	127.4	18-CH_3	13.1
5	56.1	12	109.1	19	120.0
6	46.1	13	136.8	20	139.2
7	57.4	14	30.8	21	56.8
8	136.8	15	29.6	$COOCH_3$	50.6
9	120.4	16	101.1		

Pharm.: In animals under narcosis intensifies cardiac contractions, lowers arterial pressure, and stimulates respiration. In high doses causes strychnine-like convulsions [5].

1. Aliev A.M., Babaev N.A., Farmatsiya, 1969, No. 5, 28.
2. Robakidze Z.V., Vachnadze V.Yu., Mudzhiri K.S., Sobsh. AN GSSR, 1978, **89**, 117.
3. Panas J.M., Richard B., Sigaut C., Debray M.-M., Men-Oliver L.L., Men J.L., Phytochem., 1974, **13**, 1969.
4. Yagudaev M.R., Khim. Prir. Soedin., 1983, 210.
5. Sadritdinov, p. 26.

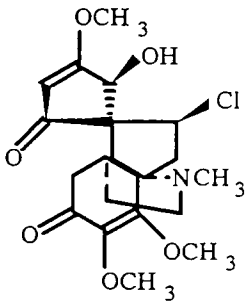


ACUTINE

Haplophyllum acutifolium
$C_{16}H_{19}NO$: 241.1467
mp: 122-123° (ac.)
{dihydro. 143°}
sol-y.: sol. chlf., alc., meth.; i.s. eth., petr. eth., water

UV: 214, 235, 305 sh, 318, 330 (4.45, 4.61, 3.92, 4.04, 3.97)
IR: 1635, 1597, 1560, 1510
Mass: 241(M^+, 16), 226, 212, 199, 186, 173(24), 172(39), 159(100), 130(12)
PMR: 0.84(3H, t, J=7, CH_3), 1.87(6H, m, CH_2), 2.68(2H, t, J=7, Ar-CH_2), 5.12(2H, m, –CH=CH–), 6.21(1H, s, H-3), 7.25-7.90(3H, m, H-Ar), 8.24(1H, d, J=9, H-5)

1. Razakova D.M., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1973, 206.

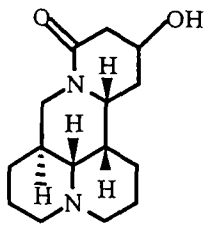


ACUTUMINE

Menispermum dauricum
$C_{19}H_{24}NO_6Cl$: 397.1292/399.1263
mp: 241° (dec., alc.-e-a.) [1]
$[\alpha]_D$–120° (pyr.) [1]
sol-y.: sol. chlf., pyr.; sp.sol. eth., alc. [1]
IR: 1690, 1670, 1625, 1605

Mass: 397(M^+), 362, 209(100), 194, 181, 166, 150 [2]
PMR(Py-d_5): 2.27(3H, s, NCH_3), 3.72, 3.79, 4.04(9H, s, OCH_3), 5.01, 5.59(2H, J=0.8, C<u>H</u>=C–C<u>H</u>–OH), 5.18(1H, J=7.5, CH_2–CHCl) [2]

1. Il'inskaya T.N., Aptechnoe Delo, 1958, No. 6, 10.
2. Tomita M., Okamoto Y., Kikuchi T., Osaki K., Nishikawa M., Kamiya K., Sasaki Y., Matoba K., Goto K., Tetrahedron. Lett., 1967, 2421.

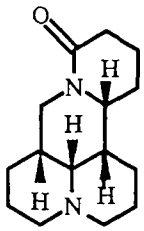


ALBERTAMINE

Leontice alberti
$C_{15}H_{24}N_2O_2$: 264.1838
mp: 190-192° (ac.)
$[\alpha]_D$+11° (alc.)
{p-chl. 120°, m-i. 250°, picr. 85°}
sol-y.: r-sol.chlf., alc., eth., bz., water; sp. sol. ac.

UV: 220
IR: 3300, 1640
Mass: 264(M^+, 87), 263(97), 249(5), 246(38), 235(12), 221(54), 218(55), 205(23), 203(9), 192(30), 190(23), 188(22), 177(39), 162(35), 150(9), 137(64), 122(20), 110(31), 98(22), 96(100)

1. Sadykov B., Iskandarov S., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 377.

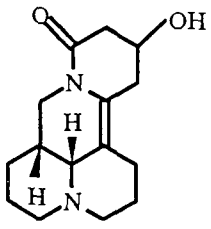


ALBERTIDINE

Leontice alberti
$C_{15}H_{24}N_2O$: 248.1889
mp: 70-71° [1]
$[\alpha]_D$+34° (alc.) [1]
{p-chl. 254°}
sol-y.: r-sol. chlf., meth., eth., alc.; sp. sol. petr. eth. [2]

IR: 2790-2750, 1640 [1]
Mass: 248(M^+, 55), 247(48), 219(12), 205(25), 192(15), 177(11), 162(10), 152(14), 151(13), 150(12), 137(25), 98(48), 96(70), 55(100) [2]

1. Kamalitdinov D.D., Iskandarov S., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 409.
2. Kamalitdinov D.D., Unpub.

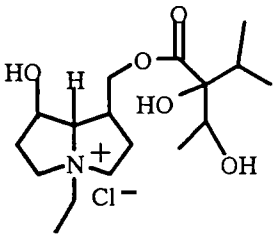


ALBERTINE

Leontice alberti
$C_{15}H_{22}N_2O_2$: 262.1681
mp: 161° (ac.)
$[\alpha]_D$–101° (alc.)
{p-chl. 229, m-i. 285°} [1]
Sol-y: r-sol. chlf., alc.; sol.ac. [2]

UV: 244(4.20) [3]
IR: 3300, 2795, 1675, 1655 [3]
Mass: 262(M^+, 83), 261(100), 247(3), 234(87), 220(30), 206(30), 189(8), 175(3), 160(4), 148(8), 134(8), 120(6), 108(5), 96(4), 95(2), 94(8), 82(2), 55(4) [2]

1. Iskandarov S., Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 26.
2. Iskandarov S., Unpub.
3. Iskandarov S., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 137.

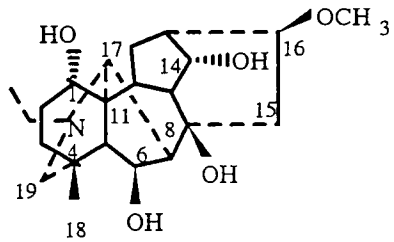


ALKALOID N1

Lindelofia anchusoides
$C_{17}H_{32}NO_5Cl$: 365.1969/367.1940
mp: 149-151° (abs. dioxane–alc.)
$[\alpha]_D$+20° (anh. meth.)
{trachelanthic acid 92°, necine 220°,

$[\alpha]_D$+4° (water), +2° (alc.)}
Sol-y: r-sol. water, alc.; sp. sol. org. solvents

1. Tsirul'nikova L.T., Labenskii A.S., Utkin L.M., Zh. Org. Khim., 1962, **32**, 2705.



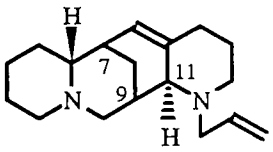
ALKALOID B

Delphinium elisabetae, D.speciosum
$C_{22}H_{35}NO_5$: 393.2515
mp: 190-192° (ac.)
$[\alpha]_D$+16° (chlf.)
{tri Ac 164°}

IR: 3450-3300, 1460, 1450, 1410, 1378, 1305, 1243, 1230, 1190, 1157, 1136, 1092, 1083, 1055, 1043, 1020, 1000, 983, 945, 920, 893, 880, 867, 820, 810, 723
Mass: 393(M^+), 378, 376, 360, 337
PMR: 0.97(3H, s, 18-CH_3), 1.04(3H, t, J=7, NCH_2CH_3), 3.28(3H, s, OCH_3), 4.12(1H, t, J=5, H-14β), 4.36(1H, d, J=7) [1]
^{13}C NMR: [2]

C-1	72.9	C-9	50.2	C-17	64.9
2	29.7	10	40.0	18	27.4
3	32.2	11	48.4	19	61.8
4	32.8	12	29.7	16′	56.3
5	46.1	13	44.4	NCH_2	48.4
6	72.0	14	76.0	CH_3	13.0
7	54.8	15	42.4		
8	76.0	16	82.4		

1. Beshitaishvili L.V., Sultankhodzhaev M.N., Yunusov M.S., Khim. Prir. Soedin., 1984, 671; Unpub.
2. Codding P.W., Kerr K.A., Benn M.N., Jones A.J., Pelletier S.W., Mody N.V., Tetrahedron Lett., 1980, 127.

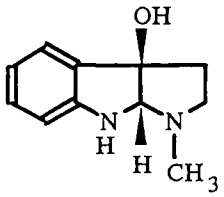


ALLYLALOPERINE

Sophora alopecuroides
$C_{18}H_{28}N_2$: 272.2253
mp: oil
{h-b. 237°}

Mass: 272(M^+), 231, 203, 189, 174, 148, 134, 98, 97, 96, 84, 83
PMR: 1.10(q, J=3.1; 12), 1.76(H-7), 1.95(H-9), 2.45(q, J=3.4;12, H-10_a), 2.86(q, J=5.2;12, H-10_e), 3.11(d, J=6.3, H-11), 4.90-5.20(=CH_2), 5.50(d, J=6.5, H-17), 5.60-5.80(m, =CH)

1. Tolkachev O.N., Monakhova T.E., Sheichenko V.I., Kabanov V.S., Fesenko O.G., Proskurnina N.F., Khim. Prir. Soedin., 1975, 30.

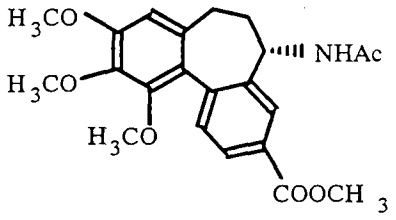


ALLINE

Allium altaicum, A.anisopodium, A.odorum, A.senescens, A.splendens, A.stelleranum, A.victorialis
$C_{11}H_{14}N_2O$: 190.1106
mp: 91-92° (ac.) [1]
$[\alpha]_D$+136° (chlf.) [2]
{h-chl. 197°} [2]

UV: 245, 303(3.68, 3.14)
IR: 3350, 1615, 1495, 760, 710 [2]
Mass: 190($M^{+\cdot}$, 100), 189(11), 173(42), 172(27), 171(14), 162(32), 161(23), 148(19), 147(98), 146(100), 134(20), 133(55), 132(55), 131(88), 130(77), 128(19), 120(32), 119(32), 118(48), 117(28), 106(19), 105(16), 104(34), 103(14), 93(55), 92(28), 91(33), 78(12), 77(46) [2]
PMR: 2.00, 2.70(2H, m, NCH_2CH_2), 2.21(3H, s, NCH_3), 4.03, 4.18(2H, s, 1H, s, OH, NH, CH), 6.45-7.12(4H, m, H-Ar) [2]
X-ray spectral analysis: [2]

1. Antsupova T.P., Samikov K., Khim. Prir. Soedin., 1984, 257.
2. Tashkhozhdaev B., Samikov K., Yagudaev M.R., Antsupova T.P., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1985, 687.

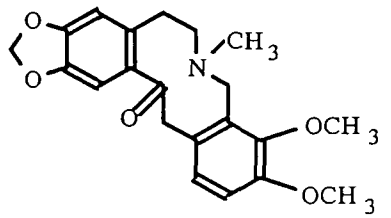


ALLOCOLCHICINE

Colchicum kesselringii
$C_{22}H_{25}NO_6$: 399.1682
mp: 255-257° (eth.-chlf.)
{colchicinic acid 262°} [1]
Sol-y: sol.meth., chlf., ac.; sp. sol. water, eth., petr. eth. [1]

UV: 226, 290 [2]
IR: 3300, 1735, 1660, 1610 [2]
Mass: 340 [2]
PMR: 2.00, 3.57, 3.71, 3.83 (NAc, 4×OCH_3) [2]

1. Yusupov M.K., Sadykov A.S., Zh. Org. Khim., 1964, **34**, 1672; 1677.
2. Yusupov M.K., in: The Chemistry of Plant Substances [in Russian], Fan, Tashkent, 1972, p. 19.

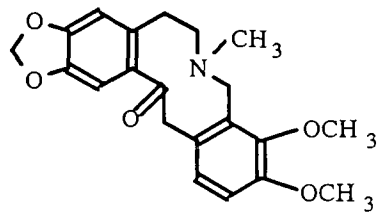


α-ALLOCRYPTOPINE

Argemone albiflora, A.hybrida, A.mexicana, A.ochroleuca, A.platyceras, Bocconia frutescens, Corydalis caucasica, C.intermedia, C.ledebouriana, C.marschalliana, C.remota, C.sewerzowii, Dicentra peregrina, Dicranostigma franschetianum, D.lactucoides, D.leptopodum, Eschscholtzia californica, Glaucium corniculatum, G.elegans, G.fimbrilligerum, G.flavum, G.oxylobum, G.squamigerum, Hylomecon vernalis, Hypecoum erectum, H.lactiflorum, Macleaya cordata, M.microcarpa, Papaver oreophilum, P.pavoninum, P.zangezuricum, Thalictrum minus
$C_{21}H_{23}NO_5$: 369.1576
mp: 159-160° (chlf.-alc.)
UV: 232, 285 [1]
IR: 1665 [1]

Mass: 369(M^+), 206, 164(100), 149 [1]
PMR: 1.85(3H, s, NCH_3), 2.60, 2.86(2H, m), 3.50-4.00(4H, m), 3.79, 3.84(3H, s, $2\times OCH_3$), 5.92(2H, s, CH_2O_2), 6.64, 6.95(1H, s, p-H-Ar), 6.87(2H, q, o-H–Ar) [2]
HPLC: [3]
Pharm.: Pronounced local anesthetic and antiarrhythmic action. Superior to quinidine and novocainamid [procaine amide hydrochloride] [4].

1. Veznik F., Israilov I.A., Taborska E., Slavik J., Collect., 1985, 1745.
2. Cross A.D., Dolejs L., Hanus V., Maturova M., Santavy E., Collect., 1965, 1335.
3. Liang-Feng Han, Nowicky W., Gutmann V., J. Chromatogr., 1991, **543**, 123.
4. Aliev Kh.U., Kamilov I.K., in: The Pharmacology of Alkaloids and Glycosides [in Russian], Fan, Tashkent, 1967, p. 176.

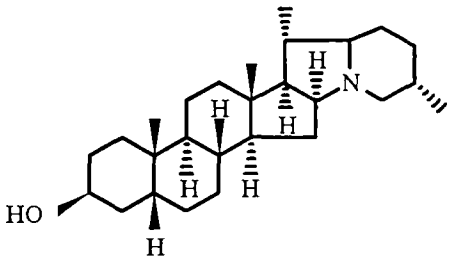


β-ALLOCRYPTOPINE (THALICTRIMINE)

Thalictrum amurense, Th.contortum, Th.minus, Th.simplex
$C_{21}H_{23}NO_5$: 369.1576
mp: 169-170° (ac.) [1]
{h-b. 179° (dec.), sulf. 219°, nitr. 179° (dec.)} [1]

Pharm.: LD_{50} 220 mg/kg (s/c, mice). Pronounced stimulating action on the musculature of the uterus [2].

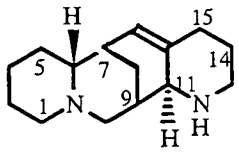
1. Yunusov S.Yu., Alkaloids [in Russian], Fan, Tashkent, 1981, p. 126.
2. Popova V.I., Leskov A.I., Trudy VILR, 1971, **14**, 91.



ALLOSOLANIDANOL-3β

Solanum tuberosum
$C_{27}H_{45}NO$: 399.3490
mp: 219-220° [1, 2]
$[\alpha]_D$+26° (chlf.) [1, 2]

1. Orekhov A.P., The Chemistry of Alkaloids [in Russian], Moscow, 1955, p. 701.
2. Aslanov Kh.A., Kasymov T.K., Sadykov A.S., Uzb. Khim. Zh., 1963, No. 2, 35.

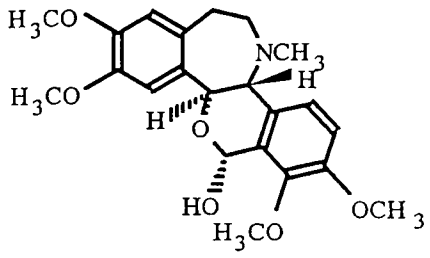


ALOPERINE

Leptorhabdos parviflora, Sophora alopecuroides
$C_{15}H_{24}N_2$: 232.194
mp: 72° (petr.eth.)
$[\alpha]_D$+82° (alc.)
{di h-chl. 265°, h-chl. 208°} [1]

Mass: 232(M^+), 203, 189, 174, 148, 134, 98, 97, 96, 84, 83 [1]
PMR: 1.79(1H, H-7), 2.26(1H, J=13.5; 2.2; 2.2, H-15$_e$), 2.45(1H, q, J=3.4; 12, H-10$_a$), 2.66(1H, J=9; 12, H-13$_a$), 2.86(1H, q, J=5.2, H-10$_e$), 3.08(1H, J=12, H-13$_e$), 3.11(1H, d, J=6.3, H-11), 5.40(1H, d, J=6.5, H-17) [1]
Pharm.: Stimulating action. Raises arterial pressure and stimulates respiration [2].

1. Tolkachev O.N., Monakhova T.E., Sheichenko V.I., Kabanov V.S., Fesenko O.G., Proskurnina N.F., Khim. Prir. Soedin., 1975, 30.
2. Monakhova T.E., Author's Abstract of Candidate's Dissertation, Moscow, 1975.

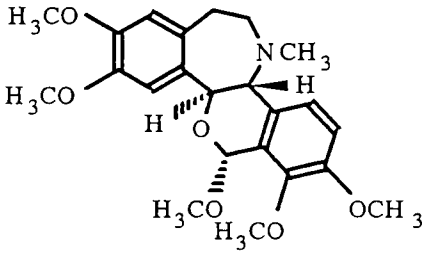


ALPINIGENINE

Papaver bracteatum, P.orientale
$C_{22}H_{27}NO_6$: 401.1838
mp: 192-193° (alc.) [1] 186.5-187° [2]
$[\alpha]_D$+290° (chlf.) [1]; +306° (meth.) [2]
UV: 230, 284 [2]

IR(CCl_4): 3610, 3484 [2]
Mass: 401(M^+), 222, 208, 206, 179, 164
PMR: 2.28(3H, s, NCH_3), 2.00-2.40(4H, m), 3.79, 3.87(6H, s, 4×OCH_3), 3.95, 5.69(1H, d, J=9), 6.28, 6.55, 7.11(1H, s), 6.78, 7.13(1H, d, J=8.5) [2]
HPLC: [3]

1. Denisenko O.N., Israilov I.A., Murav'eva D.A., Yunusov M.S., Khim. Prir. Soedin., 1977, 547.
2. Guggisberg A., Hesse M., Shmid H., Bohm H., Ronsch H., Mothes K., Helv. Chim. Acta, 1967, **50**, 621.
3. Milo J., Levy A., Palevitch D., Ladizinsky J., J.Chromarogr., 1988. **452**, 563.

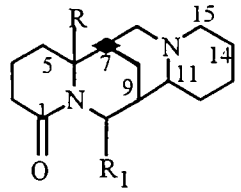


ALPININE

Papaver bracteatum
$C_{23}H_{29}NO_6$: 415.1995
mp: 119-120° (meth.)
$[\alpha]_D$+280° (chlf.)
UV: 233, 286
Mass: 415(M^+), 400, 384, 222, 208, 206, 193

PMR: 2.26(3H, s, NCH_3), 3.10-3.90(4H, m), 3.50(3H, s, OCH_3), 3.85(12H, s, 4×OCH_3), 3.96, 5.51(1H, d, J=9), 5.78(1H, s), 6.62, 7.29(1H, s, p-H-Ar), 6.86, 7.19(1H, d, J=8, o-H-Ar).

1. Denisenko O.N., Israilov I.A., Murav'eva D.A., Yunusov M.S., Khim. Prir. Soedin., 1977, 547.

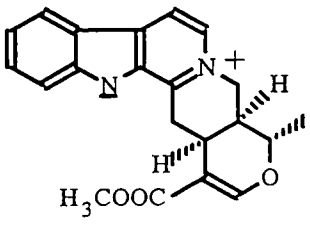


R=H, R_1=OH
or
R=OH, R_1=H

ALPINE

Thermopsis alpina
$C_{15}H_{24}N_2O_2$: 264.1838
mp: 135-137° (petr. eth.)
IR: 3300, 2800-2600, 1630, 1470, 1450, 1420
Mass: 264(M^+, 5), 246(52), 136, 122, 98(100), 84

1. Vinogradova V.I., Iskandarov S., Yunusov S.Yu., Unpub.

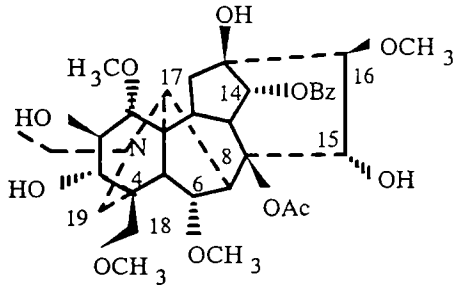


ALSTONINE

Rauwolfia littoralis
$C_{21}H_{20}N_2O_3$: 348.1474
mp: 203-205° [1]
{sulf. 207° (dec.)} [2]

UV: 252, 307, 370 [1]; 251, 308, 368(4.53, 4.35, 3.65) [2]
IR: 1690, 1634, 1576, 1530, 1505, 1331, 1315, 1293, 1251, 1225, 1211, 1195, 1178, 1127, 1090, 1040, 1010, 985, 970, 945, 920, 849, 831, 798, 780, 766, 745, 720 [2]
IR(LiF): 3560, 3350 [2]
Pharm.: LD_{50} 8.8 mg/kg (i/v, mice); 14.4 mg/kg (i/v, rats). Hypotensive and antiparasitic action [3].

1. Nguen Kim Kan, Khim. Prir. Soedin., 1990, 282.
2. Holubek, No. 304.
3. Sadritdinov, p. 26.



ALTACONITINE

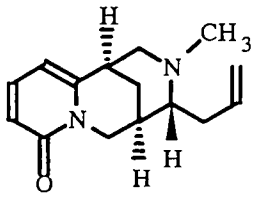
Aconitum altaicum, A.volubile
$C_{34}H_{47}NO_{12}$: 661.3098
mp: 235-237° (dec.)
IR: 3520, 3500, 1730, 1710, 1120

Mass: 661(M^+, 33), 646(44), 630(55), 616(22), 614(24), 602(100), 570 (33), 554(77), 386(66)
PMR: 1.34(3H, t, J=7, NCH_2CH_3), 1.41(3H, s, Ac), 3.24, 3.31, 3.33, 3.72(3H, s, 4×OCH_3), 4.11(1H, d, J=5, H-6β), 4.35(1H, d, J=3, H-15β), 4.47(1H, dd, J=6; 3), 4.88(1H, d, J=5, H-14β), 7.47-8.06(H-Ar)
^{13}C NMR

C-1	83.6	C-12	38.1	C-6′	58.4
2	65.2	13	73.8	16′	60.9
3	67.7	14	78.6	18′	58.7
4	43.8	15	78.6	CO	172.2
5	45.6	16	90.1	CH_3	21.2
6	82.4	17	59.3	CO	166.0
7	44.9	18	71.6	C_6H_5	129.7
8	91.5	19	48.6		129.5
9	45.3	NCH_2	43.8		128.5
10	40.5	CH_3	12.0		133.2
11	52.4	1′	56.0		

X-ray spectral analysis

1. Batbayar N., Batsurén D., Tashkhodzhaev B., Yusupova M.N., Sultankhodzhaev M.N., Khim. Prir. Soedin., 1993, 47; Unpub.

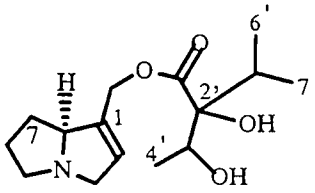


ALTERAMINE (TINCTORINE)

Thermopsis alterniflora
$C_{15}H_{20}N_2O$: 244.1576
T.pl: 112° (petr. eth.) [1, 2]
$[\alpha]_D$–43° (alc.)
{p-chl. 235°, picr. 216°, h-chl. 186°}
Sol-y: r-sol.chlf., alc., ac., water; sol.eth., bz.; sp. sol. petr. eth. [1]

UV: 234, 312(3.70, 3.80) [1]
IR: 3070, 2790, 1660, 1645, 1565, 1545, 910 [1]
Mass: 244(M^+), 203(100), 160, 146, 132, 117, 108, 98, 94, 82, 70, 68, 58, 41 [1]
PMR: 2.15(3H, s, NCH_3), 4.91, 5.05, 5.52, 5.72(1H, d, J=7, H-3), 6.14(1H, dd, J=9; 2, H-5), 7.10(1H, q, J=7; 9, H-4) [1]
Pharm.: Stimulates respiration but is inferior to cytisine. Lowers arterial pressure slightly [3].

1. Shaimardanov R.A., Iskandarov S., Yunusov S.Yu., Khim Prir. Soedin., 1971, 169.
2. Knoffel D., Schutte M.R., J. Prakt. Chem., 1970, 887.
3. Iskandarov S., Unpub.



AMABILINE

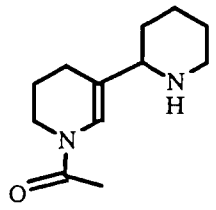
Cynoglossum amabile
$C_{15}H_{25}NO_4$: 283.1783
mp: oil
$[\alpha]_D$–7° (alc.) [1]
{picr. 113°} [1]

IR: 3340, 1720 [2]
Mass: 283(M^+), 120, 85, 83
Mass(SIMS): 284(M+1), 238, 220, 140, 124, 122, 120 [3]
PMR: 0.89(3H, d, J=6.8, H-6′), 0.94(3H, d, J=6.86, H-7′), 1.22(3H, d, J=6.05, H-4′), 1.55(1H, m, H-7), 1.79(2H, m, H-6), 1.99(1H, m, H-7), 2.17(1H, m, H-5′), 2.50(1H, m, H-5), 3.15(1H, m, H-5), 3.38(1H, dd, H-3), 3.93(1H, dd, H-3), 4.02(1H, q, H-3′), 4.19(1H, narrow s, H-8), 4.78(2H, m, H-9), 5.70(1H, narrow s, H-2) [2, 3]
^{13}C NMR: [2]

C-1	137.5	C-7	30.0	C-3′	70.5
2	125.5	8	71.5	4′	17.2
3	61.8	9	62.3	5′	32.2
5	56.8	1′	174.4	6′	16.1
6	25.9	2′	83.3	7′	17.7

1. Man'ko I.V., Rastit. Res., 1972, **8**, 243.
2. Roeder E., Breitmaier E., Birecka H., Frohlich M.W., Badziez-Crombach A., Phytochem., 1991, **30**, 1703.
3. Dodson C.D., Stermitz F.R., J. Natur. Prod., 1986, **49**, 727.

AMMODENDRINE

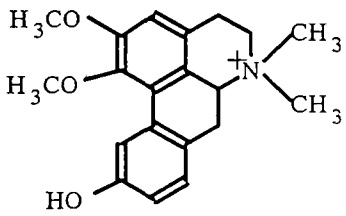


Ammodendron argenteum, A.conollyi, A.eichwaldii, A.karelinii, A.longiracemosum
$C_{12}H_{20}N_2O$: 328.1576
mp: 73-74° (petr.eth.)
$[\alpha]_D$ 0°
{p-chl. 200°, h-i. 220°}
Sol-y: r-sol. alc., ac., chlf.; sol. water, eth.; sp. sol. petr.eth. [1]

UV: 243 [2]
IR: 1622, 1578, 1325, 1300, 1270, 1255, 1199, 1189, 1127, 1075, 1041, 1020, 1003, 983, 969, 941, 919, 905, 886, 870, 861, 811, 782, 763 [2]
Mass: 208(M^+, 48), 179(43), 165(80), 137(42), 136(55), 123(65), 110(79), 109(68), 94(40), 43(100) [3]
Pharm.: LD_{50} 385 mg/kg (s/c, mice). Exhibits a permanent pressor action on narcotized animals [4].

1. Orekhov A.P., Proskurnina N.F., Zh. Org. Khim., 1938, **8**, 308.
2. Holubek, No. 803.
3. Pelletier, Vol. 2, p. 105.
4. Sadritdinov, p. 138.

AMURENINE

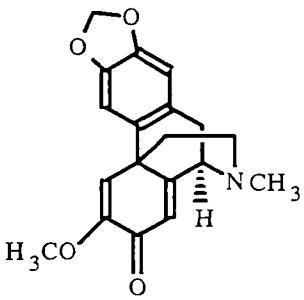


Berberis amurensis
$C_{20}H_{24}NO_3$: 326.1750
mp {chloride}: 194-195°
$[\alpha]_D$ {chloride}: −164° (meth.)
{o-Ac 187°}

UV: 265, 275, 305(4.23, 4.25, 4.16)
IR: 3200, 1610, 1580, 1470
Mass: 326, 325, 309, 296, 268, 58(100)
PMR(CD_3OD): 3.00, 3.36(3H, s, $N(CH_3)_2$), 3.60(3H, s, 1-OCH_3), 3.82(3H, s, 2-OCH_3), 6.65(1H, dd, J=8.5, J=1.5, H-9), 6.82(1H, s, H-3), 7.11(1H, dd, J=8.5, J=1, H-8), 7.72(1H, dd, J=1.5, J=1, H-11)

1. Yusupov M.M., Karimov V., Shakirov R., Gorovoi P.G., Khim. Prir. Soedin., 1993, 401.

AMURINE

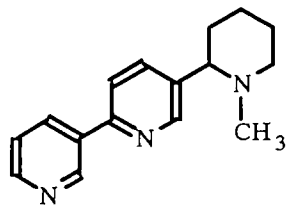


Papaver croceum
$C_{19}H_{19}NO_4$: 325.1314
mp: 212-213° (ac.)
$[\alpha]_D$+9° (meth.)
UV: 238, 290
IR: 1680, 1660, 1623, 1570, 1490, 1040, 935
Mass: 325(M^+), 324, 310, 297, 282, 162.5($^{++}$)

PMR: 1.65-3.65(7H, m), 2.25(3H, s, NCH_3), 3.60(3H, s, OCH_3), 5.80(2H, s, CH_2O_2), 6.27(2H, s), 6.57, 6.79(1H, s)
HPLC: [2]
ORD: [3]

1. Veznik F., Israilov I.A., Taborska E., Slavik J., Collect., 1985, **50**, 1745.
2. Hutin M., Oztekin A., Cave A., Foucher J.P., J. Chromatogr., 1983, **265**, 139.

3. Dopke W., Flentje H., Jeffs P.W., Tetrahedron, 1968, 4459.

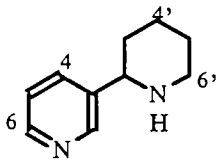


ANABASAMINE

Anabasis aphylla
$C_{16}H_{19}N_3$: 253.1579
mp: 65-66°(petr.eth.)
$[\alpha]_D$+107°(alc.)
{h-chl. 265°, h-b. 293°, picr. 90°} [1]

UV: 246, 278(4.10, 4.00) [1]
IR: 3090-3030, 2950-2800, 2780-2500, 1593-1560, 1470, 1330, 825-815, 810, 805 [1]
Mass: 253(M^+), 252, 224, 210, 98(100) [1]
PMR: 1.20-1.60(6H, m, 3×CH_2), 1.85(3H, s, NCH_3), 1.90-2.00(1H), 2.80(2H, CH_2), 7.20(2H, d), 7.60(2H, d), 8.20(1H, d), 8.50(2H, t), 9.10(1H, d) [1]
Pharm.: LD_{50} 159 mg/kg (i/p, mice). Hypothermal action. Enhances the effect of aminazine [chlorpromazine] and hypnotics, possesses a central myorelaxant effect and pronounced analgesic activity, and enhances the similar property of morphine 2- to 12-fold [2]. Sedative, hypotensive, and ganglioblocking actions. Lowers the tonus of the smooth musculature and retards the cardiac rhythm [3].

1. Mukhamedzhanov S.Z., Aslanov Kh.A., Sadykov A.S., Leont'ev V.B., Kiryukhin V.K., Khim. Prir. Soedin., 1968, 158.
2. Sadritdinov, p. 96
3. Khazbievich I.S., in: The Pharmacological Properties of Natural Substances [in Russian], Fan, Tashkent, 1973, p. 37.



(–)-ANABASINE

Anabasis aphylla, Leontice alberti, L.darwasica, Nicotiana debney, N.glauca, N.rotundifolia, Verbascum songaricum
$C_{10}H_{14}N_2$: 162.1157
bp: 104-105° (2 mm Hg), 276° (760 mm Hg) [1]
$[\alpha]_D$–52° (alc.) [1]
{p-chl. 237°, picr. 203°} [1]

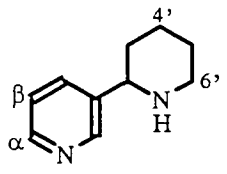
UV: 262(3.20) [2, 3]
IR: 3270, 3075, 3045, 3020, 2980, 2925, 2850, 2785, 2720, 2690, 1589, 1574, 1478, 1461, 1440, 1423, 1370, 1351, 1318, 1300, 1265, 1208, 1183, 1150, 1110, 1064, 1052, 1027, 1020, 998, 945, 935, 918, 889, 850, 806, 795, 770, 716 [2, 3]
Mass: 162(M^+), 161, 133, 119, 105, 84(100), 56, 42
^{13}C NMR: [4]

C-2	148.9	C-5	123.6	C-3′	34.9
3	140.9	6	148.8	4′	24.3
4	134.3	2′	59.9	5′	25.7
				6′	47.7

HPLC: [5]
Pharm.: LD_{50} 13.7, 10.2, 240 mg/kg (s/c, i/p, oral, mice). Stimulates respiration, raises arterial pressure accompanied by a retardation of the rhythm of cardiac contractions and an increase in the amplitude of pulse waves. Potentiates the action of acetylcholine and barium chloride on the intestine. In low doses (0.25-0.50 mg/kg) intensifies the spontaneous motor activity of muscles, and in higher doses (1.50-3.00 mg/kg) suppresses it. Insecticide [6]. Shortens the time of action of hypnotics. Protonated forms of anabasine possess a neuroleptic action [7].

1. Orekhov A.P., Men'shikov G.P., Byull. NIKhFI, 1931, No. 1, p. 1.

2. Holubek, No. 404.
3. Ziyaev R., Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1971, p. 853.
4. Shamma, No. 24.
5. Saunders J.A., Blume D.E., J. Chromatogr., 1981, **205**, 147.
6. Sadritdinov, 97.
7. Sadykov A.S., Izv. AH SSSR, 1983, 2432.

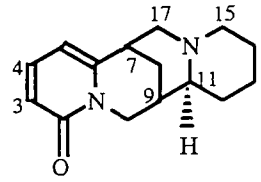


(+)-ANABASINE

Malacocarpus crithmifolius
$C_{10}H_{14}N_2$: 162.1157
bp: 145-150° (25 mm Hg)
$[\alpha]_D$+7° (ac.), +10° (no solvent) n_D^{20} 1.5412

{p-chl. 153°, nitr. 80°, oxalate 68°, picr. 186°} [1]
UV: 255 sh, 260, 264 sh (3.14, 3.18, 3.04) [1, 2]
UV(H^+): 260 [1]
IR: 3670, 3330, 3120, 2950, 2870, 2830, 2740, 2710, 2500, 1600, 1590, 1460, 1380, 1330, 1160, 1120, 1060, 1040 [2]
Mass: 162(M^+, 65), 84(100) [3]
PMR: 1.50(6H, narrow s, 3×CH_2), 2.60(1H, s, NH), 2.90(2H, m, CH_2), 3.47(1H, m), 7.15(1H, m, H-β), 7.64(1H, m, H-γ), 8.20–8.42(2H, m, H-α) [3]
HPLC: [4]

1. Zharekeev B.Kh., Telezhenetskaya M.V., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 538.
2. Zharekeev B.Kh., Unpub.
3. Zharekeev B.Kh., Author's Abstract of Candidate's Dissertation, Tashkent, 1974.
4. Saunders J.A., Blume D.E., J. Chromatogr., 1981, **205**, 147.



ANAGYRINE

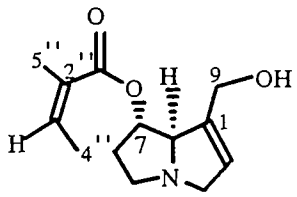
Ammodendron conollyi, A.eichwaldii, A.karelinii, A.longiracemosum, Genista tinctoria, G.transcaucasica, Sophora flavescens, Spartium junceum, Thermopsis alterniflora, T.lanceolata
$C_{15}H_{20}N_2O$: 244.1576
mp: oil
$[\alpha]_D$–165°(alc.)
{h-chl. 285°, picr. 253°, p-chl. 315°, m-i. 264°} [1]

UV {h-chl.}: 233, 310(3.77, 3.90) [2]
IR {h-chl.}: 3465, 3380, 1663, 1655, 1623, 1589, 1572, 1552, 1301, 1270, 1249, 1218, 1188, 1163, 1134, 1088, 1077, 1058, 1043, 1022, 1010, 993, 975, 946, 910, 878, 860, 852, 832, 808, 800, 792, 776, 732, 723 [2]
Mass: 244(M^+, 22), 243(5), 160(7), 146(13), 136(9), 122(7), 98(100), 97(10), 41(22) [3]
^{13}C NMR: [4]

C-2	163.5	C-7	35.6	C-12	25.7
3	116.6	8	22.6	13	19.2
4	138.6	9	32.7	14	20.8
5	104.3	10	51.6	15	53.0
6	151.1	11	63.3	17	54.4

Abs. conf.: 7R, 9R, 11R [5]
HPLC: [6]
GLC: [7]

1. Yunusov S.Yu., Alkaloids [in Russian], Fan, Tashkent, 1981, p. 219.
2. Holubek, No. 20.
3. Neuer-Jehle N., Nesvadba H., Spiteller G., Mh. Chem., 1964, **95**, 687.
4. Shamma, No. 215.
5. The Alkaloids, 1967, Vol. 9, p. 175.
6. Takamatsu S., Saito K., Ohmiya S., Ruangrungsi N., Murakoshi I., Phytochem., 191, **30**, 3793.
7. Ueno A., Morinaga K., Fukushima S., Okuda S., Chem. Pharm. Bull., 1978, **26**, 1832.



7-ANGELYLHELIOTRIDINE

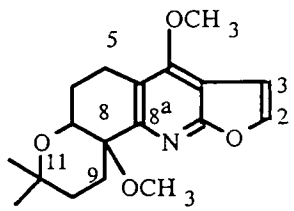
Rindera austroechinata
$C_{13}H_{19}NO_3$: 237.1365
mp: 116-117° [1]
$[\alpha]_D$+22°(alc.), −16° (chlf.) [1]
{picr. 164° [1], m-i. 141° [2], angelic acid 46°, heliotridine 118°, $[\alpha]_D$+32° [3]}

UV: 218(4.07) [4]
IR: 3100, 1700, 1640 [5]
Mass: 237(M^+, 2), 219, 154, 137, 124, 111, 106, 94, 80(100), 55 [5]
PMR: 1.85(3H, m, 5″-CH_3), 1.90(2H, m, H-6), 1.97(3H, dd, 4″-CH_3), 2.90(1H, m, H-5), 3.22(1H, m, H-5), 3.36(1H, d, H-3), 3.99(1H, d, H-3), 4.14(1H, narrow s, H-8), 4.33(2H, s, H-9), 5.12(1H, narrow s, H-7), 5.61(1H, s, H-2), 6.12(1H, q, H-3″) [6]
^{13}C NMR: [5]

C-1	127.7	C-7	77.7	C-2″	140.8
2	139.0	8	79.3	3″	124.4
3	62.0	9	59.8	4″	15.9
5	53.8	1″	168.7	5″	20.5
6	30.2				

CD: [7]
X-ray spectral analysis: [8]

1. Telezhenetskaya M.V., Matkarimov A.D., Khadzhibekov S.N., Yunusov S.Yu., Khim. Prir. Soedin., 1987, 463.
2. Santavy F., Sula B., Manis V., Collect., 1962, **27**, 1666.
3. Klasek A., Vrublovsky P., Santavy F., Collect., 1967, **32**, 2512.
4. Simanek V., Klasek A., Santavy F., Collect., 1969, **34**, 1832.
5. Roder E., Wiedenfeld H., Stengl P., Planta Medica, 1980, **40**, 182.
6. Asibal C.F., Clinski J.A., Gelbaum L.T., Zalkow L.H., J. Natur. Prod., 1989, **52**, 109.
7. Hrbek J., Hruban L., Klasek A., Kochetkov N.K., Likhosherstov A.M., Santavy F., Snatzke G., Collect., 1972, **37**, 3918.
8. Wiedenfeld H., Roder E., Arch. Pharm., 1981, **314**, 737.



ANHYDROPERFORINE

Haplophyllum perforatum
$C_{18}H_{23}NO_4$: 317.1627
mp: 143-144° (alc.)
$[\alpha]_D$−35° (meth.) [1]
Sol-y: sol. eth., chlf., bz. [1]

UV: 258(4.08) [2]
IR: 3130, 1610, 1580, 1542, 1470, 1448 [2]
Mass: 317($M^{+\cdot}$, 1), 302(9), 287(100), 272(16), 229(70), 218(26), 216(19), 203(12), 202(27), 188(16), 174(4) [3]
PMR(CCl_4): 0.91, 1.20(3H, s, 2×CH_3), 3.08, 4.15(3H, 2×OCH_3), 3.76(1H, q, J=2.5; 3.5, H-7), 6.76, 7.39(1H, H-3, H-2) [3]
^{13}C NMR: [4]

C-2	142.6	C-5	18.2	C-10	25.8
2a	161.9	6	22.3	11	71.0
3	104.5	7	70.8	12	30.7
3a	118.0	8	73.0	13	21.8
4	158.3	8a	149.2	4-OCH_3	58.1
4a	104.9	9	34.0	8-OCH_3	50.0

1. Bessonova I.A., Abdullaeva Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 682.
2. Faizutdinova Z.Sh., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 360.
3. Bessonova I.A., Faizutdinova Z.Sh., Rashkes Ya.V., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 273; Bessonova I.A., Unpub.
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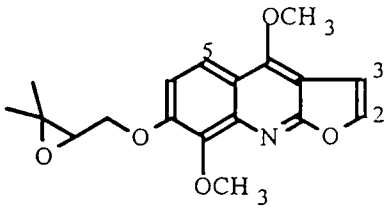
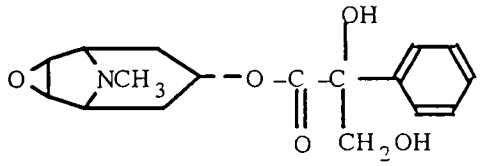


ANHYDROEVOXINE

Haplophyllum ferganicum, H.perforatum
$C_{18}H_{19}NO_5$: 329. 1263
mp: 136-138° (e-a.-hx.) [1]
$[\alpha]_D$+13° (chlf.) [2]
Sol-y: r-sol. chlf.

UV: 248, 310, 320, 332
IR: 3170, 3138, 1621, 1585, 1510, 1495, 1370 [3]
Mass: 329($M^{+\cdot}$, 100), 314(33), 300(13), 258(19), 245(90), 227(83) [1]
PMR: 1.24, 1.26(3H, s, CH_3), 3.11(1H, t, J=5, –CH–O), 4.20(2H, d, J=5, CH_2-O), 3.99, 4.28(3H, s, 2×OCH_3), 6.93, 7.47(1H, d, J=3, H-3, H-2), 7.14, 7.87(1H, d, J=9, H-6, H-5) [1]

1. Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1982, 530.
2. Dreyer D.L., J. Org. Chem., 1970, **35**, 2420.
3. Bessonova I.A., Unpub.

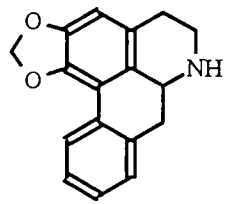


ANISODINE

Scopolia tangutica
$C_{17}H_{21}NO_5$: 361.1512
mp: 197-200°
$[\alpha]_D$–29° (water), –12° (alc.)

IR: 3600, 3510, 1740, 860
PMR(CF_3COOH): 4.39, 4.84(1H, d, J=12, CH_2-O), 7.48(5H, m, H-Ar) [1, 2]
HPLC: [3]

1. Minina S.A., Astakhova T.V., Fesenko D.A., Khim. Prir. Soedin., 1977, 712.
2. Hsieh, Ching-Hsi; Wang, Lin; Liu, Yung-Lung; Shang, Tian-Ming, Hsieh, Feng-Chin; Ke, Ta-Lun. K'o Hsueh Tung Pao., 1975, **20**, No. 1, 52; Chem. Abstr., 1975, **83**, 93824.
3. He, Li-Ji; Zhang, Gua-De; Tong, Ju-Ji, Sagara K., Oshima T., Yoshida T., J. Chromatogr., 1989, **481**, 428.

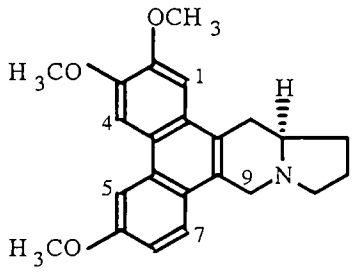


ANONAINE

Roemeria refracta, Liriodendron tulipiferum
$C_{17}H_{15}NO_2$: 265.1103
mp: 122-123° (eth.) [1]
$[\alpha]_D$–52° (chlf.) [1]
{h-chl. 277° (dec.)} [1]

UV: 234, 272, 315
IR: 1040, 945
Mass: 265(M^+), 264, 250, 236, 235, 132.5 ($^{++}$)
PMR: 5.82, 5.96(1H, d, J=1.5, CH_2O_2), 6.54(1H, s), 7.05-8.00(4H, m) [2]
Pharm.: LD_{50} 109 mg/kg (s/c., mice). In white mice and rabbits causes convulsions and also a brief lowering of the arterial pressure and the suppression of respiration [3].

1. Israilov I.A., Unpub.
2. Johns S.R., Lamberton J.A., Sioumis A.A., Austral. J. Chem., 1968, **21**, 1383.
3. Sadritdinov, p. 200.

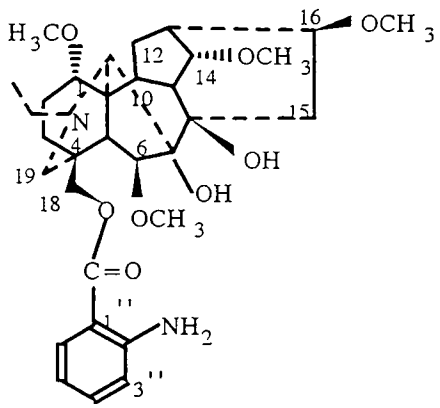


ANTOFINE

Antitoxicum funebre
$C_{23}H_{25}NO_3$: 363.1834
mp: 213-215° (ac.)
$[\alpha]_D$–165° (chlf.)
UV: 259, 286, 342, 360(4.71, 4.46, 2.99, 2.61)
IR: 845, 810, 775

Mass: 363(M^+), 294(100), 279, 251, 181.5($^{++}$)
PMR: 3.90, 3.93, 3.98(3H, s, 3×OCH_3), 7.24(1H, dd, J=9; 2.4, H-7), 7.36(1H, s, H-1), 7.82(1H, d, J=9, H-8), 8.09(2H, s, H-4, H-5)

1. Pailer M., Streicher W., Mh. Chem., 1965, **96**, 1094.



ANTHRANOYLLYCOCTONINE (INULINE)

Aconitum septentrionale, A.umbrosum, Delphinium biternatum, D.confusum, D.dictyocarpum, D.elisabethae, D.flexuosum, D.freynii, D.oreophilum, D. puniceum, D.semibarbatum, D.speciosum, D.thamarae
$C_{32}H_{46}N_2O_8$: 586.3254
mp: 153-155° (ac.)
$[\alpha]_D$+50° (chlf.)
Sol-y.: sol.chlf., meth.

IR: 3580, 3525, 3450, 3240, 1695, 1630, 1595, 1490, 1465, 1395, 1306, 1255, 1243, 1166, 1115, 1090, 1030, 985, 970, 863, 810, 760, 712 [1]
Mass: 586(M^+, 8), 571(21), 569(3), 568(3.2), 555(100), 538(4.1), 523(3)
PMR: 1.08(3H,t,J=7,NCH_2CH_3), 3.24, 3.31, 3.36, 3.40(3H, s, 4×OCH_3), 6.70-7.68(H-Ar) [1]

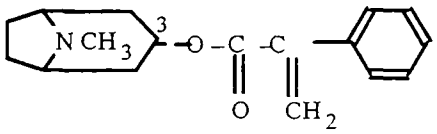
^{13}C NMR: [2]

C-1	84.0	C-12	28.8	C-6′	57.9
2	26.2	13	46.2	14′	58.0
3	32.3	14	84.0	16′	56.3
4	37.6	15	33.7	Ar-C=O	167.9
5	43.3	16	82.6	1″	110.4
6	91.0	17	64.6	2″	150.9
7	88.6	18	68.7	3″	116.9*
8	77.6	19	52.6	4″	134.4**
9	50.4	NCH_2	51.0	5″	116.4*
10	38.3	CH_3	14.1	6″	130.8**
11	49.1	1′	55.8		

HPLC [3]

Pharm.: LD_{50} 20.1, 95.0 mg/kg (i/v, i/p, mice). Lowers arterial pressure, exhibits a ganglioblocking and curaremimetic action. In vitro in a concentration of 2×10^{-6} M blocks by 50% the amplitude of miniature end-plate potentials [4].

1. Tel'nov V.A., Golubev N.M., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 675; Unpub.
2. Pelletier S.W., Mody N.V., Sawhuey R.S., Bhattacharyya J., Heterocycles, 1977, 7, 327.
3. Manners G.D., Panter K.E., Ralphs M.H., Pfister J.A., Olsen J.D., James I.F., J. Agric. Food Chem., 1993, **41**, 96.
4. Dzhakhangirov F.N., Unpub.

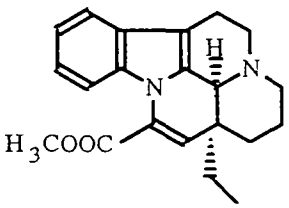


APOATROPINE

Atropa belladonna, Datura innoxia, D.stramonium, Hyoscyamus niger, H.pusillus, Physochlaina alaica, Ph. orientalis

$C_{17}H_{21}NO_2$: 271.1572
mp: 62° (chlf.)
$[\alpha]_D$ 0°
{h-b. 248°, h-chl. 239°, picr. 168°, chl-aur. 112°} [1]
UV: 251(3.47)
IR: 1715, 1620, 780, 710 [2]
Mass: 271(M^+)
PMR: 2.20(3H, s, NCH_3), 5.08(1H, t, H-3), 5.79, 6.26(1H, d, $C=CH_2$), 7.25(5H, s) [2]

1. King H., Ware L., J. Chem. Soc., 1941, 331.
2. Aripova S.F., Unpub.



(+)-APOVINCAMINE

Vinca erecta, V.minor
$C_{21}H_{24}N_2O_2$: 336.1838
mp: 160-162° (meth.) [1]
$[\alpha]_D$+202° (pyr.) [2], +121° (chlf.) [3]

UV: 230, 275, 315(4.40, 4.00, 3.80) [2]
IR: 1725, 1630, 1610, 750 [1]; 1750, 1255, 745 [2]
Mass: 336(M^+, 100), 307(83), 266(75), 251(10) [1]; 336(M^+, 33), 307(100), 266(92) [4]
HPLC: [5]

1. Rakhimov D.A., Sharipov M.R., Aripov Kh.N., Malikov V.M., Shakirov T.T., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 713.
2. Robakidze Z.V., Mudzhiri M.M., Vachnadze V.Yu., Mudzhiri K.S., Khim. Prir. Soedin., 1980, 735.
3. Cava M.P., Tjoa S.S., Ahmed Q.A., Da Rocha I., J. Org. Chem., 1968, **33**, 1055.
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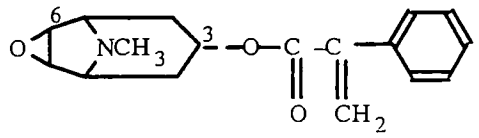
5. Pietta P., Rava A., Catenacci E., J. Chromatogr., 1981, **210**, 149.

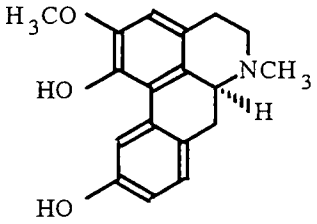


APOHYOSCINE

Datura innoxia, D.stramonium, Hyoscyamus niger, H.pusillus, Physochlaina alaica
$C_{17}H_{19}NO_5$: 285.1365

mp: 80° (eth.)
{picr. 216° (dec.), chl-aur. 185°}
IR: 1700, 1605, 780, 710
Mass: 285(M^+)
PMR: 2.40(3H, s, NCH_3), 3.17(H-6, H-7), 4.95(1H, t, H-3), 5.65, 6.15(1H, d, $=CH_2$), 7.22(5H, H-Ar) [3]

1. Mirzamatov R.T., Unpub.
2. Evans W.P., Woolley J.G., J. Chem. Soc., 1965, 4936.
3. Willstatter R., Hug E., Z. Physiol. Chem., 1912, 79, 146.



APOGLASOVINE

Liriodendron tulipiferum
$C_{18}H_{19}NO_3$: 297.1365
mp {h-chl.}: 256° (ac.-alc.) [1]
$[\alpha]_D$ {h-chl.} +165° (chlf.) [2]
UV: 218, 266, 275, 307 [3]

IR: 3460, 3300, 1600, 1302, 1136 [3]
PMR: 2.57(3H, s, NCH_3), 3.92, s, OCH_3), 6.62(1H, q, J=7.8, 2.5), 6.77(1H, s), 7.18(1H, d, J=7.8), 8.08(1H, d, J=2.5) [3]

1. Ziyaev R., Ikramov K., Kadyrov Kh.A., Abdusamatov A., Khim. Prir. Soedin., 1991, 587.
2. Cava M.P., Behforouz M., Mitchell M.J., Tetrahedron Lett., 1972, 4647.
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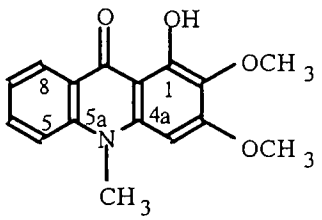


ARBORININE

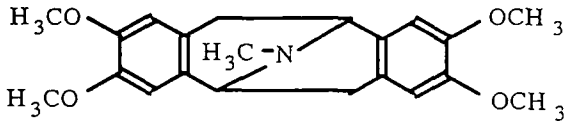
Ruta graveolens
$C_{16}H_{15}NO_4$: 285.1001
mp: 175-176°
{norarborinine 243°} [1]

UV: 217, 265 sh, 274, 319 sh, 395(4.38, 4.63, 4.71, 3.77, 3.84) [2]
IR: 1637, 1587, 1550, 1493, 1460, 1316, 1282, 1143, 1105, 1053, 990, 855 [2]
Mass: 285(M^+, 74), 284(23), 271(23), 270(100), 256(14), 243(13), 242(59), 226(7), 212(9), 200(8), 199(39), 184(6), 171(17), 170(18), 143(11), 142(8), 128(8), 115(13), 77(15) [3]
PMR: 3.65, 4.07, 4.12(3H, s, NCH_3, OCH_3), 6.07(1H, s, H-4), 6.98-7.80(3H, m, H-Ar), 8.23(1H, d, H-8) [2]

^{13}C NMR: [4]

C-1	155.7	C-5	114.5	C-9a	105.3
2	129.9	6	133.7	2-OCH_3	60.6
3	159.1	7	121.2	3-OCH_3	55.8
4	86.7	8	126.0	NCH_3	33.8
4a	140.1	8a	120.3		
5a	141.6	9	180.4		

1. Banerjee S.K., Chakravarti D., Chakravarti R.N., Fales H.M., Klayman D.L., Tetrahedron, 1961, **16**, 251.
2. Pakrashi S.C., Roy S.K., Johnson L.F., George T., Djerassi C., Chem. Ind., 1961, 464.
3. Bowie J.H., Cooks R.G., Prager R.H., Thredgold H.M., Austral. J. Chem., 1967, **20**, 1179.
4. Bergenthal D., Mester I., Rozsa Z., Reisch J., Phytochem., 1979, **18**, 161.

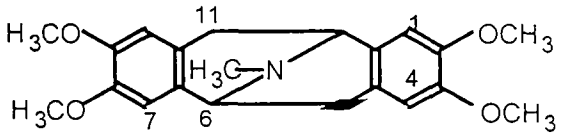


(+)-ARGEMONINE

Leontice smirnowii
$C_{21}H_{25}NO_4$: 355.1783
mp:152-153° [1]

$[\alpha]_D$+218° (alc.) [1]
{p-chl. 165°, m-i. 270°} [2]
IR: 3005, 2840, 1610, 1520, 1450 [2]
Mass: 355(M^+, 30), 204(100) [2]
PMR: 2.44(3H, s, NCH_3), 3.68, 3.77(6H, s, 4×OCH_3), 6.38, 6.51(2H, s, p-H-Ar) [2]

1. Tkeshelashvili E.G., Mudzhiri K.S., Khim. Prir. Soedin., 1975, 807.
2. Tkeshelashvili E.G., Iskandarov S., Mudzhiri K.S., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 539.



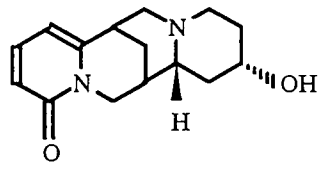
(–)-ARGEMONINE

Argemone platyceras, Thalictrum minus, Th. strictum
$C_{21}H_{25}NO_4$: 355.1783

mp: 147-148° [1], 154-155° [2]
$[\alpha]_D$–208° (chlf.) [2]
UV: 223, 287(4.20, 4.00) [2]
Mass: 355(M^+, 30), 354, 204(100) [3]
PMR: 2.57(3H, s, NCH_3), 2.62(2H, d, J=17, H-5, H-11), 3.42, 3.53(2H, dd, J=6; 17, H-5, H-11), 3.84, 3.92(6H, s, 4×OCH_3), 4.08(2H, d, J=6, H-6, H-12), 6.59, 6.76(2H, s, p-H-Ar) [3]
^{13}C NMR: [4]

C-1,	C-10	109.9	C-4,	C-7	111.4	C-6,	C-12	66.2
2,	9	147.3	4a,	10a	123.7	6a,	12a	129.7
3,	8	147.7	5,	11	33.3		NCH_3	40.6

1. Gorovoi P.G., Ibragimov A.A., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 533.
2. Chelombit'ko V.A., Nazarova L.E., Khim. Farm. Zh., 1988, 580.
3. Manske R.H.F., Shin K.H., Battersby A.R., Shaw D.F., Can. J. Chem., 1965, **43**, 2183.
4. Shamma R., Moniot J.L., Isoquinoline Alkaloids Research, Plenum Press, New York–London, 1978, p. 69.
5. Kaneda T., Sakabe N., Tanaka J., Bull. Chem. Soc. Jpn., 1976, **49**, 1263.

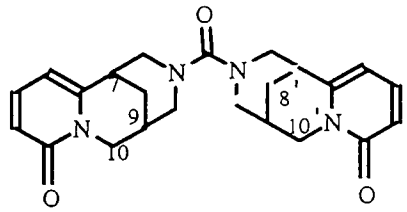


ARGENTAMINE

Ammodendron argenteum, A.longiracemosum, Thermopsis alterniflora
$C_{15}H_{20}N_2O_2$: 260.1525
mp: 202° (bz.)

$[\alpha]_D$–142° (alc.)
{p-chl. 246° (meth.), h-chl. 298° (alc.-ac.), picr. 230°}
UV: 232, 308(4.30, 4.40) [1, 2]
IR: 3260, 3040, 2810-2675, 1640, 1545, 800 [1, 2]
Mass: 260(M^+), 243, 215, 160, 152, 146, 114, 100, 96, 83, 70, 55 [2]

1. Kushmuradov Yu.K., Fam Khoang Ngok, Sadykov A.S., Aslanov Kh.A., Nauch. Trudy TashGU, 1968, Issue 341, Vol. 3, p. 95.
2. Fam Khoang Ngok, Kushmuradov Yu.K., Aslanov Kh.A., Sadykov A.S., Ziyavitdinov Z.S., Zaikin V.G., Vul'fson N.S., Khim. Prir. Soedin., 1970, 111.

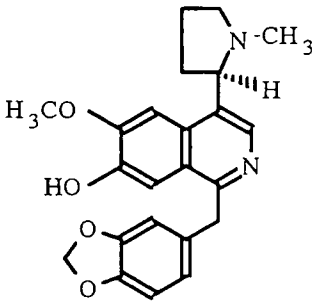


ARGENTINE

Ammodendron argenteum, A.longiracemosum, Sophora griffithii, Thermopsis alpina, T.alterniflora, T.lanceolata
$C_{23}H_{26}N_4O_3$: 406.2005
mp: 258-259° (alc.-ac.)
$[\alpha]_D$–318° (alc.)

Sol-y.: r-sol. chlf., alc.; sol. bz., ac., water; sp. sol. petr. eth., eth. [1]
UV: 232, 308(4.19, 4.16) [1]
IR: 1665, 1645, 1565, 1555, 800 [2]
Mass: 406(M^+), 217, 189, 160, 146 [2]
PMR: 1.90(H-8, H-8′), 2.40(H-7, H-7′), 2.70-3.00(1OH), 3.10(J=13, H-10′a), 4.25(J=13, H-10′e), 6.00, 6.55, 7.35 [3]

1. Kushmuradov Yu.K., Fam Khoang Ngok, Sadykov A.S., Aslanov Kh.A., Nauch. Trudy TashGU, 1968, Issue 341, Vol. 3, p. 95.
2. Fam Khoang Ngok, Kushmuradov Yu.K., Aslanov Kh.A., Sadykov A.S., Nauch. Trudy TashGU, 1968, Issue 341, Vol. 3, p. 99.
3. Sadykov, p. 72.

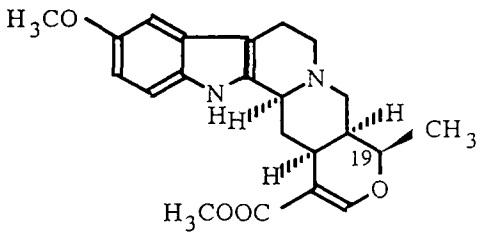


ARENINE

Papaver arenarium
$C_{23}H_{24}N_2O_4$: 392.1736
mp: amorph.
$[\alpha]_D$–31° (meth.)
UV: 244, 291, 319, 333(4.49, 3.78, 3.57, 3.57)
IR: 3300, 1040, 930

Mass: 392(M^+), 377, 363, 349, 135, 84(100)
PMR: 1.90-3.50(m), 2.19(3H, s, NCH_3), 3.94(3H, s, OCH_3), 4.32(2H, s, CH_2), 5.74(2H, s, CH_2O_2), 6.53-6.60(3H, m, 3×H-Ar), 7.47, 7.74, 8.30(1H each, s, H-Ar)

1. Israilov I.A., Manushakyan M.A., Yunusov M.S., Mnatsakanyan V.A., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 417.



ARICINE

Rauwolfia canescens
$C_{22}H_{26}N_2O_4$: 382.1893
$[\alpha]_D$–79° (pyr.) [2], –59° (alc.) [3]
{h-chl. 255°, h-b. 264°, picr. 223°, oxalate 245°} [3]

UV: 227, 250, 279, 298 sh (4.54; 4.05; 3.98; 3.88) [4]; 229, 281 [2]
IR: [2]
Mass: [4]
PMR: 1.37(J=6.3, 19-CH_3) [5]
ORD: [4]
Stereochemistry: [4-7]

1. Belikov A.S., Khim. Prir. Soedin., 1969, 64.
2. Stoll A., Hofmann A., Brunner R., Helv. Chim. Acta, 1955, **38**, 270.
3. Iacobucci G., Deulofeu V., J. Org. Chem., 1957, **22**, 94.
4. Antonaccio L.D., Pereiro N.A., Gilbert B., Vorbrueggen H., Budzikiewicz H., Wilson J.M., Durham L.J., Djerassi C., J. Am. Chem. Soc., 1962, **84**, 2161.
5. Shamma M., Richey J.M., J. Am. Chem. Soc., 1963, **85**, 2507.
6. Finch N., Taylor W.I., Emerson T.R., Klyne W., Swan R.J., Tetrahedron, 1966, **22**, 1327.
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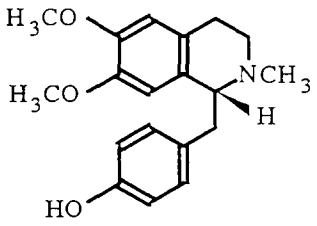
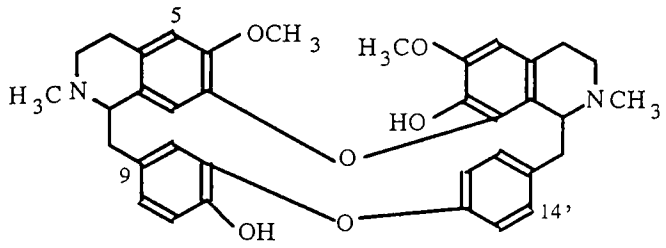


ARMEPAVINE

Papaver armeniacum, P.floribundum, P.fugax, P.persicum, P.zangezuricum
$C_{19}H_{23}NO_3$: 313.1678
mp: 148-149° (ac.-eth.) [1]
$[\alpha]_D$–118° (chlf.) [1]
{h-chl. 152°, oxalate 212°, m-i. 200°, O-Me 64°} [2]

UV: 228, 282 [2]
IR: 3500 [3]
Mass: 206, 191, 176 [3]
PMR: 2.50(3H, s, NCH_3), 3.40, 3.72(3H, s, 2×OCH_3), 5.87, 6.48(1H, s, p-H-Ar), 6.56, 6.85(2H, d, J=8, o-H-Ar) [3]
Pharm.: LD_{50} 22.2 mg/kg (i/v, mice). In acute experiments on cats lowers arterial pressure on i/v administration. Stimulates the muscles of isolated animal uteri [4].

1. Konovalova R.A., Yunusov S.Yu., Orekhov A.P., Zh. Org. Khim., 1937, **7**, 1791; Yunusov S.Yu., Konovalova R.A., Orekhov A.P., Zh. Org. Khim., 1940, **10**, 641.
2. Craig J.C., Martin-Smith M., Roy S.K., Stenlake J.B., Tetrahedron, 1966, **22**, 1335.
3. Israilov I.A., Unpub.
4. Sadritdinov, p. 203.



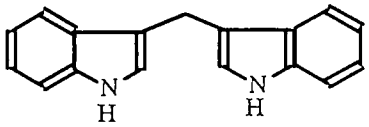
AROMOLINE

Berberis heteropoda, Thalictrum minus
$C_{36}H_{38}N_2O_6$: 594.2730
mp: 189-190° (chlf.) [1]
UV: 287 [1]
UV(OH^-): 295 [1]

Mass: 594(M^+), 593, 487, 403, 381, 192, 191, 190, 174, 168 [1]
PMR($CDCl_3$+CDOD): 2.46(6H, s, 2×NCH_3), 3.48, 3.72(3H, s, 2×OCH_3), 6.23-7.27(10 H, m, H-Ar) [1]
PMR: 2.55(2-NCH_3), 2.61(2′-NCH_3), 3.60(6-OCH_3), 3.61(H-1), 3.81(6′-OCH_3), 4.22(H-1′), 5.63(H-10), 6.36(H-5′), 6.37(H-5), 6.41(H-11′), 6.68(H-8), 6.78(H-14), 6.82(H-13), 6.89(H-10′), 6.91(H-13′), 7.45(H-14′) [2]

1. Mukhamedova S., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 393.
2. Guinaudeau H., Freyer A.J., Shamma M., Natur. Prod. Rep., 1986, 5, 477.

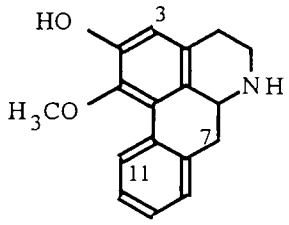
ARUNDINE



Arundo donax
$C_{17}H_{14}N_2$: 246.1157
mp 166-168° (meth.)
Sol-y.: sol. in meth., alc.

IR: 3400, 1620, 1600, 1470, 860, 800.
Mass: 246(M^+), 130, 96, 75, 51
PMR: 3.85(2H, narrow s, CH_2), 6.85-7.65(10H, H-Ar).

1. Khuzhaev V.U., Aripova S.F., Shakirov R., Khim. Prir. Soedin., 1994, 685.



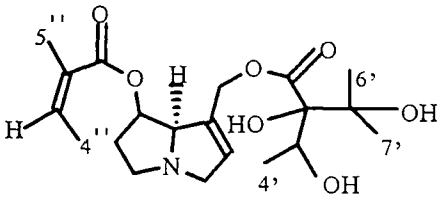
ASIMILOBINE

Liriodendron tulipiferum, Zizyphus jujuba
$C_{17}C_{17}NO_2$: 267.1259
mp: 175-177° (ac.) [1]
$[\alpha]_D$–21° (chlf.) [1]
{h-chl. 244° (dec.)} [1]

UV: 274, 308(4.21, 3.51) [2]
PMR: 3.58(3H, s, OCH_3), 6.64(1H, s, H-3), 7.17-7.30(3H, m, H-8, H-9, H-10), 8.13(1H, m, H-11) [3]
^{13}C NMR (DMSO-d_6): [3]

C-1	143.2	C-4	28.5	C-9	127.5*
1a	125.1	5	42.6	10	127.2*
1b	129.3	6a	53.2	11	126.5*
2	148.9	7	36.9	11a	132.1
3	115.7	7a	136.3	1-OCH_3	59.3
3a	126.8	8	127.7*		

1. Ziyaev R., Irgashev T., Israilov I.A., Abdullaev N.D., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 239.
2. Guinaudeau H., Leboeuf M., Cave A., Lloydia, 1975, **38**, 276.
3. Guinaudeau H., Leboeuf M., Cave A., Lloydia, 1979, **42**, 325.

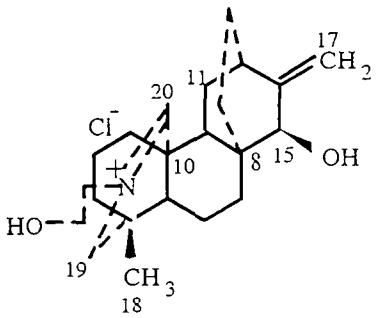


ASPERUMINE

Echium vulgare, Symphytum asperum, S.caucasicum
$C_{20}H_{31}NO_7$: 397.2101
mp: oil
$[\alpha]_D$ 0° (alc.) [1]
{picr. 137°, picrolonate 171°, angelic acid 45°} [1]

UV: 222(3.90) [2]
IR: 3500-2800, 1730, 1708, 1645 [2]
Mass: 397(M^+), 136, 120, 119, 93, 80 [2]
PMR: 1.00-1.15(9H, m, 4'-CH_3, 6'-CH_3, 7'-CH_3), 1.77(3H, s, 5''-CH_3), 1.92(3H, d, J=7, 4''-CH_3), 6.02(1H, m) [2]

1. Man'ko I.V., Kotovskii B.K., Zh. Org. Khim., 1970, **40**, 2519.
2. Mel'kumova Z.V., Telezhenetskaya M.V., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 478.

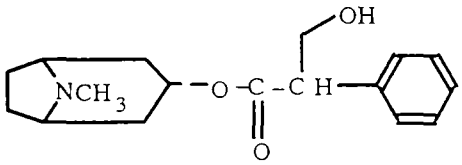


ATISINE CHLORIDE

Aconitum coreanum, A.rotundifolium, A.zeravschanicum
$C_{22}H_{34}NO_2Cl$: 379.2277/381.2248
mp: 297° (dec., alc.)
Sol-y.: sol.meth., water
IR: 3390, 3320, 3270, 2935, 2870, 1685, 1665, 1455, 1371, 1225, 1075, 1005, 900 [1, 2]

PMR: 1.03(3H, s, 18-CH_3), 3.56-3.75(3H, m, H-19, H-15), 3.90, 4.14(2H, m, H-21, H-22), 5.00(2H, s, =SH_2), 8.65(1H, narrow s, H-20) [1, 2]

1. Vaisov Z.M., Salimov B.T., Tashkhodzhaev B., Yunusov M.S., Khim. Prir. Soedin., 1986, 658.
2. Razakova D.M., Bessonova I.A., Yunusov M.S., Khim. Prir. Soedin., 1988, 309.

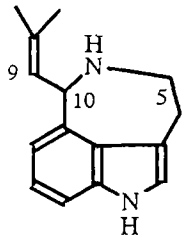


ATROPINE ((±)-HYOSCYAMINE)

Atropa belladonna, Physochlaina alaica, Scopolia tangutica
$C_{17}H_{23}NO_3$: 289.1678
mp: 115-116° (alc.-chlf.)
$[\alpha]_D$ 0°

{h-chl. 165°, h-b. 164°, oxalate 198°, picr. 176°, chl-aur. 139°}
IR: 3420, 3380, 1722, 760, 710
Mass: 289(M^+), 124, 123, 113, 112, 97, 96, 95, 82 [1]
PMR: 2.18(3H, s, NCH_3), 5.00(1H, t, H-3β), 7.22(5H, s, H-Ar)
HPLC: [2]

1. Mirzamatov R.T., Lutfullin K.L., Khim. Prir. Soedin., 1985, 128.
2. Okuda T., Nishida M., Sameshima I., Kyoyama K., Hiramatsu K., Takehara Y., Kohriyama K., J. Chromatogr., 1991, **567**, 141.

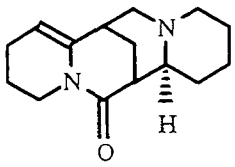


AURANTIOCLAVINE

Penicillium aurantio-virens
$C_{15}H_{18}N_2$: 226.1469
mp: 188-189° (meth.)
$[\alpha]_D$–28° (pyr.), –34° (chlf.)
Sol-y.: sol.alc., chlf., acids; sp. sol. petr. eth., hx.

UV: 227, 287
Mass: 226(M^+, 100), 225, 197, 196, 182, 169, 167, 154
PMR: 1.7(6H, s, 2×CH_3), 2.50(1H, s, NH), 2.80-3.70(4H, m, H-4, H-5), 4.90(H-10), 5.50(H-9), 6.70-7.20(H-Ar), 8.25(NH)

1. Kozlovskii A.G., Solov'eva T.F., Sakharovskii V.G., Adanin V.M., DAN SSSR, 1981, **260**, 230.

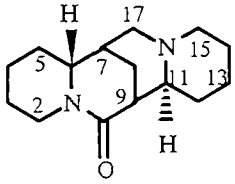


APHYLLIDINE

Anabasis aphylla
$C_{15}H_{22}N_2O$: 246.1732
mp: 100-103° (petr.eth.) [1], 112-113° [1]
$[\alpha]_D$+7° (meth.) [1]

{p-chl.211°, m-i. 225°, picrolonate 236° (dec.), h-chl. 237°} [1]
Sol-y.: r-sol.alc., eth.; sp. sol. petr. eth. [1]
UV: 248(4.10) [2]
Mass: 246(M^+, 42), 245(19), 137(14), 136(18), 135(15), 134(16), 110(16), 98(100), 97(55), 42(22) [3]

1. Orekhov A.P., Men'shikov G.P., Khim. Farm. Prom., 1932, No. 1, 10; Chem. Ber., 1932, **65**, 234.
2. Sangster A.W., Stuart K.L., Chem. Rev., 1965, **65**, 69.
3. Pelletier, Vol. 2, p. 105.



APHYLLINE

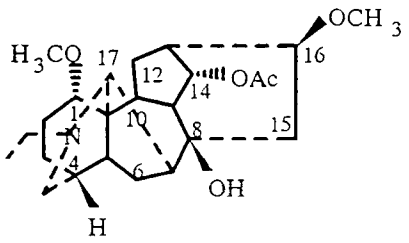
Anabasis aphylla
$C_{15}H_{24}N_2O$: 248.1889
mp: 52-53° (eth.)
$[\alpha]_D$+10° (meth.)

{picrolonate 231° (dec.), m-i. 213°} [1]
Sol-y.: r-sol. water, alc.; sp. sol. eth. [1]
IR: 3000-2800, 1660 [2]
Mass: 248(M^+, 35), 247(33), 220(43), 191(19), 137(46), 136(100), 98(31), 97(40), 96(35), 84(32), 41(47) [3]
PMR: 1.49(H-8_a), 1.85(2H, H-7, H-8), 2.04(H-9), 2.17(H-2_a), 2.45(H-17e), 2.50(H-15_e), 2.80(H-15_a), 2.82(H-11), 2.99(H-17_a), 3.14(H-6), 4.56(H-2_e) [4]
^{13}C NMR: [4]

C-2	45.0	C-7	33.8	C-12	26.3
3	28.8	8	27.8	13	20.1
4	23.7	9	43.2	14	23.7
5	30.2	10	172.9	15	54.9
6	59.7	11	59.7	17	49.7

Pharm: Local anesthetic action not inferior to novocaine [procaine hydrochloride] [5]. Infiltration-anesthetic action. Possesses a slight hypotensive effect and stimulates respiration [6].

1. Orekhov A.P., Men'shikov G.P., Khim. Farm. Prom., 1932, No. 1, 10; Chem. Ber. 1932, **65**, 234.
2. Bohlmann F., Weise W., Sander M., Manke H., Winterfeldt E., Chem. Ber., 1957, **90**, 653.
3. Pelletier, Vol. 2, p. 105; Timbekov E.Kh., Eshbaev F.Sh., Aslanov Kh.A., Sadykov A.S., Ishbaev A.I., Kasymov T.K., Khim. Prir. Soedin., 1972, 194.
4. Sadykov, p. 217; Sadykov A.S., Izv. AN SSSR Ser. Khim., 1983, 2432.
5. Sadritdinov, p. 100.
6. Tursunova S.A., in: The Pharmacology of Natural Substances [in Russian], Fan, Tashkent, 1973, p. 64.

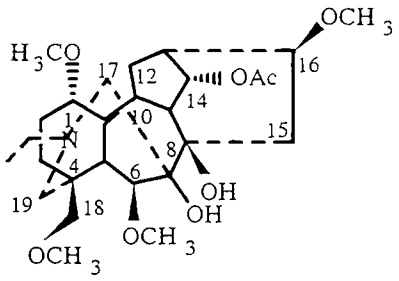


14-ACETYLACONOSINE (DOLACONINE)

Aconitum nasutum
$C_{24}H_{37}NO_5$: 419.
mp: amorph.
IR: 3580, 3570-3200, 1740, 1650, 1470, 1460, 1444, 1370, 1250, 1238, 1095.

Mass: 419(M^+, 4), 404(3), 401(2), 389(25), 388(100), 372(8)
PMR: 1.00(3H, t, J=7.5, NCH_2CH_3), 1.97(3H, s, OAc), 3.14, 3.20(3H, s, 2×OCH_3), 4.73(1H, t, J=4.5, H-14β).

1. Manukov A.N., Bessonova I.A., Vaisov Z.M., Chelombit'ko V.A., Khim. Prir. Soedin., 1993, 770.



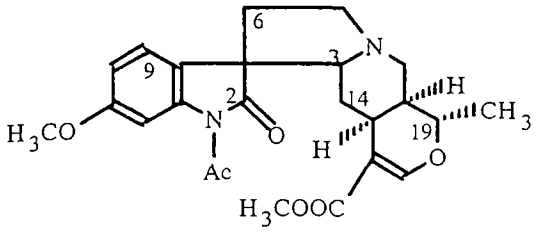
14-ACETYLBROWNIINE

Delphinium confusum, D.oreophyllum
$C_{27}H_{43}NO_8$: 509.2989
mp: 115-117° (hx.-eth.)
IR: 3600-3400, 1750, 1100
Mass: 509(M^+), 478(100)

PMR: 0.95(3H, t, J=7, NCH_2CH_3), 2.00(3H, s, Ac), 3.17, 3.21, 3.24, 3.30(3H, s, 4OCH_3), 4.66(1H, t, J=5, H-14β) [1]
^{13}C NMR: [2]

C-1	84.2	C-10	38.1	C-19	52.7
2	26.2	11	49.5	N-CH_2	48.8
3	32.4	12	28.2	CH_3	14.2
4	38.1	13	45.7	1′	55.8
5	42.6	14	76.0	6′	57.3
6	90.3	15	33.7	16′	56.2
7	88.3	16	82.4	18′	59.0
8	77.1	17	64.8	C=O	171.9
9	51.2	18	78.0	CH_3	21.5

1. Kozlikhin V.G., Tel'nov V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 869.
2. Pelletier S.W., Mody N.V., Sawhney R.S., Bhattacharyya J., Heterocycles, 1977, **7**, 327.



N-ACETYLVINERINE

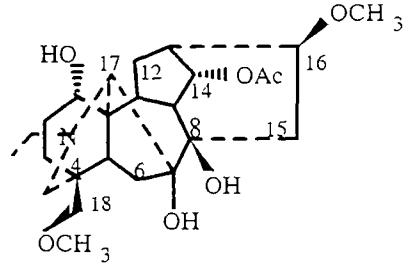
Vinca erecta
$C_{24}H_{28}N_2O_6$: 440.1947
mp: 152-153° [1]
IR: 1765, 1700, 1638 [1]

Mass: 440(M^+, 100), 223(40), 208(9), 189(7), 180(7), 69(11) [1]
PMR: 1.41(d, 19-CH_3), 2.66(s, NAc), 3.60(s, $COOCH_3$), 3.82(s, OCH_3), 4.36(s, H-19), 7.20(d, H-9), 7.40(s, H-17), 7.87(d, H-12) [2]
^{13}C NMR: [3]

C-2	180.7	C-11	159.6	C-20	37.8
3	72.3	12	102.7	21	54.0*
5	53.5*	13	140.2	22	167.3
6	36.6	14	30.1	19-CH_3	18.5
7	56.6	15	30.4	OCH_3	50.8
8	123.9	16	109.6	NCO	170.7
9	124.3	17	154.9	CH_3	26.6
10	111.1	19	72.0	Ar-OCH_3	55.5

Abs. conf.: 3S, 4R, 7S, 15S, 19S, 20S [2]

1. Malikov V.M., Kasymov Sh.Z., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 640.
2. Yagudaev M.R., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 493.
3. Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 217.



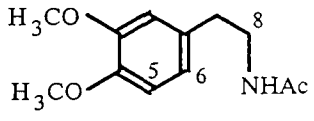
14-ACETYLVIRISCENINE

Delphinium confusum
$C_{25}H_{39}NO_7$: 465.2726
mp: 157-159°
$[\alpha]_D$+32° (chlf.)

IR: 3550, 3365, 1740, 1497, 1470, 1452, 1405, 1390, 1377, 1350, 1332, 1303, 1286, 1250, 1215, 1162, 1130, 1105, 1036, 998, 985, 970, 950, 920, 908, 892, 877, 865, 850, 814, 760 [1]
Mass: 465(M^+, 21.4), 450(61.9), 448(100), 432(14), 422(16.6), 409(3.5), 378(14) [1]
PMR: 1.10(3H, t, NCH_2CH_3), 2.07(3H, s, Ac), 3.29, 3.33(3H, s, 2×OCH_3), 4.88(1H, dd, H-14β) [2]
^{13}C NMR: [2]

C-1	72.4	C-9	45.9	C-17	64.9
2	29.0	10	37.7	18	78.8
3	29.4	11	50.0	19	56.1
4	37.7	12	26.8	NCH_2	50.6
5	41.7	13	42.9	CH_3	13.9
6	33.7	14	77.1	16′	56.3
7	85.9	15	35.9	18′	59.4
8	76.9	16	82.1	C=O	170.9
				CH_3	21.3

1. Vaisov Z.M., Yunusov M.S., Khim. Prir. Soedin., 1986, 801; Khim. Prir. Soedin., 1987, 869.
2. Pelletier S.W., Mody N.V., Venkov A.P., Jr., Jones S.B., Heterocycles, 1979, **12**, 779.

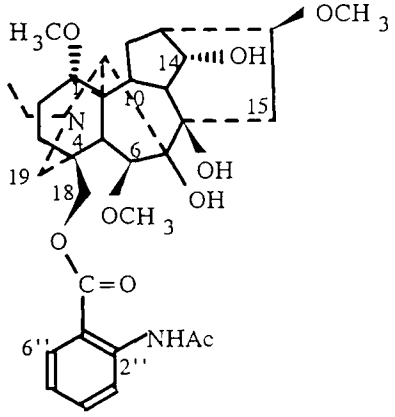


N-ACETYLHOMOVERATRILAMINE

Berberis sibirica
$C_{12}H_{17}NO_3$
mp 104-105°

IR: 3200, 3080, 3000, 2950, 1650, 1580, 1270, 1240
Mass: 233(M^+), 164(100), 151, 149, 121, 107
PMR: 1.86(3H, s, N-Ac), 2.68(2H, t, J=6.5, H-7), 3.37, 3.44(1H, t, J=6.5, H-8), 3.77(6H, s, 2×OCH_3), 5.40(1H, narrow s, NH), 6.64(1H, d, J=2, H-2), 6.66(1H, dd, J=8.8, J=2, H-6), 6.72(1H, d, J=8.8, H-5).

1. Karimov A.T., Levkovich M.G., Abdullaev N.D., Shakirov R., Khim. Prir. Soedin., 1993, 424.



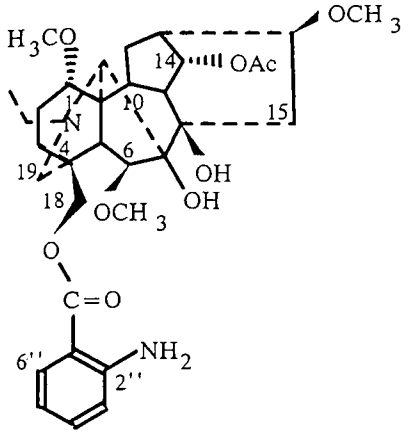
N-ACETYLDELECTINE (14-DEACETYLAJADINE)

Delphinium dictyocarpum
$C_{33}H_{46}N_2O_9$: 614.3203
mp: 116-118° (ac.)
$[\alpha]_D$+30° (chlf.)
IR: 3460, 1595, 1705, 1690, 1090.
Mass: 614(M^-), 599, 597, 596, 583(100).
PMR: 1.03(3H, t, J=7, NCH_2CH_3), 2.20(3H, s, Ac), 3.21, 3.31, 3.33(3H, s, 3×OCH_3), 7.07-8.66(H-Ar), 10.93(1H, narrow s, NHAc) [1]

^{13}C NMR: [2]

C-1	84.7	C-12	27.4	C-6′	58.3
2	25.2	13	36.3	16′	56.5
3	32.2	14	75.2	ArCO	168.0
4	37.8	15	33.1	1″	114.4
5	50.4	16	81.6	2″	141.8
6	90.4	17	65.0	3″	120.5
7	89.2	18	69.7	4″	135.0
8	76.2	19	52.4	5″	122.5
9	45.1	NCH_2	51.1	6″	130.3
10	46.0	CH_3	14.2	NHCO	169.0
11	48.3	1′	56.0	CH_3	25.5

1. Salimov B.T., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 128.
2. Kulanthaivel P., Desai H.K., Pelletier S.W., J. Natur. Prod., 1989, **52**, 143.



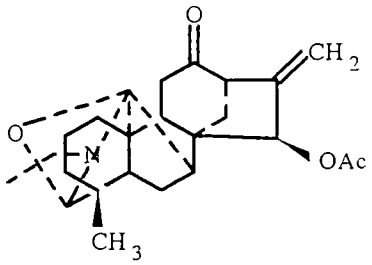
O-ACETIYDELECTINE (ANDERSONIDINE)

Delphinium dictyocarpum
$C_{33}H_{46}N_2O_9$: 614.3203
mp: 118-120° (meth.) [1], 127-129° [2]
$[\alpha]_D$+42° (chlf.) [3]
IR: 3460, 1740, 1690, 1593, 1090 [1]
Mass: 614(M^+), 599, 596, 583(100), 581, 120 [1, 3]
PMR: 1.04(3H, t, J=7, NCH_2CH_3), 2.02(3H, s, OAc), 3.18, 3.26, 3.29(3H, s, 3×OCH_3), 5.70(2H, narrow s, NCH_2), 6.61-7.76(4H, m, H-Ar) [1]

^{13}C NMR: [2]

C-1	83.9	C-12	28.2	C-6′	58.0
2	26.1	13	38.2	16′	56.2
3	32.2	14	75.9	CO	171.8
4	37.6	15	33.7	CH_3	21.8
5	42.6	16	82.3	Ar-CO	167.7
6	90.7	17	64.5	1″	110.3
7	88.3	18	68.5	2″	150.7
8	77.4	19	52.4	3″	116.8
9	50.1	NCH_2	51.0	4″	134.3
10	45.7	CH_3	14.0	5″	116.4
11	49.0	1′	55.7	6″	130.7

1. Salimov B.T., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 716.
2. Pelletier S.W., Kulanthaivel P., Olsen J.D., Heterocycles, 1989, **28**, 107.
3. Salimov B.T., Author's Abstract of Candidate's Dissertation, Tashkent, 1979.

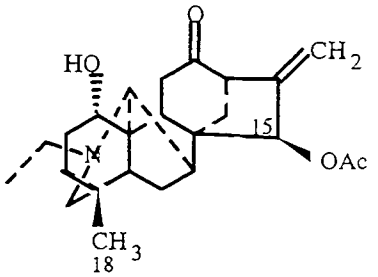


15-ACETYLSONGORAMINE

Aconitum soongaricum
$C_{24}H_{31}NO_4$: 397.2253
mp: amorph.
IR: 1740, 1720
Mass: 397(M^+, 100), 382(5), 369(15), 354(36), 341(68)

PMR: 0.78(3H, s, 18-CH_3), 0.97(3H, t, J=7, NCH_2CH_3), 2.10(3H, s, Ac), 5.16, 5.22(1H, narrow s, =CH_2)

1. Zhamierashvili M.G., Tel'nov V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 733.

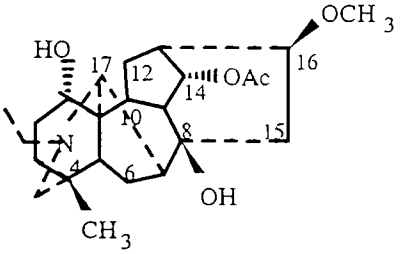


15-ACETYLSONGORINE

Aconitum firmum, A.soongaricum
$C_{24}H_{33}NO_4$: 399.2410
mp: 176-178° (alc.)
$[\alpha]_D$–172° (water)
{p-chl. 273°, h-chl. 286°}

IR: 3480, 1730, 1710, 1660, 1455, 1380, 1250, 1170, 1125, 1100, 1080, 1030, 910.
Mass: 399(M^+, 72), 384(14), 382(14), 371(12), 370(18), 356(100), 340(84), 312(20).
PMR: 0.74(3H, s, 18-CH_3), 1.03(3H, t, J=7, NCH_2CH_3), 2.03(3H, s, Ac), 4.85, 5.18(1H, narrow s, $=CH_2$), 5.55(1H, narrow s, H-15)

1. Vaisov Z.M., Bessonova I.A., Tel'nov V.A., Khim. Prir. Soedin., 1993, 86; Unpub.

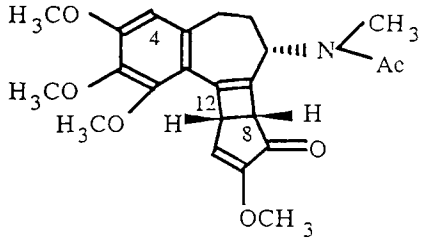


14-ACETYLKARAKOLINE

Delphinium confusum
$C_{24}H_{37}NO_5$: 419.2672
mp: 99-100° (ac.)
IR: 3620, 3460, 1743, 1100.

Mass: 419(M^+), 404, 402(100), 363.
PMR: 0.83(3H, s, 18-CH_3), 1.06(3H, t, J=7, NCH_2CH_3), 2.00(3H, s, Ac), 3.22(3H, s, OCH_3)

1. Vaisov Z.M., Yunusov M.S., Khim. Prir. Soedin., 1987, 869.

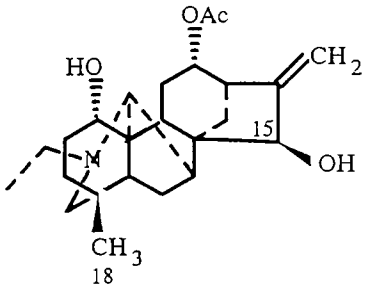


N-ACETYL-β-LUMICOLCHAMINE

Colchicum speciosum
$C_{23}H_{27}NO_6$: 413.1838
mp: 132-133°
$[\alpha]_D$+410° (chlf.) [1]

UV: 226-230, 264-266, 342 [2]
IR: 1720, 1640 [2]
Mass: 342 [2]
PMR: 2.14(3H, s, NAc), 3.26(3H, s, NCH_3), 3.52(1H, dd, H-8), 3.60, 3.84, 3.86, 3.94(3H, s, $4\times OCH_3$), 4.12(1H, dd, H-12), 6.46(1H, s, H-4), 6.67(1H, d, H-11) [2]

1. Chommadov B., Yusupov M.K., Sadykov A.S., Khim. Prir. Soedin., 1990, 147.
2. Chommadov B., Author's Abstract of Doctoral Dissertation, Tashkent, 1992.

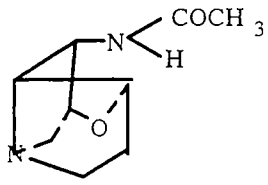


12-ACETYLNAPELLINE

Aconitum karakolicum, A.soongaricum
$C_{24}H_{35}NO_4$: 401.2566
mp: 205-206° (ac.)

IR: 3440, 3070, 2990, 2975, 2950, 2930, 2910, 2880, 2850, 1735, 1660, 1500. 1480, 1460, 1410, 1380, 1360, 1330, 1285, 1260, 1250, 1235, 1190, 1175, 1155, 1130, 1100, 1090, 1070, 1050, 1030, 1015, 980, 920, 910, 880, 810, 780, 740, 725
Mass: 401(M^+, 100), 386(8), 384(9), 358(5), 357(3), 356(3), 342(39), 324(5), 314(3), 312(4), 298(2), 284(4), 282(4), 242(15), 224(2), 218(2), 212(3), 58(6), 44(5)
PMR: 0.70(3H, s, 4-CH_3), 1.05(3H, t, J=7, NCH_2CH_3), 1.91(3H, s, OAc), 4.93, 5.10(1H, d, J=1.5, H-17)

1. Sultankhodzhaev M.N., Beshitaishvili L.V., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 479; Unpub.

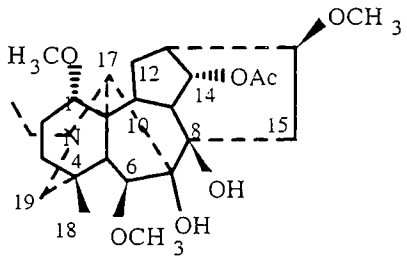


N-ACETYLNORLOLINE

Lolium cuneatum
$C_9H_{14}N_2O_2$: 182.1055
mp: oil
$[\alpha]_D$+50° (chlf.) [1]

{h-chl. 235° (dec.)} [1]
Sol-y.: r-sol. alc., chlf. [2]
IR: {h-chl.}: 3250-3200, 1670 [1]
Mass: 182(M^+), 139, 124, 123, 111, 110, 95, 83, 82(100), 69, 55, 42 [2]
PMR: 1.95(3H, s, Ac), 7.04(NH) [1]

1. Batirov E.Kh., Khamidkhodzhaev S.A., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 60.
2. Batirov E.Kh., Unpub.

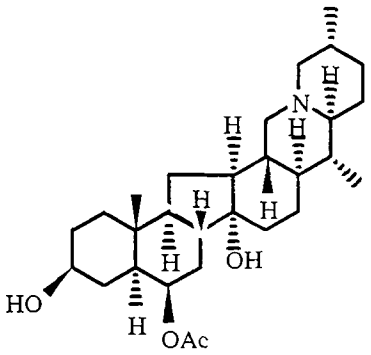


14-ACETYLNUDICAULIDINE

Delphinium confusum
$C_{26}H_{41}NO_7$: 479.2883
mp: 206-208° (hx.-eth.)
IR: 3550-3400, 1740, 1100
Mass: 479(M^+, 1), 464(30), 448(100)

PMR: 0.85(3H, s, 18-CH_3), 1.00(3H, t, J=7, NCH_2CH_3), 2.10(3H, s, OAc), 3.18, 3.26, 3.36(3H, s, 3×OCH_3), 3.81, 3.87(1H, narrow s), 4.70(1H, t, J=4.5, H-14β)

1. Narzullaev A.S., Yunusov S.Yu., Matveev V.M., Sabirov S.S., Khim. Prir. Soedin., 1989, 48.

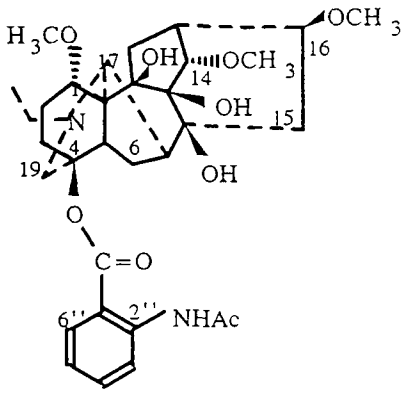


ACETYLSEVEDINE

Korolkowia sewerzowii
$C_{29}H_{47}NO_4$: 473.3505
mp: 189° (eth.-ac.)
$[\alpha]_D$–37° (alc.)
IR: 3400, 2940-2865, 1735, 1455, 1255, 1030
Mass: 473(M^+), 458, 456, 445, 444, 431, 430, 416, 412, 402, 394, 384, 179, 166, 164, 162, 150, 139, 138, 125, 124, 112, 111(100), 98

PMR: 0.90(3H, s, 19-CH_3), 1.99(3H, s, OAc), 4.94(1H, m, HC-OAc)

1. Kul'kova V.V., Samikov K., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1986, 352.



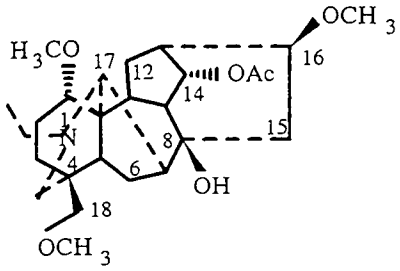
N-ACETYLSEPACONITINE

Aconitum leucostomum
$C_{32}H_{44}N_2O_9$: 600.3047
mp: amorph.
IR: 1700, 1600, 1280, 1250, 750.
Mass: 600(M^+), 569, 421(100)
PMR: 1.11(3H, t, J=7, NCH_2CH_3), 3.25, 3.35(6H, 3H, s, OCH_3), 6.92-8.52(H-Ar), 10.77(1H, s, NHAc)

^{13}C NMR

C-1	77.8	C-12	37.5	C-14′	58.0
2	26.5	13	34.7	16′	56.2
3	31.6	14	87.9	NHCO	169.0
4	84.7	15	44.8	CH_3	25.5
5	44.3	16	82.8	Ar-CO	167.5
6	24.5	17	61.5	1″	115.8
7	46.9	18	–	2″	141.7
8	74.6	19	55.6	3″	120.3
9	78.9	NCH_2	48.5	4″	134.4
10	79.6	CH_3	13.4	5″	122.8
11	56.4	1′	56.3	6″	131.0

1. Tel'nov V.A., Yunusov M.S., Abdullaev N.D., Zhamierashvili M.G., Khim. Prir. Soedin., 1988, 556.



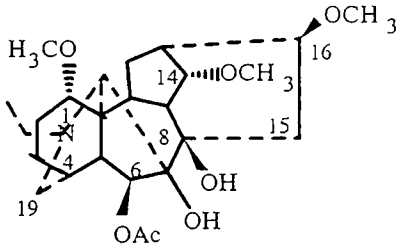
14-ACETYLTALATIZAMINE

Aconitum nemorum, A.saposhnikovii, A.talassicum
$C_{26}H_{41}NO_6$:463.2934
mp: 95-97°
$[\alpha]_D$+19° (chlf.)
Mass: 463(M^+, 45), 448(30), 432(100).

PMR: 1.01(3H, t, J=7, NCH_2CH_3), 1.98(3H, s, Ac), 3.14, 3.18, 3.21(3H, s, 3×OCH_3), 4.72(1H, t, J=4.5, H-14β) [1].
^{13}C NMR: [2]

C-1	85.8	C-10	45.0	C-19	53.1
2	26.2	11	48.8	NCH_2	49.4
3	32.7	12	28.5	CH_3	13.6
4	38.6	13	45.0	1′	56.1
5	35.4	14	77.0	16′	56.1
6	25.0	15	41.0	18′	59.5
7	45.4	16	81.7	CO	170.7
8	73.7	17	62.2	CH_3	21.4
9	46.3	18	79.7		

1. Yunusov M.S., Author's Abstract of Doctoral Dissertation, Tashkent, 1973.
2. Sakai S., Takayama H., Okamoto T., J. Pharm Soc. Jpn., 1979, 99, 647.



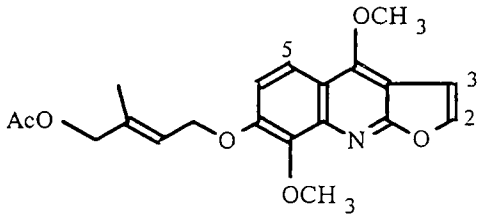
6-ACETYLUMBROFINE

Aconitum umbrosum
$C_{25}H_{39}NO_7$: 465.2783
mp: 174-175° (alc.)
IR: 3554, 3460, 1730, 1475, 1455, 1370, 1345, 1330, 1270, 1232, 1214, 1170, 1122, 1110, 1093, 1080, 1045, 1030, 1010, 994, 934, 920, 887, 860, 830, 814, 798, 764

Mass: 465(M^+), 450, 434(100), 432, 422, 406, 405, 390, 374, 362
PMR: 0.99(3H, t, J=7.5, NCH_2CH_3), 1.99(3H, s, Ac), 3.22, 3.30, 3.38(3H, s, 3×OCH_3), 3.68(1H, t, J=4.5, H-14β), 5.13(1H, narrow s, H-6α)
^{13}C NMR:

C-1	86.0	C-10	38.0	C-19	50.4
2	26.1	11	48.2	NCH_2	49.9
3	30.7	12	30.1	CH_3	13.9
4	35.9	13	46.2	CO	169.5
5	45.8	14	84.2	CH_3	21.6
6	79.4	15	35.1	1′	56.2
7	88.5	16	81.9	14′	57.8
8	76.1	17	63.6	16′	56.5
9	47.1	18	–		

1. Tel'nov V.A., Khim. Prir. Soedin., 1993, 73.

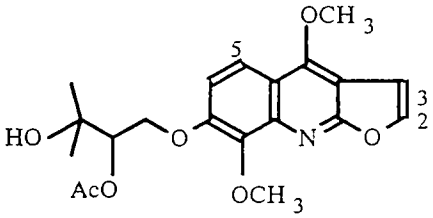


ACETYLHAPLATINE

Haplophyllum obtusifolium
$C_{20}H_{21}NO_6$: 371.1369
mp: 87-88°
Sol-y.: sol.chlf. [1, 2]

IR: 3165, 3140, 1740, 1628, 1583, 1520, 1498 [1, 2]
Mass: 371(M^+, 75), 312(15), 245(100), 244(98), 230(70), 227(90), 216(98), 201(61), 127(62)
PMR: 1.76(3H, s, CH_3), 1.99(3H, s, OAc), 4.00, 4.26(3H, s, 2×OCH_3), 4.57(2H, s, CH_2-OAc), 4.72(2H, d, J=6.5, O-CH_2), 5.68(1H, t, J=6.5, =CH), 6.88, 7.43(1H, d, J=3, H-3, H-2), 7.05, 7.81(1H, d, J=10, H-6, H-5) [1]

1. Bessonova I.A., Kurbanov D., Yunusov S.Yu., Khim. Prir. Soedin., 1984, 124.
2. Nesmelova E.F., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 758.

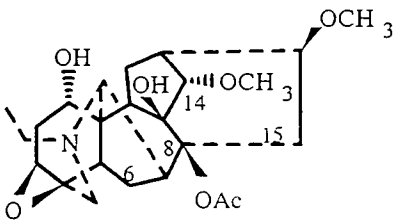


ACETYLEVOXINE

Haplophyllum ferganicum, H. ramosissimum
$C_{20}H_{23}NO_7$: 389.1475
mp: 160-162° [1]
IR: 3335, 3165, 3150, 1750, 1630, 1590, 1520 [2]

Mass: 389(M^+, 32), 329(15), 258(20), 245(50), 244(70), 227(100), 202, 199, 145, 127, 85 [1]
PMR: 1.26, 1.28(3H, s, 2×CH_3), 2.08(3H, s, OAc), 4.01, 4.35(3H, s, 2×OCH_3), 4.30(2H, m, $-OCH_2$), 5.12(1H, m, -CH-OAc), 7.00, 7.55(1H, d, J=3, H-3, H-2), 7.15, 7.85(1H, J=9, H-6, H-5) [1, 2]

1. Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1982, 530.
2. Bessonova I.A., Unpub.

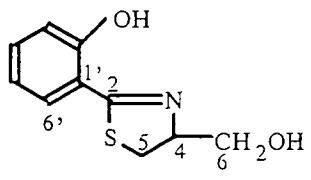


8-ACETYLEXCELSINE

Aconitum kirinense
$C_{24}H_{35}NO_7$: 449.2414
mp: amorph.
IR: 3500, 3270, 1740

Mass: 449(M^+, 83), 434(42), 418(5), 406(7), 405(6), 390(100), 389(29), 374(14), 372(58), 358(17)
PMR: 1.05(3H, t, NCH_2CH_3), 2.00(3H, s, OAc), 3.25, 3.32(3H, s, 2×OCH_3), 3.88(1H, narrow s)

1. Nishanov A.A., Sultankhodzhaev M.N., Yunusov M.S., Kondrat'ev V.G., Khim. Prir. Soedin., 1991, 258.



AERUGINE

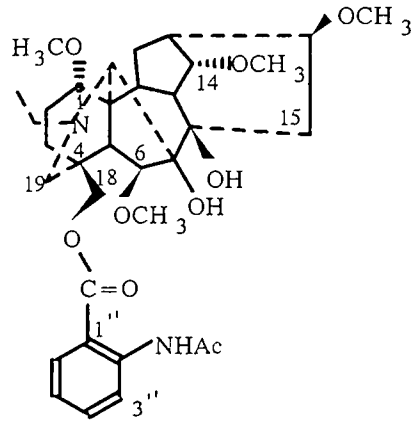
Pseudomonas aeruginosa
$C_{10}H_{11}NO_2S$: 209.0511
mp: 85-88° (hx.)

$[\alpha]_D$+28° (chlf.)
{O-Ac 60°}
Sol-y.: r-sol. chlf., ac., alc., meth., eth.; sol.hx.

UV: 213, 251, 256 sh, 317(4.09, 3.74, 3.72, 3.32)
IR: 3300, 1620, 1600, 1580, 750
Mass: 209(M^+, 61), 178(100), 146(9), 120(12), 119(8), 73(8), 59(27), 57(10)
PMR: 3.19, 3.32(1H, dd, ^3J=8.8; 8.5; ^2J= −10.9, H-5), 3.69, 3.87(1H, dd, ^3J=5.1; 4.9; ^2J= −11.4, H-6), 4.73(1H, m, H-4), 6.84, 7.20, 6.72, 7.25(1H, H-Ar)
^{13}C NMR:

C-1′	116.2	5′	117.0	4	77.8
2′	158.9	6′	130.5	5	32.7
3′	119.0	2	173.2	6	64.0
4′	133.0				

1. Zunnundzhanov A., Bessonova I.A., Abdullaev N.D., Ogai D.K., Khim. Prir. Soedin., 1987, 553.



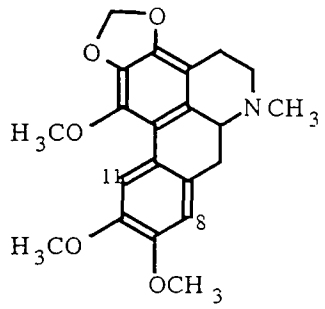
AJACINE

Aconitum rubicundum, Delphinium orientale
$C_{34}H_{48}N_2O_9$: 628.3360
mp: 152-154° (water alc.)
$[\alpha]_D$+50° (alc.)
Sol-y.: sol. chlf.
IR: 3450, 3310, 3280, 1700-1680, 1610-1593
Mass: 628(M^-), 613, 611, 610, 598, 597(100), 595, 450, 436 [1].
PMR: 1.08(3H, t, J=7, NCH_2CH_3), 2.24(3H, s, Ac), 3.27, 3.35, 3.38, 3.42(3H, s, OCH_3) [2].

^{13}C NMR: [3]

C-1	83.9	C-12	28.6	C-6′	57.8
2	26.1	13	46.1	14′	58.1
3	32.2	14	83.9	16′	56.3
4	38.2	15	33.8	Ar-C=O	168.1
5	43.3	16	82.6	1″	114.5
6	91.0	17	64.5	2″	141.9
7	88.6	18	69.8	3″	120.6
8	77.5	19	52.5	4″	135.0
9	50.5	NCH_2	51.0	5″	122.5
10	37.6	CH_3	14.0	6″	130.3
11	49.1	1′	55.8	NHCO	169.0
				CH_3	25.5

1. Nishanov A.A., Sultankhodzhaev M.N., Yunusov M.S., Kondrat'ev V.G., Khim. Prir. Soedin., 1991, 403; Unpub.
2. Pelletier S.W., Sawhney R.S., Desai H.K., Mody N.V., J. Natur. Prod., 1980, **43**, 395.
3. Pelletier S.W., Mody N.V., Sawhney R.S., Bhattacharyya J., Heterocycles, 1977, **7**, 327.

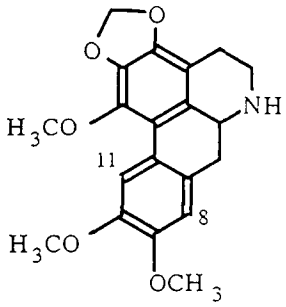


BAICALIDINE

Thalictrum baikalense
$C_{21}H_{23}NO_5$: 369.1576
mp: 146-147° (ac.)
$[\alpha]_D$+55° (meth.)
UV: 217, 242, 291, 306, 318
Mass: 369(M^+), 368, 354, 338, 326, 311

PMR: 2.44(3H, s, NCH_3), 3.76, 3.81(9H, s, OCH_3), 5.84, 5.89(CH_2O_2), 6.64, 7.71(1H, s, H-8, H-11)

1. Maekh S.Kh., Yunusov S.Yu., Boiko É.V., Starchenko V.M., Khim. Prir. Soedin., 1982, 791.

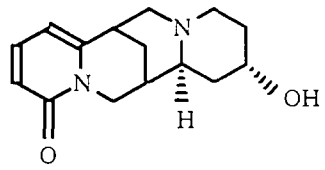


BAICALINE

Thalictrum baikalense
$C_{20}H_{21}NO_5$: 355.1420
mp: 169-172° (eth.)
$[\alpha]_D$+48° (meth.)
{N-Ac. oil, $[\alpha]_D$+262° (alc.)}
UV: 220, 246, 287, 303, 315
UV{N-Ac}: 218, 243, 290, 307, 317(4.56, 4.30, 4.10, 4.15, 4.15)

IR{N-Ac}: 1650
Mass: 355(M^+), 354, 340, 326
Mass{N-Ac}: 397(M^+)
PMR: 3.91(9H, s, OCH_3), 6.03(2H, narrow s, CH_2O_2), 6.82(1H, s, H-8), 7.94(1H, s, H-11)

1. Maekh S.Kh., Yunusov S.Yu., Boiko É.V., Starchenko V.M., Khim. Prir. Soedin., 1982, 227.

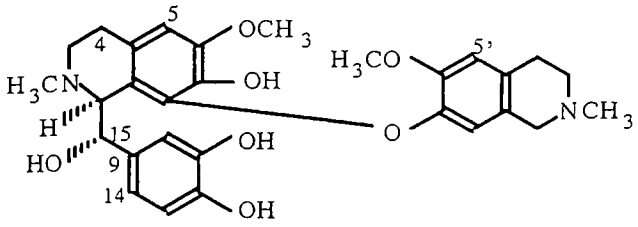


BAPTIFOLINE

Sophora alopecuroides, S.flavescens
$C_{15}H_{20}N_2O_2$: 260.1525
mp: 210° (ac.) [1]

$[\alpha]_D$–149° (alc.) [1]
{h-chl. 256°, picr. 145°} [1]
UV: 233, 309(3.84, 3.91) [2]
IR: 3610, 3360, 3010, 2990, 2890, 2810, 1650, 1565, 1550, 1472, 1460, 1442, 1428, 1379, 1358, 1331, 1315, 1288, 1270, 1175, 1160, 1148, 1118, 1103, 1080, 1070, 1040, 1020, 1003, 990, 962, 941, 930, 910, 899, 890, 862, 852, 830 [2]
Mass: 260(M^+, 27), 241(4), 160(13), 146(27), 145(11), 114(100), 96(31), 70(37), 43(33) [1, 3]
GLC: [4]

1. Monakhova T.E., Proskurnina N.F., Tolkachev O.N., Kabanov V.S., Perel'son M.E., Khim. Prir. Soedin., 1973, 59.
2. Holubek, No. 614.
3. Pelletier, Vol. 2, p. 105.
4. Ueno A., Morinaga K., Fukushima S., Okuda S., Chem. Pharm. Bull., 1978, **26**, 1832.



BARGUSTANINE

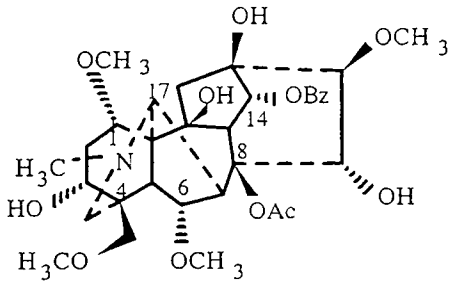
Berberis vulgaris
$C_{29}H_{34}N_2O_7$: 522.2366
mp: 193-194° (meth.)
Sol-y.: r-sol. meth., chlf.; alc. sol. bz., eth., e-a.

UV: 218 sh, 286(4.85, 3.98)
IR: 3540, 1273, 840, 810, 750, 710
Mass: 522(M^+, 0.3), 381(100), 367(44), 192(16), 191.5(11), 191(44)
PMR(Py-d_5): 2.46(3H, s, 2′-NCH_3), 2.51(3H, s, 2-NCH_3), 2.74-2.92(4H, m, H-4, H-4′), 3.14-3.42(4H, m, H-3, H-3′), 3.54(2H, s, H-1′), 3.79(6H, 2×OCH_3), 4.51(1H, d, J=5, H-15), 6.39(1H, d, J=5, 15-OH), 6.45(1H, s, H-5′), 6.46(1H, s, H-5), 6.67(1H, s, H-8′), 6.74(1H, d, J=1.5, H-10), 6.85(1H, dd, J=8.5; 1.5, H-14), 7.65(1H, d, J=8.5, H-13)

^{13}C NMR:

C-1	60.5	C-9	136.4	C-1′	51.3
3	45.4	10	117.9	3′	40.4
4	28.5	11	145.5	4′	24.6
4a	126.2	12	146.6	4a′	130.1
5	106.3	13	124.8	5′	112.1
6	149.2	14	132.0	6′	148.1
7	146.9	15	67.1	7′	147.6
8	142.5	2-NCH_3	43.5	8′	116.0
8a	128.0	6-OCH_3	56.5	8a′	129.1
				2′-NCH_3	42.0
				6′-OCH_3	55.6

1. Yusupov M.M., Karimov A., Shakirov R., Khim. Prir. Soedin., 1993, 44.



BEIWUTINE

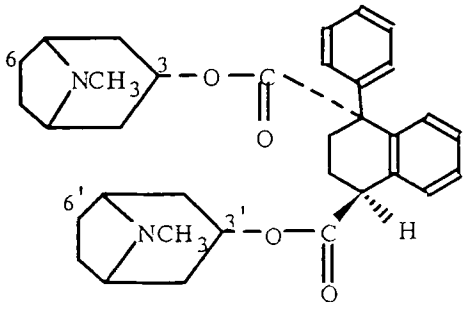
Aconitum turchaninovii
$C_{33}H_{45}NO_{12}$: 647.2942
mp: 196-198°
IR: 3510, 1715, 1610, 1500, 1450, 1410, 1380, 1340, 1285, 1190, 1120, 1100, 1060, 995, 950, 890, 855, 810, 780, 760, 730

Mass: 587(M^+–60), 572, 570, 550, 538
PMR: 1.34(3H, s, Ac), 2.38(3H, s, NCH_3), 3.06, 3.24, 3.34, 3.64(3H, s, 4×OCH_3), 5.28(1H, dd, J=4.5, H-14β), 7.22-8.00 (H–Ar)

^{13}C NMR:

C-1	83.3	C-11	56.0	C-1′	55.8
2	33.7	12	42.6	6′	58.2
3	71.3	13	76.5	16′	61.2
4	43.2	14	78.4	18′	59.1
5	46.8	15	77.1	C=O	172.4
6	79.8	16	89.6	CH_3	21.4
7	43.4	17	62.8	ArCO	166.3
8	89.8	18	75.7	Ar C	128.8
9	53.9	19	49.7	C	129.7
10	74.8	N-CH_3	42.5	C	129.9

1. Wang Y.-G., Zhu Y.-L., Zhu R.-H., Heterocycles, 1982, 17, 607.



α-BELLADONINE

Datura innoxia, D.stramonium, Physochlaina alaica, Hyoscyamus niger

$C_{34}H_{42}N_2O_4$: 542.3145

mp: 128-129° (e-a.)

{h-chl. 196°, h-b. 191°, m-i. 260°, m-chl. 95°, e-i. 231°, e-chl. 226°, pr-i. 196°, chl-plat. 77°, b-i. 201°, b-chl. 80°} [1, 2]

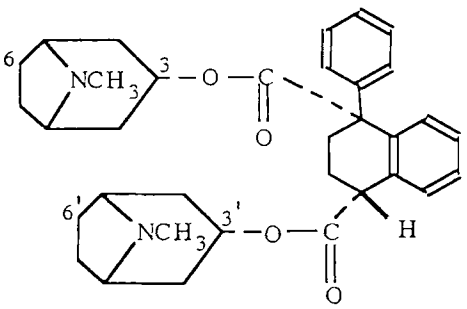
UV: 255, 259, 2663(2.56, 2.61, 2.60) [1]

IR: 1725, 775, 715

Mass: 542(M^+, 70), 461(10), 375(90), 271(15), 124(100), 96(40), 95(30), 94(44), 83(19), 82(18), 81(3) [3]

PMR: 1.10-1.99(16H, m, H-2, H-2′, H-4, H-4′, H-6, H-6′, H-7, H-7′), 2.04(3H, s, NCH_3), 2.10(3H, s, NCH_3), 2.81(4H, q, H-1, H-1′, H-5, H-5′), 3.70(1H, t, CH), 4.87(1H, t, H-3), 4.97(1H, t, H-3′), 7.10(9H, s, H-Ar) [1, 3]

1. Mirzamatov R.T., Author's Abstract of Candidate's Dissertation, Tashkent, 1974; Unpub.
2. Voigtlander H.W., Rosenberg W., Arch. Pharm., 1959, 292, 632.
3. Aripova S.F., Yunusov S.Yu., Khim. Prir. Soedin., 1991, 447.



β-BELLADONINE

Datura innoxia, D.stramonium, Hyoscyamus niger, Physochlaina alaica

$C_{34}H_{42}N_2O_4$: 542.3145

mp: amorph. [1]

{p-chl. 180° (dec.), picr. 150°, h-b. 88°, m-i. 231°, m-chl. 85°, e-i. 225°, e-chl. 243°, b-i. 186°, b-chl. 96°} [2]

Sol-y.: r-sol.meth., alc., chlf., ac. [1]

UV: 254, 259, 263(2.63, 2.67, 2.66) [1]

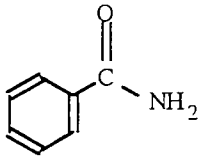
IR: 1725, 770, 710 [1]

Mass: 542 (M^+), 461(6), 375(44), 271(18), 140(30), 124(100), 96(35), 95(30), 94(40) [1, 3]

PMR: 2.06, 2.12 (3H, s, 2×NCH_3), 2.74-2.94 (4H, m, H-1, H-1′, H-5, H-5′), 3.70 (1H, t, CH), 4.97 (2H, m, H-3, H-3′), 6.85, 7.09 (7H, narrow s, 2H, q, J=8; 1.5, H-Ar) [3]

Pharm.: LD_{50} 0.223, 0.394 mg/kg (i/v, s/c, mice). Étbellonii – {the diethochloride of β-belladonine} – possesses curaremimetic properties [4].

1. Mirzamatov R.T., Author's Abstract of Candidate's Dissertation, Tashkent, 1974.
2. Voigtlander H.W., Rosenberg W., Arch. Pharm., 1959, **292**, 632.
3. Aripova S.F., Yunusov S.Yu., Khim. Prir. Soedin., 1991, 447.
4. Vakhabov A.A., Author's Abstract of Doctoral Dissertation, Moscow, 1982.

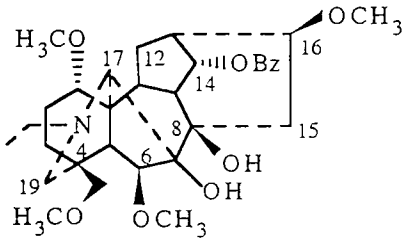


BENZAMIDE

Haplophyllum bucharicum, H.obtusifolium
C_7H_7NO: 121.0528
mp: 120-121°

UV: 227(4.22)
IR: 3375, 3185, 1660, 1630, 1580
Mass: 121 (M^+, 86), 105(100), 77(100)

1. Razakova D.M., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1984, 635.



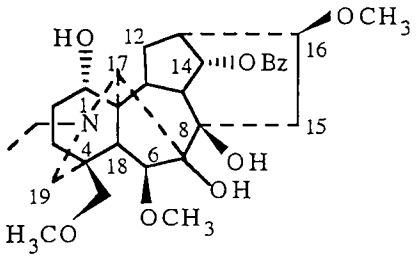
14-BENZOYLBROWNIINE

Delphinium biternatum
$C_{32}H_{45}NO_8$: 571.3145
mp: 114-116° (meth.)
$[\alpha]_D$+53° (chlf.)
IR: 3460, 1715, 1610, 1585, 1100 [1]

Mass: 571(M^+), 556, 554, 553, 540(100), 105 [1]
PMR: 1.01(3H, t, J=7, NCH_2CH_3), 3.22, 3.32(9H, 3H, c, 4×OCH_3),5.00(1H, t, J=5, H-14β), 7.42-8.10(H-Ar) [1]
Pharm.: LD_{50} 17.5; 125.0 mg/kg (i/v, i/p, mice). Aconitine antagonist. Possesses a pronounced antiarrhythmic and a weak hypotensive action. Exhibits H-cholinoblocking, myotropic, spasmolytic, local anesthetic, analgesic, and antiinflammatory effects [3].
^{13}C NMR [2]:

C-1	84.2	C-11	49.2	CH_3	14.0
2	25.9	12	28.3	1'	55.9
3	32.0	13	45.5	6'	57.4
4	38.1	14	76.0	16'	56.1
5	43.1	15	34.0	18'	59.1
6	90.2	16	82.2	C=O	167.0
7	88.3	17	64.8	Ar	
8	77.5	18	77.9	C	132.5
9	51.3	19	52.9	C	129.9
10	37.6	N-CH_2	51.3	C	128.3

1. Salimov B.T., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 106.
2. Pelletier S.W., Sawhney R.S., Heterocycles,1978, 9, 463.
3. Dzhakhangirov F.N., DAN UzSSR, 1982, No. 9, 36; Unpub.



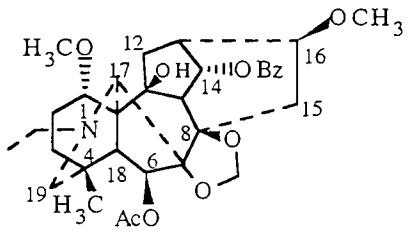
14-BENZOYLDELCOSINE (10-BENZOYLILIENSINE)

Delphinium biternatum
$C_{31}H_{43}NO_8$: 557.2989
mp: 147-149° (eth.) [1]
$[\alpha]_D$+50° (chlf.) [1]
Sol-y.: sol.chlf., ac., meth.

IR: 3460, 1715, 1602, 1585, 1100 [1]
Mass: 557(M^+), 542(100), 105 [1]
PMR: 1.08(3H, t, J=7, NCH_2CH_3), 3.27(9H, s, 3×OCH_3), 5.01(1H, t, J=5, H-14β), 7.43-8.06(H-Ar) [1,2]
Pharm.: LD_{50} 35.1 mg/kg (i/v, mice). Hypotensive. H-Cholinoblocking, quinidine-like, antiarrhythmic action [4].
^{13}C NMR [3]:

C-1	72.6	C-12	29.4	C-16'	56.1
2	27.3	13	43.1	18'	59.0
3	29.8	14	76.5	C=O	166.5
4	37.4	15	34.2	Ar	
5	43.6	16	82.6	C-1	130.7
6	90.1	17	66.2	2	129.8
7	87.7	18	77.1	3	128.3
8	78.4	19	57.2	4	132.6
9	44.9	NCH_2	50.3	5	128.3
10	37.9	CH_3	13.6	6	129.8
11	49.2	6'	57.2		

1. Salimov B.T., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 106; Unpub.
2. Yunusov S.Yu., Alkaloids, Supplement 1 [in Russian], Fan, Tashkent, 1984, p. 28.
3. Pelletier S.W., Mody N.V., Joshi B.S., Schramm L.C., in: Alkaloids: Chemical and Biological Perspectives, Pelletier S.W. (ed.), New York, 1984 Vol. 2, Chap. 5, p. 284.
4. Dzhakhangirov F.N., DAN UzSSR,1982, No. 9, 36.



14-BENZOYLDICTYOCARPINE (GLAUCEPHINE)

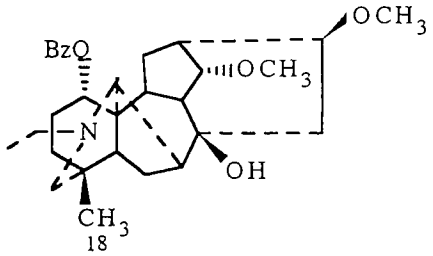
Delphinium dictyocarpum
$C_{33}H_{43}NO_9$: 597.2938
mp: 143-145° (ac.) [1]
IR: 3510, 1745, 1725, 1605, 1585, 1285, 1255, 1090 [1]

Mass: 597(M^+), 582, 566(100), 538, 105 [1]
PMR: 0.84(3H, s, 18-CH_3), 1.01(3H, t, J=7, NCH_2CH_3), 1.94(3H, s, Ac), 3.18, 3.20(3H, s, 2×OCH_3), 4.78, 4.83(1H, s, CH_2O_2), 5.43(1H, t, J=5, H-14β), 5.35(1H, s, H-6α), 7.32-8.01(H-Ar) [1]
Pharm.: LD_{50} 22.1 mg/kg (i/v, mice). Powerful antiarrhythmic action and antitoxic properties in relation to aconitine. Weak hypotensive, H-cholinoblocking, cardiodepressive, and antiinflammatory effects [3].

^{13}C NMR [2]:

C-1	79.0	C-12	36.6	C-1'	55.5
2	26.9	13	38.7	16'	55.9
3	36.9	14	74.3	OC=O	170.2
4	33.8	15	35.1	CH_3	21.6
5	50.2	16	81.2	OC=O	166.9
6	77.4	17	64.1	Ar	
7	91.7	18	25.6	C-1	130.7
8	83.2	19	56.9	2	129.9
9	50.1	NCH_2	50.4	3	128.3
10	81.2	CH_3	13.9	4	132.7
11	55.7	OCH_2O	93.9	5	128.3
				6	129.9

1. Salimov B.T., Yunusov M.S., Khim. Prir. Soedin.,1981, 530.
2. Pelletier S.W., Jr., Dailey O.D., Mody N.V., Olsen J.D., J. Org. Chem., 1981, **46**, 3284.
3. Dzhakhangirov F.N., DAN UzSSR, 1982, No. 9, 36.



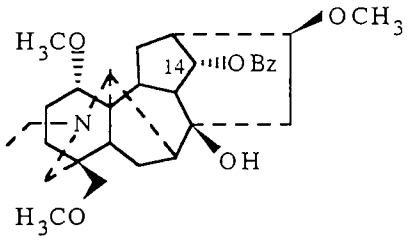
1-BENZOYLKARASAMINE

Aconitum karakolicum
$C_{30}H_{41}NO_5$: 495.2985
mp: 206-208° (ac.)
IR: 3400, 1710, 1100 [1]
Mass: 495(M^+), 374(100) [1]

PMR: 0.74(3H, s, 18-CH_3), 1.19(3H, t, J=7, NCH_2CH_3), 3.21, 3.34(3H, s, 2×OCH_3), 5.18(1H, q, J=10;7, H-1β), 7.38-7.95(H-Ar) [1]

Pharm.: LD_{50} 20.3 mg/kg (i/v, mice). Pronounced myotropic and spasmolytic activity. Superior to papaverine and No-Spa. Cardiodepressive, antiarrhythmic, and H-cholinoblocking actions. Suppression of the CNS [2].

1. Sultankhodzhaev M.N., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1986, 207.
2. Dzhakhangirov F.N., Unpub.



14-BENZOYLTALATIZAMINE

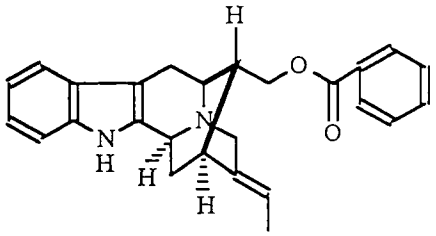
Aconitum nemorum
$C_{31}H_{43}NO_6$: 525.3090
mp: amorph.
{p-chl.221° (alc.)}
IR: 1720, 1590, 1100

Mass: 525(M^+), 494(100), 146, 105

PMR: 1.03(3H, t, NCH_2CH_3), 3.09, 3.21, 3.21(3H, s, 3×OCH_3), 5.03(1H, t, H-14β), 7.56, 7.88(5H, m, H-Ar)

Pharm.: LD_{50} 25 and 122.5 mg/kg (i/v and i/p, mice). Powerful antiarrhythmic and antifibrillatory action and antitoxic properties in relation to aconitine. Its activity exceeds that of quinidine, ajmaline, etc. Antiinflammatory and spasmolytic, and weak local anesthetic and H-cholinoblocking effects [3].

1. Sultankhodzhaev M.N. in: Results of an Investigation of Alkaloid-bearing Plants [in Russian], Fan, Tashkent, 1993, p. 37.
2. Sultankhodzhaev M.N., Khim. Prir. Soedin., 1995, 283.
3. Dzhakhangirov F.N., DAN UzSSR, 1982, No. 9, 36.

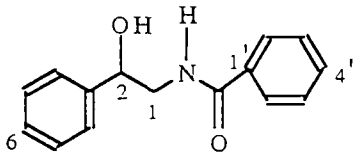


O-BENZOYLTOMBOSINE

Vinca erecta
$C_{26}H_{26}N_2O_2$: 398.1994
mp: 255-256° (eth.)
$[\alpha]_D$+9° (chlf.)
UV: 227, 281, 291(4.48, 3.95, 3.62)

IR: 3170, 1720
Mass: 398(M^+), 397, 293, 277, 276, 275, 263, 169, 168, 105
PMR: 1.51(d, CH_3), 5.40(q, =CH), 7.01-8.02(9H, Ar), 8.39(s, NH)

1. Sharipov M.R., Khalmirzaev M., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 413.



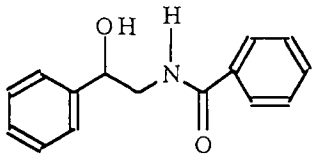
(+)-N-BENZOYL-2-PHENYL-2-HYDROXYETHYLAMINE

Oxytropis muricata, O.trichophysa
$C_{15}H_{15}NO_2$: 241.1103
mp: 154-155° (ac.)

$[\alpha]_D$+35° (meth.)
UV: 204 sh, 207
IR: 3350, 1650
Mass: 242((M+H)$^+$, 0.3), 241(M^+, 0.4), 223(2), 135(100), 134(84), 122(14), 117(11), 107(6), 105(95), 91(4), 79(11), 77(39)
PMR: 3.32(1H, narrow s, OH), 3.51(1H, ddd, J=5; 8; 14, H-1), 3.91(1H, ddd, J=3.5; 7; 14, H-1), 4.95(1H, dd, J=3.5; 8, H-2), 6.59(1H, narrow s, NH), 7.38(8H, m, H-Ar), 7.74(2H, dd, J=8; 2, H-2`, H-6`)
^{13}C NMR(DMSO-d_6):

C-1	47.8	C-6	127.2	Ar-H	126.1
2	71.3	C=0	166.6		127.4
3	134.7	1`	144.0		128.2
		4`	131.2		128.4

1. Batsuren D., Tsétségmaa S., Batbayar N., Dungerdorzh D., Akhmedzhanova V.I., Mil'grom Yu.M., Rashkes Ya.V., Ibragimov A.A., Khim. Prir. Soedin., 1992, 388.

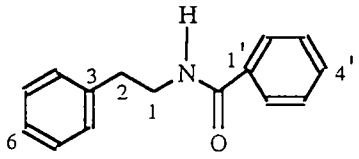


(±)-N-BENZOYL-2-PHENYL-2-HYDROXYETHYLAMINE

Oxytropis muricata
$C_{15}H_{15}NO_2$: 241.1103
mp: 147-149° (chlf.)

$[\alpha]_D$ 0°
{h-chl. 197°}
Sol-y.: r-sol.alc., chlf.; sp.sol.ac., eth., water
IR: 3290, 1645

1. Duboshina Z.N., Proskurnina N.F., Zh. Org. Khim., 1963, **33**, 2071.

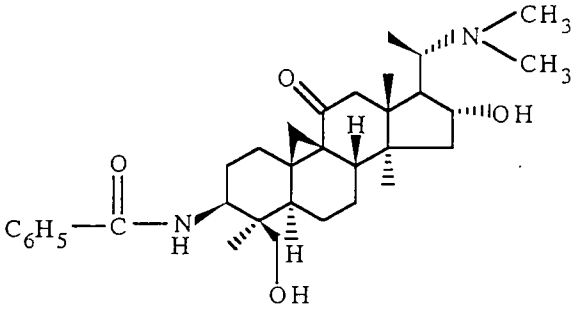


N-BENZOYL-2-PHENYLETHYLAMINE

Oxytropis trichophysa
$C_{15}H_{15}NO$: 225.1154
mp: 117-118° (ac.)

UV: 208, 226 sh
IR: 3390, 1650
Mass: 225(M^+, 39), 207(3), 134(18), 105(100), 104(44), 91(9), 84(11), 77(29)
PMR: 2.84(2H, t, J=6.5, H-2), 3.48(2H, m, H-1), 7.12(1H, t, J=7.5, H-6), 7.24(2H, d, J=7.5, H-4, H-8), 7.29(2H, t, J=7.5, H-5, H-7), 7.44(2H, t, J=7.5, H-3', H-5'), 7.51(1H, t, J=7.5, H-4'), 7.81(2H, d, J=7.5, H-2', H-6'), 8.55(1H, narrow s, NH)

1. Batsuren D., Tsétségmaa S., Batbayar N., Dungerdorzh D., Akhmedzhanova V.I., Mil'grom Yu.M., Rashkes Ya.V., Ibragimov A.A., Khim. Prir. Soedin., 1992, 388.

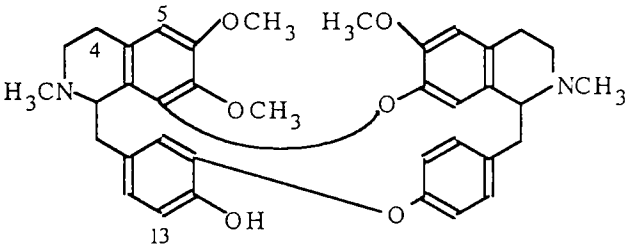


N-3-BENZOYLCYCLOBUXIDINE F

Buxus hyrcana
$C_{33}H_{48}N_2O_4$: 536.3614
mp: 273-275° (ac.) [1]
$[\alpha]_D$+52° (chlf.) [2]
UV: 225, 230, 245,(4.15, 4.15, 3.84) [1]
IR: 290, 3050, 1670, 1630, 1540, 1460 [1]
Mass: 536(M+.), 105(11), 72(41) [2]

PMR: 0.58, 0.77(9H, s, CH_3), 0.80(3H, d, J=7, CH_3), 2.17(6H, s, $N(CH_3)_2$), 3.07, 3.40(2H, dd, J=12.5, CH_2-OH), 4.05(1H, m, H-16), 6.10(1H, d, J=9, NH), 7.34, 7.80(5H, m, H-Ar) [1]
CD: [2]

1. Kurakina I.O., Tolkachev O.N., Pakaln D.A., Khim. Prir. Soedin., 1974, 814.
2. Herlem-Gaulier D., Khuong-Huu-Laine F., Goutarel R., Magdeleine M.-J., Bull. Soc. Chim. France, 1968, No. 2, 763.



BERBAMINE

Berberis heteropoda, B.iliensis, B.integerrima, B.nummularia, B.oblonga, B.vulgaris, Mahonia aquifolia
$C_{37}H_{40}N_2O_6$: 608.2886
mp: 156-157° [1]
$[\alpha]_D$+107° (chlf.) [1]
{di h-chl. 255°} [1]

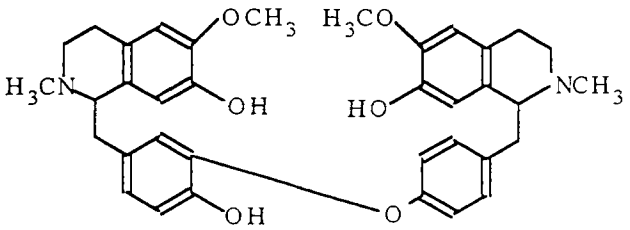
UV: 284(3.79) [2]
Mass: 608(M^+, 79), 607(50), 485(2), 417(7), 395(68), 381(34), 198($^{++}$,(100) [2]
PMR: 2.25(2-NCH_3), 2.57(2'-NCH_3), 3.11(7-OCH_3), 3.58(6'-OCH_3), 3.75(6-OCH_3), 3.82(H-1), 3.85(H-1'), 5.98(H-8'), 6.26(H-5), 6.42(H-10), 6.51(H-5'), 6.62(H-11'), 6.73(H-14), 6.83(H-13), 7.10(H-13'), 7.30(H-14') [3]

^{13}C NMR: [4]

C-1	62.0	C-13	147.3	C-9'	38.2
3	44.7	14	114.6	10'	134.6
4	29.3	15	123.5	11'	130.0*
4a	129.0	1'	63.4	12'	121.2
5	105.4	3'	45.2	13'	153.9
6	151.7	4'	24.8	14'	121.4
7	136.8	4'a	127.9	15'	132.0*
8	147.7	5'	111.1	6-OCH_3	55.7
8a	120.1	6'	149.9	7-OCH_3	60.3
9	37.5	7'	143.4	6'-OCH_3	55.7
10	134.0	8'	119.7	2-NCH_3	42.6**
11	115.3	8'a	126.3	2'-NCH_3	42.0**
12	143.8				

Pharm.: Hypotensive effect [5]. {di m-i}-curaremimetic action [6].

1. Karimov A., Unpub.
2. Akasu M., Itokawa H., Fujita M., Phytochem.,1976, **15**, 471.
3. Guinaudeau H., Freyer A.J., Shamma M., Natur. Prod. Rep., 1986, **5**, 477.
4. Broadbent T.A., Paul E.G., Heterocycles, 1983, **20**, 863.
5. Naidovich L.P., Trutneva E.A., Tolkachev O.N., Vasil'eva V.D., Farmatsiya, 1976, **25**, No. 4, 33.
6. Sadritdinov, S.78.

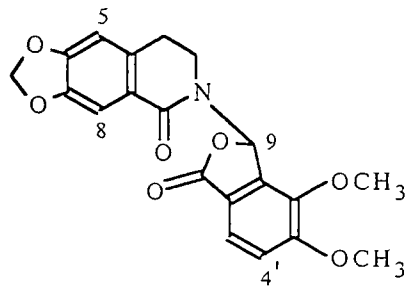


BERBAMUNINE

Berberis heteropoda, B.iliensis, B.integerrima, B.nummularia, B.oblonga
$C_{36}H_{40}N_2O_6$: 596.2886
mp: 190-191° (ac.)
$[\alpha]_D$+55° (chlf.)

Sol-y.: r-sol.chlf., meth., alc.; sp.sol.hx., bz. [1]
UV: 283(4.02) [1]
IR: 3350 [1]
Mass: 192(100), 178 [1]
PMR: 2.35(3H, s, NCH_3), 2.40(3H, s, NCH_3), 3.74(6H, s, 2×OCH_3), 6.05-7.00(11H, m, H-Ar) [1]
Pharm.: Spasmolytic action on the smooth musculature of the intestine [2].

1. Karimov A., Author's Abstract of Candidate's Dissertation, Tashkent, 1978.
2. Sadritdinov F.S., Med. Zh. Uzb., 1980, No. **2**, 54.



BERBERAL

Berberis heterobotrys
$C_{20}H_{17}NO_7$: 383.1005
mp: 151-153° (eth.)
UV: 226, 255, 305(4.92, 4.60, 4.41)
IR: 2970, 2840, 1770, 1660, 1500, 1350, 1270, 1100, 850

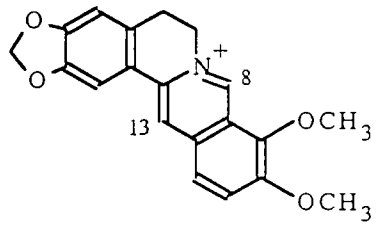
Mass: 383(M^+, 100), 365(7), 354(5), 352(12), 338(31), 324(31), 220(28), 208(5), 193(45), 190(58), 176(75), 165(72), 148(43)

PMR: 2.81(2H, t, J=7.4, H-4), 2.99, 3.20 (1H, dt, J=14.7, 7.4, H-3), 3.87(3H, s, 6'-OCH_3), 3.97(3H, s, 5'-OCH_3), 6.01(2H, s, CH_2O_2), 6.60(1H, s, H-5), 7.14(1H, d, J=8.0, H-4'), 7.59(1H, s, H-8), 7.65(1H, d, J=8.0, H-3'), 7.97(1H, s, H-9)

NMR ^{13}C:

C-1	164.5*	8	107.0****	4'	115.0****
3	40.0	8a	122.4***	5'	157.3**
4	27.9	9	81.8	6'	144.0**
4a	134.5***	10	168.4*	CH_2O_2	101.7
5	108.6****	C-1'	135.8***	5'-OCH_3	60.8
6	151.3**	2'	120.7***	6'-OCH_3	56.5
7	147.1**	3'	121.8****		

1. Karimov A., Faskhutdinov M.F., Abdullaev N.D., Levkovich M.G., Mil'grom E.G., Rashkes Ya.V., Shakirov R., Khim. Prir. Soedin., 1993, 869.



BERBERINE

Aquilegia olympica, Argemone alba, A.albiflora, A.hybrida, A.mexicana, A.platyceras, A.ochroleuca, Berberis amurensis, B.densiflora, B.heterobotrys, B.heteropoda, B.iberica, B.iliensis, B.integerrima, B.kaschgarica, B.nummularia, B.oblonga, B.orientalis, B.ottawensis, B.regeliana, B.sibirica, B.turcomanica, B.vulgaris, Bocconia frutescens, Corydalis ledebouriana, Dicranostigma franschetianum, D.lactucoides, D.leptopodum, Eschscholtzia californica, Mahonia aquifolia, Macleaya cordata, M.microcarpa, Nandina domestica, Phellodendron amurense, Ph.lavallei, Ph.sachalinense, Thalictrum baikalense, Th.collinum, Th.flavum, Th.foetidum, Th.longipedunculatum, Th.minus, Th.sachalinense, Th.simplex, Th.strictum, Papaver alberti, P.arenarium, P.paczoskii, P.rhoeas, P.stevenianum

$C_{20}H_{18}NO_4$: 336.1236

{chloride 197° [1], iodide 263° [2]}

Sol-y. {chloride}: sol.meth., alc., water, sp.sol.ac. [2]

UV: 267, 347, 426(4.45, 4.42, 3.75) [1]

IR: 3400, 1630, 1590, 1540, 1500 [1]

PMR (CD_3OD): 4.12(3H, s, 10-OCH_3), 4.23(3H, s, 9-OCH_3), 6.12(2H, s, CH_2O_2), 6.91(1H, s, H-4), 7.64(1H, s, H-1), 7.99, 8.11(1H, d, J=8.9, H-11, H-12), 8.68(1H, s, H-13) [3]

^{13}C-NMR:

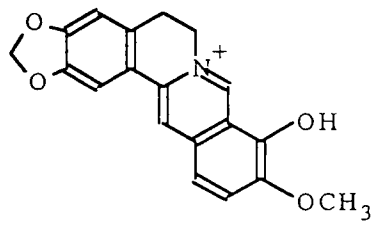
C-1	105.4	C-8	145.4	C-13	120.2
2	147.6	8a	121.4	13a	137.4
3	149.8	9	143.6	13b	120.4
4	108.4	10	150.4	2,3-CH_2O_2	102.1
4a	130.6	11	126.7	8-OCH_3	57.1
5	26.3	12	123.5	9-OCH_3	61.9
6	55.2	12a	132.9		

HPLC: [5]

Pharm.: LD_{50} 13.3, 9.5 mg/kg (s/c, i/v, mice). Active cholagogic and ypotensive agent. {The bisulfate} is used in the treatment of chronic cystitises. Supplied in 0.005-g tablets [6, 7].

1. Khusainova Kh.Sh., Sadykov Yu.D., DAN Tadzh.SSR, 1981, **24**, 489.
2. Ismailov Z.F., Maekh S.Kh., Yunusov S.Yu., DAN UzSSR, 1959, No. 7, 32.
3. Simon J., Verpoorte R., van Essen G.F.A., Baerheim-Svendsen A., Planta medica, 1980, **38**, 924.

4. Blasko G., Cordell G.A., Bhamarapravati S., Beecher C.W.W., Heterocycles,1988, **27**, 911.
5. Liang-Feng Han, Nowicky W., Gutmann V., J. Chromatogr., 1991, **543**, 123.
6. Sadritdinov, p. 79.
7. Mashkovskii, Vol. 1, p. 513.

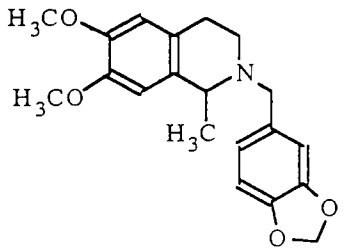


BERBERRUBINE

Berberis iliensis, B.vulgaris
$C_{19}H_{16}NO_4$: 322.1079
mp: 285-286°
{tetrahydro. 180°}
Sol-y.: r-sol.chlf., meth.; sp.sol.bz., eth.

UV: 240, 280, 325, 390(4.30, 4.10, 3.91, 3.78)
IR: 3350
PMR: 3.00(2H, t, H-5), 3.75(3H, s, OCH_3), 4.30(2H, t, H-6), 5.98(2H, s, CH_2O_2), 6.12(1H, d, J=8.5), 6.77(1H, s), 7.12(1H, s), 7.13(1H, d, J=8.5), 7.47(1H, s), 9.11(1H, s)

1. Karimov A., Shakirov R., Khim. Prir. Soedin.,1993, 83.

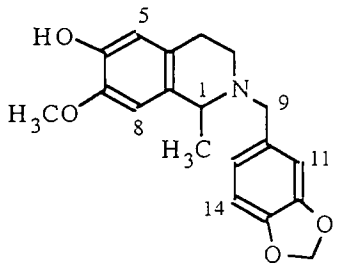


BERNUMIDINE

Berberis nummularia
$C_{20}H_{23}NO_4$: 341.1627
mp: oil
$[\alpha]_D$+21° (chlf.)
{h-chl. 181°}
UV: 286(3.78)

IR: 2920, 2439, 1610, 1540, 1450, 1270, 1110, 1030, 810, 780
Mass: 341(M^+, 3), 326(52), 207(11), 206(8), 192(14), 135(100)
PMR {h-chl.} ($CDCl_3$+CD_3OD): 1.71(3H, d, J=7, CH_3), 3.00(2H, m), 3.32(2H, m), 3.76, 3.78(3H, s, 2×OCH_3), 4.06(2H, narrow s, CH_2O_2), 4.15(1H, m), 5.91(2H, s), 6.35, 6.56(1H, s, n-H-Ar), 6.70, 6.96, 7.20(1H, d, J=8.5, dd, J=8.5, J=1.8, d, J=1.8, H-Ar)

1. Karimov A., Shakirov R., Khim. Prir. Soedin., 1993, 397.



BERNUMINE

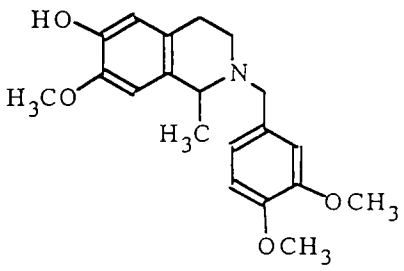
Berberis nummularia
$C_{19}H_{21}NO_4$: 327.1465
mp: oil
$[\alpha]_D$+33° (chlf.)
UV: 285(3.84)
IR: 3450

Mass: 327(M^+, 2), 312(55), 192(2, 5), 190(2), 178(5, 5), 135(100)
PMR: 1.30(3H, d, CH_3), 2.30-3.20(4H, m), 3.58, 3.64(1H, d, J=13.5, H-9), 3.74(1H, q, J=6.6, H-1), 3.75(3H, s, OCH_3), 5.92(2H, s, CH_2O_2), 6.42(1H, s, H-8), 6.56(1H, s, H-5), 6.65(1H, d, J=8, H-14), 6.74(1H, d, J=8, H-15), 6.87(1H, d, J=1.5, H-11)

^{13}C NMR:

C-1	55.5	C-8	109.4	C-13	146.5
3	43.2	8a	132.2	14	109.3
4	25.7	9	57.3	15	121.9
4a	126.1	10	130.5	CH_3	20.0
5	114.3	11	107.8	OCH_3	55.8
6	143.9	12	147.5	CH_2O_2	100.8
7	145.0				

1. Karimov A., Levkovich M.G., Abdullaev N.D., Shakirov R., Khim. Prir. Soedin., 1993, 394.

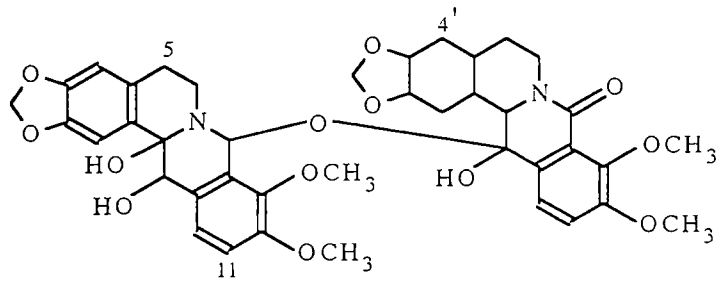


BERNUMICINE

Berberis nummularia
$C_{20}H_{25}NO_4$: 343.1777
mp: oil
$[\alpha]_D$+14° (chlf.)
{h-chl. 212°}

UV: 286(3.84)
IR: 3400
Mass: 343(M^+, 4), 328(56), 192(3), 178(9), 151(100)
PMR {h-chl.} ($CDCl_3$+Py-d_5): 1.61(3H, d, J=6.6, CH_3), 2.97(2H, m), 3.40(2H, m), 3.77, 3.80(3H, 6H, s, 3×OCH_3), 4.26(2H, s), 4.44(1H, q), 6.65, 6.72(1H, s, n-H-Ar), 7.01, 7.12(2H, narrow s, 1H, narrow s, H-Ar)

1. Karimov A., Shakirov R., Khim. Prir. Soedin.,1993, 397.



BERPODINE

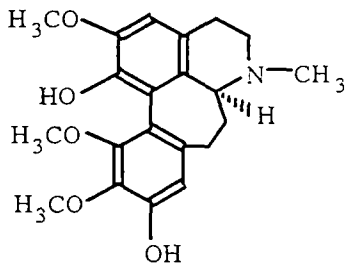
Berberis heteropoda
$C_{40}H_{38}N_2O_{13}$: 754.2363
mp: 197-198°
UV: 235 sh, 295(4.34, 4.18)
IR: 3300, 1680, 1510, 1490

PMR (Py-d_5): 1.85, 2.39, 2.43, 2.55, 2.96, 3.07, 3.28, 3.82 (1H, m, 4×CH_2), 3.44, 3.49, 3.98, 4.01 (3H, s, 4×OCH_3), 5.32, 6.11(1H, c, H-14', H-8), 5.75, 5.80, 5.84, 5.91(1H, narrow s, 2×CH_2O_2), 5.91(1H, s, H-13), 6.44, 6.56, 6.81, 7.74(1H, s, n-H-Ar), 6.50, 7.07(1H, d, J=8.1, o-H-Ar), 6.60, 7.32(1H, d, J=8.8, o-H-Ar)

^{13}C NMR:

C-1	109.0	C-12a	132.6	8`	172.6
2	143.5	13	67.0	8`a	129.1
3	147.3	14	85.1	9`	151.8
4	107.8	14a	133.6	10`	145.7
4a	131.3	CH_2O_2	101.4	11`	112.0
5	29.7	9-OCH_3	61.7	12`	124.0
6	42.5	10-OCH_3	55.3	12`a	132.9
8	78.2	C-1`	107.7	13`	83.2
8a	125.2	2`	146.1	14`	56.2
9	152.0	3`	147.1	14`a	130.8
10	146.0	4`	107.8	CH_2O_2	101.8
11	111.5	4`a	129.3	9`-OCH_3	61.6
12	125.4	5`	28.9	10`-OCH_3	55.5
		6`	45.4		

1. Karimov A., Abdullaev N.D., Shakirov R., Khim. Prir. Soedin., 1993, 264.

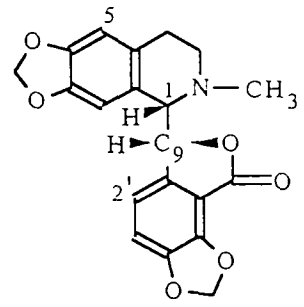


BECHUANINE (MERENDERINE)

Merendera raddeana, M.robusta, M.trigyna
$C_{21}H_{25}NO_5$: 371.1733
mp: 229-230° (ac.)
$[\alpha]_D$+105° (chlf.)
{h-chl. 220°, m-i. 150° (dec.)} [1]

UV: 258, 296(4.11, 3.89) [1]
IR: 3560, 3470, 1600, 1577, 1455 [1]
Mass: 371 (M^+, 55), 370(21), 356(35), 354(100), 352(4), 342(17), 340(25), 338(15), 328(5), 326(4), 324(10), 204(12) [2]
PMR: 2.20(3H, s, NCH_3), 3.67, 3.80(3H, 6H, s, 3×OCH_3), 6.60, 6.69(1H, s, H-1, H-7) [1]
Pharm.: Reversible cholinesterase inhibitor [3].

1. Yusupov M.K., Trozyan A.A., Aslanov Kh.A., Sadykov A.S., Khim. Prir. Soedin., 1972, 777; Trozyan A.A., Yusupov M.K., Aslanov Kh.A., Khim. Prir. Soedin., 1975, 527.
2. Kasymov A.K., Timbekov É.Kh., Yusupov M.K., Aslanov Kh.A., Khim. Prir. Soedin., 1977, 230.
3. Zuparova K.M., Rozengart E.V., Yusupov M.K., Abduvakhabov A.A., Khakimov Yu.R., Chommadov B., Israilov D.I., Uzb. Khim. Zh., 1991, No. 2, 33.



(+)-BICUCULLINE

Corydalis alpestris, C.caucasica, C.emanuelii, C.gigantea, C.gortschakovii, C.marschalliana, C.paniculigera, C.pseudoadunca, C.remota, C.stricta, C.vaginans, Dicentra peregrina, Fumaria capreolata, F.parviflora, F.vaillantii
$C_{20}H_{17}NO_6$: 367.1056
mp: 194-195° (meth.-chlf.) [1]
$[\alpha]_D$+112° (chlf.) [1]

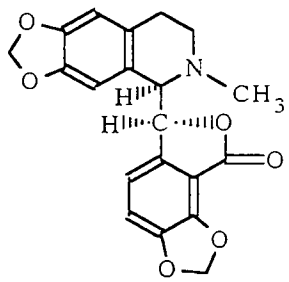
UV: 222, 298, 324 [1]
IR: 1750 [1]

Mass: 190 [2]
PMR: 2.50(3H, s, NCH_3), 3.97, 5.62(1H, d, J=4), 5.83, 6.08(2H, s, $2\times CH_2O_2$), 6.32, 6.49(1H, s, n-H-Ar), 6.21, 6.85(1H, d, J=8, o-H-Ar) [2]
^{13}C NMR: [3]

C-1	66.0	C-8	107.8	C-4'	149.1
3	49.5	8a	130.7	5'	144.5
4	27.0	9	85.0	6'	110.3
4a	124.8	10	167.2	6,7-OCH_2O	101.0
5	108.5	1'	140.5	4',5'-OCH_2O	103.3
6	146.8	2'	115.6	NCH_3	45.3
7	146.0	3'	113.1		

Abs. conf.: 1S9R [4]
Pharm.: LD_{50} 1.48, 0.3 mg/kg (s/c, i/v, mice). Exhibits an antinarcotic action in relation to trunk narcotics [5,6]. Is a specific antagonist of GABA and is widely used in experimental studies [7].

1. Yunusov M.S., Akramov S.T., Yunusov S.Yu., DAN SSSR, 1965, **162**, 607.
2. Israilov I.A., Unpub.
3. The Alkaloids, 1981, Vol. 18, p. 217.
4. Blasko J., Hussain S.F., Shamma M., J. Natur. Prod., 1981, **44**, 475.
5. Sadritdinov, p. 204.
6. Khamdamov I., Sadritdinov F.S., Dokl.AN Uz.SSR, 1972, No. 2, 58.
7. Valeev A.E., Chernyavskaya N.I., Dzhakhangirov F.N., Yunusov M.S., Israilov I.A., Neirofiziologiya, 1988, No. 6, 820.

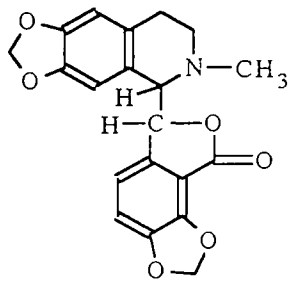


(–)-BICUCULLINE

Corydalis ledebouriana, C.sewerzowii, Fumaria schleicheri
$C_{20}H_{17}NO_6$: 367.1056
mp: 193-195° (meth.-ac.) [1]
$[\alpha]_D$-110° (chlf.) [1]
Abs. conf.: 1R, 9S [2]

Pharm.: Has low activity. In contrast to (+)-bicuculine, is not a blocker of GABA receptors [3]

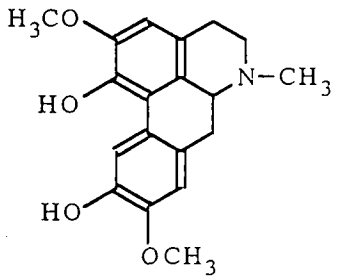
1. Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 61.
2. Moiseeva G.P., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 103.
3. Valeev A.E., Chernyavskaya N.I., Dzhakhangirov F.N., Yunusov M.S., Israilov I.A., Neirofiziologiya, 1988, No. 6, 820.



(±)-BICUCULLINE

Corydalis pseudoadunca, Fumaria schleicheri
$C_{20}H_{17}NO_6$: 367.1056
mp: 197-203° (chlf.-meth.)
$[\alpha]_D$ 0°

1. Yunusov M.S., Akramov S.Yu., Yunusov S.Yu., DAN SSSR, 1965, **162**, 607; Markosyan S.S., Tsulikyan T.A., Mnatsakanyan V.A., Arm. Khim. Zh., 1976, No. 29, 1053.



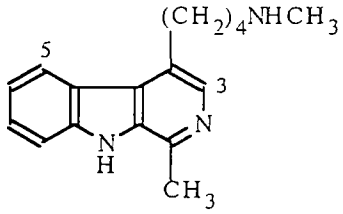
BRACTEOLINE

Corydalis gortschakovii, Papaver bracteatum, P.orientale, P.pseudo-orientale
$C_{19}H_{21}NO_4$: 327.1471
mp: 218-221° (alc.)
$[\alpha]_D$ +36° (chlf.)

UV: 223, 282, 310
Mass: 327(M^+), 326, 312, 284
PMR: 2.50(3H, s, NCH_3), 3.70(6H, s, 2×OCH_3), 6.40, 6.65, 7.90(1H, s, H-Ar)
^{13}C NMR (DMSO): [2]

C-1	140.8	C-5	52.8	C-10	143.8
1a	119.4	6a	62.4	11	111.3
1b	122.7	7	33.9	11a	124.7
2	146.2	7a	126.9	NCH_3	43.6
3	109.2	8	116.0	2-OCH_3	55.6
3a	126.9	9	145.7	9-OCH_3	55.3
4	28.4				

1. Israilov I.A., Ibragimova M.U., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 612.
2. Guinaudeau H., Leboeuf M., Cave A., J. Natur. Prod., 1979, 325.

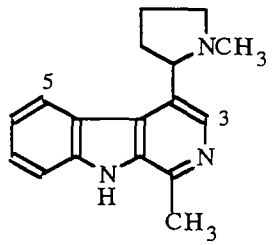


BREVICARINE

Carex brevicollis
$C_{17}H_{21}N_3$: 267.1736
mp: 61° (crystal hydrate), 112° (anh.) [1]
$[\alpha]_D$ +30° (meth.)

{di h-chl. 196° (alc.), di nitr. 202° (dec., alc.), di picr. 212° (dec.)} [1]
Sol-y.: r-sol.alc., pyr.; sol.bz., chlf.; sp.sol.petr.eth., eth.: i.s.water [2]
UV: 236, 244, 288, 338, 350(2.53, 4.51, 4.12, 3.79, 3.83) [2]
UV(H^+): 250, 302, 365(4.55, 4.24, 3.92) [2]
IR: 3125, 1639, 1563, 1504, 1481, 746, 719 [2]
Mass: 267(M^+, 5), 252, 237, 223, 209, 195, 44(100) [1]
PMR: 1.67, 2.05(2H, m), 2.35(3H, c, NCH_3), 2.55(2H, m), 2.70(3H, s, C-CH_3), 3.10(2H, m), 7.40(3H, m, H-Ar), 8.05(1H, m, H-5), 8.08(1H, m, H-3), 10.10(1H, narrow s, NH)
Pharm.: LD_{50} 375 mg/kg (s/c, mice). Antiarrhythmic activity [3,4].

1. Terent'eva I.V., Shirshova T.I., Sholl' A.F., Kovalenko V.I., in: Brevicolline — An Alkaloid of the Sedge *Carex brevicollis* [in Russian], Kishinev, 1969, p. 36.
2. Terent'eva I.V., Borovkov A.V., in: Alkaloid-bearing Plants of Moldavia [in Russian], Kishinev, 1960, p. 41.
3. Sadritdinov, p. 123.
4. Denisenko P.P., Vinogradova T.V., Semenov A.A., Farmakol. Toksikol., 1988, No. 2, 50.

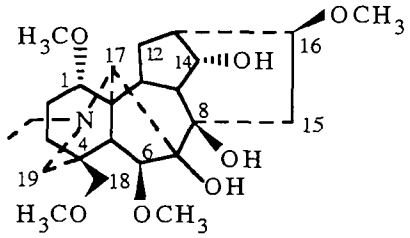


BREVICOLLINE

Carex brevicollis
$C_{17}H_{19}N_3$: 265.1579
mp: 224-225° (meth.)
$[\alpha]_D$ −146° (alc.)

{h-chl. 242° (water), di h-chl. 273° (alc.), di h-i. 253° (alc.), m-i. 212°, di m-i. 264°, sulf. 214°, di sulf. 253°, di p-chl. 246° (alc.), di nitr. 189° (alc.), di picr. 231° (alc.)} [1]
UV: 245, 288, 338, 352(4.42, 3.98, 3.64, 3.69) [1]
UV(H^+): 262, 306, 372 [1]
IR: 3440, 1625, 1575, 1460, 1160, 1060, 910, 670 [1]
Mass: 265(M^+, 10), 236(38), 222(18), 84(100), 42(54) [1]
PMR: 1.90(2H, m), 2.20(2H, m), 2.25, 2.80(3H, s, NCH_3, CH_3), 3.25(2H, m), 4.00(1H, t), 7.50(3H, m, H-Ar), 8.45(1H, d, H-5), 8.50(1H, H-3), 10.70(1H, narrow s, NH) [1]
Pharm.: LD_{50} 146 mg/kg (s/c, mice) [2]. LD_{100} 50-80 mg/kg (s/c, rats). {Di (h-chl.)} stimulates respiration, intensifies contraction of the muscles of the intestine and the uterus, exhibits vasodilator and antispasmodic effects [3]. Used in gynecological practice [1, 4, 5].

1. Terent'eva I.V., Lazur'evskii G.V., Vember P.A., in: Brevicolline — An Alkaloid of the Sedge *Carex brevicollis* [in Russian], Kishinev, 1969, p. 5.
2. Sadritdinov, p. 124.
3. Chernov V.M., in: Alkaloid-bearing Plants of Moldavia [in Russian], Kishinev, 1960, p. 49.
4. Turova A.D., Leskov A.I., Mitrofanov A.I., Sizov P.I., in: Brevicolline — An Alkaloid of the Sedge *Carex brevicollis* [in Russian], Kishinev, 1969, p. 69.
5. Konovalova M.N., Chernovskaya N.A., Men'shikov G.P., Shirokinskaya O.N., in: Brevicolline — An Alkaloid of the Sedge *Carex brevicollis* [in Russian], Kishinev, 1969, p. 81.



BROWNIINE

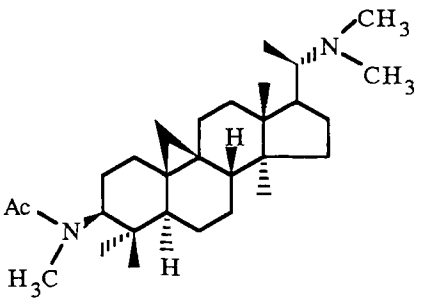
Delphinium biternatum, D.corymbosum, D.iliense, D.rotundifolium
$C_{25}H_{41}NO_7$: 467.2883
mp: 110-112° (eth.) [1]
$[\alpha]_D$ +39° (alc.) [1]

{p-chl. 212°, h-i. 196°, 14-Ac 130°} [1]
IR: 3530, 3475, 1464, 1410, 1387, 1365, 1345, 1315, 1295, 1220, 1193, 1170, 1120, 1090, 990, 945, 875, 855, 747, 733 [1]
Mass: 467(M^+, 7), 452(28), 436(100) [1]
PMR: 1.05(3H, t, J=7, NCH_2CH_3), 3.27, 3.32, 3.38, 3.44(3H, s, 4×OCH_3), 3.90(1H, d, J=1, H-6α), 4.05(1H, dd, J=7,4, H-14β) [2]
^{13}C NMR: [3]

C-1	85.2	C-9	49.6	C-17	65.4
2	25.5	10	36.4	18	78.0
3	32.5	11	48.2	19	52.7
4	38.4	12	27.5	NCH_2	51.3
5	45.1	13	46.1	CH_3	14.3
6	90.1	14	75.3	1'	56.0
7	89.1	15	33.1	6'	57.5
8	76.3	16	81.7	16'	56.5
				18'	59.1

Pharm.: LD_{50} 70 mg/kg (i/v, mice). Hypotensive, H-cholinoblocking, and weak spasmolytic effects [4].

1. Salimov B.T., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 106.
2. Pelletier S.W., Jr., Daily O.D., Mody N.V., Olsen J.D., J. Org. Chem., 1981, **46**, 3284.
3. Pelletier S.W., Mody N.V., Sawhney R.S., Bhattacharyya J., Heterocycles, 1977, **7**, 327.
4. Dzhakhangirov F.N., Unpub.

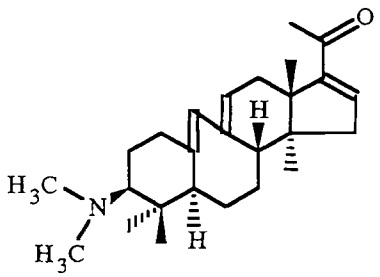


BUXALINE C

Buxus sempervirens
$C_{29}H_{50}N_2O$: 442.3923
mp: 230-232° (alc.)
$[\alpha]_D$ +29° (chlf.)
{N-Me. 206°, N-benzoyl 262°}

IR: 3050, 1645, 1450
Mass: 442(M^+), 427, 85, 84, 72(100), 71, 70, 58, 44
PMR: 0.78(3H, s, CH_3), 0.84(3H, d, J=6, CH_3), 0.87(3H, s, CH_3), 1.21(6H, s, 2×CH_3), 2.07(3H, s, NAc), 2.21(6H, s, $N(CH_3)_2$), 2.85(3H, s, NCH_3)

1. Khodzhaev B.U., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 776.

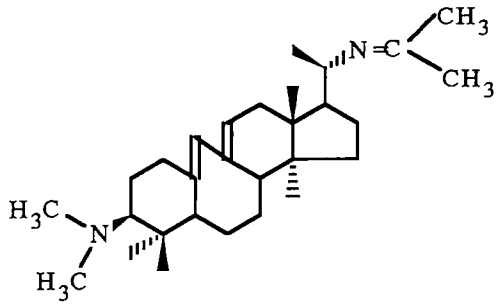


BUXAMIDEINE K (BUXPSIINE)

Buxus balearica
$C_{26}H_{39}NO$: 381.3032
mp: 180-183 (ac.) [1]
$[\alpha]_D$ +118° (chlf.) [1, 2]

UV: 239, 247(4.52, 4.48) [1]
IR: 3075, 1669, 1596 [2]
Mass: 381(M^+), 184, 71, 58, 43 [1]
PMR: 0.69(6H, s, 4-$(CH_3)_2$), 0.86(3H, s, 14-CH_3), 1.08(3H, s, 18-CH_3), 2.20(3H, s, 21-CH_3), 2.34(6H, s, $N(CH_3)_2$), 5.52(1H, H-11), 5.84(1H, H-19), 6.62(1H, H-16) [1, 3]
ORD: [3]

1. Kurakina I.O., Proskurnina N.F., Stepanyants A.Ts., Khim. Prir. Soedin., 1969, 406.
2. Kurakina I.O., Proskurnina N.F., Kibal'chich P.N., Khim. Prir. Soedin., 1969, 26.
3. Tomko I., Bauerova O., Voticky Z., Goutarel R., Longevialle P., Tetrahedron Lett., 1966, 915.

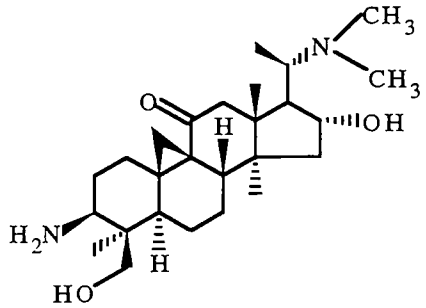


BUXAMINE E (N-ISOPROPYLIDENBUXAMINE)

Buxus sempervirens
$C_{29}H_{48}N_2$: 424.3817
mp: 187-189° (ac.) [1]
$[\alpha]_D$ +50° (chlf.) [1]

UV: 240, 249, 257(4.46, 4.49, 4.29) [2]
IR: 1670 [2]
Mass: 424(M^+), 382, 381(100), 380, 379, 354, 85, 84, 71, 58, 44 [2]
PMR: 0.65(6H, s, CH_3), 0.74(3H, s, CH_3), 0.95(3H, s, CH_3), 0.98(3H, d, 21-CH_3), 1.78, 1.91(6H, s, N=C(CH_3)$_2$), 2.21(6H, s, N(CH_3)$_2$), 5.42, 5.83(2H, m, 2×C=CH) [2-4]

1. Khodzhaev B.U., Primukhamedov I.M., Dzhabbarov A., Yunusov S.Yu., Khim. Prir. Soedin., 1987, 919.
2. Khodzhaev B.U., Shakirov R., Unpub.
3. Stauffacher D., Helv. Chim. Acta., 1964, **47**, 968.
4. Khuong-Huu F., Herlem-Gaulier D., Khuong-Huu Q., Stanislas E., Goutarel R., Tetrahedron, 1966, **22**, 3321.

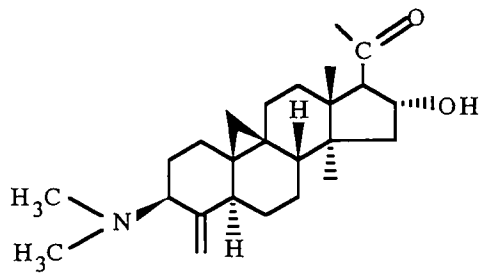


BUXIDINE F

Buxus balearica
$C_{26}H_{44}N_2O_3$: 432.3352
mp: 227-238° (bz.)
$[\alpha]_D$ +114° (chlf.)
{tri Ac. 228°, N-Me. 222°, N-di Me. 237°}

UV: 221(3.95)
IR: 3500, 3240, 1670, 1640, 1593
Mass: 432(M^+), 72(100)
PMR: 0.77(3H, s, CH_3), 0.80(3H, d, J=6, 21-CH_3), 0.82(3H, s, CH_3), 1.10(3H, s, CH_3), 2.16(6H, N(CH_3)$_2$), 3.37, 3.57(2H, q, J=12.7, $-CH_2-OH$)

1. Kurakina I.O., Proskurnina N.F., Stepanyants A.Ts., Mondeshka D.M., Khim. Prir. Soedin., 1970, 231.

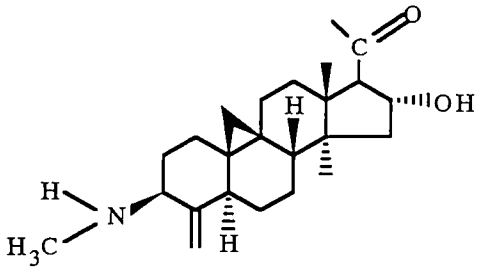


BUXPIINE

Buxus hyrcana
$C_{25}H_{39}NO_2$: 385.2981
mp: 171-172° (bz.) [1]
$[\alpha]_D$ +157° (chlf.) [1]
IR: 3583, 3093, 1709, 1653, 1458, 1037, 903 [2]
Mass: 385(M^+), 58, 43 [2]

PMR: 0.08, 0.29(2H, H-19), 0.92, 1.15(3H, s, 18-CH_3, 14-CH_3), 2.23(3H, s, 21-CH_3), 2.35(6H, N(CH_3)$_2$), 4.66, 4.95(2H, =CH_2) [2]

1. Orazmuradov G.M., Aliev A.M., Khim. Prir. Soedin., 1977, 582.
2. Voticky Z., Tomko I., Tetrahedron Lett., 1965, 3579.

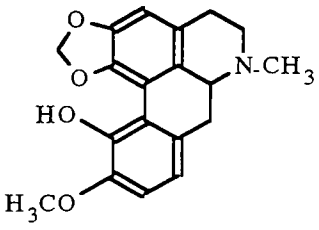


BUXTAUINE

Buxus hyrcana
$C_{24}H_{37}NO_2$: 371.2824
mp: 177-178° (ac.) [1]
$[\alpha]_D$ +155° (alc.) [1]
{dihydro 172° [2], diol 190° [2], di Ac 197° [1, 2]}

UV: 203(3.69) [2]
IR: 3595, 3290, 3095, 1695, 1630, 1455, 1040, 896 [1]
Mass: 371(M^+), 356, 353, 44(100), 43 [2]
PMR: 0.27(2H, H-19), 0.84(3H, CH_3), 1.15(3H, CH_3), 2.07(3H, 21-CH_3), 2.40(3H, s, NCH_3), 4.53, 4.76(2H, d, $=CH_2$) [2]

1. Aliev A.M., Orazmuradov G.M., Khim. Prir. Soedin., 1974, 409.
2. Voticky Z., Tomko I., Doleis L., Hanus V., Collect., 1965, **11**, 3705.

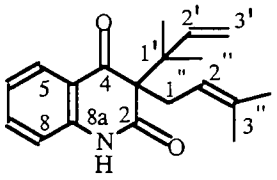


BULBOCAPNINE

Corydalis alpestris, C.caucasica, C.emanuelii, C.fedtschenkoana, C.glaucescens, C.ledebouriana, C.marschalliana, C.paczoskii, C.popovii, C.rosea-purpurea, C.vaginans
$C_{19}H_{19}NO_4$: 325.1314
mp: 199-200° (alc.) [1]

$[\alpha]_D$ +237° (chlf.) [1]
UV: 223, 235 sh, 269, 282 sh, 306 [1]
Mass: 325(M^+), 324, 310, 282, 165, 152 [1]
PMR: 2.57(3H, s, NCH_3), 3.92(3H, s, OCH_3), 5.95, 6.10(1H, d, J=1, CH_2O_2), 6.64(1H), 6.83(2H, s, H-Ar) [1]
Pharm: LD_{50} 220 mg/kg (s/c, mice). Suppresses respiratory activity and lowers arterial pressure. Causes catalepsy. Is a blocker of dopamine receptors [2].

1. Israilov I.A., Unpub.
2. Sadritdinov, p. 205.



BUCHAPINE

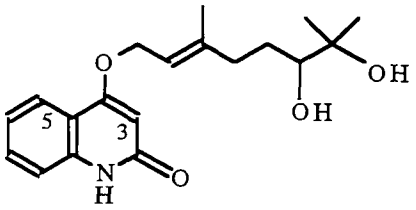
Haplophyllum bucharicum
$C_{19}H_{23}NO_2$: 297.1729
mp: 134-135° (hx.)
Sol-y.: r-sol.chlf., alc., meth., ac., eth.

UV: 234, 238 sh, 242 sh, 244 sh, 258 sh, 324, 329 sh, 335 sh (4.44, 4.41, 4.32, 3.72, 3.60, 3.41, 3.50, 3.40)
IR: 1692, 1660
Mass: 297(M^+, 10), 229(34), 228(100), 214(20), 212(24), 200(16), 186(38), 174(24), 69(20)
PMR: 1.09, 1.40, 1.88(6H, 3H, 3H, s, 4×CH_3), 2.77, 4.65(2H, d, 1H, t, J=7.5, $-CH_2-CH=$), 4.81, 5.76(2H, 1H, $-CH=CH_2$), 6.82-7.50(3H, m, H-Ar), 7.74(1H, d, J=8.5, H-5) [1]

^{13}C NMR: [2]

C-2	173.4	C-8	115.7	C-1''	29.6
3	67.6	8a	140.8	2''	119.4
4	196.1	1'	43.9	3''	135.0
4a	121.7	2'	142.7	3''-CH_3	18.2
5	126.9	3'	113.1	3''-CH_3	25.9
6	123.2	1'-CH_3	23.2		
7	135.5	1'-CH_3	23.4		

1. Nesmelova E.F., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1982, 532.
2. Sheriha G.M., Abouamer K.M., Elshtaiwi B.Z., Ashour A.S., Abed F.A., Alhallaq H.H., Phytochem., 1987, **26**, 3339.

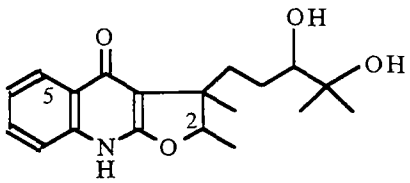


BUCHARAINE

Haplophyllum bucharicum
$C_{19}H_{25}NO_4$: 331.1783
mp: 151-152° (meth.)
$[\alpha]_D$ 0° (pyr.)
{O-Ac 165°, N-Me 143° [1], acetonide 158° [2]}

Sol-y.: sp. sol.org. solvent [2]
UV: 227, 267, 278, 316, 328 sh(4.64, 3.80, 3.80, 3.78, 3.64) [1]
IR: 3325, 3070, 1660, 1612, 1510, 1468, 1445, 1412, 1380, 1360, 1340, 1265, 1230, 1152, 1118, 1088, 830, 800 [3]
Mass: 331(M^+, 4), 316(9), 272(12), 214(12), 189(33), 188(21), 174(11), 162(13), 161(9), 143(100), 125(21), 85(19), 71(33), 59(10) [4]
PMR{acetonide}: 1.06, 1.21, 1.28, 1.35(3H, s, 4×CH_3), 1.56(2H, m, CH_2), 1.74(3H, s, =C–CH_3), 2.18(2H, t, J=7.5, =C–CH_2), 3.65(1H, t, J=6.5, CH–O), 4.68(2H, d, J=6, O–CH_2), 5.53(1H, t, J=6, =CH), 5.97(1H, s, H-3), 7.00-7.50(3H, m, H–Ar), 7.82(1H, d, J=9, H-5), 12.72(1H, narrow s, NH) [2]
Pharm.: Of low toxicity. Sedative and hypnotic action [5].

1. Sharafutdinova S.M., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 198; 1969, 394.
2. Bessonova I.A., Rashkes Ya.V., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 338.
3. Bessonova I.A., Unpub.
4. Rashkes Ya.V., Faizutdinova Z.Sh., Bessonova I.A., Khim. Prir. Soedin., 1970, 577.
5. Sadritdinov, p. 269.

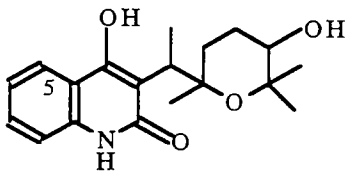


BUCHARAMINOL

Haplophyllum bucharicum
$C_{19}H_{25}NO_4$: 331.1783 [1]
{acetonide 223°} [2]

UV: 216, 232, 250 sh, 297, 307, 317(4.20, 4.22, 3.96, 3.70, 3.79, 3.72) [3]
IR: 3440, 3210, 1620, 1580, 1510, 1475, 1455, 1370, 1340, 1310, 1270, 1240-1205, 1122, 1060, 1040, 1010 [3]
Mass: 331(M^+,6) ,316(7), 313(14), 286(9), 272(15), 242(6), 215(50), 214(100), 200(15) [3]
PMR{acetonide}: 0.80-2.35(22H, m, 6×CH_3, 2×CH_2), 3.60(1H, m, CH-O), 4.60(1H, q, J=7, H-2), 7.20-7.70(3H, m, H–Ar), 8.37(1H, d, J=8.5, H-5) [2]

1. Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 303.
2. Ubaidullaev K., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 343.
3. Bessonova I.A., Unpub.

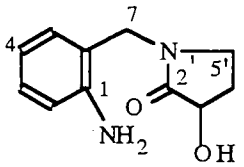


BUCHARIDINE

Haplophyllum bucharicum
$C_{19}H_{25}NO_4$: 331.1783
mp: 251-252° (ac.)

$[\alpha]_D$ 0° (pyr.)
Sol-y.: sol.chlf.
UV: 214, 228, 265 sh, 274, 282, 306 sh, 314, 328(4.36, 4.43, 3.54, 3.72, 3.76, 3.43, 3.77, 3.66) [1]
IR: 3470, 1643, 1608, 1500, 1425, 1380, 1335, 1310, 1280, 1190, 1160, 1120, 1060, 1040, 890 [2]
Mass: 331(M^+, 3), 316(6), 272(18), 214(9), 189(38), 188(25), 174(8), 162(4), 143(100), 125(31), 85(22), 71(39), 59(6) [3]
PMR: 1.16(6H, s, 2×CH_3), 1.23(3H, d, J=6.5, CH_3), 1.30(3H, s, CH_3), 1.70-2.30(4H, m, CH_2–CH_2), 3.70-4.10(2H, m, Ar–CH, CH–O), 7.22(3H, m, H–Ar), 7.88(1H, d, J=8.5, H-5) [1]

1. Faizutdinova Z.Sh., Bessonova I.A., Rashkes Ya.V., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 239.
2. Bessonova I.A., Unpub.
3. Rashkes Ya.V., Faizutdinova Z.Sh., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 577.



VASICOL

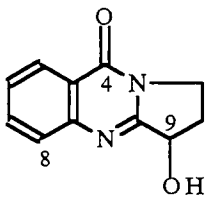
Peganum harmala
$C_{11}H_{14}N_2O_2$: 206.1055
mp: oil

{di Ac 130°, 4-Br 147°}
UV: 240, 293(3.89, 3.53) [1]
IR: 3450-3240, 1690-1660, 1612 [1]
Mass: 206(M^+, 72), 187(11), 161(28), 147(37), 133(20), 106(100) [2]
PMR: 2.02, 3.12(2H, m, H-4', H-5'), 4.22(3H, m, H-7, H-3'), 6.57(4H, m, H-Ar) [1]
^{13}C NMR {di Ac}: [1]

C-1	137.3	C-6	123.9	C-5'	44.7
2	124.7	7	43.8	OCO	169.5
3	129.5	1'	137.3	CH_3	20.8
4	123.2	2'	171.2	NCO	170.1
5	130.9	3'	71.0	CH_3	24.4
		4'	25.8		

X-ray spectral analysis{4-Br}: [1]

1. Telezhenetskaya M.V., Tashkhodzhaev B., Yagudaev M.R., Ibragimov B.T., Yunusov S.Yu., Khim. Prir. Soedin., 1989, 18.
2. Telezhenetskaya M.V., Unpub.



(–)-VASICINONE

Biebersteinia multifida, Galega officinalis, Linaria transiliensis, Nitraria sibirica, Peganum harmala, P.nigellastrum
$C_{11}H_{10}N_2O_2$: 202.0742
mp: 203-204° [1]

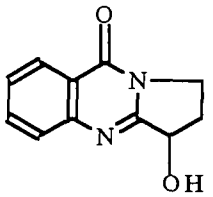
$[\alpha]_D$ –129° (chlf.) [1]
{h-chl 232° (dec.), h-b. 250° (dec.)} [1]

Sol-y.: sp. sol.org. solvent, water [2]
UV: 226, 270, 303, 316
IR: 3200, 1700, 1640, 1600, 1475 [2]; 3110, 1668 [1]
Mass: 202($M^{+\cdot}$, 100), 146(85), 119(55) [3]
PMR: 2.55(2H, m, H-10), 4.10(2H, m, H-11), 5.10(1H, 9-OH), 5.20(1H, t, H-9), 7.55(3H, m, H-6, H-7, H-8), 8.30(1H, d, J=8, H-5) [4]
^{13}C NMR: [5]

C-2	160.3	C-6	126.9*	C-9	72.0
4	160.3	7	134.4	10	29.4
4a	121.0	8	126.7*	11	43.4
5	126.6*	8a	148.7		

HPLC: [6]
Pharm.: LD_{50} 152, 1133 mg/kg (i/v, s/c, mice). Causes muscular relaxation and labored respiration [7].

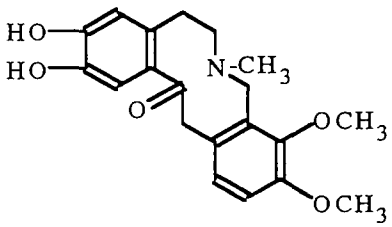
1. Koretskaya N.I., Zh. Org. Khim., 1957, **27**, 3361.
2. Khashimov Kh.N., Unpub.
3. Plugar' V.N., Gorovits T.T., Tulyaganov N., Rashkes Ya.V., Khim. Prir. Soedin., 1977, 250.
4. Pandita K., Bhatia M.S., Thappa R.K., Agarwal S.G., Dhar K.L., Atal C.K., Planta Medica, 1983, **48**, 81.
5. Johne S., Jung B., Groger D., J. Pract. Chem., 1977, **319**, 919.
6. Parikh K.M., Doshi V.J., Salunkhe J.B., Kamath R.P., Indian Drugs, 1989, **27**, 64.
7. Sadritdinov, p. 301.



(±)-VASICINONE

Peganum harmala, Nitraria komarovii
$C_{11}H_{10}N_2O_2$: 202.0742
mp: 211-212° {h-chl. 235°}

1. Khashimov Kh.N., Author's Abstract of Candidate's Dissertation, Tashkent, 1973.

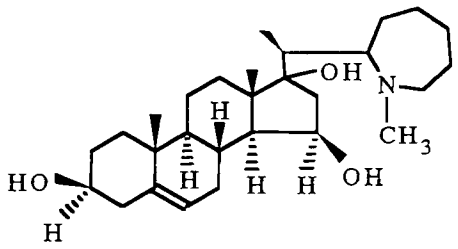


VAILLANTINE

Fumaria vaillantii
$C_{20}H_{23}NO_5$: 357.1576
mp: 165-167° (dec. ac.-meth.)
{0,0'-di Me (muramine) 175°}
Sol-y.: sp. sol.eth., bz., chlf., ac., alc.

UV: 292(3.92)
IR: 1650, 1600
Mass: 357($M^{+\cdot}$), 164(100)
Mass{0,0'-di Me}: 385($M^{+\cdot}$), 206, 179, 164(100), 149, 121
PMR{0,0'-di Me}: 1.80(3H, s, NCH_3), 3.80(3H, s, OCH_3), 3.84(9H, s, 3×OCH_3), 6.60, 6.97(1H, s, p-H–Ar), 6.74, 6.88(1H, d, J=8, o-H–Ar)

1. Ibragimova M.U., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 476.

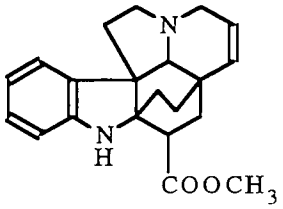


VALIVINE

Fritillaria walujewii
$C_{28}H_{47}NO_3$: 445.3556
mp: 256-258° (meth.)
$[\alpha]_D$ –48°
{di Ac. 212°}

IR: 3430, 2975-2835, 2740, 1470, 1455, 1055
Mass: 445(M^+), 430, 428, 410, 401, 400, 212, 199, 171, 170, 149, 141, 140, 113, 112(100)
PMR: 0.92(s, 18-CH_3), 0.97(19-CH_3), 1.08(3H, d, 21-CH_3), 2.34(s, N–CH_3), 3.56, 3.99(m, HC–OH), 5.24(m, C=CH)

1. Samikov K., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1982, 644.

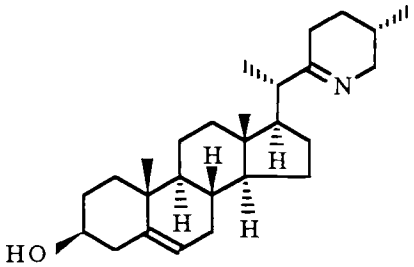


VENALSTONINE

Vinca erecta, V.herbacea
$C_{21}H_{24}N_2O_2$: 336.1838
mp: 139-140° (meth.) [1]
$[\alpha]_D$ -85° (chlf.) [1]

UV: 243, 293(3.82, 3.27) [1, 2]
IR: 3370, 1720, 760 [1, 2]
Mass: 336(M^+), 216, 156, 149, 135, 107 [1]
PMR: 3.67(s, $COOCH_3$), 5.30-5.70(CH=CH), 6.50-7.10(4H, H-Ar) [1]

1. Sharipov M., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 263.
2. Das B., Biemann K., Chatterjee A., Ray A.B., Majumder P.L., Tetrahedron Lett., 1965, 2239.

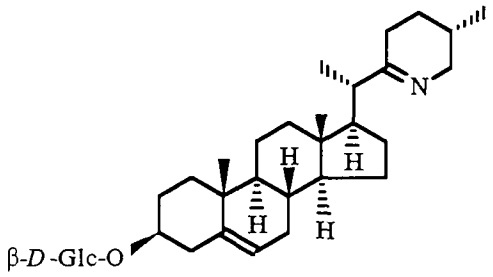


VERAZINE

Veratrum dahuricum, V.lobelianum, V.nigrum, V.oxysepalum, Zigadenus sibiricus
$C_{27}H_{43}NO$: 397.3345
mp: 173-175° (ac.) [1]
$[\alpha]_D$ –99°
{di Ac amorph., Δ^4-verazin-3-one amorph., tetrahydro A amorph., tetrahydro V amorph. [2]}

IR: 3390, 3095, 1670
Mass: 397(M^+), 382, 368, 354, 327, 259, 164, 150, 149, 125(100), 111, 98
PMR: 0.70(3H, s, 18-CH_3), 0.88(3H, d, 21-CH_3), 0.99(3H, s, 19-CH_3), 1.09(3H, d, 27-CH_3), 5.32(1H, m, H-6) [1,2]

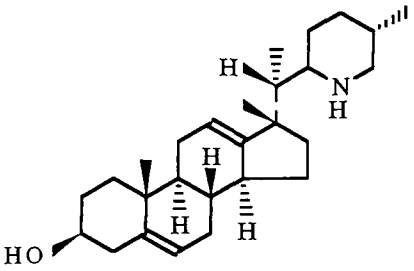
1. Taskhanova É.M., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1985, 368.
2. Agam G., Schreiber K., Tomko I., Vassova A., Tetrahedron, 1967, **23**, 167.



VERAZININE

Zigadenus sibiricus
$C_{33}H_{53}NO_6$: 559.3873
mp: 259-261° (ac.)
$[\alpha]_D$ −112° (chlf.)
IR: 3430, 1655, 1105-1030
Mass: 559(M^+)

1. Taskhanova É.M., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1985, 368.

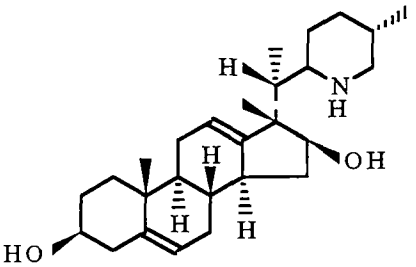


VERALININE

Veratrum lobelianum
$C_{27}H_{43}NO$: 397.3345
mp: 124-126° (hx.)
$[\alpha]_D$ -80° (chlf.)
{N-nitroso 120°, N,O-di Ac 161°, tetrahydro 111°}

IR: 3628, 3360, 3040, 1679
Mass: 397(M^+), 125, 98
PMR: 0.96(6H, s, 18-CH_3, 19-CH_3), 3.50(1H, m, H-3), 5.30(2H, m, H-6, H-12)

1. Tomko I., Vassova A., Agam G., Schreiber K., Tetrahedron, 1968, **24**, 6839.

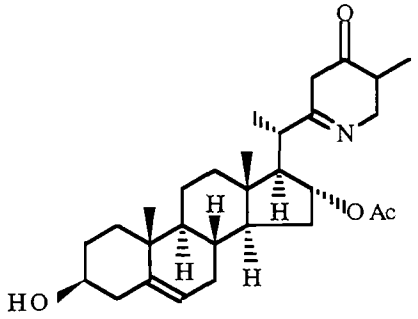


VERALCAMINE

Veratrum lobelianum
$C_{27}H_{43}NO_2$: 413.3294
mp: 168° (alc.) [1]
{0,0',N-tri Ac 154°, N-Ac 193°, dihydro 233°, tetrahydro 221° [2]}

UV: 305, 408, 460, 496 [1]
IR: 3635, 3230
Mass: 413(M^+), 315, 98
PMR: 0.81(3H, d, 21-CH_3), 0.96(6H, s, 18-CH_3, 19-CH_3), 0.97(3H, d, 27-CH_3), 3.41(1H, m, H-3), 4.00(1H, m, H-16), 5.25(2H, m, H-6, H-12) [2]

1. Bondarenko N.V., Khim. Prir. Soedin., 1973, 132.
2. Tomko I., Vassova A., Agam G., Schreiber K., Hohne E., Tetrahedron Lett., 1967, No. 40, 3907.

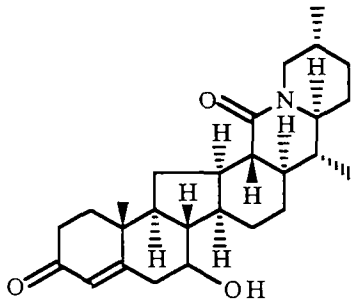


VERALODISINE

Veratrum lobelianum
$C_{29}H_{43}NO_4$: 469.3192
mp: 172-174° (bz.)
$[\alpha]_D$ −93° (chlf.)
{veralodisinol 190°}
UV: 275(3.63)
IR: 3475, 3030, 2940, 1730, 1700, 1680, 1460, 1435, 1270

Mass: 469(M^+), 454, 441, 427, 426, 409(100), 398, 394, 382, 381, 366, 352, 326, 314, 300, 299, 298, 281, 272, 177, 164, 140, 139, 111, 110, 84, 83
PMR: 0.64(3H, s, 18-CH_3), 0.92(3H, s, 19-CH_3), 0.93, 1.00(6H, d, J=6, 21-CH_3, 27-CH_3), 1.99(3H, s, OAc), 3.71(1H, m, H-3), 4.96(1H, m, H-16), 5.26(1H, m, H-6)
PMR{veralodisinol}: 0.61(3H, s, 18-CH_3), 0.91(3H, s, 19-CH_3), 0.98(6H, m, 21-CH_3, 27-CH_3), 3.60, 4.10(2H, m, 2×HC–OH), 5.23(1H, H-6)

1. Shakirov R., Khashimov A.M., Samikov K., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 44.

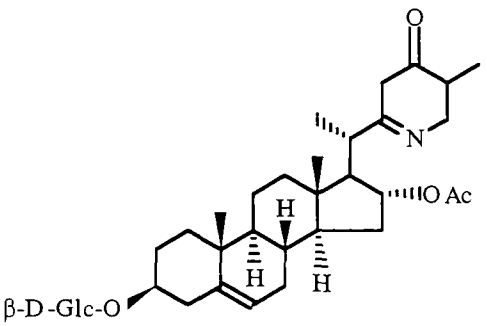


VERALODINE

Veratrum lobelianum
$C_{27}H_{39}NO_3$: 425.2930
mp: 254-257° (ac.) [1]
$[\alpha]_D$ +96° (chlf.) [1]
{Ac 250°, dihydro 236°, tetrahydro 305°}
UV: 245(4.26) [1]
IR: 3470, 2960-2830, 1690, 1610, 1465, 1445, 1257 [1]

Mass: 425(M^+), 424, 410, 407, 392, 302, 285, 249, 220(100), 204, 165, 151, 149, 131, 126, 125, 111, 98 [1]
PMR: 0.85(3H, d, J=6, 27-CH_3), 0.93(3H, d, J=6, 21-CH_3), 1.25(3H, s, 19-CH_3), 3.50(1H, m, H-7), 4.73(1H, q, J=12; 2, H-26_e), 5.63(1H, s, H-4) [1]
CD: [2]

1. Samikov K., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 770.
2. Moiseeva G.P., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 630.



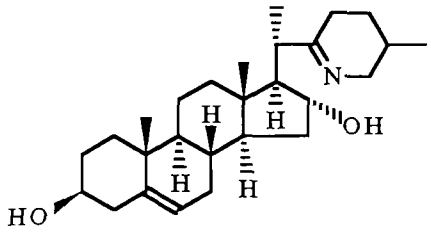
VERALODININE

Veratrum lobelianum
$C_{35}H_{53}NO_9$: 631.3720
mp: 226-228° (meth.)
$[\alpha]_D$ -95° (chlf.)
{tetrahydro. 229°, des. Ac 239°}
UV: 268(2.43)

IR: 3500-3260, 3040, 1728, 1710, 1690, 1630, 1250, 1100-1000

PMR: 0.79(3H, s, 18-CH_3), 0.95(3H, s, 19-CH_3), 0.99(3H, d, CH_3), 1.06(3H, d, CH_3), 1.87(3H, s, OAc), 3.12-4.62(signals of the protons of the sugar component), 4.97(1H, m, HC–OAc), 5.28(1H, m, C=CH)

1. Samikov K., Shakirov R., Ubaidullaev Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 183.

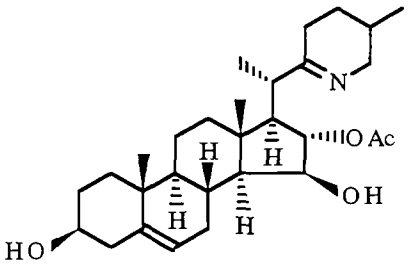


VERALOSIDINE

Veratrum lobelianum
$C_{27}H_{43}NO_2$: 413.3294
mp: 153-155° (meth.-ac.)
$[\alpha]_D$ –92° (alc.)
{di Ac 168°, tri Ac 195°, dihydro. 216°, Δ^4-veralosidinone-3 196°} [1, 2]

UV: 242(2.45)
IR: 3330, 3035, 2930, 1650, 1460, 1060 [1]
Mass: 413(M^+), 162, 138, 125(100), 111, 98 [1]
PMR: 0.68(3H, s, 18-CH_3), 0.88(3H, d, 27-CH_3), 0.94(3H, s, 19-CH_3), 1.06(3H, d, 21-CH_3), 5.26(1H, m, H-6) [2]
PMR{di Ac}: 0.68(3H, s, 18-CH_3), 0.78(3H, d, 27-CH_3), 0.94(3H, s, 19-CH_3), 1.02(3H, d, 21-CH_3), 1.87(3H, s, OAc), 1.90(3H, s, OAc), 4.62(1H, m, H-3), 4.96(1H, m, H-16), 5.29(1H, m, H-6) [2, 3]
PMR{tri Ac}: 0.64(3H, s, 18-CH_3), 0.87(3H, d, 27-CH_3), 0.95(3H, s, 19-CH_3), 1.18(3H, d, 21-CH_3), 1.93(3H, s, OAc), 1.98(3H, s, OAc), 2.07(3H, s, NAc), 4.50(1H, m, H-3), 4.72(1H, m, H-16), 5.11(1H, m, H-23), 5.27(1H, m, H-6) [2]
PMR{dihydro}: 0.64(3H, s, 18-CH_3), 0.73(3H, d, 27-CH_3), 0.91(3H, s, 19-CH_3), 0.95(3H, d, 21-CH_3), 3.44(1H, m, H-3), 3.99(1H, m, H-16), 5.27(1H, m, H-6) [2]
PMR{Δ^4-veralosidinone-3}: 0.68(3H, s, 18-CH_3), 0.83(3H, d, 27-CH_3), 1.03(3H, d, 21-CH_3), 1.12(3H, s, 19-CH_3), 4.38(1H, m, H-16), 5.65(1H, m, H-4) [2, 3]
CD: [3]

1. Khashimov A.M., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 339.
2. Khashimov A.M., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 779.
3. Moiseeva G.P., Shakirov R., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 623.

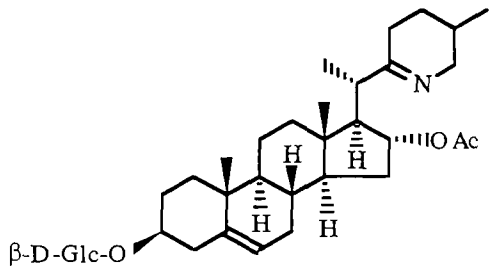


VERALOSIDININE

Veratrum lobelianum
$C_{29}H_{45}NO_4$: 471.3337
mp: 220-221° (ac.)
$[\alpha]_D$ –173° (chlf.)
UV: 248(2.44)

IR: 3420, 3030, 2930, 1725, 1650, 1445, 1250, 1065
Mass: 471(M^+), 456, 429, 413, 412, 411, 163, 162, 148, 138, 126, 125(100), 124, 111, 110, 99,98
PMR: 0.58(3H, s, 18-CH_3), 0.86(3H, d, 21-CH_3), 0.89(3H, s, 19-CH_3), 0.92(3H, d, 27-CH_3), 1.95(3H, s, OAc), 4.85(1H, m, H-16), 5.23(1H, m, H-6)

1. Shakirov R., Yunusov S.Yu. , Khim. Prir. Soedin., 1973, 501.

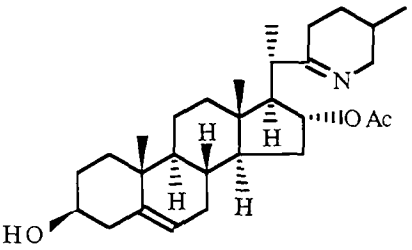


VERALOSINE

Veratrum lobelianum
$C_{35}H_{55}NO_8$: 617.3928
mp: 213-215° (meth.-ac.) [1]
$[\alpha]_D$ −148° (meth.) [1]
{h-chl. 222°, Ac 250°} [2]
Sol-y.: r-sol.meth., chlf.

UV: 245(2.20) [2]
IR: 3450, 2900, 1725, 1660, 1460, 1100-1000 [2]
CD: [3]
Pharm.: LD_{50} 65, 30 mg/kg (s/c, i/v, mice). Pronounced antiinflammatory activity. Stimulating action of the CNS. Possesses a potentiating effect with central analeotics and a moderate antagonism with narcotics [4, 5].

1. Khashimov A.M., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 339.
2. Khashimov A.M., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 343.
3. Moiseeva G.P., Shakirov R., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 623.
4. Saidkasymov T., Mirzaev Yu.R., Sultanov M.B., in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 100.
5. Saidkasymov T., in: The Pharmacology of Natural Substances [in Russian], Fan, Tashkent, 1978, p. 71.

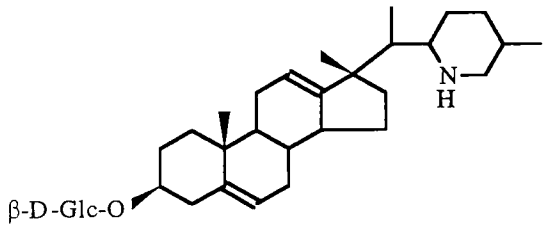


VERALOSININE

Veratrum lobelianum
$C_{29}H_{45}NO_3$: 455.3399
mp: 161-163° (ac.) [1]
$[\alpha]_D$ −186° (chlf.) [1]
{Ac 195°} [2]
Sol-y.: r-sol.meth., chlf.

UV: 242(2.39) [2]
IR: 3470, 3080, 2940, 1730, 1650, 1460, 1260, 1040
Mass: 455(M^+), 396, 163, 162, 138, 125(100), 111, 98 [3]
PMR: 0.71(3H, s, 18-CH_3), 0.81(3H, d, 27-CH_3), 0.94(3H, s, 19-CH_3), 1.03(3H, d, 21-CH_3), 1.93(3H, s, OAc), 4.87(1H, m, H-16), 5.27(1H, m, C=CH) [2]
CD: [4]
Pharm.: Weak antiinflammatory activity [5].

1. Khashimov A.M., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 339.
2. Khashimov A.M., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 779.
3. Khashimov A.M., Unpub.
4. Moiseeva G.P., Shakirov R., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 623.
5. Saidkasymov T., Mirzaev Yu.R., Sultanov M.B., in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 100.

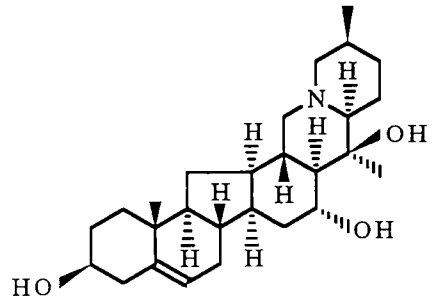


VERALOMINE

Veratrum lobelianum
$C_{33}H_{53}NO_6$: 559.3873
mp: 275-277° (meth.) [1]
$[\alpha]_D$ −54° (10% AcOH) [1]
{O,N-penta Ac 202°} [2]

IR: 3400, 1040-1000 [2]

1. Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 852.
2. Shakirov R., Ubaidullaev K.A., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 527.

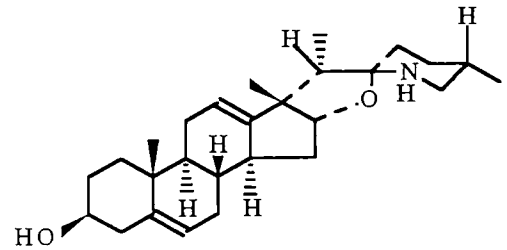


VERAMARINE

Veratrum dahuricum, V.lobelianum, V.nigrum, V.oxysepalum
$C_{27}H_{43}NO_3$: 429.3243
mp: amorph.
$[\alpha]_D$ −85° (chlf.) [1,2]
{O-Ac 255°, O,O'-di Ac 211°, dihydro amorph., diketodihydro amorph.}

IR: 3625, 3480, 1052
Mass: 429(M^+), 112(100)
PMR: 5.40(1H, m, H-6) [2]
X-ray spectral analysis: [3]

1. Bondarenko N.V., Khim. Prir. Soedin., 1984, 801.
2. Tomko I., Voticky Z., Budzikiewicz H., Durham L.I., Collect., 1965, **30**, 3320.
3. Pavelcik F., Tomko I., Tetrahedron Lett., 1979, 887.

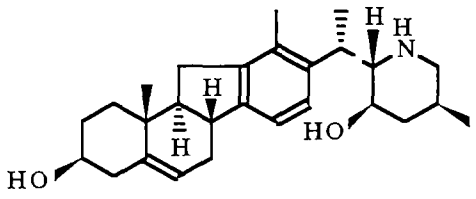


VERAMINE

Veratrum dahuricum, V.lobelianum, V.nigrum, V.oxysepalum
$C_{27}H_{41}NO_2$: 411.3137
mp: amorph.
$[\alpha]_D$ −94°

UV: 289, 416, 502 [1]
IR: 3420, 3030, 1670, 975, 949, 919, 878
Mass: 411(M^+), 410, 114(100)
PMR: 0.84(3H, d, J=6, 27-CH_3), 0.92, 1.09(6H, s, 19-CH_3, 18-CH_3), 0.97(3H, d, J=6, 21-CH_3), 3.47(1H, m, H-3), 4.00(1H, d, H-16), 5.30(1H, m, H-6) [2]
HPLC: [3]

1. Bondarenko N.V., Khim. Prir. Soedin., 1984, 801.
2. Tomko I., Voticky Z., Vassova A., Adam G., Schreiber K., Collect., 1968, **33**, 4054.
3. Hunter I.R., Walden M.K., Heftmann E., J. Chromatogr., 1980, **198**, 363.



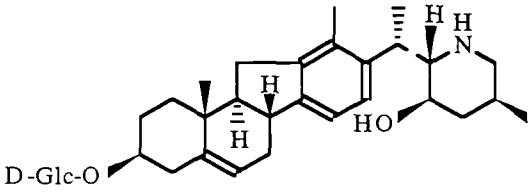
VERATRAMINE

Veratrum dahuricum
$C_{27}H_{39}NO_2$: 409.2981
mp: 203-205° (ac.) [1]
$[\alpha]_D$ −71°
{dihydro 194° [2, 3]}

UV: 268(5.75)
Mass: 409(M^+), 394, 391, 376, 295, 114(100)
PMR: 0.80(3H, d, J=6, 27-CH_3), 1.14(3H, s, 19-CH_3), 1.34(3H, d, J=7, 21-CH_3), 1.55(2H, s, OH, NH), 2.27(3H, s, 18-CH_3), 5.41(1H, m, C=CH), 7.01(2H, H–Ar) [1]
HPLC: [4]

1. Nakhatov I., Shakirov R., Taskhanova E.M., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 131.
2. Tamm C., Wintersteiner O., J. Am. Chem. Soc., 1952, **74**, 3842.
3. Scott J.W., Durham L.J., Jongh H.A.P., Burckhardt U., Johnson W.S., Tetrahedron Lett., 1967, 2381.
4. Hunter I.R., Walden M.K., Heftmann E., J. Chromatogr., 1980, **198**, 363.

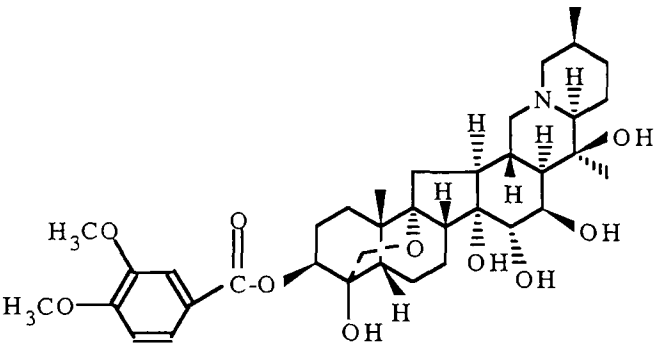
VERATROSINE



Veratrum dahuricum
$C_{33}H_{49}NO_7$: 571.3509
mp: 243-245° (meth.) [1]
{veratramine 206°} [2, 3]

IR: 3400, 1650, 1150, 1000, 820
Mass: 571(M^+), 114(100) [1]

1. Nakhatov I., Shakirov R., Taskhanova É.M., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 131.
2. Klohs M.W., Draper M.D., Keller F., Malesh W., Petracek F.I., J. Am. Chem. Soc., 1953, **75**, 2133.
3. Scott I.W., Durham L.I., Jongh H.A.P., Burckhardt U., Johnson W.S., Tetrahedron Lett., 1967, 2381.



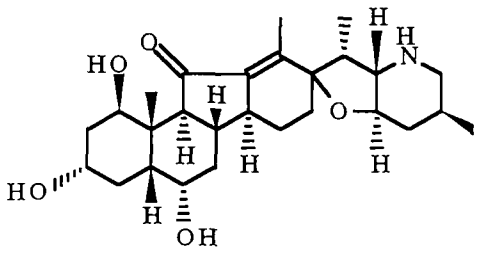
VERATROYLZYGADENINE

Veratrum dahuricum, V.lobelianum, V.nigrum, V.oxysepalum, Zigadenus sibiricus
$C_{36}H_{51}NO_{10}$: 657.3513
mp: 259-261° (ac.)
$[\alpha]_D$ −39° (chlf.) [1]
UV: 262, 293(4.13, 3.85)
IR: 3480, 2775, 1715, 1610, 1525, 1260 [2, 3]

Mass: 657(M^+), 642, 640, 639, 492, 475, 458, 440, 183, 165, 125, 112(100), 98 [2, 4]
Pharm.: LD_{50} 0.77 mg/kg (i/v). Exhibits a pronounced anesthetic action [5] and a weak hypotensive effect, sudden and brief [6, 7]

1. Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 852.
2. Taskhanova É.M., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1985, 368.

3. Kupchan S.M., Deliwala C.V., J. Am. Chem. Soc., 1953, **75**, 1025.
4. Kupchan S.M., J. Am. Chem. Soc., 1959, **81**, 1925.
5. Saidkasymov T.K., Mirzaev Yu.R., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 45.
6. Mirzaev Yu.R., Saidkasymov T.K., Sultanov M.B., in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 94.
7. Mirzaev Yu.R., Sultanov M.B., Dokl.AN UzSSR, 1984, No. 8, 47.

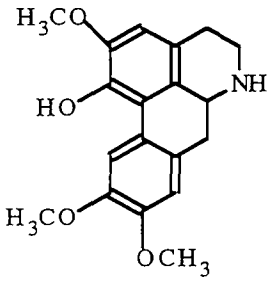


VERDINE

Veratrum dahuricum, V.lobelianum
$C_{27}H_{41}NO_5$: 459.2985
mp: 218-220° (chlf.)
$[\alpha]_D$ −81° (meth.) [1]

UV: 252(4.07)
IR: 3400, 1710, 1630 [2]
Mass: 459(M^+), 444, 441, 430, 426, 346, 328, 125, 124, 113, 112, 110(100), 97
PMR: 0.70(3H, d, 21-CH_3), 0.93(3H, d, 27-CH_3), 1.31(3H, s, 19-CH_3), 2.23(3H, s, 18-CH_3) [2]
X-ray spectral analysis: [3]

1. Nakhatov I., Shakirov R., Taskhanova É.M., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 131.
2. Nakhatov I., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1984, 395.
3. Tashkhodzhaev B., Nakhatov I., Shakirov R., Yagudaev M.R., Khim. Prir. Soedin., 1984, 753.

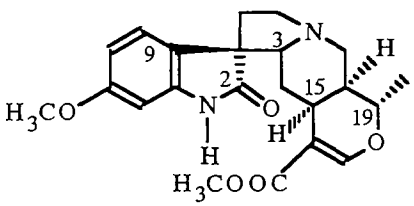


WILSONIRINE (ADUCAINE)

Corydalis pseudoadunca, C.paniculigera, C.stricta
$C_{19}H_{21}NO_4$: 327.1471
mp: 106-107° (ac.) [1]
$[\alpha]_D$ +55° (chlf.)
{h-b. 247° (dec.), picr. 200°} [2]

UV: 220, 280, 303(4.50, 4.12, 4.13) [2]
IR: 3400 [2]
PMR: 3.20(1H, m), 3.88(9H, s, 3×OCH_3), 6.46, 6.72, 8.02(1H, s, H-Ar) [1,3]

1. Israilov I.A. Unpub.
2. Yunusov M.S., Author's Abstract of Candidate's Dissertation, Tashkent, 1968.
3. Stuart K.L., Chambers C., Tetrahedron Lett., 1967, 4135.



VINERIDINE

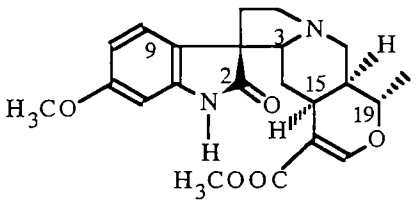
Vinca erecta
$C_{22}H_{26}N_2O_5$: 398.1842
mp: 179-180° (ac.) [1]
$[\alpha]_D$ +23° (pyr.), +42° (meth.), +40° (chlf.) [1]

{m-i. 211°, nitr. 178°} [1]
UV: 220(4.54) [1]
IR: 3240, 1720, 1630
IR($CHCl_3$): 3440, 3200, 1720, 1630 [1]
PMR: 1.24(d, 19-CH_3), 3.40(s, $COOCH_3$), 3.77(s, Ar-OCH_3), 4.22(o, H-19), 6.51(q, H-10), 6.55(s, H-17), 6.99(d, H-9), 7.37(d, H-12), 9.60(narrow s, NH) [2]
^{13}C NMR: [3]

C-2	182.5	C-10	107.6	C-17	153.5
3	70.1	11	159.8	19	74.6
5	53.2*	12	96.7	20	36.5
6	34.2	13	142.2	21	54.6*
7	55.3	14	26.2	22	167.3
8	125.0	15	25.1	19-CH_3	18.5
9	123.0	16	105.1	Ar-OCH_3	55.3
				OCH_3	50.3

CD: [2]
Abs. conf.: 3R, 4S, 7S, 15S, 19S, 20S [2, 3]
Pharm.: LD_{50} 125, 485 mg/kg (i/v, i/p, mice) [4]. Sedative action [5].

1. Kasymov Sh.Z., Yuldashev P.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1966, 260.
2. Yagudaev M.R., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 493.
3. Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 217.
4. Sadritdinov, p. 28.
5. Sultanov M.B., in: The Pharmacology of Alkaloids and Their Derivative [in Russian], Fan, Tashkent, 1972, p. 10.



VINERINE

Vinca erecta
$C_{22}H_{26}N_2O_5$: 398.1842
mp: 202-203° (meth.) [1]
$[\alpha]_D$ +20° (pyr.), +54° (ac.), +36° (chlf.) [1]
{m-i. 195°, nitr. 170°} [1]

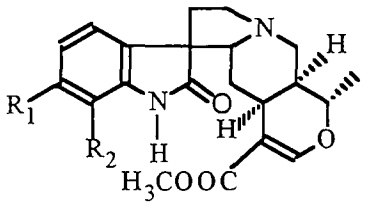
UV: 220(4.54) [1]
IR: 3295, 1730, 1665, 1605, 830, 800 [1]
Mass: 398(M^+), 223, 208, 189, 176, 174, 160, 69 [1]
PMR: 1.20(d, 19-CH_3), 3.59(s, $COOCH_3$), 3.77(s, Ar-OCH_3), 4.16(o, H-19), 6.47(s, H-17), 6.51(q, H-10), 7.24(d, H-9), 7.40(d, H-12), 8.90(narrow s, NH) [2]
^{13}C NMR: [3]

C-2	182.0	C-10	106.8	C-17	153.5
3	67.2	11	159.6	19	74.5
5	53.2*	12	96.6	20	36.8
6	34.8	13	141.5	21	53.7*
7	56.0	14	27.0	22	167.3
8	125.4	15	24.8	19-CH_3	18.4
9	125.3	16	104.9	Ar-OCH_3	55.3
				OCH_3	50.7

CD: [2]
Abs. conf.: 3R, 4S, 7R, 15S, 19S, 20S [2, 3]
Pharm.: LD_{50} 91 mg/kg [4]. Sedative and hypotensive action [5].

1. Kasymov Sh.Z., Yuldashev P.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1966, 260.
2. Yagudaev M.R., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 493.
3. Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 217.
4. Sadritdinov, p. 28.
5. Sultanov M.B, in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 10.

VINERININE



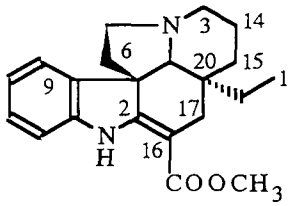
R_1=OH, P_2=OCH_3 or
R_1=OCH_3, R_2=OH

Vinca erecta
$C_{22}H_{26}N_2O_6$: 414.1791
mp: amorph.
$[\alpha]_D$ −74° (meth.)
Sol-y.: r-sol.alk., chlf., meth.; sol.eth.
UV: 224(4.44)
IR: 3500-3100, 1720, 1635, 810, 780

Mass: 414(M^+, 100), 224(22), 223(50), 222(11), 208(21), 205(11), 180(14), 69(46)
PMR: 1.34(d, J=6, 19-CH_3), 3.77(s, $COOCH_3$), 4.50(J=10, H-19), 6.50, 6.70(J=8, H-Ar)

1. Khalmirzaev M.M., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 411.

(−)-VINCADIFFORMINE (ERVAMINE)



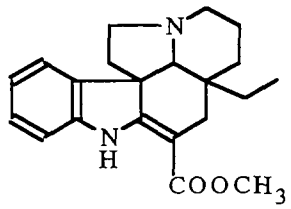
Vinca erecta
$C_{21}H_{26}N_2O_2$: 338.1994
mp: amorph. [1]
$[\alpha]_D$ −502° (meth.) [1]
{h-i. 200°, nitr. 258°, tartrate 129°} [1]

UV: 226, 302, 328(4.11, 4.10, 4.24) [1]
IR: 3370, 1690 [1]; 3580, 1660, 1610 [2]
Mass: 338(M^+), 214, 124(100) [3]
^{13}C NMR: [4]

C-2	167.8	C-10	120.5	C-17	25.6
3	51.7	11	127.4	18	7.3
5	50.7	12	109.3	19	29.3
6	45.3	13	143.4	20	38.2
7	55.5	14	22.2	21	72.7
8	138.0	15	32.9	22	169.2
9	121.0	16	92.8	23	50.9

Pharm.: LD_{50} 225, 90 mg/kg (i/p, i/v, mice) [5]. Myometrium stimulator [6].

1. Malikov V.M., Yuldashev P.Kh., Yunusov S.Yu., DAN UzSSR, 1963, No. 4, 21.
2. Plat M., Le Men J., Janot M.-M., Budzikiewicz H., Wilson J.M., Durham L.T., Djerassi C., Bull. Soc. Chim. France, 1962, 2237.
3. Hesse M., Indolalkaloide (Progress in Mass Spectrometry), Verlag Chemie, 1974, Vol. 1, Teil. 2, Abb. 19.
4. Shamma, No. 226.
5. Sadritdinov, p. 62.
6. Sultanov M.B., in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 11.

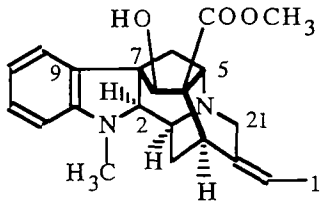


(±)-VINCADIFFORMINE

Vinca herbacea, V.minor
$C_{21}H_{26}N_2O_2$: 338.1994
mp: 123-125° (meth.)
$[\alpha]_D$ 0° (chlf.)

UV: 225, 298, 325(4.03, 4.05, 4.15)
IR: 3385, 1680, 1610, 750
Mass: 338(M^+)

1. Robakidze Z.V., Mudzhiri M.M., Vachnadze V.Yu., Mudzhiri K.S., Khim. Prir. Soedin., 1980, 735.



VINCAMAJINE

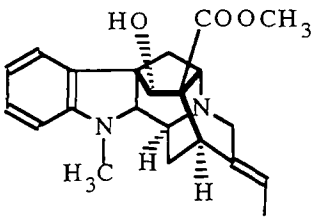
Vinca erecta, V.herbacea, V.major
$C_{22}H_{26}N_2O_3$: 366.1943
mp: 226-227° (meth.) [1]
$[\alpha]_D$ −55° (alc.) [1], −22° (chlf.) [2]

UV: 249, 292(3.95, 3.49) [1, 2]
IR: 1740, 775 [1]
Mass: 366(M^+) [2]
PMR: 1.58(3H, d, J=6.5, 19-CH_3), 2.60(3H, s, NCH_3), 3.64(3H, s, $COOCH_3$), 4.17(1H, s, H-17), 5.20(q, J=6.5, H-19), 6.50-7.20(4H, m, H-Ar) [3-5]
^{13}C NMR: [6]

C-2	74.4	C-11	127.6	C-19	116.1
3	52.7	12	108.4	20	135.6
6	35.0	13	153.8	21	54.7
7	56.5	14	21.4	18-CH_3	12.3
8	129.7	15	29.6	NCH_3	33.8
9	124.2	16	59.6	CO	172.8
10	118.2	17	73.9	OCH_3	51.1

1. Chkhikvadze G.V., Vachnadze V.Yu., Mudzhiri K.S., Khim. Prir. Soedin., 1980, 850.
2. Kaul J.L., Trojanek J., Lloydia, 1966, **29**, 26.
3. Crow W.D., Haneox N.C., Johns S.R., Lamberton J.A., Austral. J. Chem., 1970, **23**, 2489.
4. Aynilian G.N., Bell C.L., Farnsworth I.S., J. Natur. Prod., 1974, **37**, 589.
5. Yagudaev M.R., Khim. Prir. Soedin., 1981, 608.
6. Yagudaev M.R., Khim. Prir. Soedin., 1982, 731.

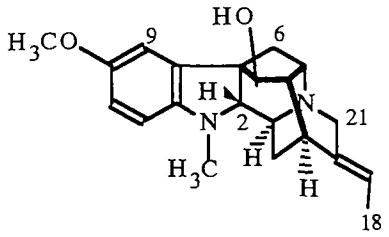
VINCAMAJININE



Vinca major
$C_{22}H_{26}N_2O_3$: 366.1943
mp: 274-275° (meth.)
UV: 242, 290(4.48, 4.14)
IR: 3200-3050, 1745, 1250, 770

Mass: 366(M^+, 83), 222(44), 190(68), 158(29), 157(100), 144(73), 131(42)
PMR: 1.62(d, 18-CH_3), 2.64(s, NCH_3), 3.69(s, $COOCH_3$), 5.31(q, H-19)

1. Zhukovich E.N., Vachnadze V.Yu., Khim. Prir. Soedin., 1985, 720.



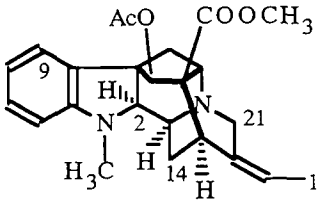
VINCAMAJOREINE

Vinca major
$C_{21}H_{26}N_2O_2$: 338.1994
mp: 227-229° (meth.) [1,2], 246-247° (meth.) [3]
UV: 246, 310(4.13, 3.66) [3]

IR: 3340, 1620, 815 [1]; 1215, 807 [3]
Mass: 338(M^+), 213, 212, 187, 174 [3]
PMR: 1.65(3H, d, J=7, 18-CH_3), 2.75(3H, s, NCH_3), 3.78(3H, s, OCH_3), 4.47(1H, s, OH), 5.25(1H, q, J=7, H-19), 7.00(3H, m, H-Ar) [3]
^{13}C NMR: [4]

C-2	79.6	C-10	153.0	C-17	76.0
3	49.0	11	111.4	18	12.5
5	55.8	12	109.2	19	114.2
6	34.9	13	147.7	20	138.6
7	54.9	14	29.2	21	54.6
8	134.4	15	27.9	NCH_3	34.8
9	110.2	16	51.9	Ar-OCH_3	55.6

1. Zhukovich E.N., Vachnadze V.Yu., Khim. Prir. Soedin., 1984, 533.
2. Zhukovich E.N., Khim. Prir. Soedin., 1987, 611.
3. Plat M., Lemay R., Le Men J., Janot M.-M., Djerassi C., Budzikiewicz H., Bull. Soc. Chim. France, 1965, 2497.
4. Chatterjee A., Chakrabarty M., Chosh A.K., Hagaman E.W., Wenkert E., Tetrahedron Lett., 1978, 3879.



VINCAMEDINE

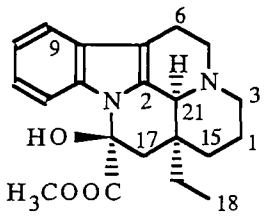
Vinca erecta
$C_{24}H_{28}N_2O_4$: 408.2049
mp: 185-187° [1]
$[\alpha]_D$ −75° (chlf.) [1]

UV: 248, 292(3.94, 3.48) [1]
IR($CHCl_3$): 2950, 2910, 1616, 1484, 1376, 1250, 831 [2]
Mass: 408(M^+, 100), 349, 264, 222, 190, 157, 144 [3]
^{13}C NMR: [4]

C-2	74.7	C-11	128.2	C-19	116.5
3	53.1	12	109.1	18-CH_3	12.6
6	36.3	13	154.1	C-20	136.6
7	56.0	14	21.5	21	55.4
8	128.6	15	30.2	NCH_3	33.9
9	123.1	16	58.8	CO	172.1
10	118.7	17	75.2	OCH_3	51.4
		19	116.5	CO	168.2
				CH_3	20.5

1. Kaul J.L., Trojanek J., Lloydia, 1966, **29**, 26.
2. Holubek, No. 283.

3. Gorman M., Burlingame A.L., Biemann K., Tetrahedron Lett., 1963, 39.
4. Yagudaev M.R., Khim. Prir. Soedin., 1982, 731.



(+)-VINCAMINE (MINORINE)

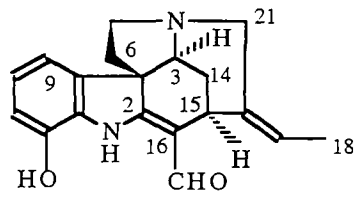
Vinca erecta, V.herbacea, V.major, V.minor
$C_{21}H_{26}N_2O_3$: 354.1943
mp: 232-233° (meth.) [1, 2]
$[\alpha]_D$ –5° (chlf.) [2, 4], +41° (pyr.) [1, 5]
{h-chl. 227°, nitr. 215°, picr. 203°} [6]

Sol-y.: r-sol.chlf.; i.s.alc., ac., eth., bz., water [3]
UV: 225, 275(4.50, 3.95) [1, 4, 5]
IR: 3590, 1745, 1255, 1210, 742 [1, 2, 4]
Mass: 354(M^+, 100), 339(11), 336(8), 325(10), 307(30), 295(51), 294(36), 284(21), 267(63), 252(72) [7]
PMR: 0.66(3H, t, CH_3), 3.62(3H, s, $COOCH_3$), 3.78(1H, s, OH), 4.77, 7.55(m, H-Ar) [4]
^{13}C NMR: [8]

C-2	131.4	C-10	121.5	C-17	44.5
3	44.5	11	120.1	18	7.6
5	50.9	12	110.2	19	28.8
6	16.9	13	134.1	20	35.1
7	105.9	14	20.8	21	59.1
8	128.9	15	25.2	C=O	174.3
9	118.4	16	81.9	OCH_3	54.1

HPLC: [9]
Pharm.: LD_{50} 411, 57 mg/kg (i/p, i/v, mice). Approved for use as stimulant in weak labor activity. Used in Hungary as a hypotensive agent [10].

1. Cava M.P., Tjoa S.S., Ahmed Q.A., Da Rocha A.I., J.,Org.,Chem., 1968, **33**, 1055.
2. Zhukovich E.N., Vachnadze V.Yu., Khim. Prir. Soedin., 1984, 533.
3. Zabolotnaya E.S., Trudy VILAR, 1950, **10**, 29.
4. Robakidze Z.V., Mudzhiri M.M., Vachnadze V.Yu., Mudzhiri K.S., Soobshch. AN GSSR, 1975, **80**, 377.
5. Aliev A.M., Babaev N.A., Farmatsiya, 1968, No. 4, 23.
6. Yunusov S.Yu., Yuldashev P.Kh., Plekhanova N.V., DAN UzSSR, 1956, No. 7, 13.
7. Plat M., Manh D.D., Men J.L., Janot M.-M., Budzikiewicz H., Wilson J.M., Durham L.J., Djerassi C., Bull. Soc. Chim. France, 1962, 1082.
8. Feng X.Z., Kan C., Husson H.-P., Potier P., Kan S.-K., Lounasmaa M., J. Natur. Prod., 1984, **47**, 117.
9. Dal Bo L., Ceriani G., Broccali G., J. Chromatogr., 1992, **573**, 158.
10. Sadritdinov, p. 31.



VINCANIDINE

Vinca erecta
$C_{19}H_{20}N_2O_2$: 308.1525
mp: 250-280° (dec.) [1, 2]
$[\alpha]_D$ –849° (meth.) [3]

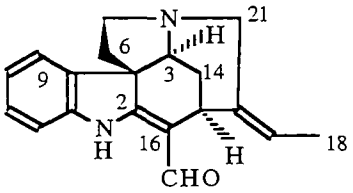
{h-chl. 175°, h-b. 170°, nitr. 142.5°, m-i. 315° [1, 2], picr. 221° [2]}
Sol-y.: r-sol.pyr., alk.; i.s.alc., chlf., bz., ac. [2]
UV: 242, 291, 375(3.95, 3.26, 4.14) [3]
IR: 1660, 1580 [3]; 860, 815 [4]

PMR: 6.50-6.80(3H, m, H-Ar) [5]
^{13}C NMR (Py-d_5): [6]

C-2	169.4	C-9	115.9	C-15	31.4
3	62.5	10	123.5	16	112.2
5	56.9	11	112.7	17	187.9
6	47.2	12	143.7	19	120.0
7	59.8	13	131.8	20	139.4
8	141.0	14	31.2	21	57.1
				18-CH_3	13.0

Pharm.: LD_{50} 85 mg/kg (s/c, i/p, mice). Emetic effect. {Quaternary alkyl derivatives} possess hypotensive, ganglioblocking, and curaremimetic actions [7].

1. Yunusov S.Yu., Yuldashev P.Kh., DAN UzSSR, 1952, No. 12, 24.
2. Yunusov S.Yu., Yuldashev P.Kh., Zh. Org. Khim., 1957, **27**, 2015.
3. Ubaev Kh., Yuldashev P.Kh., Yunusov S.Yu., DAN UzSSR, 1964, No. 10, 34.
4. Yuldashev P.Kh., Ubaev Kh., Kuchenkova M.A., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 34.
5. Yagudaev M.R., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 260.
6. Yagudaev M.R., Khim. Prir. Soedin., 1983, 210.
7. Sadritdinov, p. 33-34.



(–)-VINCANINE (NORFLUOROCURARINE)

Vinca erecta, V.herbacea
$C_{19}H_{20}N_2O$: 292.1576
mp: 187.5-188° (meth.) [1,2]
$[\alpha]_D$ –992° (meth.) [1, 2]; –1243° (chlf.) [3]

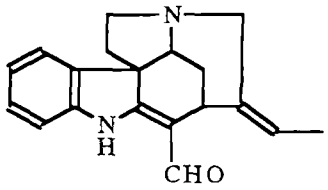
{h-chl. 212° [2], nitr. 194°, h-b. 227°, m-i. 282° [1, 2]}
UV: 245, 302, 365.5(4.01, 3.61, 4.26) [3, 4]
IR: 3300, 1645, 1610, 1575 [3-5]
Mass: 292(M^+), 249(17), 180(16), 167(20), 121(100), 57(26) [3]; 292(M^+, 83), 277(9), 263(20), 121(100) [6]
^{13}C NMR: [7]

C-2	168.7	C-9	121.7	C-15	31.2
3	62.7	10	120.7	16	111.1
5	56.4	11	127.6	17-CO	188.2
6	46.2	12	110.2	18-CH_3	12.7
7	58.3	13	142.9	C-19	120.2
8	136.9	14	30.8	20	139.6
				21	56.6

Pharm.: LD_{50} 14, 13.6, 5.6 mg/kg (s/c, i/p, i/v, mice). Analeptic for treating a number of diseases of the CNS and neuritises of the acoustic nerve; {methochloride} is used as a brief-action ganglioblocker [8].

1. Yunusov S.Yu., Yuldashev P.Kh., DAN UzSSR, 1952, No. 12, 24.
2. Yunusov S.Yu., Yuldashev P.Kh., Zh. Org. Khim., 1957, **27**, 2015.
3. Asatiani V.S., Mudzhiri M.M., Mudzhiri K.S., Soobshch. AN GSSR, 1971, **64**, 341.
4. Aliev A.M., Mirza-zade N.A., Babaev N.A., Farmatsiya, 1971, No. 4, 25.
5. Yagudaev M.R., Rashkes Ya.V., Yuldashev P.Kh., Uzb. Khim. Zh., 1963, No. 6, 54.
6. Rakhimov D.A., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 461.
7. Yagudaev M.R., Khim. Prir. Soedin., 1983, 210.
8. Sadritdinov, pp. 34-36.

(±)-VINCANINE (VINERVIDINE)

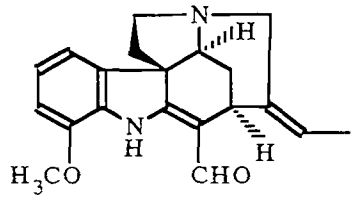


Vinca erecta
$C_{19}H_{20}N_2O$: 292.1576
mp: 190-191° (ac.)
$[\alpha]_D$ 0° (meth.)

UV: 244, 300, 362(4.08, 3.67, 4.33)
IR: 3220, 1665, 1575, 743
Mass: 292(M^+, 62), 277(9), 263(17), 121(100)

1. Rakhimov D.A., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 461.

VINCANICINE

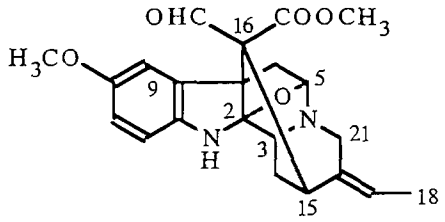


Vinca erecta
$C_{20}H_{22}N_2O_2$: 322.1681
mp: amorph. [1]
$[\alpha]_D$ –438° (chlf.) [1]

UV: 248, 293, 376(3.90, 3.29, 4.04) [1]
IR: 3400, 1650, 1560, 860-830 [1]
Mass: 322(M^+, 60), 307(7), 293(15), 121(100) [1]
PMR: 3.80(3H, s, OCH_3) [1]; 6.50-6.80(3H, m, H-Ar) [2]

1. Rakhimov D.A., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 461.
2. Yagudaev M.R., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 260.

VINCARININE

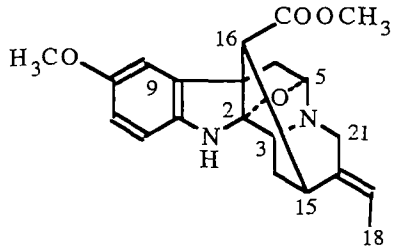


Vinca erecta
$C_{22}H_{24}N_2O_5$: 396.1685
mp: 178-179° (bz.) [1]
UV: 238, 312(3.89, 3.53) [1]

UV(alc. +$HClO_4$): 260, 356(3.40, 3.38) [1]
IR: 3310, 1750, 1720 [1]
Mass: 396(M^+, 95), 367(100), 337(23), 309(25), 269(71), 212(8) [1]
PMR: 1.43(3H, d, J=6, 18-CH_3), 3.60-3.65(6H, s, 2×OCH_3), 5.06(1H, s, NH), 5.32(1H, q, J=6, H-19), 6.52-6.70(3H, H-Ar), 8.51(1H, s, CHO) [1]
^{13}C NMR: [2]

C-2	106.7	C-10	155.0	C-17	197.0
3	52.9	11	113.3*	18	12.8
5	87.4	12	111.0	19	120.7
6	43.4	13	141.5	20	136.2
7	53.8	14	20.5	21	46.5
8	133.3	15	31.6	Ar-OCH_3	55.8
9	113.2*	16	55.9	CO	168.0
				OCH_3	51.8

1. Il'yasova Kh.T., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 164.
2. Yagudaev M.R., Khim. Prir. Soedin., 1985, 129.



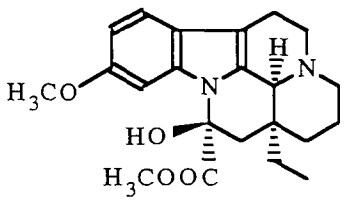
VINCARICINE

Vinca erecta
$C_{21}H_{24}N_2O_4$: 368.1736
mp: 187-189° (meth., ac.) [1]
$[\alpha]_D$ ±5° (chlf.) [1]
UV: 236, 308(3.85, 3.48) [1, 2]

UV(alc. $+H^+$): 255, 343(3.97, 4.02) [1, 2]
IR: 3180, 1750, 770 [1, 2]
Mass: 368(M^+, 70), 350(100), 337(18), 309(20), 291(24), 269(90) [1, 2]
PMR: 1.45(18-CH_3), 3.62(3H, s, OCH_3), 3.67(3H, s, $COOCH_3$), 5.36(H-19), 6.53-6.69(H-Ar) [1, 2, 3]
^{13}C NMR: [3]

C-2	107.0	C-10	154.4	C-18	12.6
3	51.4	11	112.8*	19	120.2
5	87.2	12	110.8	20	136.4
6	40.5	13	141.2	21	46.3
7	52.0	14	25.9	Ar-OCH_3	55.9
8	136.2	15	31.0	CO	172.3
9	111.2*	16	51.6	OCH_3	51.4

1. Rakhimov D.A., Il'yasova Kh.T., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 521.
2. Il'yasova Kh.T., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 327.
3. Yagudaev M.R., Khim. Prir. Soedin., 1985, 129.

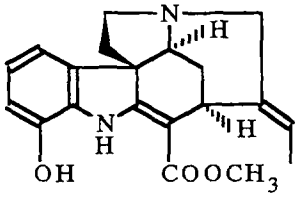


VINCINE

Vinca erecta, V.minor
$C_{22}H_{28}N_2O_4$: 384.2049
mp: 205-206° (ac.) [1], 212-214° (meth.) [2]
$[\alpha]_D$ +38° (pyr.) [2]

{m-i. 217°} [3]
UV: 232, 275, 300(4.45, 3.78, 3.70) [1, 2]
IR: 1750, 762, 746 [1], 3540, 1745, 1260, 1210, 830, 760, 720 [2]
Mass: 384(100), 369(6), 354(7), 324(12), 297(16), 282(31), 267(13), 254(16), 234(13), 227(20), 200(15), 189(15) [1]
PMR: 0.90(t, J=7), 3.82, 3.84, 6.60-6.90 [4]
HPLC: [5]

1. Malikov V.M., Kasymov Sh.Z., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 640.
2. Robakidze Z.V., Mudzhiri M.M., Vachnadze V.Yu., Mudzhiri K.S., Khim. Prir. Soedin., 1980, 735.
3. Strouf O., Trojanek J., Chem. Ind., 1962, 2037.
4. Plat M., Lemay R., Le Men J., Janot M.-M., Djerassi K., Budzikiewicz H., Bull. Soc. Chim. France, 1965, 2497.
5. Gazdag M., Szepesi G., Csomor K., J. Chromatogr., 1982, **243**, 315.

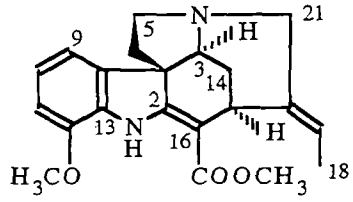


VINERVINE

Vinca erecta
$C_{20}H_{22}N_2O_3$: 338.1631
mp: 154-155° (dec., eth.) [1]
$[\alpha]_D$ −505° (meth.) [1]

{h-chl. 200°, sulf. 183°} [1]
UV: 234, 290, 336(4.22, 3.86, 4.22) [1]
IR: 3440, 1690 [1]
PMR: [2]
Pharm.: LD_{50} 24.5, 100, 102, 167 mg/kg (i/v, i/p, s/c, oral, mice) [3]. Sedative and hypotensive action [4].

1. Yuldashev P.Kh., Ubaev Kh., Kuchenkova M.A., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 34.
2. Yagudaev M.R., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 260.
3. Sadritdinov, p. 40.
4. Kurmukov A.G., in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 13.



VINERVININE

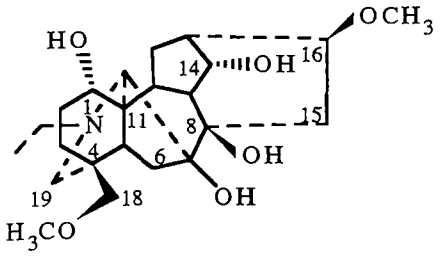
Vinca erecta
$C_{21}H_{24}N_2O_3$: 352.1787
mp: 190-191° (meth.) [1]
$[\alpha]_D$ −564° (chlf.) [1]

{dihydro 144°} [1]
UV: 237, 292, 334(4.12, 3.82, 4.26) [1]
IR: 3380, 1690 [1]
PMR: 6.50-6.80(3H, H-Ar) [2]
^{13}C NMR: [3]

C-2	167.7*	C-10	121.5	C-19	120.3
3	62.0	11	110.3	20	139.3
5	56.2	12	144.3	21	57.0
6	46.2	13	132.5	CO	167.8*
7	58.5	14	31.0	18-CH_3	12.7
8	138.0	15	30.0	$COOCH_3$	50.8
9	113.2	16	101.6	Ar-OCH_3	55.5

Pharm.: LD_{50} 115 mg/kg (i/p, mice). Sedative and hypotensive action [4].

1. Abdurakhimova N., Yuldashev P.Kh., Yunusov S.Yu., DAN SSSR, 1967, **173**, 87.
2. Yagudaev M.R., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 260.
3. Yagudaev M.R., Khim. Prir. Soedin., 1983, 210.
4. Sadritdinov, p. 42.



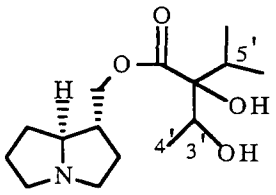
VIRESCENINE

Delphinium confusum
$C_{23}H_{37}NO_6$: 423.2621
mp: 68-70°
$[\alpha]_D$ +17° (chlf.)

IR: 3500-3390, 1496, 1455, 1363, 1324, 1295, 1198, 1172, 1105, 1050, 1020, 990, 984, 955, 935, 870, 850, 752 [1]
Mass: 423(M^+, 23.7), 408(52.6), 406(100), 390(16), 367(5.2), 336(12) [1]
PMR: 1.10(3H, t, NCH_2CH_3), 3.33, 3.35(3H, s, OCH_3), 4.23(1H, dd, H-14β) [2, 3]
^{13}C NMR: [2, 3]

C-1	72.4	C-9	48.0	C-17	64.9
2	28.8	10	39.9	18	78.7
3	29.3	11	49.5	19	55.9
4	37.7	12	26.9	NCH_2	50.5
5	41.9	13	43.6	CH_3	13.9
6	33.6	14	75.5	C-16'	56.4
7	86.1	15	36.0	18'	59.4
8	76.3	16	82.2		

1. Vaisov Z.M., Yunusov M.S., Unpub.
2. Pelletier S.W., Mody N.V., Venkov A.P., Jones S.B., Heterocycles, 1979, **12**, 779.
3. Chen S.-Y., Li S.-H., Hao H.-J., Acta Botanika Sinica, 1986, **28**, 86.



VIRIDIFLORINE

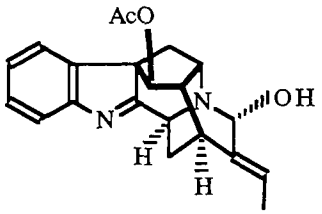
Cynoglossum viridiflorum, Lindelofia macrostyla, L.olgae, L.pterocarpa, L.stylosa, L.tschimganica, Paracaryum himalayense, Symphytum officinale, Trachelanthus hissaricus
$C_{15}H_{27}NO_4$: 285.1940

mp: 101-102° (ac.) [1]
$[\alpha]_D$ −12° (alc.) [2]
{h-chl. 164° [3], m-i. 144° [2]}
Sol-y.: r-sol.alc., water; sp. sol.eth., petr.eth. [2]
UV: 262, 268 [1] *
IR: 3400, 3360, 3230, 3120, 2965, 2860, 2745, 2130, 1940, 1738, 1470, 1430, 1420, 1250 [1]
Mass: 285(M^+), 284, 270, 267, 252, 242, 241, 240, 226, 142, 140, 124(100), 96, 83, 82, 55 [4]
PMR: 0.90, 0.92(3H, d, J=6, 5'-CH_3, 6'-CH_3), 1.22(3H, d, J=6, 4'-CH_3), 1.95(1H, m, H-5'), 3.52(1H, narrow s, OH), 3.99(1H, q, H-3') [5]
CD: [6]
Pharm.: Cholinolytic action [7].

1. Sadykov Yu.D., Khodzhimatov M., DAN Tadzh.SSR, 1984, **27**, 577.
2. Men'shikov G.P., Zh. Org. Khim., 1948, **18**, 1736.
3. Likhosherstov A.M., Kulakov V.N., Kochetkov N.K., Zh. Org. Khim., 1967, **37**, 1012.
4. Abdullaev U.A., Rashkes Ya.V., Shakhidoyatov Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 634.
5. Mattocks A.R., Pigott C.D., Phytochem., 1990, **29**, 2871.

*Figures doubtful.

6. Hrbek J., Hruban L., Klasek A., Kochetkov N.K., Likhosherstov A.M., Santavy F., Snatzke G., Collect., 1972, **37**, 3918.
7. Sadritdinov F.S.in: The Pharmacology of Natural Compounds [in Russian], Fan, Tashkent, 1979, p. 29.

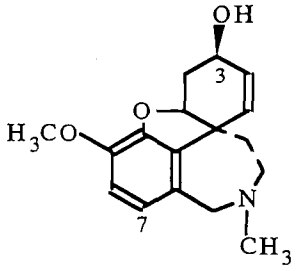


VOMILENINE

Rauwolfia serpentina
$C_{21}H_{22}N_2O_3$: 350.1631
mp: 207° [1, 2]
$[\alpha]_D$ –76° (pyr.) [1], –72° (pyr.) [2]

UV: 219, 259(4.37, 3.74) [1, 2]
IR: 3600, 1740 [1, 2]
Mass: 350(M^+) [1]
PMR: 1.68(3H, d, J=6, =C–CH_3), 2.15(3H, s, Ac), 7.12-7.65(4H, m, H–Ar) [1, 2]

1. Shimolina L.L., Minina S.A., Khim. Prir. Soedin., 1981, 807.
2. Taylor W.I., Frey A.J., Hofman A., Helv. Chim. Acta, 1962, **45**, 611.



GALANTHAMINE

Amaryllis hybrida, Crinum amabile, C.giganteum, Eucharis subedentata, Galanthus caucasicus, G.nivalis, G.woronowii, Hippeastrum equestre, Hymenocallis littoralis, Leucojum aestivum, L.vernum, Narcissus hybridus, Pancratium trianthum, Ungernia ferganica, U.sewerzowii, U.spiralis, U.tadshicorum, U.trisphaera, U.victoris, U.vvedenskyi, Vallota speciosa

$C_{17}H_{21}NO_3$: 287.1521
mp: 127-128° (bz.) [1]
$[\alpha]_D$ –119° [1]
{h-chl. 257°, h-b. 247°, p-chl. 224°, m-i. 279°, chl-plat. 217°} [1]
Sol-y.: r-sol.alc., meth., ac., chlf.; sol.bz., water; sp. sol.eth., petr.eth. [1]
UV: 285 [2]
IR: 3580, 3020, 2935, 2845, 2810, 1629, 1596, 1514, 1465, 1441, 1410, 1390, 1376, 1365, 1333, 1318, 1284, 1269, 1170, 1153, 1112, 1093, 1070, 1049, 1028, 992, 979, 963, 952, 942, 923, 898, 872, 840, 836 [2]
Mass: 287(M^+), 272, 258, 244, 230, 226, 216, 174 [3]
PMR: 2.30(3H, s, NCH_3), 3.76(3H, s, 9-OCH_3), 4.00(1H, m, H-3), 4.59(1H, t, J=8, H-1), 6.51(1H, d, J=8.5, H-7), 6.56(1H, d, J=8.5, H-8) [4]
HPLC: [5]
Pharm.: LD_{50} 8.7 mg/kg (mice). Strong cholinestease inhibitor, increases sensitivity of the organism to acetylcholine. {Galanthamine hydrobromide} is used in the treatment of myasthenia, progressive muscular dystropy, motor and sensory disturbances connected with neuritises, polyneuritises, radiculitises, and other phenomena after a disturbance of the cerebral blood circulation, and in the treatment of poliomyelitis and infantile cerebral paralyses. Is supplied in ampuls with 1 ml of 0.1% and 1% solns. [6]. Antiarrhythmic activity [7]. {H-chl. of the monomethyl ether of apogalanthamine}: LD_{50} 58.5, 131.2, 200 mg/kg (i/v, i/p, s/c) [8].

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6. Mashkovskii, Vol. 1, p. 222.
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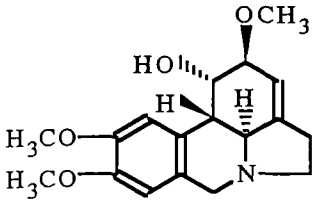

GALANTHINE

Crinum amabile, Galanthus caucasicus, G.woronowii, Hyppeastrum equestre
$C_{16}H_{23}NO_4$: 293.1627
mp: 132-134° (alc.) [1, 2]
$[\alpha]_D$ –87° [1, 2]

{h-chl. 199°, h-b. 203°, p-chl. 201°} [1, 2]
UV: 230, 284 [3]
IR: 3600, 3010, 2965, 2935, 2825, 2800, 2760, 1618, 1590, 1521, 1510, 1470, 1457, 1420, 1390, 1360, 1342, 1319, 1271, 1250, 1170, 1152, 1138, 1118, 1092, 1078, 1060, 1041, 998, 955, 915, 872, 854 [3]

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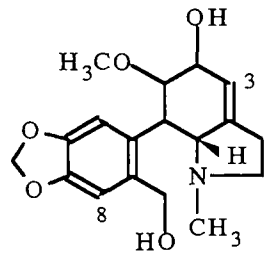

GALANTHUSINE

Galanthus caucasicus
$C_{18}H_{23}NO_5$: 333.1576
mp: 118-119° (ac.) [1]
$[\alpha]_D$ –66° (alc.) [1]
{h-b. 200° (dec.)} [1]

UV: 242, 292(3.87, 3.77) [1]
IR: 3400-3200, 940 [1, 2]
Mass: 333(M^+), 315, 301, 283, 125(100), 96 [1, 2]
PMR: 1.58(3H, s, NCH_3), 3.56(3H, s, OCH_3), 5.60(1H, H-3), 5.78(2H, s, CH_2O_2), 6.52(1H, s, H-11), 7.37(1H, s, H-8) [1, 2]

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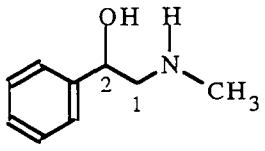

HALOSTACHINE

Halostachys caspica
$C_9H_{13}NO$: 151.0997
mp: 43-45° [1]
$[\alpha]_D$ –47° [1]

{h-chl. 114°, N-Me m-i. 231°} [1, 2]
PMR: 2.18(3H, NCH_3), 2.40(2H, H-1), 4.37(1H, NH), 4.60(1H, H-2), 7.13(5H, H–Ar) [3]

Pharm.: Pressor action. In animals it sharply constricts the vessels of the kidneys and sharply dilates the vessels of the spleen. Is a strong antagonist of papaverine in its action on the peripheral vessels. In its vasoconstricting action it is similar to ephedrine. Possesses a mydriatic action [4].

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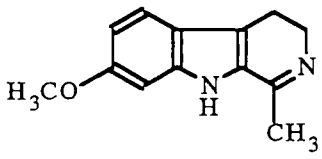

HARMALINE

Peganum harmala, P.nigellastrum
$C_{13}H_{14}N_2O$: 214.1106
mp: 250-252° {h-i. 235°, picr. 229°} [1]

UV: 231, 259, 333 [2]
PMR(Py-d_5): 2.40(3H, t, J=1.5, CH_3), 2.80(2H, t, J=8.5, H-4), 3.69(3H, s, OCH_3), 3.95(2H, narrow t, J=8.5, H-3) [3]
HPLC: [4]

1. Khashimov Kh.N., Author's Abstract of Candidate's Dissertation, Tashkent, 1978.
2. Chatterjee A., Ganguly M., Phytochem., 1986, **7**, 307.
3. Robinson B., Chem. Ind., 1965, 605.
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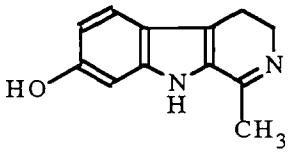

HARMALOL

Peganum harmala
$C_{12}H_{12}NO$: 186.0919
mp: 212° [1]
HPLC: [2]

1. Orekhov A.P., Proskurnina N.F., Konovalova R.A., Zh. Org. Khim., 1936, **6**, 1257.
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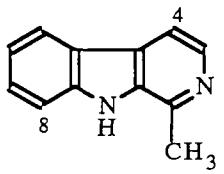

HARMAN

Calligonum caput-medusae, C.eriopodum, C.minimum, Carex brevicollis, Elaeagnus angustifolia
$C_{12}H_{10}N_2$: 182.0842
mp: 236-237° (bz.)

{h-chl. 275° (dec.), picr. 255° (dec.)} [1]
Sol-y.: r-sol.eth., ac., e-a., chlf.; sp. sol.bz. [2]
UV: 235, 249, 288, 336, 348 [3]
IR: 1630, 1570, 1510, 1450, 760 [4]
Mass: 182(M^+, 100), 181(25), 154(17), 140(5), 127(7), 91($^{++}$, 8), 76(5) [2]
PMR($CDCl_3$+CD_3OD): 2.70(3H, s, CH_3), 7.18(1H, td, J=9.0, 4.0, H-6), 7.44(2H, m, H-7, H-8), 7.69(1H, d, J=7, H-4), 8.00(1H, dd, J=9.0, 1.5, H-5), 8.14(1H, d, J=7, H-3) [5]

^{13}C NMR: [6]

C-1	141.8	C-4b	122.1	C-8	111.5
3	138.8	5	121.8	8a	140.1
4	112.9	6	120.2	9a	134.6
4a	128.3	7	128.2	1'	20.3

HPLC: [7]

1. Terent'eva I.V., Borovkov A.V., in: Alkaloid-bearing Plants of Moldavia [in Russian], Kishinev, 1960, p. 41.
2. Mudzhiri L.A, Author's Abstract of Candidate's Dissertation, Tbilisi, 1975.
3. Nikolaeva A.G., Prokopenko A.T., Krivenchuk P.E., Khim. Prir. Soedin., 1970, 708.
4. Nikolaeva A.G., Terent'eva I.V., Krivenchuk P.E., Khim. Prir. Soedin., 1970, 493.
5. Tulyaganov T.S., Unpub.
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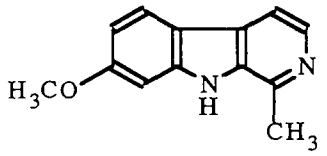

HARMINE

Carex brevicollis, Oxytropis puberula, Peganum harmala, P.nigellastrum, Thalictrum foetidum
$C_{13}H_{12}N_2O$: 212.0950
mp: 252°

{h-chl. 270°, nitr. 231°, m-i. 306° (dec.)}
UV: 243, 303, 327, 339(4.71, 4.33, 3.79, 3.74) [1]
Mass: 212(M^+, 100), 197, 169 [1]
IR{h-chl.}: 3500, 3435, 1632, 1548, 1331, 1282, 1263, 1233, 1201, 1164, 1137, 1110, 1075, 1022, 877, 822, 802, 771, 740 [2]
PMR(CF_3COOH): 3.61(3H, s, OCH_3), 3.64(3H, s, CH_3), 6.76(2H, m), 7.70(3H, m) [1]
HPLC: [3]
Pharm.: LD_{50} 75, 124 mg/kg (i/v, i/p, mice). Psychotomimetic action [4].

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3. Moncrieff J., J. Chromatogr., 1989, **496**, 269.
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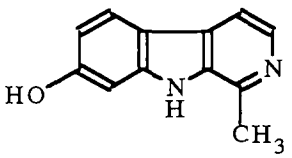

HARMOL

Carex brevicollis
$C_{12}H_{10}N_2O$: 198.0793
mp: 319-321° (eth.) [1]

{ethyl eth. 193° (alc.)}
UV: 240, 302, 323, 338(4.68, 4.26, 3.96, 3.87) [2]
IR: 3270, 1630, 1568, 1324, 1292, 1232, 1172, 1139, 1112, 1071, 990, 962, 942, 898, 885, 850, 839, 823, 802 [2]
HPLC: [3]

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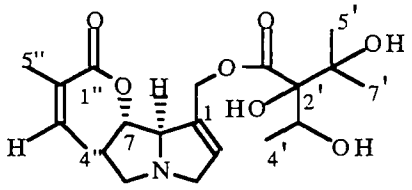
3. Sasse F., Hammer J., Berlin J., J. Chromatogr., 1980, **194**, 234.



HELIOSUPINE

Cynoglossum officinale, C.pictum, C.viridiflorum, Echium vulgare, Heliotropium supinum, Paracynoglossum imeretinum

$C_{20}H_{31}NO_7$: 397.2101

mp: oil [1]

$[\alpha]_D$ –4° (alc.) [1]

{picr. 101°, picrolonate 104°, angelic acid 45°, heliotridine 118°, $[\alpha]_D$ +31°} [1]

Sol-y.: r-sol.alc., chlf., ac.; sol. bz., eth., petr.eth., water [1]

IR: 3475, 1740, 1710 [2]

Mass: 397(M^+), 297, 220(70), 136(62), 120(82), 119(100), 100(70), 93(70), 83(62) [2]

PMR: 1.20(3H, s, 6'-CH_3), 1.22(3H, d, 4'-CH_3), 1.25(3H, s, 7'-CH_3), 1.82(3H, s, 5''-CH_3), 1.87(2H, m, H-6), 1.93(3H, dd, 4''-CH_3), 2.81(1H, m, H-5), 3.13(1H, m, H-5), 3.31(1H, m, H-3), 3.91(1H, m, H-3), 4.06(1H, narrow s, H-8), 4.15(1H, q, H-3'), 4.93(2H, q, H-9), 5.12(1H, m, H-7), 5.84(1H, s, H-2), 6.08(1H, dq, H-3'') [3]

^{13}C NMR: [3]

C-1	134.1	C-9	62.5	C-7'	24.8
2	129.6	1'	174.0	1''	168.0
3	62.1	2'	82.8	2''	127.3
5	54.2	3'	69.7	3''	138.9
6	30.2	4'	18.5	4''	16.0
7	76.9	5'	73.8	5''	20.5
8	79.0	6'	26.0		

Pharm.: LD_{50} 60 mg/kg (i/v, rats) [4]. Hypotensive, spasmolytic and antitumoral action [1].

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2. Zalkow L.H., Bonetti S., Gelbaum L., Gordon M.M., Patil B.B., Shani A., Derveer D.V., J. Natur. Prod., 1979, **42**, 603.
3. Asibal C.F., Glinski J.A., Gelbaum L.T., Zalkow L.H., J. Natur. Prod., 1989, **52**, 109.
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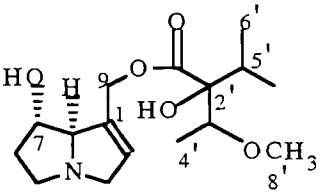

HELIOTRINE

Heliotropium acutiflorum, H.argusioides, H.dasycarpum, H.eichwaldi, H.europaeum, H.lasiocarpum, H.olgae, H.transoxanum

$C_{16}H_{27}NO_5$: 313.1889

mp: 125-126° (ac.) [1]

$[\alpha]_D$ –75° [1]

{heliotridine h-chl. 125°, heliotric acid 90°} [2]

UV: 213(3.29) [3]

IR: 3550-3350, 1750 [4]

Mass: 313(M^+, 0.2), 255(0.9), 197(2.2), 156(11.1), 139(39), 138(93), 136(14), 120(10), 119(20), 95(20), 94(32), 93(100), 80(25) [4]

PMR: 0.82, 0.87(3H, d, 7'-CH_3, 6'-CH_3), 1.07(3H, d, 4'-CH_3), 1.83, 1.97(2H, m, H-6), 2.07(1H, m, H-5'), 2.52, 3.22(2H, m, H-5), 3.27(3H, s, 8'-CH_3), 3.27(1H, m, H-3), 3.54(1H, q, H-3'), 3.80(1H, d, H-3), 3.81(1H, s, H-8), 4.01(1H, m, H-7), 4.61, 4.98(2H, q, H-9), 5.64(1H, s, H-2) [5]

^{13}C NMR: [5]

C-1	136.1	C-7	75.3	C-3'	78.5
2	126.9	8	79.9	4'	12.4
3	61.9	9	62.5	5'	31.9
5	54.1	1'	174.6	6'	17.1
6	34.3	2'	82.5	7'	16.6
				8'	57.0

CD: [6]
X-ray spectral analysis: [5, 7]
Pharm.: LD_{50} 274.4, 254.6 mg/kg (i/v, rats, mice). Hepatotoxic. Inhibits development of experimental tumors [8].

1. Yunusov S.Yu., Sidyakin G.P., DAN UzSSR, 1950, No. 1, 3.
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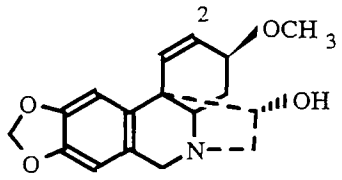

HAEMANTHAMINE

Hippeastrum equestre, Narcissus hybridus, Sternbergia lutea
$C_{17}H_{19}NO_4$: 301.1314
mp: 200-201° (ac.) [1]
$[\alpha]_D$ +33° (chlf.) [1]

{m-i. 190°, picr. 220° [1], h-b. 192° [2]}
UV: 239, 296 [3]
IR: 3600, 3010, 2930, 2900, 2825, 2770, 1626, 1509, 1490, 1468, 1447, 1409, 1387, 1375, 1325, 1304, 1243, 1191, 1160, 1123, 1098, 1084, 1064, 1040, 981, 940, 906, 887, 872, 855, 825 [3]
Mass: 301(M^+), 286, 272, 270, 269, 257, 240, 227, 225, 211, 181, 153, 152 [4]
PMR: 1.97-2.17(2H, m, H-4), 3.32(3H, s, 3-OCH_3), 3.80(1H, H-3), 3.95(1H, dt, H-11), 4.35(1H, d, J=16), 5.82(2H, s, CH_2O_2), 6.23(1H, dd, J=5), 6.40(1H, dd, J=10, H-1), 6.40(1H, s, H-7), 6.75(1H, s, H-10) [2]
Pharm.: LD_{50} 318 mg/kg (s/c, mice). Inhibits the activity of cholinesterase [5]. Hypotensive action. In high doses suppresses the orientation reaction and prolongs the action of narcotics and hypnotics [6].

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3. Holubek, No. 130.
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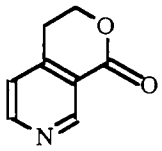
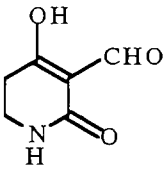


GENTIANADINE

Cephalaria gigantea, C.kotschyi, C.nachiczevanica, Gentiana olgae, G.olivieri, G.turkestanorum
$C_8H_7NO_2$: 149.0477

mp: 77-78° (abs.eth.)
{h-chl. 196°, picr. 158°}
Sol-y.: sol.meth., ac., chlf.
IR: 1730
Mass: 149(M^+, 100), 121(10), 120(80), 92(27), 65(13)
PMR: 3.03, 4.52(2H, t, J=6), 7.20, 8.65, 9.12(1H, s, d, q, H-Ar) [1]
Pharm.: LD_{50} 1210 mg/kg (i/p, mice). Sedative and antiinflammatory action [2].

1. Samatov A.S., Akramov S.T., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 182.
2. Sadritdinov F., Tulyaganov N., in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 152.

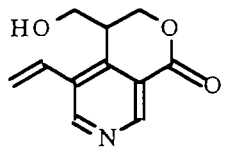


GENTIANAINE

Cephalaria gigantea, C.kotschyi, C.nachiczevanica, Gentiana kaufmanniana, G.olgae, G.olivieri, G.turkestanorum
$C_6H_7NO_3$: 141.0426
mp: 149-150° (ac.)

Sol-y.: sol. water, alc., meth. [1]
UV: 231, 283(4.10, 4.16)
IR: 3390, 3260, 1718, 1640
Mass: 141(M^+, 85), 114, 113, 112, 98, 69(100)
PMR(Py-d_5): 2.01, 5.30(2H, t, 2×CH_2), 4.88(1H, s, OH), 8.25(1H, m, NH), 8.50(1H, s, CHO) [2]
Pharm.: LD_{50} 1275 mg/kg (i/p, mice). Antiinflammatroy and sedative action [3].

1. Rakhmatullaev T.U., Akramov S.T., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 32.
2. Akramov S.T., Yagudaev M.R., Rakhmatullaev T.U., Samatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 14.
3. Sadritdinov F., in: The Pharmacology of Alkaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, p. 146, 151.

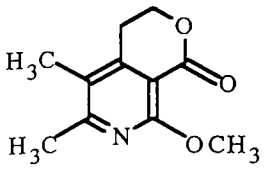


GENTIANAMINE

Gentiana turkestanorum
$C_{11}H_{11}NO_3$: 205.0739
mp: 149-150° (ac.)

{oxalate 159° (alc.), nitr. 128°, picr. 147°, m-i. 158°, O-Ac. 97°, dihydro 170°} [1]
Sol-y.: sol.chlf., meth., alc.
UV: 218, 250(3.96, 4.46)
IR: 3200, 1720, 1660, 1585
Mass: 205(M^+), 175, 131, 130, 117, 91, 77 [1]
Pharm.: LD_{50} 770 mg/kg (i/p, mice). Sedative and antiinflammatory action [2].

1. Samatov A.S., Akramov S.T., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 182.
2. Sadritdinov F., in: The Pharmacology of Alkaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, p. 151.

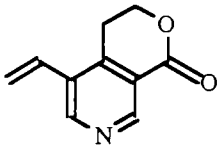


GENTIANANINE

Gentiana caucasica, G.kaufmanniana, G.olgae, G.olivieri, G.tianschanica, G.turkestanorum, G.vvedenskyi, Pedicularis macrochila, Swertia graciliflora, S.marginata

$C_{11}H_{13}NO_3$: 207.0895
mp: 375-380° (dec.)
UV: 219, 265(3.89, 3.50)
IR: 1735, 1600
PMR: 1.78, 2.27(3H, s, 2×CH_3), 3.38(3H, s, OCH_3)

1. Abdusamatov A., Samatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 122.

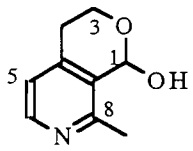


GENTIANINE

Cephalaria gigantea, C.kotschyi, C.nachiczevanica, Dipsacus azureus, Erythraea centaurium, Gentiana barbata, G.caucasica, G.cruciata, G.decumbens, G.kaufmanniana, G.kirilowii, G.macrophylla, G.olivieri, G.pneumonanthe, G.tianschanica, G.turkestanorum, G.vvedenskyi, Lomatogonium rotatum, Ophelia diluta, Swertia connata, S.graciliflora, S.marginata

$C_{10}H_9NO_2$: 175.0633
mp: 81-82° (alc.)
{h-chl. 172°, h-b. 178°, oxalate 153°, nitr. 240°, m-i. 191°, picr. 122° (dec.)} [1]
UV: 218, 254, 290(4.41, 3.90, 3.10)
IR: 1730, 1632, 1592, 1574, 1475, 1129, 1045
Mass: 175(M^+), 117(87), 147, 90
PMR: 3.24, 4.67(2H, t, J=5.9, CH_2–S, CH_2–O), 5.77, 5.95(1H, d, J=10.7; 17.9, =CH_2), 7.08(1H, q, J=10.7; 17.9, =CH), 9.17(2H, narrow s, H-Ar) [2]
Pharm.: LD_{50} 504, 460, 618 mg/kg (s/c, i/p, oral, mice). Antiinflammatory, sedative [3], and antihelminthic [4] actions.

1. Proskurnina N.F., Zh. Org. Khim., 1944, **14**, 1148.
2. Lavie D., Taylor-Smith R., Chem. Ind., 1963, 781.
3. Tulyaganov N., Danilevskii V.L., Sadritdinov F., in: The Pharmacology of Aklaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, p. 148.
4. Mashkovskii M.D., The Main Directions of the Work of VNIKhFI [Sergo Ordzhonikidze All-Union Research Institute of Pharmaceutical Chemistry] [in Russian], Moscow, 1959, p. 393.

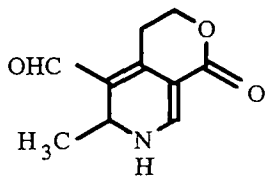


GENTIOTIBETINE

Gentiana olivieri
$C_9H_{11}NO_2$: 165.0790
mp: 161.5°

UV: 263, 270
IR: 3200-2500, 1602, 1575, 1381-1377, 830, 780, 732-728
Mass: 165(M^+), 134, 106, 79, 77, 51
PMR: 2.53(3H, s, CH_3), 2.56(1H, dd, J=17;3.5, H-4), 2.98(1H, m, J=17;12;6, H-4), 3.88(1H, q, J=11.5;6, H-3), 4.29(1H, td, J=11.5;12;3.5, H-3), 4.60-5.20(1H, narrow s, OH), 5.94(1H, narrow s, H-1), 6.85(1H, d, J=5, H-5), 8.21(1H, d, J=5, H-6)

1. Rulko F., Dolejs L., Cross A.D., Murphy G.W., Toube T.P., Roczniki Chemii, 1967, **41**, 567.

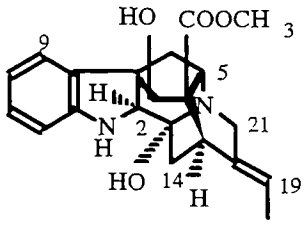


GENTIOFLAVINE

Gentiana olgae, G.olivieri, G.tianschanica, Swertia connata, S.graciliflora, S.marginata
$C_{10}H_{11}NO_3$:193.0739
mp: 218-220°

Sol-y.: sol.chlf., alc., water
UV: 235, 298, 410
IR: 3235, 1700, 1640, 1620
PMR: 1.30(3H, d, CH_3), 3.00, 4.35(2H, t, 2×CH_2), 5.20(1H, q, CH–CH_3), 8.45, 8.80, 10.10(1H, s, H–Ar, NH, CHO)

1. Marekov N.L., Popov S.S., Tetrahedron, 1968, **24**, 1323.



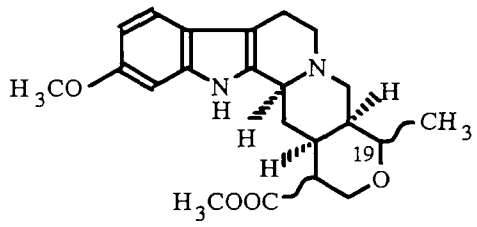
HERBADINE

Vinca herbacea
$C_{21}H_{24}N_2O_4$: 368.1736
mp: 206-208° (dec., ac.) [1] 202-205° (dec.) [2]
{dihydro 240°} [1]

UV: 238, 292(3.84, 3.55) [1]
UV(meth.): 212, 242, 292(4.57, 3.98, 3.48) [2]
IR: 3450, 2950, 2875, 2400, 1240, 1200, 1140, 1100, 1060, 1040, 980, 950, 900, 860, 810, 780, 760, 735 [2]
Mass: 368(M^+, 32), 337(2), 252(2), 251(2), 178(3), 168(1), 167(1), 166(1), 158(1), 157(1), 150(3), 147(3), 144(5), 143(20), 135(5), 130(10), 121(2), 117(100) [2]
PMR(Py-d_5): 1.71(3H, d, J=6, 18-CH_3), 1.84(1H, d, J=15, H-14), 2.12(1H, d, J=12, H-6), 3.23(1H, dd, J=12, H-6), 3.40(1H, dd, J=4, H-14β), 3.42(1H, d, J=17, H-21), 3.86(1H, d, J=4, H-15), 3.90(3H, s, $COOCH_3$), 4.16(1H, d, J=4.5, H-5), 4.24(1H, d, J=3, H-2), 4.50(1H, d, J=17, H-21β), 4.85(1H, d, J=5, H-17), 5.32(1H, q, J=6, H-19), 6.65(1H, d, J=3, NH), 7.00(1H, m, J=6.5, H-10), 7.17(1H, d, J=6.5, H-12), 7.30-7.75(4H, m, H-9, H-11; 2×OH) [2]
^{13}C NMR (Py-d_5): [3]

C-2	76.3	C-10	118.3	C-17	73.6
3	85.4	11	127.5	19	114.0
5	64.0	12	110.2	21	40.1
6	36.6	14	30.1	OCH_3	50.7
7	61.2	15	33.3	18-CH_3	12.5
9	125.9	16	58.6		

1. Vachnadze V.Yu., Malikov V.M., Mudzhiri K.S., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 341.
2. Aynilian G.H., Bell C.L., Farnsworth N.R., J. Pharm. Sci., 1975, **64**, 341.
3. Yagudaev M.R., Khim. Prir. Soedin., 1982, 731.



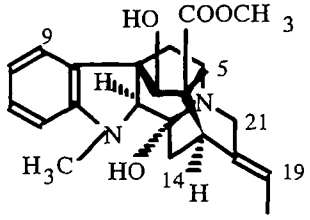
HERBAINE (VINCAHERBINE)

Vinca herbacea
$C_{22}H_{28}N_2O_4$: 384.2049
mp: 129-130° (dec., meth.) [1] 126-128° [2, 3]; 128-129° [4]
$[\alpha]_D$–253° (pyr.) [1]; –217° [2, 3]
{p-chl. 203°} [1]

UV: 228, 274, 297(4.63, 3.85, 3.87) [1-4]

IR: 3465, 1720, 1250, 1225, 860 [1, 4]
Mass: 384(M^+, 100), 369, 353, 325, 253, 214, 200, 199, 186, 174 [2]
PMR: 1.19(3H, d, J=7, 19-CH_3), 3.65(3H, s, $COOCH_3$), 3.83(3H, s, Ar-OCH_3), 6.70(3H, m, H-Ar), 8.17(1H, s, NH) [2]

1. Zabolotnaya E.S., Bukreeva É.V., Zh. Org. Khim., 1963, **33**, 3780.
2. Ognyanov I., Pyuskyulev B., Spiteller G., Mh. Chem., 1966, **97**, 857.
3. Ognyanov I., Pyuskyulev B., Chem. Ber. 1966, **99**, 1008.
4. Chkhikvadze G.V., Vachnadze V.Yu., Mudzhiri K.S., Khim. Prir. Soedin., 1980, 850.



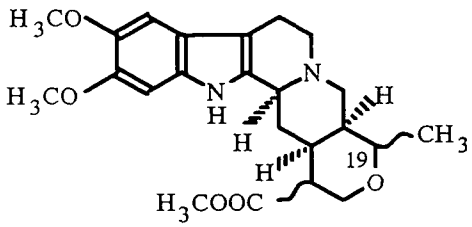
HERBAMINE

Vinca herbacea
$C_{22}H_{26}N_2O_4$: 382.1893
mp: 176-179° (dec.) [1]
$[\alpha]_D$ 0±5° (chlf.) [1]

UV: 250, 295(3.82, 3.38) [1]
IR: 3400, 1740, 745 [1]
Mass: 382(M^+, 50), 168(1), 167(3), 158(5), 157(25), 144(25), 131(100) [1]
PMR: 1.50(3H, d,18-CH_3), 2.72(3H, s, NCH_3), 5.07(1H, q, H-19), 6.12-7.00(4H, m, H-Ar) [1-3]
^{13}C NMR: [4]

C-2	80.8	C-10	118.9	C-17	74.1
3	86.0	11	128.4	19	115.7
5	62.9	12	108.9	20	136.5
6	34.6	13	154.1	21	48.4
7	57.6	14	29.5	18-CH_3	12.7
8	129.4	15	32.4	NCH_3	35.8
9	124.1	16	59.0	C=O	172.6

1. Vachnadze V.Yu., Malikov V.M., Mudzhiri K.S., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 341.
2. Yagudaev M.R., Khim. Prir. Soedin., 1981, 608.
3. Aynilian G.H., Bell C.L., Farnsworth I.S., Llodia, 1974, **37**, 589.
4. Yagudaev M.R., Khim. Prir. Soedin., 1982, 731.



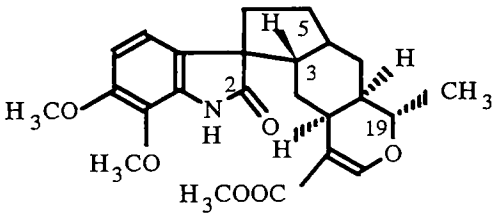
HERBACEINE (VINCAHERBININE)

Vinca herbacea
$C_{23}H_{30}N_2O_5$: 414.2155
mp: 139-140° (dec., meth.) [1]; 144° (dec.) [2]; 142-144° [3]
$[\alpha]_D$–238° (pyr.) [1]; –219° [2]

{p-chl. 207°} [1]
UV: 226, 300(4.53, 4.04) [1, 2]; 226, 280, 300(4.46, 3.83, 4.04) [3]
IR: 3384, 3254, 1741, 1634, 1604, 1573 [1]; 3365, 1715, 1225, 835 [2, 3]
Mass: 414(M^+,100),413,399, 384, 383, 355, 295, 283, 281, 254, 244, 236, 230, 229, 216, 149 [2, 4].
PMR: 1.22(3H, d, J=7, 19-CH_3), 3.70(3H, s, $COOCH_3$), 3.88(3H, s, Ar–OCH_3), 3.97(5H, m, Ar–OCH_3, 17-CH_2), 6.87(1H, s, H-Ar), 6.98(1H, s, H–Ar), 8.03(1H, narrow s, NH). [2]

1. Zabolotnaya E.S., Bukreeva É.V., Zh. Org. Khim., 1963, **33**, 3780.
2. Ognyanov I., Pyuskyulev B., Chem. Ber., 1966, **99**, 1008.
3. Chkhikvadze G.V., Vachnadze V.Yu., Mudzhiri K.S., Khim. Prir. Soedin., 1980, 850.
4. Ognyanov I., Pyuskyulev B., Spiteller G., Mh. Chem., 1966, **97**, 857.

HERBOKSINE

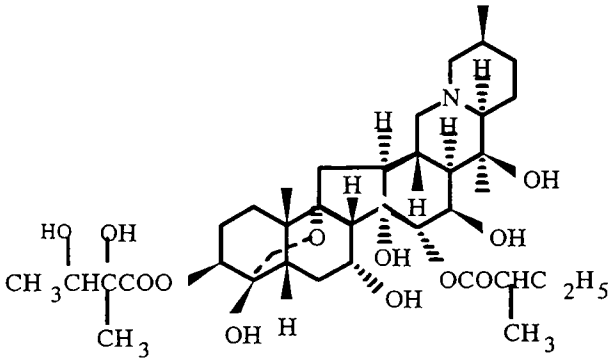


Vinca herbacea
$C_{23}H_{28}N_2O_6$: 428.1947
mp: 179-181°
$[\alpha]_D$+40° (meth.)

UV: 224, 250 sh(4.39)
IR: 1710, 1635, 800, 775
Mass: 428(M^+, 100), 413, 411, 397, 223, 222, 219, 208, 206, 204, 180, 69
PMR: 1.18(3H, d, J=6, 19-CH_3), 3.37(3H, s, $COOCH_3$), 3.71(3H, s, Ar–OCH_3), 3.78(3H, s, Ar-OCH_3), 4.12(1H, q, J=10, H-19), 6.40(1H, d, J=8, H-10), 6.70(1H, d, J=8, H-9), 7.32(1H, s, H-17), 8.20(1H, narrow s, NH)

1. Chkhikvadze G.V., Khalmirzaev M.M., Vachnadze V.Yu., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 227.

GERMBUDINE

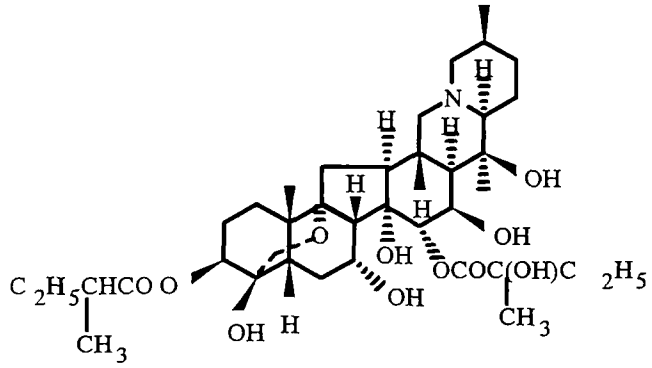


Veratrum lobelianum
$C_{37}H_{59}NO_{12}$: 709.4037
mp: 157-159° (bz.)
$[\alpha]_D$+8° (chlf.)
{Ac 207°} [1]
IR: 3350, 1740, 1245
Mass: 709(M^+), 112(100) [1]

PMR: 0.84(3H, t, CH_2–CH_3), 0.92(3H, s, 19-CH_3), 1.02(3H, d, 27-CH_3), 1.09(3H, d, CH–CH_3), 1.13(3H, s, 21-CH_3), 1.16(3H, d, CH(OH) –CH_3), 1.39(3H, s, C(OH) –CH_3), 4.96(1H, m, HC–O-acyl), 5.26(1H, d, HC–O-acyl) [1, 2]
Pharm.: LD_{50} 0.34, 30.0, 41.2 mg/kg (i/v, s/c, oral, mice). Considerable hypotensive activity, weak anesthetic action. In high doses causes pressor effect. Recommended for experimental purposes and as a test object [3, 4].

1. Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 532; Unpub.
2. Kupchan S.M., Gruenfeld N., J. Am. Pharm. Assoc. Sci. Ed., 1959, **48**, 737.
3. Mirzaev Yu.R., Author's Abstract of Candidate's Dissertation, Tashkent, 1982.
4. Saidkasymov T.K., Mirzaev Yu.R., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 45.

GERMERINE



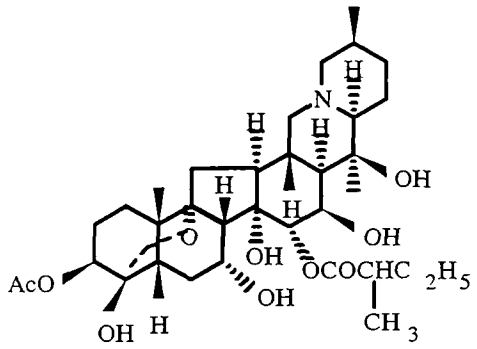
Veratrum lobelianum, V.nigrum, V.oxysepalum
$C_{37}H_{59}NO_{11}$: 693. 4088
mp: 203-205° (bz.) [1]
$[\alpha]_D$+10 (chlf.) [1]
{h-chl. 215°, h-b. 213°, picr. 189°, rhodanide 222°}
IR: 3360, 2935, 1742, 1465, 1250 [1]

PMR: 0.85(3H, t, J=7, CH_2–CH_3), 0.94(3H, s, 19-CH_3), 1.03(3H, d, J=7.27-CH_3), 1.07(3H, t, J=7, CH_2–CH_3), 1.11(3H, d, J=7, CH_2–CH_3), 1.14(3H, s, 21-CH_3), 1.35(3H, s, –C(OH) –CH_3), 4.22(1H, m, HC–OH), 4.48(1H, m, HC–OH), 4.96(1H, m, –HC–O-acyl), 5.29(1H, d, J=3, –HC–O-acyl) [2, 3]

Pharm.: LD_{50} 0.34, 3.00, 41.2 mg/kg (i/v, s/c, oral, mice). Considerable hypotensive and weak anesthetic action. In high doses, a hypertensive effect [4].

1. Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 852.
2. Shakirov R., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 639.
3. Kupchan S.M., J. Am. Chem. Soc., 1959, **81**, 1921.
4. Mirzaev Yu.R., Author's Abstract of Candidate's Dissertation, Tashkent, 1982.

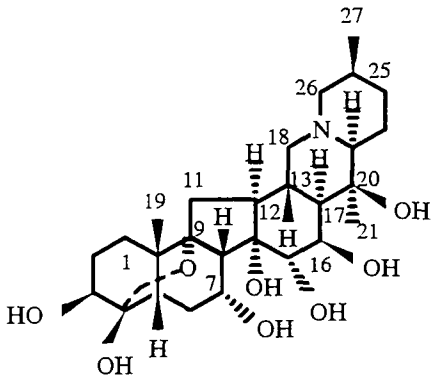
GERMIDINE



Veratrum lobelianum, V.nigrum
$C_{34}H_{53}NO_{10}$: 635.3669
mp: 200-202° (water eth.), 230-231°, 240° (chlf.-eth.) [1]
$[\alpha]_D$–11° [2]
IR: 3600-3160, 3030-2750, 1745, 1245 [1]
Pharm.: Possesses hypotensive activity and is a component of preparation lowering blood pressure [1, 3].

1. Shinkarenko A.L., Bondarenko N.V., Rast. Res., 1966, No. 2, 45.
2. Kupchan S.M., J. Am. Chem. Soc., 1959, **81**, 1921.
3. Fried J., Whito H.L., Wintersteiner O.W., J. Am. Chem. Soc., 1950, **72**, 4621.

GERMINE

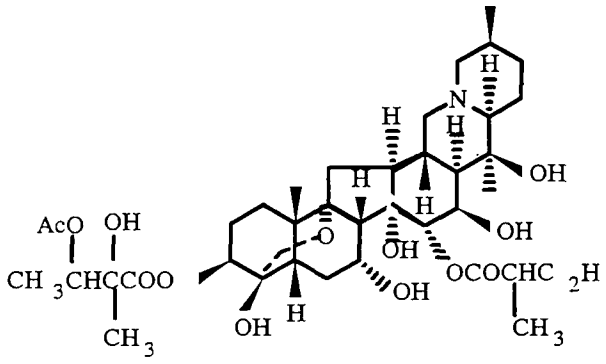


Veratrum lobelianum
$C_{27}H_{43}NO_8$: 509.2989
mp: 220-222° (meth.) [1]
$[\alpha]_D$+19° (10% H_2SO_4) [2]
IR: 3400, 2930, 2770, 1445 [2]
Mass: 509(M^+), 494, 493, 491, 482, 474, 466, 451, 330, 320, 149, 137, 125, 112(100), 98, 97 [2, 3]

^{13}C NMR: [4]

C-1	32.2	C-10	46.8	C-19	18.7
2	28.6	11	33.2	20	73.4
3	72.7	12	45.9	21	20.7
4	106.5	13	33.4	22	70.4
5	44.0	14	82.3	23	19.2
6	29.5	15	69.9	24	29.3
7	67.5	16	70.4	25	27.6
8	48.8	17	47.7	26	61.9
9	93.1	18	61.7	27	17.3

1. Ubaidullaev K.A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 678.
2. Shakirov R., Unpub.
3. Kupchan S.M., Narayanan C.R., J. Am. Chem. Soc., 1959, **81**, 1913.
4. Broadbent T.A., Paul E.G., Heterocycles, 1983, **20**, 966.

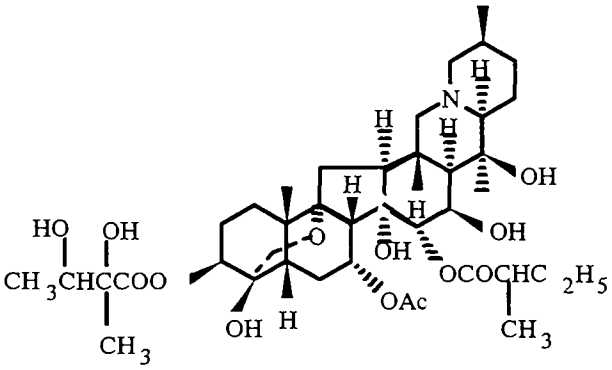


GERMINALINE

Veratrum lobelianum
$C_{39}H_{61}NO_{13}$: 751.4143
mp: 138-140° (bz.)
{di Ac 212°, tri Ac 202°}
Sol-y.: r-sol. chlf.; sp. sol. bz.
IR: 3450, 1745, 1250
Mass: 751(M^-), 112(100)

PMR: 0.82(3H, t, CH_2–CH_3), 0.89(3H, s, 19-CH_3), 1.00(3H, d, 27-CH_3), 1.08(3H, d, CH–CH_3), 1.11(3H, s, 21-CH_3), 1.21(3H, d, CH–CH_3), 1.26(3H, s, –C(OH) –CH_3), 1.89(3H, s, OAc), 4.98(1H, m, HC–O-acyl), 5.23(1H, m, HC–O-acyl), 5.91(1H, m, –O-acyl)

1. Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 116; Unpub.



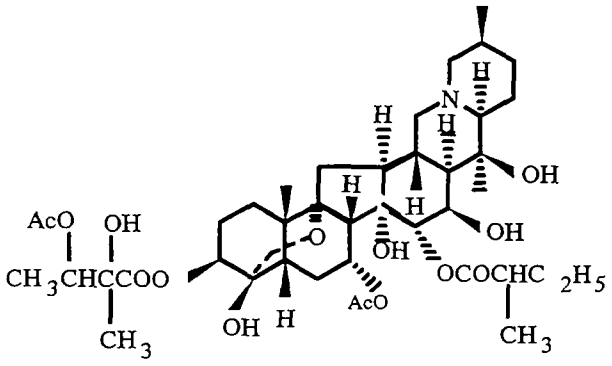
GERMINALININE

Veratrum lobelianum
$C_{39}H_{61}NO_{13}$: 751.4143
mp: 168-170° (eth.) [1]
$[\alpha]_D$–52° (pyr.) [1]
IR: 3490, 1750, 1255 [1]
Mass: 751(M^-), 112(100) [1]

PMR: 0.81(3H, t, CH_2–CH_3), 0.93(3H, s, 19-CH_3), 1.02(3H, d, 27-CH_3), 1.05(3H, d, CH_2–CH_3), 1.12(3H, d, –HC(OH) –CH_3), 1.13(3H, s, 21-CH_3), 1.38(3H, s, –C(OH) –CH_3), 2.03(3H, s, OAc), 4.99(1H, m, HC–O–Ac), 5.10(1H, d, HC–O–Ac), 5.72(1H, m, –HC–O–Ac) [1]

Pharm.: LD_{50} 0.046, 0.56, 15.7 mg/kg (i/v, s/c, oral, mice). Smooth and prolonged hypotensive action [2].

1. Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 532; Unpub.
2. Mirzaev Yu.R., Author's Abstract of Candidate's Dissertation, Tashkent, 1982.

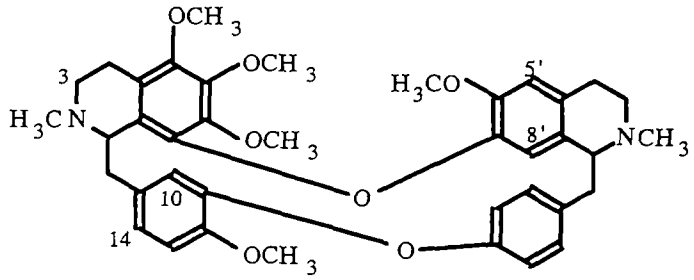


GERMITETRINE

Veratrum lobelianum
$C_{41}H_{63}NO_{14}$: 793.4249
mp: 220-221° (ac.-eth.) [1]
$[\alpha]_D$–65° (pyr.)
{picr. 246°}
IR: 3540, 1750, 1253 [1]
Mass: 793(M^+), 112(100) [1]

PMR: 0.82(3H, t, CH_2–CH_3), 0.94(3H, s, 19-CH_3), 1.02(3H, d, 27-CH_3), 1.06(3H, d, CH–CH_3), 1.10(3H, s, 21-CH_3), 1.22(3H, d, CH–CH_3), 1.28(3H, s, –C(OH) –CH_3), 1.88(3H, s, OAc), 2.00(3H, s, OAc), 5.04(3H, m, –CH–O–Ac), 5.71(1H, m, –CH–O–Ac) [1, 2]
Pharm.: LD_{50} .082 [sic] mg/kg (i/v, mice). Smooth and prolonged hypotensive action. Weak pressor effect [3].

1. Shakirov, Yunusov S.Yu., Khim. Prir. Soedin., 1983, 116; Unpub.
2. Kupchan S.M., Ayres C.I., Chem. Ind., 1958, 1594.
3. Mirzaev Yu.R., Author's Abstract of Candidate's Dissertation, Tashkent, 1982.



HERNANDEZINE (THALICSIMINE)

Thalictrum alpinum, Th. simplex, Th. sultanabadense
$C_{39}H_{44}N_2O_7$: 652.3148
mp: 153-154° (alc.) [1], 122-123° (ac.) [2], 190-193° [3]

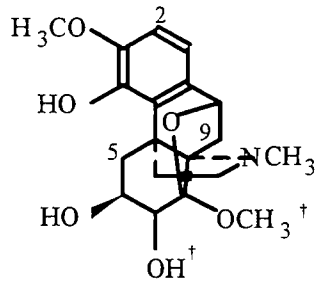
$[\alpha]_D$+221° (chlf.) [1], +250° (chlf.) [3]
{nitr. 211° (dec.), h-b. 253°, h-i. 242°, m-i. 236° (dec.) [1]; α-des. 192° $[\alpha]_D$ 0° [4]; h-chl. 230° (dec.) [5], picr. 204° (dec.), β-des. 152° $[\alpha]_D$+422° (chlf.) [5]}
Sol-y.: r-sol. ac., meth., alc., eth., bz., chlf.; sp. sol. petr. eth.; i.s. water, alk. [1]
UV: 286(3.76) [2]
IR: [3]
Mass: 652(M^+, 62), 651(31), 637(12), 461(16), 426(17), 425, 411, 394, 379, 365, 213($^{++}$, 100), 192, 190($^{++}$, 13), 174(27) [6-8]
PMR: 2.24(3H, s, 2-NCH_3), 2.55(3H, s, 2′-NCH_3), 3.18(3H, s, 7-OCH_3), 3.27(3H, s, 6′-OCH_3), 3.73(3H, s, 6-OCH_3), 3.75(3H, s, 5-OCH_3), 3.85(3H, s, 12-OCH_3), 5.92(1H, s, H-8′) [9]; 6.02(1H, s, H-8′) [7]

^{13}C NMR: [10]

C-1	61.3*	C-11	143.5	C-8′	120.0
3	43.5	12	146.8	8a′	128.3
4	16.4	13	111.4	α′	41.7
4a	121.6	14	122.6	9′	134.9
5	145.3	1′	63.7*	10′	129.9
6	142.2	3′	45.2	11′	121.7
7	149.1	4′	25.4	12′	153.5
8	144.2	4′a	127.9	13′	121.7
8a	125.5	5′	112.5	14′	132.4
α	37.8	6′	148.1	2-NCH_3	42.3**
9	134.7	7′	149.1	2′-NCH_3	42.6**
10	116.0				

Abs. conf.: 1S, 1′S
CD: [11]
Pharm.: LD_{50} 282 mg/kg (s/c, mice), 175 mg/kg (s/c, rats). Antiinflammatory, antipyretic, and analgesic action [12].

1. Ismailov Z.F., Maekh S.Kh., Yunusov S.Yu., DAN UzSSR, 1959, No. 7, 32.
2. Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 188.
3. Padilla J., Herran J., Tetrahedron, 1962, **18**, 427.
4. Yunusov S.Yu., Telezhenetskaya M.V., DAN UzSSR, 1963, No. 5, 22.
5. Telezhenetskaya M.V., Unpub.
6. Baldas J., Bick I.R.C., Ibuka T., Kapil R.S., Porter Q.N., J. Chem. Soc. Perkin I, 1972, 592.
7. Shamma M., Dudock B.S., Cava M.P., Rao K.V., Dalton D.R., Dejongh D.C., Shrader S.R., Chem. Commun., 1966, 7.
8. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 256.
9. Maekh S.Kh., Unpub.
10. Broadbent T.A., Paul E.G., Heterocycles, 1983, **20**, 863.
11. Moiseeva G.P., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 818.
12. Sadritdinov, p. 240.



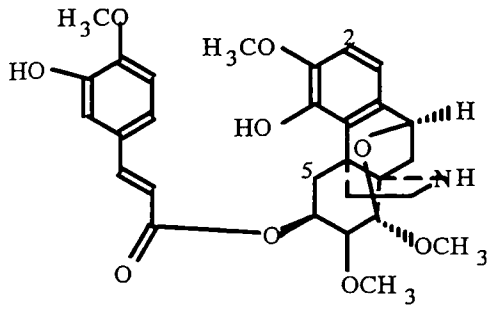
HERNANDINE

Stephania hernandifolia
$C_{19}H_{25}NO_6$: 363.1682
mp: 197-199° (alc.)
$[\alpha]_D$–33° (alc.)
IR: 3530, 3260
Mass: 363(M^+), 348, 231(100), 230, 216, 199

PMR: 1.51(1H, d, J=10.8, H-9), 1.95(1H, q, J=2.4; 14.6, H-5), 2.52(3H, s, NCH_3), 2.68(1H, d, J=11, OH), 2.85(1H, q, J=6.2; 10.8, H-9), 3.09(1H, q, J=3.5; 14.6, H-5), 3.42, 3.65(3H, s, 8-OCH_3, 3-OCH_3), 3.58(1H, d, J=3.8), 4.15(2H, m, H-6, H-7), 4.01(1H, s, OH), 4.82(1H, d, J=10.8, H-10), 6.45(2H, s, H-1, H-2), 6.53(1H, s, OH)

1. Il'inskaya T.N., Fesenko D.A., Fadeeva I.I., Perel'son M.E., Tolkachev O.N., Khim. Prir. Soedin., 1971, 180.

†Or conversely.

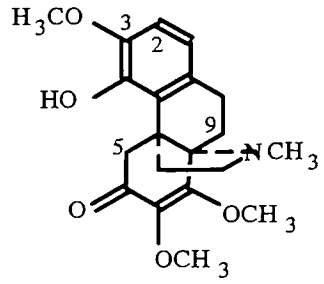


HERNANDIFOLINE

Stephania hernandifolia
$C_{29}H_{33}NO_9$: 539.2155
mp: 128-129°
$[\alpha]_D$–25° (alc.)
{di Ac 171°}
IR: 1700

Mass: 363, 218, 217(100), 216, 215, 202, 186
PMR: 1.85(1H, d, J=10.5, H-9), 1.98(1H, q, J=15; 2.2, H-5_a), 2.23(1H, q, J=10.5; 5.8, H-9), 3.08(1H, H-5_e), 3.31, 3.32, 3.51(3H, s, 3-OCH_3, 7-OCH_3, 8-OCH_3), 3.74(1H, d, J=4.4, H-7), 4.85(1H, d, J=5.8, H-10), 5.32(1H, m, H-6), 6.39, 6.64(1H, d, J=8, H-2, H-1)

1. Fesenko D.A., Fadeeva I.I., Il'inskaya T.N., Perel'son M.E., Tolkachev O.N., Khim. Prir. Soedin., 1971, 158.

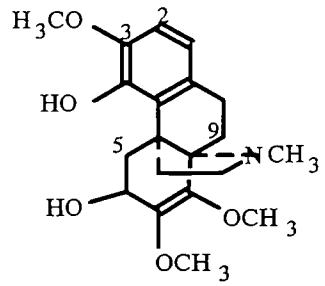


HERNANDOLINE

Stephania hernandifolia
$C_{20}H_{25}NO_5$: 359.1733
mp: amorph.
{p-chl. 226°, m-i. 188°, O-Ac 114°}
UV: 267, 288(4.07, 3.78)
IR: 2870, 1670, 1600, 1460

PMR: 2.50(3H, s, NCH_3), 2.60, 3.47(1H, d, J=16), 3.62, 3.80(3H, s, 2×OCH_3), 4.04(3H, s, 3-OCH_3), 6.50, 6.67(1H, d, J=8, H-1, H-2)

1. Fadeeva I.I., Perel'son M.E., Il'inskaya T.N., Kuzovkov A.D., Farmatsiya, 1970, No. 2, 28.

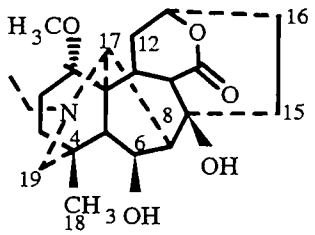


HERNANDOLINOLE

Stephania hernandifolia
$C_{20}H_{27}NO_5$: 361. 1889
mp: 114-115° (eth.); 144.5° (meth.)
$[\alpha]_D$–98° (alc.)
{h-chl. 201° (alc.), m-i. 180°, des-base 115°}
UV: 216, 285(3.94, 3.48)

IR: 3520, 3300, 1630, 1590
PMR: 2.46(3H, s, NCH_3), 3.38, 3.47, 3.65(3H, s, 3×OCH_3)

1. Fadeeva I.I., Il'inskaya T.N., Perel'son M.E., Kuzovkov A.D., Khim. Prir. Soedin., 1970, 492.



HETERATISINE (ZERAVSCHANINE)

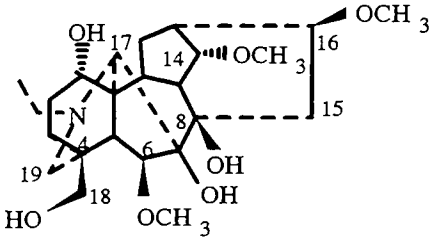
Aconitum zeravschanicum
$C_{22}H_{33}NO_5$: 391.2359
mp: 258° (dec.)
$[\alpha]_D$+26° (chlf.)
Sol-y.: sol.chlf., meth., eth.

IR: 3460, 3401, 1738 [1]
Mass: 391(M^+, 6), 376(9), 373(9), 374(10), 360(100), 344(10), 342(22) [2]
PMR: 0.97(3H, s, 18-CH_3), 1.02(3H, t, J=7.5, NCH_2CH_3), 3.25(3H, s, OCH_3), 3.49(1H, d, J=2, H-17), 4.03(1H, H-9), 4.50(1H, m, H-6α), 4.74(1H, m, H-13) [1]
^{13}C NMR: [3, 4]

C-1	83.5	C-8	75.4	C-15	29.1*
2	26.9	9	57.8	16	29.2*
3	36.8	10	42.8	17	62.2
4	34.7	11	49.3	18	26.2
5	50.9	12	33.1	19	58.3
6	72.9	13	75.8	NCH_2	49.0
7	49.3	14	176.0	CH_3	13.5
				1′	55.2

Pharm.: LD_{50} 192.5 mg/kg (i/v., mice). Brief hypotensive and ganglioblocking action, antiarrhythmic effect [5].

1. Aneja R., Locke D.M., Pelletier S.W., Tetrahedron, 1973, **29**, 3297.
2. Pelletier S.W., Aneja R., Tetrahedron Lett., 1967, 557.
3. Pelletier S.W., Mody N.V., Jones A.J., Benn M.H., Tetrahedron Lett., 1976, 3025.
4. Desai H.K., Pelletier S.W., J. Nat. Prod., 1993, **56**, 2193; Chem. Abstr., 1994, 120:164597x.
5. Dzhakhangirov F.N., Sadritdinov F., DAN UzSSR, 1977, No. 3, 50.



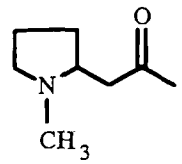
GIGACTONINE

Aconitum orientale, Delphinium speciosum
$C_{24}H_{39}NO_7$: 453.2726
mp: 168-169°
$[\alpha]_D$+49° (alc.)

IR: 3490-3370, 1470, 1460, 1400, 1380, 1302, 1230, 1193, 1182, 1160, 1120, 1100, 1090, 1075, 1024, 1005, 980, 950, 930, 900, 880, 865, 800, 760, 746 [1, 2]
Mass: 453(M^+), 438(100), 436, 422, 420, 397 [1, 2]
PMR: 1.08(3H, t, J=7, NCH_2CH_3), 2.92(2H, q, J=7, NCH_2CH_3), 3.33, 3.40(3H, 6H, s, 3×OCH_3), 3.98(1H, s, H-6α) [2, 3]
^{13}C NMR: [2]

C-1	72.7	C-9	43.4	C-17	66.1
2	29.4	10	44.0	18	66.8
3	30.5	11	49.4	19	57.3
4	38.2	12	26.7	6′	57.7
5	44.7	13	37.8	14′	57.7
6	90.6	14	84.6	16′	56.4
7	87.8	15	33.5	NCH_2	50.4
8	78.5	16	83.0	CH_3	13.6

1. Beshitaishvili L.V., Sultankhodzhaev M.N., Unpub.
2. Sakai S., Shinma N., Hasegawa S., Okamoto T., J. Pharm. Soc. Jpn., 1978, **98**, 1376.
3. Sakai S., Shinma N., Okamoto T., Heterocycles, 1977, **8**, 207.



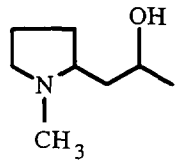
HYGRINE

Cochlearia arctica, Convolvulus hamadae
$C_8H_{15}NO$: 141.1154
bp: 92-95°

$D\ ^{17}_{4}$ 0.9392; n_D 1.4565

$[\alpha]_D$–4°
{picr. 153°, chl-aur. 158°}

1. Lazur'evskii G.V., Trudy UzGU, 1939, **15**, 43.

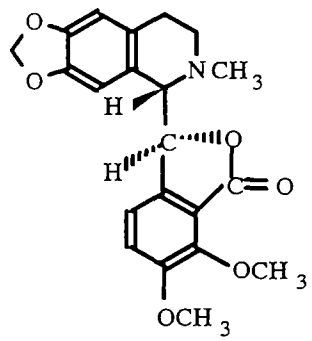


HYGROLINE

Cochlearia arctica
$C_8H_{17}NO$: 143.1310
mp: 33-34°

$[\alpha]\ ^{20}_{D}$–63° (water) [1, 2]

1. Platonova T.F., Kuzovkov A.D., Med. Prom. SSSR, 1963, **10**, 19.
2. Spath E., Kittel F., Chem. Ber., 1943, **76**, 942.

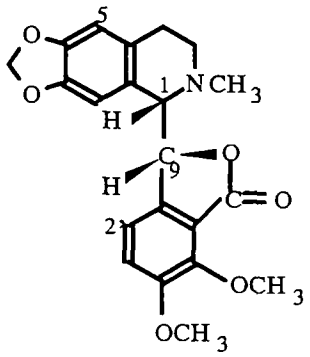


(+)-α-HYDRASTINE

Fumaria capreolata, F.parviflora, F.schleicheri, F.vaillantii
$C_{21}H_{21}NO_6$: 383.1369
mp: 158-159° (meth.) [1]
$[\alpha]_D$+128° (chlf.) [1]
UV: 296 [1]
IR: 1760, 1610, 1505, 1035, 940 [1]

PMR: 2.56(3H, s, NCH_3), 3.86, 3.99(3H, s, 2×OCH_3), 3.99, 5.54(1H, d, J=3.5), 5.81(2H, q), 6.38, 6.66(1H, s, p-H–Ar), 7.04, 7.30(1H, d, J=8, o-H–Ar) [2]
Abs. conf.: 1S, 9S [3]

1. Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 194.
2. Seitanidi K.L., Yagudaev M.R., Israilov I.A., Yunusov M.S., Khim. Prir. Soedin., 1978, 465.
3. Moiseeva G.P., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 103.



(+)-β-HYDRASTINE

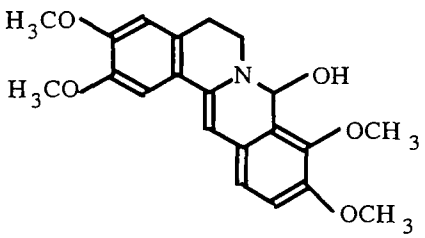
Corydalis caucasica, C.pseudoadunca, C.stricta
$C_{21}H_{21}NO_6$: 383.1369
mp: 131-132° (meth.) [1]
$[\alpha]_D$+63° [1]
{m-i. 206° (meth.) }
UV: 298 [22]
IR: 1760 [2]
Mass: 190 [2]

PMR: 2.57(3H, s, NCH_3), 3.92, 4.08(3H, s, 2×OCH_3), 3.99, 5.49(1H, d, J=4), 5.92(2H, s, CH_2O_2), 6.39, 6.58(1H, s, p-H-Ar), 6.52, 7.08(1H, d, J=8, o-H-Ar) [3]
^{13}C NMR: [4]

C-1	66.0	C-8	107.3	C-5′	147.5
3	49.0	8a	130.0	6′	119.4
4	26.7	9	82.7	10	167.0
4a	124.5	1′	140.4	NCH_3	44.7
5	108.1	2′	117.3	6,7-OCH_2O	100.5
6	146.3	3′	118.5	4′-OCH_3	56.7
7	145.4	4′	152.6	5′-OCH_3	62.0

Abs. conf.: 1S, 9R [5]
Pharm.: LD_{50} 0.97, 0.102 mg/kg (s/c, i/v, mice); 1.45 (s/c, rats). Active antinarcotic agent. Its activity far exceed those of the known drugs Bemetrid, Korozal, Érvinin, and d-Bicuculline. The {h-chl.}, under the name Izokorin, is recommended for clinical trials as an antinarcotic agent in cases of poisoning by narcotics and hypnotics [6]. Is an antagonist of GABA receptors and can be used as an analyzer in experimental biological investigations. Its pharmacological activity is 5 to 10 times greater than that of the currently used drug d-bicuculline [7].

1. Yunusov M.S., Akramov S.T., Yunusov S.Yu., DAN SSSR, 1965, **162**, 607.
2. Israilov I.A., Unpub.
3. Seitanidi K.L., Yagudaev M.R., Israilov I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 465.
4. Hughes D.W., Holland H.L., McLean D.B., Can. J. Chem., 1976, **54**, 2252.
5. Moiseeva G.P., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 103.
6. Sadritdinov, p. 207.
7. Valeev A.E., Chernavskaya N.I.. Dzhakhangirov F.N., Israilov I.A., Yunusov M.S., Neirofiziologiya, 1988, 820.

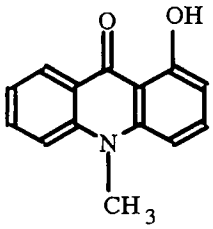


8-HYDROXYDIHYDROPALMATINE

Berberis heteropoda
$C_{21}H_{23}NO_5$: 369.1576
mp: 129-130°
Sol-y.: r-sol.meth.; sp. sol. chlf., bz., eth.

UV: 358, 434 (3.97, 4.17)
IR: 3350
Mass: 369($M^{+\cdot}$), 352, 351, 336, 322
PMR: 2.75(2H, m), 3.35(2H, m), 3.76(6H, s, 2×OCH_3), 3.85(3H, s, OCH_3), 3.87(3H, s, OCH_3), 5.61(1H, s), 6.05, 6.60(1H, s), 6.75(1H, d, J=8.5), 6.88(1H, d, J=8.5), 7.11(1H, s)

1. Yusupov M.M., Karimov A., Israilov I.A., Shakirov R., Dep. VINITI 1640–V92; RZh. Khim., 1992, 17E113.

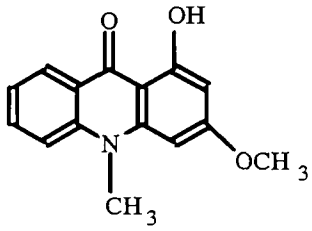


1-HYDROXY-N-METHYLACRIDONE

Ruta graveolens
$C_{14}H_{11}NO_2$: 225.0790
mp: 192-194° (ac.) [1]

Mass: 225(M^+, 100), 210(3), 197(7.5), 196(7), 182(16), 168(3.5), 167(3), 154(5), 127(4), 112.5(2), 98.5, 77(6) [2]
PMR: 3.80(3H, s, NCH_3), 14.50(1H, s, OH) [3]

1. Rozsa Z., Szendrei K., Novak I., Reisch J., Minker E., Pharmazie, 1975, **30**, 753.
2. Rozsa Z., Szendrei K., Kovacs Z., Novak I., Minker E., Reisch J., Phytochem., 1978, **17**, 169.
3. Reisch J., Szendrei K., Novak I., Minker E., Rozsa Z., Experientia, 1971, **27**, 1005.



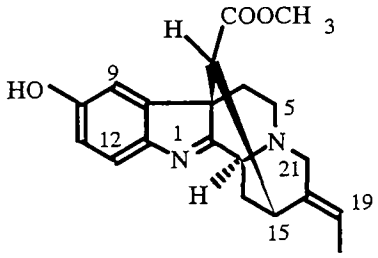
1-HYDROXY-3-METHOXY-N-METHYLACRIDONE

Boenninghausenia albiflora, Ruta graveolens
$C_{15}N_{13}NO_3$: 255.0895
mp: 174-175° (bz.-e-a.) [1]

UV: 223, 248, 263, 271, 295, 324, 395(4.11, 4.40, 4.55, 4.61, 4.00, 3.77, 3.72) [1]
IR: 2650 [1]
Mass: 255(M^+, 100), 254(20), 227(19), 226(54), 225(30), 212(19), 200(8), 199(11), 184(13), 183(9), 182(12), 169(8), 168(6), 154(9), 140(6), 128(6), 77(11) [2]
PMR: 3.60(3H, s, NCH_3), 3.80(3H, s, OCH_3), 6.10(2H, s, H-2, H-4), 7.10-7.80(3H, m, H-Ar), 8.29(1H, d, H-8), 14.60(1H. s, OH) [1]
^{13}C NMR: [3]

C-1	164.6	C-5a	141.9	C-8a	119.9
2	93.3	5	115.7	9	179.6
3	165.7	6	134.2	9a	104.3
4	89.7	7	121.7	3-OCH_3	55.5
4a	144.4	8	125.4	NCH_3	34.0

1. Fish F., Waterman P.G., Phytochem., 1971, **10**, 3322.
2. Bowie J.H., Cooks R.G., Prager R.H., Thredgold H.M., Austral. J. Chem., 1967, **20**, 1179.
3. Bergenthal D., Mester I., Rozsa Z., Reisch J., Phytochem., 1979, **18**, 161.

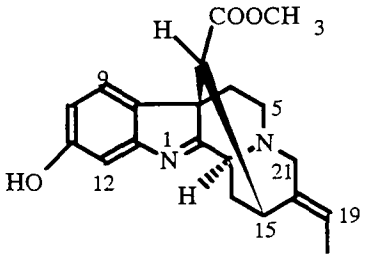


10-HYDROXYSTRICTAMINE

Vinca erecta
$C_{20}H_{22}N_2O_3$: 338.1631
mp: amorph. [1, 2]
UV: 226, 280(4.11, 3.65) [1]
IR: 3300-3100, 1730, 840, 790, 760 [1]

Mass: 338(M^+), 337, 323, 307, 279, 196 [1]
PMR: 1.50(d, J=7, 18-CH_3), 3.55(s, $COOCH_3$), 5.50(q, J=7, H-19), 6.75(q, J=8; 2, H-11), 6.96(d, J=2, H-9), 7.41(d, J=8, H-12) [1]

1. Khalmirzaev M.M., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 426.
2. Yagudaev M.R., Khalmirzaev M.M., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 483.



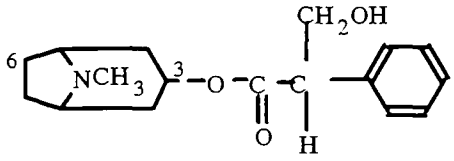
11-HYDROXYSTRICTAMINE

Vinca erecta
$C_{20}H_{22}N_2O_3$: 338.1631
mp: 228-229° (ac.) [1]
[α]+71° (meth.) [1]
Sol-y.: r-sol. alc., chlf., meth., ac., alk.; i.s. eth., bz. [1]

UV: 233, 285(4.25, 3.64) [1]
IR: 3465, 1742, 860, 840, 790 [1]
Mass: 338(M^+, 100), 337(6), 323(3), 307(9), 279(40), 196(12) [1]
PMR: 1.47(d, J=6, 18-CH_3), 3.63($COOH_3$), 5.45(q, J=7, H-19), 6.49-7.15(3H, H-Ar) [1]
^{13}C NMR: [2]

C-2	191.7	C-10	113.0	C-19	120.2
3	55.6	11	157.5	20	137.1
5	51.5	12	168.4	21	53.5
6	35.8	13	156.0	18-CH_3	12.8
7	55.3	14	33.3	OCH_3	51.5
8	137.1	15	32.2	17-C=O	171.5
9	123.8	16	54.6		

1. Il'yasova Kh.T., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 717.
2. Yagudaev M.R., Khalmirzaev M.M., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 483.

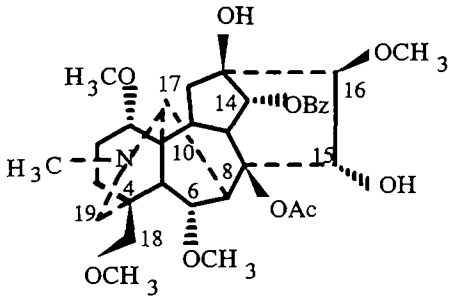


HYOSCYAMINE

Anisodus luridus, Datura innoxia, D.stramonium, Hyoscyamus albus, H.niger, H.pusillus, Physochlaina alaica, Ph. orientalis, Scopolia carniolica, S.stramonifolia, S.tangutica

$C_{17}H_{23}NO_3$: 289.1678
mp: 109.5° (alc.)
$[\alpha]_D$–21° (alc.-water)
{picr. 165°, h-b. 151°, oxalate 176°, chl-aur. 168°, chl-plat. 206°} [1, 2]
UV: 252, 258, 264(2.24, 2.30, 2.20)
IR: 3600, 3020, 2940, 1727, 1717, 1606, 1473, 1116, 1065, 930, 853, 812
Mass: 289(M^+, 23), 140(11), 124(100), 96(14), 95(15), 94(24), 83(30), 82(31), 81(7)
PMR: 1.18-2.12(8H, m, H-2, H-4, H-6, H-7), 2.20(3H, s, NCH_3), 3.70-3.95(2H, m, CH_2), 4.05-4.40(2H, m, CH, OH), 5.04(1H, m, H-3), 7.28(5H, m, H–Ar) [2]
HPLC: [3]
Pharm.: m-cholinolytic action [4].

1. Willstatter R., Chem. Ber., 1888, **31**, 1534.
2. Mirzamatov R.T., Unpub.
3. Bashir Khan M., Harborne J.B., Phytochem., 1991, **30**, 3559.
4. Nyman E., Acta Physiol. Scand., 1942, Suppl. 10, **3**.



HYPACONITINE

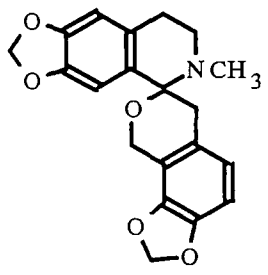
Aconitum firmum, A.tauricum
$C_{33}H_{45}NO_{10}$: 615.3043
mp: 189-190° (meth.-chlf.)
$[\alpha]_D$+21° (chlf.)
{h-b. 178°}
Sol-y.: sol. chlf.
UV: 231(4.18) [1]

IR: 3512, 3405, 1730, 1608, 1590, 1455, 1387, 1323, 1285, 1205, 1120, 1100, 1067, 1035, 994, 960, 900, 855, 843, 720 [2]
Mass: 615(M^+, 0.82), 584(17.5), 555(5), 540(12.5), 524(100), 508(2.5) [2]
PMR: 1.30(3H, s, Ac), 2.26(3H, s, NCH_3), 3.07, 3.20, 3.65(3H, 6H, 3H, s, 4×OCH_3), 4.79(1H, d, J=5, H-14β), 7.29-7.90(H–Ar) [2, 3]
^{13}C NMR: [4]

C-1	85.0	C-12	36.3	C-18′	59.0
2	26.4	13	74.1	NCH_3	42.6
3	34.9	14	78.8	C=O	172.3
4	39.3	15	78.8	CH_3	21.4
5	48.2	16	90.1	Ar-C=O	166.1
6	83.1	17	62.1	1	129.9
7	44.5	18	80.1	2	129.6
8	91.9	19	56.0	3	128.6
9	43.8	16′	60.9	4	133.2
10	41.1	1′	56.5	5	128.6
11	49.9	6′	57.9	6	129.6

HPLC: [5]

1. Chen Y., Chu Y.-L., and Chu Y.-L., Acta Pharmaceutica Sinica, 1965, **12**, 435.
2. Tel'nov V.A., Vaisov Z.M., Unpub.
3. Birnbaum K.B., Wiesner K., Jay E.W.K., Jay L., Tetrahedron Lett., 1971, 867.
4. Katz A., Staehelin E., Pharm. Acta Helv., 1979, **54**, 253.
5. Hikino H., Konno C., Watanabe H., Ishikawa O., J. Chromatogr., 1981, **211**, 123.

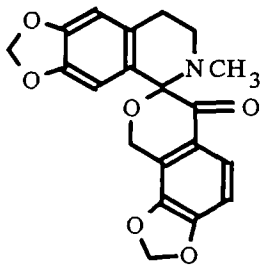


HYPECORINE

Hypecoum erectum, H.lactiflorum
$C_{20}H_{19}NO_5$: 353.1263
mp: 154-156° (alc.)
$[\alpha]_D$ 0°
UV: 236, 290

PMR(CCl_4): 2.19(3H, s, NCH_3), 2.35-3.35(6H, m), 4.61, 4.65(1H, d, J=15), 5.79, 5.86(2H, s, 2×CH_2O_2), 6.38, 6.52(1H, d, J=8, o-H–Ar), 6.40, 6.74(1H, s, n-H–Ar)

1. Yakhontova L.D., Komarova M.N., Perel'son M.E., Blinova K.F., Tolkachev O.N., Khim. Prir. Soedin., 1972, 624.

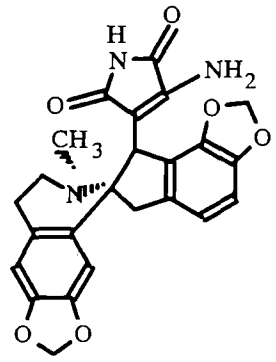


HYPECORININE

Hypecoum erectum, H.lactiflorum
$C_{20}H_{17}NO_6$: 367.1056
mp: 197-198° (alc.)
$[\alpha]_D$ 0°
UV: 240, 292, 322
IR: 1690

Mass: 367(M^+), 190, 177
PMR(CCl_4): 2.21(3H, s, NCH_3), 2.30-3.40(4H, m), 4.63, 5.04(1H, d, J=15.5), 5.81, 6.01(2H, s, 2×CH_2O_2), 6.41, 6.45(1H, s, p-H–Ar), 6.76, 7.61(1H, d, J=8.2, o-H–Ar)

1. Yakhontova L.D., Komarova M.N., Perel'son M.E., Blinova K.F., Tolkachev O.N., Khim. Prir. Soedin., 1972, 624.

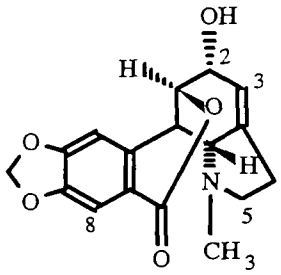


HYPERECTINE

Hypecoum erectum
$C_{24}H_{21}N_3O_6$: 447.1430
mp: 237-238° (dec., meth.-chlf.)
{N-Me.259° (dec.)}
UV: 230 sh, 292, 363(4.29, 3.81, 3.35)
IR($CHCl_3$): 3500, 3450, 3395, 1775, 1730, 1675
Mass: 447(M^+), 322, 190

PMR: 2.18(3H, s, NCH_3), 3.45(2H, s), 3.45(1H, narrow s), 3.96(2H, narrow s), 4.64(1H, s), 5.76-5.89(4H, m, 2×CH_2O_2), 6.45, 6.77(2H, s, 4×H–Ar)
X-ray spectral analysis

1. Perel'son M.E., Aleksandrov G.G., Yakhontova L.D., Tolkachev O.N., Fesenko D.A., Komarova M.N., Esipov S.E., Khim. Prir. Soedin., 1984, 628.



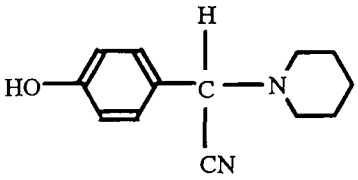
HIPPEASTRINE (TRISPHERINE)

Clivia miniata, Crinum amabile, C.giganteum, Galanthus nivalis, Hippeastrum equestre, Hymenocallis littoralis, Pancratium trianthum, Ungernia ferganica, U.sewerzowii, U.spiralis, U.tadshicorum, U.trisphaera, U.victoris, U.vvedenskyi

$C_{17}H_{17}NO_5$: 315.1107
mp: 209-210° (meth.) [1]
$[\alpha]_D$+122° (alc.) [1]
{h-b. 267°, m-i. 218°, p-chl. 258°, nitr. 271°, h-chl. 281°, picr. 243°} [1]
Sol-y.: sol.meth., alc., chlf; sp. sol. ac., eth.; i.s. water [1]
UV: 227, 267, 308 [2]
IR: 3600, 3015, 2960, 2920, 2860, 2790, 1715, 1618, 1508, 1484, 1453, 1400, 1387, 1354, 1338, 1318, 1293, 1252, 1190, 1152, 1121, 1058, 1041, 998, 983, 955, 943, 905, 888, 864, 841, 824 [2]
Mass: 315(M^+, 0.7), 298(1), 297(2.3), 125(100), 124(13), 96(19), [3]

PMR: 2.04(3H, s, NCH_3), 2.50(H-6a), 2.94(H-6), 4.38(H-2), 4.58(H-1), 5.65(H-3), 6.06(CH_2O_2), 6.94(H-11), 7.43(H-8) [4]
Pharm.: LD_{50} 800, 670, 195 mg/kg (s/c, i/p, i/v, mice). Suppresses muscular motor activity, exerts an inhibiting influence on the higher nervous activity of rats, prolongs the action of hypnotics [5, 6]. {Alkiodides} exhibit a hypotensive effect [7].

1. Allayarov Kh., Abduazimov Kh.A., Yunusov S.Yu., DAN UzSSR, 1961, No. 10, 25.
2. Holubek, No. 339.
3. Razakov R., Abduazimov Kh.A., Vul'fson N.S., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 23.
4. Yagudaev M.R., Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 94.
5. Zakirov U.B., Abdumalikova N.V., Sadritdinov F.S., Kamilov I.K., in: The Pharmcology and Pharmacotherapy of Alkaloids and Glycosides [in Russian], Nauka, Tashkent, 1965, p. 243.
6. Zakirov U.B., Abdumalikova N.V., Kamilov I.K., in: The Pharmcology and Pharmacotherapy of Alkaloids and Glycosides [in Russian], Fan, Tashkent, 1966, p. 40.
7. Zakirov U.B., Aliev Kh.U., Abdumalikova N.V., Kamilov I.K., in: The Pharmacology of Alkaloids and Glycosides [in Russian], Fan, Tashkent, 1967, p. 120.

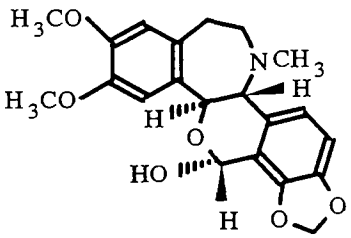


GIRGENSONINE

Girgensohnia oppositiflora
$C_{13}H_{16}N_2O$: 216.1263
mp: 147-148° (meth.)

$[\alpha]_D$ 0°
{h-chl. 148°, picrolonate 194° (dec.)}
Sol-y.: r-sol. alc., eth., chlf; sol. bz; sp. sol. petr. eth., water

1. Yurashevskii N.K., Stepanova N.L., Zh. Org. Khim., 1946, **16**, 141.

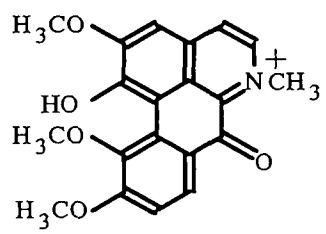


GLAUCAMINE

Papaver zangezuricum
$C_{21}H_{23}NO_6$: 385.1525
mp:218-219° (meth.) [1]
$[\alpha]_D$+287° (chlf.) [1]
UV: 232, 279

Mass: 385(M^+), 206(100), 192, 190, 163 [2]
PMR: 2.25(3H, s, NCH_3), 3.75(6H, s, 2×OCH_3), 3.91, 5.69(1H, d, J=9), 5.88, 5.95(1H, d, J=1, CH_2O_2), 5.90(1H, s), 6.20, 6.55(1H, s, p-H–Ar), 6.85(2H, s, o-H–Ar)
ORD: [3]

1. Israilov I.A., Unpub.
2. Dolejs L., Hanus V., Collect., 1967, **23**, 2997.
3. Santavy F., Hrubek J., Blaha K., Collect., 1967, **23**, 4452.

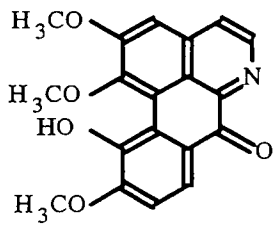


GLAUNIDINE

Aconitum leucostomum, Glaucium fimbrilligerum
$C_{20}H_{18}NO_5$: 352.1185
mp: 230-232° (dec. chlf.)
UV: 235, 315, 410, 620(4.53, 4.46, 3.72, 3.59)
UV(H^+): 350, 290 sh, 380, 450(4.54, 4.36, 3.87, 3.55)

IR: 3500, 1625, 1585
PMR: 3.65, 3.94, 4.03(3H, s, 3×OCH_3), 4.49(3H, s, NCH_3), 6.52(1H, s, H–Ar), 7.02, 8.09(1H, d, J=9, o-H–Ar), 7.12, 7.45(1H, d, J=6, o-H–Ar)

1. Israilov I.A., Karimova S.U., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 415.

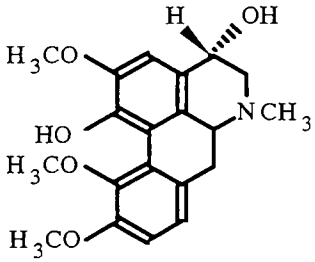


GLAUNINE

Glaucium fimbrilligerum
$C_{19}H_{15}NO_5$: 337.0950
mp: 292-294° (dec.)

UV: 250, 272, 310 sh, 348, 406, 600(4.40, 4.22, 3.97, 3.87, 2.75, 2.68)
UV(H^+): 248, 263 sh, 285, 320 sh, 375, 470 sh (4.46, 4.41, 4.32, 3.88, 2.94, 2.60
IR: 3410, 1660, 1590
PMR: 3.78, 4.03, 4.04(3H, s, 3×OCH_3), 7.17(1H, s, H–Ar), 7.18, 8.50(1H, d, J=8, o-H–Ar), 7.72, 8.77(1H, d, J=5, o-H–Ar)

1. Israilov I.A., Karimova S.U., Yunusorv M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 415.

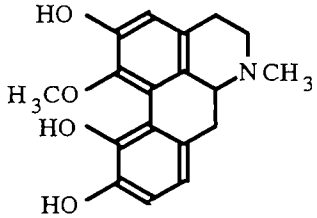


GLAUFIRIDINE

Glaucium corniculatum, G.fimbrilligerum
$C_{20}H_{23}NO_5$: 357.1576
mp: amorph.
$[\alpha]_D$+182° (meth.)
UV: 223, 269, 305(4.51, 4.03, 3.69)

IR: 3500-3200, 1610, 1580
Mass: 357(M^-), 356, 342, 340, 339, 326, 314, 178.5($^{--}$)
PMR: 2.20-3.50(m, CH_2), 2.48(3H, s, NCH_3), 3.66(3H, s, OCH_3), 3.85(3H, s, OCH_3), 3.88(3H, s, OCH_3), 4.46(1H, t, $W_{1/2}$=5), 6.79, 6.99(1H, d, J=8, o-H–Ar), 6.92(1H, s, H–Ar)

1. Israilov I.A.. Karimova S.U., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 104.

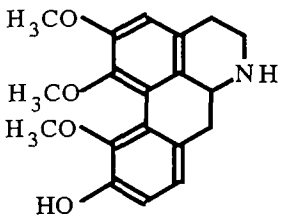


GLAUFINE

Glaucium fimbrilligerum, G. squamigerum
$C_{18}H_{19}NO_4$: 313.1314
mp: amorph.
$[\alpha]_D$+183° (meth.)

UV: 217, 274, 308(4.60, 4.21, 3.84)
PMR($CDCl_3$+CD_3OD): 2.49(3H, s, NCH_3), 3.63(3H, s, OCH_3), 6.70-7.20(3H, m, H–Ar)

1. Karimova S.U., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 814.

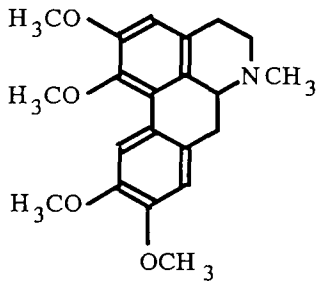


GLAUFININE

Glaucium fimbrilligerum
$C_{19}H_{21}NO_4$: 327.1471
mp: amorph.
$[\alpha]_D$+165° (meth.)

UV: 222, 270, 309(4.35, 3.82, 3.43)
Mass: 327(M^+), 326, 312, 310, 298, 296, 163.5($^{++}$)
PMR: 2.30-3.70(m, CH_2), 3.62(3H, s, OCH_3), 3.80(6H, s, 2×OCH_3), 6.63(1H, s, H–Ar), 6.75(2H, s, H–Ar)

1. Israilov I.A., Karimova S.U., Yunusov M.S., Khim. Prir. Soedin., 1986, 250.



GLAUCINE

Aconitum tokii, Corydalis rosea-purpurea, Berberis heteropoda, B.integerrima, Delphinium ternatum, Eschscholtzia californica, Glaucium corniculatum, G.elegans, G.flavum, G.grandiflorum, G.serpieri, Liriodendron tulipiferum, Thalictrum baikalense, Th. collinum, Th.filamentosum, Th.foetidum, Th.longipedunculatum, Th.minus, Th.sachalinense

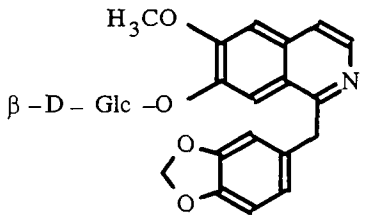
$C_{21}H_{25}NO_4$: 355.1783
mp: 104-109° (eth.) [1]; 116-117° [2]; oil [3]
$[\alpha]_D$+84° (meth.) [1]; +113° (alc.) [2]
{m-i. 219°, h-b. 237°} [1]
UV: 282, 304(4.34, 4.24) [3]
IR: 2800, 1600, 1583, 1440, 1318, 1105, 975, 950 [4]
Mass: 355(M^+), 354, 340, 324, 312, 297, 281 [3]
PMR: 2.49(3H, s, NCH_3), 3.59(3H, s, 1-OCH_3), 3.84(9H, s, 3×OCH_3), 6.54, 6.74, 8.03(1H, s, H-3, H-8, H-11) [3]
^{13}C NMR: [5]

C-1	143.9	C-5	53.1	C-11	111.4
1a	126.5	6a	62.3	11a	124.2
1b	128.6	7	34.4	NCH_3	43.4
2	151.5	7a	129.1	1-OCH_3	59.8
3	110.1	8	110.6	OCH_3	55.5
3a	127.0	9	147.7	OCH_3	55.5
4	29.1	10	147.1	OCH_3	55.7

HPLC: [6]
GLC: [7]
Pharm.: LD_{50} 430, 420, 33 mg/kg (oral, s/c, i/v, mice) [8].
{m-i.}: LD_{50} 59, 4.8 mg/kg (s/c, i/v, mice); {e-i.}: LD_{50} 400, 10.3 mg/kg (s/c, i/v, mice) [9]. Glaucine and its {m-i} possess a hypotensive action. Glaucine prolongs the action of hypnotics [10] and possesses antitussive activity [11]. The {h-chl.} is used as an antitussive agent. Supplied in 0.05-g coated tablets [12].

1. Yunusov S.Yu., Progressov N.N., Zh. Org. Khim., 1952, **22**, 1047.
2. Yakhontova L.D., Trudy VILAR, 1969, **15**, 348.
3. Karimov A., Telezhenetskaya M.V., Lutfullin K.L., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 558.
4. Shamma M., Dudock B.S., J. Pharm. Sci., 1968, **57**, 262.
5. Guinaudeau H., Leboeuf M., Cave A., J. Natur. Prod., 1979, **42**, 325.

6. Fels J.-P., Lechat P., Rispe R., Cautreels W., J. Chromatogr., 1984, **308**; 273.
7. Kompantseva E.V., Tolkachev O.N., Botezat-Belyi Yu.K., Kudrin S.A., Klochkov S.V., Markova O.M., Tumbov V.G., Ladanova A.A., Molchalova N.L., Khim. Pharm. Zh., 1989, 1116.
8. Sadritdinov, p. 209.
9. Shakhabutdinova Kh.S., Kamilov I.K., Fakhrutdinov S.F., in: The Pharmacology of Alkaloids and Glycosides [in Russian], Fan, Tashkent, 1967, p. 142.
10. Fakhrutdinov S.F., Shamirzaeva Kh.S., in: The Pharmacology of Alkaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, p. 137.
11. Aronchik E.K., Ivanova-Neznamova A.Yu., Kalmykova V.I., Maksimova R.G., Aleshinskaya E.E., Trudy VILR, 1971, **14**, 251; Elova M.Ya. Semenova V.P., Maksimova R.G., Trudy VILR, 1971, **14**, 253.
12. Mashkovskii, Vol. 1, p. 205.

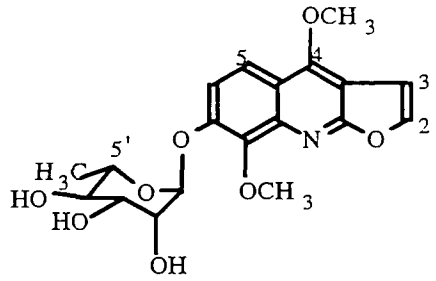


GLICOMARINE

Papaver arenarium
$C_{24}H_{25}NO_9$: 471.1529
mp: 205-206° (meth.)
$[\alpha]_D$–51° (chlf.-meth.)
UV: 239, 290, 313, 327(4.78, 4.01, 3.81, 3.85)

IR: 3515, 3450, 1630, 1605, 1580, 1520, 1100-1000, 940, 925
Mass: 471(M^+), 309, 308
PMR(Py-d_5): 3.64(3H, s, OCH_3), 4.22(2H, s, Ar–CH_2–Ar), 4.25-5.65(11H, m), 5.69(2H, s, CH_2O_2), 6.67(1H, d, J=8, o-H–Ar), 7.03-7.28(3H, m, H–Ar), 7.44, 8.56(1H, d, J=4.5, o-H–Ar), 8.21(1H, s, H–Ar)

1. Israilov I.A., Manushakyan M.A., Mnatsakanyan V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 852.



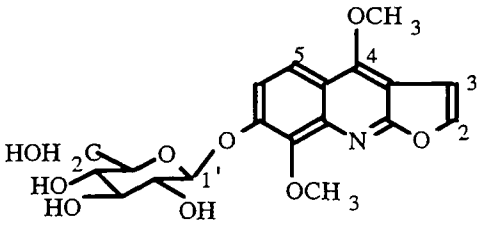
GLYCOPERINE

Haplophyllum ferganicum, H.latifolium, H.perforatum
$C_{19}H_{21}NO_8$: 391.1267
mp: 224-225° (meth.)
$[\alpha]_D$–66° (pyr.)
{tri Ac. 182°, tetrahydro 219°}
Sol-y.: sol. water; sp. sol. chlf., meth., alc., ac.

UV: 250, 322(4.85, 3.96) [1]
IR: 3428, 3165, 3145, 1622, 1583, 1512, 1487, 1450 [2]
Mass: 391(M^+, 3), 245(100), 227(49), 216(10) [1]
PMR(CF_3COOH): 1.10(3H, d, J=4.5, CH_3), 3.80, 4.35(3H, s, 2×OCH_3), 5.64(1H, narrow s, H-1'), 7.10, 7.41(1H, d, J=3, H-3, H-2), 7.39, 7.89(1H, d, J=10, H-6, H-5) [1]
^{13}C NMR (DMSO-d^6): [3]

C-2	144.0	C-6	116.2	C-1′	100.0
2a	163.8	7	143.2	2′	70.5
3	105.3	8	141.0	3′	70.7
3a	115.2	8a	148.7	4′	71.9
4	156.8	4-OCH_3	59.5	5′	70.0
4a	102.3	8-OCH_3	61.1	6′	18.0
5	117.8				

1. Akhmedzhanova V.I., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 680; 1976, 320.
2. Bessonova I.A., Unpub.
3. Rasulova Kh.A., Bessonova I.A., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1987, 876.

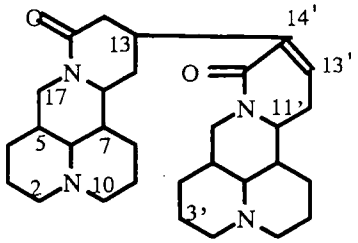


GLUCOHAPLOPINE

Haplophyllum perforatum
$C_{19}H_{21}NO_9$: 407.1216
mp: 217-218° (alc.)
$[\alpha]_D$–41° (pyr.)
{tetra Ac 137°}

Sol-y.: sp. sol. meth., alc., water; i.s. chlf., bz., e-a., eth.
UV: 250, 321, 334, 348 [1]
IR: 3470, 3340, 3220, 3175, 3150, 1630, 1590, 1515, 1495, 1470, 1400, 1375, 1280, 1240, 1098, 1070 [1, 2]
Mass{tetra Ac}: 575(M^+, 3), 331(38), 271(6), 246(23), 245(100), 230(9), 227(23), 216(9), 169(28), 127(14), 109(16) [1, 2]
PMR(CF_3COOH): 3.00-4.00(6H, m), 3.59, 4.26(3H, s, 2×OCH_3), 4.88(1H, d, J=7, H-1'), 7.07, 7.30(1H, d, J=2.5, H-3, H-2), 7.08, 8.05(1H, d, J=9.5, H-6, H-5) [3]

1. Abdullaeva Kh.A., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 873.
2. Bessonova I.A., Unpub.
3. Rasulova Kh.A., Author's Abstract of Candidate's Dissertation, Tashkent, 1995.



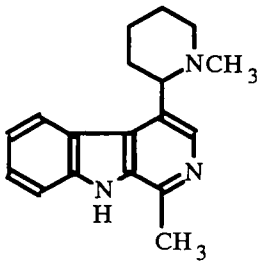
GOEBELINE (artefact)

Sophora pachycarpa
$C_{30}H_{44}N_2O_2$: 492.3464
mp: 231° (eth.)
$[\alpha]_D$–13° (meth.)
{p-chl. 310°, h-i. 360°, h-b. 362°, di h-chl. 348°}

UV: 262(3.30) [1]
IR: 2941, 2809, 1678, 1658, 1574, 1565, 1374, 1256, 1153, 1120, 1112, 1100 [1]
Mass: 492(M^+, 100), 449, 246.5($^{++}$), 224.5($^{++}$), 150(63), 137(30) [2]
PMR: 6.10(1H, t, J=5) [3]
^{13}C NMR: [4]

C-2	57.6	C-12	31.7	C-7′	41.9
3	20.6	13	18.2	8′	26.0
4	27.1	14	37.5	9′	20.3
5	34.8	15	168.9	10′	57.6
6	63.0	17	40.6	11′	52.7
7	43.8	2′	56.8	12′	27.3
8	26.0	3′	20.3	13′	130.8
9	20.6	4′	27.1	14′	135.6
10	56.8	5′	34.3	15′	165.1
11	50.8	6′	63.4	17′	41.3

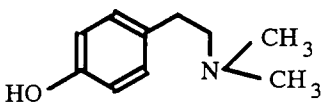
1. Pakanaev Ya.I., Sadykov A.S., Zh. Org. Khim., 1961, **31**, 2428.
2. Iskandarov S., Sadykov B., Rashkes Ya.V., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 347.
3. Sadykov, p. 136.
4. Sadykov A.S., Izv. AN SSSR, Ser. Khim., 1983, No. 11, 2432.



HOMOBREVICOLLINE

Carex brevicollis
$C_{18}H_{21}N_3$: 279.1736
mp: 262°
UV: 212, 225 sh, 262, 310, 375
UV(H^+): 220, 245, 285, 350
Mass: 279(M^+), 278, 264, 250, 236, 222, 209, 98(100)

1. Sharipov I.N., Terent'eva I.V., Lazur'evskii G.V., Izv. AN MSSR, 1979, No. 1, 86.



HORDENINE (EREMURSINE)

Eremurus fuscus, E.hilariae, E.luteus., E.olgae, E.regelii, E.sogdianus, E.tianschanicus, Pancratium trianthum, Ungernia ferganica, U.tadshicorum, U.trisphaera, U.victoris, U.vvedenskyi

$C_{10}H_{15}NO$: 165.1154
mp: 117-118° (ac.)
{h-chl. 179°, h-b. 175°, h-i. 152°, m-i. 230°, picr. 140°} [1]
UV: 278 [2]
IR: 3590, 3010, 2940, 2860, 2820, 2780, 2680, 1611, 1582, 1513, 1469, 1375, 1331, 1255, 1172, 1143, 1100, 1053, 1039, 1005, 930, 913, 868, 842, 826 [2]
Mass: 165(0.7), 107(2.7), 58(100) [3]
Pharm.: LD_{50} 131 mg/kg (i/v, mice) [4]. Broncholytic action [5]. Used for inhibiting intestinal peristalsis [6].

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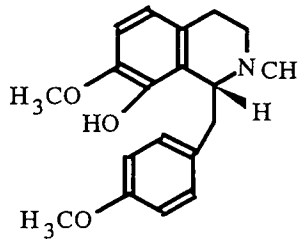
6. Sadritdinov, p. 10.

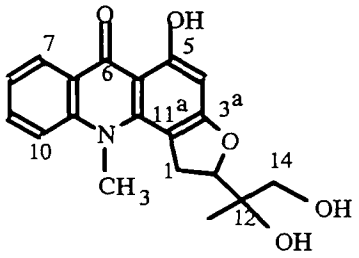


GORTSCHAKOINE

Corydalis gortschakovii
$C_{19}H_{23}NO_3$: 313.1678
mp: amorph.
$[\alpha]_D$–40° (meth.)

UV: 226, 282(4.31, 3.68)
IR: 3510, 1610
Mass: 313(M^+), 192(100), 177, 148, 121
PMR(CCl_4): 2.20-3.30(6H, m, 3×CH_2), 2.23(3H, s, NCH_3), 3.63(3H, s, OCH_3), 3.73(3H, s, OCH_3), 3.88(1H, q, H-1), 5.94(1H, narrow s, OH), 6.34, 6.50(1H, d, J=7.9, o-H–Ar), 6.56, 7.00(2H, d, J=8.1, o-H–Ar)

1. Irgashev T., Israilov I.A., Abdullaev N.D., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 127.



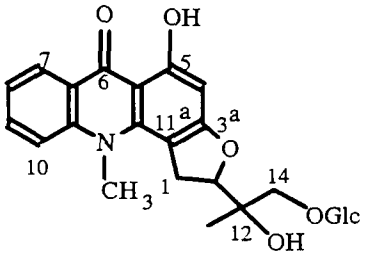
GRAVACRIDONEDIOL

Ruta graveolens
$C_{19}H_{19}NO_5$: 341.1263
mp: 224-227° (dec., ac.)
{Ac. 223° (bz.)} [1]
UV: 213, 227, 249, 264, 273, 300, 332, 390(4.16, 4.15, 4.40, 4.46, 4.55, 4.18, 3.86, 3.68) [1]

IR: 3600-3200, 1640, 1600, 1575, 1550, 1500 [1]
Mass: 341($M^{+\cdot}$), 266(100) [1]
PMR(DMSO-d_6): 1.00(3H, s, CH_3), 3.50(2H, narrow s, H-14), 3.60(2H, m, H-1), 3.90(3H, s, NCH_3), 4.70(1H, t, H-2), 6.10(1H, H-4), 7.00-7.60(3H, m, H–Ar), 8.10(1H, dd, H-7) [1]
^{13}C NMR: [2]

C-1	37.7	C-6	179.9	C-10a	142.1
2	86.3	6a	120.0	11a	143.1
3a	167.4	7	125.2	11b	101.4
4	91.5	8	121.4	12	72.7
5	164.9	9	134.1	13	20.6
5a	105.0	10	115.7	14	65.9
				NCH_3	31.4

1. Reisch J., Rozsa Z., Szendrei K., Novak I., Minker E., Phytochem., 1972, **11**, 2121.
2. Bergenthal D., Mester I., Rozsa Z., Reisch J., Phytochem., 1979, **18**, 161.



GRAVACRIDONEDIOL GLYCOSIDE

Boenninghausenia albiflora, Ruta graveolens
$C_{25}H_{29}NO_{10}$: 503.1791
mp: 185-187° (ac.-petr.eth.) [1]
UV: 227.5, 250, 265 sh, 272.5, 300, 332.5, 400 [2]

^{13}C NMR: [3]

C-1	37.9	C-8	121.6	C-14	63.7*
2	86.7	9	134.4	NCH_3	32.1
3a	167.1	10	115.9	1′	97.7
4	91.7	10a	142.3	2′	73.7
5	165.0	11a	143.3	3′	76.8
5a	105.3	11b	101.5	4′	70.3
6	180.1	12	80.1	5′	76.8
6a	120.1	13	16.7	6′	61.3*
7	125.4				

1. Rozsa Z., Kusovkina I.N., Reisch J., Novak I., Szendrei K., Minker E., Fitoterapia, 1976, **47**, 147.
2. Reisch J., Rozsa Z., Szendrei K., Novak I., Minker E., Phytochem., 1976, **15**, 240.
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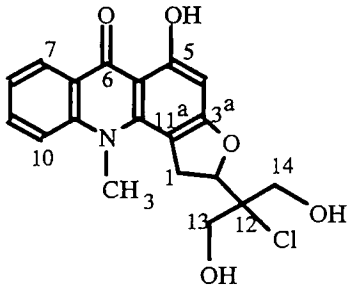
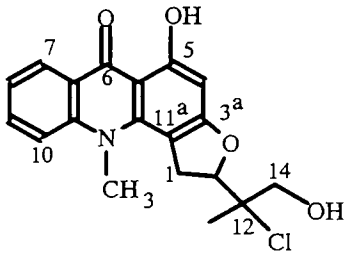


GRAVACRIDONOLCHLORINE

Ruta graveolens
$C_{19}H_{18}NO_5Cl$: 375.1873/377.1844
mp: 223-227°
UV: 213, 227, 249, 264 sh, 272, 300, 331, 291(4.25, 4.22, 4.47, 4.37, 4.63, 4.26, 3.93, 3.77)
IR: 3400, 1620, 1590, 1565, 1535, 1500

Mass: 375(M^+), 266(100)
PMR: 3.50(4H, narrow s, H-13, H-14), 3.60(2H, m, H-1), 3.90(3H, s, NCH_3), 4.80(1H, t, H-2), 6.08(1H, s, H-4), 7.00-7.60(3H, m, H–Ar), 8.15(1H, dd, H-7)

1. Reisch J., Szendrei K., Rozsa Z., Novak I., Minker E., Phytochem., 1972, **11**, 2359.

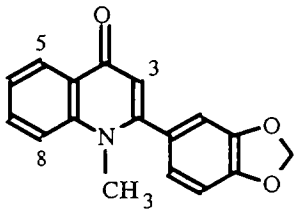


GRAVACRIDONECHLORINE

Ruta graveolens
$C_{19}H_{18}NO_4Cl$: 359.0924/361.0895
mp: 254-257° (ac.)
UV: 213, 227, 249, 264 sh, 273, 300, 332, 391(4.36, 4.33, 4.58, 4.63, 4.72, 4.38, 4.04, 3.86)

IR: 3600-3200, 1640, 1600, 1590, 1550, 1510
Mass: 359(M^+), 266(100)
PMR: 1.15(3H, s, CH_3), 3.50(2H, s, H-14), 3.60(2H, m, H-1), 3.90(3H, s, NCH_3), 4.80(1H, t, H-2), 6.10(1H, s, H-4), 7.00-7.60(3H, m, H–Ar), 8.15(1H. dd, H-7)

1. Reisch J., Szendrei K., Rozsa Z., Novak I., Minker E., Phytochem., 1972, **11**, 2359.



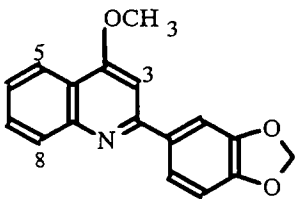
GRAVEOLINE (FOLIOSINE)

Haplophyllum dubium, H.foliosum, H.perforatum, Ruta graveolens
$C_{17}H_{13}NO_3$: 279.0895
mp: 188° (hydrated form, alc.-water) 204-205° (anhydrous form, alc.)

{h-chl. 254°, h-b. 250°, h-i. 226°, nitr. 171°, m-i. 211°, p-chl. 231°}
Sol-y.: sp. sol. meth., ac., alc; i.s. eth., chlf. [1]
UV: 214, 244, 275, 294 sh, 326, 338(4.30, 4.28, 3.77, 3.78, 4.03, 4.04) [2]
IR: 1623, 1602, 1574, 1492, 1250, 927, 885, 841, 819, 730 [3]
Mass: 279(M^+, 100), 278(8), 251(58), 220, 192, 165 [3]
PMR(CF_3COOH): 3.83(3H, s, NCH_3), 5.67(2H, s, CH_2O_2), 6.60-6.63(3H, m, H-Ar), 6.86(1H, s, H-3), 7.52(1H, m, H-8), 7.76(2H, m, H-7), H-6), 8.22(1H, d, J=9, H-5) [2]
Pharm.: LD_{50} 363.5, 410 mg/kg (i/p, oral, mice). Respiratory analeptic. Tones the cardiovascular system [4, 5].

1. Sidyakin G.P., Eskairov M., Yunusov S.Yu., Zh. Org. Khim., 1960, **30**, 338.
2. Razakova D.M., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 755.
3. Bessonova I.A., Unpub.
4. Fakhrutdinov S.F., in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 64.

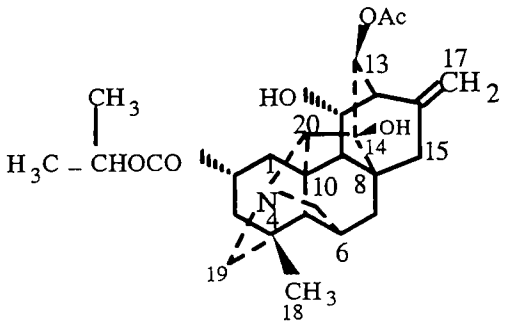
5. Sultanov M.B., in: The Pharmacolgy of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 3.



GRAVEOLININE

Rura graveolens
$C_{17}H_{13}NO_3$: 279.0895
mp: 116-117° (e-a.) [1, 2]
UV: 224 sh, 234, 274, 311, 323 sh (4.55, 4.61, 4.28, 4.17, 4.11) [2]

1. Kuzovkina I.N., Sendrei K., Rosa Zh., Rait I., Rast. Res., 1980, **16**, No. 1, 112.
2. Goodwin S., Smith A.F., Velasques A.A., Horning E.C., J. Am. Chem. Soc., 1959, **81**, 6209.

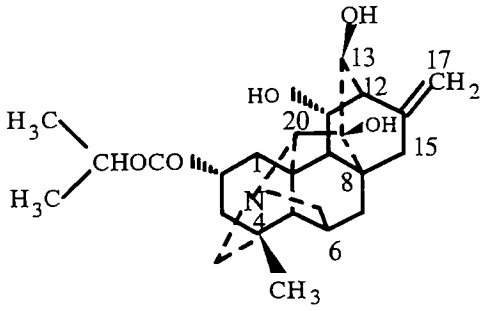


GUAN-FU BASE F

Aconitum coreanum
$C_{26}H_{35}NO_6$: 457.2464
mp: 181-182°
$[\alpha]_D$+58°
IR: 3555-3430, 1745, 1735, 1680
Mass: 457(M^+), 415, 414(100), 398, 370

PMR: 0.96(3H, s, 18-CH_3), 1.09, 1.13(3H, d, J=6.5, $-C(CH_3)_2$), 1.33(1H, dd, J=14; 2, H-7β), 1.49(1H, s, H-5), 1.56(1H, dd, J=15.5; 4, H-3β), 1.97(3H, s, Ac), 1.64-2.06(m, H_2-15, H-9, H-1β, H-7α, H-3α), 2.40(m, H-2'), 2.55(1H, d, J=4, H-12), 2.47, 2.83(1H, d, J=12, H-19β, H-19α), 2.88(1H, d, J=16, H-1α), 3.07(1H, narrow s, H-6), 3.32(1H, s, H-20), 4.19(1H, d, J=9, H-11), 4.68, 4.89(1H, narrow s, H_2-17), 4.99(1H, narrow s, H-13), 5.12(1H, narrow s, H-2β)

1. Bessonova I.A., Samusenko L.N., Yunusov M.S., Khim. Prir. Soedin., 1990, 561.



GUAN-FU BASE Z (2-ISOBUTYRYL-14-HYDROXYHETISINE)

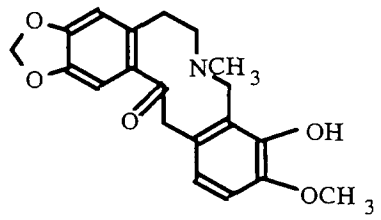
Aconitum coreanum
$C_{24}H_{33}NO_5$: 415.2359
mp: 229-230° (hx.-eth.)
Sol-y.: sol. chlf.
IR: 3400, 1745, 1658 [1]
Mass: 415(M^+, 82), 398(88), 387(89), 370(100), 328(70) [1]

PMR: 1.01(3H, s, 18-CH_3), 1.16(6H, d, J=6.8, 2×CH_3), 1.37(1H, dd, J=13.9; 2.2, H-7β), 1.52(1H, s, H-5), 1.59(1H, dd, J=15.4; 4.1, H-3β), 1.77-2.00(6H, narrow m H-1β, H-3α, H-7α, H-9, H-15), 2.47-2.52(3H, narrow m H-2', H-12, H-19β), 2.85(1H, d, J=15.7, H-1α), 2.95(1H, d, J=12.2, H-19α), 3.11(1H, narrow s, H-6), 3.53(1H, s, H-20), 4.04(1H, narrow s, H-13), 4.22(1H, d, J=8.7, H-11), 4.68, 4.86(1H, narrow s, H_2-17), 5.13(1H, m, H-2) [2]

^{13}C NMR: [1, 2]

C-1	31.4	C-9	53.5	C-17	108.2
2	69.6	10	46.3	18	29.7
3	36.7	11	76.0	19	63.0
4	37.6	12	52.7	20	69.1
5	59.9	13	80.0	1″	176.5
6	63.0	14	80.2	2″	34.4
7	32.0	15	31.1	3″	19.1
8	44.3	16	144.7		

1. Bessonova I.A., Yunusov M.S., Kondrat'ev V.G., Shreter A.I., Khim. Prir. Soedin., 1987, 690.
2. Reinecke M.G., Watson W.H., Chen D.C., Yan W.M., Heterocycles, 1986, **24**, 49.



HUNNEMANINE

Corydalis ledebouriana
$C_{20}H_{21}NO_5$: 355.1420
mp: 208-209° (alc.)
UV: 288
IR: 3500, 1660, 1505, 1035, 940

Mass: 355(M^+), 340, 338, 192, 163, 150
PMR: 1.82(3H, s, NCH_3), 2.48, 2.84(2H, m), 3.64(4H, narrow s), 3.80(3H, s, OCH_3), 5.87(2H, s, CH_2O_2), 6.56, 6.88(1H, s, p-H–Ar), 6.65(2H, s, o-H–Ar)

1. Israilov I.A., Unpub.