Chemistry of Natural Compounds, Vol. 32, No. 4, 1996

ALKALOIDS. PLANTS, STRUCTURES, PROPERTIES*

Chapter 2, continued

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*For the beginning of the review, see Chemistry of Natural Compounds, No. 1, 102; No. 2, 216; No. 3, 386 (1996).

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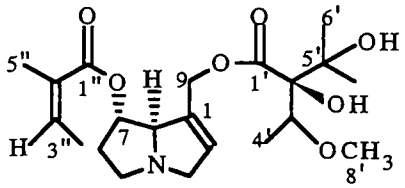


LASIOCARPINE

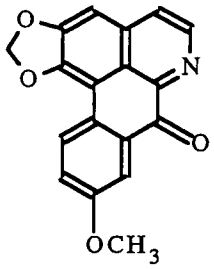
Heliotropium eichwaldi, H.europaeum, H.lasiocarpum, H.olgae, Lappula intermedia, Symphytum caucasicum, S.officinale
$C_{21}H_{33}NO_7$: 411.2257
Mp: 94-95° (petr.eth.) [1]

$[\alpha]_D$ –4° [1]
UV: 219(4.07) [2]
IR: 3680, 3600, 3460, 1735, 1710 [3]
Mass: 411(1), 396(2), 311(4), 279(5), 221(43), 220(100), 219(7), 137(20), 136(49), 124(22), 120(74), 119(42), 106(15), 95(49), 94(23), 93(33), 83(39) [3, 4]
PMR: 1.11(3H, s, 7'-CH_3), 1.21(3H, d, 4'-CH_3), 1.24(3H, s, 6'-CH_3), 1.81(3H, s, 5''-CH_3), 1.85(2H, m, H-6), 1.92(3H, dd, 4''-CH_3), 2.78, 3.14(1H, m, H-5), 3.20(3H, s, 8'-OCH_3), 3.31(1H, m, H-3), 3.75(1H, q, H-3'), 3.89(1H, d, H-3), 4.06(1H, narrow s, H-8), 4.88(2H, s, H-9), 5.09(1H, m, H-7), 5.77(1H, narrow s, H-2), 6.03(1H, q, H-3'') [5]
^{13}C NMR: [5]

C-1	134.7	C-9	62.2	C-7'	24.5
2	128.3	1'	173.6	8'	56.4
3	62.2	2'	83.6	1''	167.5
5	54.2	3'	78.7	2''	127.5
6	30.4	4'	13.0	3''	138.3
7	76.7	5'	72.8	4''	15.9
8	78.7	6'	26.5	5''	20.5

CD: [6]
X-ray spectral analysis: [7]
Pharm.: LD_{50} 88.1, 85.1 mg/kg (i/v, rats, mice). [8] Antimicrobiotic activity [9].

1. Yunusov S.Yu., Sidyakin G.P., DAN UzSSR, 1950, No. 1, 3.
2. Simanek V., Klasek A., Santavy F., Collect., 1969, **34**, 1832.
3. Zalkow L.H., Bonetti S., Gelbaum L., Gordon M.M., Patil B.B., Shani A., Derveer D.V., J. Natur. Prod., 1979, **42**, 603.
4. Rashkes Ya.V., Abdullaev U.A., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 153.
5. Asibal C.F., Gelbaum L.T., Zalkow L.H., J. Natur. Prod., 1989, **52**, 726.
6. Culvenor C.C.J., Crout D.H.G., Klyne W., Mose W.P., Renwick J.D., Scopes P.M., J. Chem. Soc. C, 1971, 3653.
7. Hay D.G., McKay M.F., Culvenor C.C.J., Acta Cryst., 1982, **38B**, 155.
8. Sadritdinov, p. 87.
9. Jaain S.C., Sharma R., Chem. Pharm. Bull., 1987, **35**, 3487.

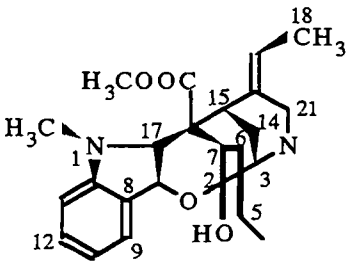


LANUGINOSINE

Liriodendron tulipiferum
$C_{18}H_{11}NO_4$: 305.0688
Mp: 319-321° (chlf.)
UV: 246, 271, 315(4.54, 4.44, 3.83)
IR: 1655, 1490, 1405, 1360, 1254, 1125, 1040, 960, 940
Mass: 305($M^{+\cdot}$, 100), 275

PMR(CF_3COOH): 4.12(3H, s, OCH_3), 6.65(2H, s, CH_2O_2), 7.53(1H, s, H-3), 7.67(1H, dd, J=9;3, H-10), 8.07(1H, d, J=3, H-8), 8.45, 8.78(1H, d, J=6, H-4, H-5), 8.78(1H, d, J=9, H-11)

1. Kupchan S.M., Suffness M.I., Gordon E.M., J. Org. Chem., 1970, **35**, 1682.



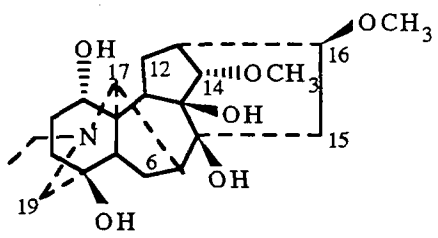
LANCEOMIGINE

Vinca major
$C_{22}H_{26}N_2O_4$: 382.1893
Mp: amorph. [1, 2]
$[\alpha]_D$ +32°
UV: 225, 257, 295 [2]
UV(alc. +$HClO_4$): 235, 290 [2]

IR(chlf.): 3640, 3400, 1750, 1740, 1600, 1500 [2]
Mass: 382(M^+), 367, 354, 338, 337, 323, 295, 278, 264, 216, 194, 181, 170, 167, 157 [1]
PMR: 1.50(3H, narrow d, J=7), 2.95(3H, s), 3.55(3H, s), 4.80(1H, s), 5.45(1H, m) [2]
^{13}C NMR: [2]

C-2	110.9	C-7	50.1	C-11	127.3*
3	57.7	8	126.4	12	112.3
5	48.3	9	128.7*	13	144.7
6	27.4	10	118.2		

1. Zhukovich E.N., Kikoladze V.S., Tskitishvili N.Z., Tsitsishvili V.G., Vachnadze V.Yu., Khim. Prir. Soedin., 1989, 434.
2. Vercauteren J., Massiot G., Sevenet T., Richard B., Lobjois V., Men-Oliver L., Levy J., Phytochem., 1981, **20**, 1411.



LAPPACONIDINE

Aconitum leucostomum
$C_{22}H_{35}NO_6$: 409.2464
Mp: 206-207° (bz.-meth.)
$[\alpha]_D$ +120° (chlf.)
{tetra Ac 197°}

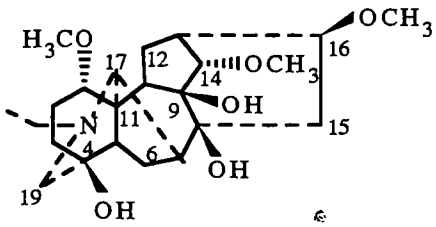
Sol-y.: sol. chlf., ac., meth.
IR: 3540, 3430, 3390, 1460, 1380, 1130, 1080, 980, 917, 890, 690 [1, 2, 3]
Mass: 409(M^+, 5.3), 394(4.7), 392(100), 353(2.8) [1, 2, 3]
PMR: 1.07(3H, t, J=7, NCH_2CH_3), 3.26, 3.33(3H, s, 2×OCH_3) [1, 2]
^{13}C NMR: [4]

C-1	72.5	C-9	77.6	C-17	63.1
2	28.9	10	36.3	18	—
3	33.5	11	50.4	19	60.4
4	70.7	12	23.1	NCH_2	46.5
5	48.2	13	48.4	CH_3	13.1
6	27.4	14	90.4	C-14'	58.1
7	47.0	15	45.1	16'	56.3
8	76.3	16	83.0		

Pharm.: LD_{50} 195 mg/kg (i/v, mice). Brief weak hypotensive, ganglioblocking, antiinflammatory, and antiarrhythmic action [5].

1. Tel'nov V.A., Yunusov M.S., Rashkes Ya.V., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 622.
2. Tel'eov V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 639.
3. Tel'nov V.A., Unpub.
4. Pelletier S.W., Mody N.V., Sawhney R.S., Canad. J. Chem., 1979, **57**, 1652.

5. Dzhakhangirov F.N., Unpub.



LAPPACONINE

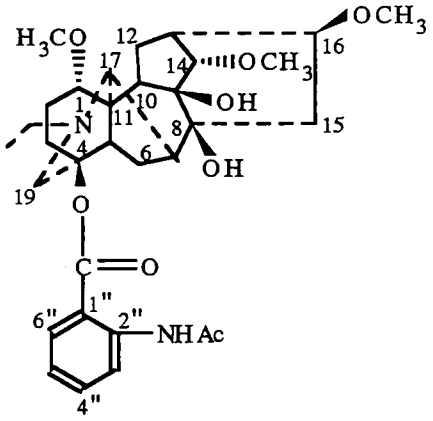
Aconitum orientale
$C_{23}H_{37}NO_6$: 423.2621
Mp: 96°
$[\alpha]_D$ +27° (chlf.) [1]
IR: 3550, 1610 [2]

Mass: 423(100), 408(8) [3]
PMR: 1.07(3H, t, J=7, NCH_2CH_3), 3.26, 3.28, 3.38(3H, s, 3×OCH_3) [4]
^{13}C NMR: [5]

C-1	85.2	C-9	78.8	C-17	61.7
2	26.6	10	37.4	18	—
3	36.3	11	51.0	19	58.0
4	71.1	12	23.7	NCH_2	49.9
5	50.8	13	49.0	CH_3	13.5
6	26.9	14	90.3	C-1'	56.5
7	47.8	15	44.7	14'	58.0
8	75.7	16	83.1	16'	56.1

Pharm.: LD_{50} 142-195 mg/kg (i/v, mice). Weak hypotensive, ganglioblocking, and antiarrhythmic action [7, 8].

1. Marion L., Fonzes L., Wilkins C.K., Boca J.P., Sandberg F., Thorsen R., Linden E., Canad. J. Chem., 1967, **45**, 969.
2. Khaimova M., Mollov N., Cerneva P., Antonova A., Ivanova V., Tetrahedron Lett., 1964, 2711.
3. Tel'nov V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 583.
4. Mollov N., Tada M., Marion L., Tetrahedron Lett., 1969, 2189.
5. Pelletier S.W., Mody N.V., Sawhney R.S., Canad. J. Chem., 1979, **57**, 1652.
6. Birnbaum G.I., Tetrahedron Lett., 1969, 2193.
7. Tulyaganov N.T., Dzhakhangirov F.N., Sadritdinov F.S., Khamdamov I., The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 76.
8. Dzhakhangirov F.N., Unpub.



LAPPACONITINE

Aconitum leucostomum, A.orientale, A.septentrionale, A.talassicum
$C_{32}H_{44}N_2O_8$: 584.3098
Mp: 217-218° [1]
$[\alpha]_D$ +27° (alc.) [1]
{h-chl. 208°, h-b. 225° (dec.), p-chl. 253°, lappaconine 96°}
Sol-y.: sol. chlf., meth.
IR: 3560, 3540, 3295, 3265, 1700, 1686, 1588, 1527, 1518, 1445, 1380, 1320, 1290, 1270, 1235, 1140, 1130, 1090, 950, 897, 880, 770 [1]

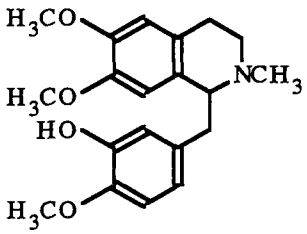
Mass: 584($M^{+\cdot}$, 3), 553(18), 523(5), 405(100), 390(86), 374(36), 360(21), 345(43), 178(29), 160(20) [1]
PMR: 1.10(3H, t, J=7, NCH_2CH_3), 2.12(3H, s, NAc), 3.19, 3.29(6H, 3H, s, 3×OCH_3), 6.83-7.60(H-Ar), 10.85(1H, narrow s, NHAc) [1]

^{13}C NMR: [3]

C-1	84.2	C-12	24.2	C-14'	57.9
2	26.2	13	49.0	16'	56.1
3	31.9	14	90.2	Ar-C=0	167.7
4	84.7	15	44.9	Ar C-1''	115.9
5	48.6	16	82.9	2''	141.8
6	26.8	17	61.5	3''	120.4
7	47.6	18	—	4''	134.6
8	75.6	19	55.5	5''	122.6
9	78.6	NCH_2	49.9	6''	131.3
10	36.4	CH_3	13.5	HNCO	169.5
11	51.0	C-1'	56.5	CH_3	25.6

PCA{lappaconine}: [2]
HPLC: [4]
Pharm.: Pronounced prolonged antiarrhythmic, local anesthetic, analgesic, antiinflammatory, and sedative action. Blocks the sodium ion current entering the cell. Belongs to the 1"D" group of antiarrhythmic drugs. The medicinal preparation Allapinine, patented in the USA, France, and Switzerland has been created on the basis of lappaconitine [5-10].

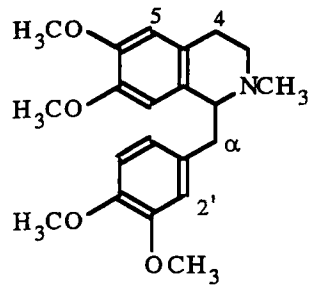
1. Tel'nov V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 583; Unpub.
2. Birnbaum G.I., Tetrahedron Lett., 1969, 2193.
3. Pelletier S.W., Mody N.V., Sawhney R.S., Can. J. Chem., 1979, **57**, 1652.
4. Fuming Xie, Hongcheng Wang, Henling Shu, Jianhua Li, Jirong Jiang, Jenpin Chang, Yuyuan Hsieh, J. Chromatogr., 1990, **526**, 109.
5. Yunusov S.Yu., Yunusov M.S., Tel'nov V.A., Dzhakhangirov F.N., Sadritdinov F., Taizhanov K., USSR Inventor's certificate 1335293.
6. Dzhakhangirov F.N., Sadritdinov F.S., DAN UzSSR, 1985, No. 3, 46.
7. Valeev A.E., Verkhratskii A.N., Dzhakhangirov F.N., Neirofiziologiya, 1990, No. 2, 201.
8. Dzhakhangirov F.N., Valeev A.E., Sadritdinov F.S., Uzb. Biolog. Zh., 1986, No. 5, 7.
9. Dzhakhangirov F.N., Sirotenko E.G., Rashkes Ya.V., DAN UzSSR, 1990, No. 8, 44.
10. Dzhakhangirov F.N., Sokolov S.F., Verkhratskii A.N., Allapinine – A New Antiarrhythmic Drug of Plant Origin [in Russian], Fan, Tashkent, 1993.



LAUDANIDINE

Berberis heteropoda
$C_{20}H_{25}NO_4$: 343.1783
Mp: 178-179°
$[\alpha]_D$+75° (chlf.)
UV: 285(3.82)

1. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1966, 43; Yusupov M.M., Karimov A., Israilov I.A., Shakirov R., Dep. VINITI No. 640-V92; Ref. Zh., Khim., 1992, 17E 113.



LAUDANOSINE

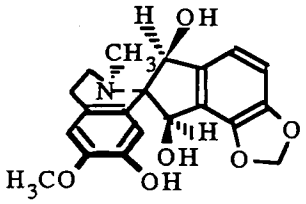
Berberis heteropoda
$C_{21}H_{27}NO_4$: 357.1940
Mp: 86-87° (ac.)
$[\alpha]_D$ +48° (chlf.)
{m-i. 220°}
UV: 282(3.82)
IR: 2830, 2780, 1610, 1580, 1520, 1270, 1240 [1]

^{13}C NMR: [2]

C-1	65.5	C-8	110.7	C-5'	110.7
3	46.8	8a	132.2	6'	121.5
4	25.3	α	40.4	6-OCH_3	55.5
4a	125.8	1'	129.0	7-OCH_3	55.5
5	112.8	2'	110.7	3'-OCH_3	55.3
6	146.9	3'	148.3	4'-OCH_3	55.3
7	146.9	4'	146.0	NCH_3	42.4

HPLC: [3]

1. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1966, 43.
2. Shamma, No. 320.
3. Ramzan I., J. Chromatogr., 1991, **565**, 465.

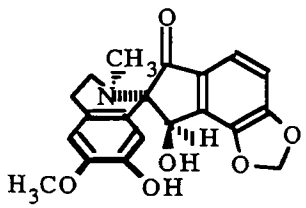


LEDEBORIDINE

Corydalis ledebouriana
$C_{20}H_{21}NO_6$: 371.1369
Mp: 140-141°
$[\alpha]_D$ +114° (meth.)
IR: 3540, 3430, 1600, 1500, 1030, 920

Mass: 371(M^+), 356, 353, 338, 324, 308, 294, 192, 190, 177
PMR: 2.50(3H, s, NCH_3), 3.75(3H, s, OCH_3), 5.11, 5.33(1H, s), 5.91(2H, s, CH_2O_2), 6.19, 6.59(1H, s, p-H-Ar), 6.77(2H, s, o-H-Ar)

1. Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 428.

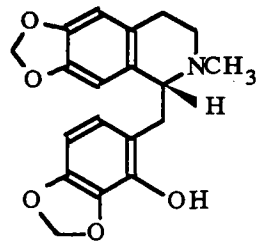


LEDEBORINE

Corydalis ledebouriana
$C_{20}H_{19}NO_6$: 369.1212
Mp: 184-185° (chlf.-meth.)
UV: 238, 293, 3.16(4.38, 3.98, 3.90)

IR: 3450, 1705, 1600, 1040, 920
Mass: 369(M^+), 354, 338, 206, 192, 177
PMR(CF_3COOH): 2.67(3H, d, J=5, NCH_3), 2.70-3.50(4H, m), 3.40(3H, s, OCH_3), 5.62(1H, s), 5.70(3H, narrow s), 6.31(1H, s, p-H-Ar), 6.70, 7.25(1H, d, J=8, o-H-Ar)

1. Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 268.

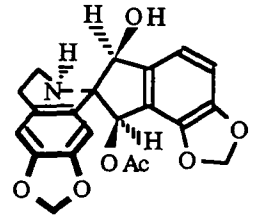


LEDECORINE

Corydalis ledebouriana, Fumaria vaillantii
$C_{19}H_{19}NO_5$: 341.1263
Mp: 199-200° (meth.)
$[\alpha]_D$ −112° (meth.)
UV: 240 sh, 295(3.88, 3.74)
IR: 3430, 1620, 1590, 1040, 935

Mass: 190(100), 175, 160, 149
PMR: 2.55(3H, s, NCH_3), 2.60-3.20(m), 4.20(1H, t, J=6), 5.86, 5.88(1H, s, CH_2O_2), 6.01(2H, s, CH_2O_2), 6.23, 6.54(1H, s, p-H-Ar), 6.27, 6.58(1H, d, J=8, o-H-Ar)

1. Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 537.

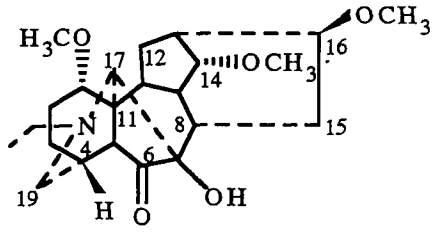


LEDERINE

Corydalis ledebouriana, Dicentra peregrina
$C_{21}H_{19}NO_7$: 397.1161
Mp: 208-209° (meth.)
$[\alpha]_D$ +13° (chlf.)
IR: 3600-3150, 1760, 1605, 1500, 1050, 940

PMR: 1.90(3H, s, Ac), 2.40-3.65(4H, m), 5.23(1H, s), 5.86, 5.89, 6.00, 6.03(1H, d, J=2, 2×CH_2O_2), 6.18, 6.51, 6.66(1H, s), 6.78(2H, s, o-H-Ar)

1. Israilov I.A., Melikov F.M., Yunusov M.S., Murav'eva D.A., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 540.



LEUCONINE

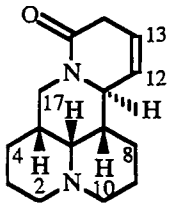
Aconitum leucostomum, A.septentrionale
$C_{23}H_{35}NO_5$: 405.2506
Mp: 195-197°
Sol-y.: sol. chlf., meth.
IR: 3460, 1740 [1]

Mass: 405(M^+, 22), 390(5.6), 374(100), 362(26.8), 346(32) [1]
PMR: 1.01(3H, t, J=7.5, NCH_2CH_3), 3.25, 3.32(6H, 3H, s, 3×OCH_3), 3.65(1H, t, J=4.5, H-14β) [1]
^{13}C NMR: [1]

C-1	84.9	C-9	40.2	C-17	62.4
2	26.3	10	46.0	18	-
3	30.0	11	44.8	19	51.1
4	35.0	12	29.0	NCH_2	49.5
5	56.8	13	35.8	CH_3	14.1
6	222.6	14	84.9	C-1'	56.2
7	85.0	15	23.0	14'	57.2
8	39.1	16	83.2	16'	56.3

Pharm.: Only slightly toxic. In anesthetized cats in doses of 15-20 mg/kg it briefly lowers the arterial pressure, blocks the conduction of impulses in vegetative ganglia, lowers the frequency of cardiac contractions, and depresses conductivity [2].

1. Tel'nov V.A., Usmanova S.K., Khim. Prir. Soedin., 1992, 538.
2. Dzhakhangirov F.N., Unpub.

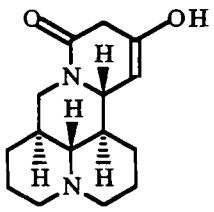


LEHMANINE

Ammothamnus lehmannii
$C_{15}H_{22}N_2O$: 246.1732
Mp: 93-94° (petr. eth.)
$[\alpha]_D$ +37° (alc.)
{picr. 145°}

UV: 255-260 sh [1]
IR: 2810, 2770, 2750, 2680, 1650 [1]
Mass: 246(M^+, 100), 245(62), 231(1.5), 217(16), 203(85), 188(9), 177(12), 160(32), 150(89), 137(30), 122(34), 96(98) [2]
PMR: 1.00-2.10 (m), 2.60-2.85(H-2_e, H-10_e), 2.95(1H, t, J=12;11, H-17_a), 4.20-4.50(2H, H-17_e, H-11), 5.60-5.90(H-12, H-13) [1]

1. Kushmuradov Yu.K., Aslanov Kh.A., Kuchkarov S., Khim. Prir. Soedin., 1975, 377.
2. Kuchkarov S., Kushmuradov Yu.K., Aslanov Kh.A., Sadykov A.S., Khim. Prir. Soedin., 1977, 541.

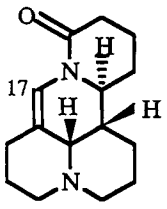


LEONTALBAMINE

Leontice alberti
$C_{15}H_{24}N_2O_2$: 264.1838
Mp: 195°
$[\alpha]_D$ –93°
{m-i. 287°}

Sol-y.: r-sol. chlf., ac., alc., meth., eth.; sp. sol. petr. eth.
UV: 220(3.40) [1]
IR: 3390, 2800-2700, 1640 [1]
Mass: 264(M^+, 2), 263(2), 249(2), 246(90), 245(100), 218(47), 204(19), 190(20), 188(17), 177(11), 162(5), 150(5), 136(5), 122(5), 109(3), 98(5), 97(3), 96(6), 83(4), 55(8) [2]
PMR: 5.20(OH) [2]

1. Iskandarov S., Author's Abstract of Doctoral Dissertation, Tashkent, 1973.
2. Iskandarov S., Unpub.



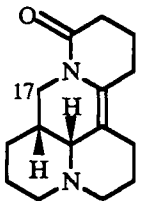
LEONTALBINE

Leontice alberti
$C_{15}H_{22}N_2O$: 246.1732
Bp: 180° (5 mm Hg) [1]
$[\alpha]_D$ –167° (alc.) [1]
{p-chl. 247°, h-chl. 277°, picr. 216°, m-i. 259°} [1]

Sol-y.: r-sol. chlf.; sol. water, ac.; sp. sol. eth.
UV: 242(4.20) [1]
IR: 2800-2700, 1670, 1640, 803 [1]
Mass: 246(M^+, 52), 245(100), 231(1), 217, 203, 175(5), 161(2), 148(3), 134(2), 108(0.7), 97(0.5), 96(0.4), 95(0.8), 83(79), 55(8) [2]
PMR: 6.90(1H, s, H-17) [3]
ORD: [4]

Pharm.: LD_{50} 142 mg/kg (i/v, mice). Ganglioblocking and uterine action [5].

1. Iskandarov S., Nuriddinov R.N., Yunusov S.Yu., DAN UzSSR, 1964, No. 12, 32.
2. Iskandarov S., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 106.
3. Iskandarov S., Unpub.
4. Zunnunzhanov A., Iskandarov S., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 373.
5. Kurmukov A.G., Sultanov M.B., DAN UzSSR, 1965, No. 12, 26.

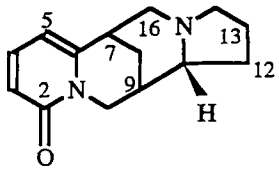


LEONTALBININE

Leontice alberti, L.darwasica
$C_{15}H_{22}N_2O$: 246.1732
Mp: 108° (eth.)
$[\alpha]_D$ −135° (alc.)
{p-chl. 245°, m-i. 295°}

Sol-y.: r-sol. chlf., alc., ac.; sp. sol. petr. eth.
UV: 242(4.20) [1]
IR: 2800-2700, 1665, 1640 [1]
Mass: 246(M^+, 11), 244(100), 230(2), 217(46), 203(17), 180(27), 175(12), 160(4), 147(6), 133(5), 121(3), 109(3), 97(2), 96(1), 95(3), 82(3), 55(6) [2]
PMR: 4.05(1H, H-17_e) [2]

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

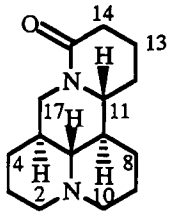


LEONTIDINE

Leontice alberti, L.darwasica, L.ewersmannii, L.smirnowii
$C_{14}H_{18}N_2O$: 230.1419
Mp: 119-120° (petr. eth.) [1]

$[\alpha]_D$ −190° (meth.) [1]
{h-chl. 311°, m-i. 276°} [1]
Sol-y.: r-sol.eth., bz., alc., ac., water; sp. sol. petr. eth.
UV: 234, 309(3.70, 3.80) [2]
IR: 2700-2500, 1657, 1552 [1];
IR{h-chl.}: 3410, 3350, 1650, 1571, 1553, 1324, 1314, 1280, 1231, 1200, 1168, 1150, 1119, 1088, 1072, 1059, 1041, 1028, 1020, 994, 970, 950, 935, 914, 905, 894, 868, 856, 806, 745, 735 [3]
Mass: 230(M^+, 4.8), 160, 146, 96, 84(100) [2]
PMR: 4.03(2H, m, H-10), 5.75(1H, d, J=8, H-3), 6.12(1H, d, J=10, H-5), 7.04(1H, dd, J=10;8, H-4) [2]

1. Syui Zhen-Shen, Kuzovkov A.D., Zh. Org. Khim., 1964, **34**, 1969.
2. Iskandarov S., Shaimardanov R.A., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 631.
3. Holubek, No. 353.



LEONTINE

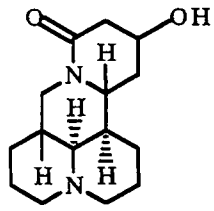
Leontice alberti, L.darwasica, L.ewersmannii
$C_{15}H_{24}N_2O$: 248.1889
Mp: 107-108° (eth.) [1]
$[\alpha]_D$ −78° (alc.) [1]
{p-chl. 258°, m-i. 292° (dec.), picr. 179°} [1]

Sol-y.: r-sol. water, chlf., alc., meth., ac.; sp. sol. petr. eth. [2]
IR: 3010, 2950, 2860, 2820, 2760, 2680, 1626, 1471, 1452, 1423, 1377, 1358, 1339, 1327, 1301, 1290, 1271, 1260, 1248, 1184, 1168, 1151, 1138, 1118, 1105, 1081, 1067, 1052, 1026, 1000, 970, 942, 932, 914, 898, 880, 862, 850, 838, 814 [3]
Mass: 248(M^+, 58), 247(100), 219(3), 206(2), 205(4), 192(1), 177(34), 162(4), 150(27), 138(2), 137(4), 136(11) [4]
PMR: 2.85(H-5_a) [5]
^{13}C NMR: [6]

C-2	55.9	C-7	46.2	C-12	28.4
3	24.7	8	26.9	13	19.4
4	27.5	9	24.7	14	32.8
5	39.1	10	56.0	17	46.2
6	70.9	11	60.3		

Pharm.: Slight antitumoral action [7].

1. Platonova T.F., Kuzovkov A.D., Zh. Org. Khim., 1956, **26**, 283.
2. Rul'ko F., Proskurnina N.F., Zh. Org. Khim., 1961, **31**, 308.
3. Holubek, No. 354.
4. Iskandarov S., Rashkes Ya.V., Kamalitdieov D.D., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 331.
5. Iskandarov S., Kamalitdinov D.D., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 174.
6. Shamma, No. 195.
7. Iskandarov S., Unpub.

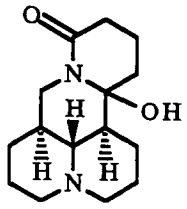


LEONTISMIDINE

Leontice smirnowii
$C_{15}H_{24}N_2O_2$: 264.1838
Mp: 110° (eth.)
{p-chl. 235°}

Sol-y.: r-sol. chlf., alc., ac., meth.; sp. sol. eth., petr. eth.
UV: 220
IR: 3440, 2775-2690, 1620
Mass: 264(M^+, 96), 247(65), 246(90), 217(25), 203(20), 176(22), 162(15), 136(100), 96(30)

1. Tkeshelashvili É.G., Author's Abstract of Candidate's Dissertation, Tashkent, 1973.

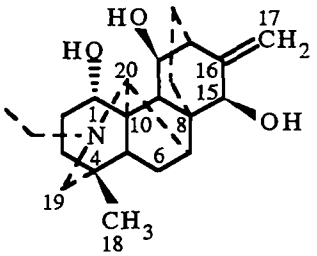


LEONTISMINE

Leontice smirnowii
$C_{15}H_{24}N_2O_2$: 264.1838
Mp: 168-169°
$[\alpha]_D$ +71° (alc.)

{p-chl. 209° (ac.), m-i. 182°}
Sol-y.: r-sol. alc., meth., chlf., water; sol. ac.; sp. sol. eth., petr. eth.
IR: 3400, 2800-2700, 1625
Mass: 264(M^+), 246, 218, 203, 176, 162, 150, 136, 96, 83

1. Tkeshelashvili É.G., Iskandarov S., Mudzhiri K.S., Yunusov S.Yu., Soobshch. AN GSSR, 1973, **69**, No. 2, 357.



LEPENINE

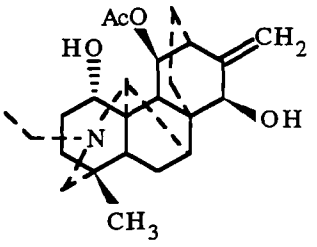
Aconitum barbatum, A.kirinense, A.turczaninowii, A.volubile
$C_{22}H_{33}NO_3$: 359.246
Mp: 191-193°

IR: 3500-3300 [1, 2]
Mass: 359(M^+, 66), 341(100), 330(27.5), 314(22), 313(25), 312(27.5), 300(39) [1, 2]
PMR: 0.64(3H, s, 18-CH_3), 0.98(3H, t, J=7, NCH_2CH_3), 3.69(1H, narrow s, H-20), 4.15(1H, narrow s, H-15α), 4.33(1H, d, J=8, H-11α), 4.93, 5.40(1H, narrow s, =CH_2) [1, 2]
^{13}C NMR: [1]

C-1	70.1	C-9	54.3	C-17	108.7
2	31.7	10	51.6	18	26.3
3	39.3	11	73.2	19	51.1
4	33.8	12	42.4	20	68.3
5	52.8	13	23.8	NCH_2	57.3
6	28.2	14	25.1	CH_3	13.8
7	47.9	15	77.9		
8	44.3	16	155.5		

Pharm.: LD_{50} 132.5 mg/kg (i/v, mice). Weak H-cholinolytic, membrane-stabilizing, and antiarrhythmic action [3].

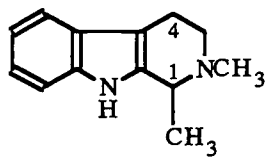
1. Batbayar N., Batsurén D., Sultankhodzhaev M.N., Khim. Prir. Soedin., 1992, 444.
2. Song W., Li H., Chen D., Proc. CAMS and PUMC, 1987, Vol. 2, p. 48.
3. Kuzibaeva Zh.Kh., Dzhakhangirov F.N., Unpub.



LEPETINE

Aconitum barbatum
$C_{24}H_{35}NO_4$: 401.2566
Mp: 137-139°
PMR: 0.92(3H, s, 18-CH_3), 1.01(3H, t, J=7, NCH_2CH_3), 2.03(3H, s, Ac), 3.68(1H, narrow s), 4.23(1H, m), 4.92, 5.17(1H, narrow s, =CH_2) [1, 2]

1. Batbayar N., Batsurén D., Sultankhodzhaev M.N., Khim. Prir. Soedin., 1992, 444; Unpub.
2. Song W., Li H., Chen D., Proc. CANS and PUMC, 1987, Vol. 2, p. 48.

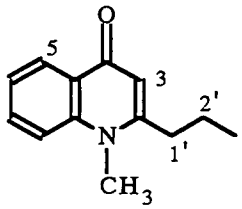


LEPTOCLADINE (N METHYLTETRAHYDROHARMAN)

Hammada leptoclada
$C_{13}H_{16}N_2$: 200.1313
Mp: 109-110° (xylene)

$[\alpha]_D$ 0°
{h-chl. 235°, picr. 184°}
Sol-y.: r-sol. org. solvent.; sp. sol. water [1]
UV: 224, 280(4.50, 3.80) [2]
IR: 3465, 3410, 3055, 3010, 2930, 2835, 2790, 1460, 1370, 1320, 1309, 1271, 1188, 1169, 1160, 1150, 1130, 1105, 1080, 1070, 1050, 1028, 1011, 968, 929, 912, 878, 850 [2]
PMR: 1.30(3H, d, 1-CH_3), 2.42(3H, s, NCH_3), 2.60-3.15(4H, m, H-3, H-4), 3.40(2H, q, H-1), 6.85-7.55(5H, m, H-Ar), 7.88(NH) [3]
Pharm.: LD_{50} 75 mg/kg (s/c, mice). Causes an increase in reflex excitability and clonic convulsions passing into the tetanic type. In experiments on urethanized cats it exhibits a ganglioblocking action. Affects respiration, which is connected with vasodepressor reflexes [4].

1. Yurashevskii N.K., Zh. Org. Khim., 1939, 9, 595; 1941, 11, 157.
2. Holubek, No. 446.
3. Johns S.R., Lamberton J.A., Sioumis A.A., Austral. J. Chem., 1966, 19, 1539.
4. Sadritdinov, p. 103.

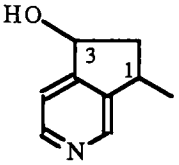


LEPTOMERINE

Haplophyllum leptomerum
$C_{13}H_{15}NO$: 201.1154
Mp: 147-148° (ac.)
Sol-y.: r-sol. chlf., alc.; sol. ac., eth.; i.s.water

UV: 213, 230, 285, 294(3.63, 3.61, 3.31, 3.40)
IR: 1635, 1600, 1580, 1500, 1480, 1440, 1425
Mass: 201($M^{+\cdot}$, 100), 186(38), 173(100), 172(19), 158(28), 145(69), 144(56), 130(59), 77(45)
PMR: 0.99(3H, t, J=7.5, CH_3), 1.63(2H, m, H-2'), 2.59(2H, t, J=7.5, H-1'), 3.62(3H, s, NCH_3), 6.11(1H, s, H-3), 7.42(3H, m, H-Ar), 8.34(1H, dd, J=9;3, H-5)

1. Akhmedzhanova V.I., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1986, 84.



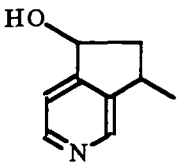
LEPTORHABINE

Leptorhabdos parviflora
$C_9H_{11}NO$: 149.0841
Mp: oil
$[\alpha]_D$ +110° (chlf.)

UV: 263, 269(3.36, 3.33)
IR: 3400-3200, 2980-2940, 1605, 1580
Mass: 149($M^{+\cdot}$), 132, 131, 118, 117, 106, 104, 79, 77, 65, 63

PMR: 1.20(3H, d, J=7, CH_3), 1.97(2H, m, CH_2), 3.30, 5.06(2H, m, 2×CH), 6.94(1H, narrow s, OH), 7.15, 8.07(1H, d, J=5, H-Ar), 8.11(1H, s, H-Ar)

1. Kadyrov Kh.A., Vinogradova V.I., Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 683.

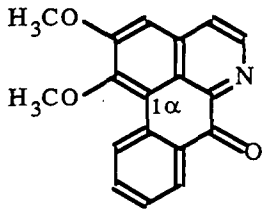


(±)-LEPTORHABINE

Leptorhabdos parviflora
$C_9H_{11}NO$: 149.0841
Mp: oil
{picr. 137° (water)}

UV: 262, 267
IR: 3400-3200, 1610, 1580
Mass: 149($M^{+\cdot}$), 132, 131, 118, 106, 104, 79, 77, 65, 63
PMR: 1.04(3H, d, J=6, CH_3), 1.84(2H, m, CH_2), 3.14, 4.88(1H, m, 2×CH), 6.80 and 7.84(1H, J=4, H-Ar), 7.88(1H, s, H-Ar)

1. Kadyrov Kh.A., Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 269.



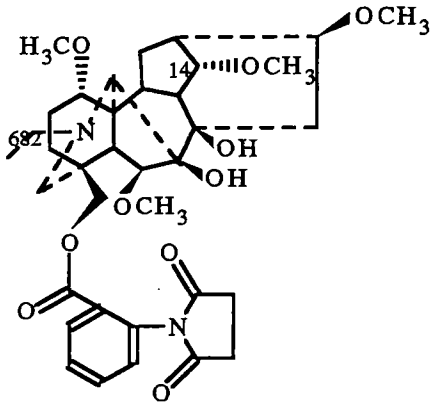
LYSICAMINE

Liriodendron tulipiferum
$C_{18}H_{13}NO_3$: 291.0895
Mp: 208-210° (alc.) [1]
UV: 235, 270, 307, 400(4.47, 4.41, 3.76, 3.94)

UV(H^+): 249, 276, 306, 453(4.33, 4.44, 3.82, 5.55) [2]
IR: 1675 [2]
PMR: 3.95, 4.01(3H, s, 2×OCH_3), 7.07(1H, s, H-3), 7.50(1H, dd, J=7.5; 2.0, H-10), 7.70(1H, dd, J=7.5; 2.0, H-9), 8.50(1H, dd, J=7.5; 2.0, H-8), 9.05(1H, dd, J=7.5; 2.0, H-11), 7.65, 8.77(1H, d, J=5.5, H-4, H-5) [3, 4]
^{13}C NMR: [4]

C-1	145.3	C-4	123.4	C-9	128.7
1a	119.6	5	145.0	10	134.2
1b	122.0	6	156.7	11	128.3
2	152.0	7	182.5	11a	134.7
3	106.4	7a	132.0	1-OCH_3	60.5
3a	135.3	8	128.7	2-OCH_3	55.0

1. Ziyaev R., Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 478.
2. Katsui N., Sato K., Tobinaga S., Takenchi N., Tetrahedron Lett., 1966, 6257.
3. Guinaudeau H., Leboeuf M., Cave A., Lloydia, 1975, **38**, 275.
4. Guinaudeau H., Leboeuf M., Cave A., J. Nat. Prod., 1983, **46**, 761.

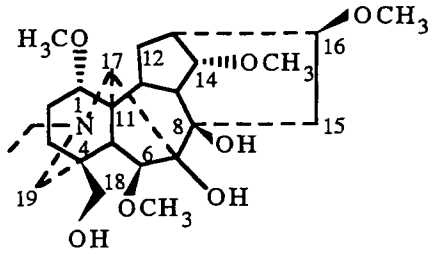


LYCACONITINE

Aconitum rubicundum, A.umbrosum
$C_{36}H_{48}N_2O_{10}$: 668.3309
Mp: amorph.
$[\alpha]_D$ +42°
{h-i. 201° (dec.)}
Sol-y.: sol. chlf., meth., ac., alc.
IR: 3480, 1720
Mass: 668(M^+, 6), 653(10), 650(5), 637(100), 635(20), 621(3), 434(2), 406(2), 390(2), 256(2), 248(5), 239(2), 219(2), 202(2), 174(4), 149(4)

PMR: 1.03(3H, t, J=7, NCH_2CH_3), 2.84(4H, s, $-CH_2CH_2-$), 3.19, 3.26, 3.34(3H, 3H, 6H, s, 4×OCH_3), 3.52(1H, t, J=4.5, H-14β), 3.79(1H, s), 3.91(1H, s), 4.10(1H, narrow s), 7.15, 7.95(1H, d, J=7, H-Ar), 7.52(2H, t, J=7.5, H-Ar) [1, 2]
Pharm.: LD_{50} 2.6, 31.0 mg/kg (i/v, oral, mice). Pronounced curaremimetic action, hypotensive effect [3].

1. Nishanov A.A., Sultankhodzhaev M.N., Yunusov M.S., Kondrat'ev V.G., Khim. Prir. Soedin., 1991, 403; Unpub.
2. Yu D., Das B.C., Planta Med., 1983, **49**, 85.
3. Dzhakhangirov F.N., in: Questions of Pharmacology and Pharmacy [in Russian], Fan, Tashkent, 1976, Vol. 4, p. 21.



LYCOCTONINE (DELSINE, ROYALINE)

Aconitum barbatum, A.orientale, A.rubicundum, A.septentrionale, Consolida orientalis, Delphinium corymbosum, D.dictyocarpum, D.elisabethae, D.iliense, D.oreophilum, D.semibarbatum, D.speciosum, D.thamarae, D.ternatum

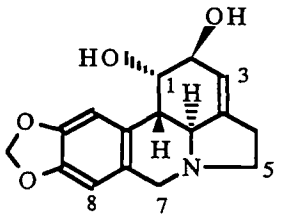
$C_{25}H_{41}NO_7$: 467.2883
Mp: 136-140° (alc.) [1]
$[\alpha]_D$ +52 (abs. alc.)
{h-b. 185°, h-chl. 165°, h-i. 189°}
Sol-y.: sol. chlf., meth.
IR: 3520, 3440, 3350, 1470, 1405, 1390, 1336, 1304, 1265, 1223, 1197, 1167, 1100, 1015, 995, 965, 865, 820, 763, 720
Mass: 467(M^+, 4.5), 452(26), 450(3), 449(5), 436(100), 434(1.5), 418(6)
PMR: 1.02(3H, t, J=7, NCH_2CH_3), 3.19, 3.27, 3.33, 3.40(3H, s, 4×OCH_3) [1, 2]
^{13}C NMR: [3]

C-1	84.2*	C-10	38.0	C-19	52.9
2	26.1	11	48.9	NCH_2	51.1
3	31.6	12	28.8	CH_3	14.1
4	38.6	13	46.1	C-1'	55.7
5	43.3	14	84.0*	6'	57.7
6	90.6	15	33.7	14'	58.0
7	88.3	16	82.7	16'	56.2
8	77.5	17	64.8		
9	49.7	18	67.6		

Pharm.: Hypotensive and ganglioblocking action [4].

1. Usmanova S.K., Tel'nov V.A., Abdullaev N.D., Khim. Prir. Soedin., 1993, No. 3; Unpub.
2. Pelletier S.W., Sawhney R.S., Desai H.K., Mody N.V., J. Nat. Prod., 1980, **43**, 395.

3. Pelletier S.W., Mody N.V., Sawhney R.S., Bhattacharryya J., Heterocycles, 1977, 7, 327.
4. Tulyaganov N., Dzhakhangirov F.N., Sadritdinov F., Khamdamov I., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 76.



LYCORINE (NARCISSINE, GALANTHIDINE)

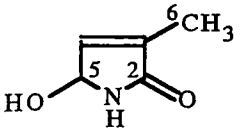
Clivia miniata, Crinum amabile, C.giganteum, Galanthus caucasicus, G.nivalis, G.woronowii, Hippeastrum equestre, Hymenocallis littoralis, Leucojum aestivum, L.vernum, Narcissus poeticus, N.tazetta, Pancratium maritimum, P.trianthum, Sternbergia fischeriana, S.lutea, Ungernia ferganica, U.minor, U.sewerzowii, U.spiralis, U.tadshicorum, U.trisphaera, U.victoris, U.vvedenskyi

$C_{16}H_{17}NO_4$: 287.1158
Mp: 265-266° (meth.) [1, 2]
$[\alpha]_D$ −120° (pyr.)
{h-chl. 211°, h-b. 211°} [1, 2]
Sol-y.: sp. sol. alc., chlf.; i.s. ac., eth., water [1]
UV: 233, 293 [3]
IR: 3330, 1507, 1489, 1340, 1314, 1293, 1263, 1243, 1220, 1185, 1158, 1134, 1120, 1104, 1091, 1068, 1054, 1038, 1018, 1003, 988, 940, 910, 893, 881, 863, 843, 828, 795, 762, 749 [3]
PMR: 2.88(2H, m, H-4), 2.99(1H, dd, J=11.8;2.2, H-11β), 3.49(1H, m, H-5), 3.75(1H, m, H-5), 3.95(1H, d, J=11.8, H-11c), 4.19(1H, d, J=14, H-7), 4.26(1H, m, J=1.1, H-2), 4.48(1H, d, J=14, H-7), 4.58(1H, s, H-8), 6.98(1H, s, H-11) [4]
^{13}C NMR: [4]

C-1	70.1	C-7	54.2	C-11	106.4
2	71.9	7a	130.6	11a	125.7
3	122.9	8	108.8	11b	38.2
3a	137.9	9	149.7	11c	61.8
4	30.3	10	148.1	12	102.8
5	55.1				

HPLC: [4]
Pharm.: LD_{50} 106 mg/kg (s/c) [5]. {Lycorine hydrochloride} is used as an expectorant in chronic and acute inflammatory processes in lungs and bronchi, in bronchoectatic diseases, and bronchial asthma. Supplied in 0.0002-g tablets [6]. Pronounced hypotensive and sedative properties. Exhibits a pronounced influence on conditional reflex activity [7]. Anticancerogenic activity [8]. {Dihydro}: LD_{50} 170 mg/kg (i/v, mice). Antiarrhythmic action [9].

1. Yunusov S.Yu., Abduazimov Kh.A., DAN UzSSR, 1956, No. 4, 7.
2. Humber L.E., Kondo H., Kotera K., Takagi S., Takeda K., Taylor W.I., Thomas B.R., Tsuda Y., Tsukamoto K., Uyeo S., Yajima H., Yanaihara N., J. Chem. Soc., 1954, 4622.
3. Holubek, No. 167.
4. Evidente A., Cicala M.R., Giudicianni I., Randazzo G., Riccio R., Phytochem., 1983, **22**, 581.
5. Abdumalikova N.V., Kamilov I.K., in: The Pharmacology of Alkaloids [in Russian], AN UzSSR, Tashkent, 1962, p. 190.
6. Mashkovskii, Vol. 1, p. 367.
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, pp. 111, 120.
8. The Alkaloids, 1985, Vol. 25, p. 207.
9. Aliev Kh.U., in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 84.



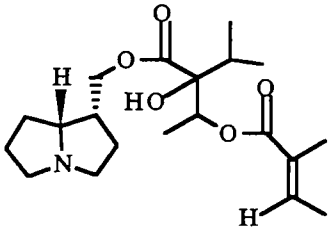
LILIDINE (JATROPHAM)

Lilium martagon
$C_5H_7NO_2$: 113.045
Mp: 118-119° (ac.) [1]

$[\alpha]_D$ –26° (meth.) [1]
UV: 235(3.10) [2]
IR: 3300, 1690, 1645 [1]
Mass: 113(M^+), 98(100), 85, 69, 68 [2]
PMR: 1.76(3H, dd, CH_3), 4.78(1H, d, OH), 5.46(1H, dddq, J=9; 1.3; 1.3, H-5), 6.59(1H, ddq, J=1.9; 1.2; 1.8, H-4), 7.40(1H, narrow s, NH) [2]
^{13}C NMR: [1]

C-2	175.2	C-5	79.8
3	136.7	6	10.4
4	142.9		

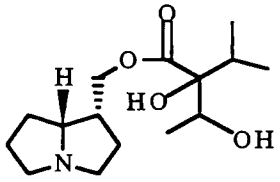
1. Abdullaev N.D., Samilov K., Antsupova T.P., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1987, 692.
2. Haladova M., Buckova A., Eisenreichova E., UhrQn D., Tomko I., Chem. Papers, 1987, **41**, 835.



LINDELOFAMINE

Lindelofia anchusoides
$C_{20}H_{33}NO_5$: 367.2359
Mp: 88° (petr. eth.)
{tiglic acid 65°}

1. Labenskii A.S., Men'shikov G.P., Zh. Org. Khim., 1948, **18**, 1836.



LINDELOFINE

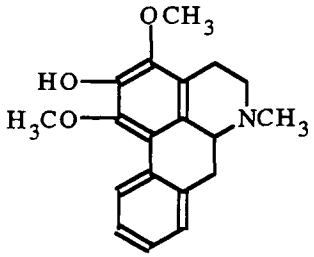
Lindelofia macrostyla, L.stylosa, Rindera cyclodonta
$C_{15}H_{27}NO_4$: 285.1940

Mp: 105-106° [1]
$[\alpha]_D$ +50° (alc.) [2]
{picr. 124°, picronolate 135°, lindelofidine $[\alpha]_D$ +81°, trachelanthic acid 95° [2], m-i. 141°, h-b. 125°, h-chl. 143°, nitr. 119°, h-i. 122°, oxylate 133°, sulf. 127° [1]}
Sol-y.: r-sol. water, alc., ac., chlf.; sp. sol. eth., petr. eth. [2]
UV: 257, 260 [1]*
IR: 3360, 3340, 3320, 3120, 2963, 2850, 2745, 2125, 1937, 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 [3]
CD: [4]
Pharm.: LD_{50} 101.5 mg/kg (i/v, mice) [5]. Hypotensive and cholinolytic action [6].

1. Sadykov Yu.D., Khodzhimatov M., DAN Tadzh.SSR, 1984, **27**, 577.
2. Labenskii A.S., Men'shikov G.P., Zh. Org. Khim., 1948, **18**, 1836.

* Data doubtful.

3. Abdullaev U.A., Rashkes Ya.V., Shakhidoyatov Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 634.
4. Culvenor C.C.J., Crout D.H.G., Klyne W., Mose W.P., Renwick J.D., Scopes P.M., J. Chem. Soc. C, 1971, 3653.
5. Sadritdinov, p. 88.
6. Sadritdinov F.S., in: The Pharmacology of Natural Compounds [in Russian], Fan, Tashkent, 1979, p. 29.

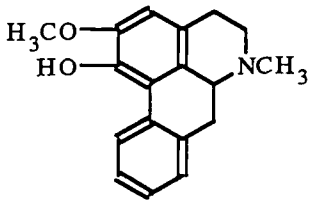


LIRIDININE

Liriodendron tulipiferum
$C_{19}H_{21}NO_3$: 311.1521
Mp: 142-144° (ac.)
$[\alpha]_D$ -38° (chlf.)
UV: 221, 281(4.41, 4.16)
IR: 3400, 3200, 2830, 1595, 1290, 760

PMR: 2.50(3H, s, NCH_3), 3.65, 3.94(3H, s, 2×OCH_3), 7.16(3H, m, H-Ar), 8.10(1H, m, H-Ar)

1. Abdusamatov A., Ziyaev R., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 813.



LIRINIDINE

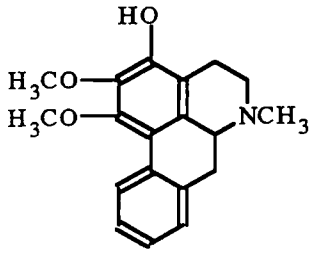
Liriodendron tulipiferum
$C_{18}H_{19}NO_2$: 281.1416
Mp: oil [1], 214-215° [2]
$[\alpha]_D$ +78° (chlf.)

{h-chl. 239° (dec.)} [1]
UV: 230 pl, 271, 312(4.22, 4.12, 3.67) [1]
IR: 3400-3200, 2850, 1610, 1260, 781, 752 [1]
Mass: 281(M^+), 280(100), 266, 264, 250, 238 [1]
PMR: 2.47(3H, s, NCH_3), 3.81(3H, s, OCH_3), 6.50(1H, s, H-3), 7.05-7.35(3H, m, H-8, H-9, H-10), 8.27(1H, m, H-11) [1]
^{13}C NMR(DMSO): [3]

C-1	141.6	C-4	28.4	C-9	127.5*
1a	119.2	5	52.9	10	126.2*
1b	123.5	6a	62.1	11	126.0*
2	146.5	7	34.4	11a	132.4
3	110.3	7a	135.7	NCH_3	43.6
3a	127.4	8	128.1*	OCH_3	55.8

Pharm.: LD_{50} 9.8, 21.3 mg/kg (i/v, s/c, mice). Relaxes the smooth musculature, possesses a hypotensive and spasmolytic action [4].

1. Ziyaev R., Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1973, 760.
2. Israilov I.A., Karimova S.U., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 279.
3. Guinaudeau H., Leboeuf M., Cave A., J. Nat. Prod., 1979, **42**, 325.
4. Aliev Kh.U., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 111.

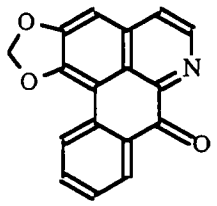


LIRININE

Liriodendron tulipiferum
$C_{19}H_{21}NO_3$: 311.1521
Mp: 152-154° (alc.)
$[\alpha]_D$ –55° (chlf.)
{h-chl. 255° (dec.)}
Sol-y.: sp. sol. bz., alc., ac.; r-sol. chlf., meth.

UV: 223, 284(4.42, 4.17)
IR: 3400-3100, 2850, 1590, 1290
Mass: 311(M^+, 100), 310, 296, 294, 280, 253, 237, 155.5($^{++}$)
PMR: 2.45(3H, s, NCH_3), 3.63, 3.81(3H, s, 2×OCH_3), 7.22-7.28(3H, m, H-8, H-9, H-10), 8.15(1H, dd, J=7.5;0.8, H-11) [1]
Pharm.: LD_{50} 28, 105 mg/kg (i/v, s/c). Relaxes the smooth musculature. Exerts a hypotensive and spasmolytic action. Enhances the action of caffeine and arecoline on combined use [2].

1. Ziyaev R., Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1973, 67.
2. Aliev Kh.U., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 111.

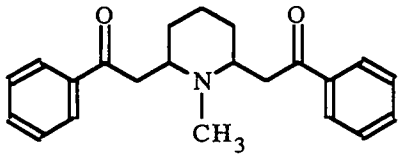


LIRIODENINE

Liriodendron tulipiferum, Magnolia soulangeana, Roemeria refracta
$C_{17}H_9NO_3$: 275.0582
Mp: 271-273° (chlf.) [1]
UV: 247, 269, 302(4.23, 4.16, 3.70)
UV(H^+): 256, 280, 334(4.33, 4.25, 3.70) [2]

IR: 1650, 1042, 953 [3]
Mass: 275(M^+, 100), 247, 246, 219, 217, 189, 188, 162 [4]
PMR(CF_3COOH): 6.22(2H, s, CH_2O_2), 7.11(1H, s, H-3), 7.35-8.78(6H, m, H-Ar) [1]
Pharm.: Does not modify arterial pressure [5]. Antimicrobial action [6].

1. Abdusamatov A., Ziyaev R., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 112.
2. Bick I.R.C., Douglas G.K., Tetrahedron Lett., 1964, 1629.
3. Guinaudeau H., Leboeuf M., Cave A., Lloydia, 1975, **38**, 275.
4. Bick I.R.C., Bowie J.H., Douglas G.K., Austral. J. Chem., 1967, **20**, 1403.
5. Sadritdinov, p. 213.
6. Chen C.R., Beal J.L., Doskotch R.W., Mitscher L.A., Svoboda G.H., Lloydia, 1974, **37**, 493.

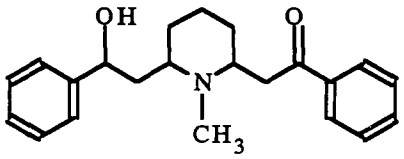


LOBELANINE

Lobelia cardinalis, L.fulgens, L.inflata, L.laxylora, L.sessilifolia, L.syphilitica, L.urens
$C_{22}H_{25}NO_2$: 335.1885
Mp: 99°

$[\alpha]_D$ 0°
{h-chl. 188° (dec.), h-b. 188°, h-i. 172°, p-chl. 174°, nitr. 154°}

1. Boit, p. 136.

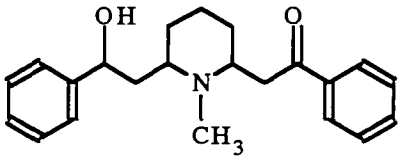


(–)-LOBELINE

Lobelia cardinalis, L.fulgens, L.inflata, L.laxylora, L.sessilifolia, L.syphilitica, L.urens
$C_{22}H_{27}NO_2$: 337.2042

Mp: 130-131° (alc.)
$[\alpha]_D$ –35°
{h-chl. 132°}
Sol-y.: sol. chlf., bz., alc.
UV: 280, 345(3.15, 4.12)
IR: 3200, 3090, 3010, 2930, 2900, 1698, 1690, 1607, 1588, 1502, 1477, 1370, 1354, 1300, 1143, 1073, 1048, 986, 930, 892, 870

1. Tsarev M.V., Trudy VILR, 1950, **10**, 48.

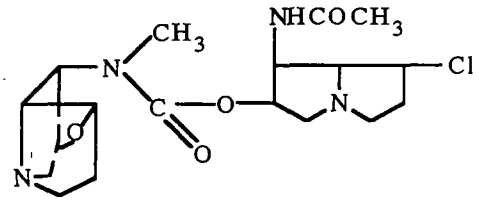


(±)-LOBELINE

Lobelia sessilifolia
$C_{22}H_{27}NO_2$: 337.2042
Mp: 110°
{h-chl. 170°, nitr. 160°} [1]

Sol-y.: sol. chlf., bz., alc.; sp. sol. water
Pharm.: Respiration stimulator. 1-ml doses of 1% solution used i/v. A component of Lobesil antismoking tablets [2].

1. Boit, p. 136.
2. Mashkovskii, Vol. 1, p. 133.

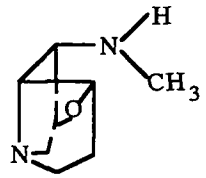


LOLIDINE

Lolium cuneatum
$C_{18}H_{27}N_4O_4Cl$: 398.1720/400.1691
Mp: 225-226° (meth.) [1]
$[\alpha]_D$ +146° (chlf.) [1]
Sol-y.: r-sol. chlf., eth. [2]

IR: 3180-3170, 1665, 1635 [1]
Mass: 400(M^+), 398, 363, 362, 245, 217, 181, 153 [1]; 398/400(M^+), 383/385, 355/357, 245/247, 217/219, 153, 124, 123, 111, 110, 95, 83, 82(100), 69, 55 [2]
PMR: 1.96(3H, s, NAc), 2.63(3H, s, NCH_3) [1]

1. Batirov É.Kh., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 63.
2. Batirov É.Kh., Unpub.



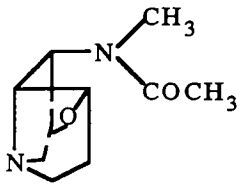
LOLINE

Lolium cuneatum
$C_8H_{14}N_2O$: 154.1106
Bp: 103° (5 mm Hg) [1]
$[\alpha]_D$ +19° (ac.) [2]

{di h-chl. 257°, di h-b. 255°, sulf. 251°, p-chl. 282°} [1]
IR: [3]

Mass: 154($M^{+\cdot}$, 18), 124(22), 123(29), 111(41), 110(81), 95(48), 83(45), 82(100), 56(7), 55(19), 42(41) [4]
PMR: [3]
Pharm.: LD_{50} 448 mg/kg (i/p, mice). Hypotensive action [5].

1. Yunusov S.Yu., Akramov S.T., Zh. Org. Khim., 1955, **25**, 1813.
2. Yunusov S.Yu., Akramov S.T., DAN UzSSR, 1954, No. 3, 27.
3. Aasen A.J., Culvenor C.C.J., Austral. J. Chem., 1969, **22**, 2021.
4. Akramov S.T., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 298.
5. Sadritdinov, p. 136.

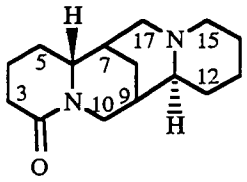


LOLININE

Lolium cuneatum
$C_{10}H_{16}N_2O_2$: 196.1212
Mp: 76-77° (anh. eth.) [1]
$[\alpha]_D$ +51° (ac.) [1]

{h-chl. 198°, h-b. 227°, m-i. 147°, p-chl. 175°} [2]
Mass: 196($M^{+\cdot}$, 7), 124(13), 123(35), 111(4), 110(4), 95(45), 83(15), 82(100), 56(16), 55(8), 42(20) [3]

1. Yunusov S.Yu., Akramov S.T., DAN UzSSR, 1954, No. 3, 27.
2. Yunusov S.Yu., Akramov S.T., Zh. Org. Khim., 1955, **25**, 1813.
3. Akramov S.T., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 298.



(+)-LUPANINE

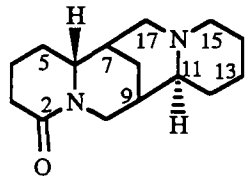
Ammopiptanthus mongolicus, Cytisus caucasicus,
C.ratisbonensis, Leontice ewersmannii,
L.smirnowii, Piptanthus nanus

$C_{15}H_{24}N_2O$: 248.1889
Mp: 44° (eth.) [1]
$[\alpha]_D$ +85° (alc.) [1]
{p-chl. 213°, picr. 180°, h-i. 190°, h-chl. 163°, h-b. 164°, m-i. 240°} [1]
UV: 215(3.80) [2]
IR{h-chl}: 3670, 3410, 3010, 2960, 2870, 1646, 1636, 1464, 1450, 1420, 1363, 1351, 1332, 1312, 1295, 1275, 1244, 1191, 1167, 1148, 1131, 1102, 1081, 1068, 1047, 1018, 1008, 991, 965, 951, 935, 923 [3]
Mass: 248($M^{+\cdot}$, 39), 247(21), 150(37), 149(49), 136(100), 110(24), 98(30), 97(28), 84(19), 41(40) [4]
PMR: 1.10(J=11.5; 2.2; 2.2, H-8_a), 1.45(J=10, H-9), 1.76(H-7), 1.85(J=11.8; 3.5; H-17_a), 1.87(J=12, H=15_a), 2.10(J=11.5, H-8_e), 2.27(J=12.9; 2.5, H-10_a), 2.61(J=12, H-15_e), 2.65(J=11.8; 11.2, H-17_e), 3.14(H-6), 4.32(J=12, H-10_e) [5]
^{13}C NMR: [6]

C-3	33.0	C-7	34.9	C-12	33.5
4	19.6	8	27.3	13	24.5
5	26.7	9	32.4	14	25.3
6	61.7	10	46.6	15	55.3
		11	63.8	17	52.8

HPLC: [7]
Pharm.: LD_{50} 550 mg/kg (s/c, mice). In experiments on narcotized animals lowers the arterial pressure and strengthens respiration. Enhances the hypotensive effect of acetylcholine and the hypertensive effect of adrenaline. Decreases the influence of cytisine on pressure and respiration [7, 8].

1. Yunusov S.Yu., The Alkaloids [in Russian], Fan, Tashkent, 1981, p. 222; Unpub.
2. Sangster A.W., Stuart K.L., Chem. Rev., 1965, **65**, 69.
3. Holubek, No. 163.
4. Pelletier, Vol. 2, p. 105.
5. Sadykov, p. 217.
6. Shamma, No. 209.
7. Takamatsu S., Saito K., Ohmiya S., Ruangrungsi N., Murakoshi, Phytochem., 1991, **30**, 3793.
8. Sadritdinov, p. 140.



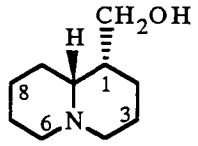
(–)-LUPANINE

Ammodendron argenteum, A.eichwaldii, A.karelinii, A.longiracemosum, Leontice darwasica, L.smirnowii, Maackia amurensis

$C_{15}H_{24}N_2O$: 248.1889
Mp: 44° [1]
$[\alpha]_D$ –75° [1]
{h-chl. 163°, p-chl. 211°, h-i. 190°, picr. 178°} [1]
UV: 215(3.80) [2]
IR: 1635 [2]
Mass: 248(M^+), 219, 150, 149, 136(100), 110, 98, 97, 84 [2]
PMR: 1.45(1H, H-9), 1.75(1H, H-7), 1.85(1H, J=11.8;3.5, H-17$_a$), 1.87(1H, J=12, H-15$_a$), 2.10(1H, J=11.5, H-8$_e$), 2.27(1H, J=12.9; 2.5, H-10$_a$), 2.61(1H, J=12, H-15$_e$), 2.65(1H, J=11.8; 11.2, H-17$_e$), 3.14(1H, H-6), 4.32(1H, J=12.9; 2.1; 2.0, H-10$_e$) [4]
^{13}C NMR: [3]

C-3	33.0	C-8	27.3	C-13	24.5
4	19.6	9	32.4	14	25.3
5	26.7	10	46.6	15	55.3
6	61.7	11	63.8	17	52.8
7	34.9	12	33.5		

1. Tkeshelashvili É.G., Iskandarov S., Mudzhiri K.S., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 539.
2. Zunnunzhanov A., Unpub.
3. Sadykov, p. 217.
4. Shamma, No. 209.



LUPININE

Anabasis aphylla, Genista transcaucasica
$C_{10}H_{19}NO$: 169.1467
Mp: 68-69° (petr. eth.)

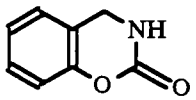
$[\alpha]_D$ –24° (water)
{h-chl. 212°}
Sol-y.: r-sol. water, alc., eth.; sp. sol. petr. eth. [1]
IR: 3250, 3010, 2945, 2900, 2860, 2815, 2770, 2700, 2680, 1484, 1459, 1407, 1365, 1345, 1303, 1278, 1264, 1193, 1155, 1134, 1118, 1112, 1091, 1070, 1058, 1021, 1013, 940, 891, 878, 870, 857, 823, 815 [2]
Mass: 169(M^+, 32), 168(28), 152(54), 138(52), 97(66), 96(51), 83(100), 82(43), 55(57), 41(57) [3, 4]
PMR: 2.82, 3.65(J=11.6; 3), 4.00(J=11.6; 6), 4.65(OH) [4]

^{13}C NMR: [5]

C-1	38.5	C-6	56.9	C-9	29.5
2	30.8	7	25.5	10	65.0
3	22.7	8	24.6	CH_2OH	65.0
4	56.9				

Pharm.: LD_{50} 110, 15 mg/kg (s/c, i/v, mice). Lowers arterial pressure and depresses respiration (in acute experiments on cats). Stimulates respiration in dogs. The action is connected with a peripheral and central effect. Cumulative property. {Benzoyllupinine} possesses an antihelminthic action [6]. Increases liver regeneration in white rats [7].

1. Orekhov A.P., Men'shikov G.P., Byull. NIKhFI, 1931, No. 1, 1.
2. Holubek, No. 164.
3. Pelletier, Vol. 2, p. 105.
4. Yunusov T.K., Ishbaev A.I., Leont'ev V.B., Sadykov A.S., Khim. Prir. Soedin., 1971, 49.
5. Shamma, No. 4, p. 168.
6. Sadritdinov, p. 103.
7. Ryabchenko V.P., Kolesnikova S.S., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1973, p. 41.

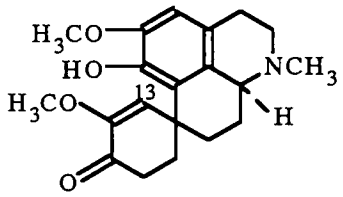


LUTEANINE

Reseda lutea
$C_8H_7NO_2$: 149.0477
Mp: 185-187° (bz.)

IR: 3280-3240, 1720-1710, 750
Mass: 149(M^+), 106, 78
PMR: 4.26(2H, s, CH_2), 6.78(4H, m, H-Ar)

1. Nakhatov I.K., Tadzhibaev M.M., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 424.



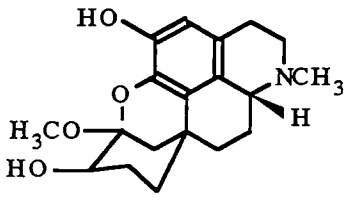
LUTEIDINE

Colchicum luteum, Merendera jolantae
$C_{20}H_{25}NO_4$: 343.1783
Mp: 231-232° (ac.)
$[\alpha]_D$ –96° (meth.) [1]

{h-chl. 258°, m-i. 265°, picr. 181° [2]; oxime 171° [3]; luteinone 235°, O,N-di Ac 200°, m-i. O-Me 265° [1]}
UV: 228, 272(3.89, 4.05) [1]
IR: 3535, 1677, 1667, 1617, 1600 [1]
Mass: 343(M^+, 38), 342(22), 244(100) [1]
PMR: 2.37(3H, s, NCH_3), 3.51, 3.78(3H, s, 2×OCH_3), 5.79(1H, s, H-13), 6.46(1H, s, H-3) [1]
^{13}C NMR: [1]
X-ray spectral analysis: [4]
Pharm.: Reversible cholinesterase inhibitor [5]. Only slightly toxic. Lowers arterial pressure with brief stimulation of respiration [6].

1. Mukhamed'yarova N.L., Yusupov M.K., Levkovich M.G., Aslanov Kh.A., Sadykov A.S., Khim. Prir. Soedin., 1976, 354.
2. Yusupov M.K., Sadykov A.S., Nauch. Trudy TashGU, 1962, No. 203, 3.
3. Chommadov B., Author's Abstract of Doctoral Dissertation, Tashkent, 1992, p. 14.

4. Nazarov G.B., Ibragimov B.T., Talipov S.A., Aripov T.F., Yusupov M.K., Mukhamed'yarova N.L., Chommadov B., Khim. Prir. Soedin., 1986, 348.
5. 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.
6. Emel'yanova L.S., in: The Pharmacology of Plant Substances, Nauchn. Trudy TashGU [Scientific Papers of Tashkent State University], Issue 457, Fan, Tashkent, 1973, p. 69.

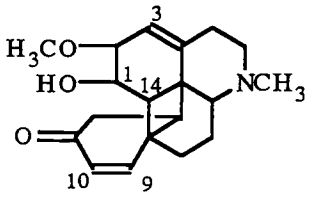


LUTEINE

Colchicum kesselringii, C.luteum
$C_{19}H_{25}NO_4$: 331.1783
Mp: 228-230° (ac.)
$[\alpha]_D$ +93° (meth.)

{O,O,N-tri Ac amorph. [1], h-chl. 262°, m-i. 251°, p-chl. 165°, picr. 172° [2]}
Sol-y.: r-sol. meth., chlf.; sp. sol. ac.; i.s. water [2]
UV: 210, 285(4.70, 3.70) [1]
IR: 3470, 1590, 1470 [1]
Mass: 331(M^+, 43), 330(100), 316, 300, 288, 284, 270, 230, 228, 215, 201 [1]
PMR: 1.25(H-10_a), 1.40(H-13_a), 1.75(H-10_e), 1.97(H-9_a), 2.03(H-13_e), 2.35(3H, s, NCH_3), 3.25(3H, s, OCH_3), 3.64(1H, dd, J=10;5.5, H-11_a), 4.70(1H, narrow s, OH), 6.47(1H, s, H-3) [1]

1. Mukhamed'yarova N.L., Yusupov M.K., Levkovich M.G., Aslanov Kh.A., Khim. Prir. Soedin., 1976, 801.
2. Yusupov M.K., Sadykov A.S., Nauch. Trudy TashGU, 1962, No. 203, 3.



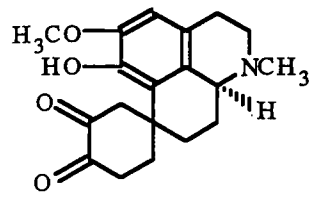
LUTEININE

Colchicum luteum
$C_{19}H_{25}NO_3$: 315.1834
UV: 220, 246 sh, 278 sh(4.12, 4.04, 3.20)
IR: 3350, 1680

Mass: 315(M^+), 300, 289, 282, 272
PMR: 2.04(1H, d, J=6, H-14), 2.46(3H, s, NCH_3), 3.34(3H, s, OCH_3), 3.46(1H, dd, J=6; 4, H-1), 4.32(1H, dd, J=6.2; 4, H-2), 5.82(1H, d, J=6.2, H-3), 5.86(1H, dd, J=9.5; 1.8, H-9), 6.77(1H, dd, J=9.5; 2, H-10)
^{13}C NMR:

>C=0	192.6	–O–CH<	76.3; 64.4
>C=	144.0	N–CH<	62.1
>C<	52.0; 48.3	N–CH_2	50.2
–CH=	158.8; 128.2; 119.8	O–CH_3	56.2
–CH	48.0; 45.2	N–CH_3	41.2
$>CH_2$	42.8; 33.8; 30.9; 24.4		

1. Mukhamed'yarova N.L., Levkovich M.G., Yusupov M.K., Nauch. Trudy TashGU, Tashkent, 1976, No. 513, 111.

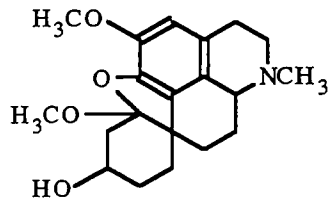


LUTEINONE

Colchicum luteum
$C_{19}H_{23}NO_4$: 329.1627
Mp: 237-238° (ac.)
$[\alpha]_D$ +325° (chlf.) [1, 2]
{dioxime 213°} [1]

IR: 3220, 1735 [1, 2]
Mass: 329(M^+, 50), 328(100), 287, 257, 244, 242 [1, 2]
PMR: 2.35(3H, s, NCH_3), 3.70(3H, s, OCH_3), 6.44(1H, s, H-3) [1, 2]
Pharm.: Reversible cholinesterase inhibitor [3].

1. Chommadov B., Author's Abstract of Docotoral Dissertation, Tashkent, 1992, pp. 6, 15.
2. Mukhamed'yarova N.L., Yusupov M.K., Levkovich M.G., Aslanov Kh.A., Sadykov A.S., Khim. Prir. Soedin., 1976, 354.
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.

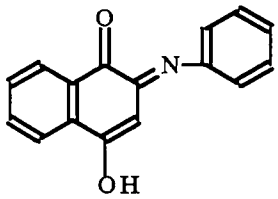


LUTEICINE

Colchicum luteum
$C_{20}H_{27}NO_4$: 345.1940
$[\alpha]_D$ +112° (chlf.)

{Ac 211° [1], m-i. 250° [2], m-i. Ac 230° [1], luteicinone 267° [1]}
UV: 215, 237 sh, 287(4.70, 4.10, 3.50) [1]
IR: 3370, 1600, 1470 [1]
Mass: 345(M^+, 50), 344(100), 330, 328, 314, 302, 284 [1]
PMR: 2.73(3H, s, NCH_3), 3.28, 3.73(3H, s, 2×OCH_3), 6.43(1H, s, H-Ar)

1. Yusupov M.K., Mukhamed'yarova N.L., Aslanov Kh.A., Khim. Prir. Soedin., 1976, 359.
2. Yusupov M.K., in: The Chemistry of Plant Substances [in Russian], Fan, Tashkent, 1972, p. 19.

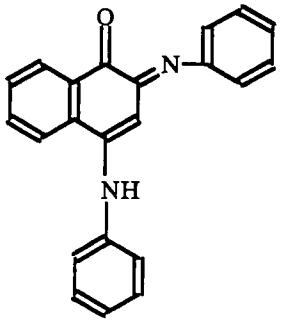


LUTINE

Reseda luteola
$C_{16}H_{11}NO_2$: 249.079
Mp: 185-186° (chlf.)
UV: 216, 222, 274(4.45, 4.37, 4.50)

IR: 3320, 1670, 770, 750, 710
Mass: 249(M^+, 100), 232(10), 231(24), 220(50), 172(8), 104(30), 77(76)
PMR: 6.35(1H, s, CH=C), 7.25-8.05(9H, m, H-Ar)

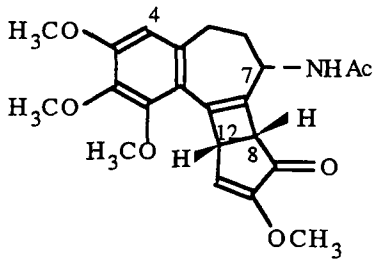
1. Lutfullin K.L., Tadzhibaev M.M., Malikov V.M., Abdullaev U.A., Rakhmankulov U., Khim. Prir. Soedin., 1977, 826.



LUTININE

Reseda luteola
$C_{22}H_{16}N_2O$: 324.1263
Mp: 177-179° (chlf.)
UV: 253, 283, 470(4.35, 4.39, 3.80)
IR: 3300, 1660, 775, 760, 710
Mass: 324($M^{+\cdot}$, 100), 307(2), 295(8), 247(20), 232(12), 104(2), 93(4), 77(30)
PMR: 6.58(1H, s, CH=C), 6.59-8.46(16H, m, H-Ar), 8.13, 8.46(4H, dd, J=8.2)

1. Lutfullin K.L., Tadzhibaev M.M., Malikov V.M., Abdullaev U.A., Rakhmankulov U., Khim. Prir. Soedin., 1977, 826.

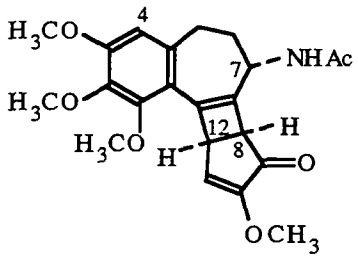


β-LUMICOLCHICINE

Colchicum kesselringii, C.laetum, C.luteum, Merendera jolantae, M.raddeana, M.robusta, M.sobolifera, M.trigyna
$C_{22}H_{25}NO_6$: 399.1682
Mp: 184-186° (e-a.)
$[\alpha]_D$ +309° (chlf.) [1, 2]

UV: 226, 264, 342 [1]
IR: 3280, 1733, 1648, 1619, 1600, 1570, 1537, 1498, 1336, 1295, 1254, 1135, 1125, 1110, 1033 [2]
Mass: 399($M^{+\cdot}$), 356, 340 [3]
PMR: 2.05(2H, H-6), 2.06(3H, s, NAc), 2.70(2H, H-5), 3.64(H-8), 3.67, 3.87, 3.97(3H, 6H, 3H, s, 4×OCH_3), 4.12(H-12), 4.86(H-7), 6.08(NH), 6.48(H-4), 6.65(H-11) [4]
HPLC: [5]
Pharm.: Anticholinesterase activity [6].

1. Zuparova K.M., Chommadov B., Yusupov M.K., Sadykov A.S., Khim. Prir. Soedin., 1972, 487.
2. Holubek, No. 160A.
3. Popova O.I., Murav'eva D.A., Tolkachev O.N., Khim. Prir. Soedin., 1991, 731.
4. Severini Ricco G., Danieli B., Gazz. Chim. Ital., 1969, **99**, 133.
5. Lacey E., Brady R.L., J. Chromatogr., 1984, **315**, 233.
6. Zuparova K.M., Rozengart E.V., Yusupov M.K., Chommadov B., Khakimov Yu.R., Abduvakhabov A.A., Israilov D.I., DAN UzSSR, 1991, No. 4, 33.

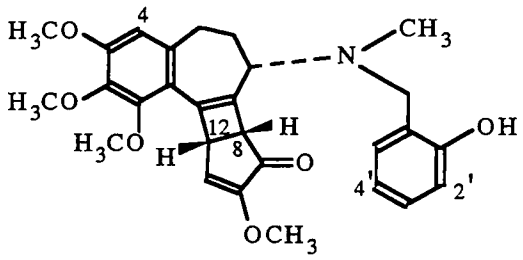


γ-LUMICOLCHICINE

Colchicum kesselringii, C.speciosum, Merendera raddeana, M.robusta
$C_{22}H_{25}NO_6$: 399.1682
Mp: 276-278° (eth.-chlf.)
$[\alpha]_D$ –304° (chlf.) [1, 2]
UV: 223, 266, 335(4.41, 4.42, 3.38) [2]

IR: 3320, 1714, 1647, 1613, 1601, 1537, 1500, 1330, 1251, 1238, 1198, 1138, 1131, 1112, 1098, 1039 [2]
PMR: 2.00(NAc), 2.05, 2.70(2H, H-6, 2H, H-5), 3.68(H-8), 3.68, 3.88, 3.94 (3H, 6H, 3H, s, 4×OCH_3), 4.04(H-12), 4.65(H-7), 5.92(NH), 6.47(H-4), 6.61(H-11) [3]
HPLC: [4]

1. Yusupov M.K., Sadykov A.S., Zh. Org. Khim., 1964, **34**, 1672.
2. Holubek, No. 161A.
3. Severini Ricca G., Danieli B., Gazz. Chim. Ital., 1969, **99**, 133.
4. Lacey E., Brady R.L., J. Chromatogr., 1984, **315**, 233.

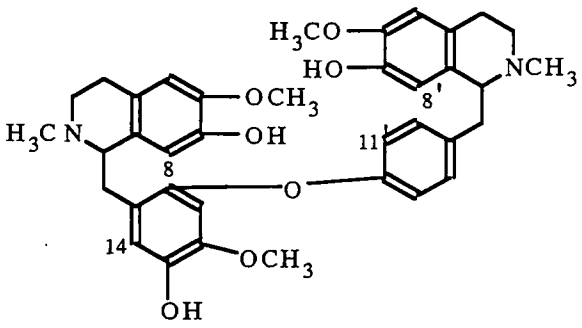


β-LUMISPECIOSINE

Colchicum speciosum
$C_{28}H_{31}NO_6$: 477.2151
Mp: 157-158° (ac.)
$[\alpha]_D$ +132° (chlf.)
UV: 226 sh, 265, 340
IR: 2960, 2880, 1720, 1460

Mass: 477($M^{+\cdot}$), 462, 447, 446, 434, 371, 370, 356, 340, 328, 282, 107, 106
PMR: 2.06(NCH_3), 3.58(1H, dd, J=2.6; 1.8, H-8), 3.68, 3.82, 3.84, 3.90(3H, s, 4×OCH_3), 3.90(1H, dd, J=3.0; 2.6, H-12), 6.38(1H, s, H-4), 6.68(1H, d, J=3, H-11), 6.70, 6.90(1H, 2H, m, H-3', H-4', H-5'), 7.14(1H, q, J=7.15, H-2')

1. Chommadov B., Author's Abstract of Doctoral Dissertation, Tashkent, 1992, p. 36; Unpub.

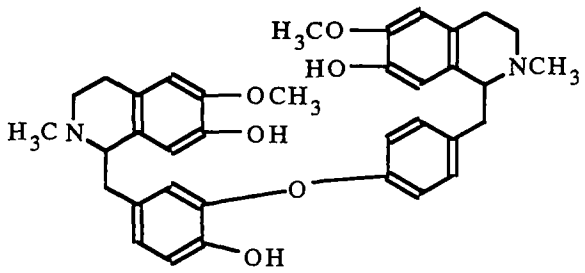


MAGNOLAMINE

Magnolia fuscata
$C_{37}H_{42}N_2O_7$: 626.299
Mp: 117-118° (bz.) [1]
$[\alpha]_D$ +183° [2]
{picr. 145° (dec.) [1], O,O,O-tri Me 152° [2];O,O,O-tri Et 103° [2]}
Sol-y.: r-sol. alc., chlf.; sp. sol. bz.
UV: 284(4.11) [3]

IR: 3545, 1650, 1610, 1268, 1220, 1170 [3, 4]
Mass: 192(100) [5]
PMR: 2.34, 2.43(3H, s, 2×NCH_3), 3.74, 3.76, 3.78(3H, s, 3×OCH_3), 6.02, 6.21(1H, s, H-8, H-8'), 6.73, 6.98(2H, d, J=8, H-10', H-11', H-13', H-14'), 6.46, 6.49(1H, s, H-5, H-5'), 6.53, 6.64(1H, s, H-11, H-14) [4]
Abs. conf.: 1S, 1'S
Pharm.: Hypotensive [6] and depressive [7] action.

1. Orekhov A.P., Proskurnina N.F., Zh. Org. Khim., 1939, **9**, 127.
2. Proskurnina N.F., Orekhov A.P., Zh. Org. Khim., 1946, **16**, 129.
3. Holubek, No. 558.
4. Yakhontova L.D., Tolkachev O.N., Fesenko D.A., Perel'son M.E., Proskurnina N.F., Khim. Prir. Soedin., 1977, 234.
5. Baldas J., Bick I.R.C., Ibuka T., Kapil R.S., Porter Q.N., J. Chem. Soc. Perkin I, 1972, 592.
6. Sadritdinov, p. 186; Mashkovskii M.D., in: Main Directions of the Work of VNIKhFI [Sergei Ordzhonikidze All-Union Scientific-Research of Pharmaceutical Chemistry], Moscow, 1959, p. 393.
7. Tolkachev O.N., Nakova E.P., Evstigneeva R.P., Khim. Prir. Soedin., 1977, 451.

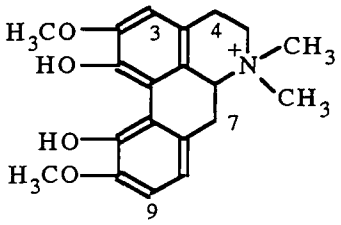


MAGNOLINE (GRISABUTINE)

Magnolia fuscata
$C_{36}H_{40}N_2O_6$: 596.2886
Mp: 178-179° (alc.) [1], 192-193° [2]
$[\alpha]_D$ −10° (pyr.) [1], −50° (chlf.) [2]

{picr. 162° (dec.), picrolonate 190° (dec.); O,O,O-tri Me 110°, $[\alpha]_D$ +92° (chlf.) [3]}
Sol-y.: sp. sol. alc., ac., chlf.; i.s. bz., eth., petr. eth., water [1]
IR: 3400 [2]
Mass: 596(M^+, 15), 404(13), 192(100), 175(6) [2]
PMR(DMSO-d_6): 2.32(6H, s, 2×NCH_3), 3.71(6H, s, 2×OCH_3) [2]
Abs. conf.: 1S,1'R [2]
Pharm.: Anticholinesterase [4] and depressive [5] action.

1. Orekhov A.P., Proskurnina N.F., Zh. Org. Khim., 1939, **9**, 127.
2. Ahmad R., Cava M.P., J. Org. Chem., 1977, **42**, 2271.
3. Proskurnina N.F., Orekhov A.P., Zh. Org. Khim., 1940, **10**, 707.
4. Sadritdinov, p. 186; Mashkovskii M.D., in: Main Directions of the Work of VNIKhFI [Sergei Ordzhonikidze All-Union Scientific-Research of Pharmaceutical Chemistry], Moscow, 1959, p. 393.
5. Tolkachev O.N., Nakova E.P., Evstigneeva R.P., Khim. Prir. Soedin., 1977, 451.



MAGNOFLORINE

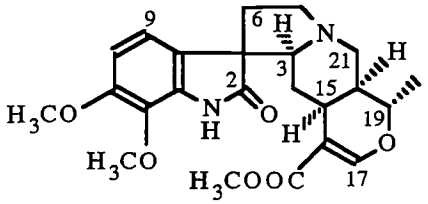
Aquilegia karelinii, A.olympica, Argemone platyceras, Berberis heteropoda, B.iliensis, B.integerrima, B.nummularia, B.oblonga, B.vulgaris, Dicranostigma franschetianum, D.lactucoides, D.leptopodum, Eschscholtzia californica, Glaucium fimbrilligerum, G.squamigerum, Papaver maeoticum, Thalictrum baikalense, Th.collinum, Th.flavum, Th.foetidum, Th.isopyroides, Th.longipedunculatum, Th.minus, Th.sachalinense, Th.simplex, Th.strictum.

$C_{20}H_{24}NO_4$: 342.1705
Mp:{iodide}: 249-251° (dec.) [1]
$[\alpha]_D${iodide} +193° (meth.) [3], +100° (water) [1]
{O,O-di Ac iodide 235° (dec.), p-chl. 262°}
UV{iodide}: 227, 271, 310(4.65, 3.93, 3.80) [2]
IR{iodide}: 3400-3100 [1]
Mass{iodide}: 342, 341, 327, 58(100) [2, 3]
PMR{iodide, DMSO-d_6}: 2.98, 3.41(3H, s, $N(CH_3)_2$), 3.88(3H, s, 10-OCH_3), 3.93(3H, s, 2-OCH_3), 6.90(1H, s, H-3), 6.95(2H, s, H-8, H-9) [3]
^{13}C NMR{iodide, $CDCl_3$+CF_3COOH}: [4]

C-1	140.2	C-5	61.5	C-11	140.2
1a	118.9	6a	69.7	11a	119.2*
1b	117.7	7	30.3	NCH_3	43.4
2	148.2	7a	123.8	NCH_3	54.2
3	109.6	8	120.8	2-OCH_3	55.8
3a	120.3*	9	110.9	10-OCH_3	55.8
4	23.4	10	147.6		

HPLC: [5]
Pharm.: LD_{50} 138 mg/kg (s/c, mice). Hypotensive action [6].

1. Abdizhabbarova S., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 354.
2. Dominguez X.A., Benavides L., Butruille D., Phytochem., 1974, **13**, 680.
3. Slavik J., Dolejs L., Collect., 1973, **38**, 3514.
4. Marsaioli A.J., Reis F.A.M., Magalhaes A.F., Ruveda E.A., Kuck A.M., Phytochem., 1979, **18**, 165.
5. Bonora A., Tosi B., Dall'Olio G., Bruni A., Phytochem., 1990, **29**, 2389.
6. Sadritdinov, p. 187.



MAJDINE

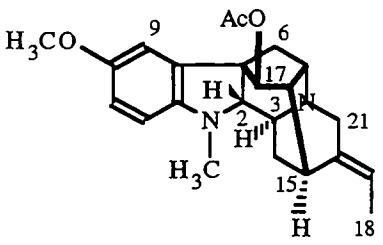
Vinca erecta, V.herbacea, V.major, V.pubescens
$C_{23}H_{28}N_2O_6$: 428.1947
Mp: 190-192° (meth.) [1,2]
$[\alpha]_D$ −108° (pyr.), −145° (chlf.) [2]

UV: 225, 248 sh, 285 sh (4.57, 4.23, 3.16) [1], 227, 270-290 sh [3]
IR: 3330, 1730, 1710, 1635, 790, 775 [4]
Mass: 428(M^+, 100), 413(2), 411(3), 397(3), 223(46), 208(13), 206(4), 205(5), 204(6), 180(9), 59(35) [1, 2, 4]
PMR: 1.35(3H, d, J=6.6, 19-CH_3), 3.54(3H, s, $COOCH_3$), 3.79(6H, 2×OCH_3), 4.41(1H, m, H-19), 6.50(1H, d, J=8, H-Ar), 6.73(1H, d, J=8, H-Ar), 7.40(1H, s, H-17), 8.18(1H, NH) [1, 2, 4, 5]
^{13}C NMR: [6]

C-2	180.8	C-10	106.1	C-17	154.9
3	74.0	11	152.2	19	72.0
5	53.3*	12	133.9	20	38.1
6	33.7	13	132.5	21	54.6*
7	55.9	14	29.3	22	167.4
8	126.5	15	30.8	19-CH_3	18.4
9	117.8	16	109.1	Ar-OCH_3	56.2
					60.5
				OCH_3	50.6

Abs. conf.: 3S,4R,7R [6]
Pharm.: LD_{50} 240 mg/kg (i/v, mice). Hypotensive action [7].

1. Shamma M., Shine R.I., Tetrahedron, 1968, **24**, 4641.
2. Chkhikvadze G.V., Vachnadze V.Yu., Mudzhiri K.S., Soobshch. AN GSSR, 1973, **69**, 369.
3. Abdurakhimova N., Yuldashev P.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 310.
4. Vachnadze V.Yu., Malikov V.M., Mudzhiri K.S., Yunusov S.Yu., Soobshch. AN GSSR, 1972, **66**, 333.
5. Yagudaev M.R., Abdurakhimova N., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 197.
6. Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 217.
7. Kurmukov A.G., in: The Pharmacology of Alkaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, p. 43.



MAJORIDINE (MAJDININE)

Vinca erecta, V.major, V.pubescens
$C_{23}H_{28}N_2O_3$: 380.21
Mp: 222-223° [1, 2]
$[\alpha]_D$ −27° (chlf.) [1], −19° (chlf.) [3]
{dihydro 195°}
UV: 248, 307(4.00, 3.58) [3]

IR: 1728, 1255, 760, 749, 742 [3]
IR($CHCl_3$): 1728, 1593, 1255, 1038, 815, 805 [2]
Mass{dihydro}: 382(M^+, 12), 381(100), 352(1.5), 190(14), 188(6), 174(18) [2, 3]
PMR: [2]
^{13}C NMR: [4]

C-2	79.6	C-11	111.1	C-19	114.3
3	49.3*	12	109.6	20	139.3
5	55.9*	13	147.8	21	55.2
6	36.1	14	29.4	NCH_3	35.1
7	53.6	15	27.8	Ar-OCH_3	55.5
8	113.3	16	50.1	C=O	169.9
9	110.0	17	79.1	OCH_3	21.1
10	153.0	18	12.8		

ORD: [2]

1. Yuldashev P.Kh., Kaul D.L., Kablitsova Z., Troyanek Ya., Yunusov S.Yu., Khim. Prir. Soedin., 1966, 192.
2. Kaul J.L., Trojanek J., Chem. Ind., 1966, 853; Lloydia, 1966, **29**, 26.
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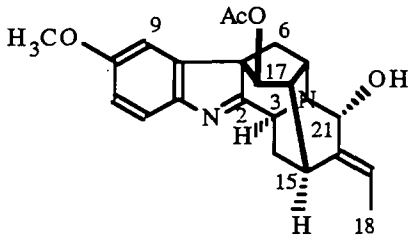
4. Chatterjee A., Chakrabarty M., Chosh A.K., Hagaman E.W., Wenkert E., Tetrahedron Lett., 1978, 3879.

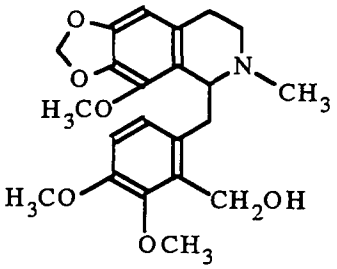


MAJORININE

Vinca major
$C_{22}H_{24}N_2O_4$: 380.1736
Mp: 195-196° (ac.)
UV: 213, 222, 280(4.31, 4.32, 3.92)
IR: 3200, 1748, 1635, 880, 830

Mass: 380(M^+), 362, 352, 351, 350, 337, 321, 213, 199
PMR: 1.67(q, H-6_a, 18-CH_3), 1.95(m, H-14α, H-14β), 2.19(s, OAc), 2.37(t, J=6; 0.5), 2.71(q, J=12; 5, H-6_e), 3.28(m, J=6; 0.5, H-15α), 3.82(s, 10-OCH_3), 3.85(m, J=5; 0.5; 6, H-5α), 4.30(q, J=7; 3, H-3_e), 4.98(m, H-17α, H-21α), 5.70(o, J=6.5; 2, H-19), 6.90(q, J=8.5; 2.3, H-11), 7.02(d, J=2.3, H-9), 7.53(d, J=2.3, H-12)

1. Il'yashenko L.I., Malikov V.M., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 382.

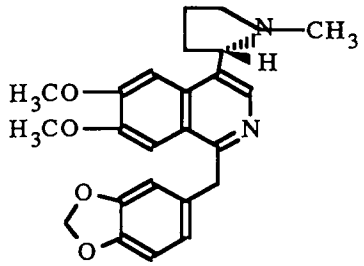


MACRANTALINE

Papaver lisae
$C_{22}H_{27}NO_6$: 401.1838
Mp: 140-141° (ac.-eth.-petr. eth.)
$[\alpha]_D$ +30° (chlf.)
UV: 238, 285
IR: 3150

Mass: 401(M^+), 220(100), 205, 181
PMR: 2.19(3H, s, NCH_3), 2.40-3.40(6H, m), 3.67(1H, q), 3.82, 3.86, 4.16(3H, s, 3×OCH_3), 4.39, 4.82(1H, d, J=10), 5.84(2H, s, CH_2O_2), 6.29(1H, s, H-Ar), 6.81, 7.04(1H, d, J=7, o-H-Ar)

1. Melik-Guseinov V.V., Murav'eva D.A., Mnatsakanyan V.A., Khim. Prir. Soedin., 1979, 239.

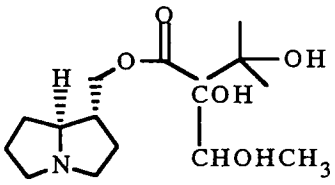


MACROSTOMINE

Papaver arenarium, P.macrostomum
$C_{24}H_{26}N_2O_4$: 406.1893
Mp: 107-108° (bz.)
$[\alpha]_D$ −51° (chlf.)
UV: 241, 246 sh, 276 sh, 288, 292 sh, 317, 332
IR: 2792, 1645

Mass: 406(M^+), 405, 391, 377, 375, 364, 363, 350, 349, 322, 271, 243, 160, 135, 84(100)
PMR(C_6D_6): 1.50-2.20(4H, m), 2.13(3H, s, NCH_3), 3.00-3.60(3H, m), 3.47, 3.55(3H, s, 2×OCH_3), 4.55(2H, s, Ar-CH_2-Ar), 5.30(2H, s, CH_2O_2), 6.55(1H, d, J=8), 6.80(1H, dd, J=8; 1), 6.97(1H, d, J=1), 7.35, 7.87, 8.72(1H, s, 3×H-Ar)

1. Mnatsakanyan V.A., Preininger V., Simanek V., Jurina J., Klasek A., Dolejs L., Santavy F., Collect., 1977, **42**, 1421.

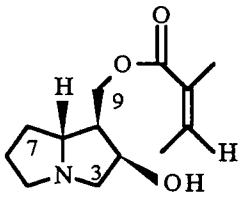


MACROTOMINE

Macrotomia echioides
$C_{15}H_{27}NO_5$: 301.1889
Mp: 95-97° (ac.) [1]

$[\alpha]_D$ −7° (alc.) [1]
{picr. 132°} [1]
Pharm.: LD_{50} 148.4 mg/kg (i/v, mice) [2]. Cholinolytic action [3].

1. Men'shikov G.P., Petrova M.F., Zh. Org. Khim., 1952, **22**, 1457.
2. Sadritdinov, p. 88.
3. Sadritdinov F.S., in: The Pharmacology of Natural Compounds [in Russian], Fan, Tashkent, 1979, p. 29.

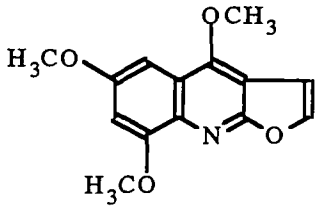


MACROPHYLLINE

Senecio amphibolius, S.macrophyllus
$C_{13}H_{21}NO_3$: 239.1521
Mp: 42-44° [1], 50-52° (petr.eth.) [2]
$[\alpha]_D$ +34° (alc.) [1]

{bitartrate 164°, anhydro 88°, macronecine 128°, $[\alpha]_D$ +49° (alc.)} [1]
Sol-y.: r-sol. ac., alc., petr. eth., water; sol. bz. [1]
Mass: 239(M^+, 24), 141(13), 140(99), 139(17), 138(8), 122(17), 111(15), 110(9), 108(44), 98(7), 96(6), 84(19), 83(100), 82(12), 81(9), 80(9), 70(20), 55(70) [3]
PMR: 3.33(2H, H-3), 3.71, 4.60(1H, H-9), 5.21(2H, H-7) [3]

1. Danilova A.V., Utkin L.M., Massagetov P.S., Zh. Org. Khim., 1955, **25**, 831.
2. Danilova A.V., Utkin L.M., Zh. Org. Khim., 1960, **30**, 345.
3. Aasen A.J., Culvenor C.C.J., Smith L.W., J. Org. Chem., 1969, **34**, 4137; Aasen A.J., Culvenor C.C.J., J. Org. Chem., 1969, **34**, 4143.



MACULOSIDINE

Ptelea trifoliata
$C_{14}H_{13}NO_4$: 259.0845
Mp: 183-184° (alc.) [1]
UV: 211, 246, 284 sh, 294, 306, 338, 351(4.29, 4.85, 3.72, 3.86, 3.88, 3.76, 3.69) [1, 2]
Mass: 259(M^+, 100), 244(22), 230(45), 216, 201, 186, 173, 158 [3]
PMR: 3.81, 4.01, 4.33(3H, s, 3×OCH_3), 6.68, 6.98(1H, d, J=2.5, H-7, H-5), 6.93, 7.53(1H, d, J=2.5, H-3, H-2) [4]

1. Frolova V.I., Kuzovkov A.D., Kibal'chich P.N., Zh. Org. Khim., 1964, **34**, 3499.
2. Sangster A.W., Stuart K.L., Chem. Rev., 1965, 69.
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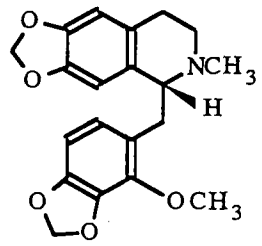
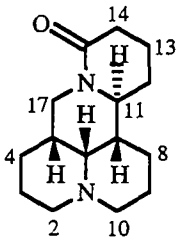


MARSHALINE

Corydalis marschalliana
$C_{20}H_{21}NO_5$: 355.1420
Mp: 134-135°
$[\alpha]_D$ −105° (chlf.)
UV: 290
Mass: 190

PMR: 2.29(3H, s, NCH_3), 2.30-3.70(m, 7H), 3.77(3H, s, OCH_3), 5.77, 5.92(2H, s, 2×CH_2O_2), 6.22, 6.42(1H, s, p-H-Ar), 6.40, 6.70(1H, d, J=8, o-H-Ar)

1. Israilov I.A., Denisenko O.N., Murav'eva D.A., Yunusov M.S., Khim. Prir. Soedin., 1984, 672.



MATRINE

Ammothamnus lehmannii, Leontice alberti, Sophora alopecuroides, S.flavescens, S.griffithii, S.japonica, S.pachycarpa, Vexibia pachycarpa
$C_{15}H_{24}N_2O$: 248.1889
Mp: 77° (α-form), 87° (β-form), oil (γ-form), 84° (δ-form) [1]
$[\alpha]_D$ +38° (alc.) [1]
{p-chl. 214°, h-b. 275°, m-i. 211°} [2]
IR: 2795, 2750, 2700, 2690 [3]
Mass: 248(M^+, 73), 247(100), 219(8), 205(29), 177(23), 150(63), 136(26), 98(26), 96(67), 41(54) [4]; 248(M^+, 100), 247(98.7), 233(2.6), 219(19), 205(78), 192(20), 177(24), 162(28), 150(61), 137(36), 130(8), 122(22), 110(13), 98(45), 97(11), 96(49), 83(34), 55(34) [5]
PMR: 3.00(1H, dd, J=12.5; 12.5; 4, H-17$_a$), 3.81(1H, m, H-11), 4.42(1H, dd, J=12.5; 4, H-17$_e$) [6]
^{13}C NMR: [7]

C-2	57.2	C-7	41.3	C-12	27.8
3	20.7	8	26.4	13	18.9
4	27.1	9	21.2	14	32.8
5	35.3	10	57.2	17	43.2
6	63.7	11	53.1		

ORD: [8]
HPLC: [9]
Pharm.: Acts on the CNS. Initially stimulates, and then causes paralysis [10, 11]. On i/v administration to animals in a dose of 50 mg/kg general excitation is observed which becomes more pronounced with an increase in the dose. On i/v administration to urethanized cats in a dose of 1 mg/kg, it raises the arterial pressure. In a dose of 10 mg/kg it stimulates respiration. Possesses an anticancerogenic action against sarcoma 180 for mice [12].

1. Sadykov, p. 125.
2. Orechoff A., Proskurnina N., Chem. Ber., 1934, **67**, 77.
3. Yunusov T.K., Matveeva A.P., Leont'ev V.B., Kamaev F.G., Aslanov Kh.A., Sadykov A.S., Khim. Prir. Soedin., 1972, 200.
4. Pelletier, Vol. 2, p. 124.
5. Iskandarov S., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 106.
6. Bohlmann F., Schumann D., Tetrahedron Lett., 1965, 2435.
7. Shamma, No. 194.
8. Zannunzhanov A., Iskandarov S., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 373.
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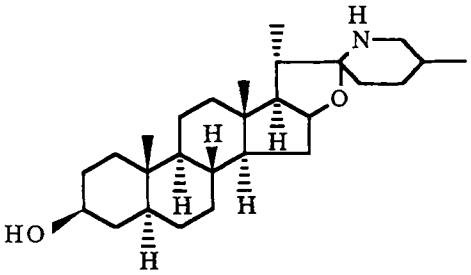
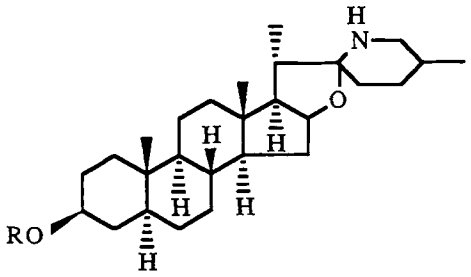
10. Georgadze V.M., Fiziolog. Zh. SSSR, 1938, **25**, No. 1-2, 179.
11. Bichikhanov M.P., Badyaraev B.-D.V., Monakhova G.N., Trutneva E.A., Tolkachev O.N., Rast. Res., 1990, **26**, 387.
12. Strauch R., Miller K., Pharmazie, 1974, **29**, 656.



MEGACARPIDINE

Solanum megacarpum
$C_{27}H_{45}NO_2$: 415.345
Mp: 208-209° [1, 2]
$[\alpha]_D$ −52° (chlf.) [2], −54° (meth.) [1]
{h-chl. 299°, picrolonate 219°, picr. 152°,
p-chl. 232°, Ac 215.5°, di Ac 183°}

1. Labenskii A.S., Gerasimenko I.I., Utkin L.M., Zh. Org. Khim., 1958, **28**, 3120.
2. Labenskii A.S., Zh. Org. Khim., 1960, **30**, 335.

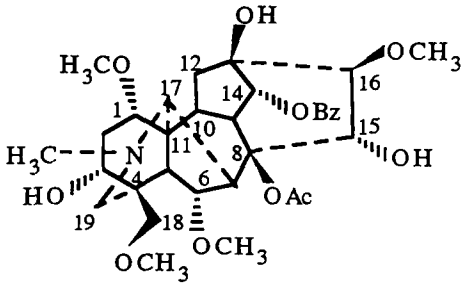


R=Glc, Gal, 2Xyl

MEGACARPINE

Solanum megacarpum
$C_{49}H_{81}NO_{20}$: 1003.535
Mp: 259-260° (dec., alc.) [1, 2]
$[\alpha]_D$ −62° (pyr.) [1]
{sulf. 219°} [1]

1. Labenskii A.S., Gerasimenko I.I., Utkin L.M., Zh. Org. Khim., 1958, **28**, 3120.
2. Labenskii A.S., Zh. Org. Khim., 1960, **30**, 335.



MESACONITINE

Aconitum altaicum, A.firmum,
A.sczukinii, A.tauricum, A.tokii
$C_{33}H_{45}NO_{11}$: 631.2993
Mp: 208-209° (meth.)
$[\alpha]_D$ +30° (chlf.)
Sol-y.: sol. chlf.
UV: 232(4.25) [1]

IR: 3515, 3412, 1713, 1604, 1587, 1495, 1464, 1453, 1400, 1380, 1328, 1280, 1260, 1245, 1220, 1210, 1192, 1156, 1123, 1100, 1033, 990, 960, 944, 925, 900, 880, 855, 840, 800, 773, 718 [2]

Mass: 631(M^+, 0.47), 613(0.56), 600(3.4), 571(15.4), 556(13), 554(13), 540(100), 524(34), 522(8.4) [2]

PMR: 1.36(3H, s, OAc), 2.33(3H, s, NCH_3), 2.87(1H, narrow s, H-17), 3.15, 3.27, 3.29, 3.73(3H, s, 4×OCH_3), 3.32(1H, d, J=5.3, H-16α), 3.59(2H, dd, J=9, H-18), 3.72(1H, dd, J=10.5, H-3), 3.94(1H, s, OH-13), 4.03(1H, d, J=6.5, H-6β), 4.35(1H, d, J=25, OH-15), 4.45(1H, dd, J=5.5;2.5, H-15β), 4.86(1H, d, J=5.0, H-14β) [3]

^{13}C NMR: [4]

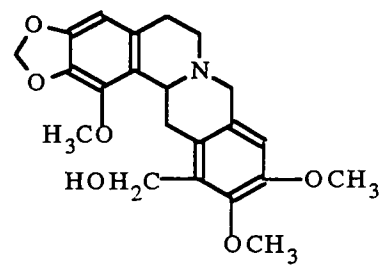
C-1	83.2	C-11	50.0	C-1'	56.2
2	35.9	12	34.2	6'	57.9
3	70.8	13	74.1	16'	61.0
4	43.5	14	78.9	18'	59.0
5	46.5	15	78.9	CO	172.3
6	82.4	16	90.1	CH_3	21.4
7	44.3*	17	62.2	Ar-C=O	166.0
8	91.8	18	75.8	Ar C-1	129.9
9	43.8*	19	49.4	2, 6	129.6
10	40.9	NCH_3	42.4	3, 5	128.6
				4	133.2

HPLC: [5]

Pharm.: LD_{50} 0.085, 0.024, 0.019, 0.018 (i/v, mice, rats, rabbits, dogs). Neurocardiotoxin. Superior to aconitine in toxicity and arrhythmogenic action but inferior in the duration of the effect. Interacts selectively with the sodium channels of electrostimulable formations, changing their basic characteristics – selectivity, activation, inactivation [6, 7].

1. Wang Y.-C., Zhu Y.-L., Zhu R.-H., Acta Pharmaceutica Sinica, 1980, **15**, 526.
2. Golubev N.M., Tel'nov V.A., Yunusov M.S., Fruentov N.K., Yunusov S.Yu., Questions of Pharmaceutics in the Far East [in Russian], Khabarovsk, 1977, Issue 2, p. 10; Unpub.
3. Zhapova Ts., Modonova L.D., Semenov A.A., Khim. Prir. Soedin., 1985, 717.
4. Pelletier S.W., Djarmati Z., J. Amer. Chem. Soc., 1976, **98**, 2626.
5. Kulanthaivel P., Pelletier S.W., J. Chromatogr., 1987, **402**, 366.
6. Dzhakhangirov F.N., DAN UzSSR, 1982, No. 9, 36.
7. Valeev A.E., Dzhakhangirov F.N., Unpub.

* The assignments may be interchanged.

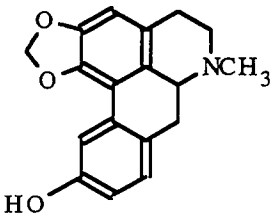


MECAMBRIDINE (OREOFILLINE)

Papaver bracteatum, P.lisae, P.oreophilum, P.orientale, P.pseudoorientale
$C_{22}H_{25}NO_6$: 399.1682
Mp: 176-177° (alc.) [1]
$[\alpha]_D$ –260° (chlf.) [1]
UV: 229, 288 [2]

IR: 3605 [3]
Mass: 399(M^+), 368, 206, 204, 195, 194, 179 [3]
PMR: 2.10-3.80(10H, m), 3.84(6H, s, 2×OCH_3), 3.98(3H, s, OCH_3), 4.65(2H, s, Ar-CH_2OH), 5.85(2H, s, CH_2O_2), 6.33, 6.58(1H, s, 2×H-Ar) [3]

1. Denisenko O.N., Israilov I.A., Murav'eva D.A., Yunusov M.S., Khim. Prir. Soedin., 1977, 547.
2. Veznik F., Israilov I.A., Toborska E., Slavik J., Collect., 1985, **50**, 1745.
3. Chelombit'ko V.A., Mnatsakanyan V.A., Sal'nikova L.V., Khim. Prir. Soedin., 1978, 270.

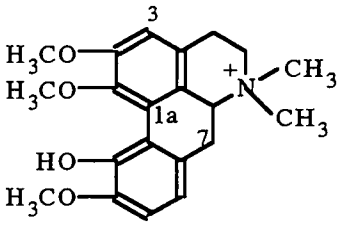


MECAMBROLINE

Roemeria refracta
$C_{18}H_{17}NO_3$: 295.1208
Mp: 232-233°
$[\alpha]_D$–76° (chlf.)
UV: 230, 263, 273, 308

Mass: 295(M^+), 280, 278
PMR: 2.55(3H, s, NCH_3), 5.65, 5.72(1H, d, J=1.5, CH_2O_2), 6.42(1H, s), 6.60(1H, q, J=2.5; 7.5), 7.00(1H, d, J=7.5), 7.47(1H, d, J=2.5)

1. Johns S.R., Lamberton J.A., Austral. J. Chem., 1967, **20**, 1277.



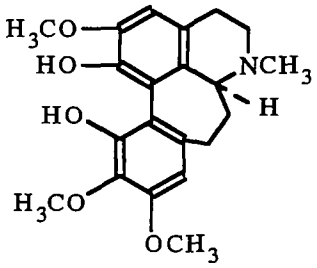
MENISPERINE

Dicranostigma franschetianum
$C_{21}H_{26}NO_4$: 356.1862
{chloride 219° (dec.), $[\alpha]_D$+168° (water)}
UV: 223, 270, 303 [1]
IR: 3180

Mass: 356(M^+), 355, 341, 328, 310, 298, 58(100) [1]
PMR(CD_3OD): 3.05, 3.65(3H, s, $N(CH_3)_2$), 3.75, 3.92, 3.95(3H, s, 3×OCH_3), 4.35(1H, q, J=3.5; 14), 6.96(2H, s), 7.02(1H, s) [1]
13C NMR($CDCl_3$+CD_3OD): [2]

C-1	143.0	C-5	60.3	C-11	143.5
1a	126.0	6a	69.1	11a	120.2
1b	118.3	7	30.6	NCH_3	42.9
2	152.9	7a	124.3	CH_3	53.5
3	110.6	8	119.6	1-OCH_3	62.1
3a	125.2	9	111.5	2-OCH_3	55.8
4	23.8	10	149.7	10-OCH_3	55.8

1. Israilov I.A., Unpub.
2. Marsaioli A.J., Reis F., Magalhaes A.F., Ruveda E.A., Kuck A.M., Phytochem., 1979, **18**, 165.

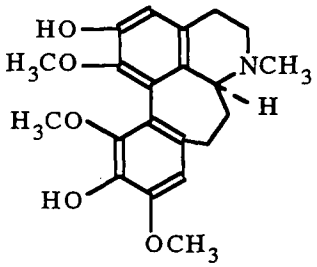


MEROBUSTINE

Merendera robusta
$C_{21}H_{25}O_5N$: 371.1733
Mp: 241-242° (ac.)
$[\alpha]_D$+76° (chlf.)
UV: 260, 290
IR: 3470-3420
Mass: 371(M^+), 356, 354(100), 340

PMR: 240(3H, s, NCH_3), 3.83-3.85(9H, 3×OCH_3), 6.43, 6.67(1H, s, H-9, H-3)

1. Alikulov R.V., Yusupov M.K., Khim. Prir. Soedin., 1993, 862.

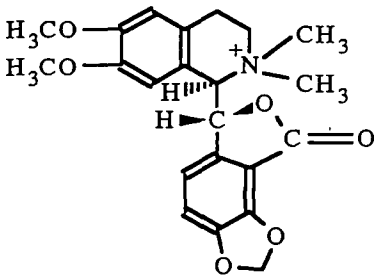


MEROBUSTININE

Merendera robusta
$C_{21}H_{25}O_5N$: 371.1733
Mp: 216-218° (ac.)
$[\alpha]_D$+42° (chlf.)
UV: 258, 292

Mass: 371(M^+), 356, 354, 340(100)
PMR: 2.38(3H, s, NCH_3), 3.52, 3.60, 3.85(3H, s, 12-OCH_3, 1-OCH_3, 10-OCH_3), 6.55, 6.68(1H, s, H-9, H-3).

1. Alikulov R.V., Yusupov M.K., Khim. Prir. Soedin., 1993, 862.

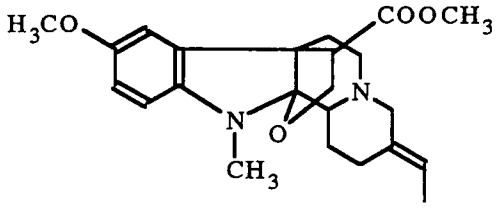


N-METHYLADLUMINE

Fumaria vaillantii
$C_{22}H_{24}NO_6$: 398.1604
Mp: {iodide}: 199° (meth.)
$[\alpha]_D$–45° (meth.) [1]
Sol-y.: sp. sol. chlf., ac., alc., bz., eth. [2]
UV: 240, 292, 330(4.46, 4.04, 3.14)
IR: 1775, 1510, 1490, 1035, 915

PMR(CF_3COOH): 2.85, 3.11(3H, s, $N(CH_3)_2$), 3.21, 3.50(3H, s, 2×OCH_3), 4.41, 5.09(1H, d, J=8), 5.69(4H, narrow s), 6.44(1H, d, J=8, o-H-Ar), 6.48(1H, s, p-H-Ar)

1. Alimova M., Israilov I.A., Khim. Prir. Soedin., 1981, 602.
2. Alimova M., Author's Abstract of Candidate's Dissertation, Tashkent, 1983.

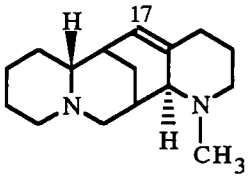


O-METHYLAKUAMMINE

Vinca erecta
$C_{23}H_{28}N_2O_4$: 396.2049
Mp: 241-242° (meth.)
UV: 245, 310(3.76, 3.18)

IR: 1730, 820, 725
Mass: 396(M^+)
PMR: 1.45(d, CH_3), 2.70(s, NCH_3), 3.68(s, $COOCH_3$), 3.73(s, Ar-OCH_3), 6.40-6.67(H-Ar)

1. Rakhimov D.A., Sharipov M.R., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 677.

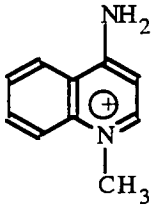


N-METHYLALOPERINE

Sophora alopecuroides
$C_{16}H_{26}N_2$: 246.2096
Mp: 92° (ac.) [1] 94-95° (eth.) [2]
$[\alpha]_D$+104° (alc.)

IR: 2800, 1650 [1]; 2800, 1475-1450 [2]
Mass: 246(M^+), 231, 215, 189, 174, 163, 148, 136, 124, 110, 98(100), 84, 70, 58 [1]
PMR(CCl_4): 2.15(NCH_3), 5.42-5.46(1H, d, H-17) [1, 2]

1. Kuchkarov S., Kushmuradov Yu.K., Begisheva A.I., Aslanov Kh.A., Nauch. Trudy TashGU, 1976, Issue 513, 108.
2. Tolkachev O.N., Monakhova T.E., Sheichenko V.I., Kabanov V.S., Fesenko O.G., Proskurnina N.F., Khim. Prir. Soedin., 1975, 30.

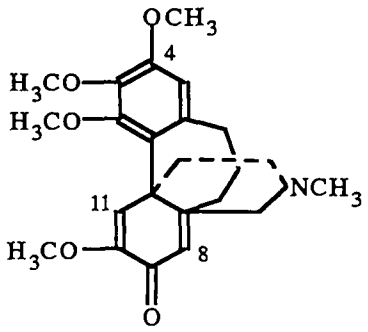


N-METHYL-4-AMINOQUINOLINIUM

Echinops albicaulis, E.chantavicus, E. karatavicus, E.ritro, E.maracandicus, E.sphaerocephalus
$C_{10}H_{11}N_2$: 159.0922
$[\alpha]_D$+54° [1]
{echinopsine 151°, echinopsidine 314°} [1]

UV: 240, 310(4.00, 3.50) [1]
IR{echinopsine}: 1653, 1621, 1565, 1549, 1496 [1, 2]
IR{echinopsidine}: 3422, 3357, 3307, 3147, 1674, 1622, 1568, 1549, 1514
Pharm.{echinopsine}: LD_{50} 490 mg/kg (s/c, mice).
Pharm.{echinopsidine}: LD_{50} 47.5 mg/kg (s/c, mice). Affects the peripheral and central links of the nervous system [3].

1. Ban'kovskii A.I., Perel'son M.E., Shevelev V.A., DAN SSSR, 1963, **148**, 1073.
2. Avramova B., Farmatsiya, 1964, No. 6, 29.
3. Leskov A.I., Sokolov S.Ya., Trudy VILR, 1971, **14**, 79.

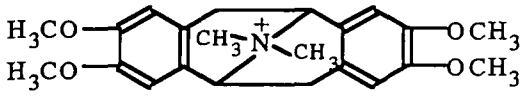


O-METHYLANDROCYMBINE

Colchicum szovitsii
$C_{22}H_{27}NO_5$: 285.1889
Mp: 176-178° (eth.-hx.)
$[\alpha]_D$–140° (chlf.) [1]
UV: 238, 280(4.28, 3.69) [1, 2]
IR: 1670, 1642, 1610, 1600 [1]
Mass: 385(M^+, 100), 370, 356, 354. 342 [1]

PMR: 2.32(3H, s, NCH_3), 3.56, 3.76, 3.94(3H, 6H, 3H, s, 4×OCH_3), 6.22, 6.27, 6.74(1H, s, H-4, H-8, H-11) [1]

1. Yusupov M.K., Aslanov Kh.A., Din Tkhi Bik Ngo, Khim. Prir. Soedin., 1975, 271.
2. Kametani T., Koizumi M., Fukumoto K., J. Chem. Soc., 1971, 1792.

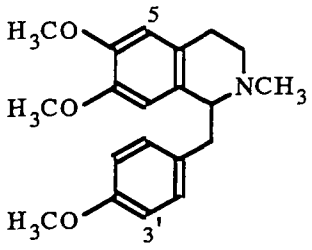


N-METHYLARGEMONINE

Thalictrum minus
$C_{22}H_{28}NO_4$: 370.2018
Mp: 203-205°

$[\alpha]_D$–185° (meth.)
UV: 288
Mass: 355, 354. 340, 324. 205, 204(100)
PMR(Py-d_5): 3.49(12H, s, $N(CH_3)_2$, 2×OCH_3), 3.59(6H, s, 2×OCH_3), 5.33(2H, narrow d), 6.45, 6.94(2H, s, H-Ar)

1. Mukhamedova S., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 393.

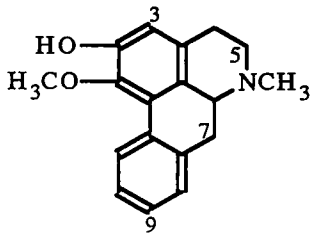


O-METHYLARMEPAVINE

Aconitum leucostomum
$C_{20}H_{25}NO_3$: 327.1834
Mp: 63-64° (petr. eth.) [1], oil [2]
$[\alpha]_D$–84° (chlf.) [1]
{m-i. 136°} [1]
Sol-y.: r-sol. chlf., eth., alc.; sp. sol. petr. eth. [1]

UV{m-i.}: 284(3.66) [3]
IR: 2910, 2820, 1610, 1515, 1460, 1450, 1380, 1300, 1250, 1190, 1170, 1120, 1030, 870, 800 [4]
Mass: 327(M^+), 206(100), 192, 121 [5]
PMR: 2.55(3H, s, NCH_3), 3.60(3H, s, 7-OCH_3), 3.80(3H, s, 4′-OCH_3), 3.87(3H, s, 6-OCH_3). 6.10(1H, s, H-8), 6.60(1H, s, H-5), 6.83, 7.07(2H, d, J=7.5, H-2′, H-3′, H-5′, H-6′) [6]

1. Yunusov S.Yu., Konovalova R.A., Orekhov A.P., Zh. Org. Khim., 1940, **10**, 641.
2. Zhamierashvili M.G., Tel'nov V.A., Yunusov S.S., Yunusov S.Yu., Nigmatullaev A., Taizhanov K., Khim. Prir. Soedin., 1980, 805.
3. Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 188.
4. Telezhenetskaya M.V., Unpub.
5. Karimov A., Unpub.
6. Shamma M., The Isoquinoline Alkaloids, Academic Press, New York–London, 1972, p. 81.



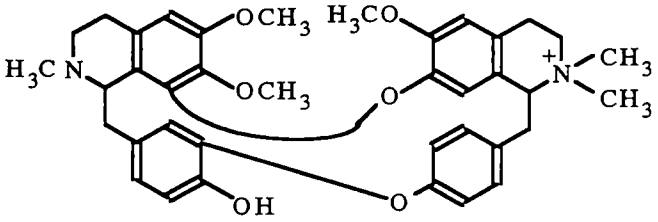
N-METHYLASIMILOBINE (FLORIBUNDINE)

Papaver floribundum, P.urbanianum
$C_{18}H_{19}NO_2$: 281.1416
Mp: 194-195°
$[\alpha]_D$–221° (chlf.) [1]

UV: 231, 272, 314 [2]
IR($CHCl_3$): 3500 [2]
Mass: 281(M^+), 280, 266, 265, 250, 238 [1]
PMR: 2.48(3H, s, NCH_3), 2.50-3.10(7H, m), 3.50(3H, s, OCH_3), 6.60(1H, s), 7.21(3H, m, 3×H-Ar), 8.20(1H, narrow d, J=8)
^{13}C NMR: [3]

C-1	143.0	C-4	28.6	C-9	127.2
1a	125.6	5	53.2	10	127.2
1b	126.9	6a	62.2	11	127.2
2	148.1	7	34.7	11a	131.7
3	114.2	7a	136.0	NCH_3	43.7
3a	129.6	8	127.8		

1. Israilov I.A., Denisenko O.N., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 799.
2. Guinadeau H., Leboeuf M., Cave A., J. Natur Prod., 1975, **38**, 275.
3. Guinaudeau H., Leboeuf M., Cave A., J. Natur. Prod., 1979, **42**, 325.

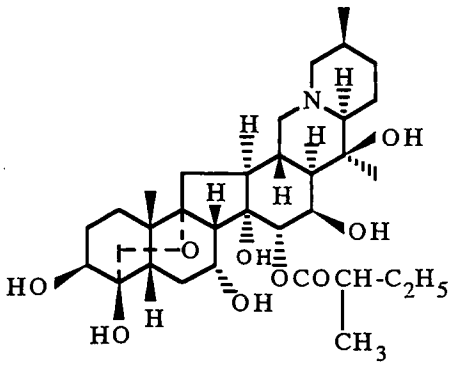


2'-N-METHYLBERBAMINE

Berberis oblonga
$C_{38}H_{43}N_2O_6$: 623.3121
Mp: {iodide}: amorph.
{iodide O-methyl. 222°}

UV{iodide}: 282(3.87)
Mass{iodide}: 622, 608. 417, 396, 395, 361, 198, 175, 174, 142, 127, 58(100)
PMR{iodide, Py-d_5}: 2.14(3H, s, 2-NCH_3), 3.20(6H, s), 3.35(6H, s), 3.57(3H, s), 6.35-7.10(10H, m, H-Ar)

1. Karimov A., Telezhenetskaya M.V., Lutfullin K.L., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 227.

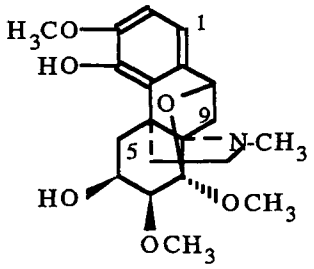


15-(–)-2-METHYLBUTYRYLGERMINE

Veratrum lobelianum
$C_{32}H_{51}NO_9$: 539.3564
Mp: 224-226° (bz.) [1]
$[\alpha]_D$–22° (pyr.) [1]
{tri Ac 252°}
IR: 3450, 1735, 1260 [1]
Mass: 593(M^+), 576, 558, 535, 491, 474, 472, 456, 112(100) [1]

PMR: 0.87(3H, t, CH_2-CH_3), 0.89(3H, s, 19-CH_3), 1.02(3H, d, 27-CH_3), 1.09(3H, d, HC-CH_3), 1.13(3H, s, 21-CH_3), 5.26(1H, H-15) [1, 2]

1. Nakhatov I., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 118.
2. Weisenborn F.L., Bolger I.W., J. Amer. Chem. Soc., 1954, **76**, 5543.

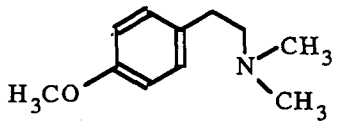


METHYLHERNANDINE

Stephania hernandifolia
$C_{20}H_{27}NO_6$: 377.1838
Mp: 152-153° (meth.)
$[\alpha]_D$+125° (alc.)
{h-chl. 201°}
IR: 3525, 3250

PMR: 1.45(1H, d, J=10.8, H-9), 1.93(1H, q, J=14.8; 2.9, H-5$_a$), 2.24(1H, d, J=9.8, 6-OH), 2.48(3H, s, NCH_3), 2.63(1H, q, J=10.8; 6.2, H-9), 3.00(1H, q, J=14.8; 3.4, H-5$_e$), 3.38, 3.48, 3.72(3H, s, 3×OCH_3), 3.62(1H, d, J=4.1, H-7), 4.05(1H, m, H-6), 4.81(1H, d, J=6.2, H-10), 6.50(2H, s, H-1, H-2)

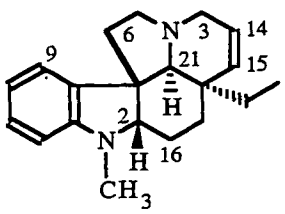
1. Fadeeva I.I., Fesenko D.A., Il'inskaya T.N., Perel'son M.E., Tolkachev O.N., Khim. Prir. Soedin., 1971, 455.



O-METHYLHORDENINE

Eremurus fuscus, E.luteus, E.tianschanicus
$C_{11}H_{17}NO$: 179.1310
Mp: 196-198°

1. Sheveleva G.P., Plekhanova N.V., Sargazakov D.S., in: Proceedings of a Scientific Conference Devoted to the Centenary of D. I. Mendeleev's Periodic Law [in Russian], Frunze, 1970, p. 107.

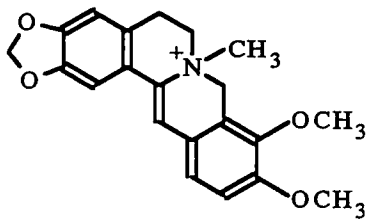


N(α)-METHYL-14,15-DEHYDROASPIDOSPERMIDINE

Vinca herbacea
$C_{20}H_{26}N_2$: 294.2096
Mp: 110-112° (alc.) [1], 118-120° [2]
$[\alpha]_D$–40° (chlf.) [1]

UV: 258, 308(3.91, 3.45) [1, 2]
IR: 1605, 730 [1], 1607 [2]
Mass: 294(M^+), 265, 182, 170, 158(100), 135, 122, 121, 107 [1]; 294(M^+, 30), 266(4), 265(100), 158(58), 144(31), 135(100), 122(39), 121(46), 107(44) [2]
PMR: 0.73(3H, t, J=7, 18-CH_3), 1.20(2H, q, J=7, H-19), 2.76(3H, s, N_α-CH_3), 3.10-3.60(3H, m), 5.50(1H, q, J=10; 2, H-15), 5.70(1H, o, J=10; 4.5; 1, H-14), 6.39(1H, d, J=8, H-12), 6.65(1H, t, J=8, H-10), 7.05(1H, d, J=8, H-9), 7.12(1H, t, J=8, H-11) [2]

1. Babaev N.A., Aliev A.M., Malikov V.M., Khim. Prir. Soedin., 1975, 267.
2. Gorman A.A., Schmid H., Mh. Chem., 1967, **98**, 1554.

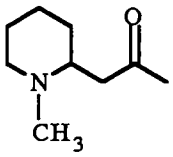


N-METHYLDIHYDROBERBERINE

Berberis heteropoda
$C_{21}H_{22}NO_4$: 352.1549
Mp: {chloride}: 212°
Sol-y.: r-sol. meth.; sp. sol. chlf.
UV{chloride}: 241, 350(4.37, 3.92)

Mass{chloride}: 351, 337, 336, 321, 320, 308, 307, 292, 278.
PMR{chloride, DMSO-d_6}: 3.22-4.98(6H, m), 3.45(3H, narrow s, NCH_3), 4.05(3H, s, OCH_3), 4.17(3H, s, OCH_3), 6.05(2H, s, CH_2O_2), 6.49(1H, s), 6.78(1H, s), 7.44(2H, s), 7.85(1H, s)

1. Yusupov M.M., Karimov A., Levkovich M.G., Abdullaev N.D., Shakirov R.Sh., Khim. Prir. Soedin., 1993, 53.

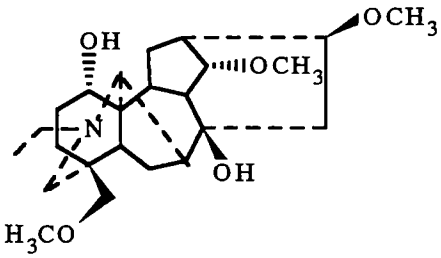


(±)-METHYLISOPELLETIERINE

Sedum aizoon, S.hybridum, S.purpureum
$C_9H_{17}NO$: 155.1310
Bp: 100° (15 mm Hg)

$[\alpha]_D$ 0° [1, 2]
{picr. 158°, h-chl. 156°, m-i. 156°} [1]
IR: 2950, 1690 [2]

1. Boit, p. 132.
2. Krasnov E.A., Petrova L.V., Bekker E.F., Khim. Prir. Soedin., 1977, 585.

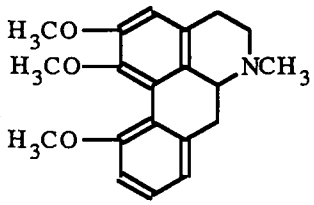


14-METHYLISOTALATIZIDINE

Delphinium confusum
$C_{24}H_{39}NO_5$: 421.2828
Mp: 136-137° (ac.)
IR: 3560, 3210, 1120 [1]
Mass: 421(M^+, 6.3), 406(30), 404(100), 365(2.5), 334(15) [1]

PMR: 1.06(3H, t, J=7, $NCH_2\dot{C}H_3$), 3.28, 3.30, 3.36(3H, s, 3×OCH_3) [1]
Pharm.: Only slightly toxic. Hypotensive and ganglioblocking action [2].

1. Vamsov Z.M., Yunusov M.S., Khim. Prir. Soedin., 1987, 869.
2. Dzhakhangirov F.N., Unpub.



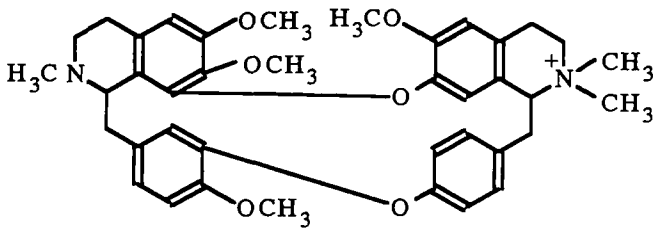
O-METHYLISOTHEBAINE

Papaver orientale
$C_{20}H_{23}NO_3$: 325.1678
Mp: amorph.
$[\alpha]_D$+26° (chlf.)
UV: 273, 302(4.26, 3.31)

Mass: 325(M^+, 100), 324, 310, 294, 282, 162.5($^{++}$)

PMR: 2.35-3.15(m, CH_2), 2.46(3H, s, NCH_3), 3.53(3H, s, OCH_3), 3.78(6H, s, 2×OCH_3), 6.57(1H, s, H-Ar), 6.68-7.23(3H, m, H-Ar)

1. Israilov I.A., Manushakyan M.A., Mnatsakanyan V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1984, 81.

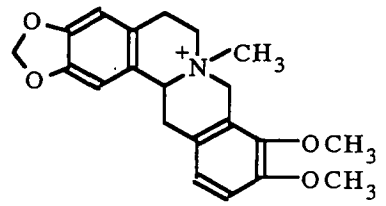


2'-N-METHYLISOTETRANDRINE

Berberis oblonga
$C_{39}H_{45}N_2O_6$: 637.3278
Mp:{iodide}: 222°
$[\alpha]_D$ {iodide}: +29.5° (chlf.)}
UV{iodide}: 284(3.91)

Mass{iodide}: 636, 622, 607, 431, 395, 381, 198, 175, 142, 127, 58(100)
PMR{iodide}: 2.15(3H, s, NCH_3), 3.06, 3.55(3H, s, $N(CH_3)_2$), 3.31(3H, s, OCH_3), 3.72(6H, s, 2×OCH_3), 3.82(3H, s, OCH_3), 6.20-6.90(10H, m, H-Ar)

1. Karimov A., Lutfullin K.L., Khim. Prir. Soedin., 1986, 249.

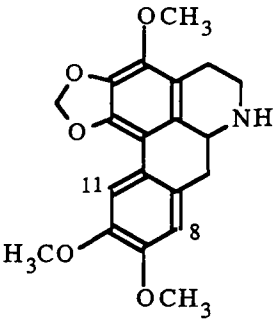


(–)-β-N-METHYLCANADINE

Glaucium squamigerum, Hypecoum erectum, Thalictrum minus
$C_{21}H_{24}NO_4$: 354.1705
{hydroxide 192°, $[\alpha]_D$–128° (alc.) [1]; chloride 193° (dec.),

$[\alpha]_D$–158° [2]; iodide 265°, $[\alpha]_D$–130° (meth.) [3]; anhydrobase 111° [2]}
UV: 231 sh, 286(3.99, 3.69) [2]

1. Dutschwska H., Dimov B., Mollov N., Evstatieva L., Planta Medica, 1980, **39**, 77.
2. Kuchkova K.I., Terent'eva I.V., Lazur'evskii G.V., Khim. Prir. Soedin., 1967, 141.
3. Novak V., Dolejs L., Slavik J., Collect., 1972, **37**, 3346.



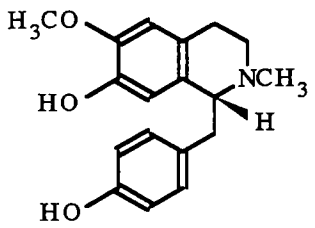
O-METHYLCASSIFILINE (NORTALICMINE)

Thalictrum strictum
$C_{20}H_{21}NO_5$: 355.1420
Mp: 150-152° [1]
$[\alpha]_D$+16° (chlf.) [2]
{N-Me=thalicmine [3], {N-Ac 168° [4], $[\alpha]_D$+233° (chlf.) [4]}

UV: 236, 283, 302, 312(4.43, 4.31. 4.30, 4.27) [1]
UV{N-Ac}: 222, 240 sh, 287, 305, 317(4.51, 4.38, 4.18, 4.20, 4.19) [4]
IR{N-Ac}: 1650-1638 [4]
Mass{N-Ac}: 397(M^+) [4]
PMR: 3.87, 3.97(6H, 3H, s, 3×OCH_3), 5.87, 6.02(1H, d, J=1.5, CH_2O_2), 6.71(1H, s, H-8), 7.61(1H, s, H-11) [5]

PMR{N-Ac}: 2.11(3H, s, NAc), 3.80, 3.82, 3.89(3H, s, 3×OCH_3), 5.81, 5.96(1H, narrow s, CH_2O_2), 6.63(1H, s, H-8), 7.52(1H, s, H-11) [4]

1. Cava M.P., Rao K.V., Douglas B., Weisbach J.A., J. Org. Chem., 1968, **33**, 2443.
2. Guinaudeau H., Leboeuf M., Cave A., Lloydia, 1975, **38**, 275.
3. Gorovoi P.G., Ibragimov A.A., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 533.
4. Maekh S.Kh., Yunusov S.Yu., Boiko É.V., Starchenko V.M., Khim. Prir. Soedin., 1982, 227.
5. Johns S.R., Lamberton J.A., Austral. J. Chem., 1966, **19**, 297.

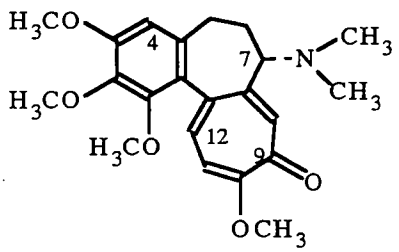


N-METHYLCOCLAURINE

Berberis heteropoda, B.iliensis, Corydalis gortschakovii, C.ledebouriana, C.stricta, Glauciun fimbrilligerum, G.oxylobum
$C_{18}H_{21}NO_3$: 299.1521
Mp: 132-133° (meth.)
$[\alpha]_D$–62° (chlf.)

UV: 228, 288
IR: 3600-3200, 1600, 1510
Mass: 299(M^+), 192, 177
PMR: 2.39(3H, s, NCH_3), 2.40-3.70(7H, m), 3.75(3H, s, OCH_3), 5.70(2H, narrow s), 6.31, 6.46(1H, s, p-H-Ar), 6.44, 6.85(2H, d, J=8, o-H-Ar)

1. Israilov I.A., Unpub.



N-METHYLCOLCHAMINE (N-METHYLDEMECOLCINE)

Merendera robusta
$C_{22}H_{27}NO_5$: 385.1889
Mp: 206-208° (e-a.-eth.)
$[\alpha]_D$–109° (chlf.) [1]

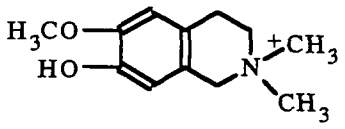
UV: 244, 255(4.54, 4.25) [2]
IR: 1615, 1590, 1560, 1487, 1464, 1398, 1359, 1345, 1326, 1313, 1281, 1138, 1093, 1011, 999, 986, 898 [3]
Mass: 385(M^+, 100), 370(27), 357(36), 356(50), 354(27), 342(73), 326(73), 314(45), 313(50), 312(73) [3]
PMR: 1.74, 1.90-2.60(1H, 3H, m, H-5, H-6), 2.12(6H, s, $N(CH_3)_2$), 2.68(m, H-7), 3.60, 3.90, 3.93, 3.98(3H, s, 4×OCH_3), 6.51(1H, s, H-4), 6.76, 7.21(1H, d, J=11, H-11, H-12), 8.09(1H, s, H-8) [3]
^{13}C NMR: [4]

C-1	150.6	C-7	68.5	C-12a	137.5
2	141.6	7a	152.0	1a	125.9
3	153.4	8	134.2	1-OCH_3	60.6
4	107.5	9	180.1	2-OCH_3	61.2
4a	134.8	10	164.1	3-OCH_3	56.1
5	30.6	11	111.7	10-OCH_3	56.1
6	36.3	12	133.8	NCH_3	43.7

Pharm.: LD_{100} 20 mg/kg. Antitumoral activity [5].

1. Turdikulov Kh., Yusupov M.K., Sadykov A.S., Khim. Prir. Soedin., 1972, 247.
2. Uffer A., Schindler O., Santavy F., Reichstein T., Helv. Chim. Acta, 1954, **37**, 18.

3. Capraro H.-G., Brossi A., Helv. Chim. Acta, 1979, **62**, 965.
4. Huffort C.D., Capraro H.-G., Brossi A., Helv. Chim. Acta, 1980, **63**, 50.
5. Kiselev V.V., Khim. Prir. Soedin., 1977, 3.

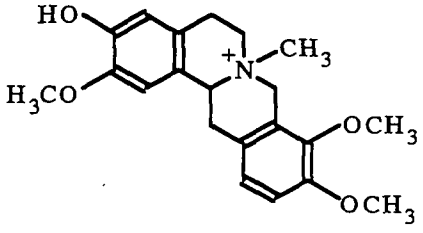


N-METHYLCORYPALLINE

Corydalis stricta
$C_{12}H_{18}NO_2$: 208.1338
Mp:{iodide}: 239°

UV: 287(4.14)
IR: 3370, 1620, 1610, 1530
Mass: 207, 206, 177, 164, 150, 142, 127
PMR(CF_3COOH): 2.85(6H, s, $N(CH_3)_2$), 2.70-3.45(4H, m), 3.50(3H, s, OCH_3), 4.06(2H, s, CH_2), 6.34, 6.40(1H, s, H-5, H-8)

1. Irgashev T., Israilov I.A., Batsurén D., Yunusov M.S., Khim. Prir. Soedin., 1983, 490.

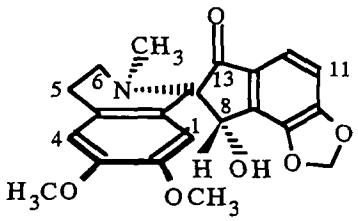


(+)-β-N-METHYLCORYPALMINE

Berberis iliensis
$C_{21}H_{26}NO_4$: 356.1862
Mp:{iodide}: 231°
$[\alpha]_D${iodide}: +127° (alc.)
Sol-y.{iodide}: sol. meth.; sp. sol. chlf., bz., eth.

UV: 224, 285(4.17, 3.94)
IR: 3400, 2840
Mass{iodide}: 355, 341, 178, 164, 149, 142, 127
PMR(DMSO-d_6): 2.75(2H, m), 3.08(1H, d, J=15), 3.35(3H, s, NCH_3), 3.75(9H, narrow s, 3×OCH_3), 4.01(1H, d, J=15), 4.76(2H, m), 6.75(1H, s), 6.87(1H, s), 7.05(2H, s)

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



O-METHYLCORPAINE

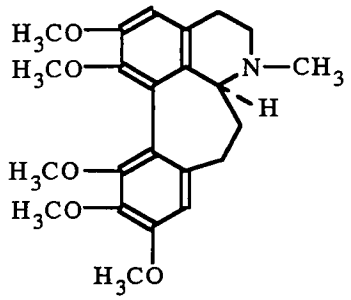
Corydalis vaginans
$C_{21}H_{21}NO_6$: 383.1369
Mp: 220-221°
$[\alpha]_D$–37° (chlf.)

UV: 204, 240, 291, 313
IR: 3260, 1710
Mass: 383(M^+, 100), 368, 338, 206, 191.5($^{++}$), 190, 177
PMR: 2.25(3H, s, NCH_3), 3.72, 3.82(3H, s, 2×OCH_3), 5.08(1H, s), 6.20(2H, s, CH_2O_2). 6.06, 6.58(1H, s, p-H-Ar), 6.93, 7.32(1H, d, J=8, o-H-Ar) [1]

^{13}C NMR: [2]

C-1	110.7	C-8	75.1	C-13	202.7
2	148.5	8a	134.6	14	72.0
3	148.6	9	144.4	14a	128.7
4	111.4	10	154.6	NCH_3	41.9
4a	128.7	11	109.5	9,10-CH_2O_2	103.2
5	29.3	12	119.6	2-OCH_3	56.1
6	50.3	12a	131.3	3-OCH_3	56.5

1. Margvelashvili N.N., Lasskaya O.E., Kir'yanova A.T., Tolkachev O.N., Khim. Prir. Soedin., 1976, 123.
2. Hughes D.W., Nalliah B.C., Holland H.L., McLean D.B., Canad. J. Chem., 1977, **55**, 3304.

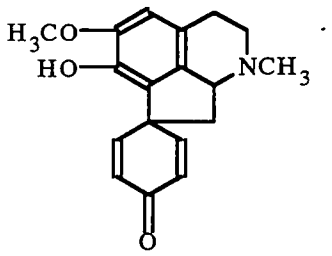


O-METHYLKREIZIGINE

Colchicum szovitsii, Merendera raddeana
$C_{23}H_{29}NO_5$: 399.2046
Mp: oil
$[\alpha]_D$+81° (chlf.)
{m-i. 153°}
UV: 258, 290(4.00, 3.78) [1]

Mass: 399(M^+, 23), 398(4), 384(17), 370(10), 368(100), 356(2), 354(4), 352(4), 204(6) [2]
PMR: 2.35(3H, s, NCH_3), 3.48, 3.56, 3.81(3H, s, 3×OCH_3), 3.83(6H, s, 2×OCH_3) [1]

1. Yusupov M.K., Din Tkhi Bik Ngo, Aslanov Kh.A., Khim. Prir. Soedin., 1975, 526.
2. Kasymov A.K., Timbekov É.Kh., Yusupov M.K., Aslanov Kh.A., Khim. Prir. Soedin., 1977, 230.

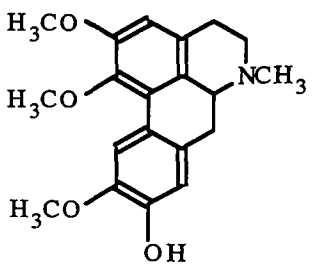


N-METHYLCROTSPARINE

Liriodendron tulipiferum
$C_{18}H_{19}NO_3$: 297.1365
Mp: 222-224° (dec., ac.)
$[\alpha]_D$–39° (chlf.)
UV: 235, 284-292(4.38, 3.18)

IR: 2860, 1660, 1615, 1490, 1375, 1270, 1185, 1135, 1075, 1020, 865
Mass: 297(M^+, 100), 296, 282, 280, 268, 254, 226, 174, 148.5($^{++}$)
PMR: 2.34(3H, s, NCH_3), 3.76(3H, s, OCH_3), 6.10-6.35, 6.65-7.05(4H, H-8, H-9, H-10, H-11)

1. Ziyaev R., Author's Abstract of Candidate's Dissertation, Tashkent, 1974.



N-METHYLLAUROTETANINE

Aconitum tokii, Corydalis emanuelii, C.marschalliana, Delphinium dictyocarpum, Eschscholtzia californica, Glaucium corniculatum, Liriodendron tulipiferum

$C_{20}H_{23}NO_4$: 341. 1627

Mp: amorph.

$[\alpha]_D$+80° (chlf.) [1]

{h-b. 211° (dec., abs. alc.)}

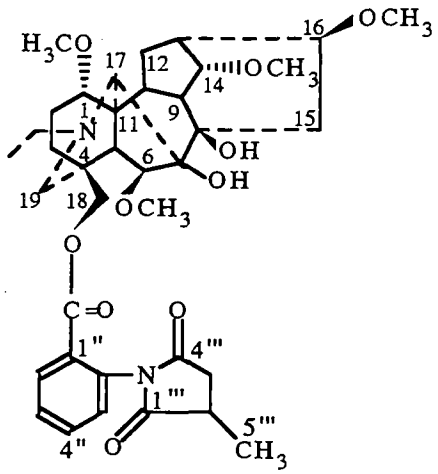
UV: 221, 281, 310 [2]

Mass: 341(M^+), 340, 326, 311, 310, 298 [2]

PMR: 2.10-3.10(7H, m), 2.45(3H, s, NCH_3), 3.57, 3.77, 3.79(3H, s, 3×OCH_3), 5.32(1H, narrow s, OH), 6.50, 6.70, 7.97(1H, s, H-Ar) [1]

HPLC: [3]

1. Salimov B.T., Abdullaev N.D., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 235.
2. Israilov I.A., Unpub.
3. Betts T.J., J. Chromatogr., 1990, **511**, 373.



METHYLLYCACONITINE

Delphinium biternatum, D.confusum, D.corymbosum, D.dictyocarpum, D.elisabethae, D.flexuosum, D.freynii, D.grandiflorum, D.oreophilum, D.pyramidatum, D.puniceum, D.rotundifolium, D.semibarbatum, D.speciosum, D.ternatum, D.thamarae

$C_{37}H_{50}N_2O_{10}$: 682.3466

Mp: amorph.

$[\alpha]_D$+49° (alc.) [1, 2]

{h-i. 201°}

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

IR: 3540-3450, 1730-1715, 1612, 1500, 1460, 1395, 1300, 1270, 1200, 1140, 1100

Mass: 682(M^+), 667, 651(100), 649 [1]

PMR: 1.08(3H, t, J=7, NCH_2CH_3), 1.47(3H, d, J=6, $CH\text{-}CH_3$), 3.28, 3.38, 3.42, 3.45(3H, s, 4×OCH_3), 3.98(1H, dd, J=4.1, H-14β), 4.15(1H, d, J=1, H-6α), 7.54-8.01(H-Ar) [1, 2]

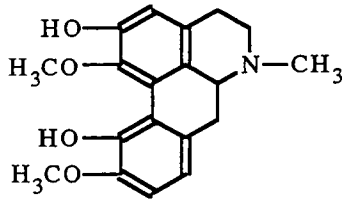
^{13}C NMR: [2]

C-1	83.9	C-13	46.1	Ar-C=O	164.1
2	26.0	14	83.9	Ar C-1″	127.1
3	32.0	15	33.6	2″	133.1
4	37.6	16	82.5	3″	129.4
5	43.2	17	64.5	4″	133.6
6	90.8	18	69.5	5″	131.0
7	88.5	19	52.3	6″	130.0
8	77.4	NCH_2	50.9	1‴	179.8
9	50.3	CH_3	14.0	2‴	37.0
10	38.0	C-1′	55.7	3‴	35.0
11	49.0	6′	57.8	4‴	175.8
12	28.7	14′	58.1	5‴	16.4
		16′	56.3		

HPLC: [3]

Pharm.: Active curaremimetic agent. Exerts its effect on introduction into the stomach. Used in medicine under the name of melliktin [4, 5].

1. Beshitaishvili L.V., Sultankhodzhaev M.N., Yunusov M.S., Mudzhiri K.S., Soobshch. AN GSSR, 1975, **79**, 617; Unpub.
2. Pelletier S.W., Dailey O.D., Mody N.V., J. Org. Chem., 1981, **46**, 3284
3. Majak W., McDiarmid R.E., Benn M.H., J. Agricult. Food Chem., 1987, **35**, 800.
4. Mashkovskii M.D., Drugs [in Russian], Meditsina, Moscow, 1984, Vol. 1, p. 265.
5. Dzhakhangirov F.N., in: Questions of Pharmacology and Medicine [in Russian], Tashkent, 1976, Vol. 4, p. 21.

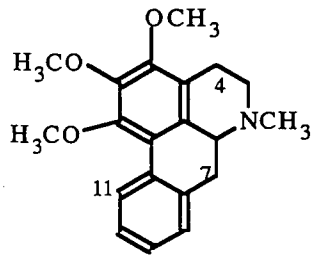


N-METHYLLINDCARPINE

Glaucium fimbrilligerum
$C_{19}H_{21}NO_4$; 327.1471
Mp: 197-198°
$[\alpha]_D$+340° (meth.)

UV: 219, 272, 307
Mass: 327(M^+), 312, 310, 296, 284
PMR: 2.48(3H, s, NCH_3), 2.60-3.00(7H, m), 3.58(3H, s, OCH_3), 3.85(3H, s, OCH_3), 6.55(1H, s), 6.78(2H, s, 2×H-Ar)

1. Karimova S.U., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 814.



O-METHYLLIRININE

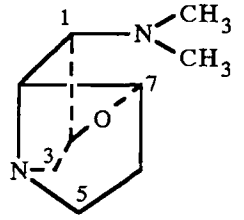
Liriodendron tulipiferum
$C_{20}H_{23}NO_3$: 325.1678
Mp: amorph.
$[\alpha]_D$–53° (chlf.) [1]
UV: 222, 283(4.46, 4.22) [1]
IR: 2855, 1590, 1270 [1]

Mass: 325(M^+, 100), 324, 310, 294, 282, 267, 251 [1]

^{13}C NMR:

C-1	150.2	C-5	53.0	C-11	126.9
1a	122.6	6a	62.6	11a	131.5
1b	132.0	7	34.8	NCH_3	44.0
2	145.2	7a	135.9	OCH_3	60.4
3	150.1	8	127.8*	OCH_3	60.6
3a	122.9	9	127.7*	OCH_3	60.9
4	23.8	10	127.0		

1. Ziyaev R., Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1973, 505; Chen C.L., Chang H.M., Phytochem., 1978, **17**, 779.
2. Leboeuf M., Cave A., J. Natur. Prod., 1983, **46**, 761.

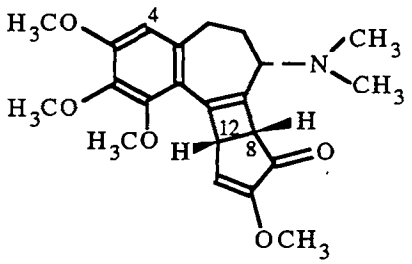


N-METHYLLOLINE

Lolium cuneatum
$C_9H_{16}N_2O$: 168.1263
Mp: oil
$[\alpha]_D$+14° (ac.) [1]
{di h-chl. 247° (dec.)} [1]

Sol-y.: r-sol. eth., alc., chlf. [2]
Mass: 168(M^+), 153, 82(100) [1]; 168(M^+, 11), 124(52), 123(93), 111(12), 110(6), 95(96), 83(14), 82(100), 56(9), 55(2), 42(90) [3]
PMR(CCl_4): 1.82(m, H-6). 2.16, 3.42(q, H-3), 2.21(6H, s, $N(CH_3)_2$), 2.83(m, H-5), 3.75-3.84(1H, H-2), 4.23(m, H-7) [3]

1. Batirov É.Kh., Khamidkhodzhaev S.A., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 60.
2. Batirov É.Kh., Unpub.
3. Akramov S.T., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 298.

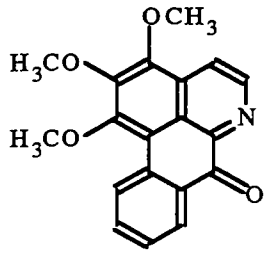


N-METHYL-β-LUMICOLCHAMINE

Colchicum speciosum
$C_{22}H_{27}NO_5$: 385.1889
Mp: 158-160° [1], amorph. [2]
$[\alpha]_D$+321° [1]
UV: 226-230, 264-266, 342 [1]

IR: 1720 [1]
PMR: 2.15(6H, s, $N(CH_3)_2$), 3.60(1H, dd, H-8), 3.72, 3.92, 3.94, 3.96(3H, s, 4×OCH_3), 4.60(1H, dd, H-12), 6.43(1H, s, H-4), 6.65(1H, d, H-11)

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



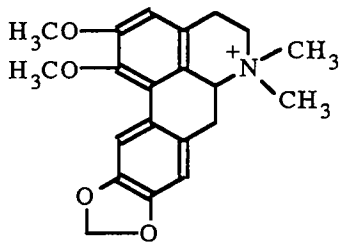
O-METHYLMOSCHATOLINE (LIRIDINE)

Liriodendron tulipiferum
$C_{19}H_{15}NO_4$: 321. 1001
Mp: 162-164° (chlf.) [1]
UV: 238, 276, 440(4.32, 4.36, 3.80) [1]
UV(H^+): 243, 282, 450 [1]
IR: 1655, 760 [1]

Mass: 321(M^+, 100), 306, 291, 278, 263, 235, 220, 207, 192, 164 [2]
PMR(CF_3COOH): 4.37(12H, s, 3×OCH_3), 7.58(1H, H-10), 8.03(1H, H-9), 8.81(1H, H-4), 8.98(1H, H-5), 9.18(1H, H-11)
PMR: 4.07(1-OCH_3), 4.10(3-OCH_3), 4.19(2-OCH_3), 7.44(H-10), 7.69(H-9), 8.13(H-4), 8.48(H-8), 8.88(H-5), 9.00(H-11) [3]
^{13}C NMR: [4]

C-1	148.2	C-4	118.9	C-9	128.7
1a	115.4	5	144.3	10	134.1
1b	122.5	6a	145.0	11	127.4
2	147.0	7	182.3	11a	134.3
3	156.2	7a	131.4	OCH_3	61.7
3a	130.8	8	127.9	OCH_3	61.3
				OCH_3	60.9

1. Abdusamatov A., Ziyaev R., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 112.
2. Ziyaev R., Author's Abstract of Candidate's Dissertation, Tashkent, 1974.
3. Leboeuf M., Cortes D., Hocquemiller R., Cave A., Planta Medica, 1983, **48**, 234.
4. Marsaioli A.J., Magalhaes A.F., Ruveda E.A., Reis A.M., Phytochem., 1980, **19**, 995.

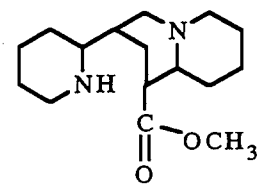


N-METHYLNANTENINE

Thalictrum sachalinence
$C_{21}H_{24}NO_4$: 354.1705
Mp: 213-214° [1]
$[\alpha]_D$+39° (alc.) [1]
UV: 285, 313 [2]

Mass: 353, 295, 251, 209, 58(100) [2]
PMR: 3.02, 3.50(3H, s, $N(CH_3)_2$), 3.60(3H, s, 1-OCH_3), 3.82(3H, s, 2-OCH_3), 5.84(2H, narrow s, CH_2O_2), 6.64, 6.79, 7.70(1H, s, H-3, H-8, H-11) [2]

1. Shamma M., Moniot J.L., Heterocycles, 1975, **3**, 297.
2. Umarova D., Maekh S.Kh., Yunusov S.Yu., Zaitseva N.M., Volkova S.A., Gorovoi P.G., Khim. Prir. Soedin., 1978, 594.



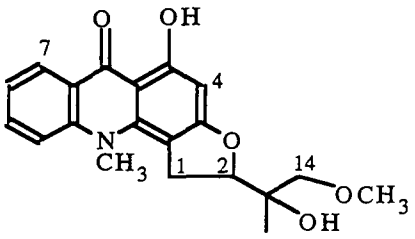
METHYL ESTER OF APHYLLINIC ACID

Anabasis aphylla
$C_{16}H_{28}N_2O_2$: 280.2151
Mp: 80-81° (ac.)

$[\alpha]_D$+20° (alc.)

{h-chl. 250° (meth.), h-b. 258° (alc.), h-i. 241° (alc.), picr. 220 (alc.)} [1]
IR: 1740 [1]
Mass: 280(M^+), 208, 149, 136, 124, 123, 122, 110, 98, 97, 84, 83, 69, 68 [2]
Pharm.: LD_{50} 410 mg/kg (i/p, mice). Depresses the orientation reactions of white mice, prolongs the action of hypnotics, exhibits a weak analgesic action [3]. Tranquilizing, weak hypotensive, and broncholytic effect [4].

1. Aslanov Kh.A., Mukhamedzhanov S.Z., Sadykov A.S., Nauch. Tr. TashGu, 1966, Issue 286, 71.
2. Timbekov É.Kh., Éshbaev F.Sh., Aslanov Kh.A., Sadykov A.S., Ishbaev A.I., Kasymov T.K., Khim. Prir. Soedin., 1972, 194.
3. Sadritdinov, p. 105.
4. Nasirov S.Kh., in: The Pharmacology of Plant Substances [In Russian], Fan, Tashkent, 1973, p. 60.

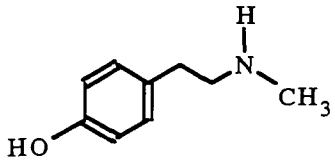


METHYL ESTER OF GRAVACRIDONDIOL

Ruta graveolens
$C_{20}H_{21}NO_5$: 355.1420
Mp: 219-221° (e-a.)

UV: 213, 227, 249, 265, 272, 299, 332, 390(4.23, 4.22, 4.52, 4.59, 4.68, 4.33, 3.96, 3.78)
IR: 3600-3200, 1640, 1600, 1580, 1560, 1510
Mass: 355(M^+), 266(100)
PMR: 1.18(3H, s, CH_3), 3.40(3H, s, OCH_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), 6.05(1H, s, H-4), 7.00-7.60(3H, m, H-Ar), 8.20(1H, dd, H-7)

1. Reish J., Rozsa Z., Szendrei K., Novak I., Minker E., Phytochem., 1972, **11**, 2121.

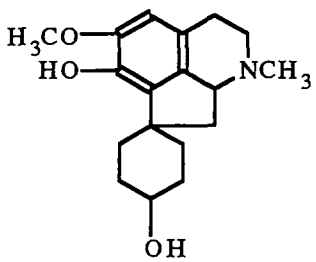


N-METHYL-4-HYDROXY-β-PHENETHYAMINE

Anabasis jaxartica
$C_9H_{13}NO$: 151.0997
Mp: 133-134.5° (ac.)
{h-chl. 150°, picr. 148°, picrolonate 238° (dec.)} [1]

UV: 205, 227, 277 [2]
IR: 3378, 2900, 1625 [2]
Mass: 151(M^+), 135, 121, 107, 91, 77 [2]

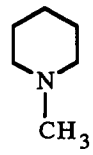
1. Platonova T.F., Kuzovkov A.D., Massagetov P.S., Zh. Org. Khim., 1958, 28, 3128.
2. Stuart K.L., Byfield D.Y., Phytochem., 1971, **10**, 460.



N-METHYLORIDINE

Papaver lisae
$C_{18}H_{25}NO_3$: 303.1834
Mp: 190-192° (ac.)
$[\alpha]_D$–61° (chlf.)
UV: 285
Mass: 303(M^+), 302(100), 260

1. Chelombit'ko V.A., Mnatsakanyan V.A., Sal'nikova L.V., Khim. Prir. Soedin., 1978, 270.



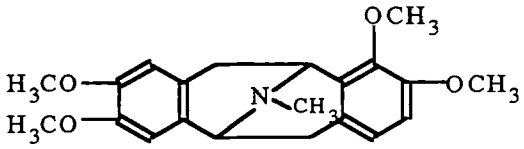
N-METHYLPIPERIDINE

Girgensohnia diptera, G.oppositiflora
$C_6H_{13}N$: 99.1048
Bp: 107° [1]

$[\alpha]_D$ 0°
{picr. 152°, picrolonate 226°} [1]
IR: 2920, 2850, 2830, 2780, 2730, 2700, 2670, 2625, 1469, 1453, 1442, 1378. 1350, 1328, 1295, 1278, 1261, 1163, 1141, 1100, 1086, 1033, 997, 975, 860, 810, 770 [2]
^{13}C NMR: [3]

C-α	56.2	C-β	25.9	C-γ	23.9
				NCH_3	46.4

1. Yurashevskii N.K., Stepanov S.I., Zh. Org. Khim., 1939, 9, 2203.
2. Holubek, No. 966.
3. Shamma, No. 66.

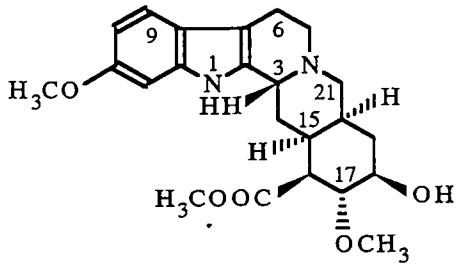


O-METHYLPLATYCERINE

Argemone platyceras
$C_{21}H_{25}NO_4$: 355.1783
Mp: amorph.
$[\alpha]_D$–285°

UV: 282
Mass: 355(M^+), 204(100)
PMR: 2.48(3H, s, NCH_3), 2.60-3.60(4H, m), 3.66, 3.70, 3.74, 3.83(3H, s, 4×OCH_3), 3.89, 4.24(1H, d, J=5), 6.30, 6.46(1H, s, p-H-Ar), 6.57(2H, s, o-H-Ar)

1. Israilov I.A., Yunusov M.S., Khim. Prir. Soedin., 1986, 204.



METHYLRESERPAT

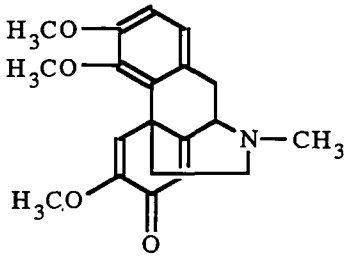
Rauwolfia vomitoria
$C_{23}H_{30}N_2O_5$: 414.2155
Mp: 231-239°, 235-240° [1]
$[\alpha]_D$–106° [1]
Mass: 414(86), 413(100), 383(16), 382(23), 381(27), 251(16), 214(20), 200(42), 186(29) [2]

^{13}C NMR: [3]

C-2	131.1	C-10	109.0	C-18	75.2
3	53.8	11	156.2	19	32.7
5	51.3	12	95.5	20	34.7
6	16.8	13	136.6	21	49.5
7	108.0	14	24.3	C=O	173.5
8	122.4	15	32.7	$COOCH_3$	51.5
9	118.5	16	51.5	11-OCH_3	55.6
		17	81.6	17-OCH_3	60.5

Pharm.: Hypotensive and sedative action [4].

1. Dorfman L., Furlenmeier A., Huebner C.F., Lucas R., McPhillaney H.B., Mueller J.M., Schlitter E., Schwyzer R., Andre A.F., Helv. Chim. Acta, 1954, **37**, 59.
2. Hesse M., Indolalkaloide (Progress in Mass Spectrometry), 1974, Vol. 1, Part 1, p. 203.
3. Wenkert E., Chang C.-J., Chawla H.P.S., Cochran W., Hagaman E.W., King J.C., Orito K., J. Amer. Chem. Soc., 1976, **98**, 3645.
4. The Alkaloids, 1986, Vol. 27, p. 256.

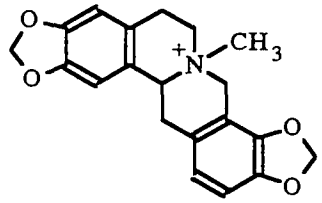


O-METHYLSALUTARIDINE

Papaver urbanianum
$C_{20}H_{23}NO_4$: 341.1624
Mp: 147-148°
$[\alpha]_D$+74° (chlf.)
UV: 240, 283
IR: 1675, 1650, 1625, 1490, 1285, 1210
Mass: 341($M^{+\cdot}$), 326, 313, 298, 282, 170.5($^{++}$)

PMR: 1.90-3.50(7H, m), 2.39(3H, s, NCH_3), 3.75, 3.82, 3.88(3H, s, 3×OCH_3), 6.24, 7.21(1H, s), 6.77(2H, s)

1. Manushakyan M.A., Israilov I.A., Mnatsakanyan V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 849.

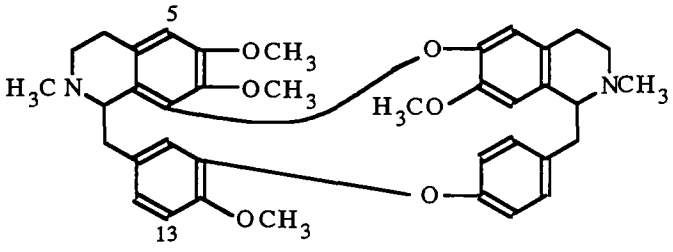


N-METHYLSTYLOPINE

Argemone platyceras, Corydalis stricta, Fumaria vaillantii, Glaucium corniculatum, G.fimbrilligerum
$C_{20}H_{20}NO_4$: 338.1392
{hydroxymethylate 266° (meth.-chlf.), $[\alpha]_D$−121° (meth.)}

UV{hydroxymethylate}: 244, 294
IR{hydroxymethylate}: 3650-3150, 1510, 1045, 940, 920
Mass{hydroxymethylate}: 323, 174, 148(100)
PMR{hydroxymethylate, CF_3COOH}: 2.63(3H, s, NCH_3), 2.65-4.70(9H, m), 5.58(4H, s, 2×CH_2O_2), 6.34(1H, s, H-Ar), 6.49(3H, s, H-Ar)

1. Israilov I.A., Unpub.



O-METHYLTHALICBERINE (THALMIDINE)

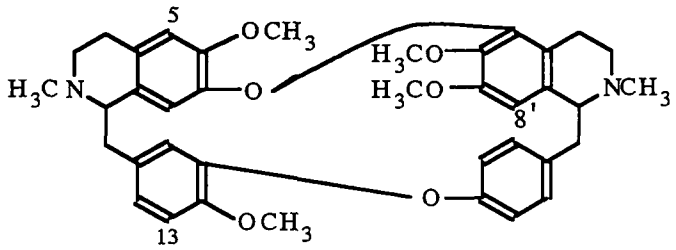
Thalictrum collinum, Th. longipedunculatum, Th. minus
$C_{38}H_{42}N_2O_6$: 622.3043
Mp: 192-193° (alc.) [1]
$[\alpha]_D$+252° (chlf.) [1]

{m-i. 255° (dec.)} [1]
Sol-y.: r-sol. chlf., alc., meth., ac.; sp. sol. eth.; i.s. water, alk. [1]
UV: 282(4.00) [2]
IR: 2820, 1610, 1590, 1520, 1450, 1270, 1220, 1130, 1020, 880, 850 [2]
Mass: 622($M^{+\cdot}$, 52), 621(26), 607(6), 591(2), 396(100), 381(18), 198(24), 175(5), 174(10), 90(2), 89(2) [3]

PMR: 2.01(3H, s, 2-NCH_3), 2.48(3H, s, 2′-NCH_3), 3.56(3H, s, 7-OCH_3), 3.69(3H, s, 7′-OCH_3), 3.77(3H, s, 6-OCH_3), 3.80(3H, s, 12-OCH_3) [4]
CD: [5]
Abs. conf.: 1S, 1′S
Pharm.: LD_{50} 310, 175 mg/kg (i/p, mice, rats). Antiinflammatory, analgesic [6], and hypotensive action. {Di m-i.} – curaremimetic action [7].

1. Yunusov S.Yu., Progressov N.N., Zh. Org. Khim., 1950, **20**, 1151.
2. Yunusov S.Yu., Telezhenetskaya M.V., DAN UzSSR, 1959, No. 7, 32; Unpub.
3. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 256.
4. Ismailov Z.F., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 262.
5. Moiseeva G.P., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 818.
6. Sadritdinov, p. 247.
7. Tursunova S.A., Tashbaev Kh.I., Sultanov M.B., in: The Pharmacology of Alkaloids and Glycosides [in Russian], Fan, Tashkent, pp. 156, 160.

O-METHYLTHALMINE

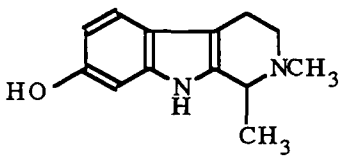


Thalictrum sultanabadense
$C_{38}H_{42}N_2O_6$: 622.3043
Mp: amorph.
$[\alpha]_D$–43° (meth.)

UV: 285
Mass: 622(M^+), 621, 396, 395, 198, 190, 175, 174
PMR: 2.10(3H, s, 2′-NCH_3), 2.58(3H, s, 2-NCH_3), 3.60(3H, s, 6′-OCH_3), 3.78(3H, s, 7′-OCH_3), 3.81(6H, s, 6-OCH_3, 12-OCH_3,), 5.76, 5.98(1H, s, H-8′, H-8), 6.49-6.85(8H, m, H-Ar)
Abs. conf.: 1S, 1′S

1. Mukhamedova S., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1984, 397.

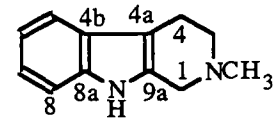
N-METHYLTETRAHYDROHARMOL



Elaeagnus angustifolia
$C_{13}H_{16}N_2O$: 216.1263
Mp: 268-270° (alc.)
$[\alpha]_D$ 0°
{h-chl. 275° (water)}

1. Platonova T.F., Kuzovkov A.D., Massagetov P.S., Zh. Org. Khim., 1956, **26**, 3220.

N-METHYLTETRAHYDRO-β-CARBOLINE



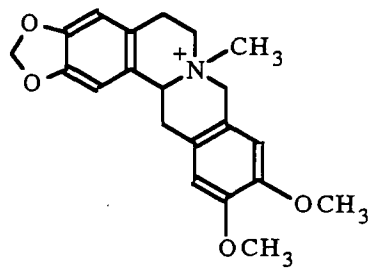
Arthophytum leptocladum, Elaeagnus angustifolia
$C_{12}H_{14}N_2$: 186.1157
Mp: 216-218° (bz.)

$[\alpha]_D$ 0°
{picr. 197°, h-chl. 247°, m-i. 266°} [1]
Sol-y.: r-sol. chlf.; sol. ac., alc., eth. [1]
UV: 224, 280(3.50, 3.90) [2]

IR: 3130, 1622, 1500, 1336, 1310, 1280, 1250, 1234, 1199, 1180, 1170, 1148, 1132, 1115, 1092, 1059, 1042, 1009, 998, 960, 922, 908, 870, 860, 798, 780, 753, 746, 735, 710 [2]; 3570 [3]
Mass: 186(M^+, 22), 143(100), 116 [3]; 186, 143(100), 115, 102, 78 [4]
PMR: 2.37(NCH_3), 2.78(4H, H-3, H-4), 3.33(2H, H-1), 6.92-7.58(4H, H-Ar), 8.45(NH) [3]
^{13}C NMR: [5]

C-1	52.5	C-4a	106.0	C-7	120.1
NCH_3	45.3	4b	126.6	8	110.8
3	52.0	5	117.2	8a	135.8
4	21.2	6	118.1	9a	132.7

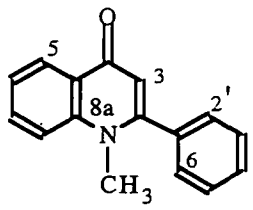
1. Platonova T.F., Kuzovkov A.D., Massagetov P.S., Zh. Org. Khim., 1958, **28**, 3128.
2. Holubek, No. 869.
3. Johns S.R., Lamberton J.A., Occolowitz J.L., Austral. J. Chem., 1967, **20**, 1737.
4. Agurell S., Holmstedt R., Lindgren J.E., Acta Chem. Scand., 1969, **23**, 903.
5. Poupat C., Ahond A., Sevenet T., Phytochem., 1976, **15**, 2019.



N-METHYLTETRAHYDROPSEUDOBERBERINE

Thalictrum minus
$C_{21}H_{24}NO_4$: 354.1705
Mp{iodide}: 128°
UV: 287
Mass: 354(M^+), 353, 339, 174, 164, 149, 142, 127
PMR(CF_3COOH): 3.43(3H, s, NCH_3), 3.98(3H, s, OCH_3), 4.05(3H, s, OCH_3), 4.98(2H, s), 6.01(2H, s, CH_2O_2), 6.80(2H, s), 7.15(2H, s)

1. Murav'eva D.A., Tolkachev O.N., Akopov A.A., Khim. Prir. Soedin., 1985, 416.



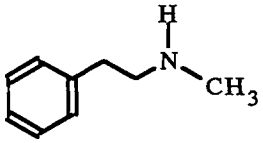
N-METHYL-2-PHENYLQUINOLIN-4-ONE

Haplophyllum foliosum, H.leptomerum, H.perforatum
$C_{16}H_{13}NO$: 235.0997
Mp: 118-119° (ac.); 141-142° (anhyd.)
{h-chl. 229°, picr. 176°} [1]

UV: 251, 325, 337(4.52, 4.12, 4.18) [2]
IR: 1625 [1]
Mass: 235(M^+, 100), 234(10), 207(66). 190, 178, 165 [2]
PMR: 3.51(3H, s, NCH_3), 6.19(1H, s, H-3), 7.45(8H, m, H-Ar), 8.40(1H, dd, J=10; 2, H-5) [1]
^{13}C NMR: [3]

C-2	154.83	C-7	132.39	C-3′	128.57
3	112.58	8	116.04	4′	129.65
4	177.58	8a	141.94	5′	128.57
4a	126.60	1′	135.86	6′	128.81
5	126.60	2′	128.81	NCH_3	37.26
6	123.68				

1. Kurbanov D., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 58.
2. Bessonova I.A., Unpub.
3. Wu T.S., Phytochem., 1987, **26**, 873.

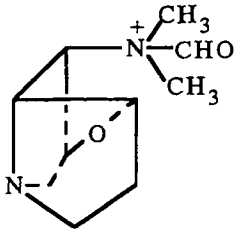


N-METHYL-β-PHENYLETHYLAMINE

Arthrophytum leptocladum, A.wakhanicum
$C_9H_{13}N$: 135.1048
Bp: 73-75° (4 mm Hg)

$[\alpha]_D$ 0°
{h-chl. 162°, picr. 143°, m-i. 228°} [1]
Mass: 135(M^+) [2]

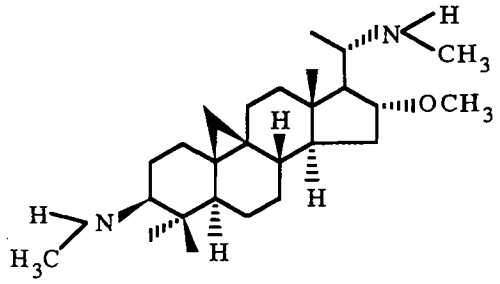
1. Yurashevskii N.K., Zh. Org. Khim., 1941, **11**, 207.
2. Dingerdissen J.J., McLaughlin J.L., J. Pharm. Sci., 1973, **62**, 1663.



N-METHYL-N-FORMYLLOLINE

Lolium cuneatum
$C_{10}H_{17}N_2O_2$: 197.1290
Mp: {iodide}: 180°
IR: 1680
Mass: 182, 153, 142
PMR(D_2O): 3.69(3H, s, NCH_3)

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

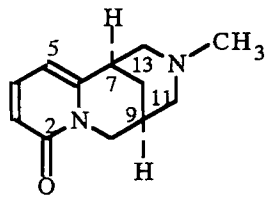


O-METHYLTCYCLO-VIROBUXINE D

Buxus sempervirens
$C_{27}H_{48}N_2O$: 416.3766
Mp: 231-233° (alc.)
$[\alpha]_D$+84° (chlf.)
{di Ac 244°, di Me 255°}
IR: 3045, 2860, 1452, 1275

Mass: 416(M^+), 402, 386, 371, 314, 58(100), 57, 56
PMR: 0.69, 0.90, 1.01(3H, 3H, 6H, s, 4×CH_3), 1.04(3H, d, J=6, HC-CH_3), 2.34(6H, s, 2×HN-CH_3), 3.45(3H, s, OCH_3)

1. Khodzhaev B.U., Primukhamedov I.M., Yunusov S.Yu., Khim. Prir. Soedin., 1986, 799.



N-METHYLTCYTISINE

Ammodendron argenteum, A.eichawaldii, A.karelinii, A.longiracemosum, Genista tinctoria, G.transcaucasica, Leontice alberti, L.darwasica, L.smirnowii, Pedicularis dolichorhiza, P.olgae, Sophora flavescens, S.griffithii, S.japonica, S.pachycarpa, Spartium junceum, Thermopsis alpina, T.alterniflora, T.fabaceae, T.lanceolata

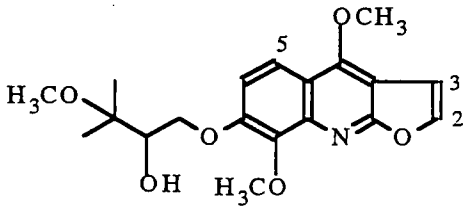
$C_{12}H_{16}N_2O$: 204.1263
Mp: 138° [1]
$[\alpha]_D$–213° (alc.)
{h-chl. 255°, picr. 233°, p-chl. 282°} [1]
UV: 234, 309(3.80, 3.90) [2]

IR: 1663, 1651, 1576, 1555, 1542, 1337, 1315, 1290, 1273, 1262, 1222, 1183, 1160, 1145, 1105, 1068, 1055, 1023, 993, 917, 907, 886, 873, 827, 811, 745, 726 [3]
Mass: 204(M^+, 7), 160(2), 146(3), 96(3), 82(3), 59(4), 58(100), 57(3), 42(8), 41(7) [4]
PMR: 2.13(3H, s, NCH_3), 2.34(H-7), 3.60-4.40(2H, H-10), 6.05(1H, d, J=7, H-3), 6.47(1H, dd, J=9; 2, H-5), 7.33(1H, q, J=9; 7.5, H-4) [5]
^{13}C NMR: [6]

C-2	162.3	C-6	150.6	C-10	49.4
3	104.0	7	34.7	11	61.9
4	138.0	8	27.4	13	61.6
5	115.8	9	24.8		

GLC: [7]
Pharm.: LD_{50} 32.125 mg/kg (s/c, oral). Paralyzes ganglionic receptors. Emetic action [8].

1. Yunusov S.Yu., The Alkaloids [in Russian], Fan, Tashkent, 1981, p. 341.
2. Sangster A.W., Stuart K.L., Chem. Rev., 1965, **65**, 69.
3. Holubek, No. 177.
4. Pelletier, Vol. 2, p. 105.
5. Sadykov, p. 49.
6. Sadykov A.S., Izv. AN SSSR, 1983, No. 11, 2442.
7. Ueno A., Morinaga K., Fukushima S., Okuda S., Chem. Pharm. Bull., 1978, **26**, 1832.
8. Sadritdinov, p. 140.

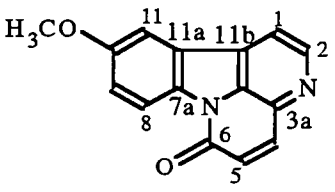


METHYLEVOXINE

Haplophyllum obtusifolium,
H.perforatum, H.ramosissimum
$C_{19}H_{23}NO_6$: 361.1525
Mp: 122-123° (eth.) [1]
$[\alpha]_D$ −15° (alc.) [2]

Sol-y.: r-sol. chlf., meth.; sp. sol. eth.; i.s. water
UV: 251, 322, 334(4.91, 3.78, 3.77) [3]
IR: 3450, 3170, 3140, 1628, 1588, 1510, 1500, 1473, 1460, 1400, 1330, 1280, 1245 [4]
Mass: 361(M^+, 48), 288(5), 258(8), 245(59), 244(22), 227(100), 216(18), 199(13), 187(6), 73(93) [3]
PMR: 1.17(6H, s, 2×CH_3). 3.11, 3.89, 4.18(3H, s, 3×OCH_3), 3.55-4.17(3H, m, O-CH-CH_2-O), 6.73, 7.25(1H, d, J=3, H-3, H-2), 6.92, 7.63(1H, d, J=9, H-6, H-5) [3]

1. Bessonova I.A., Kurbanov D., Yunusov S.Yu., Khim. Prir. Soedin., 1990, 284.
2. Abdullaeva Kh.A., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 219.
3. Akhmedzhanova V.I., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 272.
4. Bessonova I.A., Unpub.



METHYLERVINE (10-METHOXYCANTHIN-6-ONE)

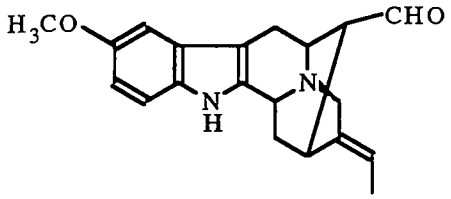
Aerva lanata
$C_{15}H_{10}N_2O_2$: 250.0742
Mp: 194-196° (meth., chlf.-alc.) [1]

UV: 269 sh, 277, 297 sh, 308 sh, 355 sh, 376(4.31, 4.41, 3.93, 3.90, 4.01, 4.09)
UV(alc.+HCl): 269 sh, 278, 310 sh, 361, 380, 393 sh (–, 4.30, 3.92, 4.08, 4.08, 3.83) [1]
IR: 1670, 1635, 1610, 1575 [1]

Mass: 250($M^{+\cdot}$, 100), 235(88), 207(21), 179(15), 153(8), 125(9) [1]
PMR: 3.98(s, OCH_3), 6.97(d, J=10, H-5), 7.22(dd, J=8.5; 2, H-9), 7.52(d, J=2, H-11), 7.90(d, J=5, H-1), 8.00(d, J=10, H-4), 8.50(d, J=8.5, H-8), 8.80(d, J=5, H-2) [1]
^{13}C NMR: [2]

C-1	117.9	C-6	159.1	C-11	106.4
2	145.5	7a	133.7	11a	125.5
3a	136.3	8	116.2	11b	130.1
4	139.1	9	117.8	11s	132.3
5	128.9	10	157.8	OCH_3	55.8

1. Zapesochnaya G.G., Pervykh L.N., Kurkin V.A., Khim. Prir. Soedin., 1991, 388.
2. Zapesochnaya G.G., Kurkin V.A., Okhanov V.V., Pervykh L.N., Miroshnikov A.I., Khim. Prir. Soedin., 1991, 821.

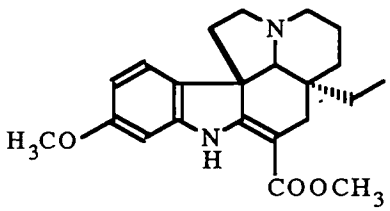


10-METHOXYVELLOSIMINE

Vinca erecta
$C_{20}H_{22}N_2O_2$: 322.1681
Mp: 224-226° (meth.) [1, 2]
UV: 228, 274, 293(4.32, 3.94, 3.78) [2]
IR: 1715, 1600, 1220, 880, 805 [2]

Mass: 322($M^{+\cdot}$), 293, 279, 212, 199, 198 [2]
PMR: 1.50(3H, d, J=7, CH_3), 3.58(3H, s, OCH_3), 5.00(1H, q, J=7, =CH–), 9.00(1H, s, CHO) [2]

1. Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 597.
2. Plat M.M., Lemay R., Le Men J., Janot M.-M., Djerassi C., Buszikiewicz H., Bull. Soc. Chim. France, 1965, 2497.

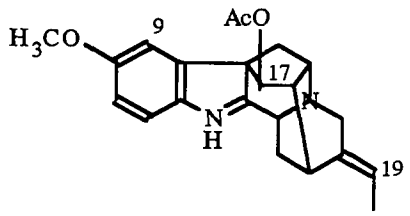


11-METHOXYVINCADIFFORMINE (ERVINCEINE)

Vinca erecta, V.herbacea, V.minor
$C_{22}H_{28}N_2O_3$: 368.2100
Mp: 99-100° (meth.) [1]; amorph. [2, 3]

$[\alpha]_D$–448° (chlf.) [1, 3]; –368° (chlf.) [2]
{h-i. 215°, dihydro 119°} [1]
UV: 248, 328(4.12, 4.26) [1, 4]
IR: 3335, 1682, 868, 805 [1, 2]
Mass: 368($M^{+\cdot}$, 48), 125(16), 124(100), [1-3, 5]
PMR: 0.53(3H, CH_3), 3.63(s, $COOOCH_3$), 3.66(s, OCH_3), 6.15, 6.28, 6.88(1H, H-Ar), 8.88(s, NH) [5]

1. Rakhimov D.A., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 330.
2. Robakidze Z.V., Mudzhiri M.M., Vachnadze V.Yu., Mudzhiri K.S., Khim. Prir. Soedin., 1980, 735.
3. Chkhikvadze G.V., Vachnadze V.Yu., Khim. Prir. Soedin., 1986, 383.
4. Pyuskyulev B., Kompis I., Ognyanov I., Spiteller G., Collect., 1967, **32**, 1289.
5. Rakhimov D.A., Malikov V.M., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 226.

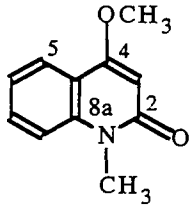


10-METHOXYVINORINE

Vinca erecta
$C_{22}H_{24}N_2O_3$: 364.1787
Mp: amorph.
{dihydro 200°}
UV: 223, 280(4.07, 3.66)

IR: 1745, 860, 825, 780
Mass: 364(M^+, 100), 321(63), 305(42), 212(10), 199(21), 198(38)
PMR: 1.60(d, CH_3), 2.10(s, OAs), 3.75(s, OCH_3), 5.00(s, H-17), 5.25(q, J=6, H-19), 6.86(H-11), 6.97(H-9), 7.45(H-12)

1. Khalmirzaev M., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1973, 681.



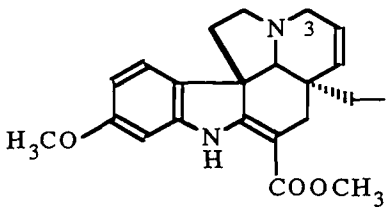
4-METHOXY-N-METHYL-QUINOLIN-2-ONE

Haplophyllum dauricum
$C_{11}H_{11}NO_2$: 189.0890
Mp: 100-101° (hx.)

UV: 229, 269, 279, 318, 330(4.50, 3.64, 3.67, 3.56, 3.46) [1]
IR: 1650, 1592, 1505, 1468, 1395, 1330, 1270, 1243, 1155, 1123, 1080 [2]
Mass: 189(M^+, 100), 174(43), 146(14), 132(13), 77(10) [1]
PMR(CCl_4): 3.47, 3.87(3H, NCH_3, OCH_3), 5.79(1H, s, H-3), 7.28(3H, m, H-Ar), 7.82(1H, dd, J=9; 2.5, H-5) [1]
^{13}C NMR: [3]

C-2	163.7	C-4a	116.3	C-7	131.1
3	90.2	5	123.2	8	114.0
4	162.5	6	121.5	8a	139.6

1. Bessonova I.A., Batsurén D., Yunusov S.Yu., Khim. Prir. Soedin., 1984, 73.
2. Bessonova I.A., Unpub.
3. Ruano J.L.G., Pedregal C., Rodriguez J.H., Heterocycles, 1991, **32**, 2151.

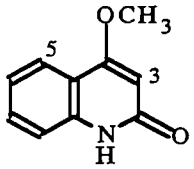


11-METHOXYTABERSONINE (ERVAMICINE)

Vinca erecta
$C_{22}H_{26}N_2O_3$: 366.1943
Mp: amorph. [1, 2]
$[\alpha]_D$–310° (chlf.) [2]
{h-chl. 186° (dec.) [2], h-i. 208° (dec.) [1]}

IR: 3375, 1685, 824, 900-700 [1, 2]
Mass: 366(M^+), 259, 135(100), 121, 107 [1, 2]
PMR(CCl_4): 0.58(3H, t, CH_3), 3.30(2H, q, H-3), 3.63(3H, s, $COOCH_3$), 3.66(3H, s, OCH_3), 6.19, 6.29, 6.94(1H, H-Ar), 8.95(NH) [1, 2]

1. Rakhimov D.A., Malikov V.M., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 226.
2. Pyuskyulev B., Kompis I., Ognyanov I., Spiteller G., Collect., 1967, **32**, 1289.

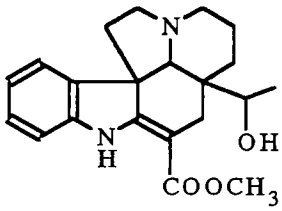


4-METHOXYQUINOLIN-2-ONE

Haplophyllum bungei
$C_{10}H_9NO_2$: 175.0633
Mp: 254-255° (alc.) [1]

UV: 212 sh, 224 sh, 227, 239 sh, 266, 275, 307 sh, 310, 327 [2]
IR: 1670, 1609, 1505, 1450, 1400, 1363, 1240, 1200, 1160, 1120, 1040, 990, 840 [3]
Mass: 175($M^{+\cdot}$, 100), 146(15), 132(29), 117(30) [4]
PMR: 3.91(3H, s, OCH_3), 5.94(1H, s, H-3), 7.00-7.52(3H, m, H-Ar), 7.80(1H, dd, J=9; 2.5, H-5), 11.95(1H, narrow s, NH) [3]

1. Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1989, 23.
2. Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 3.
3. Bessonova I.A., Unpub.
4. Razakova D.M., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1984, 635.

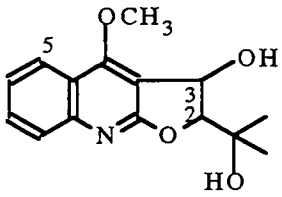


MINOVINCININE

Vinca erecta
$C_{21}H_{26}N_2O_3$: 354.1943
Mp: amorph. [1, 2]
$[\alpha]_D$–418° (alc.) [2]

UV: 225, 297, 328(4.02, 4.00, 4.09) [2]
IR: 3480, 1662, 1600 [2]
Mass: 354($M^{+\cdot}$), 336, 140, 122 [2]
PMR: 0.90(3H, d, J=7, CH_3) [2]

1. Khalmirzaev M., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 264.
2. Plat M., Le Men J., Janot M.-M., Budzikiewicz H., Wilson J.M., Durham L.J., Djerassi C., Bull. Soc. Chim. France, 1962, 2237.

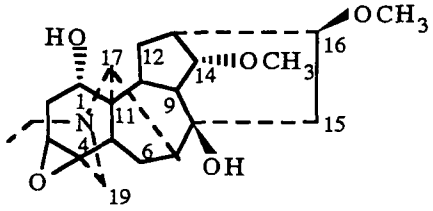


MYRTOPSINE

Haplophyllum foliosum
$C_{15}H_{17}NO_4$: 275.1158
Mp: 201-202° (chlf.)
$[\alpha]_D$–5° (meth.)
{3-O-Ac 175°)

Sol-y.: sp. sol. meth., chlf. [1]
UV: 230, 237 sh, 265, 272, 283, 313, 326(4.67, 4.55, 3.83, 3.88, 3.79, 3.62, 3.63)
IR: 3260, 1638, 1592, 1520, 1463, 1428, 1382, 1295, 1210, 1170, 1125, 1070, 1030, 1000, 970 [2]
Mass: 275($M^{+\cdot}$, 100), 260(16), 257(12), 242(39), 226(26), 216(19), 204(23), 202(24), 200(100), 199(28), 187(22), 186(25), 185(28), 173(14), 156(28), 59(53) [1, 2]
PMR(CD_3OD): 1.22, 1.30(3H, s, 2×CH_3), 4.31(1H, d, J=3, H-2), 4.42(3H, s, OCH_3), 5.64(1H, d, J=3, H-3), 7.05-7.78(3H, m, H-Ar), 8.02(1H, dd, J=8.5; 1.5, H-5) [1]

1. Akhmedzhanova V.I., Bessonova I.A., Khim. Prir. Soedin., 1981, 613.
2. Bessonova I.A., Unpub.



MONTICAMINE

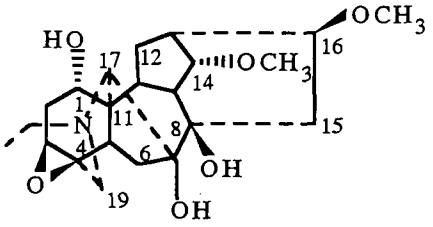
Aconitum karakolicum, A.monticola
$C_{22}H_{33}NO_5$: 391.2359
Mp: 163-164° (eth.-ac.)
$[\alpha]_D$+4°
{Ac 198°, h-chl. dihydro 205°}

Sol-y.: sol. chlf., meth.
IR: 3560, 3350-3120, 1105 [1]
Mass: 391(M^+, 90), 376(72), 374(20), 360(100) [1]
PMR: 0.84(3H, t, J=7, NCH_2CH_3), 3.14, 3.26(3H, s, 2×OCH_3), 3.54(1H, t, J=5, H-14β) [1]
^{13}C NMR: [1]

C-1	77.0	C-9	45.3	C-17	64.5
2	32.3	10	37.2	18	—
3	57.7	11	53.6	19	57.7
4	58.7	12	30.6	NCH_2	47.6
5	46.3	13	42.3	CH_3	13.3
6	25.9	14	84.6	C-14′	57.6
7	45.5	15	42.8	16′	56.1
8	74.4	16	82.6		

Pharm.: LD_{50} 250 mg/kg, 735 mg/kg (i/v, i/p, mice). Weak hypotensive, n-cholinoblocking, and antiarrhythmic effect [2].

1. Ametova É.F., Yunusov M.S., Bannikova V.E., Abdullaev N.D., Tel'nov V.A., Khim. Prir. Soedin., 1981, 466.
2. Dzhakhangirov F.N., Unpub.



MONTICOLINE

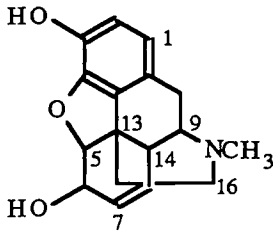
Aconitum monticola
$C_{22}H_{33}NO_6$: 407.2308
Mp: 166-167° (ac.)
$[\alpha]_D$+15° (chlf.)
Sol-y.: sol. chlf., meth.

IR: 3500, 3430, 3180, 1100 [1]
Mass: 407(M^+, 62), 392(100), 376(11), 374(3), 360(15) [1]
PMR: 0.92(3H, t, J=7, NCH_2CH_3), 3.13, 3.26(3H, s, 2×OCH_3), 3.56(1H, t, J=5, H-14β) [1]
^{13}C NMR: [1]

C-1	77.3	C-9	46.6	C-17	65.7
2	31.8	10	37.1	18	—
3	58.0	11	54.4	19	53.2
4	59.5	12	30.5	NCH_2	50.0
5	45.7	13	42.0	CH_3	14.1
6	34.2	14	84.6	C-14′	57.6
7	86.6	15	36.0	16′	56.2
8	76.9	16	82.5		

Pharm.: LD_{50} 495 mg/kg (i/v, mice). Weak hypotensive and ganglioblocking and pronounced antiarrhythmic action [2].

1. Ametova É.F., Yunusov M.S., Bannikova V.E., Abdullaev N.D., Tel'nov V.A., Khim. Prir. Soedin., 1981, 466.
2. Dzhakhangirov F.N., Unpub.



MORPHINE

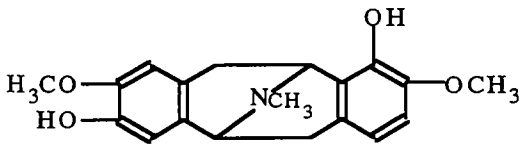
Papaver somniferum
$C_{17}H_{19}NO_3$: 285.1365
Mp: 253-254° (alc.)
$[\alpha]_D$–140° (meth.)

UV: 233 sh, 285 [1]
IR: 3610, 3010, 2930, 2905, 2825, 2770, 1609, 1511, 1490, 1452, 1375, 1336, 1294, 1280, 1191, 1173, 1138, 1083, 1043, 1028, 1003, 978, 942, 887, 876, 862, 828 [2]
Mass: 285(M^+), 268, 215, 200, 171, 162 [3]
^{13}C NMR: [4]

C-1	118.6	C-7	133.4	C-13	43.0
2	116.4	8	128.5	14	40.6
3	138.4	9	58.0	15	35.6
4	146.3	10	20.2	16	46.0
5	91.5	11	125.5	NCH_3	42.8
6	66.4	12	131.0		

ORD: [5]
Abs. conf.: [6]
X-ray spectral analysis: [7]
HPLC: [8]
Pharm.: Analgesic, antishock, hypnotic action. Enhances the action of hypnotic, narcotic, and local anesthetic agents, raises the tone of smooth musculature of internal organs, and depresses respiration. Used as an anslgesic in traumas and diseases with severe painful sensations. Supplied in the form of 0.01-g tablets and ampuls with 1 ml of 1% soln. [9].

1. Sangster A.W., Stuart K.L., Chem. Rev., 1965, **65**, 69.
2. Holubek, No. 184.
3. The Alkaloids, 1971, Vol. 13, p. 3.
4. Carroll F.I., Moreland C.G., Brine G.A., Kepler J.A., J. Org. Chem., 1976, **41**, 996.
5. Bobbit J.M., Weiss U., Hanessian D., J. Org. Chem., 1959, **24**, 1582.
6. Bentley K.W., Cardwell H.M.E., J. Chem. Soc., 1955, 3252.
7. McKay M., Hodgkin D.C., J. Chem. Soc., 1955, 3261; Fridrichsons J., McKay M., Mathieson A.M., Tetrahedron Lett., 1968, 2887; Tetrahedron, 1970, **26**, 1969.
8. Mason J.L., Ashmore S.P., Aitkenhead A.R., J. Chromatogr., 1991, **570**, 191.
9. Mashkovskii, Vol. 1, p. 169.

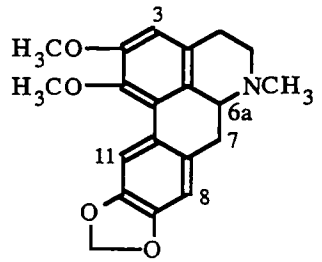


MUNITAGINE

Argemone hybrida, A.platyceras
$C_{19}H_{21}NO_4$: 327.1471
Mp: 167-168° (alc.)
$[\alpha]_D$–230° (chlf.)

UV: 284
Mass: 327(M^+), 326, 190(100), 175
PMR: 2.53(3H, s, NCH_3), 3.72, 3.76(3H, s, 2×OCH_3), 3.92, 4.38(1H, d, J=6), 6.41, 6.60(1H, s, p-H-Ar), 6.48, 6.62(1H, d, J=8, o-H-Ar)

1. Israilov I.A., Unpub.



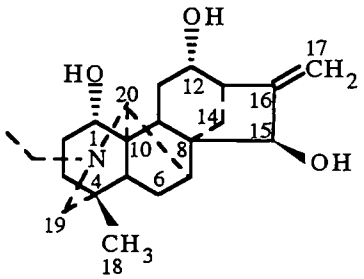
NANTENINE

Corydalis marschalliana
$C_{20}H_{21}NO_4$: 339.1471
Mp: 138-139° [1]
$[\alpha]_D$+90° (chlf.) [1]
UV: 220, 281, 310 [1]

Mass: 339(M^+), 338, 324, 308, 296, 281, 169.5($^{++}$) [1]
PMR: 2.53(3H, s, NCH_3), 3.65, 3.89(3H, s, 2×OCH_3), 6.01(2H, s, CH_2O_2), 6.54, 6.85, 7.96(1H, H-Ar) [1]
^{13}C NMR: [2]

C-1	144.0	C-5	52.9	C-11	108.4
1a	126.4	6	62.1	11a	125.1
1b	128.2	7	34.9	NCH_3	43.6
2	151.4	7a	130.4	1-OCH_3	59.8
3	110.3	8	107.8	2-OCH_3	55.4
3a	127.0	9	146.0	9,10-CH_2O_2	100.4
4	29.0	10	145.9		

1. Israilov I.A., Unpub.
2. Guinaudeau H., Leboeuf M., Cave A., J. Natur. Prod., 1979, **42**, 325.



NAPELLINE (LUCICULINE)

Aconitum altaicum, A.baicalense, A.czekanovskyi, A.karakolicum, A.soongaricum, A.volubile
$C_{22}H_{33}NO_3$: 359.246
Mp: 166°
{h-b. 229°, p-chl. 238°}
IR: 3500-3380, 1660, 1460, 1448, 1397, 1280, 1230, 1175, 1130, 1105, 1070, 1045, 1024, 915 [1]

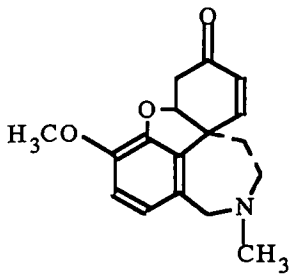
Mass: 359(M^+, 100), 344(6), 342(11), 341(10), 330(4), 300(7) [1]
PMR: 0.72(3H, s, 18-CH_3), 1.01(3H, t, J=7, NCH_2CH_3), 5.05, 5.28(1H, narrow s, H-17) [1-3]
^{13}C NMR: [4]

C-1	70.5	C-9	38.2	C-17	107.4
2	31.9	10	53.5	18	26.4
3	32.4	11	29.4	19	57.7
4	34.7	12	76.2	20	66.2
5	49.4	13	49.9	NCH_2	51.6
6	23.6	14	38.4	CH_3	13.3
7	45.0	15	77.8		
8	50.3	16	160.8		

Pharm.: LD_{50} 87.5 mg/kg (i/v, mice). Hypotensive, H-cholinolytic, antiinflammatory, and pronounced antiarrhythmic action [5].

1. Sultankhodzhaev M.N., Beshitaishvili L.V., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 479; Unpub.
2. Wiesner K., Valenta Z., King L.F., Maudgal R.K., Hamber L.C., Ito S., Chem. Ind., 1957, 173.
3. Okamoto T., Hatsume M., Gitake Y., Ioshino A., Amiya T., Chem. Pharm. Bull., 1965, **13**, 1270.
4. Chen. Z., Lao A., Wang H., Hong S., Heterocycles, 1987, **26**, 1455.

5. Dzhakhangirov F.N., Sadritdinov F.S., DAN UzSSR, No. 3, 50; Unpub.

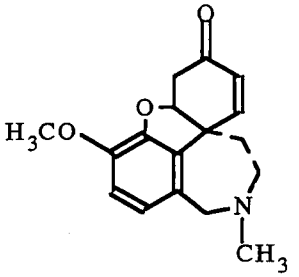


(+)-NARWEDINE

Ungernia sewerzowii
$C_{17}H_{19}NO_3$: 285.1365
Mp: 185-186° (ac.)
$[\alpha]_D$+310° (chlf.) [1], +100° (chlf.) [2, 3]
UV: 262 [2]

IR: 3020, 2940, 2850, 2810, 1692, 1631, 1598, 1516, 1466, 1443, 1392, 1377, 1367, 1340, 1320, 1288, 1268, 1260, 1171, 1150, 1132, 1128, 1111, 1070, 1053, 1038, 1011, 990, 978, 961, 928, 895, 870, 838, 829 [2]

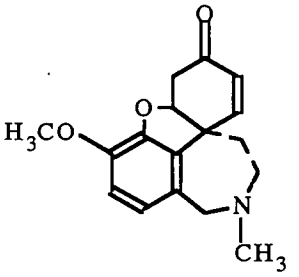
1. Smirnova L.S., Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 322.
2. Holubek, No. 371.
3. Boit H.-G., Doepke W., Beitner A., Chem. Ber., 1957, **90**, 2197.



(–)-NARWEDINE

Ungernia sewerzowii
$C_{17}H_{19}NO_3$: 285.1365
Mp: 184-185° (bz.)
$[\alpha]_D$–35° (chlf.)
{m-i. 201°, picr. 188°}

1. Smirnova L.S., Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 322.



(±)-NARWEDINE

Crinum amabile, Galanthus nivalis, Ungernia sewerzowii, U.victoris, U.vvedenskyi
$C_{17}H_{19}NO_3$: 285.1365
Mp: 186-187° (meth.) [1]
$[\alpha]_D$ 0° (chlf.) [1]
{h-b. 256°, m-i. 266°, nitr. 245°, picr. 193°} [1]

UV: 250, 262(3.66, 3.82) [1]
IR: 1685, 1595, 1510, 1445, 1270, 1055, 935
Mass: 285(M^+), 270, 257, 256, 242, 228, 216, 214, 199, 174 [2]
Pharm.: LD_{50} 36, 77 mg/kg (i/v, s/c, mice). Pronounced antinarcotic action. Facilitates the transmission of nervous excitation in n- and m-cholinergic synapses [3]. Stimulates respiration and possesses a brief hypotensive effect. Has no negative influence on the heart [4].

1. Smirnova L.S., Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 322.
2. Razakov R., Bochkarev V.N., Abduazimov Kh.A., Vul'fson N.S., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 280.
3. Sadritdinov, p. 13.
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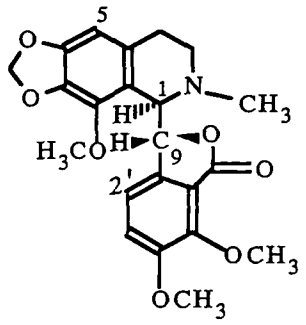
NARCOTINE



Papaver oreophilum, P.somniferum, P.zangezuricum
$C_{22}H_{23}NO_7$: 413.1475
Mp: 175-176° (alc.) [1]
$[\alpha]_D$–207° (chlf.) [1]
UV: 209, 291, 309 [1]
IR: 1765, 1600, 1505, 1485, 1040, 940 [1]
Mass: 220(100), 205, 190 [1]

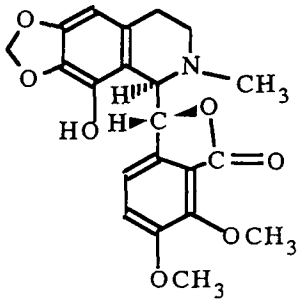
PMR: 2.45(3H, s, NCH_3), 3.77, 3.93, 3.97(3H, s, 3×OCH_3), 4.29, 5.47(1H, d, J=4), 5.87(2H, s, CH_2O_2), 6.00, 6.93(1H, d, J=8, o-H-Ar), 6.23(1H, s) [1]
^{13}C NMR: [2]

C-1	60.9	C-8a	117.2	C-5′	147.8
3	50.1	9	81.9	6′	120.3
4	28.1	10	168.2	NCH_3	46.3
4a	132.2	1′	140.6	6,7-CH_2O_2	100.8
5	102.4	2′	117.8	4′-OCH_3	55.9
6	148.5	3′	118.4	5′-OCH_3	62.2
7	134.1	4′	152.3	8-OCH_3	59.4
8	141.3				

HPLC: [3]

1. Israilov I.A., Unpub.
2. The Alkaloids, 1981, Vol. 18, p. 217.
3. Srivastava V.K., Maheshwari M.L., J. Assoc. Off. Anal. Chem., 1985, **68**, 801.

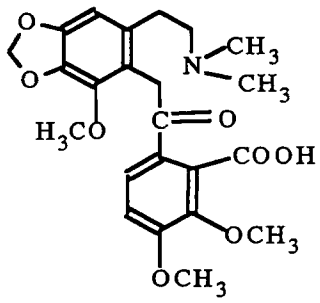
NARCOTOLINE



Papaver somniferum
$C_{21}H_{21}NO_7$: 399.1318
Mp: 198-200° (meth.) [1]
$[\alpha]_D$–189° (chlf.) [2]
UV: 291, 309 [1]
IR(nujol): 1770, 1537, 1505, 1488, 1278, 1041, 1030, 1010 [3]

Mass: 206, 194, 178, 176, 165 [1]
Abs. conf.: 1R, 9S [3]
HPLC: [4]

1. Proksa B., Cerny J., Putek J., Pharmazie, 1979, **34**, 194.
2. The Alkaloids, 1985, Vol. 24, p. 253.
3. Blasko G., Gula D.J., Shamma M., J. Natur. Prod., 1982, **45**, 105.
4. Johansson M., Westerlund D., J. Chromatogr., 1988, **452**, 241.

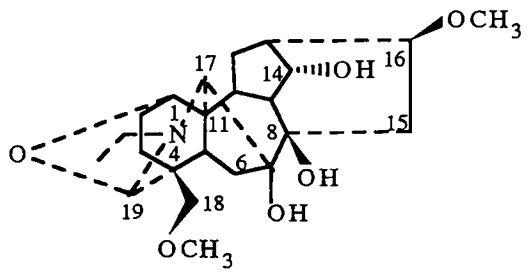


NARCEINE

Papaver somniferum
$C_{23}H_{27}NO_8$: 445.1737
Mp: 145-146° [1]
UV: 220, 271, 288 sh [2]
IR($CHCl_3$): 3340, 1683, 1583, 1253, 1089, 1059, 995 [3]

PMR: 2.25(6H, s, $N(CH_3)_2$, 3.86, 3.89, 3.97(3H, s, 3×OCH_3), 4.22(2H, s), 5.90(2H, s, CH_2O_2), 6.46(1H, s), 6.99. 7.84(1H, d, J=8.5) [2]
HPLC: [4]

1. Kuhn L., Pfeifer S., Pharmazie, 1963, **18**, 819.
2. Blasko G., Elango V., Sener B., Freyer A.J., Shamma M., J. Org. Chem., 1982, **47**, 880.
3. Blasko G., Gula D.J., Shamma M., J. Natur. Prod., 1982, **45**, 105.
4. Verpoorte R., Verzijl J.M., Baerheim-Svendsen A., J. Chromatogr., 1984, **283**, 401.



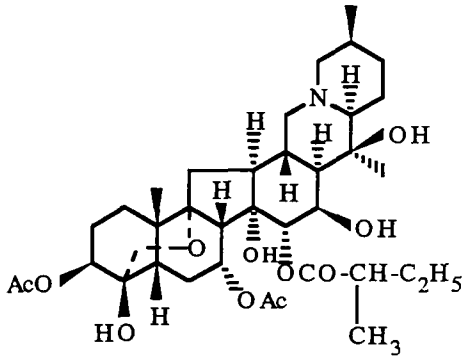
NEVADENSINE

Delphinium confusum
$C_{23}H_{35}NO_6$: 421.2464
Mp: amorph.
IR: 3520-3380, 1465, 1378, 1365, 1305, 1230, 1200, 1180, 1130, 1100, 1070, 1055, 1045, 997, 950, 935, 898, 870, 830, 815, 785, 770, 755 [1]
Mass: 421($M^{+\cdot}$), 406, 403, 390, 388, 365, 334 [1]

PMR: 1.04(3H, t, J=7, NCH_2CH_3), 3.27, 3.31(3H, s, 2×OCH_3) [1]
^{13}C NMR: [2]

C-1	85.3	C-9	46.7	C-17	64.4
2	25.9	10	43.9	18	73.9
3	22.3	11	47.9	19	69.0
4	42.7	12	27.3	NCH_2	47.9
5	36.7	13	38.9	CH_3	14.1
6	32.5	14	75.5	C-16′	56.6
7	86.7	15	35.3	18′	59.5
8	74.1	16	81.9		

1. Vaisov Z.M., Yunusov M.S., Khim. Prir. Soedin., 1987, 869; Unpub.
2. Gonzales A.G., Fuente G., Orribo T., Acosta R.D., Heterocycles, 1985, **23**, 2979.

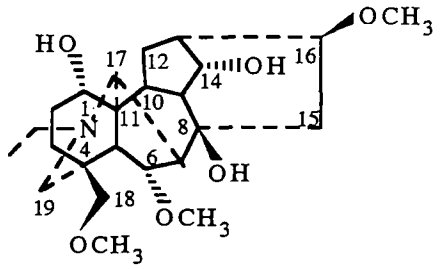


NEOGERMITRINE

Veratrum lobelianum
$C_{36}H_{55}NO_{11}$: 677.3775
Mp: 226-228° (ac.-eth.)
$[\alpha]_D$–70° (pyr.)
{Ac 252°}
IR: 3560, 3440, 1740, 1250

PMR: 0.83(3H, t, CH_2-CH_3), 0.94(3H, s, 19-CH_3), 1.01(3H, d, 27-CH_3), 1.08(3H, d, HC-CH_3), 1.13(3H, s, 21-CH_3), 2.01(3H, s, OAs), 2.03(3H, s, OAs), 4.95(1H, t, HC-O-acyl), 5.14(1H, d, HC-O-acyl), 5.74(1H, m, HC-O-acyl) [1, 2]

1. Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 265.
2. Kupchan S.M., J. Amer. Chem. Soc., 1959, **81**, 1921.



NEOLINE (BULLATINE B)

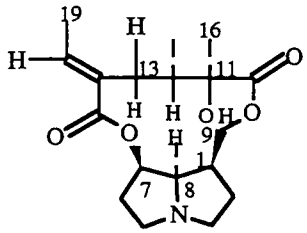
Aconitum karakolicum, A.firmum,
A.sczukinii, A.soongaricum, A.tauricum
$C_{24}H_{39}NO_6$: 437.2777
Mp: 162°
$[\alpha]_D$+10° (ac.)
{h-chl. 180°, h-b. 215°}

Sol-y.: chlf., meth.
IR: 3575, 3535, 3300, 1492, 1455, 1404, 1363, 1315, 1296, 1275, 1250, 1233, 1218, 1210, 1185, 1165, 1115, 1105, 1085, 1045, 990, 957, 934, 921, 900, 880, 865 [1]
Mass: 437(M^+, 19), 422(26), 420(100), 404(15), 381(7), 350(11) [1]
PMR: 1.03(3H, t, J=7, NCH_2CH_3), 3.25(9H, s, 3×OCH_3) [1, 3]
^{13}C NMR: [2, 3]

C-1	72.1	C-9	48.3	C-17	63.3
2	29.5*	10	44.9**	18	80.3
3	29.9*	11	49.6	19	57.2
4	38.2	12	29.8*	NCH_2	48.2
5	44.3**	13	40.7	CH_3	13.0
6	83.3	14	75.9	C-6′	57.8
7	52.3	15	42.7	16′	56.3
8	73.4	16	82.3	18′	59.1

Pharm.: LD_{50} 69 mg/kg (i/v, mice). Hypotensive, ganglioblocking, curaremimetic action [4].

1. Golubev N.M., Tel'nov V.A., Yunusov M.S., Fruentov N.K., Yunusov S.Yu., Questions of Pharmaceutics in the Far East [in Russian], Khabarovsk, 1977, issue 2, p. 10; Unpub.
2. Bando H., Wada K., Amiya T., Fujimoto Y., Kobayashi K., Heterocycles, 1988, **27**, 2167.
3. Rhetwal Kh.S., Desai H.K., Joshi B.S., Pelletier S.W., Heterocycles, 1994, **38**, 833; C.A., 1994, 121:5195 u.
4. Dzhakhangirov F.N., Panina O.S., Unpub.



NEOPLATYPHYLLINE

Senecio platyphylloides, S.rhombifolius
$C_{18}H_{27}NO_5$: 337.1889
Mp: 131-133° (meth.) [1]
$[\alpha]_D$+2°(chlf.) [1], −4° (alc.) [2]
{bitartrate 140° (dec.), picr. 165°, p-chl. 218° (dec.), platynecine 148°, $[\alpha]_D$−60 (chlf.), integerrinecic acid 150°, $[\alpha]_D$+10° (alc.)} [1]

IR: 2940, 1739, 1712, 1650, 1464, 1385, 1291, 1273, 1218, 1195, 1178, 1154, 1117, 1091, 1073, 1030, 986, 974, 949, 931, 897, 881, 841, 804, 758, 738 [1]

Mass: 337(M^+, 27), 322(3), 320(3), 266(5), 252(2), 239(3), 238(3), 226(8), 222(6), 220(3), 212(8), 211(53), 210(4), 180(12), 156(4), 141(11), 140(96), 139(13), 138(52), 125(12), 124(9), 123(55), 122(65), 121(14), 120(12), 110(5), 109(9), 108(14), 97(4), 96(26), 95(16), 94(5), 83(12), 82(100), 81(11), 80(10) [3]

PMR: 6.58(1H, H-18) [3]; 3.44(1H, J=5.8, H-8), 3.90, 4.45(1H, ddd, J=2.3; 9.7; 11.1, H-9), 5.49(1H, J=5.8, H-7) [4]

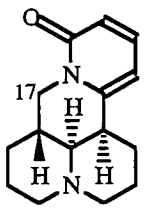
^{13}C NMR: [2]

C-1	39.5	C-8	69.0	C-14	131.8
2	30.5	9	65.1	15	167.2
3	51.7	10	178.6	16	26.4
5	53.1	11	76.5	17	13.1
6	35.9	12	36.9	18	138.2
7	73.9	13	39.0	19	14.4

CD: [5]

Pharm.: Cholinolytic and spasmolytic action [1].

1. Danilova A.V., Utkin L.M., Kozyreva G.V., Syrneva Yu.I., Zh. Org. Khim., 1959, **29**, 2432.
2. Roder E., Wiedenfeld H., Jost E.J., Planta Medica, 1982, **44**, 182; Jones A.J., Culvenor C.C.J., Smith L.W., Austral. J. Chem., 1982, **35**, 1173.
3. Culvenor C.C.J., Koretskaya N.I., Smith L.W., Utkin L.M., Austral. J. Chem., 1968, **21**, 1671.
4. Aasen A.J., Culvenor C.C.J., Smith L.W., J. Org. Chem., 1969, **34**, 4137.
5. Hrbek J., Hruban L., Klasek A., Kochetkov N.K., Likhosherstov A.M., Santavy F., Snatzke G., Collect., 1972, **37**, 3918.



NEOSOPHORAMINE

Sophora alopecuroides
$C_{15}H_{20}N_2O$: 244.1576
Mp: 124-125° (eth.)
$[\alpha]_D$−30° (alc.)
{h-chl. 285° (dec.)}

IR: 1650 [1]

Mass: 244(M^+, 90), 243(66), 229, 215, 172, 160, 146, 136(100), 122, 109, 95, 67, 55 [1, 2]

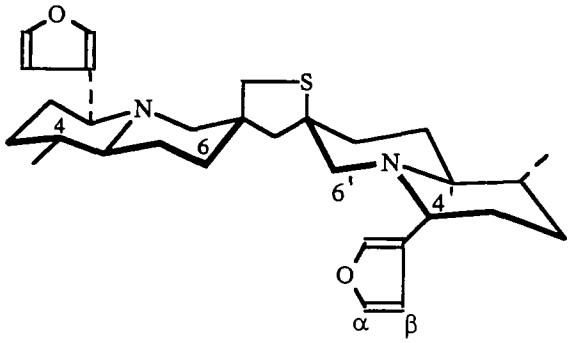
PMR(CCl_4): 2.71(q, J=15.2; 11.5, H-17$_a$), 4.27(q, J=15.2; 5.4, H-17$_e$), 5.75(q, J=6.8; 1.8), 6.06(q, J=9.5; 1.8), 7.03(q, J=9.5; 6.8) [1]

X-ray spectral analysis{tetrahydro}: [3]

Pharm.: Not very active [4].

1. Monakhova T.E., Tolkachev O.N., Kabanov V.S., Perel'son M.E., Proskurnina N.F., Khim. Prir. Soedin., 1974, 472.
2. Kushmuradov Yu.K., Éshbaev F.Sh., Kasymov A.K., Kuchkarov S., Khim. Prir. Soedin., 1979, 353.

3. Ibragimov B.T., Talipov S.A., Tishchenko T.N., Kushmuradov Yu.K., Aripov T.F., Kuchkarov S., Khim. Prir. Soedin., 1979, 588; Khim. Prir. Soedin., 1981, 751.
4. Monakhova T.E., Author's Abstract of Candidate's Dissertation, Moscow, 1975.



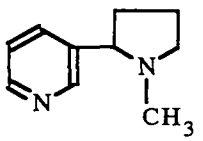
NEOTHIOBINUPHARIDINE

Nuphar lutea
$C_{30}H_{42}N_2O_2S$: 494.3906
Mp: 158-159° (abs. alc.)
$[\alpha]_D$ 0°
{p-chl. 320° (dec.)}
UV: 210
UV(H^+): 284

IR: 2780, 2735, 2580, 1595, 1502, 1265, 1137, 1062, 990, 870, 788, 705-685
Mass: 494(M^+), 479, 465, 461, 451, 447, 427, 359, 264, 247, 231, 230, 178(100), 136, 107, 94 [1]
PMR: 0.91(6H, d, J=5, 2×CH_3), 2.60-3.00(4H, m, H-4, H-4′, H-6, H-6′), 2.67(2H, s, $w_{1/2}$=3, CH_2S), 6.34, 6.52(1H, narrow s, $w_{1/2}$=3, 2×H-β), 7.23, 7.32(1H, narrow s, $w_{1/2}$=3; 3H, m, 4×H-α) [2]

1. Achmatowicz O., Baczek H., Tetrahedron Lett., 1964, 927.
2. Wrobel J.T., Bobeszko B., Canad. J. Chem., 1973, **51**, 2810.

(–)-NICOTINE



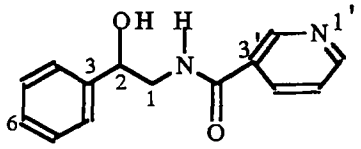
Nicotiana acuminata, N.alata, N.angustifolia, N.bigelovi, N.bonariensis, N.calyzina, N.chinensis, N.clevelandii, N.debneyi, N.glufinosa, N.ingulba, N.langsdorfii, N.macrophylla, N.paniculata, N.petiolaris, N.quadriwalvis, N.raimondii, N.rosulata, N.rotundifolia, N.rustica, N.sanquinea, N.solanifolia, N.sylvestris, N.tabacum, N.tomentosa, N.undulata, N.wigandoides

$C_{10}H_{14}N_2$: 162.1157
Bp: 246°
$[\alpha]_D$–169°
{di picr. 224°, dipicrolonate 218°, di h-i. 195°, chl-plat. 280°, trinitro-*m*-cresylate 208°} [1]
UV: 262(3.43) [2]
Mass: 162(M^+), 161, 133, 119, 84 [2]
PMR: 2.18(3H, s, NCH_3), 7.30(H-5), 7.75(H-4), 8.55(H-6), 8.60(H-2) [2]
^{13}C NMR: [2]

C-2	148.8	C-6	147.8	C-4′	21.7
3	138.3	2′	67.7	5′	55.8
4	134.0	3′	34.4	NCH_3	39.2
5	122.6				

HPLC: [3]
Pharm.: Selective depressing influence on some branches of the activating system of the reticular formation of the brain stem [4].

1. Boit, p. 138.
2. Seeman J.I., Heterocycles, 1984, **22**, 165.
3. Perfetti T.A., Swadesh J.K., J. Chromatogr., 1991, **543**, 129.
4. Lebedev V.P., Farmakol. Toksikol, 1961, No. 5, 515.

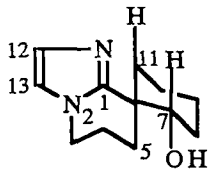


(–)-NICOTINOYL-2-PHENYL-2-HYDROXYETHYLAMINE

Oxytropis muricata, O.puberula
$C_{14}H_{14}N_2O_2$: 242.1055
Mp: 157-158° (ac.)

$[\alpha]_D$–25° (meth.)
UV: 210, 256 sh
IR: 3330, 1650
Mass: 242(M^+, 0.5), 224(2), 136(100), 135(70), 123(16), 118(9), 107(28), 106(52), 105(11), 79(35), 78(30), 77(22)
PMR(DMSO-d_6): 3.30, 3.48(1H, m, H-1), 4.77(1H, m, H-2), 5.49(1H, d, J=2.5, OH), 7.22(1H, t, J=7, H-6), 7.31(2H, t, J=7, H-5, H-7), 7.35(2H, d, J=7, H-4, H-8), 7.45(1H, dd, J=5; 8, H-5′), 8.13(1H, dt, J=8; 1.3, H-4′), 8.65(1H, dd, J=5; 1.3, H-6′), 8.67(1H, t, J=5, NH), 8.95(1H, d, J=1.3, H-2′)

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



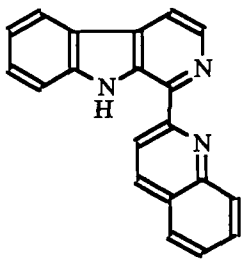
NITRABIRINE

Nitraria sibirica
$C_{12}H_{18}N_2O$: 206.1419
Mp: 184-185° (meth.)
$[\alpha]_D$ 0°

{h-chl. 225°}
UV: 212(3.84) [1]
IR: 3350-3180, 2945-2875, 1670, 1595, 1530, 1490, 1250, 1090, 935
Mass: 206(M^+, 70), 189(15), 188(9), 135(100) [1]
PMR: 1.47, 1.77, 2.00(4H, m, 6×CH_2), 3.91(2H, m, H-3), 4.37(1H, dd, H-7), 6.73(1H, d, H-13), 6.94(1H, d, H-12) [1, 2]
^{13}C NMR: [2]

C-1	150.9	C-6	42.7	C-10	20.8
3	44.7	7	74.7	11	35.4
4	19.7	8	29.1	12	127.7
5	21.6	9	24.6	13	117.9

1. Ibragimov A.A., Osmanov Z., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 213.
2. Ibragimov A.A., Yunusov S.Yu., Khim. Prir. Soedin., 1988, 82.

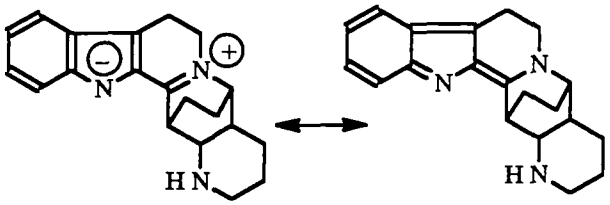


NITRAMARINE

Nitraria komarovii
$C_{20}H_{13}N_3$: 295.1110
Mp: 172-173° (chlf.-meth.)
UV: 213, 230, 246, 275, 310 sh, 388(4.62, 4.54, 4.40, 4.24, 3.92, 4.12)

UV(H^+): 233, 262, 282, 330-340, 410
IR: 3380, 3060, 3035, 1630, 1600, 1580, 1510, 1500, 1450, 835, 755
PMR: 6.94, 7.44, 7.77, 7.87, 7.92, 8.07, 8.32
Pharm.: LD_{50} 232 mg/kg (i/v, mice). Tranquilizing properties.

1. Tulyaganov T.S., Ibragimov A.A., Yunusov S.Yu., Vakhabov A.A., Aminov S.D., Sultanov M.B., Khim. Farm. Zh., 1984, 1474.

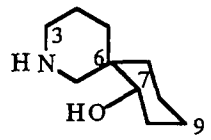


NITRAMIDINE

Nitraria komarovii, N.schoberi
$C_{20}H_{23}N_3$: 305.1892
Mp: amorph.
{di h-chl. 253°} [1]
UV{di h-chl.}: 250, 263(3.95, 4.27)
UV(OH–): 257, 388 [2]

Mass: 305(M^+, 100), 304, 277, 276, 262, 261, 249, 247, 222, 221, 219, 197, 184, 171, 83 [1]

1. Ibragimov A.A., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 275.
2. Ibragimov A.A., Author's Abstract of Candidate's Dissertation, Tashkent, 1975.



NITRAMINE

Nitraria schoberi, N.sibirica
$C_{10}H_{19}NO$: 169.1467
Mp: oil

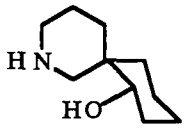
$[\alpha]_D$+17° (chlf.) [1], –8° (meth.) [4]
{nitr. 206°, h-chl. 201°} [1]
IR(chlf.): 3365, 3320 [1]
Mass: 169(M^+, 100), 151(82), 150(34), 123, 122(41), 96(27), 84(71), 57(47) [1]
PMR: 0.90-2.10(1H, H-5_e), 2.37, 3.34(1H, d, J=11.9, H-1_a, H-1_e), 2.58(1H, td, J=11.4; 11.4; 3.3, H-3_a), 2.95(1H, H-3_e), 3.48(1H, dd, J=9.1; 4.2, H-7), 3.98(2H, narrow s, NH, OH) [2]

^{13}C NMR: [2]

C-1	52.0	C-6	36.1	C-9	23.9
3	46.7	7	77.0	10	21.1
4	23.2	8	32.0	11	36.3
5	37.4				

X-ray spectral analysis: [3]
CD: [4]
Abs. conf.: 6R, 7eS [4]
Pharm.: LD_{50} 229 mg/kg (i/v, mice). Hypotensive action [5].

1. Novgorodova N.Yu., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1973, 196.
2. Ibragimov A.A., Yunusov S.Yu., Khim. Prir. Soedin., 1988, 82.
3. Tashkhodzhaev B., Khim. Prir. Soedin., 1982, 75.
4. Ibragimov A.A., Moiseeva G.P., Osmanov Z., Yunusov S.Yu., Khim. Prir. Soedin., 1986, 726.
5. Aliev Sh.R., Vakhabov A.A., Sultanov M.B., DAN UzSSR, 1975, No. 4, 43.

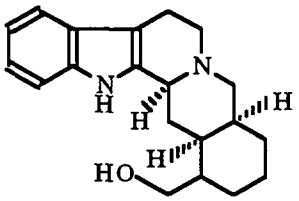


(±)-NITRAMINE

Nitraria sibirica
$C_{10}H_{19}NO$: 169.1467
Mp: 75-76°
IR: 3320

Mass: 169($M^{+\cdot}$, 100), 151, 150, 136, 123, 122, 110, 96

1. Osmanov Z., Ibragimov A.A., Yunusov S.Yu., Khim. Prir. Soedin., 1982, 126.

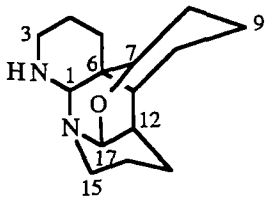


NITRARAINE

Nitraria komarovii, N.schoberi
$C_{20}H_{24}N_2O$: 308.1889
Mp: 280-281° (alc.) [1]
$[\alpha]_D$ 0°
{O-Ac 91°, dihydro 287°} [1]

Sol-y.: sp. sol. org. solvent
UV: 222, 284, 292(4.56, 3.87, 3.79) [1]
IR: 3260, 2920, 1630, 1570, 1470, 1450, 1020, 740 [1]
Mass: 308($M^{+\cdot}$, 80), 307(50), 291(6), 277(3), 223(6), 197(12), 184(9), 171(27), 170(100), 169(42), 156(10), 144(10)
PMR: 3.09(1H, d, J=11.6), 4.05(1H, d, J=12.5), 7.29(1H, d, J=12.5), 7.44(1H, d, J=7.3), 8.00(1H, narrow s) [2]
NMR ^{13}C: triplets: 23.4, 25.8, 32.3, 53.6, 61.5, 65.9, 81.7; doublets: 34.5, 35.7, 60.3, 110.9, 118.0, 119.2, 121.1, 125.0; singlets: 108.0, 127.4, 135.5; 136.1, 140.5.

1. Ibragimov A.A., Yunusov S.Yu., Khim. Prir. Soedin., 1985, 536.
2. Yamaguchi R., Hamasaku T., Sasaku T., Ohta T., Utimoto K., Kozima S., Takaya H., J. Org. Chem., 1993, **58**, 1136.



NITRARAMINE

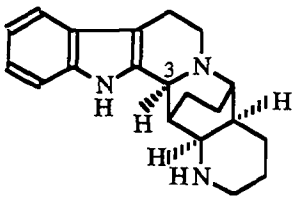
Nitraria komarovii, N.schoberi, N.sibirica
$C_{15}H_{24}N_2O$: 248.1889
Mp: 85-86° (petr. eth.) [1]
$[\alpha]_D$ 0°
{h-chl. 220°, h-b. 197° (dec.), nitr. 201°} [2]

IR: 3280 [1]
Mass: 248($M^{+\cdot}$, 100), 231, 219, 205, 204, 191, 190, 177, 176, 163, 150 [3]
PMR: 2.13(1H, m, H-5$_e$), 2.64(2H, m, H-3$_a$, H-15$_a$), 3.03(1H, m, H-3$_e$, H-15$_e$), 3.28(1H, s, H-1$_a$), 4.04(1H, d, H-17$_e$), 4.38(1H, narrow s, H-7) [4]
^{13}C NMR: [4]

C-1	66.4	C-8	30.5	C-13	28.4
3	45.3	9	14.5*	14	15.3*
4	24.0	10	25.1	15	50.4
5	21.9	11	37.9**	17	82.2
6	32.3	12	38.8**		
7	75.9				

X-ray spectral analysis: [2]

1. Novgorodova N.Yu., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 455.
2. Tashkhodzhaev B., Ibragimov A.A., Yunusov S.Yu., Khim. Prir. Soedin., 1985, 692.
3. Osmanov Z., Ibragimov A.A., Yunusov S.Yu., Khim. Prir. Soedin., 1982, 126.
4. Ibragimov A.A., Yunusov S.Yu., Khim. Prir. Soedin., 1988, 82.

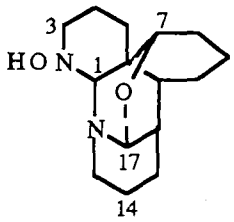


NITRARINE

Nitraria komarovii, N.schoberi
$C_{20}H_{25}N_3$: 307.2048
Mp: 256-257° (alc.-chlf.) [1]
{di h-chl. 267°, di picr. 208°, m-i. 270°} [1]

UV: 226, 286(4.52, 4.04) [1]
IR: 3150, 2960, 2920, 755 [2]
Mass: 307(M^+, 100), 306, 279, 278, 224(85), 223(85), 197, 196, 195, 184, 183, 182, 171, 170, 169, 156, 144, 83 [1]
PMR: 1.57, 2.74, 3.45, 3.80, 4.80, 6.80, 7.80(1H, NH), 8.20(1H, NH) [1]
X-ray spectral analysis: [2, 3]
Pharm.: LD_{50} 117, 340, 524 mg/kg (i/v, i/p, s/c, mice). Hypotensive, tranquilizing, and spasmolytic action. Prolongs the action of hypnotics [3].

1. Ibragimov A.A., Nasirov S.M., Andrianov V.T., Maekh S.Kh., Struchkov Yu.T., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 273.
2. Nasirov S.M., Ibragimov A.A., Andrianov V.T., Maekh S.Kh., Struchkov Yu.T., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 334.
3. Sadritdinov, p. 303.

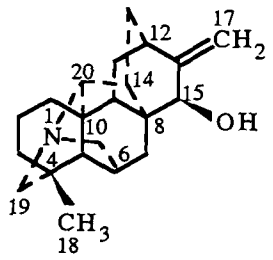


NITRAROXINE

Nitraria komarovii, N.schoberi, N.sibirica
$C_{15}H_{24}N_2O_2$: 264.1838
Mp: 220-221° (alc.) [1]
$[\alpha]_D$ 0° [1]
{O-Ac 143°} [1]

Sol-y.: r-sol. water; sp. sol. org. solvent
IR: 3400-3030, 965, 945, 925 [1]
Mass: 264(M^+, 100), 248(18), 247(41), 219, 204, 190, 176, 162, 150, 138, 125, 106, 98, 96, 83 [1]
PMR(CF_3COOH): 1.00-2.00(m, CH_2), 2.55(2H, m, H-3_a, H-15_a), 2.87(1H, s, H-1_a), 3.20(2H, d, H-3_e, H-15_e), 3.77(1H, s, H-1_e), 4.00(1H, d, J=2.5, H-17), 4.17(1H, narrow s, H-7), 4.19(1H, m, H-7_e), 4.64(1H, H-17) [2]

1. Novgorodova N.Yu., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 529.
2. Ibragimov A.A., Yunusov S.Yu., Khim. Prir. Soedin., 1986, 655.



NOMININE (NOMIBASE I, 11-DEOXYKOBUSINE)

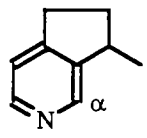
Aconitum zeravschanicum
$C_{20}H_{27}NO$: 297.2093
Mp: 258-259° (alc.)
$[\alpha]_D$+53°

IR: 3150, 1655, 1467, 1440, 1380, 1340, 1315, 1297, 1277, 1252, 1238, 1227, 1205, 1165, 1154, 1134, 1117, 1085, 1048, 1037, 1015, 985, 945, 937, 884, 855, 827, 795, 744 [1]
Mass: 297(M^+, 100), 282(6.9), 280(5.5), 269(8.3), 160(12.5), 146(34.7), 105(15), 91(25) [1, 2]
PMR: 0.89(3H, s, 18-CH_3), 2.28(1H, d, J=12, H-19α), 2.42(1H, s, H-20), 2.45(1H, d, J=12, H-19β), 3.15(1H, narrow s, H-6), 3.90(1H, s, H-15α), 4.88(2H, narrow s, H-17) [1, 3]
^{13}C NMR: [4]

C-1	33.3	C-8	45.7	C-15	74.9
2	19.8	9	43.8	16	156.8
3	34.2	10	49.7	17	108.3
4	38.0	11	27.1	18	28.9
5	61.2	12	34.0	19	62.8
6	65.4	13	32.9	20	71.8
7	27.0	14	44.0		

Pharm.: LD_{50} 68 mg/kg (i/v, mice). Membrane-stabilizing, local anesthetic, antiinflammatory, and antiarrhythmic action [5].

1. Vaisov Z.M., Salimov B.T., Tashkhodzhaev B., Yunusov M.S., Khim. Prir. Soedin., 1986, 658; Unpub.
2. Vaisov Z.M., Yunusov M.S., Khim. Prir. Soedin., 1987, 407.
3. Sakai S.-I., Yamamoto I., Yamaguchi K., Takayama H., Ito M., Okamoto T., Chem. Pharm. Bull., 1982, **30**, 4579.
4. Atta-ur-Rahman, Handbook of Natural Products Data, Elsevier, 1990, Vol. 1, p. 241.
5. Rezhepov Zh., Dzhakhangirov F.N., Unpub.

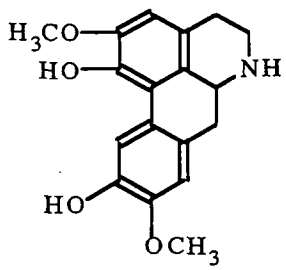


NORACTINIDINE

Pedicularis macrochila
$C_9H_{11}N$: 133.0891
Mp: oil

$[\alpha]_D$+22° (alc.) [1]
{picr. 137°} [2]
UV: 259, 267(3.05, 2.98) [2]
IR: 2930, 1600 [1]
PMR: 1.60(3H, d, CH_3), 2.00-2.40(1H), 2.50-3.00(1H), 3.20-3.80(3H, m, CH, CH_2), 8.03, 8.80(1H, d, H-Ar), 8.85(1H, s, H-α) [2]

1. Abdusamatov A., Author's Abstract of Doctoral Dissertation, Tashkent, 1972.
2. Dickinson E.M., Jones G., Tetrahedron, 1969, **25**, 1523.

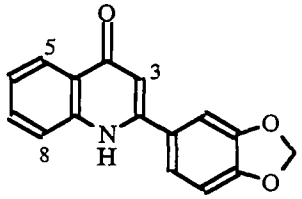


NORBRACTEOLINE

Glaucium corniculatum
$C_{18}H_{19}NO_4$: 313.1314
Mp: amorph.
$[\alpha]_D$+41° (meth.)
UV: 220, 280, 310
IR: 3400, 3285, 1520

Mass: 313(M^+), 312, 298, 296, 284, 282, 156.5($^{++}$)
PMR: 2.50-4.00(7H, m), 3.83(6H, s, 2×OCH_3), 6.43, 6.66, 7.97(1H, s, H-Ar)

1. Israilov I.A., Karimova S.U., Denisenko O.N., Yunusov M.S., Murav'eva D.A., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 751.

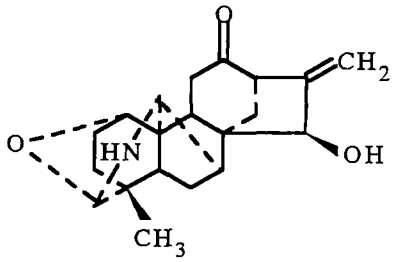


NORGRAVEOLINE

Haplophyllum dubium, H.foliosum
$C_{16}H_{11}NO_3$: 265.0739
Mp: 288-290° (dec., alc.)
Sol-y.: i.s. chlf., ac., eth., water
UV: 213, 243, 276, 324(4.46, 4.46. 4.13, 4.30)

IR: 3260-2840, 1635, 1600, 1555, 1505
Mass: 265(M^+, 100), 264(13), 237(34), 207(5), 178(20),
PMR(CF_3COOH): 5.69(2H, s, CH_2O_2), 6.50-7.05(3H, m, H-Ar), 6.87(1H, s, H-3), 7.36(1H, m, H-8), 7.58(2H, d, H-6, H-7), 8.00(1H, d, J=9, H-5)

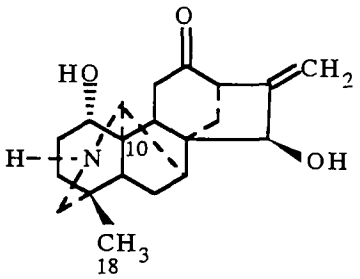
1. Razakova D.M., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 810.



NORSONGORAMINE

Delphinium thamarae
$C_{20}H_{25}NO_3$: 327.1834
Mp: 286-288° (ac.)
IR: 3530, 3450, 1710
Mass: 327(M^+, 28), 310(23), 299(7), 281(100)
PMR: 1.12(3H, s, 18-CH_3), 4.63, 4.85(1H, narrow s, H-17)

1. Beshitaishvili L.V., Sultankhodzhaev M.N., Mudzhiri K.S., Yunusov M.S., Khim. Prir. Soedin., 1981, 199.

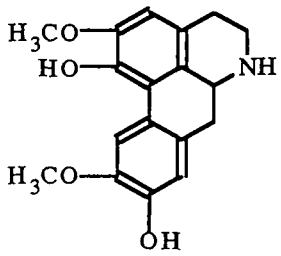


NORSONGORINE

Aconitum monticola, A.soongaricum
$C_{20}H_{27}NO_3$: 329.1991
Mp: 284-286° (dec., meth.) [1]
$[\alpha]_D$–86° (meth.) [1]
IR: 3530, 3450, 1710 [2]

Mass: 329(M^+, 28), 310(23), 299(7), 281(100), 271(29) [2]
PMR: 1.12(3H, s, 18-CH_3), 4.63, 4.85(1H, narrow s, H-17) [2]
Pharm.: LD_{50} 150 mg/kg (i/v, mice). Hypotensive, weak ganglioblocking, and pronounced antiarrhythmic action [3].

1. Samatov A.S., Akramov S.T., Yunusov S.Yu., DAN UzSSR, 1965, No. 5, 21.
2. Ametova É.F., Nevezhenko V.E., Unpub.
3. Dzhakhangirov F.N., Unpub.

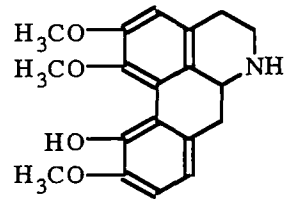


NORISOBOLDINE

Cocculus laurifolius, Zizyphus jujuba
$C_{18}H_{19}NO_4$: 313.1314
Mp: 192-194° (ac.)
$[\alpha]_D$+42° (alc.)
UV: 280, 305
Mass: 313($M^{+\cdot}$), 312, 298, 296, 284

PMR: 3.85, 3.88(3H, s, 2×OCH_3), 6.52, 6.74, 8.03(1H, s, 3×H-Ar)

1. Israilov I.A., Unpub.

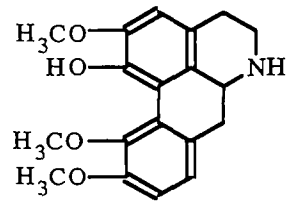


NORISOCORIDINE

Corydalis caucasica, Glaucium fimbrilligerum, G.oxylobum
$C_{19}H_{21}NO_4$: 327.1471
Mp: amorph.
$[\alpha]_D$+168° (meth.) [1]

UV: 220, 270, 308 [1]
Mass: 327($M^{+\cdot}$), 326, 312, 310, 298, 296, 253, 163.5($^{++}$)
PMR: 3.67(3H, s, OCH_3), 3.85(6H, s, 2×OCH_3), 6.64(1H, s, H-3), 6.81,7.03(1H, d, J=8, H-Ar) [1]
HPLC: [2]

1. Karimova S.U., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 224.
2. Betts T.J., J. Chromatogr., 1990, **511**, 373.

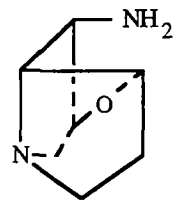


NORCORYDINE

Corydalis rosea-purpurea, Glaucium fimbrilligerum
$C_{19}H_{21}NO_4$: 327.1471
Mp: amorph.
$[\alpha]_D$+156° (meth.)

UV: 223, 270, 310
Mass: 327($M^{+\cdot}$), 326, 312, 310, 298, 296, 253, 163.5($^{++}$)
PMR: 3.67(3H, s, OCH_3), 3.88(6H, s, 2×OCH_3), 6.64(1H, s, H-3), 6.87, 7.16(1H, d, J=8, H-Ar)

1. Karimova S.U., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 224.



NORLOLINE

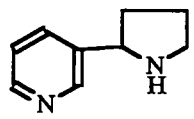
Lolium cuneatum
$C_7H_{12}N_2O$: 140.0950
Bp: 94-95° (5 mm Hg) [1]
$[\alpha]_D$+15° (meth.) [1]

{carbonate 141°, di h-chl. 311°, dinitr. 192°, di picr. 226°} [1]

Mass: 140($M^{+\cdot}$, 11), 124(10), 123(31), 111(26), 110(14), 95(17), 83(9), 82(100), 56(8), 55(16), 42(18) [2]

1. Yunusov S.Yu., Akramov S.T., Zh. Org. Khim., 1960, **30**, 677.
2. Akramov S.T., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 298.

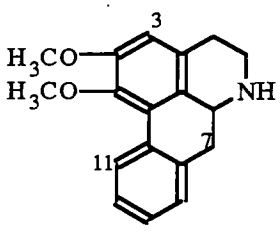
(±)-NORNICOTINE



Nicotiana benthamiana, N.caudigera, N.debneyi, N.eastii, N.glufinosa, N.ingulba, N.longiflora, N.maritima, N.megalosyphon, N.palmeri, N.plumbogenifolia, N.repanda, N.rosulata, N.rotundifolia, N.rusbyi, N.sanderae, N.sanguinea, N.solanifolia, N.suaveolens, N.sylvestris, N.tomentosa, N.trigonophylla, N.velutina

$C_9H_{12}N_2$: 148.1001
Bp: 267°
$[\alpha]_D$ 0°
{di picr. 194°, di picrolonate 240°} [1]
UV: 262(3.43)
HPLC: [2]

1. Boit, p. 137.
2. Seeman J.I., Secor H.V., Armstrong D.W., Ward K.D., Ward T.J., J. Chromatogr., 1989, **483**, 169.



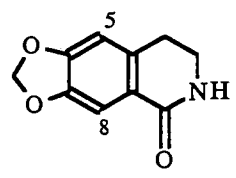
(+)-NORNUCIFERINE

Liriodendron tulipiferum
$C_{18}H_{19}NO_2$: 281.1415
Mp: 128-129° [1]
$[\alpha]_D$+140° (alc.) [1]
{Ac 232°}

UV: 232, 272, 311(4.29, 4.12. 3.62) [1]
Mass: 281($M^{+\cdot}$), 280(100), 266, 252, 250, 221, 165, 152 [1]
PMR: 3.64, 3.83(3H, s, 2×OCH_3), 6.59(1H, s), 7.10-7.33(3H, m), 8.29(1H, m) [1]
^{13}C NMR: [2]

C-1	145.2	C-4	29.2	C-9	127.4*
1a	126.6	5	43.2	10	127.8*
1b	129.1	6a	53.5	11	127.0*
2	152.2	7	37.5	11a	132.3
3	111.8	7a	136.3	1-OCH_3	60.2
3a	129.0	8	128.4*	2-OCH_3	55.6

1. Ziyaev R., Abdusamatov A.A., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 108.
2. Achenbach H., Renner C., Addae-Mensah. I., Liebigs Ann., 1982, 1623.

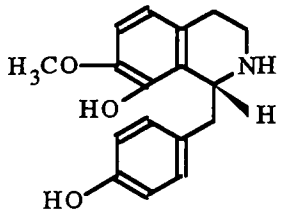


NOROXOHYDRASTININE

Berberis heteropoda
$C_{10}H_9NO_3$:191.0582
Mp: 184-185° (meth.)
Sol-y.: r-sol. chlf.; sp. sol. alc., meth.

UV: 226, 265, 308(4.17, 3.92, 4.04)
IR: 3180, 1670
Mass: 191(M^+), 162, 134, 104
PMR: 2.85(2H, t, J=7), 3.52(2H, t, J=7), 5.96(2H, s, CH_2O_2), 6.61(1H, s, H-5), 7.51(1H, s, H-8)

1. Yusupov M.M., Karimov A., Israilov I.A., Shakirov R., Dep. VINITI, No. 1640, V-92. 19.05.92.

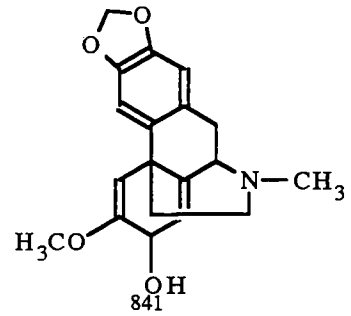


NORYUZIFINE

Fumaria parviflora, F.vaillantii
$C_{17}H_{19}NO_3$: 285.1365
Mp: 198-199°
$[\alpha]_D$–18° (meth.)

UV: 228, 285(4.20, 3.56)
IR: 3370, 1610, 1590
Mass: 285(M^+), 178(100), 163, 107
PMR(CD_3OD): 2.50-2.90(m), 3.79(3H, s, OCH_3), 4.19(1H, q, H-1), 6.50, 7.05(2H, d, J=8), 6.69, 6.72(1H, d, J=8, o-H-Ar)

1. Alimova M., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 874.

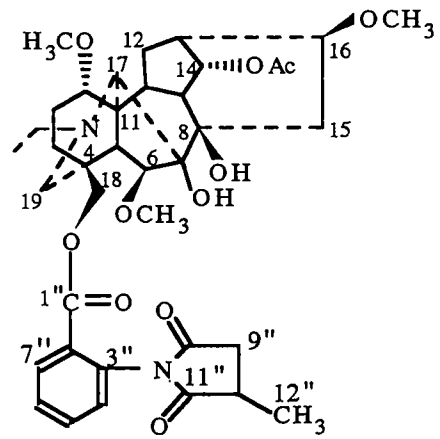


NUDAURINE

Papaver croceum
$C_{19}H_{21}NO_4$: 327.1471
Mp: 199-200° (ac.)
$[\alpha]_D$–41° (meth.)
UV: 244, 292
IR: 3500-3100, 1665, 1630, 1515, 1495, 1030, 935
Mass: 327(M^+, 100), 326. 312, 310, 309, 294

PMR: 1.30-3.45(7H, m), 2.25(3H, s, NCH_3), 3.60(3H, s, OCH_3), 4.53, 5.62(1H), 5.13(1H, s), 5.80(2H, s, CH_2O_2), 6.46, 6.71(1H, s, p-H-Ar)

1. Veznik F., Israilov I.A., Taborska E., Slavik J., Collect., 1985, **50**, 1745.



NUDICAULINE

Delphinium elatum
$C_{38}H_{50}N_2O_{11}$: 710.3415
Mp: amorph.
{p-chl. 219°}
IR: 3470, 2940, 1730, 1600, 1500, 1460, 1398, 1279, 1260, 1198, 1145, 1100 [1]
Mass: 710(M^+, 4), 695(11), 692(18). 680(42), 679(100), 677(27), 661(77), 633(13.5), 631(9.6), 386(4), 216(35), 188(11.5), 146(7.7), 71(5.8) [1]

PMR: 1.00(3H, t, J=7, NCH_2CH_3), 1.39(3H, d, J=7, CH-CH_3), 2.00(3H, s, Ac), 3.17, 3.25, 3.28(3H, s, OCH_3), 4.01(2H, s, 2×H-18), 4.65(1H, t, J=5, H-14β) [1]

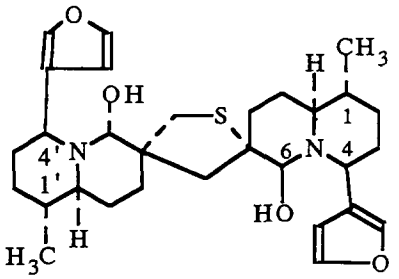
^{13}C NMR: [2]

C-1	83.8	C-14	75.9	C-1″	164.0
2	26.0	15	33.7	2″	126.9
3	32.0	16	82.3	3″	133.0
4	37.5	17	64.5	4″	130.0
5	42.5	18	69.3	5″	131.0
6	90.5	19	52.2	6″	133.7
7	88.2	NCH_2	51.0	7″	129.4
8	77.4	CH_3	14.1	8″	175.8
9	49.9	1′	55.8	9″	35.2
10	38.1	6′	58.1	10″	37.0
11	48.9	16′	56.2	11″	179.8
12	28.1	CO	171.9	12″	16.4
13	45.7	CH_3	21.5		

HPLC: [3]

Pharm.: LD_{50} 1.75 mg/kg, 38 mg/kg (i/v, oral, mice). Pronounced curaremimetic action. More active than lycaconitine and methyllycaconitine [4].

1. Samusenko L.N., Razakova D.M., Bessonova I.A., Gorelova A.P., Khim. Prir. Soedin., 1992, 146; Unpub.
2. Kulanthaivel P., Benn M., Heterocycles, 1985, **23**, 2515.
3. Majak W., McDiarmid R.E., Benn M.H., J. Agr. Food Chem., 1987, **35**, 800.
4. Dzhakhangirov F.N., Unpub.



NUPHLEINE

Nuphar lutea

$C_{30}H_{42}N_2O_4S$: 526.2866

Mp: amorph.

$[\alpha]_D$+104° (alc.)

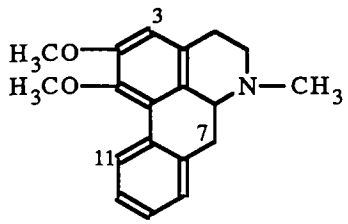
{p-chl. 226° (meth.)}

IR: 3628, 3535, 3165, 2128, 1600, 1579, 1508, 1379, 1240, 1025, 873, 852, 755 [1]

PMR: 0.89(6H, d, J=5, 2×CH_3), 2.18, 2.71(1H, d, J=13), 3.58, 3.70(1H, q, J=6; 6.5; 8; 8.5, H-4, H-4′), 3.98(1H, s, H-6′), 4.24(1H, s, $w_{1/2}$=5, H-6), 6.36(2H, narrow s, H-β-furan), 7.33(4H, narrow s, H-α-furan)

Pharm.: LD_{50} 7.6, 150 mg/kg (i/p, s/c, mice) [2, 3]. A mixture {h-chl's} of nuphleine and thiobinupharidine – lyutenurin – is used as an antimicrobial preparation [3].

1. Perel'son M.E., Il'inskaya T.N., Tolkachev O.N., Khim. Prir. Soedin., 1975, 768.
2. French Patent No. 1417969; British Patent No. 968042; USA Patent No.3147246; Japanese Patent No. 447778.
3. Vichkanova S.A., Rubinchik M.A., Il'inskaya T.N., Aleshkina L.A., Med. Prom., 1962, No. 5, 56.



NUCIFERINE

Papaver orientale
$C_{19}H_{21}NO_2$: 295.1572
Mp: 164-165° (alc.)
$[\alpha]_D$+152° (meth.) [1]
UV: 230, 274, 312 [1]
IR: 1600, 1500, 1425, 1375, 1250 [1]

Mass: 295($M^{+\cdot}$, 100), 294, 280, 252, 237, 221 [1]
PMR: 2.54(3H, s, NCH_3), 3.66, 3.88(3H, s, 2×OCH_3), 6.66(1H, s), 7.15-7.35(3H, m), 8.33(1H, m) [1]
^{13}C NMR (DMSO-d_6): [2]

C-1	144.3	C-5	52.3	C-10	127.1
1a	125.7	6a	61.9	11	126.6
1b	128.6	7	34.3	11a	131.5
2	151.4	7a	136.2	NCH_3	43.6
3	111.8	8	127.9	1-OCH_3	59.6
3a	127.5	9	127.5	2-OCH_3	55.6
4	28.6				

1. Guinaudeau H., Cave A., Paris R.R., Phytochem., 1971, **10**, 1963.
2. Wenkert E., Buckwalter B.L., Burfitt I.R., Gasic M.J., Gottlieb H.E. Hagaman E.W., Schell F.M., Wovkulich P.M., Topics in C-13 NMR Spectroscopy, G.C. Levy, ed., Vol. 2, New-York, 1976, p. 81.