Chemistry of Natural Compounds, Vol. 32, No. 6, 1996

ALKALOIDS. PLANTS, STRUCTURES, PROPERTIES*

Chapter 2, continued

UDC 547.944/945

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*For the beginning of the review, see Chemistry of Natural Compounds, No. 1, 102; No. 2, 216; No. 3, 386; No. 4, 596; No. 5, 737 (1996).

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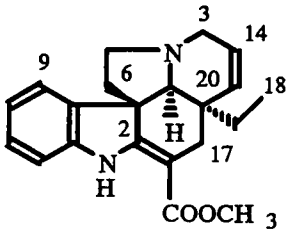


(–)-TABERSONINE

Amsonia angustifolia, A.illustris,
A.tabenaemontana, Vinca herbacea
$C_{21}H_{24}N_2O_2$: 336.1838
Mp: amorph. [1, 2]

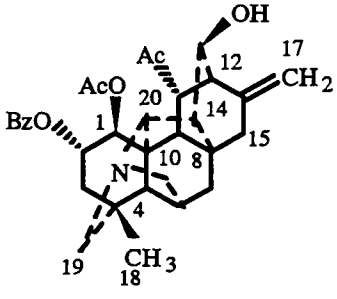
$[\alpha]_D$–204° (alc.) [1], –366° (alc.) [2]
{p-chl. 215° [1], h-chl. 192° (dec.) [2]}
UV: 224, 300, 333(3.84, 3.74, 3.89) [1, 2]
IR: 3365, 1680, 750 [1]
Mass: 336(M^+, 80), 214(9), 195(5.7), 135(100), 122(40), 107(40) [1]; 336(M^+, 56), 214(17), 195(23), 158(29), 149(52), 122(33), 107(49), 18(20) [2]
PMR: 0.62(3H, t, CH_3), 3.69(3H, s, $COOCH_3$), 5.67(2H, q, J=10, CH=CH), 6.77-7.26(4H, m, H-Ar), 8.96(1H, s, NH) [1]

^{13}C NMR: [3]

C-2	166.7	C-10	120.5	C-17	26.7
3	50.3	11	127.6	18	7.3
5	50.8	12	109.2	19	28.4
6	44.3	13	143.1	20	41.2
7	55.0	14	124.5	21	69.9
8	137.8	15	132.9	22	168.8
9	121.4	16	92.2	23	50.8

HPLC: [4]

1. Vachnadze V.Yu., Malikov V.M., Mudzhiri K.S., Yunusov S.Yu., Soobshch. AN GSSR, 1972, **66**, 97.
2. Pyuskyulev B., Kompis I., Ognyanov I., Spiteller G., Collect., 1967, **32**, 1289.
3. Shamma, No. 226.
4. Stoev G., Uzunov D., Pyuskyulev B., J.Liq. Chromatogr., 1991, **14**, 3397.



TADZHACONINE

Aconitum zeravschanicum, A.firmum,
A.anthoroideum
$C_{31}H_{35}NO_7$: 533.2413
Mp: 236-237° (dec., alc.).
IR: 3490, 3070, 1660, 1600, 1585, 860, 720 [1]

Mass: 533(M^+), 490, 474, 430, 414, 368, 352, 310, 292, 282, 264, 207, 122, 105(100) [1]
PMR: 0.94(3H, s, 18-CH_3), 1.93, 1.94(3H, s, 2×Ac), 2.39(1H, d, J=12, H-19$_b$), 2.79(1H, d, J=12, H-19$_a$), 3.18(1H, narrow s, H-6), 4.08(1H, narrow d, J=9, H-13α), 4.21(1H, s, H-20), 4.67, 4.78(1H, s, H-17), 5.26(1H, d, J=9, H-11β), 5.46(1H, m, H-2β), 5.77(1H, d, J=3, H-1α), 7.28-8.12(H-Ar) [1]

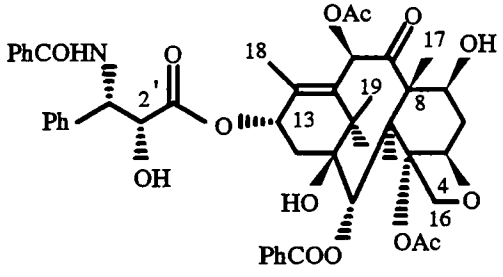
^{13}C NMR: [1]

C-1	71.6	C-12	49.4	Ar C	130.3
2	68.9	13	70.4		129.9
3	36.7	14	51.5		128.7
4	36.2	15	33.2		133.3
5	58.0	16	144.6	C_1-OC=O	172.0
6	64.3	17	108.9	CH_3	21.6
7	34.0	18	29.4	C_{11}-OC=O	170.5
8	44.0	19	63.6	CH_3	21.4
9	51.9	20	65.7		
10	54.7	C_2-OCO-	165.9		
11	76.1				

X-ray spectral analysis: [1]

Pharm.: LD_{50} 12.8 mg/kg (i/v, mice). Pronounced antiarrhythmic action. Superior in activity to quinidine, procainamide, ajmaline, etc. [2]. Pronounced local anesthetic action superior to cocaine and dicain [3].

1. Yusupova I.M., Salimov B.T., Tashkhodzhaev B., Khim. Prir. Soedin., 1992, 382.
2. Dzhakhangirov F.N., Unpub.
3. Aripova Zh.Kh., Dzhakhangirov F.N., Rezhepov Zh., in: Abstracts of Lectures at a Conference of Young Scientists of the Institute of the Chemistry of Plant Substances [in Russian], Tashkent, 1992, p. 88.



TAXOL

Taxus baccata

$C_{47}H_{51}NO_{14}$: 853.3309

Mp: 205-208° (water-alc.) [1]; 213-216° (dec.) [2]

$[\alpha]_D$ −54° (meth.) [1]; −21° (pyr.) [1]

UV: 230, 274, 282(4.46, 3.22, 3.07) [1]

IR: 3500-3300, 1730, 1710, 1650 [2]

Mass: 853(M^+) [2]

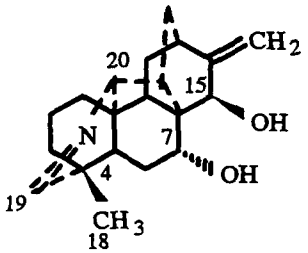
Mass(chem. ionization): 854(MH^+), 836, 714, 447, 286, 268, 123 [1]

PMR: 1.14(3H, s, 17-CH_3), 1.22(3H, s, 19-CH_3), 1.67(3H, s, 20-CH_3), 1.80(3H, s, 4-OAc), 2.20(3H, s, 18-CH_3), 2.36(3H, s, 10-OAc), 3.80(1H, d, J=6, H-3), 4.24(2H, s, H-16), 4.92(1H, d, J=10, H-5), 5.68(1H, d, J=6, H-2), 6.20(1H, narrow t, J=8, H-13), 6.28(1H, s, H-10) [2]; 1.82, 2.50(1H, m, H-6), 2.25(2H, m, H-14), 4.38(1H, m, H-7), 4.76(1H, d, J=3, H-2'), 5.76(1H, dd, J=3; 9, H-3'), 6.97(1H, d, J=9, NH), 7.36(5H, m, 3'-Ph) [1]

HPLC: [3]

Pharm.: Antitumoral action [2, 4].

1. Senilh V., Blechert S., Colin M., Guenard D., Picot F., Potier P., Varenne P., J. Natur. Prod., 1984, **47**, 131.
2. Wani M.C., Taylor H.L., Wall M.E., Coggon P., McPhail A.T., J. Amer. Chem. Soc., 1971, **93**, 2325.
3. Harvey S.D., Campbell J.A., Kelsey R.G., Vance N.C., J. Chromatogr., 1991, **587**, 300.
4. Sorochinskii B.V., Prokhnevskii A.I., Khim. Farm. Zh., 1991, No. 2, 45.

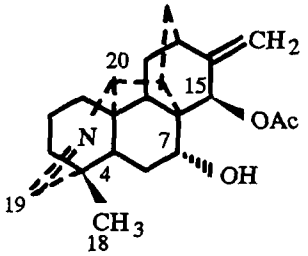


TALASAMINE

Aconitum talassicum
$C_{20}H_{27}NO_2$: 313.2042
Mp: 208-210° (ac.)
IR: 3510, 1645

Mass: 313(M^+, 100), 298(18), 295(29), 285(21), 281(18), 280(6), 272(7), 268(8), 267(10), 265(8), 256(8), 252(9)
PMR: 1.00(3H, s, 18-CH_3), 3.22(1H, narrow s, H-20), 3.94(1H, q, J=10, 7; H-7), 4.53(1H, t, J=1.5, H-15), 4.81, 4.92(1H, s, H-17), 7.31(1H, narrow s, H-19)

1. Nishanov A.A., Sultankhodzhaev M.N., Yunusov M.S., Yusupova I.M., Tashkhodzhaev B., Khim. Prir. Soedin., 1991, 93.

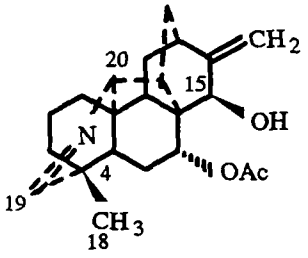


TALASIMIDINE

Aconitum talassicum
$C_{22}H_{29}NO_3$: 355.2148
Mp: 263-265° (ac.)
IR: 3225, 1740, 1662, 1642
Mass: 355(M^+, 72), 340(8), 338(11), 326(9), 312(100), 296(67), 267(10), 252(8), 176(7), 90(9), 53(11)

PMR: 1.00(3H, s, 18-CH_3), 2.12(3H, s, Ac), 3.25(1H, narrow s, H-20), 3.47(1H, q, J=10, 7; H-7), 4.61, 4.86(1H, d, J=2, H-17), 5.84(1H, J=1.5, H-15), 7.33(1H, narrow s, H-19)

1. Nishanov A.A., Sultankhodzhaev M.N., Yunusov M.S., Yusupova I.M., Tashkhodzhaev B., Khim. Prir. Soedin., 1991, 93.

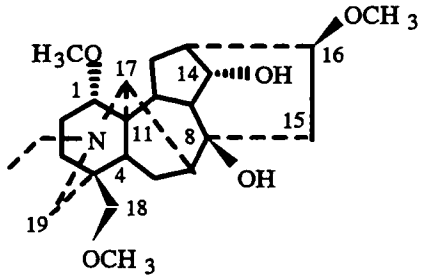


TALASIMINE

Aconitum talassicum
$C_{22}H_{29}NO_3$: 355.2148
Mp: 242-245° (eth.)
IR: 3180, 1750, 1655
Mass: 355(M^+, 50), 340(7), 326(8), 312(21), 246(90), 295(100), 280(15), 267(44), 266(16), 149(18)

PMR: 0.98(3H, s, 18-CH_3), 1.99(3H, s, Ac), 3.24(1H, narrow s, H-20), 4.20(1H, J=1.5, H-15), 4.83, 4.92(1H, s, H-17), 5.18(1H, q, J=10, 7; H-7β), 7.32(1H, narrow s, H-19)
X-ray spectral analysis

1. Nishanov A.A., Sultankhodzhaev M.N., Yunusov M.S., Yusupova I.M., Tashkhodzhaev B., Khim. Prir. Soedin., 1991, 93.



TALATIZAMINE

Aconitum arcuatum, A.fischeri, A.nasutum, A.nemorum, A.saposhnikovii, A.talassicum, A.tauricum, A.tranzschelii

$C_{24}H_{39}NO_5$: 421.2828

Mp: 145-146°

$[\alpha]_D$ 0°

{di Ac 123°} [1]

IR: 3525, 3425, 2980, 2920, 2887, 1120, 1090 [2]

PMR: 1.08(3H, t, NCH_2CH_3), 3.00, 3.12(1H, d, H-18), 3.28, 3.30, 3.36(3H, s, 3×OCH_3), 4.13(1H, t, H-14β) [3]

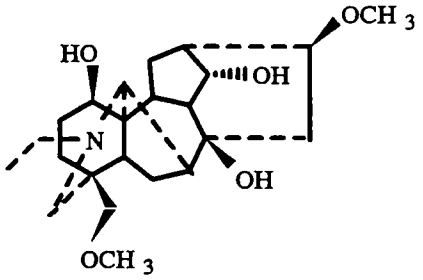
^{13}C NMR: [3]

C-1	86.1	C-9	46.9	C-17	62.8
2	25.7	10	45.7	18	79.4
3	32.6	11	48.6	19	53.1
4	38.6	12	28.6	1′	56.1
5	37.7	13	45.7	16′	56.3
6	24.8	14	75.7	18′	59.3
7	45.7	15	39.2	NCH_2	49.4
8	72.7	16	82.2	CH_3	13.6

HPLC: [4]

Pharm.: LD_{50} 110 mg/kg (i/v, mice). Hypotensive, H-cholinoblocking, curaremimetic effect [5]. Antiarrhythmic action [6].

1. Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 90.
2. Yunusov M.S., Yunusov S.Yu., Unpub.
3. Konno C., Shirasaka M., Hikino H., J. Natur. Prod., 1982, **45**, 128.
4. Tong Yuyi, Yaowu Fenxi Zazhi, 1990, **10**, 279.
5. Tulyaganov N.T., Dzhakhangirov F.N., Sadritdinov F.S., Khamdamov I., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 76.
6. Dzhakhangirov F.N., Unpub.



TALATIZIDINE

Aconitum talassicum

$C_{23}H_{37}NO_5$: 407.2672

Mp: 220-221° (ac.)

$[\alpha]_D$–20° (meth.)

{h-chl. 189°, p-chl. 220°} [1]

Sol-y.: sol. chlf., meth.

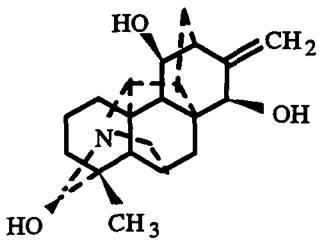
IR: 3560-3380, 1100

Mass: 407(M^+, 100), 392(93), 390(57)

PMR: 1.02(3H, t, J=7, NCH_2CH_3), 3.29(6H, s, 2×OCH_3), 4.07(1H, t, J=5, H-14β) [2]

Pharm.: Hypotensive, H-cholinoblocking, and curaremimetic action. Superior in activity to talatisamine [3].

1. Kuzovkov A.D., Platonova T.F., Zh. Org. Khim., **31**, 1389.
2. Pelletier S.W., Keith L.H., Parthasarathy P.C., J. Amer. Chem. Soc., 1967, **89**, 4146.
3. Dzhakhangirov F.N., Unpub.

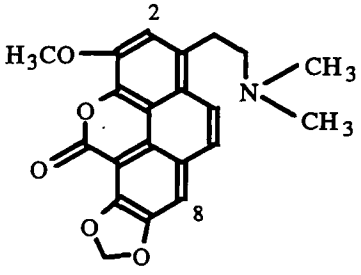


TALATIZINE

Aconitum talassicum
$C_{20}H_{27}NO_3$: 329.1991
Mp: 246-246.5° (alc.)
$[\alpha]_D$+38° (alc.)
{h-chl. 257°, p-chl. 222°, h-i. 265°, picr. 250°} [1]

X-ray spectral analysis [2]
Pharm.: LD_{50} 110.8 and 300 mg/kg (i/v and i/p, mice). Antiarrhythmic, local anesthetic, and antiinflammatory action, and H-antidepolarizing effect on vegetative ganglia. Superior in activity to quinidine and procainamide [3].

1. Yunusov S.Yu., Sichkova E.V., Potemkin G.F., DAN UzSSR, 1954, No. 2, 21.
2. Karimov Z., Zhamierashvili M.G., Khim. Prir. Soedin., 1981, 335.
3. Dzhakhangirov F.N., Unpub.

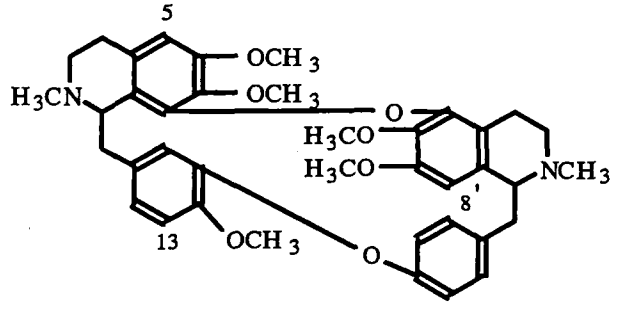


THALIGLUCINONE (TALICSINE)

Thalictrum flavum, Th.longipedunculatum, Th.simplex
$C_{21}H_{19}NO_5$: 365.1263
Mp: 194-195° [1], 126-128° [2], 133-135° [3]
{h-chl. 267°, h-i. 278° (dec.), tartrate 219° (dec.), picr. 250°, m-i. 306° (dec.)} [1]

Sol-y.: r-sol. chlf.; sp. sol. ac., alc., meth., bz., eth., e-a. [1]
UV: 237, 265, 313, 390(4.22, 4.48. 3.96, 3.60) [4], 238, 256, 264, 287, 312, 390(4.46, 4.56, 4.70, 3.67, 4.16, 3.80) [5]
IR: 3400, 1722, 1277, 1230, 1040 [3]; 1740, 930 [4]; 17365 [5]
Mass: 365(M^+, 44), 320(33), 307(27), 305(13), 277(10), 58(100) [4]
PMR: 2.40(6H, s, $N(CH_3)_2$, 4.08(3H, s, OCH_3), 6.32(2H, s, CH_2O_2), 7.27, 7.43(1H, s, H-2, H-8), 7.47, 7.81(1H, d, J=9) [5]; 2.31(6H, s, $N(CH_3)_2$, 2.40-3.30(4H, m), 3.97(3H, s, OCH_3), 6.22(2H, s, CH_2O_2), 7.11, 7.25(1H, s, H-2, H-8), 7.13, 7.48(1H, d, J=9) [4]

1. Ismailov Z.F., Maekh S.Kh., Yunusov S.Yu., DAN UzSSR, 1959, No. 7, 32.
2. Mollov N.M., Thuan L.N., Panov P.P., Dokl. Bolg. AN, 1971, **24**, 1047.
3. Ismailov Z.F., Lutfullin K.L., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 200.
4. Khodzhaev V.G., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1973, 441.
5. Wu W.-W., Beal J.L., Clark G.W., Mitscher L.A., Lloydia, 1976, **39**, 65.

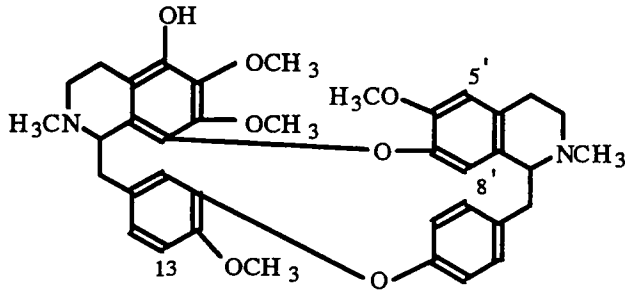


THALIDASINE

Thalictrum longipedunculatum
$C_{39}H_{44}N_2O_7$: 652.3149
Mp: 105-107° [1]
$[\alpha]_D$–70° (meth.) [1]
{picr. 177°} [1]
UV: 275, 282(3.66, 3.63) [1]
Mass: 652(M^+), 637, 621, 425, 411, 394, 213(100), 204, 190 [1]

PMR: 2.25(3H, s, 2-NCH_3), 2.62(3H, s, 2′-NCH_3), 3.27(3H, s, 7-OCH_3), 3.50(3H, s, 7′-OCH_3), 3.75(3H, s, 6-OCH_3), 3.87(3H, s, 6′-OCH_3), 3.91(3H, s, 12-OCH_3) [1]
Abs. conf.: 1S, 1′S
Pharm.: Antimicrobial activity [2]. Hypotensive [3] and antitumoral [4] actions.

1. Kupchan S.M., Yang T.H., Vasilikiotis G.S., Barnes M.H., King M.L., J. Org. Chem., 1969, **34**, 3884.
2. Mitscher L.A., Wu W.-N., Doscotch R.W., Beal J.L., Chem. Commun., 1971, 589.
3. Wu W.-N., Beal J.L., Doscotch R.W., Lloydia, 1977, **40**, 508.
4. Tolkachev O.N., Nakova E.P., Evstigneeva R.P., Khim. Prir. Soedin., 1977, 451.

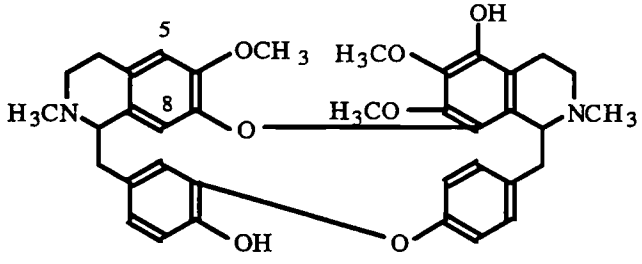


THALIDEZINE

Thalictrum sultanabadense
$C_{38}H_{42}N_2O_7$: 638.2992
Mp: amorph. [1], 158-159° [2]
$[\alpha]_D$+200° (meth.) [1], +235° (chlf.) [2]
UV: 286(4.02) [1, 2]
Mass: 638(M^+), 623, 607, 411 [1]

PMR: 2.26(3H, s, 2-NCH_3), 2.58(3H, s, 2′-NCH_3), 3.22(3H, s, 7-OCH_3), 3.27(3H, s, 6′-OCH_3), 3.78(3H, s, 6-OCH_3), 3.86(3H, s, 12-OCH_3), 6.02(1H, s, H-8′) [1, 2]
Abs. conf.: 1S,1′S

1. Mukhamedova S., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1981, 250
2. Shamma R., Shine R.J., Dudock B.S., Tetrahedron, 1967, **23**, 2887.

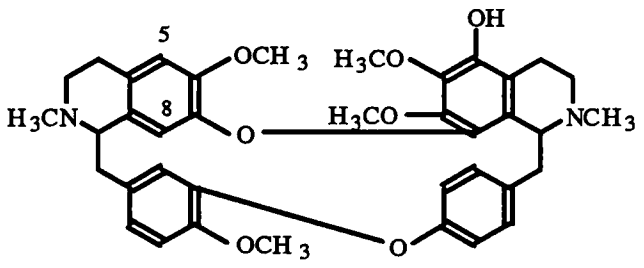


THALISOPIDINE

Thalictrum isopyroides
$C_{37}H_{40}N_2O_7$: 624.2836
Mp: 215-216° (ac.)
$[\alpha]_D$–9° (alc.)
{O,O-di Me 239°}

UV: 285(4.04) [1]
IR: 3540-3300 [1]
PMR: 2.44(3H, s, 2-NCH_3), 2.49(3H, s, 2′-NCH_3), 2.96(3H, s, 7′-OCH_3), 3.30(3H, s, 6-OCH_3), 3.70(3H, s, 6′-OCH_3), 6.30(1H, s, H-8), 6.40-7.20(8H, m, H-Ar) [2]
Abs. conf.: 1S,1′S [3]
CD: [3]

1. Pulatova Kh.G., Maekh S.Kh., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 394.
2. Pulatova Kh.G., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 609.
3. Moiseeva G.P., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 818.

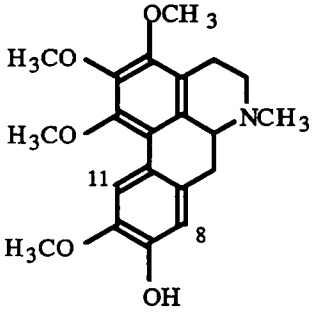


THALISOPINE

Thalictrum isopyroides
$C_{38}H_{42}N_2O_7$: 638.2992
Mp: 151-153° (water-meth.)
$[\alpha]_D$–105° (ac.) [1], –71° (chlf.) [1]
{O-Me. 166°, h-i. 234°, des-base 166°}

Sol-y.: r-sol. meth., alc., ac., chlf.; sp. sol. bz., eth., petr. eth.; i.s. water, alk. [1]
UV: 284(3.65) [2]
IR: 3500-3400 [3]
Mass: 638(M^+, 11), 412(89), 397(38), 221(18), 206($^{++}$, 100), 183(17), 174(18), 173(29), 172(89), 90(9), 89(20) [3]
PMR: 2.43(3H, s, 2-NCH_3), 2.48(3H, s, 2′-NCH_3), 3.00(3H, s, 7′-OCH_3), 3.29(3H, s, 6-OCH_3), 3.70(3H, s, 6′-OCH_3), 3.86(3H, s, 12-OCH_3), 6.31(1H, s, H-8), 6.38-7.06(8H, H-Ar) [3]
Abs. conf.: 1S, 1′S [3]
CD: [4]
Pharm.: LD_{50} 900, 397, 75 mg/kg (oral, s/c, i/v, mice). Pronounced anticonvulsive, antiarrhythmic, sedative, anti-inflammatory, antipyretic, analgesic action [5].

1. Ismailov Z.F., Rakhmatkariev A.U., Yunusov S.Yu., Uzb. Khim. Zh., 1961, No. 6, 56.
2. Ismailov Z.F., Rakhmatkariev A.U., Yunusov S.Yu., DAN UzSSR, 1963, No. 11, 21.
3. Pulatova Kh.G., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 394.
4. Moiseeva G.P., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 818.
5. Sadritdinov, p. 249.

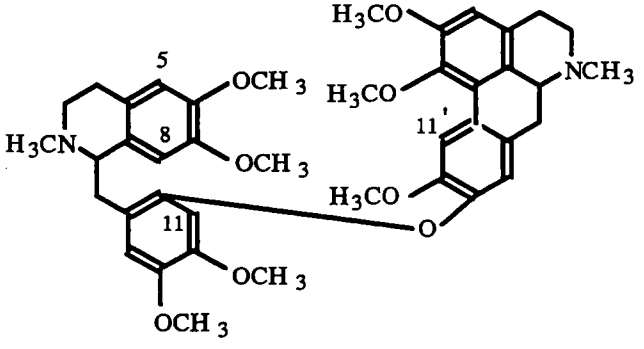


THALISOPININE

Thalictrum isopyroides
$C_{21}H_{25}NO_3$: 371.1731
Mp: oil
$[\alpha]_D$+45° (meth.)
UV: 282, 305. 316 sh
Mass: 371(M^+), 370, 356, 340, 328

PMR: 2.49(3H, s, NCH_3), 3.65(3H, s, 1-OCH_3), 3.82(3H, s, 10-OCH_3), 3.85, 3.90(3H, s, 2-OCH_3, 3-OCH_3), 6.73(1H, s, H-8), 7.85(1H, s, H-11)

1. Abdizhabbarova S., Maekh S.Kh., Yunusov S.Yu., Yagudaev M.R., Kurbanov D., Khim. Prir. Soedin., 1978, 472.

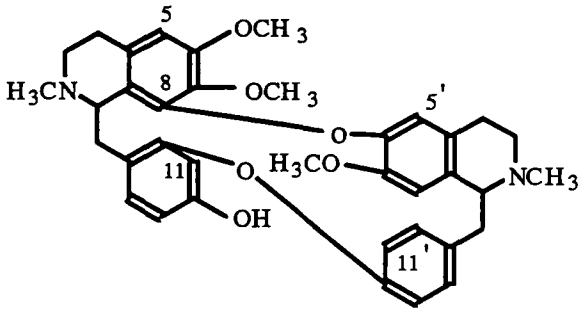


THALICARPINE

Thalictrum flavum
$C_{41}H_{48}N_2O_8$: 696.3411
Mp: 105-106° (amorph.) [1]; 153-155° [2]
$[\alpha]_D$+89° (chlf.) [1]
UV: 282, 303, 316(4.52, 4.38, 4.30) [1]

IR: 2935, 1600, 1505, 1460, 1060, 950 [1]
Mass: 696(M^+), 490, 324, 293, 206(100), 204 [2]
PMR: 2.28, 2.37(3H, s, 2×NCH_3), 3.67(3H, s, OCH_3), 3.74(6H, s, 2×OCH_3), 3.81(6H, s, 2×OCH_3), 3.89, 3.94(3H, s, 2×OCH_3), 5.83-7.97(4H, m, H-Ar), 6.21(H-8), 6.67(H-11), 8.19(H-11') [2]
Abs. conf.: 1S,1'R
Pharm.: LD_{50} 345 mg/kg (i/p, mice). Hypotensive, spasmolytic, antitussive action. Suppresses the growth of malignant tumors [3].

1. Umarov Kh.S., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 444.
2. Guinaudeau H., Leboeuf M., Cave A., J. Natur. Prod., 1979, **42**, 133.
3. Sadritdinov, p. 250.

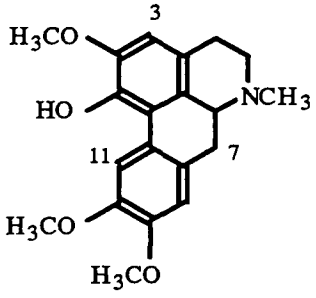


THALICBERINE

Thalictrum longipedunculatum
$C_{37}H_{40}N_2O_6$: 608.2886
Mp: 159° (eth.)
$[\alpha]_D$+230° (chlf.)
UV: 280
UV(OH^-): 285, 310
Mass: 608(M^+), 607, 485, 417, 416, 396, 395, 381, 198, 175, 174

PMR: 2.02(3H, s, 2-NCH_3), 2.47(3H, s, 2'-NCH_3), 3.52(3H, s, 7-OCH_3), 3.67(3H, s, 7'-OCH_3), 3.77(3H, s, 6-OCH_3), 5.90-7.05(10H, H-Ar)
Abs. conf.: 1S,1'S

1. Mukhamedova S., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1984, 260.



THALICMIDINE (THALIPORFINE)

Berberis heteropoda, B.integerrima, B.nummularia, B.oblonga, Corydalis gortschakovii, C.paniculigera, Glaucium corniculatum, G.grandiflorum, Thalictrum foetidum, Th.minus
$C_{20}H_{23}NO_4$: 341.1627
Mp: 192-193° (meth.) [1]
$[\alpha]_D$+44° (alc.) [2]

{h-i. 217° (dec.), m-i. 217°, m-i. O-Me 222°} [1]
UV: 220, 280, 305(4.58, 4.14, 4.18) [3]
IR: 3350-3250 [3]
Mass: 341(M^+, 100), 340(92), 326(36), 310(28), 298(50), 283(11), 267(57), 236(21), [4]
PMR: 2.50(3H, s, NCH_3), 3.73, 3.82, 3.84(3H, s, 3×OCH_3), 6.44(1H, s, H-3), 6.70(1H, s, H-8), 8.02(1H, s, H-11) [2]

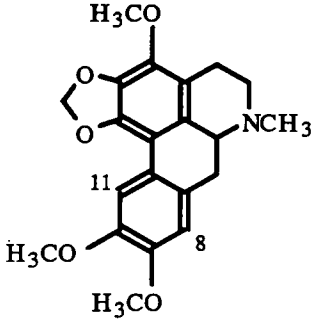
^{13}C NMR: [5]

C-1	140.7	C-5	53.5	C-10	147.1
1a	119.5	6a	62.7	11	112.0
1b	127.2	7	34.5	11a	124.8
2	145.8	7a	128.9	NCH_3	44.0
3	108.7	8	110.9	OCH_3	55.9
3a	123.9	9	147.6	OCH_3	56.0
4	29.0				

ORD: [6]

Pharm.: LD_{50} 242 mg/kg (s/c, mice) [7]. Hypotensive and antiinflammatory action [8]. {m-i.} – hypotensive action [9].

1. Yunusov S.Yu., Progressov N.N., Zh. Org. Khim., 1950, **20**, 1151.
2. Ismailov Z.F., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 202.
3. Yakhontova L.D., Tolkachev O.N., Pakaln D.A., Khim. Prir. Soedin., 1973, 684.
4. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 196.
5. Shamma M., Moniot J.L., Isoquinoline Alkaloids Research, Plenum Press, New York–London, 1978.
6. Moiseeva G.P., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 705.
7. Sadritdinov, p. 250.
8. Sadritdinov F.S., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 32.
9. Shamirzaeva Kh.S., Fakhrutdinov S.F., in: The Pharmacology of Alkaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, p. 141.



THALICMINE (OCOTEINE)

Thalictrum isopyroides, Th. minus, Th.simplex, Th. strictum

$C_{21}H_{23}NO_5$: 369.1576

Mp: 137-138° (meth.) [1]

$[\alpha]_D$+60° (chlf.) [2]

{h-chl. 270°, h-i. 224° (dec.), h-b. 260°, m-i. 237°}

UV: 220, 282, 304, 315(4.46, 4.22, 4.22, 4.18) [3]

IR: 1627, 1608, 1510, 935 [4]

Mass: 369(M^+, 100), 368(94), 354(22), 338(21), 326(15), 311(16), 295(21) [5]

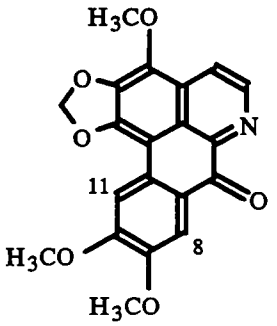
PMR: 2.42(3H, s, NCH_3), 3.79, 3.82(3H, s, 10-OCH_3, 9-OCH_3), 3.90(3H, s, 3-OCH_3), 5.90(2H, dd, J=2, CH_2O_2), 6.70(1H, s, H-8), 7.53(1H, s, H-11) [6]

^{13}C NMR: [7]

C-1	143.2	C-5	53.2	C-11	110.0
1a	110.4	6a	62.3	11a	123.5
1b	127.4	7	34.1	CH_2O_2	100.4
2	134.8	7a	127.4	3-OCH_3	59.3
3	139.1	8	111.1	9-OCH_3	56.0
3a	119.1	9	147.5	10-OCH_3	55.8
4	23.6	10	147.5		

Pharm.: LD_{50} 147, 145 mg/kg (s/c, i/p, mice). Decreases motor activity, prolongs the action of soporifica, suppresses the cough reflex [8].

1. Yunusov S.Yu., Progressov N.N., Zh. Org. Khim., 1950, **20**, 1151.
2. Progressov N.N., Yunusov S.Yu., DAN UzSSR, 1953, No. 10, 24.
3. Pulatova Kh.G., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1966, 426.
4. Baralle F., Busch A., Vernengo M.J., Kuck A.M., Lloydia, 1972, **35**, 300.
5. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 196.
6. Ismailov Z.F., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 202.
7. Marsaioli A.J., Ries F.A.M., Magalhaes A.F., Ruveda E.A., Phytochem., 1979, **18**, 165.
8. Sadritdinov, p. 250.

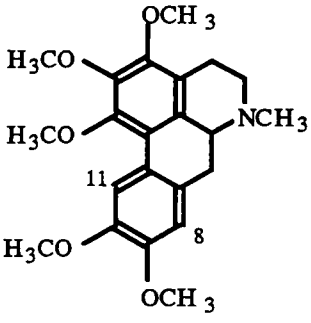


THALICMININE

Thalictrum flavum, Th.isopyrodes, Th. longipedunculatum, Th. minus, Th.simplex, Th.strictum
$C_{20}H_{15}NO_6$: 365.0899
Mp: 263-265° (chlf.) [1], 275-277° [2]
UV: 252, 282, 364, 456(4.29, 4.43, 3.91, 3.72) [1]
IR: 2850, 1650, 1280, 1150 [1]

Mass: 365, 350, 335, 322, 320, 307, 292, 290, 223, 219, 210, 205, 182.5(++) [2]
PMR(CF_3COOH): 4.20, 4.25, 4.55(3H, s, 3×OCH_3), 6.65(2H, s, CH_2O_2), 8.10, 8.35, 8.88, 8.94(1H, H-Ar) [2].
Pharm.: Relatively nontoxic. Prolongs the soporific action of chloral hydrate and hexobarbital [3].

1. Pulatova Kh.G., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1966, 426.
2. Baralle F., Schvarzberg N., Vernengo M.J., Moltrasio G.Y., Giacopello D., Phytochem., 1973, **12**, 948.
3. Sadritdinov, p. 252.

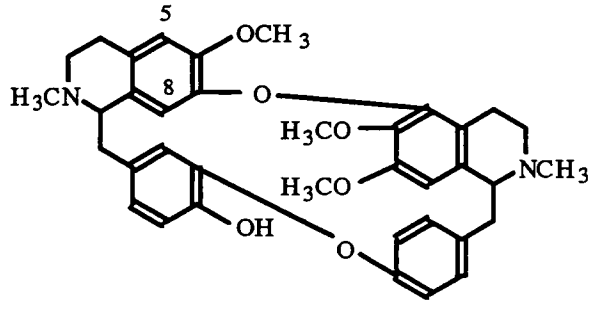


THALICSIMIDINE

Thalictrum filamentosum, Th.longipedunculatum, Th.minus, Th.simplex, Th.strictum
$C_{22}H_{27}NO_5$: 385.1889
Mp: 131-132° (alc.) [1]
$[\alpha]_D$+20° (chlf.) [1], +57° (alc.) [1]
{h-b. 252° (dec.), sulf. 202° (dec.), picr. 150°, m-i. 225°} [1]
UV: 220, 280, 300 [1]; 273, 282, 303, 312(4.26, 4.36, 4.33, 4.29) [2]

Mass: 385(M^+, 100), 384(74), 370(50), 354(21), 342(33), 327(17), 311(33), 280(26), 57, 56, 55, 43 [3, 4]
PMR: 2.47(3H, s, NCH_3), 3.64(3H, s, 1-OCH_3), 3.82(3H, s, 2-OCH_3), 3.85(6H, s, 9-OCH_3, 10-OCH_3), 3.88(3H, s, 3-OCH_3), 6.70(1H, s, H-8), 7.89(1H, s, H-11) [3]

1. Umarov Kh.S., Telezhenetskaya M.V., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 353.
2. Sonnet P.E., Jacobson M., J. Pharm. Sci., 1971, **60**, 1254.
3. Ismailov Z.F., Telezhenetskaya M.V., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 136.
4. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 196.

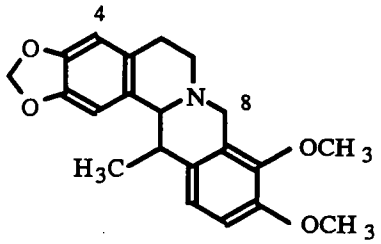


THALICTINE

Thalictrum sultanabadense
$C_{37}H_{40}N_2O_6$: 608.2886
Mp: amorph.
$[\alpha]_D$–33° (meth.) [1]
{nitr. 223°} [1]
UV: 284 [2]
Mass: 608($M^{+\cdot}$), 396, 395, 381, 380, 205, 198(100), 190, 175 [2]

PMR: 2.19(3H, s, 2′-NCH_3), 2.62(3H, s, 2-NCH_3), 3.62(3H, s, 6′-OCH_3), 3.82(3H, s, 7′-OCH_3), 3.86(3H, s, 6-OCH_3) [2]
CD: [1]
Abs. conf.: 1S,1S′ [1]

1. Mukhamedova S., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1984, 397.
2. Tomimatsu T., Sasakawa M., Chem. Pharm. Bull., 1975, **23**, 2279.

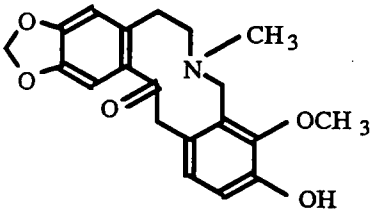


(±)-THALICTRICAVINE

Berberis nummularia
$C_{21}H_{23}NO_4$: 353.1627
Mp: 211-212°
Sol-y.: r-sol. chlf.; sp. sol. bz., eth.
UV: 234 sh, 285(4.10, 3.70)
IR: 2750

Mass: 353($M^{+\cdot}$), 338, 322, 307, 178, 176, 163.
PMR: 0.88(3H, d, CH_3), 3.73, 4.09(1H, d, J=15, H-8), 3.75(6H, s, 2×OCH_3), 5.85(2H, s, CH_2O_2), 6.21, 6.32(1H, s, H-1, H-4), 6.62, 6.72(1H, d, J=8.5, H-11, H-12)

1. Karimov A., Shakirov R., Dep. VINITI, 1639–V92; Ref. Zh., Khim., 1992, 17E114.

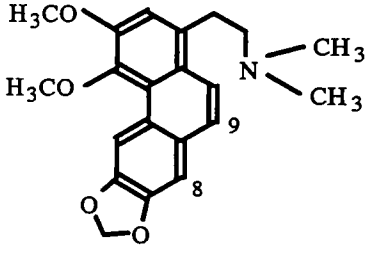


THALICTRISINE

Thalictrum amurense, Th. simplex
$C_{20}H_{21}NO_5$: 355.1420
Mp: 261-263° (meth.)
Sol-y.: sp.sol. org. solvent; sol. alk.
UV: 288(3.95)

IR: 3640, 2900, 2860, 1640, 1615, 1580, 1505, 1240, 1130, 1040, 930
Mass: 355($M^{+\cdot}$), 269, 207, 206(100), 192, 150

1. Umarov Kh.S., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 329.

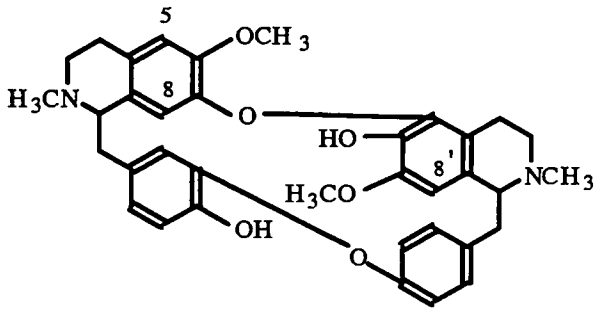


THALICTHUBERINE

Thalictrum strictum
$C_{21}H_{23}NO_4$: 353.1627
Mp: 117-118° (meth.) [1], 126-127° [2]
{h-chl. 203°} [1]
UV: 264, 285, 313, 327, 348, 366 [1]; 261, 285, 310, 345(4.84, 4.50, 4.32, 3.50) [2]

IR: 1045, 953, 930 [2]
Mass: 353($M^{+\cdot}$). 295, 251, 209, 58(100) [1]
PMR: 2.34(6H, s, $N(CH_3)_2$), 2.35-3.35(4H, m, CH_2–CH_2), 3.85, 4.02(3H, s, 2×OCH_3), 6.04(2H, s, CH_2O_2), 7.12(2H, s, H-Ar), 7.47, 7.75(1H, d, J=10, H-9, H-10) [1]

1. Maekh S.Kh., Gorovoi P.G., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 560.
2. Guinaudeau H., Leboeuf M., Cave A., Lloydia, 1975, **38**, 275.

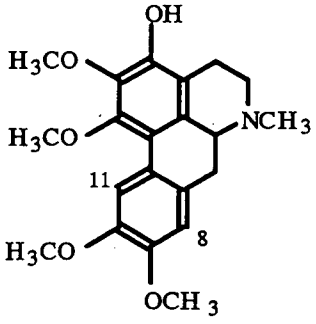


THALBADENSINE

Thalictrum minus, Th.sultanabadense
$C_{36}H_{38}N_2O_6$: 594.2730
Mp: amorph.
UV: 286
Mass: 594($M^{+\cdot}$), 395, 381

PMR: 2.17(3H, s, 2-NCH_3), 2.56(3H, s, 2′-NCH_3), 3.81(3H, s, 7′-OCH_3), 3.87(3H, s, 6-OCH_3), 4.63(2H, narrow s, 2×OH), 5.95(2H, s, H-8, H-8′)
Abs. conf.: 1S,1′S

1. Abdizhabbarova S., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 139.

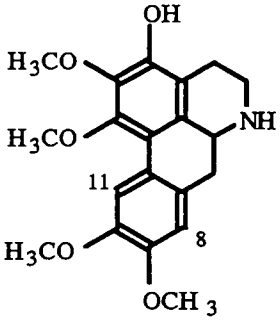


THALBAICALIDINE

Thalictrum baikalense
$C_{21}H_{25}NO_5$: 371.1733
Mp: 191-193° (e-a.)
$[\alpha]_D$+73° (meth.)
UV: 282, 303, 315
UV(OH^-): 326
Mass: 371($M^{+\cdot}$), 370, 356, 341, 328

PMR: 2.46(3H, s, NCH_3), 3.62(3H, s, 1-OCH_3), 3.83, 3.88(6H, 3H, s, 3×OCH_3), 6.65(1H, s, H-8), 7.77(1H, s, H-11)

1. Maekh S.Kh., Yunusov S.Yu., Boiko É.V., Starchenko V.M., Khim. Prir. Soedin., 1983, 537.

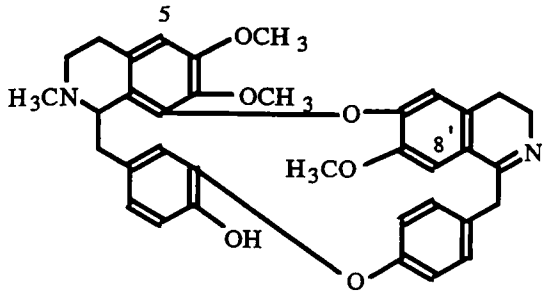


THALBAICALINE

Thalictrum baikalense
$C_{20}H_{23}NO_5$: 357.1576
$[\alpha]_D$+61° (meth.)
UV: 220, 285, 303, 313
UV(OH^-): 325
IR{O, N–di Ac}: 1760, 1650

Mass: 357($M^{+\cdot}$), 356, 342, 340, 328, 327, 297
Mass{O,N–di Ac}: 441($M^{+\cdot}$), 382, 381, 340, 339, 327. 310, 293
PMR: 3.63(3H, s, 1-OCH_3), 3.81, 3.83, 3.88(3H, s, 3×OCH_3), 6.36, 6.36(1H, s, H-8), 7.81(1H, s, H-11)
PMR{O,N–di Ac}: 2.09, 2.13(3H, NAc), 2.30(3H, s, OAc), 3.64(3H, s, 1-OCH_3), 3.84(9H, s, 3×OCH_3), 6.67(1H, s, H-8), 7.93(1H, s, H-11)

1. Maekh S.Kh., Yunusov S.Yu., Boiko É.V., Starchenko V.M., Khim. Prir. Soedin., 1983, 537.

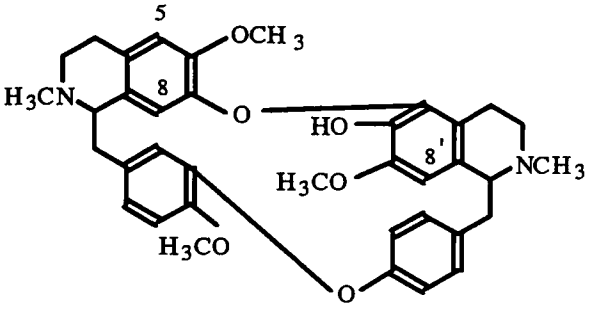


THALMETHINE

Thalictrum minus
$C_{36}H_{36}N_2O_6$: 592.2573
Mp: 265-268° (meth.) [1]
$[\alpha]_D$+200° (chlf.) [1]
UV: 283, 315(3.73, 3.41) [1]
IR: 3500-3350, 1630, 1605 [1]

Mass: 592(M^+, 100), 591, 578, 560, 546, 205, 190, 174 [1, 2]
PMR: 1.87(3H, s, 2-NCH_3),3.60(3H, s, 7-OCH_3),3.77(3H, s, 7'-OCH_3), 3.87(3H, s, 6-OCH_3) [2]
Abs. conf.: 1S

1. Khodzhaev V.G., Allayarov Kh., Khim. Prir. Soedin., 1970, 496.
2. Allayarov Kh., Khodzhaev V.G., Ismailov Z.F., Izv. AN TSSR, 1971, No. 6, 121.

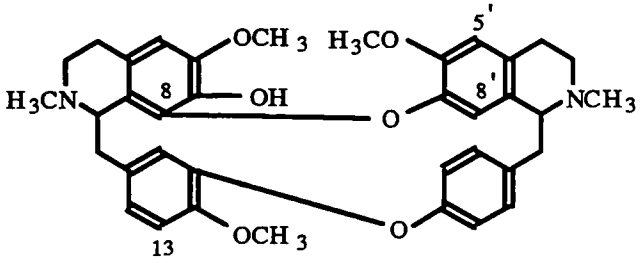


THALMINE

Thalictrum collinum, Th.minus
$C_{37}H_{40}N_2O_6$: 608.2886
Mp: 252-253° (dec.)
$[\alpha]_D$–64° (chlf.)
{h-chl. 157° (dec.), p-chl. 241° (dec.), m-i. 250° (dec.)} [1]

Sol-y.: r-sol. chlf.; sp. sol. alc., meth., ac., bz. [1]
UV: 280(3.60) [2]
IR: 3400 [3]
IR{Ac}:1770, 1195 [3]
Mass: 608(M^+, 40), 607(23), 593(5), 577(5), 382(70), 191(100), 183(10), 175(15), 174(40), 168(30), 90(10), 89(5) [4]
PMR: 2.10(3H, s, 2-NCH_3), 2.55(3H, s, 2'-NCH_3), 3.77(3H, s, 6-OCH_3), 3.83(6H, s, 2×OCH_3), 5.00(1H, OH), 5.85-6.90(10H, m, H-Ar) [5]
Abs. conf.: 1S,1'S
Pharm.: LD_{50} 217.5 mg/kg (i/v, mice); 3250, 372 mg/kg (oral, i/p, rats). Hypotensive, antipyretic, analgesic, antiinflammatory [6], and antitumoral [7] action.

1. Yunusov S.Yu., Progressov N.N., Zh. Org. Khim., 1950, .**20**, 1151.
2. Yunusov S.Yu., Telezhenetskaya M.V., DAN UzSSR, 1963, No. 5, 22.
3. Telezhenetskaya M.V., Yunusov S.Yu., DAN SSSR, 1965, **162**, 354.
4. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 256.
5. Ismailov Z.F., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 262.
6. Sadritdinov, p. 252.
7. Tolkachev O.N., Khim. Prir. Soedin., 1981, 263.

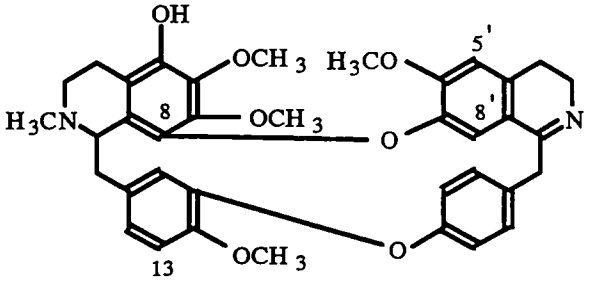


THALRUGOSINE

Thalictrum sachalinense
$C_{37}H_{40}N_2O_6$: 608.2886
Mp: amorph. [1]; 153° [2]; 211-212° (ac.) [3]
$[\alpha]_D$+146° (meth.) [1]; +87° (meth.) [2]; +177° (meth.) [3]

UV: 285 [1]
IR (chlf.): 3330 [3]
Mass: 608(M^+), 593, 577, 471, 417, 382, 381(100), 367, 192 [1]
PMR: 2.26(3H, s, 2-NCH_3), 2.43(3H, s, 2′-NCH_3), 3.72(3H, s, 6′-OCH_3), 3.87(6H, s, 6-OCH_3, 12-OCH_3), 6.24-7.05(10 H, m, H-Ar) [1]; 6.10(1H, s, H-8′) [2]
Abs. conf.: 1R, 1′S [1]
Pharm.: Antimicrobial [4] and hypotensive [5] activity.

1. Umarova D., Maekh S.Kh., Yunusov S.Yu., Zaitseva N.M., Volkova S.A., Gorovoi P.G., Khim. Prir. Soedin., 1978, 594.
2. Shamma M., Yao S.Y., Experientia, 1973, **29**, 517.
3. Kunitomo J., Murakami Y., Oshikata M., Akasu M., Kodama K., Takeda N., Harada K., Suzuki M., Tatematsu A., Kawanabe E., Ishii H., Chem. Pharm. Bull., 1985, **33**, 135.
4. Mitscher L.A., Wu W.-N., Doskotch R.W., Beal J.L., J. Chem. Soc. Chem. Commun., 1971, 589.
5. Kurmukov A.G., Zakirov U.B., Alkaloids and Preparations of Medicinal Herbs for the Treatment of Hypotensive States [in Russian], Ibn Sina [Avicenna], Tashkent, 1992.

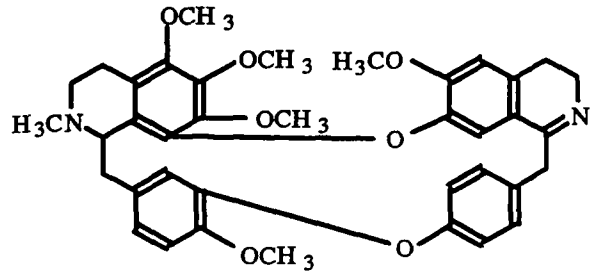


THALSIMIDINE

Thalictrum simplex
$C_{37}H_{38}N_2O_7$: 622.2679
Mp: 195° (alc.)
$[\alpha]_D$+48° (chlf.) [1]
Sol-y.: i.s. alk. [1]
UV: 280, 312(4.12, 3.76) [1]

IR: 3490, 1630 [1]
Mass: 622(M^+, 100), 621(60), 607(56), 591(20), 485(10), 311($^{++}$, 28), 221(8), 190(10),175(6) [2]
PMR(Py-d_5): 2.20(3H, d, J=11.5, NCH_3), 3.33(3H, s, 7-OCH_3), 3.44(3H, s, 6′-OCH_3), 3.77(3H, s, 6-OCH_3), 3.82(3H, s, 12-OCH_3), 6.51, 6.74(1H, s, H-8′, H-5′) [3]
Abs. conf.: 1S [2]

1. Maekh S.Kh., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 138.
2. Maekh S.Kh., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 393.
3. Maekh S.Kh., Unpub.

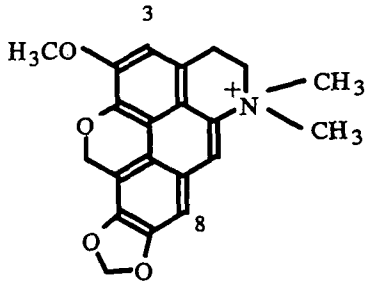


THALSIMINE

Thalictrum simplex
$C_{38}H_{40}N_2O_7$: 636.2836
Mp: 140-142° (ac.) [1]
$[\alpha]_D$+27° (chlf.) [1]
{h-chl. 235° (dec.), nitr. 218° (dec.), tartrate 171° (dec.), picr. 211° (dec.)}

Sol-y.: r-sol. alc., bz., e-a., chlf.; sp. sol. petr. eth.; i.s. water, alk. [1]
UV: 278, 310(4.02, 3.76) [2]
IR: 1630-1550 [2]
Mass: 636(M^+, 100), 635(64), 621(51), 605(17), 499(11), 235, 205(13), 190, 175(5), 174(7), 90(15) [3]
Abs. conf.: 1S
CD: [5]
Pharm.: LD_{50} 1263, 505, 69 mg/kg (s/c, i/p, i/v, mice); 358 mg/kg (i/p, rats). Hypotensive, antiinflammatory, antipyretic, sedative, and anticonvulsive action [6].

1. Ismailov Z.F., Maekh S.Kh., Yunusov S.Yu., DAN UzSSR, 1960, No. 12, 22.
2. Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 188.
3. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 256; Maekh S.Kh., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 393.
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. 253.

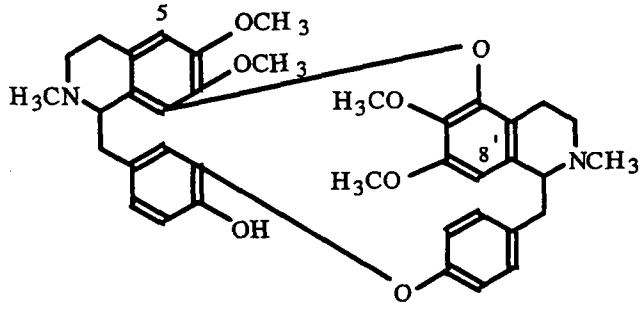


THALPHENINE

Thalictrum minus
$C_{21}H_{22}NO_4$: 352.1549
{chloride 186°, $[\alpha]_D$+69° (alc.)} [1, 2]
UV: 221, 230 sh, 280 sh, 288, 317, 328 sh (4.32, 4.21, 3.69, 3.83, 3.97, 3.87) [2]
Mass: 351, 293, 250 [2]

PMR(DMSO): 3.05, 3.45(3H, s, $N(CH_3)_2$), 3.76(3H, s, OCH_3), 5.00(2H, m), 6.02(2H, d, J=2.5, CH_2O_2), 6.79(1H, s, H-8), 6.82(1H, s, H-3) [2]

1. Murav'eva D.A., Tolkachev O.N., Akopov A.A., Khim. Prir. Soedin., 1985, 416.
2. Shamma M., Moniot J.L., Yao S.Y., Stanko J.A., J. Chem. Soc. Chem. Commun., 1972, 408.

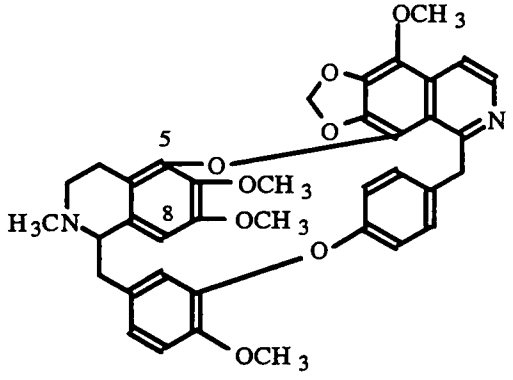


THALFOETIDINE (THALICTRININE)

Thalictrum longipedunculatum, Th.simplex
$C_{38}H_{42}N_2O_7$: 638.2992
Mp: 169-170° (dec.) [1]
$[\alpha]_D$–81° (chlf.) [1]
Sol-y.: r-sol. chlf.; sp. sol. eth., alc., ac. [1]

Mass: 638($M^{+\cdot}$, 100), 637(46), 623(9), 607(6), 515(2), 417(63), 402(57), 213(67), 206(18), 190(65), 175(7), 174(5) [2]
PMR: 2.32(3H, s, 2-NCH_3), 2.72(3H, s, 2′-NCH_3), 3.32(3H, s, 7-OCH_3), 3.51(3H, s, 7′-OCH_3), 3.77(3H, s, 6-OCH_3), 3.89(3H, s, 6′-OCH_3) [3]
Abs. conf.: 1S, 1′S
Pharm.: LD_{50} 345 mg/kg (i/p, mice). Antipyretic action [4].

1. Norkina S.S., Pakhareva N.A., Zh. Org. Khim., 1950, **20**, 1720.
2. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 256.
3. Mollov N.M., Georgiev W., Chem. Ind., 1966, **27**, 1178.
4. Sadritdinov, p. 254.

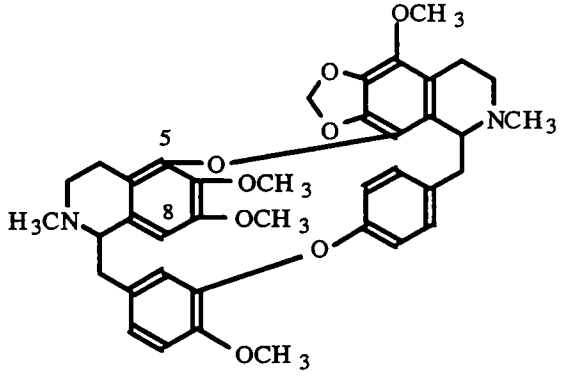


THALFINE

Thalictrum foetidum
$C_{38}H_{36}N_2O_8$: 648.2472
Mp: 141-142° (dec.) [1]
$[\alpha]_D$+69° (alc.) [1]
UV: 260, 348(4.58, 3.86) [2]
IR: 1562, 1050, 1030, 920 [1, 2]
Mass: 648($M^{+\cdot}$, 100), 647(31), 633(83), 617(21), 442(7), 421(7), 324(49), 220(12), 204(21) [3]

PMR: 2.20(3H, s, 2-NCH_3), 3.40(3H, s, 7-OCH_3), 3.50(3H, s, 6-OCH_3), 3.61(3H, s, 5′-OCH_3), 3.76(3H, s, 12-OCH_3), 5.93(1H, s, PH-8), 6.04(2H, s, CH_2O_2) [2]
Abs. conf.: 1S [4]
Pharm.: LD_{50} 1000 mg/kg (i/p, mice). Weak antiinflammatory and hypothermal action [5].

1. Abdizhabbarova S., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 330.
2. Abdizhabbarova S., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 279.
3. Liao W.-T., Beal J.L., Wu W.-N., Doskotch R.W., Lloydia, 1978, **41**, 257.
4. Moiseeva G.P., Maekh S.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 818.
5. Sadritdinov, p. 255.



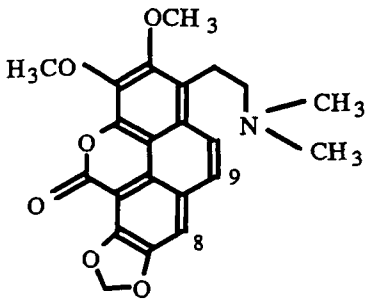
THALFININE

Thalictrum foetidum
$C_{39}H_{42}N_2O_8$: 666.2941
Mp: 117-118° [1]
$[\alpha]_D$+115° (alc.) [1]
{p-chl. 235° (dec.), h-chl. 225° (dec.)}
UV: 282(3.76) [1]
IR: 3600-3300, 1030, 920 [1]
Mass: 666($M^{+\cdot}$, 95), 440(14), 220(100), 204(16) [2]

PMR: 2.30(3H, s, 2-NCH_3), 2.54(3H, s, 2′-NCH_3), 3.36(3H, s, 7-OCH_3), 3.43(3H, s, 6-OCH_3), 3.66(3H, s, 5′-OCH_3), 3.80(3H, s, 12-OCH_3), 5.80(2H, s, CH_2O_2), 5.92(1H, s, H-8) [3]
Abs. conf.: 1S, 1′S [2]

1. Abdizhabbarova S., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 330.
2. Liao W.-T., Beal L., Wu W.-N., Doskotch R.W., Lloydia, 1978, **41**, 257.

3. Abdizhabbarova S., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 279.

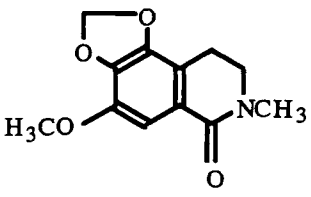


THALFLAVIDINE

Thalictrum flavum
$C_{22}H_{21}NO_6$: 395.1369
Mp: 219-220° (meth.)
UV: 254, 263, 296, 400(4.38, 4.49, 3.94, 3.60)
IR: 1730, 1060, 950
Mass: 395($M^{+\cdot}$), 337, 322, 279, 58(100)

PMR: 2.30(6H, s, $N(CH_3)_2$), 2.50, 3.26(4H, m, CH_2–CH_2), 3.82, 4.04(3H, s, 2×OCH_3), 6.29(2H, s, CH_2O_2), 7.44(1H, s, H-8), 7.56, 7.81(1H, d, H-9, H-10)

1. Umarov Kh.S., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1973, 683.

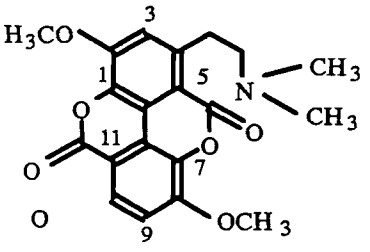


THALFLAVINE

Thalictrum flavum, Th.foetidum
$C_{12}H_{13}NO_4$: 235.0845
Mp: 132-133° [1], 141-142° (petr. eth.) [2]
UV: 216, 264, 278(4.59, 3.90, 3.96) [2]

IR: 1625 [1]
Mass: 235($M^{+\cdot}$, 100), 192(95), 164(88), 150(17), 117.5($^{++}$, 5) [1], 235($M^{+\cdot}$, 90), 192(100), 164(97), 163(2), 147(3), 134(3) [2]
PMR: 2.77, 3.95(2H, t, J=7, H-3, H-4), 3.05(3H, s, NCH_3), 3.84(3H, s, OCH_3), 5.95(2H, s, CH_2O_2), 7.32(1H, s, H-8) [1]

1. Umarov Kh.S., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 444.
2. Aly Y., Galal A., Wong L.K., Fu E.W., Lin F.-T., Duah F.K., Schiff P.L., Phytochem., 1989, **28**, 1967.

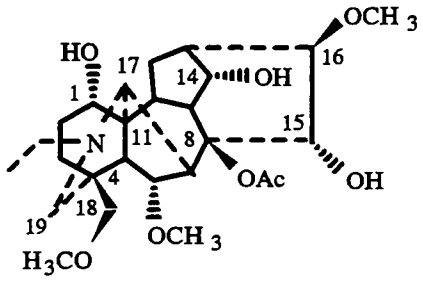


TASPINE

Leontice alberti, L.darwasica, L.ewersmannii, L.smirnowii
$C_{20}H_{19}NO_6$: 369.1212
Mp: 370° (toluol)
$[\alpha]_D$ 0°
{sulf. 360° (dec.)} [1]

UV: 246, 285, 330, 345(4.83, 4.01, 3.89, 3.97) [2]
IR: 1740, 1720, 1600, 1333, 1322, 1292, 1244, 1218, 1200, 1170, 1138, 1092, 1050, 1037, 1023, 994, 980, 938, 902, 888, 878, 860, 842, 833, 822, 800, 773, 757, 738, 715 [2]; 1728, 1596, 1285, 1140, 1085 [3]
PMR: 2.40(6H, s, $N(CH_3)_2$), 2.70-3.48(4H, m, CH_2–CH_2), 4.10(6H, s, 2×OCH_3), 7.19(1H, s, H-3), 7.29(1H, d, J=9, H-9), 8.14(1H, d, J=9, H-10) [4]

1. Platonova T.F., Kuzovkov A.D., Massagetov P.S., Zh. Org. Khim., 1953, **23**, 880.
2. Hjlubek, No. 393.
3. Platonova T.F., Kuzovkov A.D., Sheinker Yu.N., Zh. Org. Khim., 1956, **26**, 2651.
4. Shamma M., The Isoquinoline Alkaloids, Vol. 1, New York, 1972, p. 265.



TAURENINE

Aconitum tauricum, A.firmum
$C_{26}H_{41}NO_8$: 495.2832
Mp: 100-102° (petr. eth.–chlf.)
Sol-y.: sol. chlf., meth., ac., alc.
IR: 3490, 3400, 3325, 1720 [1]

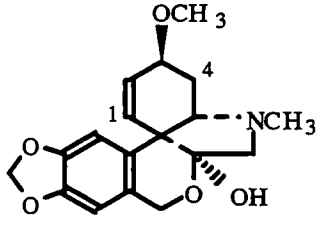
Mass: 495(M^+, 0.9), 480(1.6), 478(4.6), 435(43), 420(100), 418(21.4), 404(18), 390(53.5), 60(8.0) [1]
PMR: 1.08(3H, t, J=7.5, NCH_2CH_3), 2.00(3H, s, Ac), 3.21, 3.26, 3.41(3H, s, 3×OCH_3), 4.01(2H, m), 4.32(1H, dd, J=6; 3, H-6β), 4.47(1H, d, J=3.0, H-15β) [1]

^{13}C NMR: [1]

C-1	72.3	C-10	41.5	C-19	56.5
2	29.7	11	49.4	6′	58.3
3	29.7	12	29.7	16′	58.3
4	38.2	13	43.6	18′	59.2
5	43.8	14	75.1	NCH_2	48.7
6	84.7	15	76.0	CH_3	13.2
7	47.0	16	89.0	CO	172.8
8	92.2	17	62.5	CH_3	22.6
9	43.6	18	80.0		

Pharm.: Lowers arterial pressure, blocks the conduction of nervous impulses in vegatative ganglia, relatively nontoxic [2]

1. Tel'nov V.A., Vaisov Z.M., Yunusov M.S., Gorelova A.P., Khim. Prir. Soedin., 1992, 108.
2. Dzhakhangirov F.N., Unpub.



TAZETTINE

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 lutea, Ungernia ferganica, U.minor, U.sewerzowii, U.spiralis, U.tadshicorum, U.trisphaera, U.victoris, U.vvedenskyi

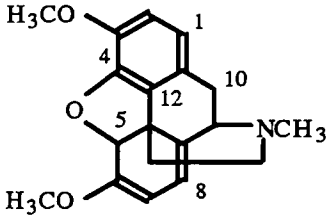
$C_{18}H_{21}NO_5$: 331.1420
Mp: 212-213° (ac.) [1]
$[\alpha]_D$+150° (chlf.) [1]
{picr. 208°, p-chl. 108°, m-i. 223°, dihydro 183°}
Sol-y.: sol. eth., chlf.; sp. sol. ac., alc., bz.; i.s. water [1]
UV: 240, 291 [2]
IR: 1665, 1507, 1493, 1330, 1313, 1257, 1237, 1194, 1173, 1131, 1108, 1085, 1070, 1061, 1040, 1019, 1007, 990, 974, 953, 939, 921, 910, 873, 866, 857, 826, 811, 783, 776, 737, 728 [2]
Mass: 331(M^+), 316, 298, 260, 247, 229, 201, 71, 70 [3]
PMR: 2.37(3H, s, NCH_3), 2.68, 3.29(1H, d, J=10, H-6), 3.41(3H, s, OCH_3), 3.87-4.26(1H, m, H-3), 4.62, 4.94(1H, d, J=15, H-8), 5.59(1H, narrow d, J=10, H-1), 5.84(2H, s, CH_2O_2), 6.10(1H, narrow d, J=10, H-2), 6.44(1H, s, H-9), 6.81(1H, s, H-12) [4]

^{13}C NMR: [5]

C-1	130.6	C-6a	101.8	C-12	109.2
2	128.5	8	65.1	12a	125.5
3	72.5	8a	127.9	12b	50.2
4	26.7	9	103.8	CH_2O_2	100.7
4a	70.0	10	146.4	OCH_3	55.7
6	61.8	11	146.4	NCH_3	42.0

Pharm.: LD_{50} 48.2 mg/kg (i/v, mice). Pronounced and prolonged hypotensive action [6]. Antiarrhythmic activity [7]; {m-i}: LD_{50} 14.0 mg/kg. Blocks nervous conductivity in the ganglia of the vegatative nervous system; appreciably lowers blood pressure [7].

1. Norkina S.S., Orekhov A.P., Zh. Org. Khim., 1937, 7, 902.
2. Holubek, No. 262.
3. Duffield A.M., Aplin R.T., Budzikiewicz H., Djerassi K., Murpky C.F., Wildman W.C., J. Amer. Chem. Soc., 1965, **87**, 4902.
4. Haugwitz R.D., Jeffs P.W., Wenkert E., J. Chem. Soc., 1965, 2001.
5. Crain W.O., Wildman W.C., Roberts J.D., J. Amer. Chem. Soc., 1971, **93**, 990.
6. Aliev Kh.U., Kamilov I.K., in: Pharmacology of the Alkaloids [in Russian], AN UZSSR, Tashkent, 1962, pp. 196, 202.
7. Aliev Kh.U., in: Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 116.



THEBAINE

Papaver bracteatum, P.orientale, P.somniferum
$C_{19}H_{21}NO_3$: 311.1521
Mp: 192-193° (alc.) [1]
$[\alpha]_D$–217° (chlf.) [1]

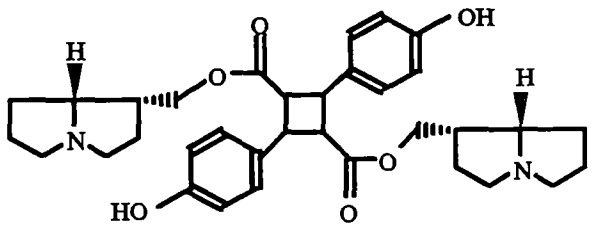
UV: 285 [2]
Mass: 311($M^{+\cdot}$, 100), 310, 296, 280, 268, 255, 155.5 ($^{++}$) [2]
PMR: 2.39(3H, s, NCH_3), 3.52, 3.76(3H, s, 2×OCH_3), 4.96, 5.48(1H, d, J=8), 5.20(1H, s), 6.48, 6.60(1H, d, J=9, o-H-Ar) [2]

^{13}C NMR: [3]

C-1	119.1	C-8	111.3	C-14	132.3
2	112.9	9	60.7	15	37.0
3	142.7	10	29.5	16	46.0
4	144.6	11	127.6	NCH_3	42.3
5	89.0	12	133.1	3-OCH_3	56.2
6	152.3	13	46.0	OCH_3	54.7
7	95.8				

ORD: [5]
CD: [5]
HPLC: [4]

1. Konovalova R.A., Yunusov S.Yu., Orekhov A.P., Zh. Org. Khim., 1937, 7, 1791.
2. Israilov I.A., Unpub.
3. The Alkaloids, 1981, Vol. 18, p. 217.
4. Milo J., Levy A., Palevitch D., Ladizinsky G., J. Chromatogr., 1988, **452**, 563.
5. Kametani T., Ihara M., Fukumoto K., Yagi H., J. Chem. Soc., 1969, 2030.

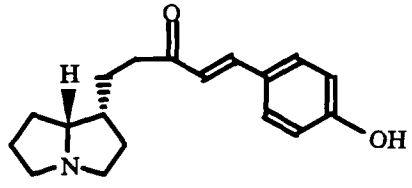


THESINE

Thesium minkwitzianum
$C_{34}H_{42}N_2O_6$: 574.3043
Mp: 254-256° (alc.)
{sulf. 246°, picr. 226° (dec.), di m-i. 150°,
(+)-isoretronecanol 40°, $[\alpha]_D$+76°}

Sol-y.: sp. sol. org. solvent; i.s. water [1, 2]
Pharm.: LD_{50} 2.99, 26 mg/kg (i/v, s/c, mice). In a dose of 2.5-3 mg/kg in narcotized cats causes complete cessation of nerve-muscle transmission, suppression of respiration, hypotensive effect [3]. For the {di m-i.}, increased toxicity and curaremimetic action [4].

1. Arendaruk A.P., Proskurnina N.F., Konovalova R.A., Zh. Org. Khim., 1960, **30**, 670.
2. Arendaruk A.P., Sklodinov A.P., Zh. Org. Khim., 1960, **30**, 484, 489.
3. Sadritdinov, p. 279.
4. Sadritdinov F.S., in: Pharmacology of Natural Compounds [in Russian], Fan, Tashkent, 1979, p. 29.

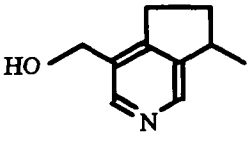


THESININE

Thesium minkwitzianum
$C_{17}H_{21}NO_3$: 287.1521
Mp: 38-40°

{*p*-hydroxycinnamic acid 208°, (+)-isoretronecanol 40°}
Sol-y.: r-sol. alc., chlf., ac.; sp. sol. eth., water

1. Arendaruk A.P., Proskurnina N.F., Konovalova R.A., Zh. Org. Khim., 1960, **30**, 670.

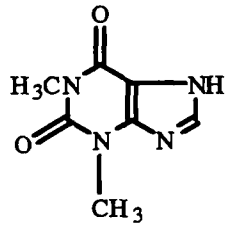


TECOSTIDINE

Pedicularis rhinanthoides
$C_{10}H_{13}NO$: 163.0997
Mp: oil

$[\alpha]_D$+6° (alc.)
{picr. 153°} [1]
UV: 262, 270(3.27, 3.21)
IR: 3400-3200, 2960, 1595, 850, 820
PMR: 1.27(3H, s, CH_3), 3.25(1H, m, CH), 4.62, 4.65(3H, m, CH_2OH), 8.22, 8.27(1H, s, H-Ar) [2]

1. Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 334.
2. Hammouda J., Le Men J., Bull. Soc. Chim. France, 1963, 2901.

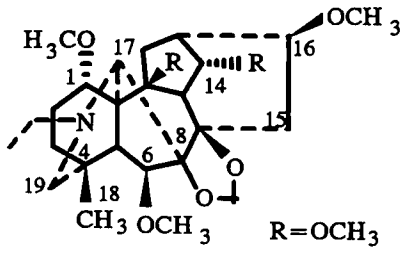


THEOPHYLLINE

Thea sinensis
$C_7H_8N_4O_2$: 180.0647
Mp: 268-270° (water) [1]
UV: 272(4.02) [2]
HPLC: [3]

Pharm.: {the sodium salicylate salt (diuretin)} is used in the treatment of hypertension [4]. Dilates the musculature of the bronchi, stimulates the central nervous system, decreases the aggregation of thrombocytes. Is used as a broncholytic and diuretic. Suppllied in the form of a powder and as suppositories. A component of the compound tablets Éufillin, Teofidrin, Antasman, etc. [5].

1. Skhiladze I.S., Vachnadze V.Yu., Khim. Prir. Soedin., 1984, 670.
2. Sangster A.W., Stuart K.L., Chem. Rev., 1965, **65**, 69.
3. Moncrieff J., J. Chromatogr., 1991, **568**, 177.
4. Bokuchava M.A., The Biochemistry of Tea and Tea Production [in Russian], AN SSSR, Moscow, 1958, p. 52.
5. Mashkovskii, Vol. 1, p. 456.



TERDELINE

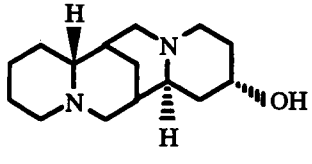
Delphinium ternatum
$C_{27}H_{43}NO_7$: 493.3040
Mp: 116-118° (eth.-hx.)
IR: 1100
Mass: 493(M^+, 2), 478(6), 464(8), 463(32), 462(100), 448(10), 446(9)

PMR: 0.90(3H, s, 18-CH_3), 1.07(3H, t, J=7, NCH_2CH_3), 3.18, 3.20, 3.29, 3.31, 3.41(3H, s, 5×OCH_3), 5.07(2H, s, CH_2O_2)

^{13}C NMR:

C-1	77.7	C-10	88.5	C-19	57.1
2	27.2	11	57.6	1′	54.9
3	36.8*	12	36.6*	6′	58.5
4	33.0	13	38.1	10′	52.0
5	44.3	14	81.7	14′	57.8
6	90.3	15	35.3	16′	56.0
7	91.9	16	82.7	NCH_2	50.3
8	82.8	17	63.1	CH_3	13.8
9	50.3	18	26.3	CH_2O_2	94.0

1. Narzullaev A.S., Matveev V.M., Abdullaev N.D., Sabirov S.S., Yunusov M.S., Khim. Prir. Soedin., 1988, 396.

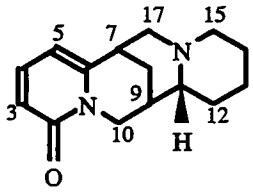


THERMOPSAMINE

Termopsis lanceolata
$C_{15}H_{26}N_2O$: 250.2045
Mp: 154-155° (ac.)

$[\alpha]_D$+26° (alc.)
{di picr. 131°, m-i. 246° (dec.)}
Sol-y.: r-sol. chlf., alc., meth., water; sol. eth., ac.; sp. sol. petr. eth.
IR: 3370, 2800-2600, 1275, 1112, 1080, 1023
Mass: 250(M^+, 53), 233(12), 209, 152, 150, 137(100), 113, 98(92), 97, 84(18), 83(30)

1. Vinogradova V.I., Iskandarov S., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 463.



THERMOPSINE

Cytisus laburnum, Thermopsis alpina, T.alterniflora, T.dolichocarpa, T. fabacea, T.lanceolata, T.turkestanica

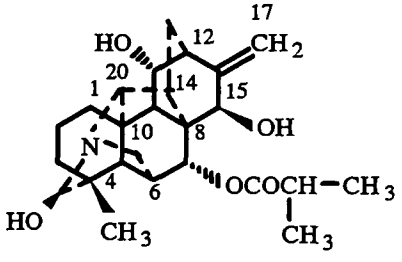
$C_{15}H_{20}N_2O$: 244.1576
Mp: 205-206° (ac.)
$[\alpha]_D$–161° (alc.) [1]
{picr. 209°, p-chl. 289°, m-i. 242° (dec.), h-i. 308° (dec.)}
Sol-y.: r-sol. eth., alc., chlf., water; sp. sol. ac., petr. eth. [1]
UV: 235, 309(3.80, 3.90) [2]
IR: 3000, 2950, 2865, 2800, 2770, 2690, 1660, 1555, 1470, 1450, 1423, 1400, 1380, 1355, 1317, 1304, 1279, 1188, 1152, 1147, 1131, 1113, 1081, 1073, 1060, 1043, 1028, 976, 960, 861, 852, 838, 804 [2]
Mass: 244(M^+, 26), 243(5), 229(4), 160(8), 146(13), 136(11), 122(10), 98(100), 97(12), 41(19) [3]
PMR: 1.70(H-15_a), 1.84(2H, H-8), 2.00(H-9), 2.29(H-17_a), 2.53(H-15_e), 2.74(H-17_e), 2.85(H-7), 3.56(H-10_a), 4.20(H-10_e) [4]

^{13}C NMR: [5]

C-2	162.2	C-7	34.2	C-12	28.7
3	103.6	8	26.2	13	23.4
4	137.4	9	31.9	14	24.4
5	111.2	10	43.8	15	62.3
6	152.3	11	64.8	17	55.0

Pharm.: In large doses supresses the CNS. Like pachycarpine inhibits the conduction of excitation in the ganglia of the central nervous system, but is considerably less active [6].

1. Orekhov A.P., Norkina S.S., Gurevich E.L., Khim. Pharm. Prom., 1934, No. 3, 9.
2. Holubek, No. 270.
3. Pelletier, Vol. 2, p. 105.
4. Sadykov, p. 217.
5. Sadykov A.S., Izv. AN SSSR, Ser. Khim., 1983, No. 11, 2432.
6. Orekhov A.P., The Chemistry of the Alkaloids [in Russian], Moscow, 1955, p. 192.



TERNATINE

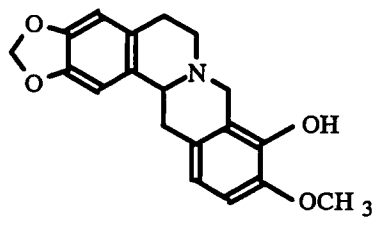
Delphinium ternatum
$C_{24}H_{33}NO_5$: 415.2359
Mp: 236-238° (ac.)

PMR: 0.99(3H, s, 18-CH_3), 1.21, 1.23(3H, d, J=7, $HC(CH_3)_2$), 2.12(1H, d, J=8.8, H-9), 2.20(1H, narrow t, $W_{1/2}$=6, H-12), 2.69(1H, m, $HC(CH_3)_2$), 2.77(1H, narrow s, H-20), 3.52(1H, m, 4.21(1H, s, H-15), 4.46(1H, dd, J=8.4, H-11β), 5.05(2H, s, H-17), 5.16(1H, d, J=2.9, H-7)

^{13}C NMR:

C-1	30.1	C-9	50.0	C-17	100.2
2	29.1	10	52.0	18	23.5
3	20.6	11	74.0	19	91.9
4	53.2	12	40.2	20	70.1
5	61.5	13	34.5	1′	177.2
6	66.6	14	44.4	2′	35.2
7	65.2	15	70.2	3′	19.8
8	43.8	16	153.6		19.2

1. Matveev V.M., Author's Abstract of Candidate's Dissertation, Dushanbe, 1988.

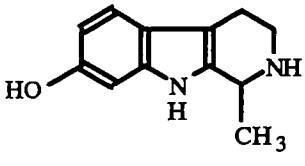


(–)-TETRAHYDROBERBERRUBINE

Berberis heteropoda, B.nummularia
$C_{19}H_{19}NO_4$: 325.1314
Mp: 188-190°
$[\alpha]_D$–287° (alc.)
Sol-y.: r-sol. chlf., meth.; sp. sol. bz., eth.

Mass: 325(M^+, 43), 176(100), 174(43), 150(48), 135(27).
PMR: 2.70(2H, t), 3.51(2H, t), 3.73(1H, d, J=15), 3.75(3H, s, OCH_3), 4.12(1H, d, J=15), 5.81(2H, s), 6.01(1H, s), 6.49(1H, s), 6.68(2H, s)

1. Karimov A., Shakirov R., Dep. VINITI, 1639-V92; Ref. Zh., Khim., 1992, 17E114.

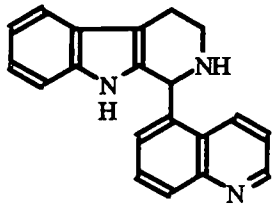


TETRAHYDROHARMOL

Elaeagnus angustifolia
$C_{12}H_{14}N_2O$: 202.1106
Mp: 256° [1]

$[\alpha]_D$ 0°
{h-chl. 235°} [1]
Sol-y.: i.s. ac., eth., water [1]
UV: 235, 270, 293(4.25, 3.70, 3.70) [1]
IR: 3448, 3333, 2632 [1]; 3380, 3265, 3245, 1620, 1560 [2]
Mass: 202(M^+), 187(100), 172, 159 [2]

1. Platonova T.F., Kuzovkov A.D., Massagetov P.S., Zh. Org. Khim., 1956, **26**, 3220.
2. Ayer W.A., Browne L.M., Canad. J. Chem., 1970, **48**, 1980.

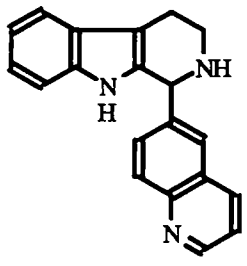


TETRAHYDROISOKOMAROVINE

Nitraria komarovii
$C_{20}H_{17}N_3$: 299.1422
Mp: 274-275° (chlf.-meth.)
UV: 232, 284-288, 295, 316(4.65, 4.08, 4.04, 3.57)

UV(H^+): 222, 275-280, 285, 291, 316
IR: 3310, 3190, 3070, 2930, 2860, 1620, 1600, 1510, 1470, 1145, 810, 760
Mass: 299($M^{+\cdot}$)
PMR: 2.10, 2.95(2H, m, H-3, H-4), 3.19(1H, NH), 5.70(1H, H-1), 7.10-8.70(H-Ar)

1. Tulyaganov T.S., Yunusov S.Yu., Khim. Prir. Soedin., 1990, 61.

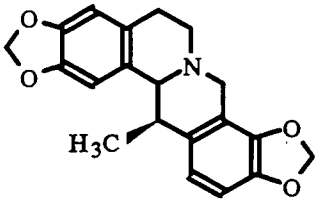


TETRAHYDROKOMAROVININE

Nitraria komarovii
$C_{20}H_{17}N_3$: 299.1422
Mp: 252-253° (chlf.-meth.)
$[\alpha]_D$ 0°
UV: 226, 232 sh, 275-283, 292, 318(4.85, 4.80, 4.23, 4.17, 3.92) [1]

IR: 3320, 3290, 2970, 2850, 1625, 1580, 1505, 1455, 750 [1]
Mass: 299($M^{+\cdot}$)
PMR: 2.83, 2.93, 3.25, 4.52, 5.22, 6.96-8.60 [1]
Pharm.: LD_{50} 67 mg/kg (i/v, mice). Hypertensive action [2].

1. Tulyaganov T.S., Yunusov S.Yu., Khim. Prir. Soedin., 1990, 61.
2. Tulyaganov T.S., Ibragimov A.A., Yunusov S.Yu., Vakhabov A.A., Aminov S.D., Khim. Pharm. Zh. 1987, No. 3, 295.

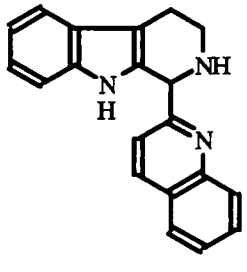


TETRAHYDROCORYSAMINE

Corydalis ledebouriana
$C_{20}H_{19}NO_4$: 337.1314
Mp: 199-200° (meth.)
$[\alpha]_D$+300° (meth.)
UV: 286

Mass: 337($M^{+\cdot}$), 322, 176, 174, 168.5($^{++}$), 162(100)
PMR: 0.90(3H, d, J=7, 13-CH_3), 2.50-3.50(6H, m), 3.42, 4.03(1H, d, J=15), 5.86(4H, s, 2×CH_2O_2), 6.52(1H, s), 6.66(3H, s)

1. Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 418.

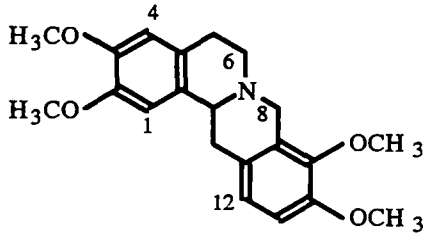


TETRAHYDRONITRAMARINE

Nitraria komarovii
$C_{20}H_{17}N_3$: 299.1422
Mp: 193-194°
$[\alpha]_D$ 0°
UV: 236, 269, 305, 309, 316(4.95, 4.08, 3.95, 3.84, 4.04) [1]

IR: 3350-3250, 2960, 2930, 2860, 1620, 1600, 1570, 1505, 1430 [1]
Mass: 299(M^+) [1]
PMR: 3.23, 3.38, 3.69, 5.33. 7.23-8.16 [1]
Pharm.: LD_{50} 126 mg/kg (i/v, mice). Hypertensive action [2].

1. Tulyaganov T.S., Yunusov S.Yu., Khim. Prir. Soedin., 1990, 61.
2. Tulyaganov T.S., Ibragimov A.A., Yunusov S.Yu., Vakhabov A.A., Aminov S.D., Sultanov M.B., Khim. Pharm. Zh., 1984, 1474.



(–)-TETRAHYDROPALMATINE (HINDARINE)

Corydalis ledebouriana, C.marschalliana, Stephania glabra
$C_{21}H_{25}NO_4$: 355.1783
Mp: 141-142° (alc.)
$[\alpha]_D$–292° (chlf.)

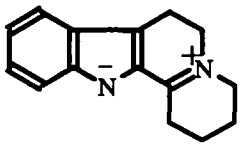
{h-chl. 257°, m-i. 257°, sulf. 218°} [1]
UV: 281(3.75) [2]
Mass: 356(21), 355(M^+, 94), 354(81), 338(27), 192(100), 191(32), 190(32), 164(35), 163(38) [2]
PMR: 2.65(1H, m, H-5_e), 2.68(1H, m, H-6_a), 2.91(1H, dd, J=15.8; 12.2, H-13_a), 3.10(1H, m, H-5_a), 3.23(1H, m, H-6_e), 3.27(1H, dd, J=15; 8.4, H-13_e), 3.49(1H, dd, J=12; 2.4, H-13_a), 3.54(1H, d, J=15.7, H-8_a), 3.85, 3.86(3H, s, 2-OCH_3, 3-OCH_3), 3.88(3H, s, 9-OCH_3), 3.90(3H, s, 10-OCH_3), 4.31(1H, d, J=15.7, H-8_e), 6.66(1H, s, H-4), 6.73(1H, s, H-1), 6.77(1H, d, J=8, H-11), 6.92(1H, d, J=8, H-12) [3]

^{13}C NMR: [3]

C-1	108.5	C-8	54.0	C-13	36.3
2	147.5	8a	127.7	14	59.3
3	147.3	9	150.2	14a	129.6
4	111.2	10	145.0	2-OCH_3	55.8
4a	126.7	11	110.8	3-OCH_3	55.8
5	126.7	12	123.8	9-OCH_3	60.1
6	51.5	12a	128.6	10-OCH_3	56.0

HPLC: [4]
Pharm.: Tranquilizing, soporific, hypotensive action [5]. Antimalarial activity [3]. Approved by the Pharmacological Committee of the USSR Ministry of Health as a sedative [6].

1. Shchelchkova I.I., Il'inskaya T.N., Kuzovkov A.D., Khim. Prir. Soedin., 1965, 271.
2. Siwon J., Verpoorte R., van Essen G.F.A., Baerheim-Swendsen A., Planta Medica, 1980, **38**, 24.
3. Hussain R.A., Kim J., Beecher C.W.W., Kinghorn A.D., Heterocycles, 1989, **29**, 2257.
4. Sagara K., Ito Y., Ojima M., Oshima T., Suto K., Misaki T., Itokawa H., Chem. Pharm. Bull., 1985, **33**, 5369.
5. Trutneva E.A., Farmakol. Toksikol., 1961, No. 3, 279.
6. Rabinovich I.M., Kibal'chich P.N., Fadeeva I.I., Il'inskaya T.N., Kuzovkov A.D., Berezhinskaya V.V., Trutneva E.A., Nikitina S.S., Aptechnoe Delo, 1965, No. 6, 19.

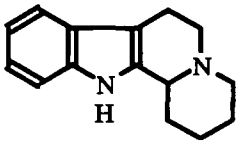


TETRAMETHYLENDIHYDRO-β-CARBOLINE

Nitraria schoberi
$C_{15}H_{16}N_2$: 224.1313
Mp: 81-83°

{h-chl. 252°}

1. Ibragimov A.A., in: Advances in the Investigation of Alkaloid-Bearing Plants [in Russian], Fan, Tashkent, 1993, p. 105.

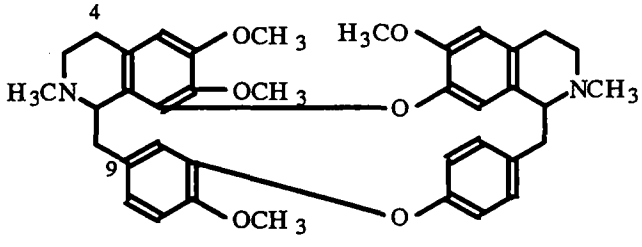


TETRAMETHYLENTETRAHYDRO-β-CARBOLINE

Nitraria komarovii, N.schoberi
$C_{15}H_{18}N_2$: 226.1470
Mp: 149-150° (petr. eth.)

$[\alpha]_D$–83° (alc.)
UV: 228, 284, 292(4.43, 3.50, 3.43)
IR: 3280, 750
Mass: 226(85), 225(100), 197(24), 184(8), 170(24), 169(30), 156(10)
PMR: 1.66, 2.93(13H, m), 7.06(4H, m, H-Ar), 7.76(1H, s, NH)

1. Pakhritdinov B.M., Novgorodova N.Yu., Normatov M., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 641.



TETRANDRINE

Stephania tetrandra
$C_{38}H_{42}N_2O_6$: 622.3043
Mp: 218
$[\alpha]_D$+241° (chlf.) [1]
UV: 214, 283(4.78, 3.91) [1]

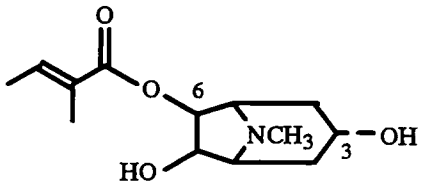
IR: 1608, 1585, 1505, 1273, 1235, 1213, 1135, 1128, 1113, 1070, 1028, 845 [1]
Mass: 622(33), 621(19), 607(6), 396(12), 395(42), 349(7), 335(5), 198.5(23), 198(100), 192(10), 190(7), 176(8), 175.5(9), 175(39), 174(31) [1]
PMR: 2.30(3H, s, 2-NCH_3), 2.59(3H, s, 2′-NCH_3), 3.18(3H, s, 7-OCH_3), 3.35(3H, s, 6′-OCH_3), 3.73(3H, s, 6-OCH_3), 3.90(3H, s, 12-OCH_3) [2]

^{13}C NMR: [3]

C-1	61.2	C-11	143.5	C-8′a	127.9
3	44.0	12	146.7	α′	41.8*
4	21.9	13	111.3	9′	134.7
4a	127.7	14	122.4	10′	129.8
5	105.5	1′	63.8	11′	121.6
6	151.1	3′	45.2	12′	153.4
7	137.6	4′	25.2	13′	121.6
8	148.1	4′a	127.9	14′	132.4
8a	127.7	5′	112.5	2-NCH_3	42.1**
α	38.2*	6′	148.2	2′-NCH_3	42.5**
9	134.9	7′	149.1		
10	116.0	8′	119.1		

CD: [4]
Abs. conf.: 1S, 1S′
Pharm.: LD_{50} 950 mg/kg (s/c, mice). Tuberculostatic, anticarcinogenic [5], antipyretic [6], hypotensive [7] action. Approved by the USSR Ministry of Health for medical use as an antiinflammatory and analgesic agent in the treatment of radiculitises, ischalgias, and neuralgias [6].

1. Dwuma-Badu D., Ayim J.S.K., Tackie A.N., Knapp J.E., Slatkin D.J., Schiff P.L., Phytochem., 1975, **14**, 2524.
2. Chan K.C., Evans M.T.A., Hassall C.H., Sangster A.M.W., J. Chem. Soc. C, 1967, 2479.
3. Broadbent T.A., Paul E.G., Heterocycles, 1983, **20**, 863.
4. Hussain S.F., Khan L., Guinaudeau H., Leet J.E., Freyer A.J., Shamma M., Tetrahedron, 1984, **40**, 2513.
5. Sadritdinov, p. 192.
6. Berezhinskaya V.V., Nikitina S.S., Trutneva E.A., Trudy VILR, 1971, **14**, 43.
7. Kurmukov A.G., Zakirov U.B., Alkaloids and Preparations of Medicinal Herbs for the Treatment of Hypotensive States [in Russian], Ibn Sina [Avicenna], Tashkent, 1992.

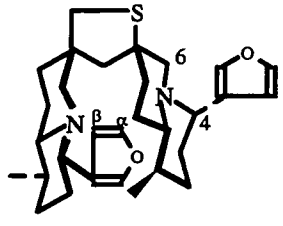


(±)-6β-THYGLOYLOXYTROPANE-3α,7β-DIOL

Datura innoxia
$C_{13}H_{21}NO_4$: 255.1471
Mp: 157-159°

$[\alpha]_D$ 0°
{picr. 171°} [1]
Mass: 255(M^+), 172, 155
PMR: 1.75(3H, s, CH_3), 1.80(3H, d, CH-CH_3), 2.46(3H, s, NCH_3), 3.08(2H, m, H-1, H-5), 4.04(1H, m, H-3β), 4.76(1H, m, H-6α), 5.60(1H, m, H-7α), 6.95(1H, m, CH) [2]

1. Evans W.C., Lampard J.F., Phytochem., 1972, **11**, 3293.
2. Aripova S.F., Yunusov S.Yu., Khim. Prir. Soedin., 1989, 36.

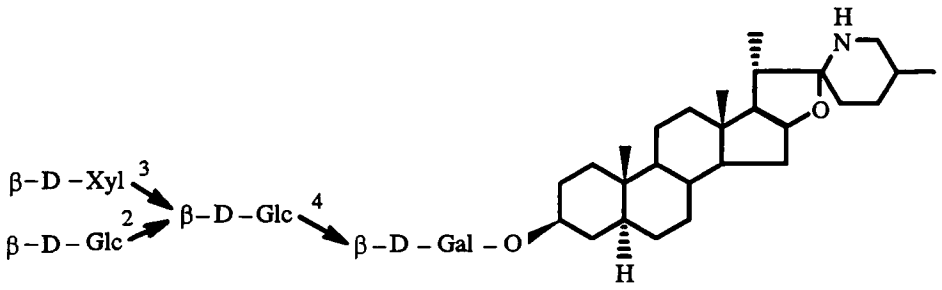


THIOBINUPHARIDINE

Nuphar luteum
$C_{30}H_{42}N_2O_2S$: 494.2967
Mp: 129-130° (meth.)
$[\alpha]_D$+49° (alc.)
{p-chl. 283°}

UV: 198
UV(H^+): 287
IR: 2920, 2850, 2780, 2739, 1595, 1500, 1375, 1268, 1135, 1065, 987, 870, 782, 760, 717 [1]
Mass: 494(M^+), 479, 465, 461, 451, 447. 427, 359, 264, 247, 231, 230, 178(100), 136, 107, 94 [2]
PMR: 0.92(6H, d, J=5.0, 2×CH_3), 2.32(2H, q, J=11.5, CH_2S), 2.77-2.98(4H, m, H-4, H-4′, H-6, H-6′), 6.39(2H, narrow s, $W_{1/2}$=7.2×H-β), 7.25(2H, q, $W_{1/2}$=4, H-α), 7.32(2H, s, $W_{1/2}$=5, H-α) [3]

1. Achmatowicz O., Wrobel J.T., Tetrahedron Lett., 1962, 122.
2. Achmatowicz O., Baczek H., Tetrahedron Lett., 1964, 927.
3. Wrobel J.T., Bobeszko B., Canad. J. Chem., 1973, **51**, 2810.

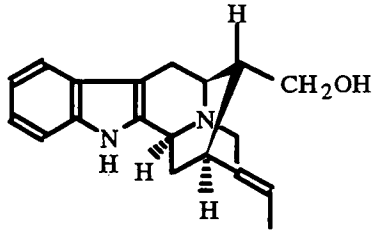


TOMATINE

Solanum kieseritzkii
$C_{50}H_{83}NO_{21}$:
1033.546
Mp: 269-271° [1. 2];
290-295° [3]
$[\alpha]_D$–20° (pyr.) [3]

IR: 3390, 1650, 1483, 1163, 1072, 1038. 1020, 978, 893, 870 [3]
Pharm.: LD_{50} 18 mg/kg (i/v, mice). Stimulating and weak hypotensive action. Specifically suppresses the growth of fungal cultures, inhibits the formation of granulation tissue, decreases the permeability of vascular walls [4].

1. Aslanov S.M., Khim. Prir. Soedin., 1970, 776.
2. Kuhn R., Low I., Trischmann H., Angew. Chem., 1956, **68**, 212.
3. Holubek, No. 272.
4. Sadritdinov, p. 294.

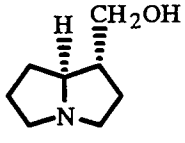


TOMBOZINE (NORMACUSINE B)

Vinca erecta
$C_{19}H_{22}N_2O$: 294.1732
Mp: 270-272°, 242-243° [1]
$[\alpha]_D$+37° (meth.) [1]
{O-Ac 212°} [2]
UV: 233, 281, 290(4.50, 3.83. 3.75) [2]

IR: 3390, 3300, 1630, 1600 [2]
Mass: 294(100), 293(84), 279(11), 277(14), 263(40), 249(12), 182(15), 169(100), 168(78), 156(14), 154(10), 143(11), 130(10), 115(14) [2, 3]
PMR(DMSO): 1.60(3H, t, J=7), 4.07(2H, m), 5.20(1H, q, J=7), 6.80-7.50(4H, m), 10.70(1H, s) [2]
Pharm.: LD_{50} 65-70, 325 mg/kg (i/m, s/c, mice). Sedative and hypotensive action [4].

1. Rapoport H., Moore R.E., J. Org. Chem., 1962, **27**, 2981.
2. Patel M.B., Thompson L., Miet C., Poisson J., Phytochem., 1973, **12**, 451.
3. Antonaccio L.D., Pereira N.A., Gilbert B., Vorbrueggon H., Budzikiewicz H., Wilson J.M., Durham L.T., Djerassi C., J. Amer. Chem. Soc., 1962, **84**, 2162.
4. Sadritdinov, p. 60.

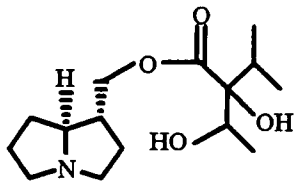


TRACHELANTHAMIDINE

Trachelanthus korolkowii
$C_8H_{15}NO$: 141.1154
Oil [1]

$[\alpha]_D$–14° (alc.) [2]
{picr. 179°, h-chl. 115°, picrolonate 183°} [2]
IR: 3300 [3]
Mass: 141(M^+, 24), 140(9), 124(15), 110(9), 108, 97, 83(100), 82(37), 70, 55(21), [3, 4]
PMR: 1.90(7H, m), 2.63(2H, m), 3.21(3H, m), 3.63(2H, d, J=6, H-9), 4.60(1H, s, OH) [3]
GLC: [5]

1. Telezhenetskaya M.V., Matkarimov A.D., Khadzhibekov S.N., Yunusov S.Yu., Khim. Prir. Soedin., 1987, 463; unpub.
2. Tsuda Y., Marion L., Canad. J. Chem., 1963, **41**, 1919.
3. Subramanian P.S., Mohanraj S., Cockrum P.A., Culvenor C.C.J., Edgar J.A., Frahn J.L., Smith L.W., Austral. J. Chem., 1980, **33**, 1357.
4. Abdullaev U.A., Rashkes Ya.V., Shakhidoyatov Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 634.
5. Brandange S., Granelli I., Acta Chim. Scand., 1973, **27**, 1096.

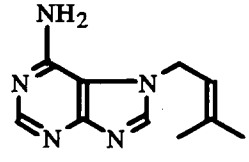


TRACHELANTHAMINE

Rindera baldshuanica, R.echinata,
Trachelanthus hissaricus, T.korolkowii
$C_{15}H_{27}NO_4$: 285.194
Mp: 91-92° (petr. eth.-ac.) [1]
$[\alpha]_D$–18° (water) [1]

{picr. 156°, (+)-trachelanthic acid 95°}
IR: [2]
Mass: 285($M^{+\cdot}$), 284, 270, 267, 252, 242, 241, 240, 142, 124(100), 83, 82, 55 [3]
CD: [4]
Pharm.: LD_{50} 139.1, 1950 mg/kg (i/v, s/c, mice) [5]. Cholinolytic action [6].

1. Men'shikov G.P., Borodina G.M., Zh. Org. Khim., 1941, **11**, 209; Zh. Org. Khim., 1945, **15**, 225.
2. Kulakov V.N., Likhosherstov A.M., Kochetkov N.K., Zh. Org. Khim., 1967, **37**, 146.
3. Abdullaev U.A., Rashkes Ya.V., Shakhidoyatov Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 634.
4. Hrbek J., Hruban L., Klasek A., Kochetkov N.K., Likhosherstov A.M., Santavy F., Snatzke G., Collect., 1972, **37**, 3918.
5. Sadritdinov, p. 90.
6. Sadritdinov F.S., in: The Pharmacology of Natural Compounds [in Russian], Fan, Tashkent, 1979, p. 29.

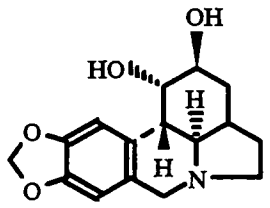


TRIACANTHINE

Gleditschia triacanthos
$C_{10}H_{13}N_5$: 203.1171
Mp: 227-228°

{picr. 241°, h-chl. 219°, h-b. 216°, m-i. 203°}
UV: 272(4.10) [1]
IR: 3370, 3250, 1684, 1630, 1556, 1517, 1341, 1289, 1279, 1235, 1225, 1210, 1176, 1118, 1087, 1058, 1041, 1018, 957, 943, 922, 873, 847, 806, 779 [2]
Pharm.: LD_{50} 259, 147, 500 mg/kg (i/p, i/v, oral, mice). Papaverine-like adrenolytic action. Dilates blood vessels, lowers the tonus and contractile activity of the uterus, exerts a favorable effect in ulcerous diseases, spastic colitises, bronchial asthma, hypertension [3].

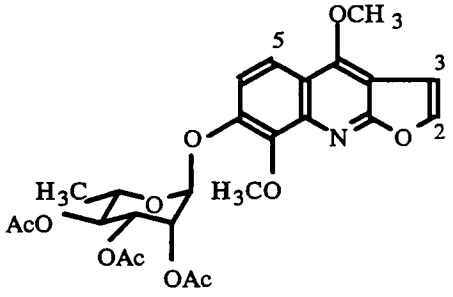
1. Belikov A.S., Zheleznova E.S., Trudy VILAR, 1959, Vol. 11, p. 22.
2. Holubek, No. 273.
3. Sadritdinov, p. 149.



TRIANTHINE ((+)-UNGMINORIDINE, (+)-ZEFIRANTINE)

Pancratium trianthum
$C_{16}H_{19}NO_4$: 289.1314
Mp: 205-206° (meth.)
$[\alpha]_D$+51°

1. Dabire Munvime Frederik, Murav'eva D.A., Khim. Prir. Soedin., 1982, 534.

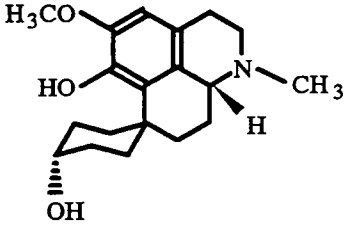


TRIACETYLGLYCOPERINE

Haplophyllum perforatum
$C_{25}H_{27}NO_{11}$: 517.1584
Mp: 181-182° (bz.-petr. eth.)
$[\alpha]_D$–91° (alc.)
Sol-y.: r-sol. chlf., ac.; sp. sol. eth., petr. eth.; i.s. water

UV: 248, 314, 323, 336(4.94, 3.91, 3.93, 3.83) [1]
IR: 3155, 3130, 1750, 1622, 1582, 1512, 1490, 1450 [1, 2]
Mass: 517(M^+, 5), 273(41), 245(93), 227(52), 171(30), 153(100), 111(8) [1]
PMR: 1.05(3H, d, J=6.5, CH_3), 1.88, 1.92, 2.05(3H, s, 3×Ac), 3.80-4.40(1H, m, H-5'), 4.00, 4.15(3H, 2×OCH_3), 5.05(1H, t, J=10, H-4'), 5.49(3H, m, H-1', H-2', H-3'), 6.91, 7.46(1H, d, J=3, H-3, H-2), 7.12, 7.86(1H, d, J=9.5, H-6, H-5) [1]

1. Abdullaeva Kh.A., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 425.
2. Bessonova I.A., unpub.

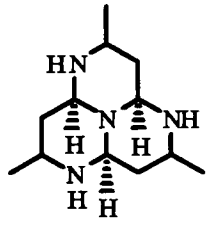


TRIGAMINE

Merendera trigyna
$C_{19}H_{27}NO_3$: 317.1991
Mp: 169-170°
$[\alpha]_D$–7° (chlf.)
UV: 216, 287

IR: 3400-3200, 1600, 1480
Mass: 317(M^+, 49), 316(100), 300, 274, 256, 244, 228, 205, 202
PMR: 2.34(3H, s, NCH_3), 3.75(3H, s, OCH_3), 6.48(1H, s, H-3)

1. Yusupov M.K., Trozyan A.A., Aslanov Kh.A., Khim. Prir. Soedin., 1975, 808; Chommadov B., Author's Abstract of Doctoral Dissertation, Tashkent, 1992, p. 13.

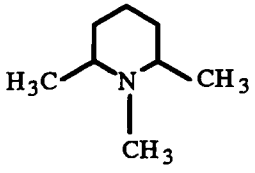


TRICROTONYLTETRAMINE

Sophora alopecuroides
$C_{12}H_{24}N_4$: 244.2001
Mp: 101-103° (ac.)
{di picr. 224°, di h-chl. 289° (dec.)}
IR: 3250, 3270, 2820-2740

Mass: 224(M^+, 44), 223(50), 207(12), 181(63), 165(11), 155(20), 153(22), 139(57), 112(90), 111(100), 97(70), 96(72), 70(80)
PMR: 1.03, 1.04(CH_3), 1.86, 2.81, 3.01

1. Monakhova T.E., Tolkachev O.N., Perel'son M.E., Kabanov V.S., Proskurnina N.F., Khim. Prir. Soedin., 1974, 752.



(–)-1,2,6-TRIMETHYLPIPERIDINE

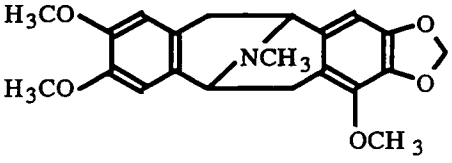
Nanophyton erinaceum
$C_8H_{17}N$: 127.1361
Bp: 153-154°

$[\alpha]_D$–43°
{h-chl. 164°} [1]

^{13}C NMR: [2]

C-α	59.7	C-γ	24.9	$C-CH_3$	21.7
C-β	35.2			$N-CH_3$	38.1

1. Kuzovkov A.D., Men'shikova G.P., Zh. Org. Khim., 1950, **20**, 1524.
2. Shamma, No. 78.

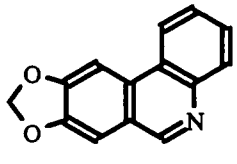


2,3,7-TRIMETHOXY-8,9-METHYLENDIOXY-N-METHYLPAVINANE

Thalictrum strictum
$C_{21}H_{23}NO_5$: 369.1576
Mp: 144-145° (eth.)

$[\alpha]_D$–174° (meth.)
Sol-y.: r-sol. meth., alc., ac.
UV: 287(3.84)
Mass: 369(M^+), 368, 354. 218(70), 204(100)
PMR: 2.40-4.05(6H, m), 2.46(3H, s, NCH_3), 3.72(3H, s, OCH_3), 3.80(6H, s, 2×OCH_3), 5.75, 5.80(1H, d, J=1.5, CH_2O_2), 6.23, 6.36, 6.54(1H, s, H-Ar)

1. Maekh S.Kh., Yunusov S.Yu., Gorovoi P.G., Khim. Prir. Soedin., 1976, 116.

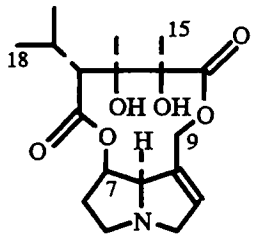


TRISPHERIDINE

Galanthus plicatus, Hymenocallis littoralis, Pancratium trianthum, Ungernia spiralis, U.trisphaera
$C_{14}H_9NO_2$: 223.0633

Mp: 140-141° (ac.) [1]
{h-b. 274° (dec.), h-chl. 285° (dec.), nitr. 198° (dec.)} [1]
UV: 205, 253, 288, 309, 335, 351(4.56, 4.72, 4.30, 3.96, 3.54. 3.46) [2, 3]
IR: 1620-1500, 860-765 [2]
Mass: 223(M^+)
PMR: 5.98(2H, s, CH_2O_2), 7.13(1H, s), 7.53(2H, m). 7.66(1H, s), 8.10(2H, m),8.92(1H, narrow s) [2]

1. Allayarov Kh.B., Abduazimov Kh.A., Yunusov S.Yu., Uzb. Khim. Zh., 1964, No. 2, 46.
2. Vdovin A.D., Kadyrov Kh.A., Yagudaev M.R., Allayarov Kh.B., Nistryan A.K., Khim. Prir. Soedin., 1981, 356.
3. Kadyrov Kh.A., Author's Abstract of Candidate's Dissertation, Tashkent, 1982.

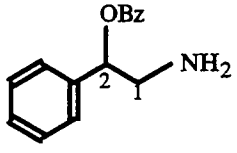


TRICHODESMINE

Heliotropium argusioides, Trichodesma incanum
$C_{18}H_{27}NO_6$: 353.18387
Mp: 160-161° (dec., ac.) [1] 154-155° [2]
$[\alpha]_D$+38° (aq. alc.) [1]
{picr. 228°, h-chl. 205°, m-i. 200°, sulfate 152°, trichodesmic acid 209°, retronecine 120°}

IR(chlf.): 3510, 1730 [3, 4]
Mass: 353(M^+, 8), 281(8), 264(100), 222(3), 220(6), 209(9), 136, 120, 119, 93, 80 [5]
PMR: 0.96, 1.04(3H, d, J=6, 17-CH_3, 18-CH_3), 1.35, 1.38(3H, s, 15-CH_3, 16-CH_3), 4.47. 5.11(1H, H-9), 5.11(1H, J=11, H-7) [2]
X-ray spectral analysis: [3]
CD: [6]
Pharm.: LD_{50} 100 mg/kg (s/c, rats). Causes severe organic lesions of the internal organs and the CNS [7].

1. Yunusov S.Yu., Plekhanova N.V., Zh. Org. Khim., 1959, **29**, 677.
2. Atal C.K., Sharma R.K., Culvenor C.C.J., Smith L.W., Austral. J. Chem., 1966, **19**, 2189.
3. Tashkhodzhaev B., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 368.
4. Adams R., Gianturco M., J. Amer. Chem. Soc., 1956, **78**, 1922.
5. Rashkes Ya.V., Abdullaev U.A., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 40.
6. Culvenor C.C.J., Crout D.H.G., Klyne W., Mose W.P., Rendwick J.D., Scopes P.M., J. Chem. Soc. C, 1971, 3653.
7. Sadritdinov, p. 91.

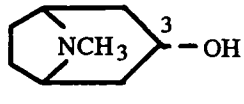


TRIKHOFIDINE

Oxytropis trichophysa
$C_{15}H_{15}NO_2$:
{h-chl. 200-203° [1] 198° [2]}

UV{h-chl.}: 233, 284(sh) [1]
IR: {h-chl.}: 3100-2800, 1730, 1600, 1275, 1105, 980, 770, 710 [1]
Mass{h-chl.}: 120(5), 119(33), 117(37),105(100),91(13), 51(34); LSIMS(+): 242[(M-HCl)+H]$^+$ [1]
PMR{h-chl.} (D_2O): 3.68(2H, m, H-1), 6.28(1H, dd, J=4.5; 6, H-2), 7.62, 8.18(8H, 2H, m, H-Ar); (C_5D_5N): 3.78(2H, m, H-1), 6.75(1H, dd, J=5; 6, H-2), 7.38(m, H-Ar), 8.12(2H, m, H-Ar) [1]

1. Akhmedzhanova V.I., Khim. Prir. Soedin., 1994, 44.
2. Dictionary of Organic Compounds, Eyre and Spottiswoode, London, 1953, Vol. 2, p. 719.



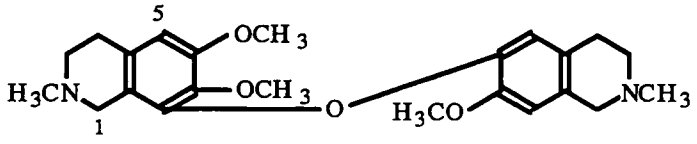
TROPINE

Datura innoxia, D.stramonium, Hyoscyamus niger, H.pusillus, Physochlaina alaica, Ph.orientalis, Scopolia carniolica

$C_8H_{15}NO$: 141.1154
Mp: 63°
{picr. 188°, h-b. 193° [3]}

IR: 3500-3300
Mass: 141(M^{+}), 124, 113, 96, 89, 82(100), 42 [1]
PMR: 1.60-1.90(4H, m, H-2, H-2′, H-4. H-4′), 2.05(2H, m, H-6, H-7), 2.16(3H, s, NCH_3), 3.00(2H, m, H-1, H-5), 3.90(1H, t, H-3), 4.30(1H, narrow s, OH) [2]
HPLC: [4]

1. Blossey E.C., Budzikiewicz H., Ohashi M., Fodor G., Djerassi C., Tetrahedron, 1964, **20**, 585.
2. Bishop. R.J., Fodor G., Katritzky A.R., Soti F., Sutton L.E., Swinboume F.J., J. Chem. Soc., 1966, 74.
3. Keagle L.C., Hartung W.H., J. Amer. Chem. Soc., 1946, **68**, 1608.
4. Bashir Khan M., Harborne J.B., Phytochem., 1991, **30**, 3559.

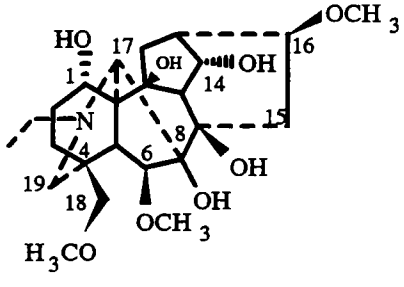


TURCBERINE

Berberis turcomanica
$C_{23}H_{30}N_2O_4$: 398.2206
Mp: oil

Sol-y.: r-sol. org. solvent
UV: 283(3.83)
IR: 2850, 1610, 1140, 810, 800
Mass: 398(M^{+}, 23), 397(57), 383(6), 368(29), 222(44.5), 221(100), 220(13.5), 206(93.6), 198(13), 192(13), 190(19), 176(28), 175(15), 174(13)
PMR: 2.32(3H, s, 2-NCH_3), 2.36(3H, s, 2′-NCH_3), 2.57(2H, t, J=5.5, H-3), 2.57(4H, s, H-3′, H-4′), 2.83(2H, t, J=5.5, H-4), 3.36(2H, s, H-1), 3.44(2H, s, H-1′), 3.61(3H, s, 7-OCH_3), 3.70(3H, s, 6-OCH_3), 3.85(3H, s, 7′-OCH_3), 6.20(1H, s, H-5′), 6.50(1H, s, H-5), 6.54(1H, s, H-8′)

1. Karimov A., Levkovich M.G., Abdullaev N.D., Shakirov R.Sh., Khim. Prir. Soedin., 1993, 77.



TURKOSINE

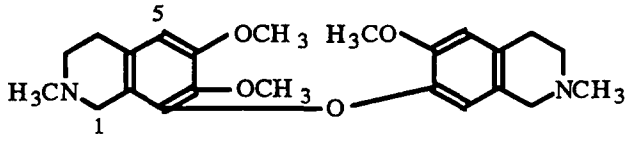
Aconitum barbatum, A.turczaninowii
$C_{24}H_{39}NO_8$: 469.2676
Mp: 206-208°
IR: 3530-3300, 1100, 1090
Mass: 469(M^{+}, 14), 454(100), 452(41), 438(12), 436(38)

PMR: 1.08(3H, t, J=7, NCH_2CH_3), 3.32, 3.33. 3.35(3H, s, 3×OCH_3), 3.99(1H, d, J=2, H-6α), 4.62(1H, dd, J=5, H-14β)

^{13}C NMR:

C-1	69.7	C-9	54.8	C-17	66.9
2	27.3	10	81.8	18	77.3
3	30.5	11	53.6	19	57.1
4	37.3	12	39.9	6′	57.6
5	41.2	13	39.9	16′	56.3
6	90.5	14	74.2	18′	59.1
7	87.1	15	35.3	NCH_2	50.4
8	76.4	16	81.2	CH_3	13.3

1. Batbayar N., Batsurén D., Sultankhodzhaev M.N., Khim. Prir. Soedin., 1993, 60.



TURKONIDINE

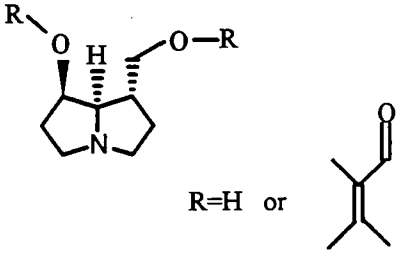
Berberis turcomanica
$C_{23}H_{30}N_2O_4$: 398.2206
Mp: amorph.

UV: 225(sh), 284(3.87, 3.44).
IR: 2940, 2840, 2780, 1610, 1580, 1520, 1450, 1380, 1320, 1260, 1130, 870, 760.
Mass: 398(M^+, 68), 397(62), 367(42), 221(70), 220(31), 206(100). 198^{++}(21), 192(14), 190(25), 175(35).
PMR: 2.31(3H, s, 2′-NCH_3), 2.32(3H, s, 2-NCH_3), 2.56(2H, t, J=5.9, H-3′), 2.57(2H, t, J=5.9, H-3), 2.79(2H, t, J=5.9, H-4′), 2.83(2H, t, J=5.9, H-4), 3.27(2H, s, H-1′), 3.36(2H, s, H-1), 3.62(3H, s, 7-OCH_3), 3.79(3H, s, 6-OCH_3), 3.86(3H, s, 6′-OCH_3), 6.12(1H, s, H-8′), 6.50(1H, s, H-5), 6.63(1H, s, H-5′) [1]

NMR ^{13}C:

=C<	151.7; 147.0; 145.5; 144.7; 139.7; 129.5; 126.9; 126.7; 121.5
=CH–	112.3; 111.8; 108.7
N-CH_2	57.1; 52.6; 52.3; 52.2
N-CH_3	2×45.7
OCH_3	60.7; 56.1; 55.8
$-CH_2-$	29.1; 28.6

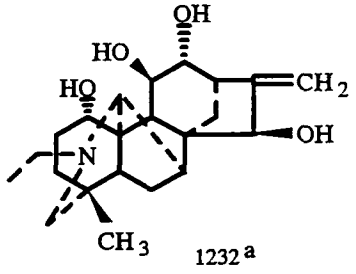
1. Karimov A., Levkovich M.G., Abdullaev N.D. Shakirov R., Khim. Prir. Soedin., 1993, 866.



TURNEFORCINE

Tournefortia sibirica
$C_{13}H_{21}NO_3$: 239.1521
Mp: oil
$[\alpha]_D$–59°
{chl-plat. 155° [1], h-chl. 170°, picr. 201°, angelic acid 44°, turneforcidine 120°,$[\alpha]_D$–10° (meth.),–4° (alc.)} [1, 2]

1. Men'shikov G.P., Denisova S.O., Massagetov P.S., Zh. Org. Khim., 1952, **22**, 1465.
2. Aasen A.J., Culvenor C.C.J., Smith L.W., J. Org. Chem., 1969, **34**, 4137.



TURPELLINE

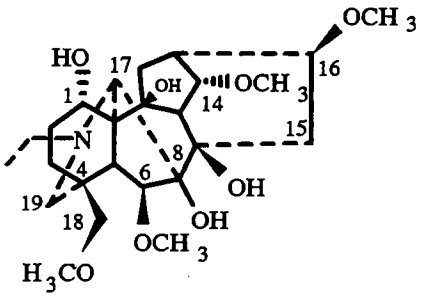
Aconitum turczaninowii
$C_{22}H_{33}NO_4$: 375.240
Mp: 268-271° (ac.)
IR: 3440, 3300, 1080, 1040
Mass: 375(M^+, 100), 360(20), 358(40), 357(21), 340(13), 316(26), 246913), 228(10), 200(20)

PMR: 0.62(3H, s, 18-CH_3), 1.05(1H, dd, J=12.1; 4.4, H-14α), 1.16(1H, m, H-3α), 1.34(1H, dd, J=4.5; 13.5, H-6α), 1.36(1H, m, H-3β), 1.37(3H, t, J=7.4, NCH_2CH_3), 1.56(1H, dd, J=7.9, H-5), 2.01(1H, m, H-2α), 2.09(1H, d, J=12.1, H-14β), 2.23(1H, d, J=5, H-10), 2.31(1H, d, J=10.3, H-9), 2.45(1H, dd, J=10.3, H-9), 2.45(1H, dd, J=13.5, H-19α), 2.81(1H, narrow d, J=4.4, H-13), 2.86(2H, m, NCH_2CH_3), 2.9(1H, m, H-15), 2.9(1H, m, H-19β), 3.23(1H, dd, J=8.3; 13.5, H-6β), 3.90(1H, narrow d, J=7.5, H-12), 3.98(1H, narrow s, H-20), 4.45(1H, t, J=2.4, H-15), 4.58(1H, dd, J=7.1; 12.2, H-1β), 4.82(1H, dd, J=7.8; 10.3, H-11), 5.16(1H, d, J=2.0, H-17β), 5.32(1H, narrow s, H-17β).

NMR ^{13}C:

C-1	68.9	C-9	46.8	C-17	109.8
2	30.2	10	55.5	18	25.6
3	31.2	11	73.5	19	59.2
4	36.8	12	82.7	20	66.8
5	48.4	13	46.8	NCH_2	51.5
6	23.6	14	37.2	CH_3	10.7
7	45.8	15	77.4		
8	55.2	16	158.6		

1. Batbayar N., Batsurén D., Semenov A.A., Sultankhodzhaev M.N., Khim. Prir. Soedin., 1993, 740.



TURSOLINE (10-HYDROXYDELSOLINE)

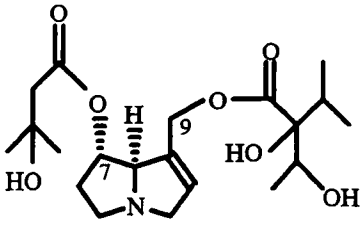
Aconitum turczaninowii
$C_{25}H_{41}NO_8$: 483.2832
Mp: 249-251° (ac.)
{1-acetyltursoline amorph.}
IR: 3460, 1100 [1]

Mass: 483(M^+, 16), 468(100), 466(58), 452(7), 450941), 434(6), 432(10), 427(2), 412(6), 396(5), 336(4), 332(16) [1]
PMR: 1.08(3H, t, J=7, NCH_2CH_3), 3.32, 3.33, 3.37. 3.43(3H, s, 4×OCH_3), 4.08(1H, m, J=5, H-14β) [1, 2]

^{13}C NMR(1-Ac tursoline):

C-1	79.4	C-10	79.9	C-19	52.5
2	25.5	11	53.8	6′	57.7
3	32.2	12	37.6	14′	57.5
4	38.1	14	73.6	16′	56.3
5	45.1	15	33.9	18′	59.1
6	90.8	16	81.3	NCH_2	51.3
7	88.0	17	66.1	CH_3	14.3
8	75.6	18	77.2	CO	170.5
9	54.0			CH_3	22.0

1. Batbayar N., Batsurén D., Sultankhodzhaev M.N., Khim. Prir. Soedin., 1992, 594.
2. Cabriel de la Fuente, Lastenia Ruiz-Mesia, Phytochemistry, 1994, **37**, No. 1, 285.



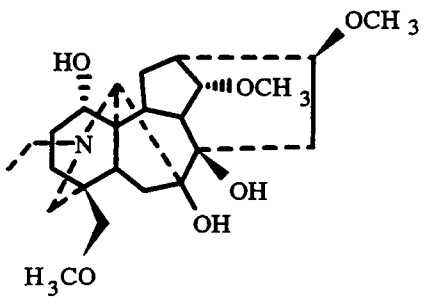
ULUGANINE

Ulugbekia tschimganica
$C_{20}H_{33}NO_7$: 399.2257
Mp: 106-109° (ac.) [1]
$[\alpha]_D$–32° (ac.) [1]
{heliotridine picr. 116°} [2]

Sol-y.: r-sol. alc., ac., chlf.; i.s. eth., petr. eth. [2]
IR: 3525, 3397, 1733, 1682, 1385, 1370, 1250 [1]
Mass: 399(M^+, 2), 384(8), 356(1), 355(3), 354(2), 341(0.6), 281(3), 256(9), 238(100), 220(10), 138, 136, 120, 119, 94, 93, 80, 59(29) [1, 2]

PMR: 0.86, 0.87(3H, d, 6′-CH_3, 7′-CH_3), 1.13(3H, d, 4′-CH_3), 1.20(6H, s, 4″-CH_3, 5″-CH_3), 1.20(2H, s, H-2″), 4.65(2H, m, H-9), 5.25(1H, m, H-7) [1, 2].

1. Khasanova M.A., Abdullaev U.A., Telezhenetskaya M.V., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 809.
2. Khasanova M.A., Author's Abstract of Candidate's Dissertation, Tbilisi, 1976.

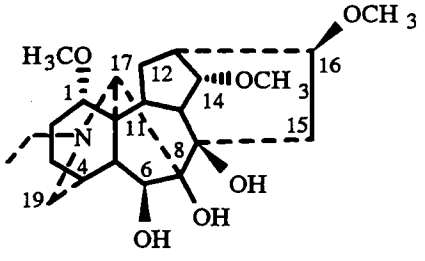


UMBROSINE

Aconitum umbrosum
$C_{24}H_{39}NO_6$: 437.2777
Mp: 150-151° (hx.)
Sol-y.: sol. chlf., meth., ac.
IR: 3550, 3500-3360, 1500, 1460, 1395, 1340, 1300, 1205, 1130. 1095, 980, 940, 885, 820, 770 [1]

Mass: 437(M^+, 35), 422(54), 420(100), 404(16), 394(8), 388(5.4), 381(2.7), 350(10.7) [1]
PMR: 1.05(3H, t, J=7, NCH_2CH_3), 3.26, 3.28, 3.33(3H, s, 3×OCH_3) [1]
Pharm.: LD_{50} 130 mg/kg (i/v, mice). Hypotensive ganglioblocking, curaremimetic effect in high doses [2].

1. Tel'nov V.A., Golubev N.M., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1976.
2. Dzhakhangirov F.N., unpub.



UMBROPHINE

Aconitum umbrosum
$C_{23}H_{37}NO_6$: 423.2621
Mp: 110-112° (ac.-hx.)
Sol-y.: sol. chlf., meth., ac.
IR: 3600, 3400-3200, 1470, 1390, 1368, 1328, 1302, 1250, 1206, 1172, 1118, 1102, 1070, 1028, 998, 994, 968, 887, 753 [1]

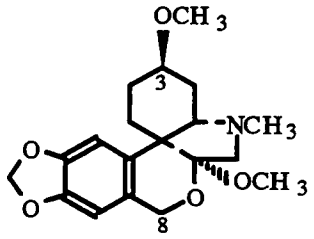
Mass: 423(M^+, 11.3), 408(9.6), 406(9.4), 405(6), 392(100), 376(11.2), 374(5) [1]
PMR: 1.08(3H, t, J=7.5, NCH_2CH_3), 3.27, 3.37, 3.44(3H, s, 3×OCH_3), 3.64(1H, t, J=4.5, H-14β), 4.24(1H, narrow s, H-6α) [1]

^{13}C NMR: [1]

C-1	86.1	C-9	47.5	C-17	63.2
2	26.3	10	37.8	18	–
3	30.8	11	48.7	19	50.3
4	36.4	12	29.3	1′	56.1**
5	46.2*	13	45.9*	14′	57.9
6	80.3	14	84.8	16′	56.3**
7	89.7	15	35.2	NCH_2	49.7
8	76.4	16	82.5	CH_3	13.6

Pharm.: Relatively nontoxic. Exhibits weak hypotensive and ganglioblocking action [2].

1. Tel'nov V.A., Khim. Prir. Soedin., 1993, 73.
2. Dzhakhangirov F.N., unpub.

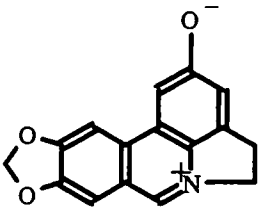


UNGVEDINE

Ungernia vvedenskyi
$C_{19}H_{25}NO_5$: 347.1733
Mp: 148-150° (ac.) [1, 2]
$[\alpha]_D$+12° (chlf.) [1]
UV: 206, 235 sh, 295(4.50, 3.66, 3.62) [1]
IR: 1620, 1500, 1255, 1035, 935 [1, 2]

Mass: 347(M^+), 332, 316, 300, 298, 261(100), 260, 247, 231, 230, 229, 201, 181, 159, 141, 115, 104, 71(35), 70(30) [1, 2]
PMR: 2.29(3H, s, NCH_3), 2.35-2.80(m), 3.27, 3.33(3H, s, 2×OCH_3), 4.46(m, H-3, H-8), 5.83(2H, CH_2O_2), 6.37(1H, s), 7.22(1H, s) [1, 2]

1. Kadyrov Kh.A., Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 585.
2. Kadyrov Kh.A., Author's Abstract of Candidate's Dissertation, Tashkent, 1982.

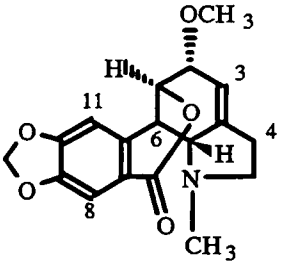


UNGEREMINE (LICOBETAINE)

Ungernia minor, U.spiralis
$C_{16}H_{11}NO_3$: 265.0739
Mp: 270-272° [1]
{h-b. 329° (dec.), h-chl. 315° (dec.),
nitr. 281° (dec.), picr. 282° (dec.), m-i. 295°} [1]

UV: 262, 280-284, 366 [1]
IR: 1610, 1310, 1030, 930 [1]
Pharm.: LD_{50} 196, 36.4 mg/kg (i/p, i/v, mice). In low doses strengthens, and in high doses suppresses, conditioned reflexes [2]. Prolongs the soporific action of barbiturates, enhances the analgesic effect of morphine and promidol [3]. Anticancer activity [4].

1. Normatov M.N., Abduazimov Kh.A., Yunusov S.Yu., Uzb. Khim. Zh., 1965, No. 2, 25.
2. Zakirov U.B., Kamilov I.K., in: The Pharmacology of Aklaloids and Glycosides [in Russian], Fan, Tashkent, 1967, p. 111.
3. Sadritdinov, p. 15.
4. The Alkaloids, 1985, Vol. 25, p. 208.



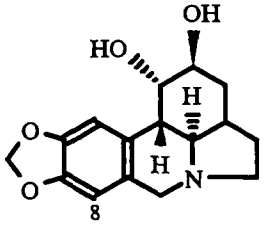
UNGERINE

Leucojum aestivum, Ungernia sewerzowii, U.tadshicorum, U.trisphaera
$C_{18}H_{19}NO_5$: 329.1263
Mp: 135-36° (alc.) [1]
$[\alpha]_D$+117° [1]

{h-b. 288° (dec.), h-chl. 271°, nitr. 260° (dec.) m-i. 266°, dihydro 139°} [1]
Sol-y.: r-sol. ac., alc., chlf., eth.; sp. sol. petr. eth., bz.
UV: 227, 228. 306 [2]
IR: 1725 [2]
Mass: 329(M^+, 2), 298(6), 297(3), 139(100), 124(38), 96(6) [2]
PMR: 1.96(3H, s, NCH_3), 2.50(J=10, H-6_a), 3.20(J=10, H-6), 3.38(3H, s, OCH_3), 3.86(H-2), 4.58(H-1), 5.60(H-4), 6.02(2H, CH_2O_2), 6.91, 7.48(1H, s, H-11, H-8) [3]

Pharm.: LD_{50}-180 mg/kg (s/c, mice). Considerably prolongs the action of soporifics [4] and analgesics, suppresses higher nervous activity [5, 6]. {Alkiodides} possess a hypotensive action [7].

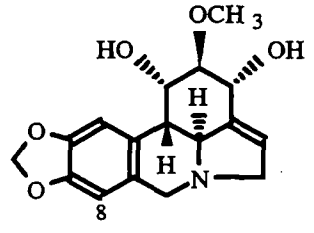
1. Yunusov S.Yu., Abduazimov Kh.A., Zh. Org. Khim., 1957, **27**, 3357.
2. Razakov R., Abduazimov Kh.A., Vul'fson N.S., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 23.
3. Yagudaev M.R., Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 94.
4. Sadritdinov, p. 15.
5. Zakirov U.B., Aliev Kh.U., Abdumalikova N.V., Kamilov I.K., in: The Pharmacology of Alkaloids and Glycosides [in Russian], Fan, Tashkent, 1967, p. 120.
6. Zakirov U.B., Kamilov I.K., in: The Pharmacology of Alkaloids [in Russian], Fan, Vol. 1965, p. 253.
7. Zakirov U.B., Kamilov I.K., Aliev Kh.U., in: The Pharmacology and Pharmacotherapy of Alkaloids and Glycosides [in Russian], Fan, Tashkent, 1966, p. 44.



UNGIMINORIDINE ((±)-ZEFIRANTINE)

Ungernia minor, U.vvedenskyi
$C_{16}H_{19}NO_4$: 289.1314
Mp: 193-194° (meth.)
$[\alpha]_D$ 0°
UV: 240, 290(3.50, 3.54)
IR: 3400, 1040, 931
Mass: 289(M^+), 288, 271, 254, 252. 250
PMR: 3.84(2H, 2×OH), 5.87(2H, CH_2O_2), 6.60, 6.92(1H, s, H-11, H-8)

1. Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1968., 263.

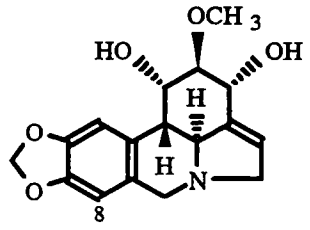


(–)-UNGIMINORINE

Ungernia ferganica, U.minor,
U.sewerzowii, U.vvedenskyi
$C_{17}H_{19}NO_5$: 317.1263
Mp: 206-208° (ac.) [1]
$[\alpha]_D$–29° (chlf.) [2], –49° (alc.) [1]

{m-i. 248° (dec.), di Ac 174°, picr. 175°, dihydro 171°}
Sol-y.: r-sol. meth., chlf.; sp. sol. ac., alc., eth., water [2]
UV: 290 [1]
IR: 3612, 3544-3200, 2840, 1610, 1265 [2, 3]
Mass: 317(M^+, 24), 316(22), 299(53), 268(100), 250(30), 243(13), 242(40) [3]
PMR: 3.35(3H, s, OCH_3), 4.51(2H, m), 5.55(1H), 5.80(2H, CH_2O_2), 6.57, 6.80(1H, s, H-11, H-8) [4]
Pharm.: LD_{50} 189 mg/kg (i/v, mice). Suppresses the orientation reaction and prolongs the action of soporifics [5]. In low doses strengthens, and in high doses suppresses, conditioned reflexes [6].

1. Normatov M.N., Abduazimov Kh.A., Yunusov S.Yu., Uzb. Khim. Zh., 1965, No. 2, 25.
2. Normatov M.N., Abduazimov Kh.A., Yunusov S.Yu., DAN UzSSR, 1961, No. 9, 23.
3. Razakov R., Bochkarev V.N., Vul'fson N.S., Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 19.
4. Yagudaev M.R., Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 99.
5. Sadritdinov, p. 16.
6. Zakirov U.B., Kamilov I.K., in: The Pharmacology of Alkaloids and Glycosides [in Russian], Fan, Tashkent, 1967, p. 111.

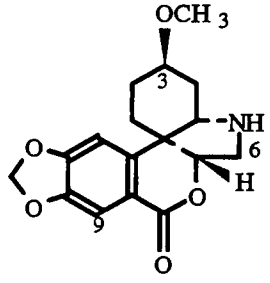


(±)-UNGIMINORINE

Ungernia vvedenskyi
$C_{17}H_{19}NO_5$: 317.1263
Mp: 210-212°
$[\alpha]_D$ 0°

UV: 290(3.40)
IR: 3400-3200, 2840, 1610, 1265Mass: 317(M^+)
PMR: 4.65(2H, 2×OH), 5.49(2H, s, H-1, H-3), 5.82(2H, s, CH_2O_2), 6.38, 6.82(1H, s, H-8, H-11)

1. Kadyrov Kh.A., Khamidkhodzhaev S.A., Khim. Prir. Soedin., 1979, 418.

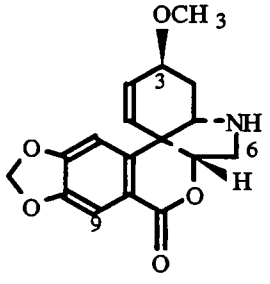


UNGSPIROLIDINE

Ungernia spiralis
$C_{17}H_{19}NO_5$: 317.1263
Mp: 142-143° [1]
$[\alpha]_D$+11° (chlf.) [1]
UV: 230, 270, 309(4.30, 3.70. 3.63) [2]
IR: 3360, 2940, 2890, 2832, 1715, 1622, 1510, 1440 [2, 3]

Mass: 317(M^+), 303. 302, 288. 286, 273, 272, 261, 259, 247, 245, 231, 203, 171, 141, 71, 70, 57, 56(100), 55 [1, 3]
PMR: 1.84(6H, m), 2.84, 2.97(1H, d, H-6), 3.32(3H, s, OCH_3), 3.62(1H, m, H-3), 5.06(1H, m, H-6_a), 5.98(2H, s, CH_2O_2), 6.93, 7.47(1H, s, H-12, H-9) [2, 3]

1. Kadyrov Kh.A., Abdusamatov A., Khim. Prir. Soedin., 1977, 426.
2. Kadyrov Kh.A., Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 719.
3. Kadyrov Kh.A., Author's Abstract of Candidate's Dissertation, Tashkent, 1982.

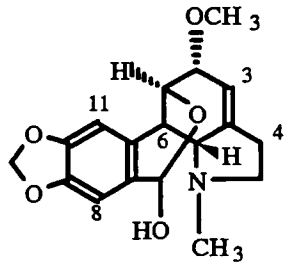


UNGSPIROLINE

Ungernia spiralis
$C_{17}H_{17}NO_5$: 315.1107
Mp: 148-149° [1]
$[\alpha]_D$+105° (chlf.) [1]
UV: 229, 270, 310(4.44, 3.82, 3.78) [2]
IR: 3400-3300, 1715, 1615, 1510, 1485 [2, 3]

Mass: 315(M^+), 301, 300, 286, 284, 272, 271, 261, 259, 245, 243, 231, 201, 171, 141, 71, 70, 57, 56(100), 55 [2, 3]
PMR: 3.48(3H, s, OCH_3), 5.43(1H, d, J=11; 2.5, H-2), 6.05(2H, s, CH_2O_2), 6.45(1H, d, J=11, H-1), 6.90, 7.60(1H, s, H-12, H-9) [2]

1. Kadyrov Kh.A., Abdusamatov A., Khim. Prir. Soedin., 1977, 426.
2. Kadyrov Kh.A., Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 719.
3. Kadyrov Kh.A., Author's Abstract of Candidate's Dissertation, Tashkent, 1982.

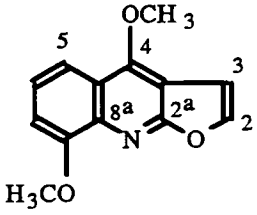


UNSEVINE

Ungernia sewerzowii
$C_{18}H_{21}NO_5$: 331.1420
Mp: 173-174° (ac.) [1]
$[\alpha]_D$+170° (chlf.) [1]
{h-b. 183°, oxalate 196°, m-i. 250°, tetrahydro 187°, dihydro 155°} [1]

Sol-y.: r-sol. chlf.; sp. sol. ac., alc., bz., eth., petr. eth.; i.s. water [1]
UV: 238, 288(3.64. 3.76) [1]
IR: 3690, 2832, 1620, 1440, 1365, 1250, 1040, 935 [1]
Mass: 331($M^{+\cdot}$, 2), 300(1), 299(2), 139(100), 124(35), 96(3) [2]
PMR: 2.04(3H, s, NCH_3), 3.35(3H, s, OCH_3), 3.68(H-2), 4.24(H-1), 5.54(H-4), 6.00(2H, s, CH_2O_2), 6.80, 6.92(1H, s, H-11, H-8) [3].
Pharm.: LD_{50} 605, 171.5 mg/kg (i/p, i/v, mice). Suppresses motor activity, prolongs the action of soporifics, enhances the effect of analgesics [4]. Sedative and hypotensive properties [5].

1. Smirnova L.S., Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 322.
2. Razakov R., Abduazimov Kh.A., Vul'fson N.S., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 23.
3. Yagudaev M.R., Abduazimov Kh.A., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 94.
4. Sadritdinov, p. 16.
5. Zakirov U.B., Kamilov I.K., in: The Pharmacology of Alkaloids and Glycosides [in Russian], Fan, Tashkent, 1967, p. 107.



γ-FAGARINE (HAPLOFINE)

Dictamnus angustifolius, D.caucasicus, Haplophyllum bucharicum, H.dauricum, H.dubium, H.kowalenskyi, H.leptomerum, H.obtusifolium, H.pedicellatum, H.robustum, H.schelkovnikovii, H.tenue, H.villosum, Ruta graveolens

$C_{13}H_{11}NO_3$: 229.0739
Mp: 141° (ac.)
{h-chl. 250°, iso compound 177°}
Sol-y.: sol. chlf., ac., alc., eth.; sp. sol. water, petr. eth. [1]
UV: 246, 270 sh, 313, 326, 336 sh (4.88, 3.84, 3.98, 3.98. 3.92) [2]
IR: 3165, 3135, 1622, 1590, 1520, 1475, 1450, 1398, 1370, 1310, 1266, 1090, 980, 865, 818 [3]
Mass: 229($M^{+\cdot}$, 100), 228(76), 214(29), 200(90), 184(50), 156(48), 128(40), 101(19) [3]
PMR: 4.05, 4.35(3H, s, 2×OCH_3), 6.97, 7.52(1H, d, J=2.5, H-3, H-2), 7.01, 7.34, 7.80(1H, q, J=9; 2.5, H-7, H-6, H-5) [4]

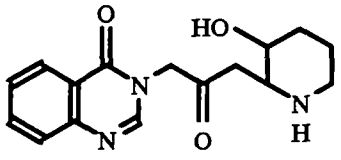
^{13}C NMR: [5]

C-2	143.3	C-4a	103.3	C-8	154.1
2a	162.7	5	107.3	8a	137.1
3	104.1	6	122.9	4-OCH_3	58.5
3a	119.1	7	113.7	8-OCH_3	55.5
4	156.3				

HPLC: [6]
Pharm.: Pronounced antiarrhythmic action [7].

1. Yunusov S.Yu., Sidyakin G.P., Zh. Org. Khim., 1952, **22**, 1055; 1955, **25**, 2009.
2. Fakhrutdinova I.M., Sidyakin G.P., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 107.

3. Faizutdinova Z.Sh., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 260.
4. Robertson A.V., Austral. J. Chem., 1963, **16**, 451.
5. Yagudaev M.R., Bessonova I.A., Khim. Prir. Soedin., 1989, 25.
6. Kanamori H., Sakamoto I., Mizuta M., Chem. Pharm. Bull., 1986, **34**, 1826.
7. Sadritdinov, p. 273.

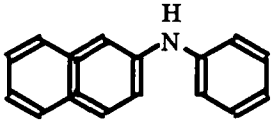


FEBRIFUGINE

Dichroa febrifuga
$C_{16}H_{19}N_3O_3$: 301.1426
Mp: 152-154° (chlf.)

$[\alpha]_D$+21° (alc.)
{di h-chl. 218° (dec.), sulf. 230°}
Sol-y.: sol. alc., ac., chlf., water; sp. sol. bz., eth. [1]
UV: 225. 266, 275, 302, 312(4.40, 3.84, 3.82, 3.68, 3.45) [2]
IR: [1]
Pharm.: LD_{50} 2.7 mg/kg (mice) [3]. Antimalarial and antitumoral activity [1].

1. Zabolotnaya E.S., Safronich L.N., in: Trudy VILAR [Proceedings of the All-Union Scientific Research Institute of Medicinal and Aromatic Plants]. Medicinal Plants, 1969, Vol. 15, p. 356.
2. Sangster A.W., Stuart R.L., Chem. Rev., 1965, **65**, 69.
3. Koepfli J.B., Mead J.F., Brockman J.A., J. Amer. Chem. Soc., 1949, **71**, 1048.

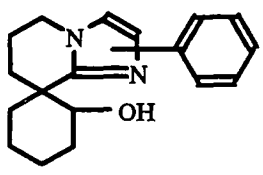


PHENYL-β-NAPHTYL-AMINE

Aconitum soongaricum, Bupleurum aureum,
Centaurea salonitana, Reseda lutea, R.luteola

$C_{16}H_{13}N$: 219.1048
Mp: 109-110° (petr. eth.-ac.) [1]
UV: 220, 273, 312, 350(4.53, 4.16, 4.20, 3.40)
IR: 3400, 1600, 1510, 1310
Mass: 219(M^+), 217, 191, 127, 115, 107, 77
PMR: 5.68(1H, narrow s, NH), 6.70-7.75(12H, m, H-Ar) [2]

1. Friedlander, Chem. Ber., 1883, **16**, 2077.
2. Sultankhodzhaev M., Tadzhibaev M.M., Khim. Prir. Soedin., 1976, 406.



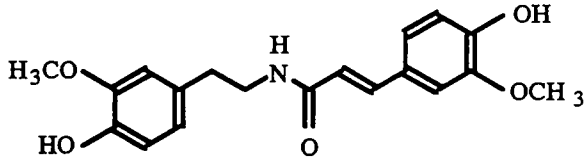
PHENYLNITRABIRINE

Nitraria sibirica
$C_{18}H_{22}N_2O$: 282.1732
Mp: 219-221° [1]

$[\alpha]_D$ 0°
UV: 204, 266 [2]

1. Yunusov S.Yu., Alkaloids. Supplement II [in Russian], Fan, Tashkent, 1989, p. 48.
2. Ibragimov A.A., Author's Abstract of Doctoral Dissertation, Moscow, 1989.

FERULOYLGOMOVANILILAMINE

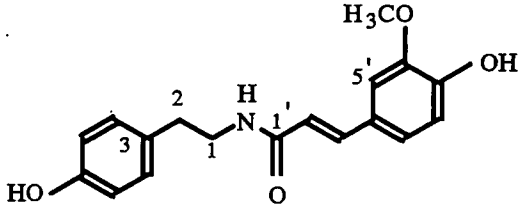


Aerua lanata
$C_{19}H_{21}NO_5$: 343.1420
Mp: 158-160°
{di O-Ac 133°}

UV: 218, 232, 290, 318
IR: 1660
Mass: 343(M^+), 194, 193, 192, 177, 150, 149, 137
PMR: 3.90(OCH_3), 6.60-7.00(6H, H-Ar)

1. Zapesochnaya G.G., Kurkin V.A., Pervykh L.N., Khim. Prir. Soedin., 1990, 694.

FERULOYLTYRAMINE



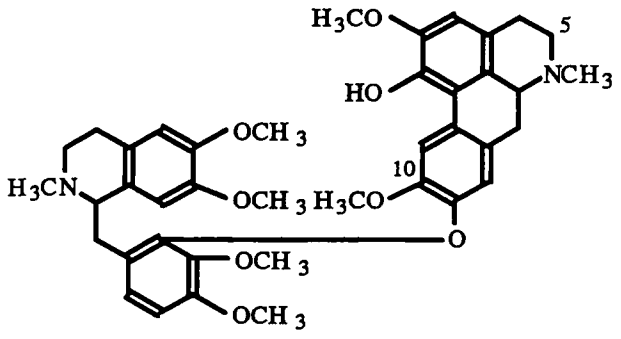
Aerva lanata
$C_{18}H_{19}NO_4$: 313.1314
Mp: 146-148° [1], 92-93° (chlf.) [2]
UV: 221, 290, 317 [1]; 220, 293, 319(4.39, 4.16, 4.26) [2]

UV(alc.+OH^-): 210, 242, 306, 362(4.80, 4.29, 3.88, 4.38) [2]
IR: 1660 [1]
Mass: 313(M^+), 194, 193, 192, 177, 149, 120, 107 [1, 2]
PMR: 2.81(2H, t, J=7, H-2), 3.61(2H, q, J=6.5, H-1), 3.92(OCH_3), 6.81(dd, J=8.2, H-5, H-7), 6.90(d, J=8.2, H-8′), 6.98(d, J=1.8, H-5′), 7.04(dd, J=8.2; 1.8, H-9′), 7.09(dd, J=8.5, H-4, H-8), 7.17(d, J=15.5, H-3′), 7.54(d, J=15.5, H-2′) [1, 2]

^{13}C NMR (CD_3OD): [2]

C-1	42.5	C-7	116.3	C-5′	111.5*
2	35.8	8	130.7	6′	149.2
3	131.3	1′	169.0	7′	149.8*
4	130.7	2′	118.7	8′	116.3
5	116.3	3′	142.0	9′	123.2
6	156.9	4′	128.3	OCH_3	56.4

1. Zapesochnaya G.G., Kurkin V.A., Pervykh L.N., Khim. Prir. Soedin., 1990, 694.
2. Nemethy E.K., Calvin M., Phytochem., 1982, **21**, 2981.

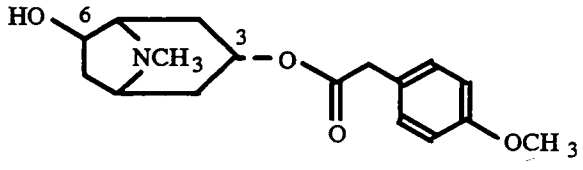


FETIDINE

Thalictrum foetidum
$C_{40}H_{46}N_2O_8$: 682.3254
Mp: 132-135° (e-a.) [1]
$[\alpha]_D$+121° (meth.) [1]
{nitr. 200° (dec.), h-chl. 230° (dec.), h-b. 230°, sulf. 218° (dec.), m-i. 210°}
UV: 220, 280, 305(4.80, 4.36, 4.24) [2]

IR: 3400, 2830, 2800, 1605, 1580, 1515 [2]
Mass: 476(1.5), 341($^{++}$, 3), 327(5), 284(3), 206(100), 191(10) [3]
PMR: 2.30, 2.37(3H, s, 2×NCH_3), 3.50(3H, s, 7′-OCH_3), 3.71, 3.78, 3.81(6H, 3H, 3H, s, 4×OCH_3), 3.90(3H, s, 10-OCH_3), 6.14(1H, s), 6.42(1H, s), 6.52(2H, s), 6.75, 6.81(1H, d, J=8.5), 8.12(1H, s, H-11) [4]
Abs. conf.: 1′R,6a S
CD: [5]
Pharm.: Antiinflammatory, hypotensive activity [6]. Suppressive influence on higher nervous activity [7].

1. Sargazakov D., Ismailov Z.F., Yunusov S.Yu., DAN UzSSR, 1963, No. 6, 28.
2. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1966, 43.
3. Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 142.
4. Ismailov Z.F., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 262; Cava M.P., Wakisaka K., Tetrahedron Lett., 1972, 2309.
5. Moiseeva G.P., Ismailov Z.F., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 705.
6. Sadritdinov F., in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 154.
7. Khamdamov I., Sadritdinov F., Sultanov M.B., in: The Pharmacology of Alkaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, p. 135.

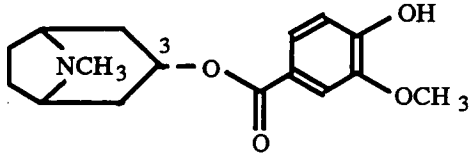


PHYSOCHLAINE

Physochlaina alaica
$C_{17}H_{23}NO_4$: 305.1627
Mp: 75-76°
$[\alpha]_D$ 0°

UV: 230, 283(3.85, 3.55)
IR: 3420-3260, 1730, 825
Mass: 305(M^+), 261, 156, 140, 96, 95, 94, 83, 82, 81
PMR: 2.52(3H, s, NCH_3), 3.50(3H, s, OCH_3), 4.78(1H, t, H-3β), 6.30-6.55(4H, m, H-Ar)

1. Mirzamatov R.T., Lutfullin K.L., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 415.

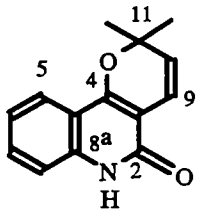


PHYLLALBINE

Convolvulus krauseanus
$C_{16}H_{21}NO_4$: 291.1471
Mp: 209-210° (chlf.-meth.)

IR: 3400, 1720, 890, 820 [2]
Mass: 291(M^+), 124(100), 108, 97, 96, 82 [2]
PMR: 2.30(3H, s, NCH_3),5.18(1H, t, H-3β), 6.87. 7.40-7.55(3H, m, H-Ar),8.27(1H, narrow s, OH) [2]

1. Parello J., Longevialle P., Vetter W., McCloskey G.A., Bull. Soc. Chim. France, 1963, 2787.
2. Sharova E.G., Aripova S.F., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 672.



FLINDERSINE

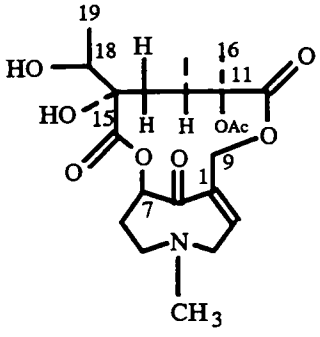
Haplophyllum bucharicum, H.perforatum
$C_{14}H_{13}NO_2$: 227.0946
Mp: 185-186° (dec., alc.)
{dihydro 229°}

Sol-y.: r-sol. chlf.; sp. sol. alc., ac., eth.; i.s. water [1]
UV: 220, 328 sh, 334, 347, 364(4.86, 3.62, 3.74, 3.86, 3.54) [1, 2]
IR: 3165, 1665, 1628, 1598, 1500, 1480, 1410 [1, 2]
Mass: 227(M^+, 22), 212(100) [1]
PMR: 1.52(6H, s, 2×CH_3), 5.48, 6.75(1H, d, J=10, CH=CH), 7.00-7.45(3H, m, H-Ar), 7.78(1H, d, J=8, H-5) [1]

^{13}C NMR: [3]

C-2	162.9	C-6	122.6	C-10	117.0
3	115.7	7	130.9	11	79.5
4	151.9	8	118.5	12	28.7
4a	106.7	8a	138.3	13	28.7
5	122.0	9	126.8		

1. Akhmedzhanova V.I., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 262.
2. Bessonova I.A., Unpub.
3. Sharifi I.A., Stermitz F.R., Phytochem., 1977, **16**, 2003.



FLORIDANINE

Doronicum macrophyllum, Senecio erraticus, S.othonnae
$C_{21}H_{31}NO_9$: 441.1999
Mp: 194-196° (ac.–chlf.) [1]
$[\alpha]_D$+67° (chlf.) [1]
{picr. 225°, Ac 178°} [1]
IR: 3500-3400, 2980, 2960, 1740, 1680-1530, 1450, 1380, 1280, 1240, 1190, 1150, 1110, 1090, 1030, 950, 760 [1, 2]

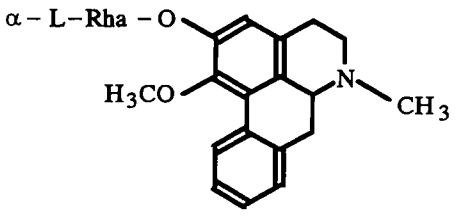
Mass: 441(M^+, 44), 397(25), 354(100), 352(22), 338(35), 337(35), 326(5), 310(2), 308(2), 299(4), 282(3), 281(4), 280(2), 269(4), 250(10), 238(30), 168(100), 151(30), 150(30), 149(10), 141(40), 123(25), 122(22), 110, 108, 97, 96, 94 [1, 3, 4]
PMR: 1.21(3H, d, J=7, 19-CH_3), 1.22(3H, d, J=6, 17-CH_3), 1.64(3H, s, H-16), 1.89(1H, m, H-12), 2.06(3H, s, H-22), 2.07(3H, s, NCH_3), 2.21, 2.66(1H, m, H-6), 2.35(2H, d, J=3.5, H-13), 2.53, 2.91(1H, dd, J=4, H-5), 3.03(2H, m, 2×OH), 3.37(2H, m, H-3), 4.43, 5.16(1H, dd, J=11, H-9), 4.98(1H, m, H-7), 6.08(1H, m, H-2) [5]

^{13}C NMR: [5]

C-1	133.9	C-9	60.2	C-16	21.6
2	136.7	10	171.4	17	14.6
3	64.0	11	84.0	18	72.8
5	54.3	12	40.9	19	17.2
6	35.9	13	36.1	21	170.0
7	79.1	14	82.0	22	21.4
8	191.1	15	174.7	NCH_3	39.8

Pharm.: LD_{50} 510 mg/kg (mice) [6]. Hypotensive action. Relaxes the smooth musculature of the vascular wall [7].

1. Khalilov D.S., Telezhenetskaya M.V., Khim. Prir. Soedin., 1973, 685.
2. Khalilov D.S., Telezhenetskaya M.V., Unpub.
3. Cava M.P., Rao K.V., Weisbach J.A., Raffauf R.F., Douglas B., J. Org. Chem., 1968, **33**, 3570.
4. Abdullaev U.A., Rashkes Ya.V., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 66.
5. Roder E., Wiedenfeld H., Hoenig A., Planta Medica, 1983, **49**, 57.
6. Sadritdinov, p. 114.
7. Litvinchuk M.D., Gaiduk R.I., Kit V.I., Farmakol. Toksikol., 1979, 42, 509.

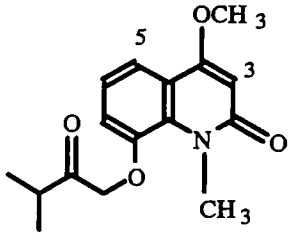


FLORIPAVIDINE

Papaver bracteatum, P.floribundum, P.urbanianum
$C_{24}H_{29}NO_6$: 427.1995
Mp: 241-242°
$[\alpha]_D$–156° (meth.)
UV: 229 sh, 273, 310(4.37, 4.25, 3.45)

IR: 3575, 3430, 1595, 1500, 1200-1000
Mass: 427(M^+), 281, 280, 266. 250, 238
PMR(Py-d_5): 1.51(3H, d, J=5, CH-CH_3), 2.27(3H, s, NCH_3), 3.54(3H, s, OCH_3), 4.33, 4.63(2H, m), 5.95(1H, s), 6.70-7.25(4H, m, H-Ar), 8.45(1H, narrow d)

1. Israilov I.A., Denisenko O.N., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 799.

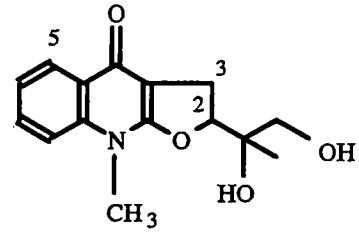


FOLIDINE

Haplophyllum foliosum
$C_{16}H_{19}NO_4$: 289.1314
Mp: 148-149° (ac.-petr. eth.)
Sol-y.: r-sol. eth., chlf., ac., alc.; i.s. water

UV: 233, 249, 273, 286, 325(3.42, 3.32, 2.89. 2.84, 2.60)
IR: 1730, 1640, 1590, 1580, 1491, 1470, 1390
Mass: 289(M^+, 89), 218(62), 205(59), 204(100), 71(26)
PMR: 1.14(6H, d, J=7.5, 2×CH_3), 2.80(1H, q, J=7.5, CH), 4.78(2H, s, CH_2O), 3.90, 3.94(3H, s, OCH_3, NCH_3), 6.08(1H, s, H-3), 6.85-7.45(2H, m, H-6, H-7), 7.72(1H, dd, J=7.5; 3, H-5)

1. Akhmedzhanova V.I., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1985, 823.



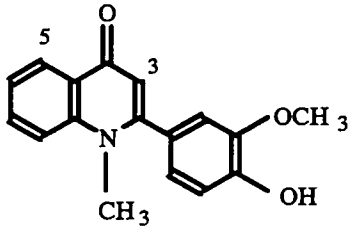
FOLISINE

Haplophyllum foliosum
$C_{15}H_{17}NO_4$: 275.1158
Mp: 236-237° (meth.)
$[\alpha]_D$–123° (meth.)
{folisinone 144°, h-chl. 230°}

Sol-y.: sp. sol. ac., eth., chlf.
UV: 215, 237, 251 sh, 299 sh, 310, 321(4.50, 4.43, 4.24, 4.01, 4.12, 4.07)

IR: 3510, 3415, 3200, 1628, 1590, 1555, 1540, 1520
Mass: 275($M^{+\cdot}$, 100), 244(29), 226(15), 215(14), 214(38), 202(53), 201(15), 200(68), 189(59), 188(70), 176(38), 175(22), 134(20)
PMR(CF_3COOH): 1.13(3H, s, CH_3), 3.40(2H, d, J=8, H-3), 3.78(3H, s, NCH_3), 3.83(2H, s, CH_2-O), 5.25(1H, t, J=8, H-2), 7.35-7.85(3H, m, H-Ar), 8.20(1H, d, J=9, H-5)

1. Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 629.

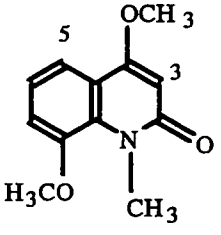


FOLIMIDINE

Haplophyllum foliosum
$C_{17}H_{15}NO_3$: 281.1052
Mp: 246-247° (alc.)
{O-Me 187°}
Sol-y.: r-sol. alk.; sp. sol. org. solvent

UV: 214, 246, 276, 326, 338(4.40, 4.34, 3.83, 4.08, 4.08)
IR: 1624, 1605, 1565, 1545, 1520, 1510, 870, 842, 770
Mass: 281($M^{+\cdot}$, 100), 280(5), 253(56), 238(18), 210(16)
PMR(CF_3COOH): 3.57(3H, s, OCH_3), 3.83(3H, s, NCH_3), 6.60-6.80(3H, m, H-Ar), 6.86(1H, s, H-3), 7.52(1H, m, H-8), 7.76(2H, m, H-7, H-6), 8.25(1H, dd, J=9; 2, H-5)

1. Razakova D.M., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 755.

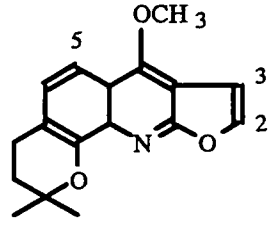


FOLIMINE

Haplophyllum bungei, H.dauricum, H.foliosum, H.obtusifolium, H.perforatum
$C_{12}H_{13}NO_3$: 219.0895
Mp: 139-140° (bz.-petr. eth.)
{h-chl. 172°, picr. 194°} [1]

Sol-y.: sol. chlf., meth., alc.
UV: 214, 234, 253, 267 sh, 282 sh, 328(4.40. 4.49, 4.44, 3.88, 3.80, 3.48) [2, 3]
IR: 1649, 1590, 1580, 1490, 1470, 1398, 1240 [3]
Mass: 219($M^{+\cdot}$, 100), 218(13), 204(93), 189(41), 174(54) [1]
PMR: 3.80(9H, s, NCH_3, 2×OCH_3), 5.94(1H, s, H-3), 6.97(2H, m, H-7, H-6), 7.45(1H, dd, J=9; 2.5, H-5) [1]

1. Razakova D.M., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 133.
2. Pastukhova V.I., Sidyakin G.P., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 27.
3. Bessonova I.A., Unpub.



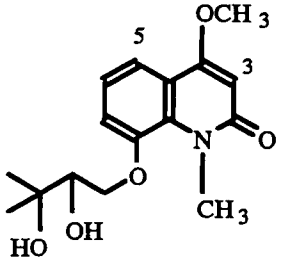
FOLIMININE

Haplophyllum foliosum
$C_{17}H_{17}NO_3$: 283.1203
Mp: 107-108° (ac.-water)
{h-chl. 188°, iso base 203°, tetrahydro 225°}
Sol-y.: r-sol. ac., chlf. [1]

UV: 252. 303 sh, 314, 328, 340(4.55, 3.68, 3.80, 3.79, 3.73) [1]

IR: 3170, 3140, 1630, 1598, 1525, 1450, 1410, 1370, 1360, 1325, 1298, 1250, 1240, 1165, 1130, 1098, 983 [2]
Mass: 283(M^+, 97), 268(21), 240(100), 228(56) [1]
PMR: 1.30(6H, s, 2×CH_3), 1.83, 3.12(2H, t, J=7, CH_2-CH_2-Ar), 4.12(3H, s, OCH_3), 6.72, 7.36(1H, d, J=3, H-3, H-2), 6.90, 7.85(1H, d, J=9, H-6, H-5) [1]

1. Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 52.
2. Bessonova I.A., Unpub.

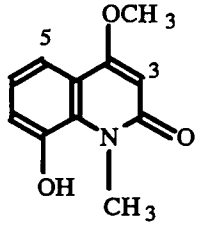


FOLIOSIDINE

Haplophyllum dubium, H.foliosum, H.perforatum
$C_{16}H_{21}NO_5$: 307.1420
Mp: 141-142° (ac.)
$[\alpha]_D$+42° (alc.)
{h-chl. 164°, h-b. 168°, picr. 183° [1, 2], acetonide 120° [3]}

Sol-y.: sol. meth., chlf., water
UV: 232, 252, 280 sh, 326, 334(4.94, 4.92, 4.22, 3.90, 3.84) [1]
IR: 3350, 1645, 1590, 1455, 1390, 1265, 1235, 1150, 1100, 1070, 1050, 985 [4]
Mass: 307(M^+, 30), 292(5), 248(8), 205(100), 174(9), 162(6), 59(28) [4]
PMR: 1.24, 1.32(3H, 2×CH_3), 3.70, 3.85(3H, s, NCH_3, OCH_3), 4.10(5H, m, $-CH_2-CH-$, 2×OH), 5.65(1H, s, H-3), 7.03(2H, m, H-6, H-7), 7.40(1H, dd, H-5) [3, 5]
Pharm.: LD_{50} 61.1, 1084 mg/kg (i/v, oral, mice). Anticonvulsive, hypothermal, antiarrhythmic action [6, 7].

1. Eskairov M., Sidyakin G.P., Yunusov S.Yu., DAN UzSSR, No. 5, 23.
2. Pastukhova V.I., Sidyakin G.P., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 27.
3. Tel'nov V.A., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 724.
4. Bessonova I.A., Unpub.
5. Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 201.
6. Sadritdinov, p. 273.
7. Sultanov M.B., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 3.

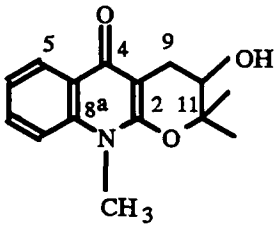


FOLIFIDINE

Haplophyllum dubium, H.foliosum
$C_{11}H_{11}NO_3$: 205.0739
Mp: 226-227° (alc.)
{h-chl. 232°, picr. 218°, Ac 151°}
Sol-y.: sol. alk. [1]

UV: 212, 225, 254, 288 sh, 332(4.36, 4.38, 4.42, 3.78, 3.34) [2]
IR: 3300-2500, 1635 [2]
Mass: 205(M^+, 100), 204(9), 190(18), 177(4), 176(9), 175(5), 174(4), 162(10) [3]
PMR(CF_3COOH): 3.78, 3.98(3H, s, NCH_3, OCH_3), 6.27(1, s, H-3), 7.03(2H, m, H-7, H-6), 7.48(1H, dd, J=8; 2.5, H-5) [4]

1. Faizutdinova Z.Sh., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 257.
2. Pastukhova V.I., Sidyakin G.P., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 27.
3. Bessonova I.A., Batsurén D., Yunusov S.Yu., Khim. Prir. Soedin., 1984, 73.
4. Bessonova I.A., Unpub.



FOLIFINE (RIBALININE)

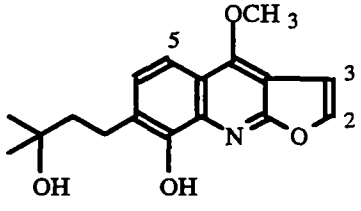
Haplophyllum bucharicum, H.foliosum
$C_{15}H_{17}NO_3$: 259.1208
Mp: 232-233° (alc.) [1, 2]
$[\alpha]_D$+14° (meth.)
{h-chl. 231, picr. 190°, nitr. 149°, Ac 155°} [1]

Sol-y.: r-sol. meth.; sol. chlf., alc.
UV: 238, 316, 328(4.40, 4.00, 3.98) [1]
IR: 3180, 1630, 1605, 1580, 1555, 1510 [2]
Mass: 259($M^{+\cdot}$, 37), 242(4), 230(4), 226(4), 216(4), 200(5), 189(45), 188(100), 135(12), 134(8), 72(12) [2, 3]
PMR: 1.23, 1.47(3H, 2×CH_3), 2.88(2H, d, J=6.5, H-9). 3.36(3H, s, NCH_3), 3.86(1H, t, H-10), 6.95-7.60(3H, m, H-Ar), 8.15(1H, dd, J=9; 2.5, H-5) [4]

^{13}C NMR: [5]

C-2	154.0	C-6	125.2	C-10	67.3
3	96.3	7	131.3	11	82.1
4	175.1	8	115.4	12	20.9
4a	123.2	8a	138.9	13	25.0
5	122.0	9	25.7	NCH_3	30.1

1. Faizutdinova Z.Sh., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 257.
2. Bessonova I.A., Unpub.
3. Rashkes Ya.V., Faizutdinova Z.Sh., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 107.
4. Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 673.
5. Brown N.M.D., Grundon M.F., Harrison D.M., Surgenor S.A., Tetrahedron, 1980, **36**, 3579

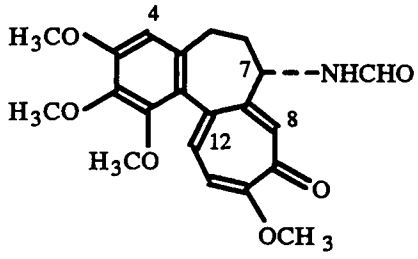


FOLIFININE

Haplophyllum foliosum
$C_{17}H_{19}NO_4$: 301.1314
Mp: 181-182° (ac.)
$[\alpha]_D$ 0° (meth.)

{h-chl. 123°, picr. 163° (dec.), di Ac 140°, tetrahydro 201°}
Sol-y.: sp. sol. meth., alc., ac.; i.s. chlf., water [1]
UV: 252, 315, 331(4.81. 3.95, 3.96) [1]
IR: 3600-3100, 1630, 1600, 1560, 1522, 1460, 1410, 1375, 1350, 1295, 1270, 1140, 1095, 1075, 1050, 982, 902, 820, 808, 720 [2]
Mass: 301($M^{+\cdot}$, 18), 286(9), 283(20), 268(16), 242(25), 240(100), 228(52) [2]
PMR{di Ac}: 1.52(6H, s, 2×CH_3), 1.96, 2.34(3H, AcO-R, AcO-Ar), 2.00, 3.14(2H, m, CH_2-CH_2-Ar), 4.28(3H, s, OCH_3), 6.92, 7.50(1H, d, J=3, H-3, H-2), 7.07, 8.05(1H, d, J=9, H-6, H-5) [1]

1. Kurbanov D., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 373.
2. Bessonova I.A., Unpub.

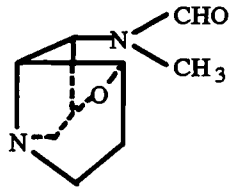


N-FORMYLDEACETYLCOLCHICINE

Colchicum kesselringii, C.luteum, C.speciosum, Merendera raddeana, M.robusta
$C_{21}H_{23}NO_6$: 385.1525
Mp: 265-267°
$[\alpha]_D$–167° [1]
UV: 241, 350(4.44, 4.18) [2]

IR: 3240, 1746, 1686, 1616, 1594, 1556, 1538, 1492, 1325, 1258, 1196, 1141, 1095, 1018 [2]
Mass: 385(M^+), 357, 342, 312(100), 297, 281 [3]
PMR: 1.90-2.60(4H, H-5, H-6), 3.65, 3.90, 3.93, 4.00(3H, s, 4×OCH_3), 4.70(1H, m, H-7), 6.55(1H, s, H-4), 6.89, 7.35(1H, d, J=11, H-11, H-12), 7.60(1H, s, H-8), 8.19(CHO), 8.31(NH) [4]
HPLC: [5]
Pharm.: LD_{50} 100 mg/kg. Antitumoral activity [6].

1. Yusupov M.K., Sadykov A.S., Khim. Prir. Soedin., 1978, 3; DAN UzSSR, 1967, No. 3, 25.
2. Holubek, No. 120.
3. Wilson J.M., Ohashi M., Budzikiewicz H., Santavy F., Djerassi C., Tetrahedron, 1963, **19**, 2225.
4. Severini Ricca G., Danieli B., Gazz. Chim. Ital., 1969, **99**, 133.
5. Husek A., Sutlupinar N., Sedmera P., Voegelein F., Valka I., Simanek V., Phytochem., 1990, **29**, 3058.
6. Kiselev V.V., Khim. Prir. Soedin., 1977, 3.

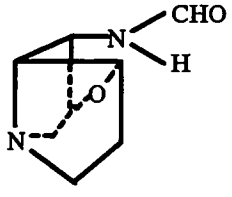


N-FORMYLLOINE

Lolium cuneatum
$C_9H_{14}N_2O_2$: 182.1055
Mp: 93-94° [1]
$[\alpha]_D$+48° (chlf.) [1]
Sol-y.: r-sol. chlf., meth. [2]

IR: 1670 [1]
Mass: 182(M^+) [1]; 182(M^+), 154, 153, 124, 123, 111, 110, 95, 83, 82(100), 69, 55 [2]
PMR: 2.90, 3.10(s, NCH_3), 8.00, 8.27(CHO) [1]

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



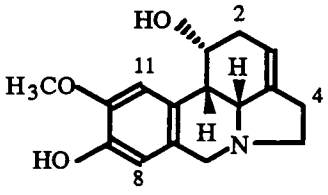
N-FORMYLNORLOLINE

Lolium cuneatum
$C_8H_{12}N_2O_2$: 168.0899
Mp: oil
$[\alpha]_D$+31° (ac.) [1]

{h-chl. 181°} [1]
Sol-y.: r-sol. alc., chlf. [1]
IR: 3600-3300, 1640 [1]
Mass: 168(M^+), 139, 125 [1], 168(M^+, 3), 140(25), 139(21), 124(27), 123(34), 111(12), 110(15), 95(21), 83(9), 82(100), 56(4), 55(12), 42(18) [2]

1. Batirov É.Kh., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 120.

2. Batirov É.Kh., Unpub.

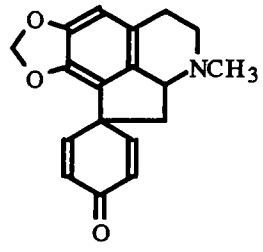


FORTHUCINE

Narcissus hybridus
$C_{16}H_{19}NO_3$: 273.1365
Mp: 160-162° (meth.)
$[\alpha]_D$+67° (alc.)

{m-i. 257°, h-chl. 209°, picr. 212°, O-Ac 201°, O-Me. 113°}
UV: 226 sh, 285(3.79, 3.53)
IR: 3180, 1615, 1590, 1460
Mass: 273(M^+, 99), 272(100), 229(17), 228(23), 256(12), 254(5), 252(22), 244(22), 242(8)
PMR: 2.30-2.60(6H, H-2, H-4, H-5), 2.68(1H, J=6, H-6a), 2.95(1H, J=6, H-6), 3.27, 3.87(1H, J=14, H-7), 3.83(3H, s, OCH_3), 4.25(1H, d, J=2.5, H-1), 5.52(1H, J=7, H-3), 6.53(1H, H-8), 6.79(1H, H-11)
CD

1. Tokhtabaeva G.M., Sheichenko V.I., Yartseva I.V., Tolkachev O.N., Khim. Prir. Soedin., 1987, 872.

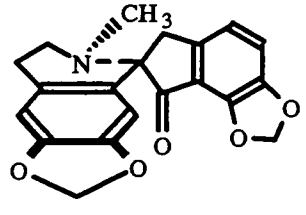


FUGAPAVINE (MECAMBRINE)

Papaver fugax, P.maeoticum, P.persicum
$C_{18}H_{17}NO_3$: 295.1208
Mp: 178-179° [1]
$[\alpha]_D$-116° (chlf.) [1]
UV: 231, 294 [1]

IR: 2735, 1667, 1607, 1592, 1490, 1462, 1365 [1]
Mass: 295(M^+), 294, 266(100), 252, 237 [1]
PMR: 2.36(3H, s, NCH_3), 5.76, 5.82(1H, d, J=1.5, CH_2O_2), 6.51(1H, s), 6.15-7.10(4H, m) [1]
HPLC: [2]
Pharm.: LD_{50} 7.015 mg/kg (s/c, mice). Analeptic for the CNS [3].

1. Israilov I.A. Unpub.
2. Hutin M., Oztekin A., Cave A., Foucher J.P., J.Chromatogr., 1983, **265**, 139.
3. Sadritdinov, p. 227.

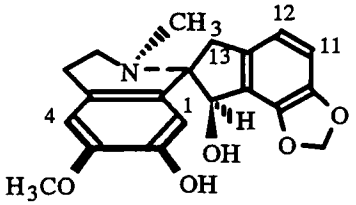


FUMARILINE

Fumaria vaillantii
$C_{20}H_{17}NO_5$: 351.1107
Mp: 137-138° [1]
$[\alpha]_D$+138° (alc.) [1]

UV: 203, 237, 263, 294, 355
IR: 1709, 1040, 940 [2]
Mass: 351(M^+), 336, 322(100), 308, 293, 264, 175, 135 [2]
PMR: 2.36(3H, s, NCH_3), 2.60-3.60(6H, m), 5.80, 6.12(2H, s, 2×CH_2O_2), 6.16. 6.54(1H, s, p-H-Ar), 6.86. 7.07(1H, d, J=8, o-H-Ar) [2]
Abs. conf.: [3]

1. Alimova M., Israilov I.A., Khim. Prir. Soedin., 1981, 602.
2. Saunders J.K., Bell R.A., Chen C.Y., McLean D.B., Manske R.H.F., Canad. J. Chem., 1968, **46**, 2873.
3. Shamma M., Moniot J.L., Manske R.H.F., Chan W.K., Nakanishi K., J. Chem. Soc. Chem. Commun., 1972, 310.



FUMARITINE

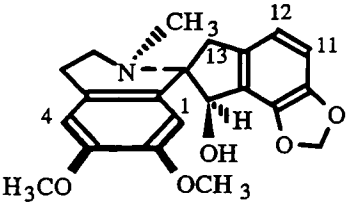
Fumaria officinalis, F.schleicheri
$C_{20}H_{21}NO_5$: 355.1420
Mp: 157-159° (alc.) [1]
UV: 287 [1]

IR: 3550, 2880, 1590, 1275, 1100 [1]
Mass: 355(M^+), 340, 324, 192(100) [2]
PMR: 2.41(3H, s, NCH_3), 3.29(2H, s), 3.85(3H, s, OCH_3), 5.47(1H, s), 5.95(2H, s, CH_2O_2), 6.47, 6.59(1H, s, p-H-Ar), 6.68, 6.74(1H, d, J=8, o-H-Ar) [2]

^{13}C NMR: [2]

C-1	111.2	C-8	82.3	C-13	44.0
2	144.2	8a	125.5	14	74.5
3	146.4	9	144.2	14a	127.9
4	112.9	10	147.5	NCH_3	38.1
4a	127.4	11	108.9	3-OCH_3	56.0
5	23.3	12	113.3	9,10-CH_2O_2	101.6
6	47.6	12a	135.0		

1. MacLean D.B., Bell R.A., Saunders J.K., Chen C.Y., Manske R.H.F., Canad. J. Chem., 1969, 3593.
2. Kiryakov H.G., Hughes D.W., Nalliah B.C., MacLean D.B., Canad. J. Chem., 1979, **57**, 53.

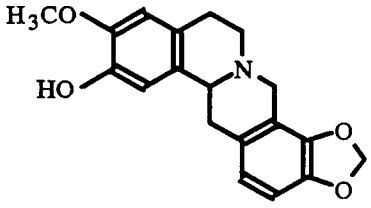


FUMARICINE

Fumaria parviflora
$C_{21}H_{23}NO_5$: 369.1576
Mp: 175-176° (meth.)
$[\alpha]_D$+38° (chlf.)

UV: 237, 288(3.95, 3.74)
IR: 3200-3100, 1615, 1525, 1500, 1035, 930
Mass: 369(M^+), 354(100), 338, 206, 184.5($^{++}$)
PMR: 2.34(3H, s, NCH_3), 2.35-3.70(6H, m), 3.45, 3.78(3H, s, 2×OCH_3), 5.48(1H, s), 5.89, 5.91(1H, d, J=2, CH_2O_2), 6.37, 6.57(1H, s, p-H-Ar), 6.70(2H, s, o-H-Ar)

1. Alimova M., Israilov I.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1982, 642.

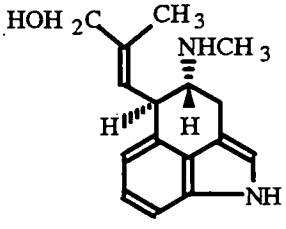


CHEILANTIFOLINE

Argemone hybrida, A.mexicana, A.ochroleuca, Corydalis caucasica, C.gigantea, C.gortschakovii, C.marschalliana, C.rosea-purpurea, C.stricta, C.vaginans, Dicentra spectabilis, Fumaria parviflora, F.vaillantii, Hylomecon vernalis, Papaver arenarium, P.commutatum, P.fugax, P.ocellatum, P.orientale, P.zangezuricum

$C_{19}H_{19}NO_4$: 325.1314
Mp: 185-186° (meth.)
$[\alpha]_D$–318° (chlf.)
UV: 240, 280
IR: 3420, 1600, 1510
Mass: 325(M^+), 324, 178, 176, 149, 148(100)
PMR: 1.60-3.60(7H, m), 3.75(3H, s,OCH_3), 3.45, 4.05(1H, d, J=16), 5.87(2H, s, CH_2O_2), 6.53, 6.85(1H, s, p-H-Ar), 6.58(2H, s, o-H-Ar)

1. Israilov I.A., Unpub.

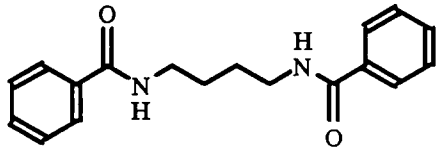


CHANOCLAVINE-I

Claviceps purpurea
$C_{16}H_{20}N_2O$: 256.1576
Mp: 208-210° (dec.) [1], 214-216° [2], 220-222° [3]
$[\alpha]_D$–197° (alc.) [1], –214° (pyr.) [2] –240° (pyr.) [3]

{oxalate 186° (dec.), mono Ac 224° (dec.), di Ac 170° (dec.)} [1]
Sol-y: r-sol. meth.; i.s. ac., water [1]
UV: 224, 273 sh, 283, 292(4.51, 3.82, 3.84, 3.78) [2, 3]
IR: 3310, 3260, 3130, 1615, 1598 [1, 3]
Mass: 256(M^+, 100), 238, 237, 183, 168, 155, 108 [2]
PMR: [2]
Stereochemistry: [4]

1. Vechkanova L.D., Ban'kovskaya A.N., Ban'kovskii A.I., Khim. Prir. Soedin., 1970, 382.
2. Kozlovskii A.G., Arinbasarov M.U., Solov'eva T.F., Adanin V.M., Grigorov I., Angelov T.I., Slokoska L.S., Angelova M.B., Prikl. Biokhim. Mikrobiol, 1980, **16**, 569.
3. Hofmann A., Brunner R., Kobel H., Brack A., Helv. Chim. Acta, 1957, **40**, 1358.
4. Sakharovskii V.G., Aripovskii A.V., Baru M.B., Kozlovskii A.G., Khim. Prir. Soedin., 1983, 656.



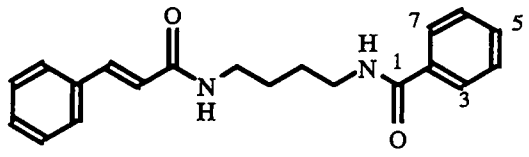
HAPLAMIDE

Haplophyllum latifolium
$C_{18}H_{20}N_2O_2$: 296.1525
Mp: 172-173° (alc.)
$[\alpha]_D$ 0° (pyr.)

Sol-y: sp. sol. alc., meth., chlf., ac.
UV: 224(4.00)
IR: 3430, 1640, 1587, 1550, 1480, 1305, 775, 730
Mass: 296(M^+, 3), 191(6), 175(11), 174(16), 162(9), 149(4), 148(6), 135(5), 134(11), 105(100), 77(43), 70(5)

PMR(CF_3COOH): 1.57, 3.48(4H, narrow s, CH_2-CH_2N), 7.05-7.50(10H, m, H-Ar), 8.25(2H, narrow s, NH)

1. Nesmelova E.F., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 289.



HAPLAMIDINE (PIRAMIDATINE)

Haplophyllum latifolium
$C_{20}H_{22}N_2O_2$: 322.1681
Mp: 172-173° (alc.)
$[\alpha]_D$ 0° (pyr.)

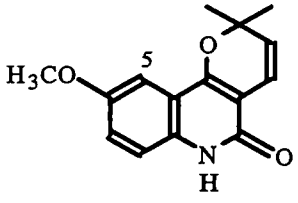
Sol-y: sp.sol. alc., meth., chlf., ac. [1]
UV: 218, 224, 274, 300 sh (4.36, 4.37, 4.19, 3.70) [1, 2]
IR: 3320, 1630, 1581, 1542, 1480, 1308, 771, 725 [1, 2]
Mass: 322(M^+, 33), 217(8), 201(80), 200(14), 191(17), 188(3), 175(69), 174(80), 162(17), 160(11), 148(20), 146(11), 134(11), 131(100), 105(57), 103(26), 77(9) [1, 2]
PMR(CF_3COOH): 1.56, 3.39(4H, narrow s, CH_2-CH_2N), 7.10-7.33(10H, m, H-Ar), 6.42, 7.55(1H, d, J=16, CH=CH), 8.35(2H, narrow s, NH) [1]

^{13}C NMR: [3]

C-1	166.2	C-5	131.0	C-4′	134.9
3,7	127.5	1′	164.9		

Pharm.: Antitumoral activity [3].

1. Nesmelova E.F., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 427.
2. Bessonova I.A., Unpub.
3. Cordell G.A., Kinghorn A.D., Tetrahedron, 1991, **47**, 3521.

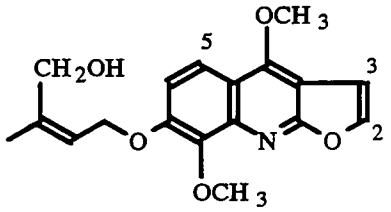


HAPLAMINE

Haplophyllum acutifolium, H.perforatum
$C_{15}H_{15}NO_3$: 257.1051
Mp: 201-202° (dec., alc.)
{dihydro 232°, O-Me. 95°}

Sol-y: r-sol. chlf.; sol. eth., alc.; i.s. water, acids
UV: 220, 243, 323 sh, 340, 359, 377(4.45, 4.44, 3.64, 3.70, 4.02, 3.98)
IR: 3155, 1660, 1630, 1600, 1505, 1490, 1470, 1425, 1354, 1330, 1280, 1238, 1220, 1130, 1048, 860, 835
Mass: 257(M^+,47), 242(100)
PMR(CCl_4): 1.50(6H, s, 2×CH_3), 3.80(3H, s, OCH_3), 5.43, 6.72(1H, J=10, CH=CH), 7.01(1H, dd, J=8.5; 3, H-7), 7.05(1H, narrow s, H-5), 7.36(1H, d, J=8.5, H-8) [1]
Pharm.: LD_{50} 1020 mg/kg (i/p, mice). Sedative and estrogenic action [2, 3].

1. Akhmedzhanova V.I., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 109; 1976, 320.
2. Akhmedkhodzhaeva Kh.S., in: The Pharmacology of Natural Substances [in Russian], Fan, Tashkent, 1978, p. 51.
3. Akhmedkhodzhaeva Kh.S., Kurmukov A.G., DAN UzSSR, 1975, No. 8, 36.

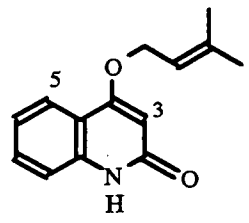


HAPLATINE

Haplophyllum latifolium
$C_{18}H_{19}NO_5$: 329.1263
Mp: 139-140° (bz.)
[O-Ac 88° [1], iso 166° [2], hexahydro 120° [2]}

Sol-y: r-sol. chlf., alc., meth., ac.; sol. eth.; i.s. water [1]
UV: 252, 320, 335(4.87, 3.82, 3.80) [1]
IR: 3340, 3170, 3140, 1625, 1590, 1510, 1500, 1450 [1, 3]
Mass: 329($M^{+\cdot}$, 18), 245(100), 244(52), 230(30), 227(98), 216(35), 202(20), 201(17), 199(20), 187(12), 84(7) [1, 3]
PMR: 1.80(3H, s, CH_3), 2.86(1H, narrow s, OH), 4.19(2H, s, CN_2-OH), 4.05, 4.31(3H, s, 2×OCH_3), 4.75, 5.60(2H, d, 1H, t, J=6.5, =CH-CH_2-O), 6.92, 7.48(1H, J=3, H-3, H-2), 7.11, 7.85(1H, J=10, H-6, H-5) [1]

1. Nesmelova E.F., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 666.
2. Nesmelova E.F., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 758.
3. Bessonova I.A., Unpub.

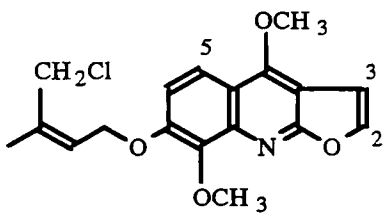


HAPLAPHINE

Haplophyllum perforatum
$C_{14}H_{15}NO_2$: 229.1103
Mp: 159-160° (ac.)
Sol-y: r-sol. chlf.

UV: 215, 225. 229, 238 sh, 267, 277, 317, 328 [1]
IR: 3170, 1665, 1610, 1510, 1442, 1414, 1380, 1368, 1330, 1265, 1230, 1160, 1110, 1040, 980 [2]
Mass: 229($M^{+\cdot}$, 42), 214(11), 186(10), 162(40), 161(100), 133(20), 132(21), 120(20), 119(35), 69(70) [1, 2]
PMR: 1.73, 1.79(3H, 2×CH_3), 4.62(2H, d, J=6.8, CH_2O), 5.50(1H, t, J=6.8, =CH), 5.97(1H, s, H-3), 7.27(3H, m, H-Ar), 7.86(1H, dd, J=9; 2, H-5), 12.09(1H, narrow s, NH) [1]

1. Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1986, 654.
2. Bessonova I.A., Unpub.

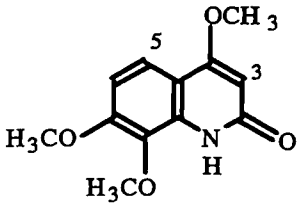


HAPLOBINE

Haplophyllum obtusifolium
$C_{18}H_{18}NO_4Cl$: 349.0895/347.0924
Mp: 151-153° (ac.)
UV: 251, 319, 330(4.73, 3.60, 3.67) [1]

IR: 3145, 3115, 1628, 1588, 1518, 1495, 1460, 1390, 1370, 1323, 1270, 1235, 1150, 1100, 1089, 1060, 1000, 990 [2]
Mass: 349(6.2), 347($M^{+\cdot}$, 19), 312(4), 245(50), 244(100), 230(10), 227(43), 216(31), 199(9) [1]
PMR: 1.87(3H, s, CH_3), 4.05(3H, s, OCH_3), 4.09(2H, s, CH_2Cl), 4.35(3H, s, OCH_3), 4.78, 5.68(2H, d, 1H, t, J=7, =CH-CH_2-O), 6.99. 7.53(1H, d, J=2.8, H-3, H-2), 7.15, 7.93(1H, d, J=9.4, H-6, H-5) [1]

1. Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1986, 736.
2. Bessonova I.A., Unpub.

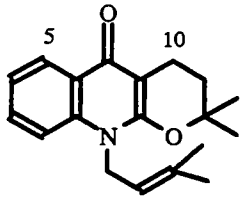


HAPLOBUNGINE

Haplophyllum bungei
$C_{12}H_{13}NO_4$: 235.0845
Mp: 174-175° (e-a.)
{N-Me 144°}

UV: 219, 231, 251 sh, 288, 313, 323 [1]
IR: 3175, 1660, 1610, 1580, 1460, 1400, 1330, 1290, 1258, 1233, 1110, 1070, 1000, 950 [2]
Mass: 235($M^{+\cdot}$, 100), 234(25), 220(65), 206(22), 192(22) [1]
PMR: 3.87, 3.90(6H, 3H, s, 3×OCH_3), 5.74(1H, s, H-3), 6.78, 7.50(1H, J=9, H-6, H-5), 8.65(1H, narrow s, NH) [1]

1. Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1989, 23.
2. Bessonova I.A., Unpub.

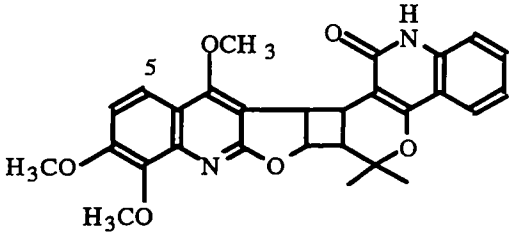


HAPLOBUCHARINE

Haplophyllum bucharicum
$C_{19}H_{23}NO_2$: 297.1729
Mp: 126° (e-a.)
Sol-y: r-sol. chlf., alc., meth., ac.

UV: 214, 238, 250 sh, 317, 329(4.10, 4.12, 3.90, 3.74, 3.73) [1]
IR: 1625, 1610, 1590, 1550, 1540, 1500, 1430, 1398, 1355, 1300, 1250, 1210, 1195, 1110, 850, 768, 710 [1, 2]
Mass: 297($M^{+\cdot}$, 56), 229(40), 228(57), 214(15), 212(47), 200(13), 186(70), 174(100), 69(70) [1, 2]
PMR: 1.37(6H, s, 2×CH_3), 1.69, 1.81(3H, s, 2×CH_3), 1.78, 2.69(2H, t, J=7, H-9, H-10), 4.75, 5.10(2H, d, 1H, t, J=7.5, =CH-CH_2-N), 7.42(3H, m, H-Ar), 8.33(1H, dd, J=9; 2, H-5) [1]

1. Nesmelova E.F., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 815.
2. Bessonova I.A., Unpub.

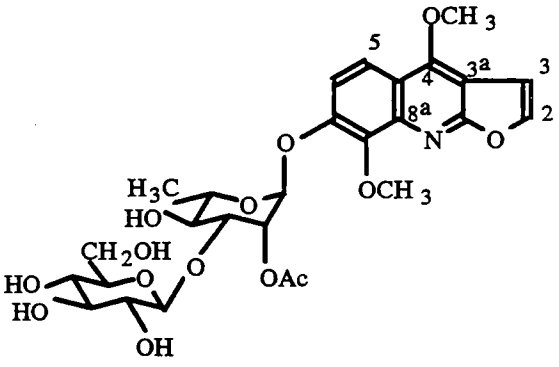


HAPLODIMERINE

Haplophyllum foliosum
$C_{28}H_{26}N_2O_6$: 486.1791
Mp: 292-293° (alc.)
Sol-y: sp. sol. org. solvent, water

UV: 219, 228, 243 sh, 278, 286, 315. 325(4.68, 4.69, 4.59, 3.94, 3.96, 3.94, 3.93)
IR: 3165, 1645, 1620, 1587, 1520, 1490
Mass: 486($M^{+\cdot}$, 1.1), 485(1.6). 260(20), 259(100), 258(20), 256(1.6), 245(17), 244(75), 230(40), 229(14), 228(14), 227(15), 216(10), 213(25), 212(50)
PMR: 1.03, 1.50(3H, s, 2×CH_3), 3.21, 3.57, 4.20(3H, s, 3×OCH_3), 3.25, 4.00, 4.85, 5.58(1H, m, H of cyclobutane), 6.85, 7.53(1H, d, J=9.5, H-6, H-5), 6.87-7.42(3H, m, H-Ar), 7.81(1H, dd, J=8; 2, H-5')
X-ray spectral analysis

1. Tashkhodzhaev B., Lindeman S.V., Bessonova I.A., Razakova D.M., Tsapkina E.N., Struchkov Yu.T., Khim. Prir. Soedin., 1988, 838.



HAPLOZIDINE

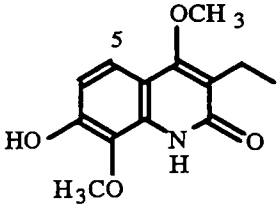
Haplophyllum perforatum
$C_{27}H_{33}NO_{14}$: 595.1901
Mp; 158-160°
$[\alpha]_D$: −77° (pyr.)
{penta Ac 105°}
Sol-y: sol. water, meth.
UV: 249, 320, 330
IR: 3650-3100, 1735, 1645, 1550, 1530, 1490, 1245

PMR(Py-d_5): 1.57(3H, d, J=6, CH_3), 2.04(3H, s, Ac), 5.45(1H, d, J=7, H-1″), 6.19(2H, H-1′, H-2′), 4.27. 4.30(3H, s, 2×OCH_3), 7.16, 7.82(1H, d, J=3, H-3, H-2), 7.62, 8.08(1H, d, J=8.5, H-6, H-5)

^{13}C NMR (DMCO-d_6):

C-2	144.2	C-8	141.0	C-6	17.8
2a	163.9	8a	148.0	1″	104.9
3	105.5	4-OCH_3	59.6	2″	74.0
3a	115.8	8-OCH_3	61.4	3″	76.4
4	157.0	1′	96.9	4″	70.1
4a	102.6	2′	71.8	5″	76.9
5	117.9	3′	78.3	6″	61.2
6	116.5	4′	71.0	CO	170.5
7	143.8	5′	69.7	$COCH_3$	21.0

1. Rasulova Kh.A., Bessonova I.A., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1988, 94.

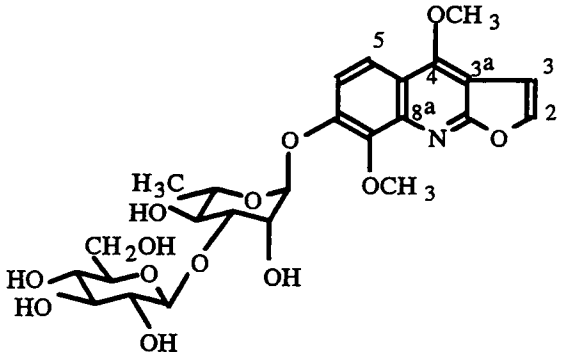


HAPLOZINE

Haplophyllum perforatum
$C_{13}H_{15}NO_4$: 249.1001
Mp: 155-156° (bz.)

UV: 217, 252, 322, 344(4.57, 4.24, 4.24, 4.22)
IR: 3570, 3480, 3100, 1650, 1500, 1450
Mass: 249(M^+, 98), 248(14), 235(17), 234(100), 233(10), 221(10), 220(72), 219(58), 218(27), 204(14), 202(14)
PMR: 1.15(3H, t, J=7.5, CH_3), 2.60(2H, q, J=7.5, CH_2), 3.84(6H, s, 2×OCH_3), 6.79, 7.31(1H, d, J=8.8, H-6, H-5)

1. Rasulova Kh.A., Bessonova I.A., Khim. Prir. Soedin., 1992, 249.



HAPLOZININE

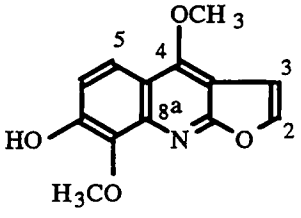
Haplophyllum perforatum
$C_{25}H_{31}NO_{13}$: 553.1796
Mp: 227-228° (meth.)
$[\alpha]_D$–74° (pyr.)
{hexa Ac 105°}
Sol-y: sol. water, meth.
IR: 3650-3100, 1630, 1590, 1518, 1495

PMR(Py-d_5): 1.54(3H, d, J=6, CH_3), 3.90-5.60(m, protons of the carbohydrate moiety), 4.27(6H, s, 2×OCH_3), 7.14, 7.82(1H, d, J=3, H-3, H-2), 7.65, 8.08(1H, J=8.5, H-6, H-5)

^{13}C NMR (DMSO-d_6):

C-2	144.3	C-8	141.2	C-1″	105.0
2a	164.0	8a	148.7	2″	74.3
3	105.7	1′	100.2	3″	76.6
3a	115.6	2′	70.0	4″	70.2
4	157.2	3′	81.3	5″	77.0
4a	102.7	4′	71.0	6″	61.6
5	118.2	5′	70.0	4-OCH_3	59.8
6	116.6	6′	18.2	8-OCH_3	61.3
7	143.7				

1. Rasulova Kh.A., Bessonova I.A., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1987, 876.



HAPLOPINE

Haplophyllum bucharicum, H.dauricum, H.dubium, H.ferganicum, H.foliosum, H.latifolium, H.obtusifolium, H.pedicellatum, H.perforatum, H.ramosissimum, H.robustum
$C_{13}H_{11}NO_4$: 245.0688

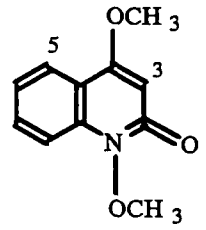
Mp: 203-204° (meth.)
{h-chl. 169° [1], sulf. 225° [2]}
Sol-y: sol. alk.; sp. sol. eth., bz., ac., chlf.
UV: 250, 262 sh, 322(4.88, 3.68, 3.74) [2]
IR: 3200-2620, 1626, 1590 [3]
Mass: 245($M^{+\cdot}$, 100), 244(22), 230(28), 227(78), 216(14) [2]
PMR(CF_3COOH): 3.76, 4.31(3H, s, 2×OCH_3), 7.05, 7.79(1H, d, J=9, H-6, H-5), 7.08, 7.39(1H, d, J=3, H-3, H-2) [2]

^{13}C NMR(DMSO): [4]

C-2	142.1	C-4	156.9	C-7	141.4
2a	163.8	4a	101.2	8	139.3
3	105.4	5	117.9	8a	150.2
3a	113.3	6	116.5	4-OCH_3	59.2
				8-OCH_3	60.8

Pharm.: In white mice, on oral administration in a dose of 200 mg/kg suppresses evoked frenzy and the "suspicion" and avoidance conditioned reflex [5]. Estrogenic action [6].

1. Sidyakin G.P., Yunusov S.Yu., DAN UzSSR, 1962, No. 4, 39.
2. Razakova D.M., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 791; 1983, 246.
3. Bessonova I.A., Unpub.
4. Bessonova I.A., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1987, 876.
5. Polievtsev N.P., Sultanov M.B., in: The Pharmacology of Alkaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, p. 178.
6. Akhmedkhodzhaeva Kh.S., Bessonova I.A., DAN UzSSR, 1982, No. 9, 34.

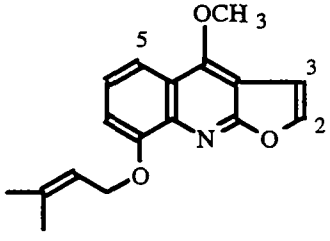


HAPLOTUSINE

Haplophyllum obtusifolium
$C_{11}H_{11}NO_3$: 205.0739
Mp: 118-119°
Sol-y: r-sol. chlf.; sol. water

UV: 230, 271, 280, 320(4.77, 3.90, 3.90, 3.84)
IR: 1670, 1600, 1570, 1500
Mass: 205(M^+, 55), 175(100), 160(14), 146(28), 132(35), 117(45)
PMR: 3.83, 3.96(3H, s, 2×OCH_3), 5.89(1H, s, H-3), 7.07(1H, m, H-8), 7.41(2H, m, H-6, H-7), 7.75(1H, dd, J=9; 2.5, H-5)

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

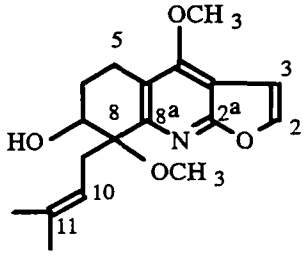


HAPLOPHIDINE

Haplophyllum perforatum
$C_{17}H_{17}NO_3$: 283.1208
Mp: 111-112° (eth.)
Sol-y: r-sol. chlf., ac.; sol. alc., eth.; i.s. water [1]

UV: 245, 261 sh, 272 sh, 300 sh, 314, 329, 342(4.82, 3.96, 3.72, 3.75, 3.84, 3.80, 3.75) [1]
IR: 3160, 3140, 1625, 1590, 1525, 1450, 1400, 1370, 1302, 1275, 1193, 1160, 1100, 1070, 990[1, 2]
Mass: 283(M^+, 6), 215(100), 200(23), 186(7), 172(7), 156(5), 69(5) [1]
PMR: 1.78(6H, s, 2×CH_3), 4.32(3H, s, OCH_3), 4.75, 5.58(2H, d, 1H, t, J=6.5, O–CH_2–CH=), 6.95, 7.53(1H, d, J=3, H-3, H-2), 6.98, 7.23, 7.72(1H, q, t, q, J=8; 1.5, H-7, H-6, H-5) [1]

1. Abdullaeva Kh.A., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 684.
2. Bessonova I.A., Unpub.



HAPLOPHILLIDINE

Haplophyllum perforatum
$C_{18}H_{23}NO_4$: 317.1627
Mp: 110-111° (petr. eth.)
$[\alpha]_D$–16° (ac.) [1]
{O-Ac 148°, tetrahydro 136°}

Sol-y: r-sol. meth., alc., ac., bz., chlf., e-a.
UV: 258(4.18)

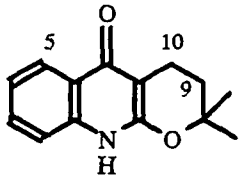
IR: 3300, 3142, 3115, 1612, 1252 [1, 2]
Mass: 317(M^+, 4), 302(2), 287(14), 285(22), 270(72), 248(68), 216(100), 188(94), 173(12), 69(6) [3]
PMR(CCl_4): 1.67, 1.73(3H, s, 2×CH_3), 3.05, 4.21(3H, s, 2×OCH_3), 4.00(1H, m, O-CH-), 5.25(1H, t, J=7, =CH-), 6.86, 7.48(1H, J=3, H-3, H-2) [3]

^{13}C NMR: [4]

C-2	142.0	C-5	18.4	C-10	119.5
2a	161.5	6	23.9	11	133.2
3	104.3	7	69.4	12	25.8
3a	116.8	8	78.8	13	17.8
4	157.9	8a	150.1	4-OCH_3	58.1
4a	104.7	9	29.7	8-OCH_3	50.3

Pharm.: LD_{50} 600, 500, 750, 160 mg/kg (oral, s/c, i/p, i/v, mice). Sedative, soporific, analgesic, tranquilizing action [5].

1. Shakirov T., Sidyakin G.P., Yunusov S.Yu., DAN UzSSR, 1959, No. 6, 28; 1960, No. 9, 40.
2. Faizutdinova Z.Sh., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 360.
3. Bessonova I.A., Faizutdinova Z.Sh., Rashkes Ya.V., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 273; Bessonova I.A., Unpub.
4. Yagudaev M.R., Bessonova I.A., Khim. Prir. Soedin., 1989, 25.
5. Sadritdinov, p. 275.

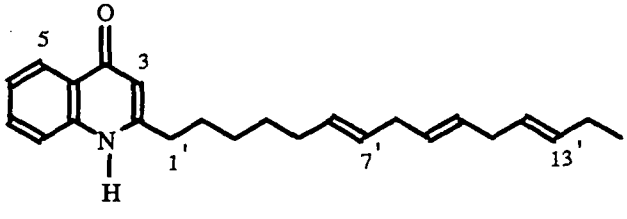


KHAPLOFOLINE

Haplophyllum foliosum
$C_{14}H_{15}NO_2$: 229.1103
Mp: 272-274° (meth.)

{h-b. 188°, h-chl. 80°, sulf. 197°, O-Ac 156°, N-Me 121°}
Sol-y: sp. sol. org. solvent; i.s. water
UV: 234, 310, 322(4.45, 3.92, 3.88) [1]
IR(chlf.): 3425, 1632 [1]
Mass: 229(M^+, 70), 214(17), 212(10), 200(10), 186(70), 174(100), 173(15) [2, 3]
PMR: (CF_3COOH): 1.18(6H, s, 2×CH_3), 1.74, 2.60(2H, t, J=6.5, H-9, H-10), 7.32(3H, m, H-Ar), 7.82(1H, dd, J=9; 2, H-5) [2]
Pharm. {N-Me}: LD_{50} 485.77 [sic] mg/kg (s/c, i/v, mice). Respiratory analeptic. Its effect lasts for from 30 to 90 min depending on the dose. Low doses (5-10 mg/kg) stimulate respiration and raise the arterial pressure; high doses stimulate respiration and lower the arterial pressure [4, 5].

1. Fakhrutdinova I.M., Sidyakin G.P., Yunusov S.Yu., Uzb. Khim. Zh., 1963, No. 4, 41.
2. Bessonova I.A., Unpub.
3. Rashkes Ya.V., Faizutdinova Z.Sh., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 107.
4. Sadritdinov, p. 176.
5. Sultanov M.B., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 20.



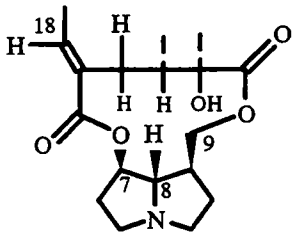
HAPOVINE

Haplophyllum popovii
$C_{24}H_{31}NO$: 349.2406
UV: 211, 236, 317, 329(4.38, 4.34, 3.99, 3.98)
IR: 1650, 1600, 1560, 1510

Mass: 349(M^+, 22), 334(8), 320(10), 294(16), 280(14), 254(16), 240(10), 214(14), 200(18), 186(20), 173(30), 172(84), 159(100), 130(45)

PMR: 0.88(3H, t, CH_3), 1.08-1.47(4H, m, H-3′, H-4′), 1.45-2.15(6H, m, H-2′, H-5′, H-14′), 2.45-2.92(6H, H-1′, H-8′, H-11′), 5.00-5.40(6H, m, –CH=), 6.15(1H, s, H-3), 7.18, 7.46, 7.74, 8.24(1H, narrow d, J=8, H-8, H-7, H-6, H-5), 12.67(1H, narrow s, NH)

1. Razakova D.M., Bessonova I.A., Khim. Prir. Soedin., 1981, 528.



HASTACINE

Cacalia hastata, C.robusta

$C_{18}H_{27}NO_5$: 337.1889

Mp: 171-172° (ac.) [1]

$[\alpha]_D$–72° (chlf.) [1]

{picr. 193° [1], hastanecine 114°, $[\alpha]_D$–9° [1], integerrinecic acid 150°, $[\alpha]_D$+9° (alc.) [3]}

Sol-y: r-sol. alc., chlf., ac.; sp. sol. eth.

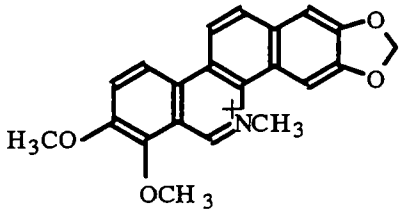
IR: 1735, 1718, 1653 [2]

Mass: 337(M^+, 33), 322(2), 320(3), 294(3), 293(11), 266(2), 239(4), 238(7), 226(6), 222(6), 220(2), 212(9), 211(49), 210(4), 180(4), 156(4), 153(7), 149(3), 141(14), 140(100), 139(10), 138(47), 124(13), 123(53), 122(59). 121(14), 120(14), 110(5), 109(8), 108(11), 106(39), 97(4), 96(26), 95(16), 94(6), 93(5), 83(11), 82(90). 81(11), 80(9) [3]

PMR: 6.72(1H, H-18) [3]; 3.32(1H, H-8), 3.84, 4.79(1H, dd, J=1.6; 10.8, H-9), 4.46(1H, m, H-7) [4]

Pharm.: Spasmolytric action [1, 2].

1. Konovalov V.S., Men'shikov G.P., Zh. Org. Khim., 1945, **15**, 328.
2. Alekseev V.S., Chernyaeva A.M., Pharm. Zh., 1966, No. 6, 40.
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.



CHELERYTHRINE

Argemone alba, A.mexicana, A.ochroleuca, Bocconia cordata, B.frutescens, Chelidonium majus, Corydalis caucasica, C.ledebouriana, C.persica, C.sewerzowii, Dicentra peregrina, Dicranostigma franschetianum, D.lactucoides, D.leptopodum, Eschscholtzia californica, Glaucium elegans, G.squamigerum, Hypecoum trilobum, Macleaya cordata, M.microcarpa, Papaver alberti, P.bipinnatum, P.paczoskii

$C_{21}H_{18}NO_4$: 348.1236

Mp: 207-208° (eth.)

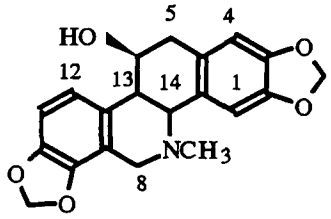
UV{chloride}: 228, 272, 283 sh, 302 sh, 343 [1]

IR{chloride, nujol}: 1605, 1425, 1278, 1175, 946, 863 [1]

PMR(CF_3COOH): 4.26, 4.44(3H, s, 2×OCH_3), 5.12(3H, s, NCH_3), 6.31(2H, s, CH_2O_2), 7.57, 8.15(1H, s, p-H-Ar), 8.22, 8.27, 8.67, 8.72(1H, d, J=9.6, 4×o-H-Ar), 9.89(1H, s) [1]

HPLC: [2]

1. Krane B.D., Fagbule M.O., Shamma M., Cozler B., J. Natur. Prod., 1984, **47**, 1.
2. Liang-Feng Han, Nowicky W., Gutmann V., J. Chromatogr., 1991, **543**, 123.



CHELIDONINE

Chelidonium majus, Glaucium elegans, G.squamigerum
$C_{20}H_{19}NO_5$: 353.1263
Mp: 135-136° (alc.) [1]

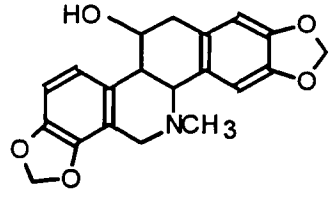
$[\alpha]_D$+115° (alc.) [1]
UV: 206, 238, 289 [1]
IR($CHCl_3$): 3210, 3206 [1]
Mass: 353($M^{+\cdot}$), 352, 336, 335(100) [1]
PMR: 2.27(3H, s, NCH_3), 2.98(1H, m), 3.08, 3.20(1H, d, J=17.5), 3.43, 4.08(1H, d, J=15.5), 3.57(1H, narrow s), 4.23(1H, narrow s, $w_{1/2}$=7.9), 5.93, 5.94(1H, d, J=1.5, CH_2O_2), 5.95, 5.99(1H, d, J=1.5, CH_2O_2), 6.64, 6.66(1H, s, H-1, H-4), 6.73, 6.76(1H, d, J=7.9, H-11, H-12) [2]

^{13}C NMR: [3]

C-1	107.4	C-6a	117.1	C-12	39.7
1a	125.8	7	143.1	13	42.1
2	145.3	8	148.2	14	62.9
3	145.6	9	109.6	NCH_3	42.4
4	111.9	10	120.4	2,3-CH_2O_2	101.1
4a	128.9	10a	131.4	7,8-CH_2O_2	101.4
6	53.9	11	72.4		

Abs. conf.: [4]
X-ray spectral analysis: [4]
HPLC: [5]
Pharm.: LD_{50} 125 (i/p, mice), 160 mg/kg (i/p, frogs), 140 mg/kg (i/p, cats). Raises arterial pressure, strengthens the tonus and peristalisis of the intestine in high doses (10-20 mg/kg). Local anesthetic action [6].

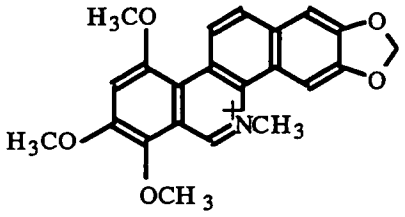
1. Israilov I.A., Unpub.
2. Cushman M., Choong T.C., Heterocycles, 1980, **14**, 1935.
3. Takao N., Iwasa K., Kamigauchi M., Sugiura M., Chem. Pharm. Bull., 1978, **26**, 1880.
4. Takao N., Bessho N., Kamigauchi M., Iwasa K., Tomita K., Fujiwara T., Fujii S., Tetrahedron Lett., 1979, 495.
5. Liang-Feng Han, Nowicky W., Gutmann V., J. Chromatogr., 1991, **543**, 123.
6. Sadritdinov, p. 228.



(±)-CHELIDONINE

Glaucium fimbrilligerum
$C_{20}H_{19}NO_5$: 353.1263
Mp: 132-133°
$[\alpha]_D$ 0°

1. Yunusov A.Kh., Israilov I.A., Khim. Prir. Soedin., 1974, 538.

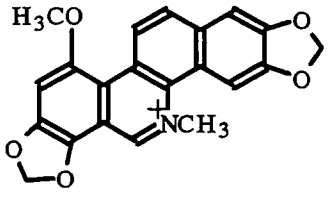


CHELILUTINE

Eschscholtzia californica
$C_{22}H_{20}NO_5$: 378.1342
Mp{chloride}: 186°
UV{chloride}: 230, 241 sh, 280, 340, 420 sh, 470 [1]

IR{chloride}: 3640, 3580, 3370, 3260, 1660, 1567, 1549, 1508, 1493, 1330, 1302, 1268, 1237, 1218, 1210, 1143, 1133, 1095, 1078, 1044, 1032, 1018, 990, 954, 941, 918, 888, 872, 864, 846, 818, 784, 755, 745, 733, 722, 709 [1]
PMR(DMSO, ψ-CN): 2.56(3H, s, NCH_3), 3.85(6H, s, 2×OCH_3), 3.98(3H, s, OCH_3), 5.88(1H, s), 6.18(2H, s, CH_2O_2), 6.96, 7.35, 7.57(1H, s, 3×H-Ar), 7.63, 8.33(1H, d, J=8, o-H-Ar) [1]
HPLC: [2]

1. Krane B.D., Fagbule M.O., Shamma M., Gozler B., J. Natur. Prod., 1984, **47**, 1.
2. Chauret N., Rho D., Archambault J., J. Chromatogr., 1990, **519**, 99.

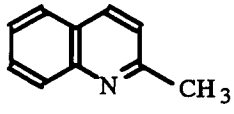


CHELIRUBINE

Dicranostigma franschetianum, D.leptopodum, Glaucium elegans
$C_{21}H_{16}NO_5$, 362.1028
Mp{chloride}: 302° (dec.) [2]
UV{chloride}: 231, 281, 305 sh, 341, 353, 413, 508 [1]

IR{chloride}: 3350, 1648, 1605, 1555, 1520, 1511, 1486, 1328, 1305, 1285, 1260, 1224, 1209, 1192, 1128, 1038, 1018, 980, 964, 937, 908, 875, 828, 790 [1]
PMR{chloride, CF_3COOH}: 4.27(3H, s, OCH_3), 4.96(3H, s, NCH_3), 6.24, 6.44(2H, s, 2×CH_2O_2), 7.48, 7.61, 7.87(1H, s, 3×H-Ar), 8.13, 9.53(1H, d, J=8.5, o-H-Ar), 9.49(1H, s) [2]
HPLC: [3]

1. Holubek, No. 54
2. Ishii H., Ueda E., Nakajima K., Ishida T., Ishikawa T., Harada K.-I., Ninomiya I., Naito T., Kiguchi T., Chem. Pharm. Bull., 1978, **26**, 864.
3. Chauret N., Rho D., Archambault J., J.Chromatogr., 1990, **519**, 99.



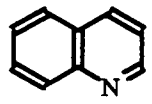
QUINALDINE

Peganum harmala
$C_{10}H_9N$: 143.0735
{picr. 187°} [1]

^{13}C NMR: [2]

C-2	158.2	C-4a	126.4	C-7	129.1
3	121.7	5	127.3	8	128.7
4	135.6	6	125.4	8a	147.9
				CH_3	25.1

1. Zharekeev B.Kh., Khashimov Kh.N., Telezhenetskaya M.V., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 264.
2. Shamma, No. 235.



QUINOLINE

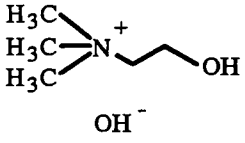
Peganum harmala
C_9H_7N: 129.0578

{picr. 202°} [1]
UV: 227, 278, 301, 314(4.56, 3.56, 3.43) [2]
Mass: 129(M^+, 100), 102 [3]
PMR: [4]

^{13}C NMR: [5]

C-2	150.2	C-4a	128.2	C-7	129.2
3	120.9	5	127.6	8	129.4
4	135.7	6	126.4	8a	148.3

1. Zharekeev B.Kh., Khashimov Kh.N., Telezhenetskaya M.V., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 264.
2. Sangster A.W., Stuart K.L., Chem. Rev., 1965, **65**, 69.
3. Budziekewicz H., Djerassi C., Williams D., Interpretation of Mass Spectra of Organic Compounds, Holden-Day, San Francisco, 1964.
4. Schaefer T., Canad. J. Chem., 1961, **39**, 1864.
5. Shamma, No. 234.

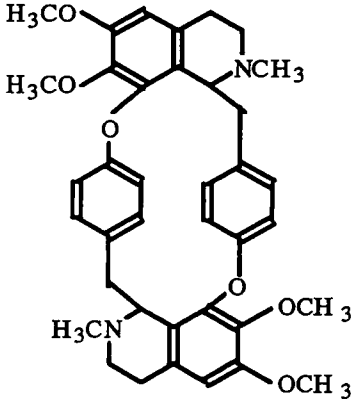


CHOLINE

Leonurus quinquelobatus
$C_5H_{15}NO_2$: 121.1103
Mp: 180° (dec.)

{chloride 107.5°}
Sol-y.: sol. water, alc.

1. Kozlova L.M., Farmatsiya, 1967, No. 6, 23.



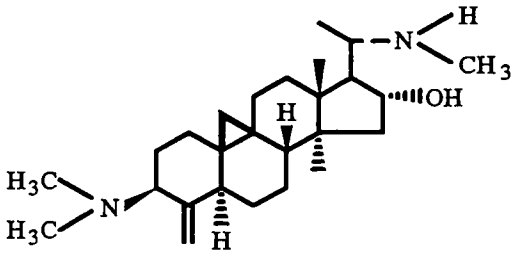
CYCLEANINE

Stephania delavayi, S.glabra
$C_{38}H_{42}N_2O_6$: 622.3043
Mp: 272-273° (alc.) [1]
$[\alpha]_D$–12° (chlf.) [1]
{m-i. 311°, picr. 193°} [1]
UV: 232 sh, 276, 285 sh (4.87, 3.89, 3.83) [2]
Mass: 622(M^+, 29), 621(8), 313(26), 312(100), 311(28), 204(21), 190(17), 174(17), 159(14), 146, 145 [2]

PMR: 2.53(6H, s, 2×NCH_3), 3.38(6H, s, 2×OCH_3), 3.78(6H, s, 2×OCH_3), 6.13-7.05(10 H, m, H-Ar) [2]
Abs. conf.: 1R, 1'R
Pharm.: Antiinflammatory, anesthetizing, antipyretic action [3].

1. Shchelchkova I.I., Il'inskaya T.N., Kuzovkov A.D., Khim. Prir. Soedin., 1965, 271.
2. Dwuma-Badu D., Ayim J.S.K., Mingle C.A., Tackie A.N., Slatkin D.J., Knapp J.E., Schiff P.L., Phytochem., 1975, **14**, 2520.

3. Rabinovich I.M., Kibal'chich P.N., Fadeeva I.I., Il'inskaya T.N., Kuzovkov A.D., Berezhinskaya V.V., Trutneva E.A., Nikitina S.S., Aptechnoe Delo, 1965, No. 6, 19.

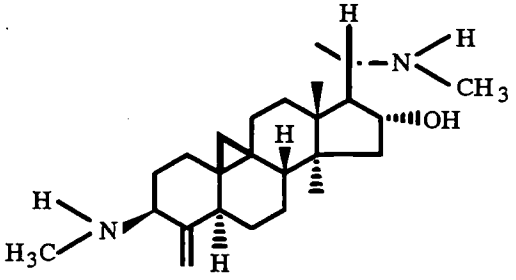


CYCLOBUXINE B

Buxus sempervirens
$C_{26}H_{44}N_2O$: 400.3454
Mp: 236-238° (alc.) [1]
$[\alpha]_D$+117° (chlf.) [1]
IR: 3580, 3310, 3032, 2777, 1655, 1460, 1280, 1040, 900 [2]

Mass: 400(M^+), 385, 370, 342, 84, 71, 58(100) [2]
PMR: 0.05, 0.30(2H, dd, J=4, H-19), 0.91(3H, s, CH_3), 0.96(3H, d, J=6, CH_3), 1.06(3H, s, CH_3), 2.23(6H, s, $N(CH_3)_2$), 2.37(3H, s, $NH\text{-}CH_3$), 4.09(1H, m, H-16), 4.65, 4.95(2H, $=CH_2$) [2]

1. Khodzhaev B.U., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 130.
2. Voticky Z., Paulik V., Sedlak B., Chem. Zvesti, 1969, **23**, 702.

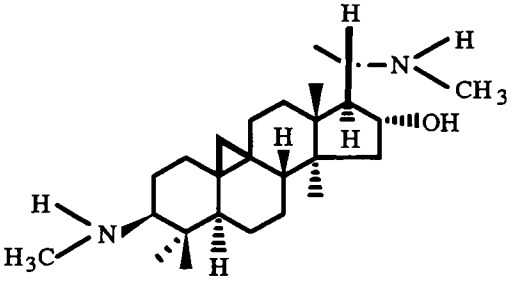


CYCLOBUXINE D

Buxus hyrcana, B.sempervirens
$C_{25}H_{42}N_2O$: 386.3297
Mp: 235-237° (alc.) [1]
$[\alpha]_D$+96° (chlf.) [1]
IR: 3310, 3150, 3042, 2930, 1650, 1463, 910 [1]

Mass: 386(M^+, 20), 372(31), 356(29), 328(11), 58(100) [1]
PMR: 0.91(3H, s, CH_3), 1.02(3H, d, J=6.21-CH_3), 1.06(3H, s, CH_3), 2.38(3H, s, NCH_3), 2.43(3H, s, NCH_3), 4.03(1H, m, H-16), 4.52, 4.75(2H, dd, J<1, $=CH_2$) [1, 2]
Pharm.: LD_{50} 20, 100, 137 mg/kg (i/v, s/c, oral, mice). Antimicrobial, antifungal activity [3], antiinflammatory, tranquilizing, hypotensive action. Relatively nontoxic [4].

1. Khodzhaev B.U., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 542.
2. Brown K.S., Kupchan S.M., J. Amer. Chem. Soc., 1964, **86**, 4414, 4424.
3. Isamukhamedov I.M., in:The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 146.
4. Saidkasymov T., in: The Pharmacology of Natural Substances [in Russian], Fan, Tashkent, 1978, p. 74.

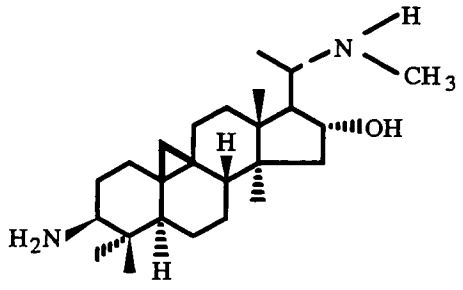


CYCLOVIROBUXINE D

Buxus sempervirens
$C_{26}H_{46}N_2O$: 402.361
Mp: 219-221° (alc.) [1]
$[\alpha]_D$+66° (chlf.) [1]
{tri Ac 238°, di Me. 245°} [1]
IR: 3305, 3150, 3030, 1460 [1]
Mass: 402(M^+), 387, 58(100), 44 [2]

PMR: 0.67(3H, s, CH_3), 0.89(6H, s, 2×CH_3), 1.02(3H, d, 21-CH_3), 1.03(3H, s, CH_3), 2.36(6H, s, 2×NCH_3), 4.04(1H, m, H-16) [1, 3]

1. Khodzhaev B.U., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 114.
2. Khodzhaev B.U., Shakirov R., Unpub.
3. Brown K.S., Kupchan S.M., Tetrahedron Lett., 1964, 2895.

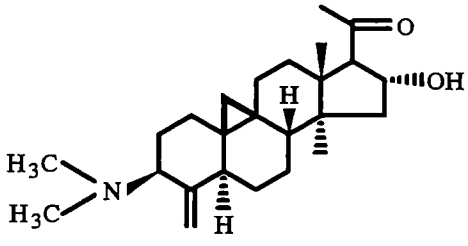


CYCLOVIROBUXINE F

Buxus sempervirens
$C_{26}H_{46}N_2O$: 402.361
Mp: 224-226° (alc.)
$[\alpha]_D$+53° (chlf.)
{di Ac 231°, di Me 246°}
IR: 3310, 3050, 1642, 1592, 1460
Mass: 402(M^+), 386, 371, 84, 72, 71

PMR: 0.71(3H, s, CH_3), 0.76(3H, s, CH_3), 0.88(3H, s, CH_3), 0.89(3H, d, J=6, CH_3), 0.94(3H, s, CH_3), 2.23(6H, s, $N(CH_3)_2$), 4.06(1H, m, H-16)

1. Khodzhaev B.U., Primukhamedov I.M., Yunusov S.Yu., Khim. Prir. Soedin., 1985, 718.

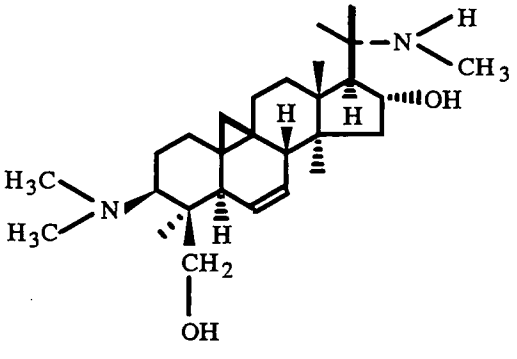


CYCLOMICROBUXINE

Buxus hyrcana
$C_{25}H_{39}NO_2$: 385.2981
Mp: 178-180° (ac.) [1]
$[\alpha]_D$+172° [2]
UV: 203(4.88) [1]
IR: 3400, 3040, 1700, 1463 [1]

PMR: 2.08(3H, s, CH_3), 2.26(6H, s, $N(CH_3)_2$), 2.97(1H, d, J=6.5, H-17), 4.58, 4.89(2H, s, $=CH_2$), 4.83(1H, m, H-16) [1]

1. Kurakina I.O., Tolkachev O.N., Pakaln D.A., Khim. Prir. Soedin., 1974, 814.
2. Nakawa T., Hasegawa M., J. Chem. Soc., 1965, 6688.

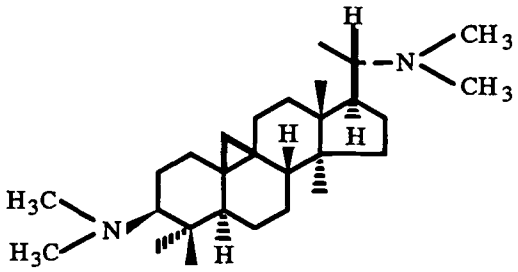


CYCLOMICROPHYLLINE B (CYCLOBALEABUXINE)

Buxus balearica
$C_{27}H_{46}N_2O_2$: 430.3559
Mp: 246-248° (alc.) [1]
$[\alpha]_D$–69° (chlf.) [1]
{Ac 195°, Me 230°}
UV: 196(4.23) [2]
IR: 3410, 3320 [1]

Mass: 430(M^+), 412, 410, 397, 395, 84(7), 71(37), 58(6) [2]
PMR: 0.16, 0.78(2H, dd, J=5, 19-CH_2), 1.09(3H, d, 21-CH_3), 0.91, 1.11(3H, s, 2×CH_3), 2.31(6H, s, $N(CH_3)_2$), 2.45(3H, s, NH-CH_3), 3.51, 3.85(2H, dd, J=10, CH_2OH), 4.15(1H, m, HC-OH), 5.46(2H, m, CH=CH) [2]

1. Kurakina I.O., Proskurina N.F., Stepanyants A.U., Khim. Prir. Soedin., 1969, 406.
2. Herlem-Gaulier D., Khuong-Huu-Laine F., Stanislas E., Goutarel R., Bull. Soc. Chim. France, 1965, 657.

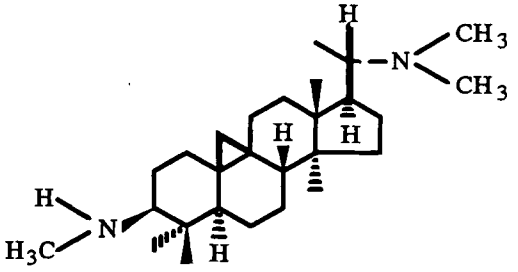


CYCLOPROTOBUXINE A

Buxus sempervirens
$C_{28}H_{50}N_2$: 414.3974
Mp: 200-202° (alc.) [1]
$[\alpha]_D$+103°(chlf.) [1]
IR: 3050, 1460 [2]
Mass: 414(M^+), 84, 72(100), 55 [3]

PMR: 0.75(3H, s, CH_3), 0.88(6H, s, 2×CH_3), 0.92(6H, s, 2×CH_3), 2.14(6H, s, $N(CH_3)_2$), 2.26(6H, s, $N(CH_3)_2$), [2, 4]

1. Khodzhaev B.U., Yunusov S.Yu., Khim. Prir. Soedin., 1982, 125.
2. Khodzhaev B.U., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 114.
3. Khodzhaev B.U., Shakirov R., Unpub.
4. Herlem-Gaulier D., Khuong-Huu-Laine F., Stanislas E., Goutarel R., Bull. Soc. Chim. France, 1965, 657.

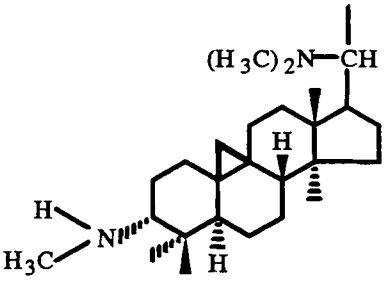


CYCLOPROTOBUXINE C

Buxus hyrcana
$C_{27}H_{48}N_2$: 400.3817
Mp: 201-202° (ac.) [1]
$[\alpha]_D$+76° (chlf.) [1]
{Ac 225°, N-Me 205°, $[\alpha]_D$+30° (chlf.)} [1]
IR: 3060, 1460 [1]

Mass: 400(M^+, 20), 385(12), 356(17), 84(8), 72(100), 70(15), 58(12) [1, 2]
PMR: 0.76(6H, s, 2×CH_3), 0.82(3H, d, J=6, 21-CH_3), 0.92(3H, s, 4-CH_3), 0.95(3H, s, 4-CH_3), 2.17(6H, s, $N(CH_3)_2$), 2.44(3H, d, NH-CH_3) [1]

1. Aliev A.M., Orazmuradov G.M., Khim. Prir. Soedin., 1974, 808.
2. Herlem-Gaulier D., Khuong-Huu-Laine, Stanislas E., Goutarel R., Bull. Soc. Chim. France, 1965, 657.



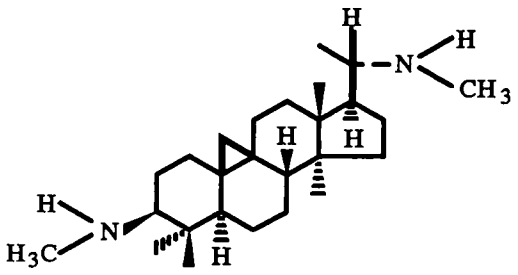
(–)-CYCLOPROTOBUXINE C

Buxus colchica, B.sempervirens
$C_{27}H_{48}N_2$: 400.3817
Mp: 195-197°
$[\alpha]_D$–62° (chlf.)
{Ac 227°, Me 203°, benzoyl derivative 246°}
IR: 3050, 1460

Mass: 400(M^+), 385, 356, 329, 72(100), 71, 70 [1]
PMR: 0.72(3H, s, CH_3), 0.78(3H, d, 21-CH_3), 0.88(3H, s, CH_3), 0.91(6H, s, 2×4-CH_3), 2.15(6H, s, $N(CH_3)_2$), 2.39(3H, s, NCH_3) [1, 2]

1. Khodzhaev B.U., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 266.

2. Khodzhaev B.U., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 554.

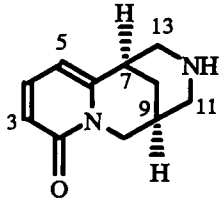


CYCLOPROTOBUXINE D

Buxus sempervirens
$C_{26}H_{46}N_2$: 386.3661
Mp: 135-137° (ac.) [1]
$[\alpha]_D$+(chlf.) [1]
{di Me. 200°} [1]
IR: 3050, 1460 [1]
Mass: 386(M^+), 371, 314, 58(100), 57 [2]

PMR: 0.69(3H, s, CH_3), 0.85(3H, s, CH_3), 0.88(3H, d, CH_3), 0.91(3H, s, CH_3), 0.94(3H, s, CH_3), 2.38(6H, s, $(NCH_3)_2$) [1, 3]

1. Khodzhaev B.U., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 114.
2. Khodzhaev B.U., Shakirov R., Unpub.
3. Kupchan S.M., Kurosawa E., J. Org. Chem., 1965, **30**, 2046.



CYTISINE

Ammodendron argenteum, A.conollyi, A.eichwaldii, A.karelinii, A.longiracemosum, Ammothamnus lehmannii, Cladrastis amurensis, Cytisus laburnum, Genista abchasica, G.aethnensis, G.ispanica, G.tinctoria, Laburnum anagyroides, Maackia amurensis, Sophora alopecuroides, S.griffithii, S.japonica, S.pachycarpa, Spartium junceum, Thermopsis alpina, T.alterniflora, T.dolichocarpa, T.fabacea, T.lanceolata, T.turkestanica, Vexibia pachycarpa

$C_{11}H_{14}N_2O$: 190.1106
Mp: 155° (ac.)
$[\alpha]_D$–120° (water)
{picr. 290°, p-chl. 298°, nitr. 187°} [1]
UV: 235, 308(3.80, 3.90) [2]
IR: 3320, 3280, 1646, 1567, 1553, 1540, 1483, 1312, 1301, 1266, 1232, 1178, 1158, 1141, 1115, 1104, 1088, 1075, 1058, 1038, 1013, 978, 923, 908, 893, 869, 863, 855, 847, 820, 810, 793, 750, 739, 718 [3]
Mass: 190(M^+, 57), 160(23), 148(35), 147(82), 146(100), 134(32), 109(22), 83(25), 44(93), 41(57) [4]
PMR: 1.97(NH), 2.34(H-9), 3.60-4.40(2H, H-10_a, H-10_e), 6.05(1H, d, J=7, H-3), 6.47(1H, dd, J=9; 2, H-5), 7.33(1H, q, J=7; 9, H-4) [5]

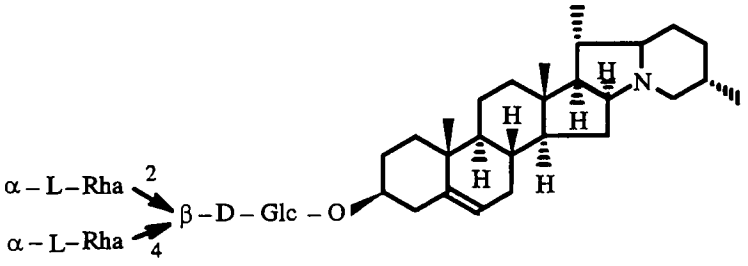
^{13}C NMR: [6]

C-2	166.6	C-6	153.4	C-10	51.8
3	117.8	7	36.9	11	53.6
4	142.1	8	27.3	13	54.6
5	108.9	9	29.5		

HPLC: [6]
Pharm.: LD_{50} 12.5, 8.75, 5.0 mg/kg (s/c, mice, rats, cats). Stimulates respiration and raises blood pressure. Sharply enhances the emetic action of apomorphine [7]. A 15% soln. (the preparation Tsititon) is used as an analeptic in shock and collaptoid states, asphyxia of the newborn, etc. Supplied in 1-ml ampuls. A component of Tabeks tablets used for ensuring that smoking is abandoned [8].

1. Yunusov S.Yu., The Alkaloids [in Russian], Fan, Tashkent, 1980, p. 235.
2. Sangster A.W., Stuart K.L., Chem. Rev., 1965, **65**, 69.

3. Spath E., Galinowsky F., Chem. Ber., 1943, **76**, 947.
4. Pelletier, Vol. 2, p. 105.
5. Sadykov, p. 49.
6. Takamatsu S., Saito K., Ohmiya S., Ruangrungsi N., Murakoshi J., Phytochem., 1991, **30**, 3793.
7. Sadritdinov, p. 154.
8. Mashkovskii, Vol. 1, p. 132.

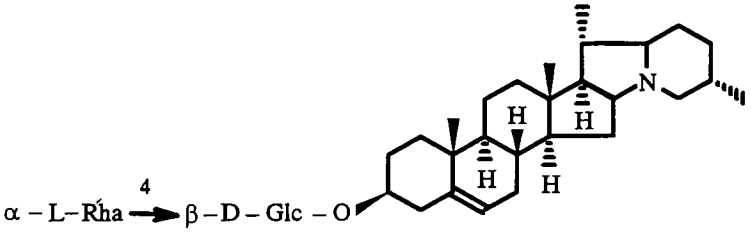


α-CHACONINE

Solanum tuberosum
$C_{45}H_{73}NO_{14}$: 851.5031
Mp: 234-238° (meth.) [1]
$[\alpha]_D$–86° (pyr.) [1, 2]
IR: 3420, 1650, 1150-1000 [1]

Mass: 397, 204, 150(100) [1]
HPLC: [3]

1. Nabiev A., Shakirov R., Khim. Prir. Soedin., 1974, 116.
2. Kuhn R., Low I., Trischmann H., Chem. Ber., 1955, **88**, 1690.
3. Hellenas K.-E., Nyman A., Slanina P., Loof L., Gabrielsson J., J. Chromatogr., 1992, **573**, 69.

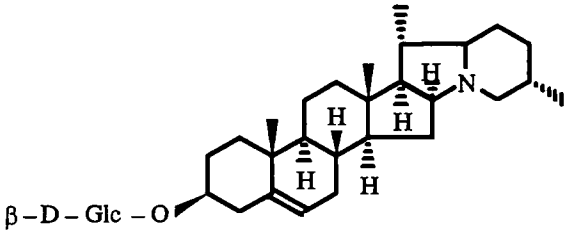


β-CHACONINE

Rhinopetalum stenantherum, Solanum tuberosum
$C_{39}H_{63}NO_{10}$: 705.4452
Mp: 253-255° (meth.)
$[\alpha]_D$–62° (pyr.)
Sol-y.: sp. sol. ac., alc., chlf.

IR: 3420, 1640, 1150-1000
Mass: 705(M^+, 16), 397(5.3), 396(5.5), 380(23), 204(25), 150(100)
GLC: glucose–rhamnose (1:1) [1]
HPLC: [2]

1. Samikov K., Rashkes Ya.V., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1981, 349.
2. Hellenas K.-E., Nyman A., Slanina P., Loof L., Gabrielsson J., J.Chromatogr., 1992, **573**, 69.

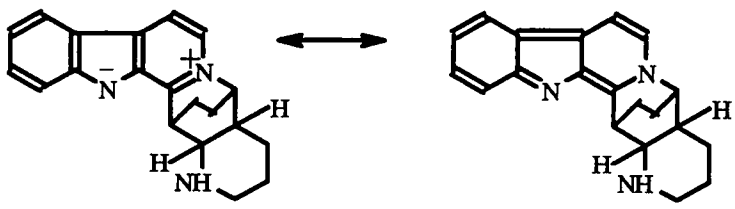


γ-CHACONINE

Solanum tuberosum
$C_{33}H_{53}NO_6$: 559.3873
Mp: 249-251° (meth.) [1, 2]
$[\alpha]_D$–37° (pyr.) [1]
IR: 3420, 1650, 1150-1000 [1]

Mass: 397, 204, 150(100) [1]
HPLC: [3]

1. Nabiev A., Shakirov R., Khim. Prir. Soedin., 1974, 116.
2. Kunh R., Low I., Angev. Chem., 1954, 66, 639; Rosen W.E., Rosen D.B., Chem. Ind., 1954, D1581.
3. Hellenas K.-E., Nyman A., Slanina P., Loox L., Gabrielsson J., J. Chromatogr., 1992, 69.

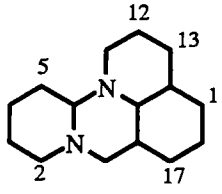


SCHOBERIDINE

Nitraria komarovii, N.schoberi
$C_{20}H_{21}N_3$: 303.1736
Mp: 204-205°
{di h-chl. 267°} [1]
Sol-y.: sp. sol. org. solvent

UV: 254, 308, 372(4.24, 4.09, 3.38) [1, 2]
UV(OH^-): 284, 330, 415(4.37, 3.80, 3.32) [1, 2]
Mass: 303(M^+), 275, 274, 260, 259, 220, 219(100), 195, 182, 169, 168, 83 [1].
Pharm.: LD_{50} 11.9 mg/kg (i/v, mice). Hypotensive action [3].

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.
3. Vakhabov A.A., Author's Abstract of Doctoral Dissertation, Moscow, 1982.

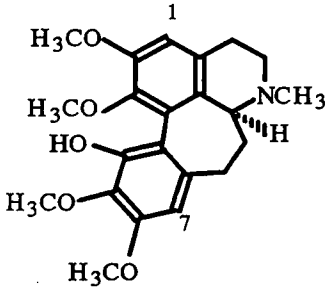


SCHOBERINE

Nitraria komarovii, N.sibirica, N.schoberi
$C_{15}H_{26}N_2$: 234.2096
Mp: 62-63°
$[\alpha]_D$ 0° [1]

{picr. 184°} [2]
Mass: 234(M^+, 67), 233(36), 206(22), 205(48), 192(100), 178(33), 177(17), 150(11), 138(3), 137(4), 136(7), 124(7), 123(4), 122(4), 110(7), 98(8), 97(10), 96(20), 84(7), 83(8), 67(6), 56(4), 55(8) [1]
PMR: (CF_3COOH) 1.49(14H, m), 2.35(1H, m), 2.70(3H, m), 3.20(3H, m), 3.46(2H, m), 3.75(2H, m), 8.29(1H, m) [1]
X-ray spectral analysis: [1]

1. Tashkhodzhaev B., Ibragimov A.A., Ibragimov B.T., Yunusov S.Yu., Khim. Prir. Soedin., 1989, 30.
2. Ibragimov A.A., Novgorodova N.Yu., Aripov Kh.N., Khim. Prir. Soedin., 1977, 84.

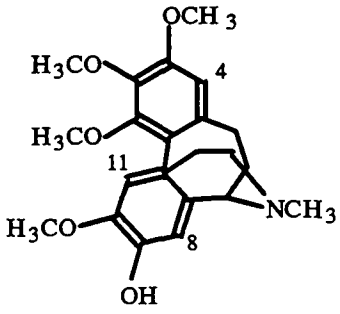


SZOVITSAMINE

Colchicum szovitsii
$C_{22}H_{27}NO_5$: 385.1889
Mp: 188-190° (eth.)
$[\alpha]_D$+86° (chlf.)
UV: 258, 287(4.33, 4.07)
Mass: 385(M^+, 33), 384(5), 370(15), 368(6), 356(7), 354(100), 342

PMR: 2.33(3H, s, NCH_3), 3.50, 3.82(3H, 9H, s, 4×OCH_3), 6.37, 6.64(1H, s, H-1, H-7)

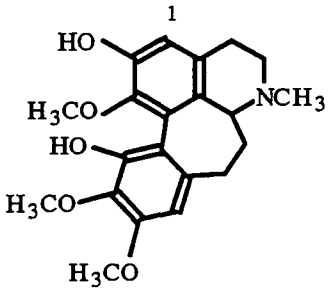
1. Yusupov M.K., Din' Tkhi Ngo, Aslanov Kh.A., Sadykov A.S., Khim. Prir. Soedin., 1975, 109.



SZOVITSIDINE

Colchicum szovitsii
$C_{22}H_{29}NO_5$: 387.2046
UV: 280
Mass: 387(M^+, 100), 372, 356, 344, 316, 149
PMR: 2.32(3H, s, NCH_3), 3.52, 3.74, 3.83, 3.86(3H, s, 4×OCH_3), 6.26, 6.40, 6.50(1H, s, H-4, H-8, H-11)

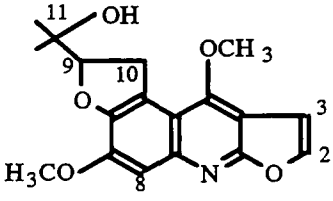
1. Yusupov M.K., Aslanov Kh.A., Din' Tkhi Bik Ngo, Khim. Prir. Soedin., 1975, 271.



SZOVITSININE

Colchicum szovitsii
$C_{21}H_{25}NO_5$: 371.1733
Mass: 371(M^+), 370, 356, 354, 340(100), 328, 204
PMR: 2.38(3H, s, NCH_3), 3.50, 3.80, 3.82(3H, s, 3×OCH_3)

1. Kasymov A.K., Timbekov É.Kh., Yusupov M.K., Aslanov Kh.A., Khim. Prir. Soedin., 1977, 230.



CHOISYINE

Choisya ternata
$C_{18}H_{19}NO_5$: 329.1263
Mp: 188-189° (alc.)

{nitr. 145°, sulf. 196°, p-chl. 191°, picrolonate 210°, chl-aur. 177°, picr. 252°, Ac, 232°, isochoisyine 259°, norchoisyine 256°}
Sol-y.: sol. alc., chlf., bz. [1, 2, 3]
UV: 255, 320, 330, 351 [1]
IR: 3405, 1627 [1]
Mass: 329(M^+, 79), 311(6), 296(54), 270(100), 256(14), 255(12), 241(10), 240(10), 228(13), 226(26) [3]
PMR: 1.29, 1.42(3H, s, 2×CH_3), 3.70, 4.77(2H, 1H, H-10, H-9), 3.91, 4.29(3H, s, 2×OCH_3), 6.95, 7.50(1H, d, J=2, 5, H-3, H-2), 7.13(1H, s, H-8) [3]

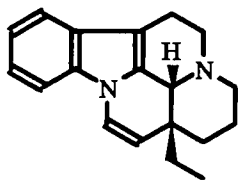
^{13}C NMR [4]:

C-2	142.6	C-5	–	C-10	90.7
2a	–	6	–	11	72.0
3	104.6	7	–	12	24.4
3a	–	8	106.8	13	26.1
4	–	8a	–	4-OCH_3	58.9
4a	–	9	90.7	7-OCH_3	55.8

Pharm.: Sympathomimetic properties [5].

1. Frolova V.I., Ban'kovskii A.I., Volynskaya M.V., Med. Prom. SSSR, 1958, No. 7, 35.

2. Frolova V.I., Kuzovkov A.D., Zh. Org. Khim., 1963, **33**, 121.
3. Johns S.R., Lamberton J.A., Sioumis A.A., Austral. J. Chem., 1967, **20**, 1975.
4. Brown N.M.D., Grundon M.F., Harrison D.M., Surgenor S.A., Tetrahedron, 1980, **36**, 3579.
5. Sadritdinov, p. 276.

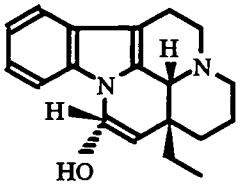


(+)-EBURNAMENINE

Amsonia angustifolia, A.illustris,
A.tabernaemontana
$C_{19}H_{22}N_2$: 278.1783

Mass: 278($M^{+\cdot}$, 30), 249(97), 208(100), 193(25) [1]
Abs. conf.: [2]

1. Hesse M., Indolalkaloide (Progress in Mass Spectrometry), Verlag Chemie, 1974, Vol. 1, Teil. 2, Abb. 76.
2. Trojanek J., Koblicova Z., Blaha K., Chem. Ind., 1965, 1261.

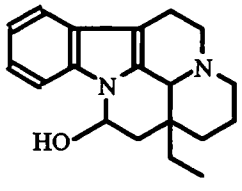


(–)-EBURNAMINE

Amsonia angustifolia, A.illustris,
A.tabernaemontana
$C_{19}H_{24}N_2O$: 296.1889
Mp: 105-107°, 178° [1]
$[\alpha]_D$–94° (chlf.) [1]

UV: 229, 282(4.52, 3.93) [1]
IR: 1319, 1297, 1285, 1271, 1262, 1240, 1211, 1170, 1152, 1139, 1112, 1099, 1070, 1055, 1035, 1028, 1013, 995, 980, 973, 940, 930, 926, 910, 895, 881, 800, 767, 748, 740 [2]
Mass: 296($M^{+\cdot}$, 100), 278, 267, 249, 226, 208, 193 [3]
Abs. conf.: [4]

1. Zabolotnaya E.S., Belikov A.S., Ivashchenko S.P., Molodozhnikov M.M., Med. Prom. SSSR, 1964, No. 5, 28.
2. Holubek, No. 433.
3. Hesse M., Indolalkaloide (Progress in Mass Spectrometry), Verlag Chemie, 1974, Vol. 1, Teil. 2, Abb. 78.
4. Trojanek J., Koblicova Z., Blaha K., Chem. Ind., 1965, 1261.

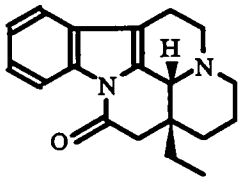


(±)-EBURNAMINE

Vinca erecta
$C_{19}H_{24}N_2O$: 296.1889
Mp: 213-214° (ac.)
$[\alpha]_D$ 0° (meth.)

UV: 230, 285, 292(4.89, 3.87, 3.79)
IR: 330-3000, 740
Mass: 296($M^{+\cdot}$), 278, 267, 249, 208, 206, 193
PMR: 0.87, 5.39, 7.05-7.61

1. Rakhimov D.A., Sharipov M.R., Aripov Kh.N., Malikov V.M., Shakirov T.T., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 713.

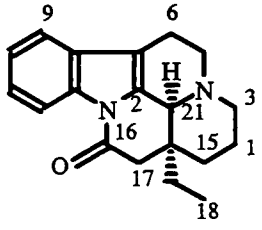


(+)-EBURNAMONINE

Amsonia angustifolia, A.illustris,
A.tabernaemontana
$C_{19}H_{22}N_2O$: 294.1732
Mp: 174-175° (alc., meth.) [1]
$[\alpha]_D$+105° (chlf.) [1]

UV: 242, 268, 296, 302(4.28, 3.99, 3.69, 3.69) [1]
Mass: 294(M^+, 100), 293, 265, 237, 224, 180, 147 [2]
Abs. conf.: [3]

1. Zabolotnaya E.S., Belikov A.S., Ivashchenko S.P., Molodozhnikov M.M., Med. Prom. SSSR, 1964, No. 5, 28.
2. Hesse M., Indolealkaloide (Progress in Mass Spectrometry), Verlag Chemie, 1974, Vol. 1, Teil 2, Abb. 77.
3. Trojanek J., Koblicova Z., Blaha K., Chem. Ind., 1965, 1263.

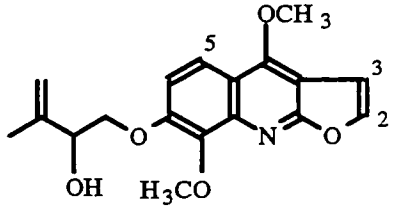


(–)-EBURNAMONINE

Vinca erecta
$C_{19}H_{22}N_2O$: 294.1732
Mp: 167-168° (ac.) [1], 174-176° [2]
$[\alpha]_D$–90° (chlf.) [2]

UV: 243, 268, 297-305(4.55, 4.16, 3.36) [1]
IR: 1700, 760 [1]
Mass: 294(M^+), 265, 237, 224 [1]
PMR: 0.94(t, 18-CH_3), 0.98(ddd, H-15), 1.38(d, H-14), 1.47(d, H-15), 1.62(dq, H-19), 1.72(ddd, H-14), 2.02(dq, H-19′), 2.35(d, H-17), 2.86(m, H-6), 3.16(ddd, H-5), 3.28(dd, H-5), 3.85(s, H-21), 7.24(t, H-10), 7.28(t, H-11), 7.40(d, H-9), 8.35(d, H-12) [3]

1. Rakhimov D.A., Malikov V.M., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 226.
2. Mokry J., Kompis I., Sefcovic P., Bauer S., Collect., 1963, **28**, 1309.
3. Feng X.Z., Kan C., Husson H.-P., Potier P., Kan S.-K., Lounasmaa M.J., J. Natur. Prod., 1984, **47**, 117.



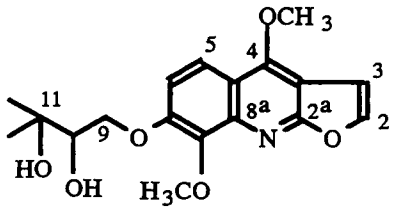
EVODINE

Haplophyllum ferganicum,
H.obtusifolium, H.perforatum,
H.ramosissimum
$C_{18}H_{19}NO_5$: 329.1263

Mp: 152-153° (ac.)
$[\alpha]_D$–60° (alc.)
{Ac 127°}
Sol-y.: sol. chlf.; sp. sol. ac., eth.; i.s. water [1]
UV: 250, 323, 335 (4.56, 3.82, 3.80) [2]
IR: 3320, 3145, 1630, 1628, 1590, 1520, 1498 [2]
Mass: 329(M^+, 78), 258(16), 245(50), 244(25), 227(100), 216(25), 71(7) [1]
PMR: 1.79(3H, s, CH_3), 3.47(1H, OH), 3.94-4.54(3H, m, CH_2-CH), 4.09, 4.34(3H, s, 2×OCH_3), 4.93, 5.09(1H, s, =CH_2), 6.96, 7.52(1H, d, J=3, H-3, H-2), 7.13, 7.90(1H, d, J=9.4, H-6, H-5) [1]

1. Akhmedzhanova V.I., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 289.

2. Bessonova I.A., Unpub.



EVOXINE (HAPLOPERINE)

Choisya ternata, Dictamnus angustifolius, Haplophyllum acutifolium, H.alberti-regelii, H.dubium, H.ferganicum, H.latifolium, H.obtusifolium, H.perforatum, H.popovii, H.ramosissimum, Nitraria schoberi

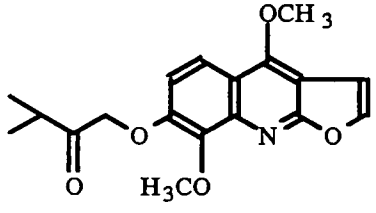
$C_{18}H_{21}NO_6$: 347.1369
Mp: 155-156° (ac.)
{h-chl. 130° (dec.), isoevoxine 159°}
Sol-y.: sol. chlf.; sp. sol. bz., eth., water, petr. eth. [1]
UV: 250, 300 sh, 320, 335(4.95, 3.64, 3.90, 3.88) [2]
IR: 3340, 3165, 3135, 1620, 1590, 1520, 1498, 1400, 1375, 1290, 1100, 1060, 996, 790, 730 [2]
Mass: 347($M^{+\cdot}$, 69), 288(17), 258(10), 245(36), 244(49), 228(23), 227(100), 216(20), 199(14), 187(6), 59(79) [2, 3]
PMR: 1.28, 1.32(3H, s, 2×CH_3), 4.12, 4.40(3H, s, 2×OCH_3), 6.96, 7.55(1H, d, J=2.5, H-3, H-2), 7.15, 7.95(1H, d, J=9, H-6, H-5) [4]

^{13}C NMR (DMSO-d_6): [5]

C-2	143.6	C-5	117.6	C-10	76.1
2a	163.8	6	113.9	11	70.9
3	105.3	7	141.7	12	24.3
3a	114.1	8	140.8	13	27.3
4	156.7	8a	151.6	4-OCH_3	59.3
4a	101.7	9	71.6	8-OCH_3	60.8

HPLC: [6]
Pharm.: LD_{50} 370, 180, 705 mg/kg (i/p, i/v, s/c). Tranquilizing, soporific, analgesic, anticonvulsive action [7].

1. Yunusov S.Yu., Sidyakin G.P., Zh. Org. Khim., 1952, **22**, 1055.
2. Bessonova I.A., Unpub.
3. Akhmedzhanova V.I., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 272.
4. Robertson A.V., Austral. J. Chem., 1963, **16**, 451.
5. Brown N.M.D., Grundon M.F., Harrison D.M., Surgenor S.A., Tetrahedron, 1980, **36**, 3579.
6. Montagu M., Levillain P., Chenieux J.C., Rideau M., J. Chromatogr., 1985, **331**, 437.
7. Sadritdinov, p. 276.

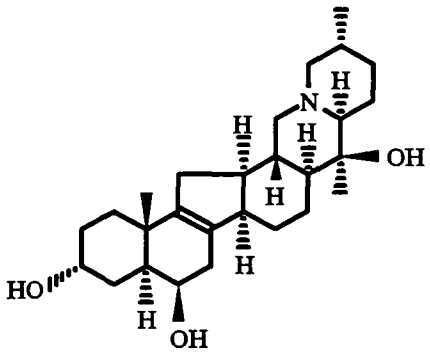


EVOXOIDINE

Haplophyllum perforatum
$C_{18}H_{19}NO_5$: 329.1263
Mp: 135-136° (ac.)
Sol-y.: r-sol. chlf.; sol. ac., eth.; i.s. water

Mass: 329($M^{+\cdot}$, 54), 258(47), 245(17), 244(100).

1. Akhmedzhanova V.I., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 289.

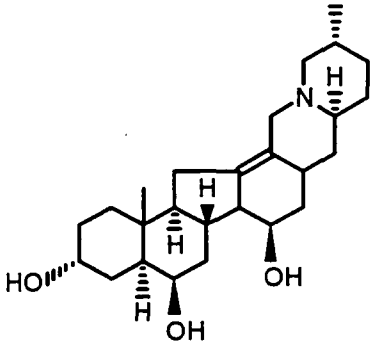


EDPETISIDINE

Petilium eduardii
$C_{27}H_{43}NO_3$: 429.3243
Mp: 257-259° (ac.)
$[\alpha]_D$–34° (meth.) [1]
{dihydro amorph., di Ac dihydro amorph.}
Sol-y.: sol. pyr., alc.
IR: 3400, 2760, 1670

Mass: 429(M^+), 414, 411, 388, 386, 374, 368, 358, 156, 155, 154, 149, 125, 124, 112(100), 111, 98.
PMR: 0.97(s, 19-CH_3), 1.03(s, 21-CH_3), 0.85(d, 27-CH_3) [2]

1. Nabiev A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 676.
2. Shakirov R., Nabiev A., Yunusov S.Yu., Khim. Prir. Soedin., 1978, 416.

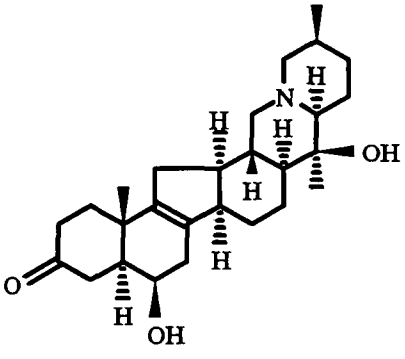


EDPETISIDININE

Petilium eduardii
$C_{27}H_{43}NO_3$: 429.3243
Mp: 263-265° (meth.)
$[\alpha]_D$–15° (meth.-chlf.) [1]
{tri Ac amorph., dione 218°}
Sol-y.: sol. meth., chlf.
IR: 3300, 2770, 1670.
Mass: 429(M^+, 100), 414, 400, 373, 178, 164, 149, 125, 124, 123, 112, 111, 98.

PMR: 0.90(s, 19-CH_3), 0.87, 0.79(d, 21-CH_3, 27-CH_3) [2]

1. Nabiev A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 676.
2. Nabiev A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1979, 584.

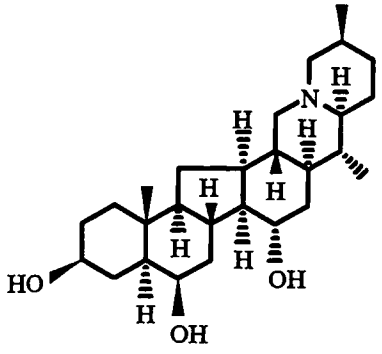


EDPETISINE

Petilium eduardii
$C_{27}H_{41}NO_2$: 411.3137
Mp: 169-171 (ac.)
$[\alpha]_D$+5° (chlf.)
{Deoxydihydro 128°}
UV: 282(2.16)
IR: 3530, 2790, 1685.

Mass: 411(M^+), 396, 393, 378, 368, 366, 355, 354, 164, 156, 155, 154, 140, 125, 124, 125, 124, 112(100), 111, 98.
PMR: 0.95(s, 19-CH_3), 1.04(s, 21-CH_3), 1.07(d, 27-CH_3).

1. Nabiev A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 403.

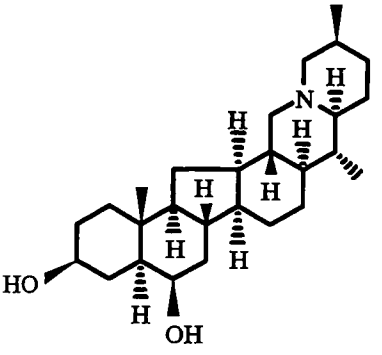


EDPETISININE

Petilium eduardii
$C_{27}H_{45}NO_3$: 431.3399
Mp: 247-248° (meth.)
$[\alpha]_D$–46°(meth.) [1]
{tri Ac 201°, dione 202°}
Sol-y.: sol. meth., chlf.
IR: 3420, 2770.

Mass: 431(M^+), 416, 413, 402, 375, 361, 260, 258, 218, 179, 178, 164, 150, 149, 139, 138, 125, 124, 112, 111(100), 98.
PMR: 0.92(s, 19-CH_3), 0.86(d, 21-CH_3), 1.07(d, 27-CH_3) [2]

1. Nabiev A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 676.
2. Nabiev A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 679.

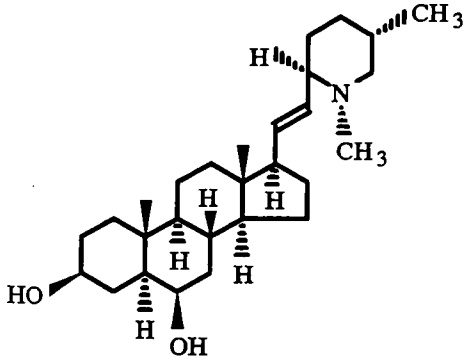


EDPETILIDINE

Petilium eduardii
$C_{27}H_{45}NO_2$: 415.3450
Mp: 227-228° (meth.)
$[\alpha]_D$–48° (pyr.)
{h-chl. 285°, h-b. 272°, h-i. 263°, nitr. 225°, m-i. 294°} [1, 2]
IR: 3425, 2930, 1465 [3]

Mass: 415(M^+), 400, 397. 386, 372, 370, 368, 359, 358, 345, 344, 218, 178, 164, 150, 139, 124, 112, 111, 98 [4]
PMR(Py-d_5): 0.57(3H, d, 21-CH_3), 1.01(3H, d, 27-CH_3), 1.25(3H, s, 19-CH_3) [5, 6]

1. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Dokl. AN UzSSR, 1963, No. 9, 23.
2. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 429.
3. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 384.
4. Nuriddinov R.N., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 316.
5. Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 333.
6. Nabiev A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 535.

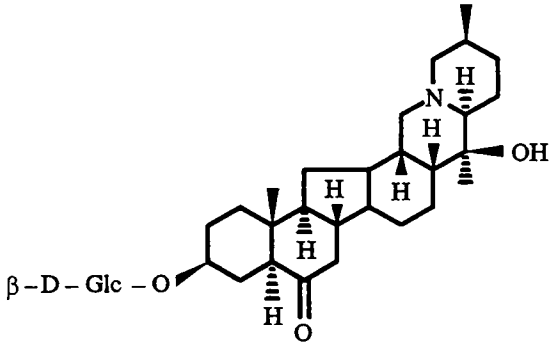


EDPETILIDININE

Petilium eduardii
$C_{28}H_{47}NO_2$: 429.3607
Mp: 269-271° (meth.)
$[\alpha]_D$+42° (alc.)
{h-chl. 283° (dec.), h-b. 282° [1], di Ac amorph., dione 228° [2]}
IR: 3420, 2930, 2790, 1700-1620, 975
Mass: 429(M^+, 28), 414, 411, 138(29), 125(42), 112(100)

PMR{di Ac}: 0.55(s, 18-CH_3), 0.79(d, 27-CH_3), 0.95(s, 19-CH_3), 1.93(s, OAc), 1.95(s, OAc), 2.14(s, NCH_3), 4.60(m, HC-OAc), 4.85(m, HC-OAc), 5.30(2H, t, olefin)
PMR{dione}: 0.55(s, 18-CH_3), 0.79(d, 27-CH_3), 0.89(s, 19-CH_3), 2.13(s, NCH_3), 5.30(2H, t, olefin) [2]
X-ray spectral analysis: [3]

1. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 384.
2. Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 601.
3. Nasirov S.M., Tashkhodzhaev B., Samikov K., Shakirov R., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1987, 864.

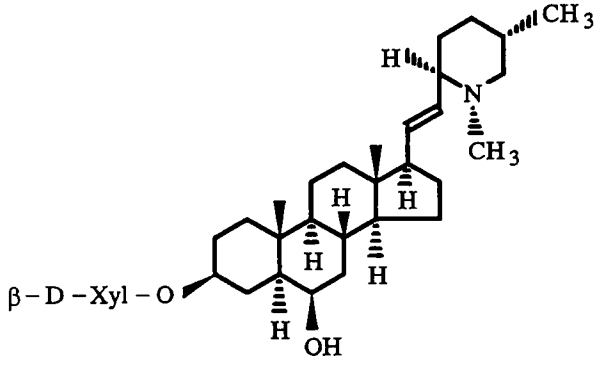


EDPETILINE

Petilium eduardii, P.raddeanum
$C_{33}H_{53}NO_8$: 591.3771
Mp: 272-276° (alc.)
$[\alpha]_D$–58° (meth.)
{h-chl. 220°, h-b. 226°, h-i. 228°, oxime 262° (dec.), tetra Ac 226°} [1-3]
IR: 3445, 1710, 1140-1000 [4-6]

Pharm.: LD_{50} 193 mg/kg (s/c, mice). Antiinflammatory, hypothermal, weak hypotensive, antimicrobial, weak spasmolytic action [7-9].

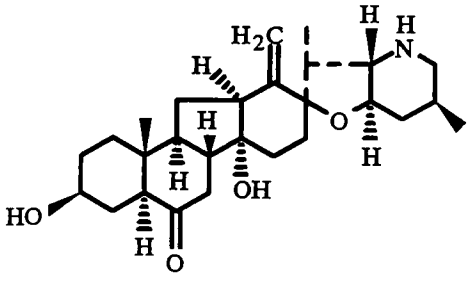
1. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Dokl. AN UzSSR, 1963, No. 3, 23.
2. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Uzb. Khim. Zh., 1965, No. 1, 38.
3. Shakirov R., Nuriddinov R.N., Babaev B., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 168.
4. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 384; 1967, 316.
5. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Dokl. AN SSSR, 1965, No. 161, 620.
6. Ito S., Fukasawa Y., Miyashita M., Tetrahedron Lett., 1976, **36**, 3161.
7. Saidkasymov T., Sultanov M.B., Umarova Sh., in: The Pharmacology of Alkaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, pp. 183, 187.
8. Isamukhamedov I., in: The Pharmacology of Alkaloids and Their Derivatives [in Russian], Fan, Tashkent, 1972, p. 185.
9. Saidkasymov T., in: The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 60.



EDPETILININE

Petilium eduardii
$C_{33}H_{55}NO_6$: 561.4030
Mp: 262-264° (meth.)
$[\alpha]_D$–11° (pyr.)
Sol-y.: sol. pyr.
IR: 3400, 2930, 2770, 1640, 1470, 1115-1015 [1]
X-ray spectral analysis: [2]

1. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 605.
2. Nasirov S.M., Tashkhodzhaev B., Samikov K., Shakirov R., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1987, 864.

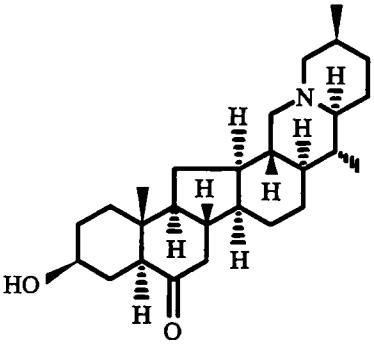


EDPETINE

Petilium eduardii, P.raddeanum
$C_{27}H_{41}NO_4$: 443.3036
Mp: 314-315° (alc.)
{O, N-di Ac amorph.}
IR: 3460, 3260, 3120, 2980-2950, 1690, 1650-1640, 1470-1430

Mass: 443(M^+), 428, 414, 410. 125(24), 124(100), 114(10), 113(14), 110(12), 97(5)
PMR{O, N-di Ac}: 0.60(3H, s, 19-CH_3), 0.81(3H, d, 21-CH_3), 0.96(3H, d, 27-CH_3), 1.92(3H, s, OAc), 1.97(3H, s, NAc), 4.60(1H, m, H-3). 5.18, 5.33(2H, =CH_2) [1, 2]

1. Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 603.
2. Nabiev A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1986, 620.

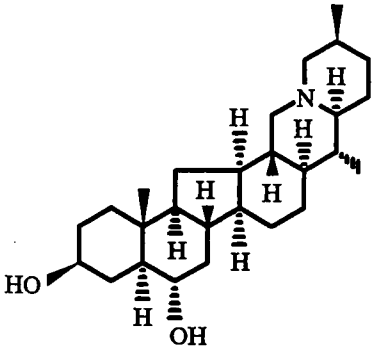


EDUARDINE

Petilium eduardii
$C_{27}H_{43}NO_2$: 413.3294
Mp: 247-251° (alc.)
$[\alpha]_D$–53° (meth.)
{Ac 147°}
IR: 3530, 2930, 1700, 1450 [1, 2]
Mass: 413(M^+), 398, 395, 384, 358, 357, 344, 343, 218, 178, 169, 150, 139, 124, 112, 111, 98 [3]

PMR: 0.68(3H, d, 21-CH_3), 0.70(3H, d, 19-CH_3), 0.98(3H, d, 27-CH_3) [4, 5]

1. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Dokl. AN UzSSR, 1965, No. 9, 23.
2. Shakirov R., Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1965, 384; 1965, 429.
3. Nuriddinov R.N., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 316.
4. Nuriddinov R.N., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 333.
5. Nabiev A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 535.

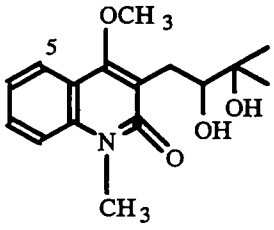


EDUARDININE

Petilium eduardii
$C_{27}H_{45}NO_2$: 415.3450
Mp: 255-257° (ac.)
$[\alpha]_D$+7° (chlf.)
{di Ac amorph., dione 240°}
Sol-y.: sol. chlf.
IR: 3360, 2930-2860, 2750, 1460
Mass: 415(M^+), 400, 397, 386, 360, 358, 218, 178, 150, 149, 139, 125, 124, 112, 111(100), 98

PMR: 0.67(d, 21-CH_3), 0.76(s, 19-CH_3), 0.99(d, 27-CH_3)

1. Nabiev A., Shakirov R., Yunusov S.Yu., Khim. Prir. Soedin., 1975, 535.

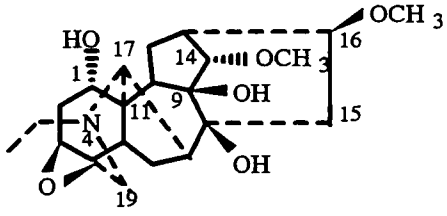


EDULININE

Haplophyllum foliosum
$C_{16}H_{21}NO_4$: 291.1471
Mp: 141-142° (ac.)
{acetonide 92°}

UV: 230, 245 sh, 267 sh, 275, 285, 316 sh, 326, 337(4.44, 4.02, 3.74, 3.86, 3.82, 3.72, 3.82, 3.69) [1]
IR: 3425, 3215, 1630, 1590, 1470, 1378, 1115, 765 [1, 2]
Mass: 276(1), 273(3), 258(2), 232(100), 203(58), 188(67), 160(8), 59(19)
Mass{acetonide}: 331(M^+, 5), 316(100), 274(23), 273(90), 258(16), 256(19), 232(6), 59(32) [1]
PMR: 1.26(6H, s, 2×CH_3), 2.67, 3.07, 3.56(1H, q, J=13; 10; 2, CH_2-CH-O), 3.68, 3.89(3H, OCH_3, NCH_3), 7.33(3H, m, H-Ar), 7.75(1H, d, J=7.6, H-5) [1]

1. Akhmedzhanova V.I., Bessonova I.A., Yunusov S.Yu., Khim. Prir. Soedin., 1980, 803.
2. Bessonova I.A., Unpub.

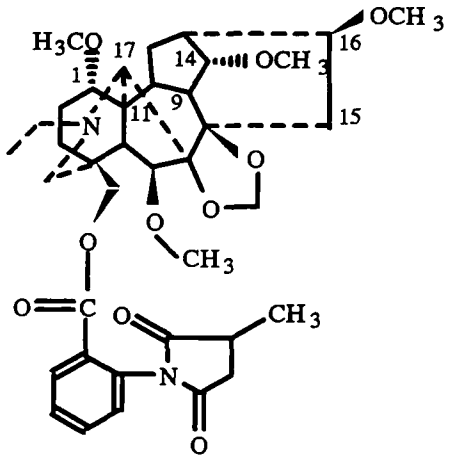


EXCELSINE

Aconitum leucostomum
$C_{22}H_{33}NO_6$: 407.2308
Mp: 103-105° (eth.-meth.)
{h-i. 186°, Cl-tetra Ac 218°}
Sol-y.: sol. chlf., ac., meth.

IR: 3510, 3415, 3280, 1640, 1470, 1395, 1300, 1295, 1260, 1228, 1190, 1135, 1113, 1080, 1037, 994, 947, 915, 880, 810, 768
Mass: 407(M^+, 75), 392(53), 376(100), 364(14.5), 358(8.8), 348(8.7), 321(14.5), 288(7.5)
PMR: 1.01(3H, t, J=7, NCH_2CH_3), 3.13, 3.18(3H, s, 2×OCH_3) [1]
X-ray spectral analysis: [2, 3]
Pharm.: LD_{50} 130 mg/kg (i/v, mice). Lowers arterial pressure briefly, exhibits an antiarrhythmic, quinidine-like action [4].

1. Tel'nov V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1973, 129; Unpub.
2. Nasirov S.M., Andrianov V.G., Struchkov Yu.T., Tel'nov V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1974, 812.
3. Nasirov S.M., Andrianov V.G., Struchkov Yu.T., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 206.



ELATINE

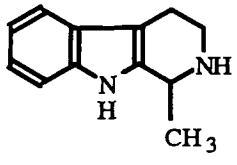
Delphinium elatum
$C_{38}H_{50}N_2O_{10}$: 694.3466
Mp: 222-225°
$[\alpha]_D$–3° (chlf.)
Sol-y.: sol. chlf., meth.
IR: 1718, 1605, 1585, 1497, 1460, 1395, 1296, 1260, 1190, 1140, 1090, 1020, 965, 860, 800, 770, 753, 718 [1]
PMR: 1.06(3H, t, J=7, NCH_2CH_3), 1.50(3H, d, J=6, 5″-CH_3), 3.25, 3.33, 3.34, 3.42(3H, s, 4×OCH_3), 3.65(1H, t, J=4.5, H-14β), 5.06(2H, s, CH_2O_2), 7.25(1H, dd, J=8, J=2, H-3′), 7.52-7.68(2H, m, H-4′, H-5′), 8.08(1H, dd, J=8, J=2, H-6′) [2]

^{13}C NMR [2]:

C-1	83.4	C-14	81.3	CO	164.0
2	28.4	15	34.9	C-1′	127.3
3	31.8	16	81.7	2′	133.1
4	37.2	17	64.1	3′	129.4
5	53.0	18	69.8	4′	133.5
6	89.4	19	52.6	5′	131.2
7	92.1	NCH_2CH_3	50.4	6′	131.0
8	83.4	NCH_2CH_3	13.8	C-1″	179.8
9	48.5	1-OCH_3	55.2	2″	37.0
10	40.0	6-OCH_3	57.8	3″	35.3
11	50.1	7,8-CH_2O_2	93.6	4″	175.8
12	27.9	14-OCH_3	58.9	5″	16.4
13	38.7	16-OCH_3	56.1		

Pharm.: Pronounced curaremimetic action. Effective on oral use. Used earlier as a drug in medicine [3].

1. Vizner K., Kuzovkov A.D., Platonova T.F., Zh. Org. Khim., 1964, **34**, 1666.
2. Pelletier S.W., Desai H.K., Kulanthaivel P., Joshi B.S., Heterocycles, 1987, **26**, 2835.
3. Kharkevich D.N., in: The Pharmacology of Curaremimetic Agents [in Russian], Meditsina, Moscow, 1969, p. 190.



ELEAGNINE (CALLIGONINE, TETRAHYDROHARMANE)

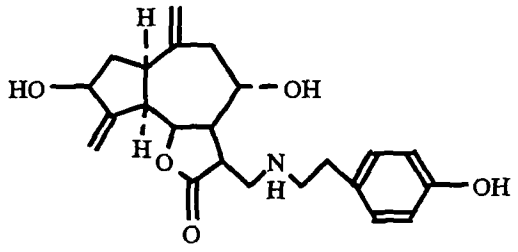
Calligonum caput-medusae, C.eriopodum, C.microcarpum, C.minimum, Elaeagnus angustifolia, Hammada leptoclada

$C_{12}H_{14}N_2$: 186.1157
Mp: 177-178° [1]
[α] 0° [1]
{h-chl. 267°, h-i. 223°, p-chl. 190°, di picr. 222°} [1]
Sol-y.: sol. eth., chlf., alc., ac.
UV: 224, 280(4.50, 3.90) [2]
IR: 3290, 1628, 1578, 1512, 1348, 1317, 1302, 1250, 1221, 1200, 1161, 1147, 1121, 1112, 1071, 1050, 1024, 1008, 952, 937, 915, 888, 852, 838, 808, 742 [2]

1. Massagetov P.S., Zh. Org. Khim., 1946, **16**, 139; Sadykov A.S., Abdusamatov B., Uzb. Khim. Zh., 1961, No. 6, 47.

2. Holubek, No. 101.

ELEGANTINE

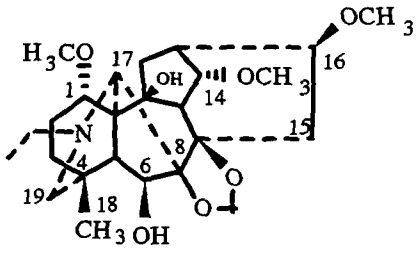


Saussurea elegans
$C_{23}H_{29}NO_5$: 399.2046
Mp: 190-192° (meth.)
$[\alpha]_D$+75° (DMF) [1]
{h-b. 210° (dec.) [1], saponification product 162° [1, 2]}

Sol-y.: sp.sol. org. solvent [1]
UV: 224, 276(3.24, 2.56) [1]
IR: 3250, 1765, 1640, 1595, 1520, 910 [1]
PMR{Py-d_5, saponification product}: 3.89(1H, m), 4.12(1H, t, J=8.5), 4.61, 1H, tt, J=7; 2; 1.9), 4.91, 5.01(1H, d, J=2), 5.47(4H, narrow s), 6.21, 6.30(1H, d) [3]
Pharm.: [4]

1. Khashimov A.M., Smirnova L.S., Matkhalikova S.F., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 367.
2. Smirnova L.S., Khashimov A.M., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 63.
3. Sham'yanov I.D., Abdullaev N.D., Sidyakin G.P., Taizhanov K., Khim. Prir. Soedin., 1981, 667.
4. Aliev Kh.U., in: The Pharmacology of Alkaloids and Cardiac Glycosides [in Russian], Fan, Tashkent, 1971, p. 195.

ELDELIDINE (DELTAMINE)



Delphinium dictyocarpum
$C_{25}H_{39}NO_7$: 465.2726
Mp: 226-228°
$[\alpha]_D$–17° (meth.)
{h-chl. 217°, h-i. 219°}
IR: 3520-3450, 1100 [1]

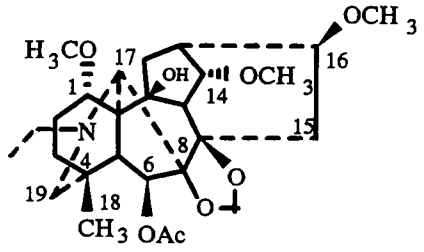
Mass: 465(M^+), 450, 434(100) [1]
PMR: 0.90(3H, s, 18-CH_3), 1.05(3H, t, J=7, NCH_2CH_3), 4.1(1H, t, J=5, H-14β), 4.22(1H, s, H-6α), 4.99, 5.06(1H, s, CH_2O_2) [1]

^{13}C NMR: [2]

C-1	80.2	C-10	82.4	C-19	57.3
2	27.0	11	56.2	1′	55.5
3	38.7	12	36.8	14′	57.9
4	33.6	13	37.6	16′	56.2
5	51.0	14	81.6	NCH_2	50.4
6	77.4	15	34.3	CH_3	13.9
7	92.4	16	81.6	CH_3O_2	93.3
8	83.5	17	63.2		
9	51.5	18	25.6		

Pharm.: LD_{50} 235 mg/kg (i/v, mice). Antiarrhythmic action. Weak hypotensive and H-cholinoblocking effect [3].

1. Narzullaev A.S., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 498; 1973, 443; Unpub.
2. Pelletier S.W., Mody N.V., Jr., Dailey O.D., Canad. J. Chem., 1980, **58**, 1875.
3. Dzhakhangirov F.N., Unpub.



ELDELINE (DELTALINE)

Delphinium dictyocarpum, D.elatum, D.iliense
$C_{27}H_{41}NO_8$: 507.2832
Mp: 182-184°
$[\alpha]_D$–30° (meth.)

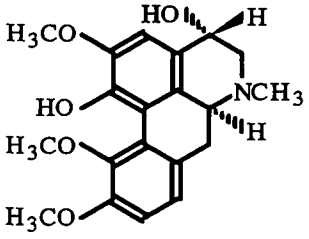
{h-chl. 216°, p-chl. 217°}
IR: 3490, 1720, 1472, 1387, 1283, 1265, 1185, 1112, 1100, 1027, 973, 865, 805, 764, 746
Mass: 507(M^+), 492, 476(100), 448(20)
PMR: 0.83(3H, s, 18-CH_3), 1.01(3H, t, J=7, NCH_2CH_3), 2.05(3H, s, Ac), 3.22, 3.27, 3.40(3H, s, 3×OCH_3), 4.08(1H, t, J=5, H-14β), 4.86, 4.97(1H, narrow s, CH_2O_2), 5.41(1H, narrow s, H-6α) [1]

^{13}C NMR: [2]

C-1	79.2	C-10	81.6	C-19	56.9
2	27.1	11	56.0	1′	55.3
3	39.4	12	36.5	14′	57.7
4	33.7	13	38.5	16′	56.2
5	50.4	14	81.7*	NCH_2	50.2
6	77.3	15	34.8	CH_3	13.8
7	91.6	16	81.5*	CH_2O_2	93.9
8	83.8	17	63.5	CO	169.9
9	50.4	18	25.7	CH_3	21.8

Pharm.: Curaremimetic and ganglioblocking action [3]. Antiarrhythmic action considerably greater than that of quinidine and procainamide [4].

1. Zhamierashvili M.G., Tel'nov V.A., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 836; Unpub.
2. Pelletier S.W., Mody N.V., Jr., Dailey O.D., Canad. J. Chem., 1980, **58**, 1875.
3. Tulyaganov N.T., Dzhakhangirov F.N., Sadritdinov F.S., Khamdamov I., The Pharmacology of Plant Substances [in Russian], Fan, Tashkent, 1976, p. 76.
4. Dzhakhangirov F.N., Unpub.

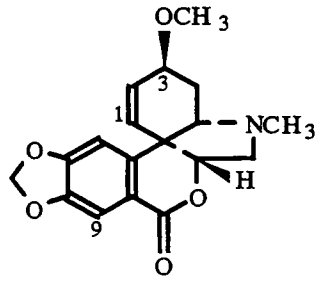


EPIGLAUFIDINE

Glaucium fimbrilligerum
$C_{20}H_{23}NO_5$: 357.1576
Mp: amorph.
$[\alpha]_D$+198° (meth.)
UV: 224, 270, 305(4.23, 3.72, 3.37)

Mass: 357(M^+, 100), 356, 342, 340, 326, 314, 285, 178.5($^{++}$)
PMR: 2.50(3H, s, NCH_3), 3.00-4.00(5H, m). 3.63(3H, s, OCH_3), 3.82(6H, s, 2×OCH_3), 4.93(1H, m, $W_{1/2}$=15), 6.75, 6.92(1H, d, J=8, o-H-Ar), 7.04(1H, s, H-Ar)

1. Karimova S.U., Israilov I.A., Vezhnik F., Yunusov M.S., Slavik Yu., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 493.

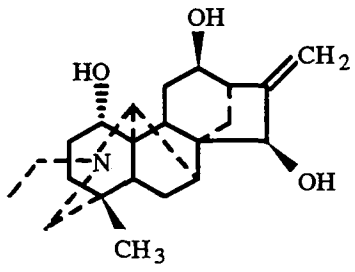


EPIMACRONINE

Ungernia spiralis
$C_{18}H_{19}NO_5$: 329.1263
Mp: 104-105° (chlf.) [1]
$[\alpha]_D$+109° (chlf.) [1]
UV: 232, 272, 312(4.67, 3.99, 3.94) [1]

IR: 1620, 1500, 1480, 1440 [1]
Mass: 329(M^+), 314. 298, 284, 272, 259, 247, 245, 203, 201, 141, 71, 70 [1, 2]
PMR: 2.47(3H, s, NCH_3), 3.40(3H, s, OCH_3), 4.10(1H, m, H-3), 5.33(1H, q, J=10.5; 2.5, H-2), 5.98(2H, s, CH_2O_2), 6.20(1H, d, J=10.5, H-1), 6.83(1H, s, H-12), 7.51(1H, s, H-9) [1, 2]

1. Kadyrov Kh.A., Abdusamatov A., Yunusov S.Yu., Khim. Prir. Soedin., 1976, 826.
2. Kadyrov Kh.A., Author's Abstract of Candidate's Dissertation, Tashkent, 1982.



12-EPINAPELLINE

Aconitum karakolicum
$C_{22}H_{33}NO_3$: 359.2460
Mp: 118-121° (chlf.)
{tri Ac 170°}
IR: 3500-3200 [1]

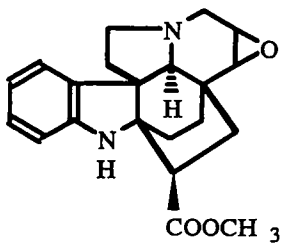
Mass: 359(M^+, 100), 344(6), 342(16), 300(21)
PMR: 0.79(3H, s, 18-CH_3), 1.18(3H, t, J=7, NCH_2CH_3), 1.09(1H, dd, J=12.1, 4.0, H-14α), 1.76(1H, d, J=12.2, H-14β), 2.30, 2.71(1H, q, J=11.8, H-19), 2.80(1H, dd, J=8.8, 3.7, H-13), 3.52(1H, narrow s, H-20), 3.87(1H, dd, J=8.6, 6.7, H-1β), 4.18(1H, dd, J=8.8, 4.8, H-12), 4.21(1H, narrow s, H-15), 5.12, 5.32(1H, narrow s, H-17) [1, 2]

^{13}C NMR: [2, 3]

C-1	67.2	C-8	51.1	C-15	77.0
2	29.7	9	37.2	16	155.0
3	31.7	10	52.6	17	111.4
4	33.8	11	32.7	18	26.3
5	48.8	12	70.0	19	58.3
6	23.6	13	44.0	20	66.2
7	44.0	14	36.3	NCH_2	50.9
				CH_3	13.3

Pharm.: Hypotensive, H-cholinoblocking, antiinflammatory, antiarrhtymic action [4].

1. Sultankhodzhaev M.N., Yunusov M.S., Khim. Prir. Soedin., 1987, 386.
2. Chen Z.-G., Lao A.-N., Wang H.-C., Hong S.-H., Heterocycles, 1987, **26**, 1455.
3. De la Fuente G., Reina M., Valencia E., Rodriguer-Ojeda A., Heterocycles, 1988, **27**, 1109.
4. Dzhakhangirov F.N., Unpub.

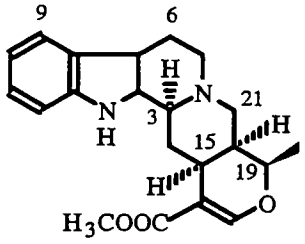


EPOXYKOPSININE

Vinca erecta
$C_{21}H_{24}N_2O_3$: 352.1787
Mp: 123-124° (meth.) [1], 223-225° [2], 230-236° [3]
$[\alpha]_D$–95° [3]
UV: 248,292(3.83, 3.39) [1-3]

IR: 3385, 1720, 760 [1, 3]
Mass: 352(M^+), 138, 123 [1, 2]
PMR: 3.68(3H, s, $COOCH_3$), 6.56-6.87(4H, H-Ar) [1, 3]

1. Rakhimov D.A., Sharipov M.R., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 677.
2. Das B., Biemann K., Chatterjee A., Ray A.B., Majumber P.L., Tetrahedron Lett., 1965, 2239.
3. Linde H.H.A., Helv. Chim. Acta, 1965, **48**, 1822.

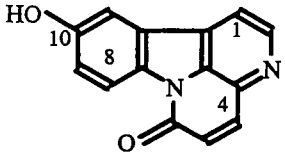


ERVINE

Vinca erecta, V.herbacea, V.major
$C_{21}H_{24}N_2O_3$: 352.1787
Mp: 222-223° (meth.) [1, 2]
$[\alpha]_D$–57° (meth.) [1, 2]; –84° (pyr.) [1]

{h-chl. 268° (dec.), h-b. 286° (dec.), h-i. 258° (dec.), m-i. 260° (dec.)} [1]
UV: 227, 282, 291(3.52, 3.77, 3.70) [1]
IR: 3390, 2750, 1710, 1630 [1]
Mass: 352(M^+, 100), 351(65), 337(20), 321(4), 225(2), 223(8), 208(2), 170(4), 169(6), 156(13) [3]
PMR: 1.33(3H, d, J=7, 19-CH_3), 3.68(3H, s, $COOCH_3$), 4.41(1H, m, J=11, H-19), 7.50(1H, s, H-17), 7.92(1H, s, NH) [3]
Pharm.: LD_{50} 175 mg/kg (i/v, mice). Hypotensive, antiarrhythmic, and sedative action [4].

1. Malikov V.M., Yuldashev P.Kh., Yunusov S.Yu., Khim. Prir. Soedin., 1966, 338.
2. Chkhikvadze G.V., Vachnadze V.Yu., Khim. Prir. Soedin., 1986, 383.
3. Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 346.
4. Sadritdinov, p. 63.

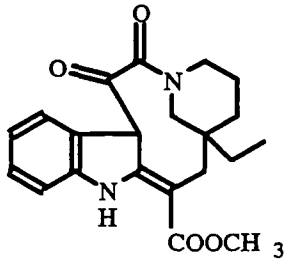


ERVINE (10-HYDROXYCANTHIN-6-ONE)

Aerva lanata
$C_{14}H_8N_2O_2$: 236.0686
Mp: 310-313° (dec., meth., chlf.-alc.) [1]

{O-Me. 195°, O-Ac 188°} [1]
UV: 271 sh, 279 sh, 308 sh, 358 sh, 375(4.22, 4.30, 3.87, 3.82, 3.96, 3.97) [1, 2]
UV(alc.+$NaOCH_3$): 299, 358, 376, 460(4.31, 3.96, 3.85, 3.51) [1, 2]
UV(alc.+HCl): 280, 310 sh, 323, 361, 377(4.24, 3.93, 3.89, 3.98, 3.95) [1, 2]
IR: 1670 [1]
Mass: 236(M^+, 100), 208(66), 179(20), 153(7), 124(4), 118(12) [1]
PMR(Py-d_5): 6.98(d, J=10, H-5), 7.48(dd, J=8.5; 2, H-9), 7.88(d, J=2, H-11), 7.93(d, J=5, H-1), 8.02(d, J=10, H-4), 8.72(d, J=8.5, H-8), 8.82(d, J=5, H-2) [1]

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.

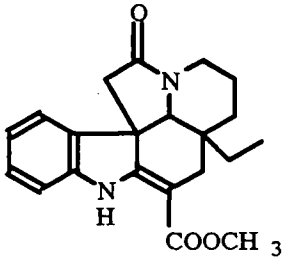


ERVINIDINE

Vinca erecta
$C_{21}H_{24}N_2O_4$: 368.1736
Mp: 283-284° (dec., meth.) [1]
$[\alpha]_D$+17° (chlf.) [1, 2]
UV: 232, 302, 340(4.10, 4.08, 4.30) [1];
232, 305, 342(3.92, 3.93, 4.10) [2]

IR: 3310, 1720, 1690, 1660, 1230 [1, 2]
Mass: 368(M^+), 340, 228, 214, 168, 154 [2]
PMR(CF_3COOH): 1.13(CH_3), 3.85($COOCH_3$), 7.61(4H, m, H-Ar), 9.21(1H, s, NH) [2]

1. Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1967, 142.
2. Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 640.

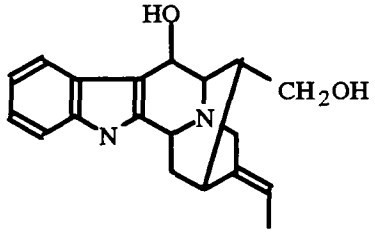


ERVINIDININE

Vinca erecta
$C_{21}H_{24}N_2O_3$: 352.1787
Mp: 265-266° (dec., ac., meth.) [1, 2]
$[\alpha]_D$−160° (meth.) [1, 2]
UV: 228, 298, 332(3.86, 3.84, 3.98) [1, 2]
IR: 3250, 1680, 1632, 1600, 760 [2]

IR(chlf.): 3400, 1680, 1610 [1]
Mass: 352(M^+, 58), 320(7), 214(100), 182(8), 154(9) [1, 2]
PMR: 0.62(3H, s, CH_3), 3.69(3H, s, $COOCH_3$), 6.90(4H, m, H-Ar), 8.91(1H, s, NH) [1, 2]

1. Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1969, 65.
2. Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1971, 640.

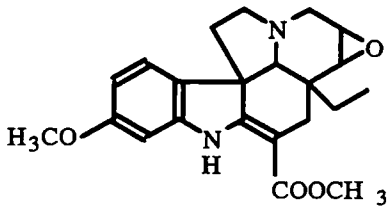


ERVINCIDINE

Vinca erecta
$C_{19}H_{22}N_2O_2$: 310.1681
Mp: 279-280° (dec., meth.) [1, 2]
$[\alpha]_D$+29° (meth.) [1, 2]
UV: 227, 282, 292(4.80, 4.11, 4.00) [1, 2]

IR: 3330-3000, 760 [2]
Mass: 310(M^+, 80), 309(75), 292(32), 279(12), 249(12), 182(62), 169(100), 168(75) [2]

1. Rakhimov D.A., Sharipov M.R., Aripov Kh.N., Malikov V.M., Shakirov T.T., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 713.
2. Malikov V.M., Sharipov M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1972, 760.

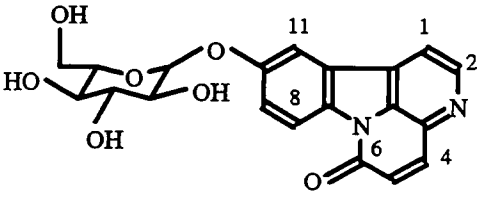


ERVINCININE

Vinca erecta
$C_{22}H_{26}N_2O_4$: 382.1893
Mp: 247-248° (dec., meth.) [1]
$[\alpha]_D$–80° (chlf.) [1]

{dihydro 208°} [1]
UV: 250, 330(4.08, 4.18) [1, 2]
IR: 3265, 1685-1615, 840, 800 [1, 2]
Mass: 282(M^+, 100), 351(10), 244(78), 138(9), 108(6) [2]
PMR: 0.61(3H, t, CH_3), 3.71(6H, s, 2×OCH_3), 6.34-7.01(3H, H-Ar), 8.89(1H, s, NH) [1, 2]

1. Rakhimov D.A., Malikov V.M., Yunusov S.Yu., Khim. Prir. Soedin., 1968, 331.
2. Rakhimov D.A., Malikov V.M., Yagudaev M.R., Yunusov S.Yu., Khim. Prir. Soedin., 1970, 226.

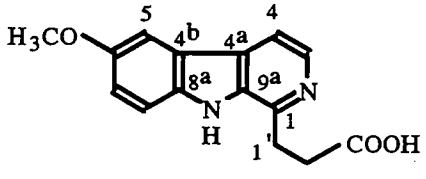


ERVOZIDE (10-β-D-GLUCOPIRANOZILOXYCANTHIN-6-ONE)

Aerva lanata
$C_{20}H_{18}N_2O_7$: 398.1114

Mp: 215-218° (meth., alc.)
UV: 265, 273, 360, 377(4.08, 4.15, 3.86, 3.82)
IR: 3350, 1670, 1660, 1640, 1610, 1575
PMR(Py-d_5): 4.25(m, J=12, H-6′), 4.37(m, H-5′), 4.45(m, H-2′, H-3′, H-4′), 4.66(dd, J=12; 2, H-6′), 5.79(d, J=7.3, H-1′), 7.00(d, J=10, H-5), 7.69(dd, J=8.5; 2, H-9), 7.92(d, J=5, H-1), 8.04(d, J=10, H-4), 8.25(d, J=2, H-11), 8.71(d, J=8.5, H-8), 8.83(d, J=5, H-2)

1. Zapesochnaya G.G., Pervykh L.N., Kurkin V.A., Khim. Prir. Soedin., 1991, 388.



ERVOLANINE

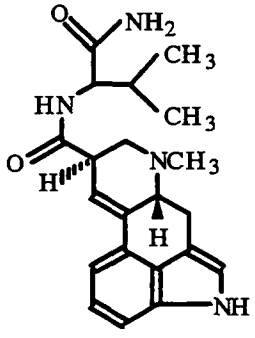
Aerva lanata
$C_{15}H_{14}N_2O_3$: 270.1004
Mp: 194-196° (alc.) [1]

UV: 234, 250 sh, 292 sh, 299, 310 sh, 358, 375 sh (4.71, 4.57, 4.32, 4.47, 4.11, 3.63, 3.62) [1]
UV(alc.+$NaOCH_3$): 295, 301, 357(4.41, 4.56, 4.06, 4.06) [1]
UV(alc.+HCl): 238, 267, 314, 410(4.59, 4.57, 4.53, 3.89) [1]
IR: 1660, 1640, 1620 [1]
Mass: 270(M^+, 58), 252(100), 240(24), 237(26), 225(71), 224(78), 209(100), 195(82), 181(38), 168(22), 153(13), 140(31), 127(15), 126(18) [1]
PMR(DMSO-d_6): 2.90(m, J=7.5, 2, H-2′), 3.37(m, J=7.5, 2, H-1′), 3.92(s, OCH_3), 7.23(dd, J=9; 2, H-7), 7.55(d, J=9, H-8), 7.78(d, J=2, H-5), 7.95(d, J=5, H-4), 8.25(d, J=5, H-3), 11.15(s, NH)
PMR(Py-d_5): 3.33(2, H-2′), 3.75(2, H-1′), 3.85(OCH_3), 7.28(H-7), 7.55(H-8), 7.83(H-5), 7.93(H-4), 8.50(H-3) [1]

^{13}C NMR (DMSO-d_6): [2]

C-1	148.3	C-5	107.5	C-9a	138.7
3	140.8	6	157.5	1′	32.0
4	116.9	7	122.0	2′	35.4
4a	131.1	8	116.9	3′	178.3
4b	125.4	8a	139.3	OCH_3	59.6

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.

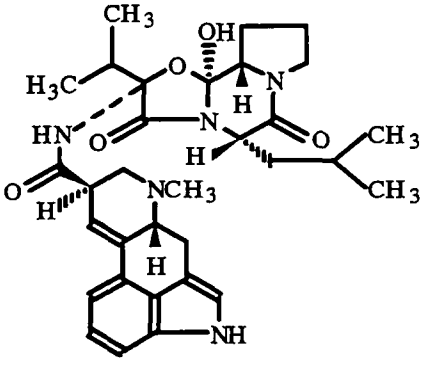


ERGOVALIDE

Claviceps purpurea
$C_{21}H_{26}N_4O_2$: 366.2056
Mp: 152-154° (meth.)
$[\alpha]_D$–81° (chlf.)
{h-chl. 275° (dec.)}
UV: 270, 315(3.30. 4.02)
IR: 3430, 3330, 3230, 1670, 1550, 1475

Mass: 366(M^+), 223. 221, 207, 196, 192, 167, 154, 111
PMR: 0.80(CH_3), 0.90(CH_3), 2.25, 4.43. 7.70(NH)

1. Ban'kovskaya A.N., Sheichenko V.I., Ban'kovskii A.I., Vechkanova L.D., Kabanov V.S., Khim. Prir. Soedin., 1973, 134.

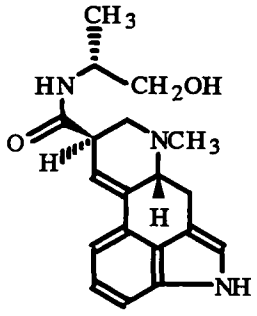


ERGOCRYPTINE

Claviceps purpurea
$C_{32}H_{41}N_5O_5$: 575.3108
Mp: 202-203° (dec.) [1], 217-218° (dec.) [2]
$[\alpha]_D$–182° (chlf.) [1], –110° (pyr.) [2]
{tartrate 200° [1], phosphate 190° [3]}
Sol-y.: r-sol. chlf., bz., meth., alc.; i.s. eth., water [1]
UV: 240, 312(4.31, 3.97) [2]

IR: 1741, 1673, 1647, 1639, 1611, 1555, 1540, 1316, 1293, 1266, 1238, 1210, 1164, 1149, 1133, 1108, 1083, 1072, 1043, 1033, 1013, 1005, 990, 973, 935, 918, 897, 878, 868, 854, 836, 817, 785, 763, 706 [1, 2]
HPLC: [4]

1. Ban'kovskaya A.N., Ban'kovskii A.I., in: Trudy VILAR [Proceedings of the All-Union Scientific Research Institute of Medicinal and Aromatic Plants]. Medicinal Plants, 1969, Vol. 15, p. 368.
2. Holubek J., No. 107.
3. Ban'kovskaya A.N., Vechkanova L.D., Ban'kovskii A.I., Khim. Prir. Soedin., 1971, 678.
4. Gill R., Key J.A., J. Chromatogr., 1985, **346**, 423.

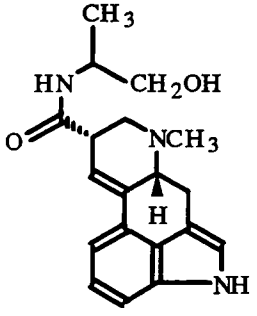


ERGOMETRINE

Claviceps purpurea
$C_{19}H_{23}N_3O_2$: 325.1790
Mp: 157-158° (dec., bz.) [1]
$[\alpha]_D$+40° (alc.) [1]
{h-chl. 246°, h-b. 239° (dec.), oxalate 190° (dec.)} [1]
Sol-y.: r-sol. meth., alc., ac.; i.s. water, bz., chlf. [1]

IR: [1]
Mass: 325(M^+), 223, 221, 207, 196, 192, 167, 154, 111 [2]
HPLC: [3]
Pharm.: LD_{50} 0.15 mg/kg (i/v, mice), 6 mg/kg (i/v, rabbits). Uterine action. Used to shorten the duration of the third period of labor [4].

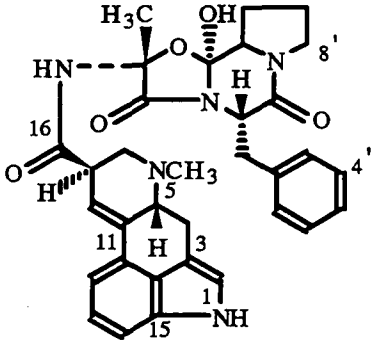
1. Ban'kovskaya A.N., Ban'kovskii A.I., in: Trudy VILAR [Proceedings of the All-Union Scientific Research Institute of Medicinal and Aromatic Plants]. Medicinal Plants, 1969, Vol. 15, p. 368.
2. Ban'kovskaya A.N., Sheichenko V.I., Ban'kovskii A.I., Vechkanova L.D., Kabanov V.S., Khim. Prir. Soedin., 1973, 134.
3. Potter H., Hulm M., Schumann S., J. Chromatogr., 1985, **319**, 440.
4. Sadritdinov, p. 109.



ERGOMETRININE

Claviceps purpurea
$C_{19}H_{23}N_3O_2$: 325.1790
Mp: 193-194° (dec.)
$[\alpha]_D$+412° (chlf.)
Sol-y.: r-sol. meth., alc., ac.; i.s. chlf., water

1. Ban'kovskaya A.N., Vechkanova L.D., Ban'kovskii A.I., Khim. Prir. Soedin., 1970, 381.



ERGOTAMINE

Claviceps purpurea
$C_{35}H_{35}N_5O_5$: 605.2638
Mp: 184° (dec., ac.) [1], 212–214° [2]
$[\alpha]_D$–160° (chlf.) [2]
{sulf. 184° (dec.) [1], 194.5° [3]; h-chl. 203° (dec.) [1];
h-b. 204° (dec.) [1]; tartrate 193° (dec.) [1]}

Sol-y.: r-sol. chlf., alc., meth., ac.; i.s. water [1]
UV: 240, 312(4.33, 3.99) [2]
IR: 1732, 1647, 1609, 1570, 1558, 1538, 1518, 1485, 1316, 1306, 1294, 1283, 1266, 1250, 1228, 1197, 1181, 1160, 1141, 1123, 1100, 1082, 1068, 1048, 1030, 996, 979, 954, 922, 915, 890, 877, 867, 850, 818, 807, 794, 762, 752, 745 [2]

IR(LiF): 3520, 3375, 3230 [2]

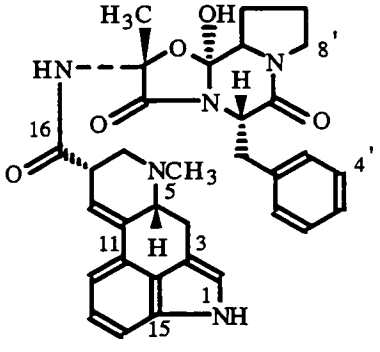
^{13}C NMR (DMSO-d_6): [4]

C-2	119.4	C-13	122.2	C-10′	25.9
3	108.8	14	110.2	11′	63.9
4	26.6	15	133.8	12′	102.8
5	62.4	16	174.3	13′	23.8
7	55.1	2′	85.9	1″	38.7
8	42.5	3′	165.8	2″	138.7
9	118.3	5′	56.1	3″,7″	129.9
10	136.0	6′	164.2	4″,6″	127.7
11	127.1	8′	45.8	5″	127.4
12	111.0	9′	21.7	NCH_3	43.4

HPLC: [5]

Pharm.: LD_{50} 60 mg/kg (i/v, mice); 3.5(i/v, rabbits); 80-100 (i/v, rats). Hemostatic action. Used in metrorrhagias and hemorrhages [6].

1. Ban'kovskaya A.N., Ban'kovskii A.I., in: Trudy VILAR [Proceedings of the All-Union Scientific Research Institute of Medicinal and Aromatic Plants]. Medicinal Plants, 1969, Vol. 15, p. 368.
2. Holubek, No. 111.
3. Ban'kovskaya A.N., Ban'kovskii A.I., Shalagina A.I., Ostrovskii N.I., Med. Prom. SSSR, 1964, No. 11, 18.
4. Shamma, No. 245.
5. Potter H., Hulm M., Schumann S., J. Chromatogr., 1985, **319**, 440.
6. Sadritdinov, p. 111.



ERGOTAMININE

Claviceps purpurea
$C_{33}H_{35}N_5O_5$: 581.2638
Mp: 231-233° (dec., meth.) [1], 243° (dec.) [2]
$[\alpha]_D$+364° (chlf.) [1]
Sol-y.: r-sol. pyr., acetic acid; i.s. eth., alc., bz. [1]
UV: 241, 309(4.28, 3.93) [2]

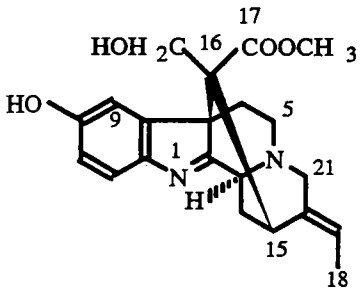
IR: 1734, 1685, 1640, 1611, 1540, 1346, 1324, 1292, 1273, 1260, 1249, 1210, 1184, 1169, 1156, 1140, 1083, 1072, 1053, 1034, 1013, 942, 918, 908, 878, 870, 842, 820, 811, 778, 755, 705 [1, 2]
IR(LiF): 3290 [1, 2]

^{13}C NMR: [3]

C-2	119.7	C-13	122.4	C-10′	25.9
3	109.0	14	110.3	11′	63.9
4	26.9	15	133.8	12′	102.9
5	61.7	16	175.3	13′	23.8
7	53.0	2′	85.7	1″	38.7
8	41.8	3′	165.9	2″	138.9
9	118.1	5′	56.1	3″,7″	129.9
10	137.1	6′	164.5	4″,6″	127.9
11	127.9	8′	45.7	5″	126.1
12	111.4	9′	21.8	NCH_3	42.5

HPLC: [4]

1. Ban'kovskaya A.N., Ban'kovskii A.I., in: Trudy VILAR [Proceedings of the All-Union Scientific Research Institute of Medicinal and Aromatic Plants]. Medicinal Plants, 1969, Vol. 15, p. 368.
2. Holubek, No. 112.
3. Shamma, No. 246.
4. Puttemans M., De Cock R.J., Hoogewijs G., Dryon L., Massart D.L., J. Pharm. Belg., 1985, **40**, 387.



ERCINAMINE

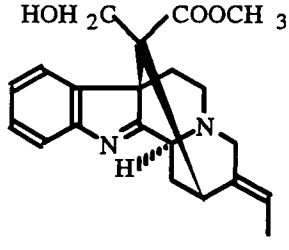
Vinca erecta
$C_{21}H_{24}N_2O_4$: 368.1736
Mp: 238-240°
$[\alpha]_D$+53° (meth.)
Sol-y.: r-sol. alc., meth.; i.s. chlf.
UV: 226, 283(3.95, 3.66)

IR: 3400, 1732, 1630, 1590, 1500, 825, 795, 760
Mass: 368(M^+, 100), 338(26), 337(59), 309(12), 149(8), 97(18), 85(19)
PMR: 1.55(3H, d, J=7, 18-CH_3), 3.60(2H, narrow s, OCH_3), 3.68(3H, s, $COOCH_3$), 5.40(1H, q, J=7, H-19), 6.66(1H, q, J=8; 2, H-11), 6.98(1H, d, J=2, H-9), 7.35(1H, d, J=8, H-12)

^{13}C NMR (Py-d_5):

C-2	187.7	C-10	157.4	C-19	118.8
3	55.2	11	115.3	20	141.5
5	52.4	12	121.7	21	54.4
6	39.3	13	149.2	17-C=O	174.0
7	59.4	14	31.2	18-CH_3	13.2
8	147.6	15	35.1	CH_2-OH	64.0
9	114.1	16	61.1	OCH_3	51.4

1. Yagudaev M.R., Khalmirzaev M.M., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 483.

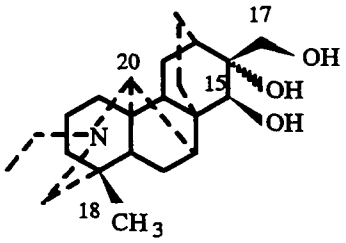


ERCINAMININE

Vinca erecta
$C_{21}H_{24}N_2O_3$: 352.1787
Mp: amorph.
Sol-y.: r-sol. meth., chlf., ac.; i.s. eth.
UV: 222, 279(3.91, 3.64)
IR: 3400, 1730, 1630, 1600, 1580, 760

Mass: 352(M^+, 100), 322(21), 321(33), 293(15), 149(9), 97(30), 85(27), 83(37)
PMR: 1.58(3H, d, J=7, CH_3), 3.62(2H, narrow s, OCH_2), 3.75(3H, s, $COOCH_3$), 5.40(1H, q, =CH), 6.65-7.56(4H, m, H-Ar)

1. Yagudaev M.R., Khalmirzaev M.M., Yunusov S.Yu., Khim. Prir. Soedin., 1983, 483.

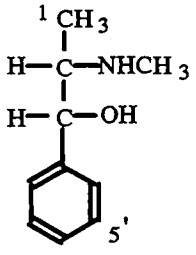


N-ETHYL-DES-N-METHYLDICTYZINE

Delphinium corymbosum
$C_{22}H_{35}NO_3$: 361.2618
{acetonide, mp 87-89° (ac.)}
IR{acetonide}: 3495, 1090

Mass{acetonide}: 401(M^+, 100), 386, 372, 358, 326, 314, 270, 186
PMR{acetonide}: 0.64(3H, s, 18-CH_3), 0.95(3H, t, J=7.0, NCH_2CH_3), 1.25; 1.35(3H, s, 2×CH_3), 3.25(1H, narrow s, H-20), 3.63; 4.34(1H, d, J=8.0, H-17), 3.88(1H, d, J=2.0, H-15α).

1. Salimov B.T., Unpub.



(–)-EPHEDRINE

Ephedra ciliata, E.equisetiana, E.distachya, E.fedtschenkoae, E.intermedia, E.lomatolepis, E.monosperma, E.procera, E.strobilacea, Roemeria refracta
$C_{10}H_{15}NO$: 165.1154

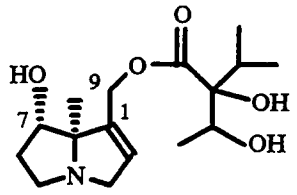
Mp: 38-39° [1]
$[\alpha]_D$–34° (water) [1]
{h-chl. 217°, oxalate 240°} [1]
UV: 252, 257, 263(2.13, 2.25, 2.13) [2]
IR: 1590, 1490, 1331, 1321, 1241, 1208, 1175, 1158, 1120, 1110, 1072, 1050, 1026, 1012, 993, 916, 895, 835, 820, 753, 702
IR(LiF): 3320 [2]
Mass: 165($M^{+\cdot}$, 0.1), 107(1), 58(100) [3]

^{13}C NMR {h-chl., D_2O}: [4]

C-1	10.6	C-1′	139.4	C-4′	129.2
2	60.8	2′,6′	126.9	NCH_3	31.7
3	72.1	3′,5′	129.6		

HPLC: [5]
Pharm.: LD_{50} 300-320 mg/kg (i/v, rats); 300-450 mg/kg (i/v, rabbits); 100 mg/kg (i/v, mice) [6]. Causes contraction of blood vessels, a rise in arterial pressure, dilatation of the bronchi and pupils, inhibition of intestinal peristalsis. Stimulates the CNS and the respiratory center. Used in bronchial asthma, hay fever, allergic diseases, traumas, hypotension, narcotic poisoning, enuresis. Supplied in the form of a powder and tablets and in ampuls with 1 ml of 5% soln and bottles with a 2.3% soln. A component of Teoéfedrin, Éfatin, and Solutan [7].

1. Konovalova R.A., Yunusov S.Yu., Orekhov A.P., Zh. Org. Khim., 1939, **9**, 1359.
2. Holubek, No. 434.
3. Hesse M., Alkaloide (Progress in Mass Spectrometry), Verlag Chemie, 1975, Vol. 3, p. 300.
4. Broadbent T.A., Paul E.G., Heterocycles, 1983, **20**, 863.
5. Zhang Jian, Tian Zhen, Lou Zhi-cen, Planta Medica, 1988, **54**, 69.
6. Sadritdinov, p. 127.
7. Mashkovskii, Vol. 1, p. 277.



ECHINATINE

Cynoglossum amabile, C.pictum, Lindelofia macrostyla, L.stylosa, L.tschmganica, Paracynoglossum imeretinum, Rindera austroechinata, R.baldshuanica, R.cyclodonta, R.echinata, R.oblongifolia, Solenanthus circinnatus, S.coronatus, S.hirsutus, S.karateginus, Suchtelenia calycina, Symphytum asperum, S.caucasicum, S.officinale

$C_{15}H_{25}NO_5$: 299.1733

Mp: 111-112° (ac.) [1], oil [2]

$[\alpha]_D$+12° (meth.) [1]

{h-chl. 97°, m-i. 140°, picrolonate 206°} [2]

UV: 266, 272 [3]*

IR: 3360, 3340, 3230, 3120, 2965, 2745, 2130, 1738, 1650, 1470, 1430, 1420, 1250, 880 [3]

Mass: 299(M^+, 3), 255(6), 138(100), 93(89) [4]

PMR: 0.82, 0.88(3H, d, 7′-CH_3, 6′-CH_3), 1.25(3H, d, 4′-CH_3), 1.77, 1.87(2H, m, H-6), 2.13(1H, m, H-5′), 2.55, 3.18(2H, m, H-5), 3.24, 3.89(2H, d, H-3), 3.91(1H, q, H-3′), 3.94(1H, narrow s, H-8), 4.08(1H, m, H-7), 4.75, 4.97(2H, q, H-9), 5.62(1H, narrow s, H-2) [5]

^{13}C NMR: [5]

C-1	135.9	C-7	74.0	C-3′	74.4
2	125.4	8	79.6	4′	17.4
3	61.9	9	61.6	5′	32.3
5	54.2	1′	173.7	6′	17.9
6	33.6	2′	84.0	7′	15.8

CD: [6]

X-ray spectral analysis: [7]

Pharm.: LD_{50} 101.2, 350 mg/kg (i/v, i/p, mice and rats). Hepatotoxic and ganglioblocking action [8].

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2. Men'shikov G.P., Denisova S.O., Collection of Papers on General Chemistry [in Russian], Moscow–Leningrad, 1953, Vol 2, p. 1458.
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6. Hrbek J., Hruban L., Klasek A., Kochetkov N.K., Likhosherstov A.M., Santavy F., Snatzke G., Collect., 1972, **37**, 3918.
7. Gable R.W., Mackay M.F., Culvenor C.C.J., Acta Cryst., 1988, **44**, 1478.
8. Sadritdinov, p. 91.

ESCHOLCINE

Eschscholtzia californica

$C_{19}H_{17}NO_4$: 323.1158

Mp: 127-128° (eth.)

$[\alpha]_D$–239° (chlf.) [1]

Sol-y.: r-sol. chlf., meth.; sp. sol. eth.

UV: 295 [1]

*Results doubtful.

IR: 1775, 1645, 901 [1]
Mass: 323(M^+), 322, 308, 204, 190, 188(100), 161.5($^{++}$) [1]
PMR: 2.42(3H, s, NCH_3), 2.44(1H, d, J=16), 3.19, 3.35(1H, d, J=6; 16), 3.86(1H, d, J=6), 5.68, 5.71(2H, s, $2\times CH_2O_2$), 6.27, 6.44(2H, s, p-H-Ar)
HPLC: [2]

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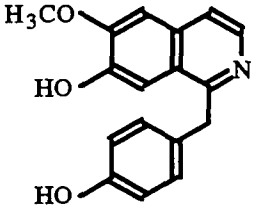
2. Rey J.-P., Levesque J., Pousset J.-L., Roblot F., J. Chromatogr., 1991, **587**, 314.

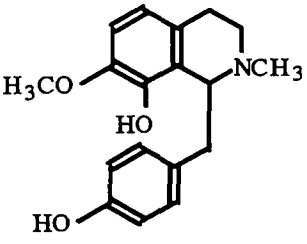


YUZIRINE

Zizyphus jujuba
$C_{17}H_{15}NO_3$: 281.1052
Mp: 203-205° (ac.)
{h-chl. 239° (dec.)}
Sol-y.: sp. sol. org. solvent

UV: 239, 273, 280, 319, 331(4.48, 3.63, 3.63, 3.31, 3.32)
IR: 3380-3200
Mass: 281(M^+), 280(100), 265, 264, 249, 236, 220, 140.5 ($^{++}$)
PMR(CF_3COOH): 3.82(3H, s, OCH_3), 4.37(2H, s, CH_2), 6.64-7.60(8H, H-Ar)

1. Ziyaev R., Irgashev T., Israilov I.A., Abdullaev N.D., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 239.

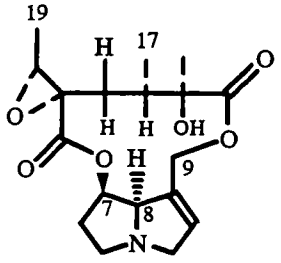


YUZIFINE

Berberis vulgaris, Corydalis gortschakovii, C.pseudoadunca, C.stricta, Zizyphus jujuba
$C_{18}H_{21}NO_3$: 299.1521
Mp: 158-159° (meth.)
$[\alpha]_D$–18° (chlf.)

{h-chl. 231° (ac.)}
UV: 227, 286(4.33, 3.92)
IR: 3210-3030, 2845, 1610, 1590, 1245
Mass: 192(100), 177, 148, 107
PMR: 2.30-3.45(6H, m, $3\times CH_2$), 2.36(3H, s, NCH_3), 3.82(3H, s, OCH_3), 4.19(1H, q, H-1), 5.96(2H, narrow s, 2×OH), 6.35, 6.99(2H, d, J=8, o-H-Ar), 6.56, 6.70(1H, d, J=8, o-H-Ar)

1. Ziyaev R., Irgashev T., Israilov I.A., Abdullaev N.D., Yunusov M.S., Yunusov S.Yu., Khim. Prir. Soedin., 1977, 239.



JAKOBINE

Senecio jacobaea
$C_{18}H_{25}NO_6$: 351.1681
Mp: 222-226° (ac.) [1] 212-214° (ac.-hx.) [2]
$[\alpha]_D$–28° (chlf.) [2]
UV: 219(3.34) [3]

IR: 3420, 1740, 1730 [2]; 1258, 907, 838 [4]
PMR: 1.15(3H, d, J=7), 1.21(3H, d, J=6), 1.32(3H, s), 2.91(1H, q, J=6), 4.04(1H, narrow d, J=12), 4.25(1H, m), 5.11(1H, narrow s), 5.56(1H, d, J=12), 6.18(1H, narrow s) [2, 5]

^{13}C NMR: [2]

C-1	131.2	C-8	77.6	C-14	64.1
2	136.4	9	60.5	15	168.6
3	63.1	10	177.9	16	24.3
5	53.0	11	77.0	17	12.8
6	35.0	12	38.1	18	56.0
7	75.9	13	36.0	19	13.6

CD: [6]
X-ray spectral analysis{hydrobromide}: [7]
HPLC: [8]
Pharm.: LD_{50} 77.1 mg/kg (i/v, mice). Hepatotoxic. Cholinolytic action [9].

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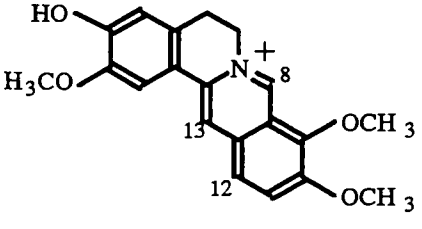

JATRORRHIZINE

Berberis amurensis, B.heteropoda, B.iliensis, B.integerrima, B.nummularia, B.oblonga, B.vulgaris, Mahonia aquifolia, Thalictrum minus
$C_{20}H_{20}NO_4$: 338.1392

Mp: {chloride 206°, iodide 210°, picr. 210°, nitr. 225°} [1]
UV: 266, 347, 440(4.4, 4.4, 3.7) [2]
UV(OH^-): 245, 385 [3]
PMR(CD_3OD): 3.94(3H, s, 2-OCH_3), 4.07(3H, s, 10-OCH_3), 4.17(3H, s, 9-OCH_3), 6.65(1H, s, H-4), 7.45(1H, s, H-1), 7.88(1H, d, H-12), 8.02(1H, d, H-11), 8.56(1H, s, H-13), 9.58(1H, s, H-8) [3]

^{13}C NMR: [4]

C-1	110.9	C-8	145.2	C-13	119.3
2	149.4	8a	119.2	13a	134.9
3	146.5	9	151.5	13b	120.9
4	116.3	10	145.2	2-OCH_3	58.3
4a	130.2	11	122.9	9-OCH_3	63.0
5	29.1	12	125.7	10-OCH_3	57.0
6	57.6	12a	128.2		

HPLC: [5]

Pharm.: LD_{50} 150 mg/kg. Tonic action on the smooth musculature of the intestine [6]. Antimalarial activity in vitro [4].

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