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APORPHINOID ALKALOIDS, IV[1]

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Substantial progress has been made since 1983 in the realm of aporphinoids, including aporphines sensu stricto and biogenetically related aporphinoids. A number of new aporphines, some with novel substitution patterns, have been found. A novel feature of this review is that alkaloids with the azaanthracene of azafluorene skeletons have been included for the first time. These are of the cleistopholine or the onychine types, and they just could be related biogenetically to the aporphines through a catabolic pathway. Similarly, aconcaguine- and chiloenine-type alkaloids, which are clearly formed by the in vivo oxidative cleavage of aporphine, have been listed in the present review.

This review supplements our earlier ones by including data published since 1983, as well as by reporting several related aporphinoids unlisted in 1975, 1979, and 1983, along the following plan: (a) additional data on previously reported aporphinoids (structures **1–395**), revised structures (Table 1), additional physical and spectral data (Table 2), and known aporphinoids reisolated from new sources (Table 3); and (b) completely new or previously unlisted aporphinoids (structures **396–542**, Table 4).

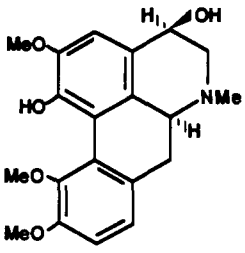
The organization, intent, and content of the present review are essentially the same as in the previous ones. Included in this listing are the aporphines (noraporphines, aporphines, aporphine *N*-oxides, quaternary aporphines, natural *N*-acylated noraporphines), 7-hydroxy-7-methylaporphines, 7,7-dimethylaporphines, oxoaporphines, 4,5-dioxoaporphines, 7- and/or 4-oxygenated aporphines, dehydroaporphines, 7-methyl- or 7-formyldehydro-aporphines, phenanthrenes, cleistopholine- and onychine-type alkaloids, and miscellaneous aporphinoids. For the new alkaloids, aporphines are structures **396–423**, 7-hydroxy-7-methylaporphines **424**, **425**, oxoaporphines **426–432**, 4,5-dioxoaporphines **433–436**, 7- and/or 4- oxygenated aporphines **437–456**, dehydroaporphines **457–473**, 7-methyl- or 7-formyldehydroaporphines **474–482**, phenanthrenes **483–494**, cleistopholine- and onychine-type alkaloids **495–517**, miscellaneous aporphinoids **518–542**. Included among the miscellaneous aporphinoids [sensu Shamma and Guinaudeau (211)] are 6,6a-dehydroaporphines, duguenaine-type aporphinoids, ring A quinonoid aporphinoids, oxoisoaporphines, azafluoranthenes, diazafluoranthenes, 1-azaoxoaporphinoids, azahomoaporphines, and catechol dioxygenase oxidized aporphinoids. However, proaporphines, aristolochic acids, aristololactams, and dimeric aporphinoids are excluded from this review. Dimeric aporphinoids will be shortly reviewed by the authors.

The numbering of the aporphine skeleton is according to the accepted ruling. Unless stated otherwise, uv (nm, log ϵ) and cd ($\Delta\epsilon$, nm) spectra were obtained in EtOH or MeOH and nmr spectra in $CDCl_3$ (at 60 MHz for ^1H nmr); chemical shifts are in ppm on the δ scale, and the coupling constants are given in Hz. Values with identical superscripts may be reversed; ir frequencies are in cm^{-1}, and melting points are in degrees centigrade.

[1]For Parts I, II, and III, see *Lloydia*, **38**, 275 (1975); *J. Nat. Prod.*, **42**, 325 (1979); and *J. Nat. Prod.*, **46**, 761 (1983), respectively.

TABLE 1. Revised Structures of Previously Reported Aporphinoid Alkaloids.

366. GLAUFIDINE



$C_{20}H_{23}O_5N$ 357.1575
Revised structure (94); see also epiglaufidine **455**

TABLE 2. Additional Physical and Spectral Data on Previously Reported Aporphinoid Alkaloids.

Aporphines sensu stricto

12. STEPHANINE

$C_{19}H_{19}O_3N$ 309.1364
^1H NMR: (C_6D_6) (128)
^{13}C NMR: (128)

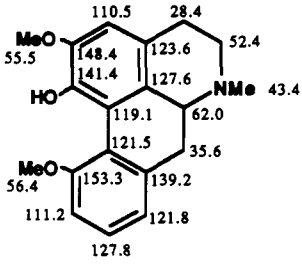
21. APOGLAZIOVINE

$C_{18}H_{19}O_3N$ 297.1364
^{13}C NMR: The values given for C-1b and C-3a in (209) have to be reversed (24); those for C-9 and C-11 may be reversed (24)

26. NUCIFEROLINE

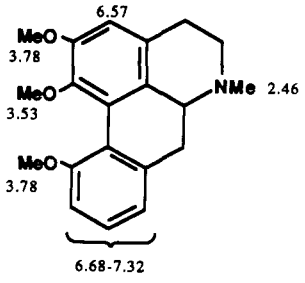
$C_{19}H_{21}O_3N$ 311.1520
^{13}C NMR: The values given for C-1b and C-3a in (209) have to be reversed (24); those for C-9 and C-11 may be reversed (24)

31. ISOTHEBAINE



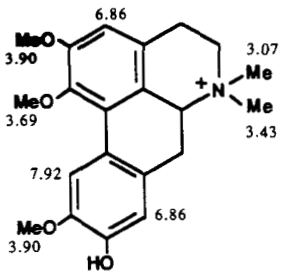
$C_{19}H_{21}O_3N$ 311.1520
^{13}C NMR: (234)

32. *O*-METHYLISOTHEBAINE (1,2,11-Trimethoxyaporphine)



$C_{20}H_{23}O_3N$ 325.1677
$[\alpha]_D$: +26° (c = 0.45, $CHCl_3$) (122)
^1H NMR: (122)
MS: $[M]^+$ 325 (100), 324, 310, 294, 282, 162.5 (122)

56. XANTHOPLANINE



$C_{21}H_{26}O_4N^+ X^-$ 356.1861
$[\alpha]_D$: +53° (c = 0.28, MeOH) (47)
^{1}H NMR: (47)
MS: $[M]^+$ 356 (10), 297 (5), 58 (100) (47)

59. GLAUCINE

$C_{21}H_{25}O_4N$ 355.1782
^{1}H NMR: additional data for H-4, H-5, H-6a, and H-7 (133)

72. MAGNOFLORINE

$C_{20}H_{24}O_4N^+ X^-$ 342.1704
MS: 341 (32), 327 (12), 326 (5), 313 (2), 312 (9), 310 (5), 297 (3), 296 (4), 284 (6), 283 (11), 282 (4), 270 (4), 269 (3), 268 (5), 165 (6), 152 (7), 142, 128, 127, 58 (100) (I^-) (67)

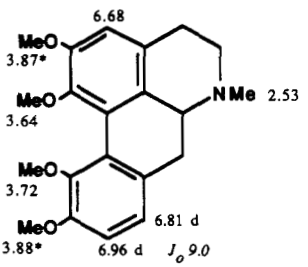
75. *N*-METHYLCORYDINE

$C_{21}H_{26}O_4N^+ X^-$ 356.1861
MS: 355 (3), 341 (28), 327 (16), 326 (8), 312 (13), 310 (9), 298 (6), 296 (10), 284 (9), 283 (12), 270 (35), 255 (20), 142, 127, 58 (out of scale) (I^-) (67)

86. MENISPERINE
(*N*-Methylisocorydine)

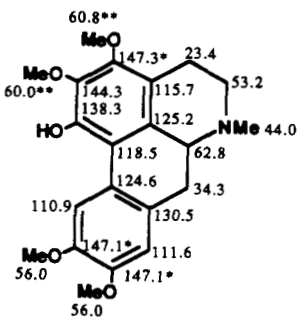
$C_{21}H_{26}O_4N^+ X^-$ 356.1861
MS: 355 (19), 341 (90), 327 (35), 326 (31), 312 (25), 310 (24), 298 (9), 297 (13), 296 (14), 284 (25), 283 (24), 270 (67), 255 (36), 142, 127, 58 (100) (I^-) (67)
X-RAY: (263)

88. *O,O*-DIMETHYLCORYTUBERINE
(*O*-Methylpraecoxine)



$C_{21}H_{25}O_4N$ 355.1782
^{1}H NMR: (138)

96. PREOCOTEINE



$C_{21}H_{25}O_5N$ 371.1731
$[\alpha]_D$: +26° (EtOH) (225)
^{13}C NMR: (225)
MS: $[M]^+$ 371 (100), 370 (73), 356 (52), 354 (23), 340 (26), 328 (25), 313 (13), 311 (5), 297 (21), 178 (5) (225)

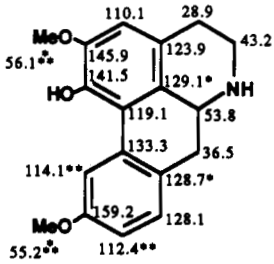
99. NORPURPUREINE

$C_{21}H_{25}O_5N$ 371.1731
^{13}C NMR: (225)

185. *N*-METHYLISOPILINE

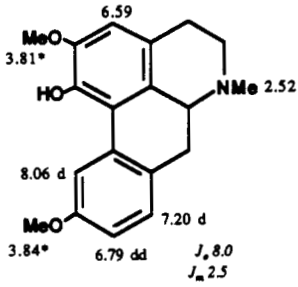
$C_{19}H_{21}O_3N$ 311.1520
UV: 214 (4.52), 271 (4.29), 301 sh (3.99) (54)

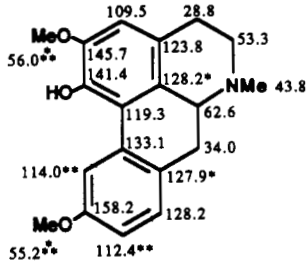
192. ZENKERINE



$C_{18}H_{19}O_3N$ 297.1364
$[\alpha]_D$: $-99°$ ($c = 0.1$, MeOH) (24)
^{13}C NMR: (24)

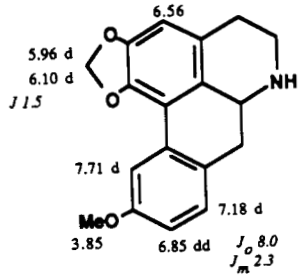
193. PULCHINE
(*N*-Methylzenkerine)





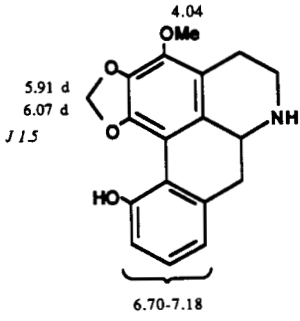
$C_{19}H_{21}O_3N$ 311.1520
$[\alpha]_D$: $-130°$ ($c = 0.1$, MeOH) (24)
^1H NMR: (24)
^{13}C NMR: (24)

195. NORLAURELINE



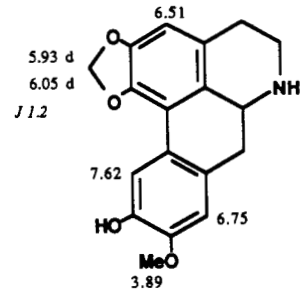
$C_{18}H_{17}O_3N$ 295.1207
$[\alpha]_D$: $-97°$ ($c = 0.2$, MeOH) (189)
UV: 218 (4.28), 232 sh (4.24), 265 (4.03), 275 (4.06), 305 (3.81) (189)
^1H NMR: (189)
MS: $[M]^+$ 295 (52), 294 (100), 278 (10), 265 (8), 264 (6), 263 (13) (189)

198. ELMERRILLICINE



$C_{18}H_{17}O_4N$ 311.1156
MP: 207–208° (189)
[α]D: −268° (*c* = 0.12, EtOH) (189)
UV: 224 (4.41), 240 sh (4.23), 268 sh (4.16), 276 (4.20), 298 (4.02) (189)
^{1}H NMR: (189); also in CD_3OD and CD_3OD + NaOD (189)
MS: $[M]^+$ 311 (100), 296 (14), 282 (14), 281 (18), 224 (14), 181 (16), 165 (23), 152 (59) (189)

203. LITSEFERINE

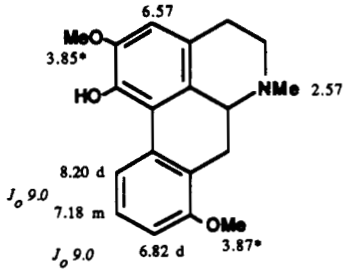


$C_{18}H_{17}O_4N$ 311.1156
UV: 233 (4.36), 283 (4.11), 308 (4.09) (187)
^{1}H NMR: ($CDCl_3/CD_3OD$ 5%, 90 MHz) (187)

254. 3-HYDROXYNORNUCIFERINE

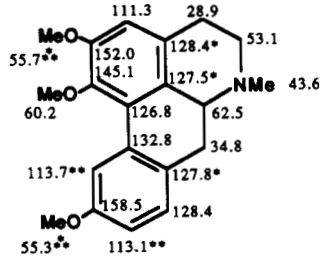
$C_{18}H_{19}O_3N$ 297.1364
^{1}H NMR: (C_5D_5N) (54)

255. PRESTEPHANINE



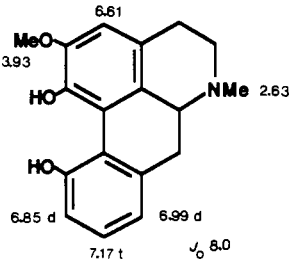
$C_{19}H_{21}O_3N$ 311.1520
MP: 238° (dec) (HBr) (214)
^{1}H NMR: (214)

261. *N,O,O*-TRIMETHYLSPARSIFLORINE
(1,2,10-Trimethoxyaporphine)



$C_{20}H_{23}O_3N$ 325.1677
[α]D: −169° (*c* = 0.1, MeOH) (24)
^{13}C NMR: (24)

262. ISOTHEBAIDINE



$C_{18}H_{19}O_3N$ 297.1364
UV: 217, 262 sh, 271, 302 (90)
^{1}H NMR: (90)

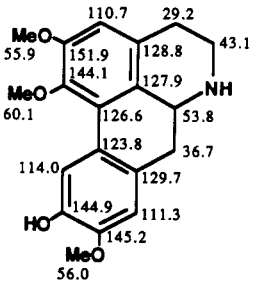
267. OUREGUATTINE
(1-*O*-Methyloureguattidine)

$C_{19}H_{21}O_4N$ 327.1469
UV: 216 (4.24), 222 sh (4.17), 281 (3.78) (54)

271. NORANNURADHAPURINE

$C_{18}H_{17}O_4N$ 311.1156
MP: 273–275° (HBr) (153)
[α]D: −55° (*c* = 1.0, EtOH) (HBr) (153)

275. NORLIRIOFERINE



$C_{19}H_{21}O_4N$ 327.1469
^{13}C NMR: (33)
MS: $[M]^+$ 327 (68), 326 (100), 312 (23), 310 (18), 298 (6), 295 (17), 283 (9), 281 (8), 267 (11) (33)

287. *N*-METHYLHERNAGINE

$C_{20}H_{23}O_4N$ 341.1626
MP: 230° (138)
[α]D: +270° (*c* = 0.1, MeOH) (138)

289. *N,O*-DIMETHYLISOCORYDINE
(*O,O*-Dimethylmagnoflorine, *O*-Methylpraecoxine methiodide, *O,O*-Dimethylcorytuberine methiodide)

$C_{22}H_{28}O_4N^+ X^-$ 370.2018
MS: 369 (7), 355 (17), 341 (7), 340 (29), 324 (35), 311 (3), 310 (3), 309 (4), 308 (6), 294 (5), 282 (3), 281 (3), 280 (2), 279 (2), 266 (4), 265 (3), 142, 127, 58 (100) (I^-) (67)

291. *N*-METHYLBULBOCAPNINE

$C_{20}H_{22}O_4N^+ X^-$ 340.1548
MS: 339 (4), 325 (14), 324 (10), 311 (4), 310 (17), 295 (3), 282 (6), 280 (6), 266 (3), 264 (3), 252 (4), 224 (4), 142, 127, 58 (100) (I^-) (67)

295. THALISOPYNINE

$C_{20}H_{25}O_5N$ 371.1731
MP: 142–144° (99)

297. BAICALIDINE
(*N*-Methylbaicaline)

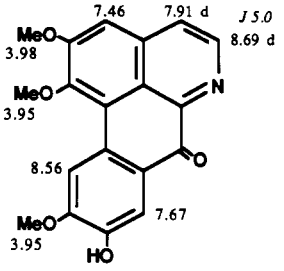
$C_{21}H_{23}O_5N$ 369.1575
MP: 146–147° (155)
[α]D: +55° (MeOH) (155)
UV: 217, 242, 291, 306, 318 (155)

Oxoaporphines

116. LIRIODENINE

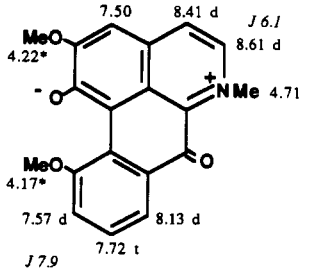
$C_{17}H_9O_3N$ 275.0582
^{13}C NMR: (TFA) (128)

123. ATHEROLINE



$C_{19}H_{15}O_5N$ 337.0949
^1H NMR: (DMSO, 80 MHz) (232)

136. ALKALOID PO-3



$C_{19}H_{15}O_4N$ 321.1000
^1H NMR: ($CDCl_3$/TFA, 250 MHz) (199)

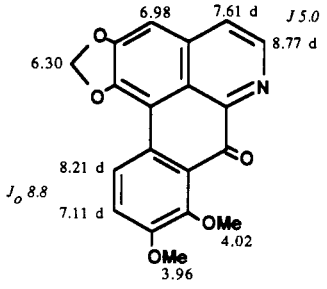
216. OXOSTEPHANINE

$C_{18}H_{11}O_4N$ 305.0687
^{13}C NMR: (TFA) (128)

218. OXOPUTERINE

$C_{18}H_{11}O_4N$ 305.0687
^1H NMR: (TFA) (55)

340. OXOCREBANINE

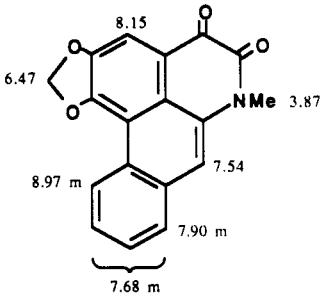


$C_{19}H_{13}O_5N$ 335.0793
^1H NMR: ($CDCl_3$) (253)

4,5-Dioxoaporphines

177. CEPHARADIONE A

$C_{18}H_{11}O_4N$ 305.0687
^1H NMR: (360 MHz) (236)



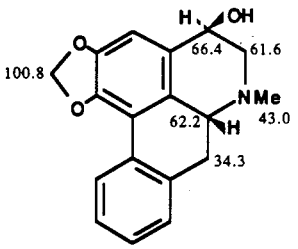
C-7 and/or C-4 Oxygenated Aporphines

142. OLIVERIDINE

$C_{19}H_{19}O_4N$ 325.1313
MP: 165–169° (134)
UV: 208 (4.45), 222 (4.43), 238 (4.11), 284 (4.20), 318 (3.63) (134)

147. EPISTEPORPHINE

$C_{18}H_{17}O_3N$ 295.1207
IR: (KBr) 3340, 1350, 1050, 940 (68)
^{13}C NMR: (68)



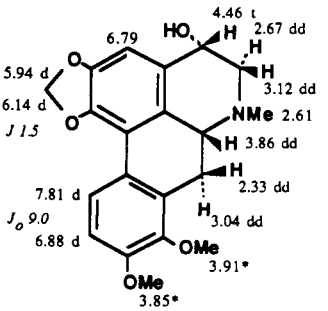
other signals: 147.2, 143.5, 135.2, 131.0, 130.8, 128.1, 127.6, 126.9, 115.9, 105.3

356. NOROLIVEROLINE

$C_{17}H_{15}O_3N$ 281.1051
MP: 140–142° (189)
$[\alpha]_D$: −48° (c = 0.24, EtOH) (189)

362. 4-HYDROXYCREBANINE

$C_{20}H_{21}O_5N$ 355.1418
^1H NMR: (200 MHz) (145)
MS: $[M]^+$ 355 (30), 354 (23), 336 (7), 335 (18), 321 (13), 320 (13), 312 (100) (145)



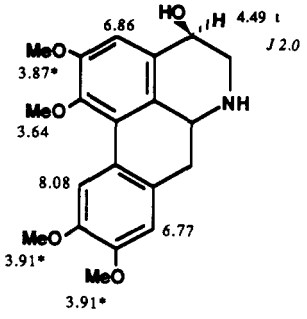
$J_{4,5\alpha}$ 2.0; $J_{4,5\beta}$ 2.0; J_{gem} 12.0
$J_{6a,7\alpha}$ 5.0; $J_{6a,7\beta}$ 1.5; J_{gem} 13.0

148. CATALINE

$C_{21}H_{25}O_5N$ 371.1731
X-RAY: (76)

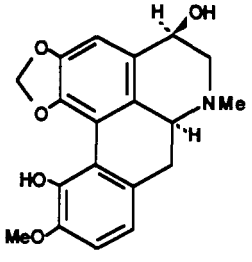
363. NORCATALINE

$C_{20}H_{23}O_5N$ 357.1575
^1H NMR: (90 MHz) (127)



367. 4-HYDROXYBULBOCAPNINE

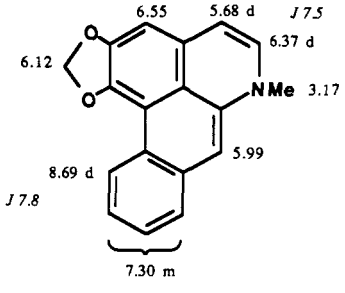
$C_{19}H_{19}O_5N$ 341.1262
Configuration at C-4 (94)



Dehydroaporphines

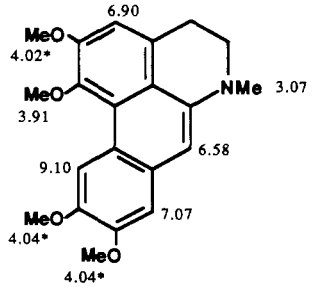
152. TETRADEHYDROROEMERINE
(Didehydroaporheine,
Didehydroroemerine)

$C_{18}H_{13}O_2N$ 275.0946
MP: 161–163° (27)
UV: 234 (4.84), 265 sh (4.62), 274 sh (4.46), 310 (3.50), 366 (4.19), 418 (3.85), 444 (3.68) (27)
^1H NMR: (80 MHz) (27)
MS: $[M]^+$ 275 (100), 260 (35), 137.5 (21) (27)



154. DEHYDROGLAUCINE

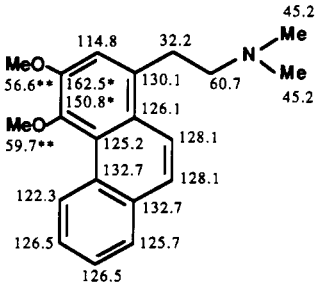
$C_{21}H_{23}O_4N$ 353.1626
^1H NMR: (90 MHz) (132)



Phenanthrenes

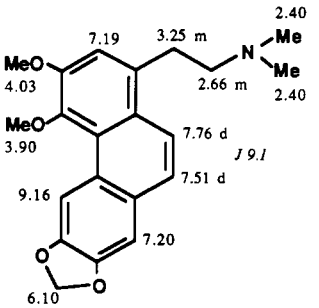
163. ATHEROSPERMININE

$C_{20}H_{23}O_2N$ 309.1728
^{13}C NMR: (153)



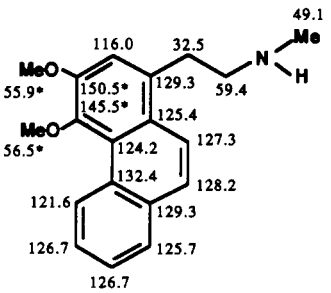
169. THALICTHUBERINE

$C_{21}H_{23}O_4N$ 353.1626
^1H NMR: (360 MHz) (100)
MS: $[M]^+$ 353 (2), 326 (0.3), 295 (1), 280 (0.2), 58 (100) (100)



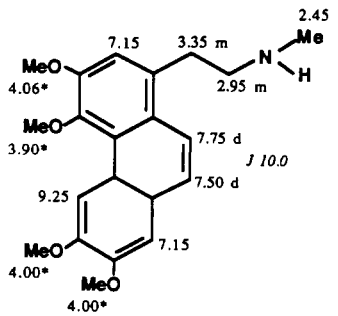
239. NORATHEROSPERMININE

$C_{19}H_{21}O_2N$ 295.1571
^{13}C NMR: (DMSO) (153)



241. SECOGLAUCINE

$C_{21}H_{25}O_4N$ 355.1782
MP: 112–114° (20)
UV: 263 (4.98), 280 sh (4.53), 307 (4.21), 320 (4.20), 344 (3.45), 362 (3.25) (20)
^1H NMR: (100 MHz) (20)
MS: $[M]^+$ 335, 311, 44 (20)



Miscellaneous

384. MENISPORPHINE

$C_{19}H_{15}O_4N$ 321.1000
^1H NMR: (200 MHz) (176)
MS: $[M]^+$ 321 (100), 306 (30), 292 (64), 278 (18), 261 (13) (176)

390. RUFESCINE

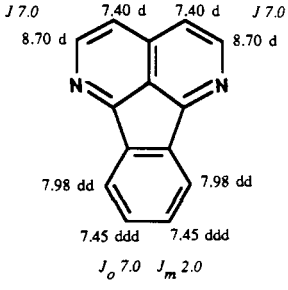
$C_{19}H_{17}O_4N$ 323.1156
IR: ($CHCl_3$) 2960, 1615, 1590, 1480, 1465, 1400, 1380, 1290, 1240, 1160, 1125, 1095, 1075, 1020, 1005, 970, 835 (18)
MS: $[M]^+$ 323 (100), 309 (13), 308 (58), 293 (20), 278 (12), 265 (25), 250 (36), 235 (10), 222 (36), 207 (11), 194 (31), 179 (15), 151 (21), 111 (19) (18)

391. IMELUTEINE

$C_{20}H_{19}O_5N$ 353.1262
IR: ($CHCl_3$) 3025, 2960, 2850, 1580, 1485, 1460, 1420, 1400, 1375, 1285, 1255, 1110, 1070, 1020, 1005, 980, 820 (18)
MS: $[M]^+$ 353 (61), 352 (48), 338 (23), 325 (24), 324 (100), 308 (40), 307 (25), 294 (36), 263 (20), 237 (20), 169 (17) (18)

392. EUPOLAURIDINE

$C_{14}H_8N_2$ 204.0687
^1H NMR: (90 MHz) (248)
^{13}C NMR: (248)



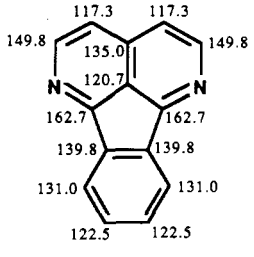


TABLE 3. Known Aporphinoids Reisolated from New Sources.

Aporphines sensu stricto

1. CAAVERINE $C_{17}H_{17}O_2N$ 267.1258
SOURCES: Annonaceae: *Isolona pilosa* (101), *Isolona zenkeri* (101)

2. LIRINIDINE $C_{18}H_{19}O_2N$ 281.1415
SOURCES: Annonaceae: *Artabotrys venustus* (37), *Guatteria ouregou* (54), *Guatteria sagotiana* (189), *Isolona zenkeri* (101)

3. ASIMILOBINE $C_{17}H_{17}O_2N$ 267.1258
SOURCES: Annonaceae: *Annona hayesii* (187), *Artabotrys venustus* (37), *Cymbopetalum brasiliense* (38), *Fissistigma glaucescens* (153), *Meiogyne virgata* (229), *Oncodostigma monosperma* (39), *Popowia pisocarpa* (127), *Rollinia emarginata* (173), *Unonopsis guatterioides* (73)
Magnoliaceae: *Liriodendron tulipifera* (197), *Magnolia watsonii* (126), *Talauma* cf. *Talauma obovata* (185)
Menispermaceae: *Stephania succifera* (258), *Stephania venosa* (46)
Monimiaceae: *Glossocalyx brevipes* (166)

4. *N*-METHYLASIMILOBINE $C_{18}H_{19}O_2N$ 281.1415
SOURCES: Annonaceae: *Duguetia spixiana* (62)
Papaveraceae: *Papaver armeniacum* (203), *Papaver fugax* (203), *Papaver tauricola* (203)

5. NORNUCIFERINE $C_{18}H_{19}O_2N$ 281.1415
SOURCES: Annonaceae: *Annona hayesii* (187), *Artabotrys venustus* (37), *Duguetia spixiana* (188), *Guatteria chrysopetala* (102), *Guatteria ouregou* (54), *Guatteria sagotiana* (189), *Isolona pilosa* (101), *Oncodostigma monosperma* (39), *Oxandra* (cf. *major*) *xylopioides* (11), *Popowia pisocarpa* (127)

6. NUCIFERINE $C_{19}H_{21}O_2N$ 295.1571
SOURCES: Annonaceae: *Annona hayesii* (187), *Artabotrys venustus* (37), *Guatteria ouregou* (54)
Magnoliaceae: *Liriodendron tulipifera* (197)
Papaveraceae: *Papaver pseudoorientale* (242)

7. ANONAINE $C_{17}H_{15}O_2N$ 265.1102
SOURCES: Annonaceae: *Alphonsea sclerocarpa* (230), *Annona bullata* (149,201), *Annona cherimolia* (243,244), *Annona hayesii* (187), *Artabotrys venustus* (37), *Duguetia spixiana* (188), *Goniothalamus amuyon* (153), *Guatteria schomburgkiana* (55), *Isolona pilosa* (101), *Meiogyne virgata* (229), *Monodora tenuifolia* (224), *Oncodostigma monosperma* (39), *Oxandra* (cf. *major*) *xylopioides* (11), *Rollinia emarginata* (173), *Rollinia mucosa* (21), *Unonopsis guatterioides* (73)
Menispermaceae: *Stephania venosa* (46)

8. ROEMERINE $C_{18}H_{17}O_2N$ 279.1258
SOURCES: Annonaceae: *Annona hayesii* (187), *Guatteria modesta* (10), *Guatteria sagotiana* (189), *Isolona pilosa* (101)
Papaveraceae: *Papaver apokrinomenon* (178,179), *Papaver pilosum* (178), *Papaver spicatum* (178), *Papaver strictum* (178)

12. STEPHANINE $C_{19}H_{19}O_3N$ 309.1364
SOURCES: Menispermaceae: *Stephania dicentzinifeza* (162), *Stephania dielsiana* (161), *Stephania kwangsiensis* (51)

13. LIRININE $C_{19}H_{21}O_3N$ 311.1520
(3-Hydroxyuciferine)
SOURCES: Annonaceae: *Guatteria ouregou* (54)

16. ANOLOBINE $C_{17}H_{15}O_3N$ 281.1051
SOURCES: Annonaceae: *Fissistigma oldhamii* (152,153), *Goniothalamus amuyon* (153), *Guatteria sagotiana* (189), *Guatteria schomburgkiana* (55), *Monodora tenuifolia* (224)
Magnoliaceae: *Talauma* cf. *Talauma obovata* (185)

18. XYLOPINE $C_{18}H_{17}O_3N$ 295.1207
SOURCES: Annonaceae: *Fissistigma oldhamii* (152,153,254), *Guatteria sagotiana* (189), *Guatteria schomburgkiana* (55), *Xylopia nigricans* (252)
Magnoliaceae: *Talauma* cf. *Talauma obovata* (185)

20. SPARSIFLORINE $C_{17}H_{17}O_3N$ 283.1207
SOURCES: Annonaceae: *Monodora tenuifolia* (224)

21. APOGLAZIOVINE $C_{18}H_{19}O_3N$ 297.1364
SOURCES: Berberidaceae: *Berberis brandisiana* (110)
Menispermaceae: *Stephania venosa* (46)

25. TUDURANINE $C_{18}H_{19}O_3N$ 297.1364
SOURCES: Menispermaceae: *Stephania venosa* (46)
Monimiaceae: *Glossocalyx brevipes* (166)

26. NUCIFEROLINE $C_{19}H_{21}O_3N$ 311.1520
SOURCES: Menispermaceae: *Stephania venosa* (46)

27. MECAMBROLINE $C_{18}H_{17}O_3N$ 295.1207
SOURCES: Menispermaceae: *Stephania venosa* (46)

29. LAURELINE $C_{19}H_{19}O_3N$ 309.1364
SOURCES: Monimiaceae: *Hedycarya angustifolia* (86)

31. ISOTHEBAINE $C_{19}H_{21}O_3N$ 311.1520
SOURCES: Papaveraceae: *Papaver atlanticum* (226), *Papaver bracteatum* (220,234), *Papaver orientale* (122,200), *Papaver pseudoorientale* (242)

32. *O*-METHYLISOTHEBAINE $C_{20}H_{23}O_3N$ 325.1677
(1,2,11-Trimethoxyaporphine)
SOURCES: Papaveraceae: *Papaver orientale* (122)

33. OBOVANINE $C_{17}H_{15}O_3N$ 281.1051
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

34. PUKATEINE $C_{18}H_{17}O_3N$ 295.1207
SOURCES: Annonaceae: *Guatteria sagotiana* (189)
Monimiaceae: *Laurelia novae-zelandiae* (6)

36. *N*-METHYLPUTERINE $C_{19}H_{19}O_3N$ 309.1364
(*O*-Methylpukateine)
SOURCES: Annonaceae: *Guatteria sagotiana* (127), *Guatteria schomburgkiana* (55)

38. CREBANINE $C_{20}H_{21}O_4N$ 339.1469
SOURCES: Annonaceae: *Fissistigma glaucescens* (153)
Menispermaceae: *Stephania dielsiana* (161), *Stephania succifera* (258), *Stephania venosa* (182)

39. LAURELLIPTINE $C_{18}H_{19}O_4N$ 313.1313
(Norisoboldine)
SOURCES: Annonaceae: *Monodora tenuifolia* (224)
Hernandiaceae: *Illigera pentaphylla* (196)

40. ISOBOLDINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Annonaceae: *Alphonsea sclerocarpa* (230), *Annona cherimolia* (243), *Guatteria chrysopetala* (102), *Guatteria goudotiana* (26), *Guatteria schomburgkiana* (22)
Berberidaceae: *Berberis brandisiana* (110), *Berberis cretica* (195), *Mahonia aquifolium* (216)
Fumariaceae: *Corydalis bulbosa* (136), *Corydalis bulleyana* (103), *Corydalis cava* (85), *Corydalis gortschakovii* (116), *Corydalis solida* (135), *Corydalis stricta* (117), *Corydalis turtschaninovii* (79), *Dicentra peregrina* (124), *Fumaria bella* (77), *Fumaria capreolata* (77,233), *Fumaria macrosepala* (28), *Fumaria parviflora* (7), *Fumaria vaillantii* (208)
Hypecoaceae:* *Hypecoum leptocarpum* (227), *Hypecoum procumbens* (227)
Lauraceae: *Litsea lecardii* (249), *Litsea wightiana* (15), *Umbellularia californica* (181)
Menispermaceae: *Pachygone ovata* (3)

*Some authors include the genus *Hypecoum* in the Fumariaceae.

Monimiaceae: *Glossocalyx brevipes* (166), *Hedycarya baudouinii* (74)
Papaveraceae: *Glaucium fimbrilligerum* (131), *Glaucium oxylobum* (130,223), *Papaver bracteatum* (220), *Stylophorum diphyllum* (219)
Ranunculaceae: *Thalictrum aquilegifolium* (13), *Thalictrum foetidum* (168), *Thalictrum isopyroides* (9), *Thalictrum minus* var. *adiantifolium* (158)

42. BRACTEOLINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Fumariaceae: *Corydalis gortschakovii* (116)
Lauraceae: *Licaria armeniaca* (2)
Papaveraceae: *Papaver bracteatum* (220), *Papaver pseudoorientale* (242)

43. WILSONIRINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Annonaceae: *Popowia pisocarpa* (127)
Fumariaceae: *Corydalis paniculigera* (8), *Corydalis pseudoadunca* (119), *Corydalis stricta* (117)
Synthesis (104)

44. THALIPORPHINE $C_{20}H_{23}O_4N$ 341.1626
(Thalicmidine, *O*-Methylisoboldine)
SOURCES: Annonaceae: *Popowia pisocarpa* (127)
Berberidaceae: *Berberis cretica* (195)
Fumariaceae: *Corydalis bulbosa* (136), *Corydalis claviculata* (16,17), *Corydalis gortschakovii* (116), *Corydalis paniculigera* (8), *Corydalis turtschaninovii* (79)
Lauraceae: *Phoebe valeriana* (32)
Papaveraceae: *Glaucium corniculatum* (120)
Ranunculaceae: *Thalictrum isopyroides* (9), *Thalictrum foetidum* (168), *Thalictrum longipedunculatum* (169), *Thalictrum minus* var. *adiantifolium* (158)

47. NORDOMESTICINE $C_{18}H_{17}O_4N$ 311.1156
SOURCES: Annonaceae: *Annona hayesii* (187)
Hernandiaceae: *Sparattanthelium uncigerum* (41)
Lauraceae: *Umbellularia californica* (181)

48. DOMESTICINE $C_{19}H_{19}O_4N$ 325.1313
SOURCES: Fumariaceae: *Corydalis bulbosa* (136), *Corydalis gortschakovii* (116), *Corydalis solida* (135)
Hernandiaceae: *Gyrocarpus americanus* (40)
Lauraceae: *Umbellularia californica* (181)
Papaveraceae: *Glaucium oxylobum* (130,223)
Ranunculaceae: *Thalictrum minus* var. *adiantifolium* (158)
Synthesis (104)

49. LAUROLITSINE $C_{18}H_{19}O_4N$ 313.1313
(Norboldine)
SOURCES: Hernandiaceae: *Illigera pentaphylla* (196)
Lauraceae: *Lindera* sp. (139), *Litsea lecardii* (249), *Litsea wightiana* (15)

50. BOLDINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Annonaceae: *Polyalthia cauliflora* var. *beccarii* (128)
Hernandiaceae: *Illigera pentaphylla* (196)
Lauraceae: *Lindera strychnifolia* (142), *Lindera* sp. (139), *Litsea lecardii* (249), *Litsea wightiana* (15)
Monimiaceae: *Hedycarya angustifolia* (86), *Peumus boldus* (235)

51. NORPREDICENTRINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Annonaceae: *Guatteria goudotiana* (26)

52. PREDICENTRINE $C_{20}H_{23}O_4N$ 341.1626
SOURCES: Annonaceae: *Polyalthia cauliflora* var. *beccarii* (128)
Fumariaceae: *Corydalis bulbosa* (136), *Corydalis cava* (85), *Corydalis solida* (135), *Dicentra peregrina* (124)

Magnoliaceae: *Liriodendron tulipifera* (197)
Papaveraceae: *Glaucium corniculatum* (120)
Synthesis (184)

53. ISODOMESTICINE $C_{19}H_{19}O_4N$ 325.1313
SOURCES: Annonaceae: *Guatteria goudotiana* (26)

54. LAUROTETANINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Annonaceae: *Alphonsea sclerocarpa* (230)
Hernandiaceae: *Hernandia guianensis* (191), *Illigera pentaphylla* (196), *Sparattanthelium uncigerum* (41)
Lauraceae: *Lindera* sp. (139,140), *Litsea wightiana* (15), *Neolitsea aciculata* (141)
Monimiaceae: *Glossocalyx brevipes* (166), *Hedycarya angustifolia* (86), *Hedycarya baudouinii* (74)

55. *N*-METHYLLAUROTETANINE $C_{20}H_{23}O_4N$ 341.1626
SOURCES: Annonaceae: *Guatteria goudotiana* (26)
Fumariaceae: *Corydalis turtschaninovii* (79,81)
Lauraceae: *Lindera* sp. (140)
Magnoliaceae: *Liriodendron tulipifera* (262)
Monimiaceae: *Glossocalyx brevipes* (166), *Hedycarya baudouinii* (74), *Peumus boldus* (235)
Papaveraceae: *Eschscholtzia californica* (180,221), *Eschscholtzia douglasii* (221), *Eschscholtzia glauca* (221), *Glaucium corniculatum* ssp. *refractum* (210), *Papaver apokrinomenon* (178,179), *Papaver strictum* (178)
Ranunculaceae: *Thalictrum hazarica* (100), *Thalictrum isopyroides* (9)
Synthesis (97,99)

56. XANTHOPLANINE $C_{21}H_{26}O_4N^+ X^-$ 356.1862
SOURCES: Ranunculaceae: *Thalictrum foliolosum* (47)

58. NORGLAUCINE $C_{20}H_{23}O_4N$ 341.1626
SOURCES: Fumariaceae: *Corydalis turtschaninovii* (79), *Corydalis yanhusuo* (108)
Monimiaceae: *Hedycarya baudouinii* (74)

59. GLAUCINE $C_{21}H_{25}O_4N$ 355.1782
SOURCES: Annonaceae: *Artabotrys lastourvillensis* (69,70)
Berberidaceae: *Berberis cretica* (195)
Fumariaceae: *Corydalis bulbosa* (136), *Corydalis turtschaninovii* (78–81), *Corydalis yanhusuo* (108)
Lauraceae: *Litsea wightiana* (15)
Monimiaceae: *Hedycarya angustifolia* (86)
Papaveraceae: *Glaucium corniculatum* ssp. *refractum* (210), *Papaver flavum* (88,93), *Papaver apokrinomenon* (178,179), *Papaver pilosum* (178), *Papaver spicatum* (178), *Papaver strictum* (178)
Ranunculaceae: *Thalictrum baicalense* (154,155), *Thalictrum foetidum* (168), *Thalictrum longipedunculatum* (169), *Thalictrum minus* (167,171), *Thalictrum minus* var. *adiantifolium* (158)

61. NORNANTENINE $C_{19}H_{19}O_4N$ 325.1313
SOURCES: Annonaceae: *Annona cherimolia* (243), *Xylopia nigricans* (252)

62. NANTENINE $C_{20}H_{21}O_4N$ 339.1469
SOURCES: Berberidaceae: *Nandina domestica* (215)
Fumariaceae: *Corydalis bulbosa* (136), *Corydalis cava* (85), *Corydalis solida* (135), *Corydalis turtschaninovii* (79,80), *Corydalis yanhusuo* (108)
Lauraceae: *Phoebe valeriana* (32)
Monimiaceae: *Glossocalyx brevipes* (166)
Ranunculaceae: *Thalictrum minus* var. *adiantifolium* (158)

64. ACTINODAPHNINE $C_{18}H_{17}O_4N$ 311.1156

SOURCES: Hernandiaceae: *Hernandia guianensis* (191), *Hernandia ovigera* var. *mascarenensis* (42), *Illigera pentaphylla* (196), *Sparattanthelium uncigerum* (41)
Lauraceae: *Litsea lecardii* (249)
Menispermaceae: *Sciadotenia cayenensis* (58)

65. *N*-METHYLACTINODAPHNINE $C_{19}H_{19}O_4N$ 325.1313
(Cassythicine)
SOURCES: Lauraceae: *Litsea lecardii* (249)
Menispermaceae: *Stephania epigea* (65)
Synthesis (99)

67. DICENTRINE $C_{20}H_{21}O_4N$ 339.1469
SOURCES: Menispermaceae: *Stephania dicentzinifeza* (162), *Stephania mashanica* (247)
Synthesis (99)

69. NEOLITSINE $C_{19}H_{17}O_4N$ 323.1156
SOURCES: Annonaceae: *Guatteria goudotiana* (26)

70. ISOCORYTUBERINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Papaveraceae: *Glaucium fimbrilligerum* (131), *Glaucium oxylobum* (130)

71. CORYTUBERINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Annonaceae: *Annona cherimolia* (243), *Meiogyne virgata* (229)
Aristolochiaceae: *Aristolochia clematitis* (217)
Berberidaceae: *Mahonia aquifolium* (216)
Papaveraceae: *Eschscholtzia californica* (221), *Eschscholtzia douglasii* (221), *Eschscholtzia glauca* (221), *Glaucium fimbrilligerum* (131), *Glaucium oxylobum* (223), *Glaucium squamigerum* (222), *Papaver atlanticum* (226), *Papaver bracteatum* (220), *Papaver glaucum* (226), *Papaver pseudoorientale* (242), *Papaver tataricum* (241), *Stylophorum diphyllum* (213)
Ranunculaceae: *Adonis aestivalis* (217), *Adonis vernalis* (217), *Aquilegia* sp. (217), *Caltha palustris* (217), *Clematis recta* (217), *Consolida regalis* (217), *Eranthis hiemalis* (217), *Helleborus foetidus* (217), *Helleborus niger* (217), *Helleborus viridis* (217), *Isopyrum thalictroides* (217)

72. MAGNOFLORINE $C_{20}H_{24}O_4N^+ X^-$ 342.1704
SOURCES: Annonaceae: *Alphonsea sclerocarpa* (230), *Cymbopetalum brasiliense* (38), *Monodora tenuifolia* (224)
Aristolochiaceae: *Aristolochia clematitis* (217), *Aristolochia contorta* (151), *Aristolochia fangchi* (257), *Aristolochia indica* (48), *Aristolochia manshuriensis* (66), *Aristolochia moupinensis* (256,257), *Aristolochia sustrozechuanica* (255)
Berberidaceae: *Berberis actinacantha* (250,251), *Berberis asiatica* (163), *Berberis cretica* (195), *Berberis darwinii* (238), *Berberis oblonga* (129), *Berberis wilsoniae* (107), *Epimedium versicolor* (217), *Mahonia aquifolium* (216), *Nandina domestica* (114)
Fumariaceae: *Fumaria capreolata* (233)
Hypecoaceae: *Hypecoum leptocarpum* (227), *Hypecoum procumbens* (227)
Menispermaceae: *Dioscoreophyllum cumminsii* (83), *Pachygone ovata* (3), *Tinospora capillipes* (43)
Monimiaceae: *Hedycarya baudouinii* (74)
Papaveraceae: *Argemone platyceras* (125), *Eschscholtzia glauca* (221), *Glaucium fimbrilligerum* (131), *Glaucium oxylobum* (223), *Glaucium squamigerum* (222), *Papaver atlanticum* (226), *Papaver bracteatum* (220), *Papaver glaucum* (226), *Papaver pseudoorientale* (242), *Stylophorum diphyllum* (219)
Ranunculaceae: *Adonis aestivalis* (217), *Adonis vernalis* (217), *Aquilegia* sp. (217), *Caltha palustris* (217), *Clematis recta* (217), *Clematis vitalba* (217), *Consolida regalis* (217), *Helleborus viridis* (217), *Isopyrum thalictroides* (217), *Thalictrum aquilegifolium* (13), *Thalictrum fauriei* (49), *Thalictrum foetidum* (168,172), *Thalictrum foliolosum* (47), *Thalictrum isopyroides* (9), *Thalictrum javanicum* (12), *Thalictrum longipedunculatum* (169), *Thalictrum minus* (167,171,172), *Thalictrum minus* var. *adiantifolium* (158), *Thalictrum sultanabadense* (14)
Rhamnaceae: *Colubrina asiatica* (246)

Rutaceae: *Zanthoxylum leprieurii* (4)
Synthesis (151)

73. NORCORYDINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Annonaceae: *Artabotrys venustus* (37), *Guatteria schomburgkiana* (22), *Popowia pisocarpa* (127)
Lauraceae: *Litsea wightiana* (15)

74. CORYDINE $C_{20}H_{23}O_4N$ 341.1626
SOURCES: Annonaceae: *Guatteria schomburgkiana* (22), *Popowia pisocarpa* (127)
Berberidaceae: *Berberis actinacantha* (212), *Mahonia aquifolium* (216)
Fumariaceae: *Corydalis bulbosa* (136), *Corydalis gortschakovii* (116), *Corydalis solida* (135), *Dicentra peregrina* (124), *Dicentra spectabilis* (124)
Hypecoaceae: *Hypecoum leptocarpum* (227), *Hypecoum procumbens* (227)
Monimiaceae: *Hedycarya angustifolia* (86), *Laurelia novae-zelandiae* (6)
Papaveraceae: *Argemone hybrida* (125), *Dicranostigma leptopodium* (44), *Eschscholtzia californica* (221), *Eschscholtzia douglasii* (221), *Eschscholtzia glauca* (221), *Glaucium corniculatum* ssp. *refractum* (210), *Glaucium fimbrilligerum* (131), *Glaucium oxylobum* (130,223), *Glaucium squamigerum* (222), *Papaver bracteatum* (220), *Papaver croceum*, (241), *Papaver glaucum* (226)
Ranunculaceae: *Thalictrum fauriei* (49)

75. *N*-METHYLCORYDINE $C_{21}H_{26}O_4N^+ X^-$ 356.1862
(*N*-Methylcorydinium)
SOURCES: Papaveraceae: *Glaucium oxylobum* (223)

76. HERNOVINE $C_{18}H_{19}O_4N$ 313.1313
SOURCES: Hernandiaceae: *Hernandia guianensis* (191), *Hernandia ovigera* var. *mascarenensis* (42)

77. *N*-METHYLHERNOVINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Hernandiaceae: *Hernandia guianensis* (191)

78. LINDCARPINE $C_{18}H_{19}O_4N$ 313.1313
SOURCES: Annonaceae: *Guatteria goudotiana* (26)
Hernandiaceae: *Illigera pentaphylla* (196)

79. *N*-METHYLLINDCARPINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Hernandiaceae: *Illigera pentaphylla* (196)

84. NORISOCORYDINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Hernandiaceae: *Sparattanthelium uncigerum* (41)
Lauraceae: *Litsea lecardii* (249)
Monimiaceae: *Hedycarya baudouinii* (74), *Peumus boldus* (235)
Papaveraceae: *Glaucium fimbrilligerum* (131), *Glaucium oxylobum* (130)

85. ISOCORYDINE $C_{20}H_{23}O_4N$ 341.1626
SOURCES: Berberidaceae: *Mahonia aquifolium* (216)
Fumariaceae: *Corydalis gortschakovii* (116), *Corydalis govaniana* (170), *Corydalis solida* (135), *Dicentra peregrina* (124), *Fumaria vaillantii* (208)
Hypecoaceae: *Hypecoum procumbens* (93)
Monimiaceae: *Glossocalyx brevipes* (166), *Hedycarya baudouinii* (74), *Peumus boldus* (235)
Papaveraceae: *Argemone mexicana* (125), *Dicranostigma leptopodium* (44), *Eschscholtzia californica* (180,221), *Eschscholtzia douglasii* (221), *Eschscholtzia glauca* (221), *Glaucium corniculatum* ssp. *refractum* (210), *Glaucium oxylobum* (130), *Papaver glaucum* (226), *Roemeria carica* (92)
Ranunculaceae: *Thalictrum aquilegifolium* (13), *Thalictrum fauriei* (49)

86. MENISPERINE $C_{21}H_{26}O_4N^+ X^-$ 356.1862
(*N*-Methylisocorydine)
SOURCES: Menispermaceae: *Rhigiocarya racemifera* (263), *Tinospora capillipes* (43)

88. *O,O*-DIMETHYLCORYTUBERINE $C_{21}H_{25}O_4N$ 355.1782
(*O*-Methylpraecoxine)
SOURCES: Synthesis (138)

89. NANDIGERINE $C_{18}H_{17}O_4N$ 311.1156
(Hernangerine)
SOURCES: Hernandiaceae: *Hernandia guianensis* (191), *Hernandia ovigera* var. *mascarenensis* (42)
Lauraceae: *Parabenzoin praecox* (138)

90. *N*-METHYLHERNANGERINE $C_{19}H_{19}O_4N$ 325.1313
(*N*-Methylnandigerine)
SOURCES: Hernandiaceae: *Hernandia guianensis* (191), *Hernandia ovigera* var. *mascarenensis* (42)

91. LAUNOBINE $C_{18}H_{17}O_4N$ 311.1156
(Norbulbocapnine)
SOURCES: Hernandiaceae: *Sparattanthelium uncigerum* (41)
Lauraceae: *Lindera* sp. (139)
Menispermaceae: *Sciadotenia cayenensis* (58)

92. BULBOCAPNINE $C_{19}H_{19}O_4N$ 325.1313
(*N*-Methyllaunobine)
SOURCES: Fumariaceae: *Corydalis bulbosa* (136), *Corydalis cava* (85,240), *Corydalis solida* (135)
Papaveraceae: *Glaucium corniculatum* ssp. *refractum* (210)

94. OVIGERINE $C_{18}H_{15}O_4N$ 309.1000
SOURCES: Hernandiaceae: *Hernandia guianensis* (191), *Hernandia ovigera* var. *mascarenensis* (42)

96. PREOCOTEINE $C_{21}H_{25}O_5N$ 371.1731
SOURCES: Lauraceae: *Phoebe molicella* (225)
Ranunculaceae: *Thalictrum isopyroides* (9)

99. NORPURPUREINE $C_{21}H_{25}O_5N$ 371.1731
SOURCES: Lauraceae: *Phoebe molicella* (225), *Phoebe pittieri* (33)

100. THALICSIMIDINE $C_{22}H_{27}O_5N$ 385.1889
(Purpureine, 3-Methoxyglaucine)
SOURCES: Lauraceae: *Phoebe molicella* (225)
Ranunculaceae: *Thalictrum kuhistanicum* (148), *Thalictrum longipedunculatum* (169), *Thalictrum minus* (167)
Synthesis (99,183)

102. OCONOVINE $C_{21}H_{25}O_5N$ 371.1731
SOURCES: Ranunculaceae: *Thalictrum fauriei* (49)

107. *N*-METHYLCASSYTHINE $C_{20}H_{21}O_5N$ 355.1418
SOURCES: Ranunculaceae: *Thalictrum isopyroides* (9)

109. OCOTEINE $C_{21}H_{23}O_5N$ 369.1575
(Thalicmine)
SOURCES: Ranunculaceae: *Thalictrum isopyroides* (9), *Thalictrum longipedunculatum* (169), *Thalictrum minus* (167)
Synthesis (64)

111. HERNANDINE $C_{19}H_{19}O_5N$ 341.1260
SOURCES: Hernandiaceae: *Hernandia guianensis* (191)

114. THALPHENINE $C_{21}H_{22}O_4N^+ X^-$ 352.1549
SOURCES: Ranunculaceae: *Thalictrum minus* (171)

181. *N*-ACETYLNORNUCIFERINE $C_{20}H_{21}O_3N$ 323.1520
SOURCES: Magnoliaceae: *Liriodendron tulipifera* (197)

184. ISOPILINE $C_{18}H_{19}O_3N$ 297.1364
SOURCES: Annonaceae: *Guatteria ouregou* (54), *Isolona pilosa* (101)

185. *N*-METHYLISOPILINE $C_{19}H_{21}O_3N$ 311.1520
SOURCES: Annonaceae: *Guatteria ouregou* (54)

188. *O*-METHYLISOPILINE $C_{19}H_{21}O_3N$ 311.1520
(*O*-Methylnorlirinine)
SOURCES: Annonaceae: *Duguetia spixiana* (188), *Guatteria ouregou* (54)

189. 3-METHOXYNUCIFERINE $C_{20}H_{23}O_3N$ 325.1677
(*O*-Methyllirinine)
SOURCES: Annonaceae: *Guatteria ouregou* (54)

191. NORSTEPHALAGINE $C_{18}H_{17}O_3N$ 295.1207
SOURCES: Annonaceae: *Artabotrys venustus* (37)

192. ZENKERINE $C_{18}H_{19}O_3N$ 297.1364
SOURCES: Annonaceae: *Isolona pilosa* (101), *Isolona zenkeri* (101)

193. PULCHINE $C_{19}H_{21}O_3N$ 311.1520
(*N*-Methylzenkerine)
SOURCES: Synthesis (24)

195. NORLAURELINE $C_{18}H_{17}O_3N$ 295.1207
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

196. PUTERINE $C_{18}H_{17}O_3N$ 295.1207
SOURCES: Annonaceae: *Guatteria sagotiana* (189), *Guatteria schomburgkiana* (22,55)

198. ELMERRILLICINE $C_{18}H_{17}O_4N$ 311.1156
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

199. LIRIOTULIPIFERINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Magnoliaceae: *Liriodendron tulipifera* (197)

200. NORISODOMESTICINE $C_{18}H_{17}O_4N$ 311.1156
SOURCES: Annonaceae: *Guatteria goudotiana* (26)
Monimiaceae: *Glossocalyx brevipes* (166)

201. LIRIOFERINE $C_{20}H_{23}O_4N$ 341.1626
SOURCES: Fumariaceae: *Corydalis turtschaninovii* (79)
Lauraceae: *Phoebe pittieri* (34)

203. LITSEFERINE $C_{18}H_{17}O_4N$ 311.1156
SOURCES: Annonaceae: *Annona hayesii* (187), *Xylopia nigricans* (252)
Lauraceae: *Litsea lecardii* (249)

204. NORDICENTRINE $C_{19}H_{19}O_4N$ 325.1313
SOURCES: Hernandiaceae: *Illigera pentaphylla* (196)

206. DELPORPHINE $C_{20}H_{23}O_5N$ 357.1575
SOURCES: Ranunculaceae: *Thalictrum isopyroides* (9)

212. LEUCOXYLONINE $C_{22}H_{25}O_6N$ 399.1680
SOURCES: Synthesis (5)

247. FLORIPAVIDINE $C_{24}H_{29}O_6N$ 427.1993
SOURCES: Papaveraceae: *Papaver armeniacum* (203), *Papaver fugax* (203), *Papaver tauricola* (203), *Papaver triniifolium* (202)

251. *N*-FORMYLANONAINE $C_{18}H_{15}O_3N$ 293.1051
SOURCES: Annonaceae: *Rollinia mucosa* (21)

254. 3-HYDROXYNORNUCIFERINE $C_{18}H_{19}O_3N$ 297.1364
SOURCES: Annonaceae: *Annona hayesii* (187), *Duguetia spixiana* (188), *Guatteria goudotiana* (26), *Guatteria melosma* (1), *Guatteria ouregou* (54), *Guatteria sagotiana* (189)

255. PRESTEPHANINE $C_{19}H_{21}O_3N$ 311.1520
SOURCES: Synthesis (214)

261. *N,O,O*-TRIMETHYLSPARSIFLORINE $C_{20}H_{23}O_3N$ 325.1677
(1,2,10-Trimethoxyaporphine)
SOURCES: Synthesis (24)

262. ISOTHEBAIDINE $C_{18}H_{19}O_3N$ 297.1364
SOURCES: Synthesis (262)

263. *N*-FORMYLPUTERINE $C_{19}H_{17}O_4N$ 323.1156
SOURCES: Annonaceae: *Guatteria schomburgkiana* (55)

267. OUREGUATTINE $C_{19}H_{21}O_4N$ 327.1469
(1-*O*-Methyloureguattidine)
SOURCES: Annonaceae: *Guatteria ouregou* (54)

271. NORANNURADHAPURINE $C_{18}H_{17}O_4N$ 311.1156
SOURCES: Annonaceae: *Fissistigma glaucescens* (153), *Fissistigma oldhamii* (153)

272. STESAKINE $C_{19}H_{19}O_4N$ 325.1313
SOURCES: Menispermaceae: *Stephania venosa* (46)

275. NORLIRIOFERINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Lauraceae: *Phoebe pittieri* (33,34)

278. CALYCININE $C_{18}H_{17}O_4N$ 311.1156
(Fissistigine A, Fissoldine)
SOURCES: Annonaceae: *Fissistigma oldhamii* (152,153,254)

279. *N*-METHYLCALYCININE $C_{19}H_{19}O_4N$ 325.1313
(*N*-Methylfissoldine)
SOURCES: Synthesis (152)

285. LAETINE $C_{18}H_{17}O_4N$ 311.1156
SOURCES: Hernandiaceae: *Hernandia peltata* (264)

286. HERNAGINE $C_{19}H_{21}O_4N$ 327.1469
SOURCES: Hernandiaceae: *Hernandia ovigera* var. *mascarenensis* (42)

287. *N*-METHYLHERNAGINE $C_{20}H_{23}O_4N$ 341.1626
(Praecoxine)
SOURCES: Lauraceae: *Parabenzoin praecox* (138)

289. *N,O*-DIMETHYLISOCORYDINE $C_{22}H_{28}O_4N^+X^-$ 370.2018
(*O,O*-Dimethylcorytuberine methiodide,
O,O-Dimethylmagnoflorine,

O-Methylpraecoxine methiodide)
SOURCES: Synthesis (138)

295. THALISOPYNINE $C_{21}H_{25}O_5N$ 371.1731
(9-Hydroxy-1,2,3,10-tetramethoxyaporphine)
SOURCES: Synthesis (99)

296. BAICALINE $C_{20}H_{21}O_5N$ 355.1418
SOURCES: Ranunculaceae: *Thalictrum baicalense* (154,155)

297. BAICALIDINE $C_{21}H_{23}O_5N$ 369.1575
(*N*-Methylbaicaline)
SOURCES: Ranunculaceae: *Thalictrum baicalense* (155)
Synthesis (245)

7-Hydroxy-7-methylaporphines

308. GUATTESCIDINE $C_{18}H_{15}O_4N$ 309.1000
SOURCES: Annonaceae: *Guatteria melosma* (1)

310. GUATTESCINE $C_{19}H_{17}O_4N$ 323.1156
SOURCES: Annonaceae: *Guatteria schomburgkiana* (55,56)

7,7-Dimethylaporphines

319. GUADISCINE $C_{20}H_{19}O_3N$ 321.1364
SOURCES: Annonaceae: *Guatteria schomburgkiana* (55,56)

Oxoaporphines

115. LYSICAMINE $C_{18}H_{13}O_3N$ 291.0895
(Oxonuciferine)
SOURCES: Annonaceae: *Annona hayesii* (187), *Duguetia spixiana* (188), *Guatteria chrysopetala* (102), *Guatteria ouregou* (54), *Guatteria saffordiana* (84), *Oxandra xylopioides* (11), *Polyalthia cauliflora* var. *beccarii* (128), *Rollinia papilionella* (57), *Unonopsis guatterioides* (73)
Hernandiaceae: *Illigera pentaphylla* (196)

116. LIRIODENINE $C_{17}H_9O_3N$ 275.0582
SOURCES: Annonaceae: *Alphonsea sclerocarpa* (230), *Annona bullata* (149,201), *Annona cherimolia* (243,244), *Annona glabra* (96), *Annona hayesii* (187), *Cananga odorata* (186), *Cleistopholis patens* (248), *Fissistigma glaucescens* (153), *Goniothalamus amuyon* (153), *Guatteria chrysopetala* (102), *Guatteria dielsiana* (89), *Guatteria goudotiana* (26), *Guatteria melosma* (1), *Guatteria modesta* (10), *Guatteria sagotiana* (189), *Guatteria schomburgkiana* (22), *Meiogyne virgata* (229), *Monodora tenuifolia* (224), *Oncodostigma monosperma* (39), *Oxandra xylopioides* (11,71), *Polyalthia cauliflora* var. *beccarii* (128), *Popowia pisocarpa* (127), *Rollinia mucosa* (21), *Rollinia papilionella* (57), *Rollinia sericea* (19), *Sapranthus palanga* (75), *Unonopsis guatterioides* (73)
Magnoliaceae: *Liriodendron tulipifera* (197,198), *Magnolia watsonii* (126)
Menispermaceae: *Pachygone ovata* (3), *Sinomenium acutum* (113), *Stephania venosa* (182)
Monimiaceae: *Glossocalyx brevipes* (166), *Laurelia novae-zelandiae* (6), *Siparuna dresslerana* (87), *Siparuna nicaraguensis* (87), *Siparuna patelliformis* (87)
Rutaceae: *Zanthoxylum nitidum* (118)
Synthesis (95,174)

118. *O*-METHYLMOSCHATOLINE $C_{19}H_{15}O_4N$ 321.1000
(Homomoschatoline)
SOURCES: Annonaceae: *Duguetia spixiana* (188), *Duguetia stelichantha* (63), *Guatteria dielsiana* (89), *Guatteria ouregou* (54), *Guatteria saffordiana* (84), *Polyalthia cauliflora* var. *beccarii* (128), *Pseuduvaria macrophylla* (157), *Rollinia sericea* (19)
Lauraceae: *Phoebe valeriana* (32)

119. ATHEROSPERMIDINE $C_{18}H_{11}O_4N$ 305.0687
SOURCES: Annonaceae: *Polyalthia cauliflora* var. *beccarii* (128), *Rollinia sericea* (19)
Synthesis (175)

120. LANUGINOSINE $C_{18}H_{11}O_4N$ 305.0687
(Oxoxylopine)
SOURCES: Annonaceae: *Annona cherimolia* (243,244), *Duguetia spixiana* (62,188), *Guatteria chrysopetala* (102), *Guatteria schomburgkiana* (55), *Rollinia mucosa* (21), *Rollinia papilionella* (57)
Hernandiaceae: *Illigera pentaphylla* (196)
Magnoliaceae: *Talauma* cf. *obovata* (185)
Menispermaceae: *Stephania japonica* (159)

121. OXOLAURELINE $C_{18}H_{11}O_4N$ 305.0687
(Lauterine, 10-Methoxyliriodenine)
SOURCES: Annonaceae: *Guatteria sagotiana* (189)
Monimiaceae: *Laurelia novae-zelandiae* (6)

122. SUBSESSILINE $C_{19}H_{15}O_5N$ 337.0949
SOURCES: Annonaceae: *Guatteria ouregou* (54)

123. ATHEROLINE $C_{19}H_{15}O_5N$ 337.0949
SOURCES: Hernandiaceae: *Illigera pentaphylla* (196)
Lauraceae: *Machilus glaucescens* (232)
Monimiaceae: *Hedycarya baudouinii* (74)

124. OXOGLAUCINE $C_{20}H_{17}O_5N$ 351.1105
(*O*-Methylatheroline)
SOURCES: Fumariaceae: *Corydalis bulbosa* (136)
Monimiaceae: *Hedycarya baudouinii* (74)
Ranunculaceae: *Thalictrum foetidum* (168)

125. OXONANTENINE $C_{19}H_{13}O_5N$ 335.0793
SOURCES: Fumariaceae: *Corydalis bulbosa* (136)
Hernandiaceae: *Illigera pentaphylla* (196)

126. DICENTRINONE $C_{19}H_{13}O_5N$ 335.0793
SOURCES: Annonaceae: *Desmos dasymachalus* (45)
Hernandiaceae: *Illigera pentaphylla* (196)
Menispermaceae: *Stephania mashanica* (247)

128. HERNANDONINE $C_{18}H_9O_5N$ 319.0480
SOURCES: Hernandiaceae: *Hernandia ovigera* var. *mascarenensis* (42)

130. THALICMININE $C_{20}H_{15}O_6N$ 365.0898
SOURCES: Ranunculaceae: *Thalictrum isopyroides* (9), *Thalictrum minus* (167)

134. CORUNNINE $C_{20}H_{17}O_5N$ 351.1105
SOURCES: Fumariaceae: *Corydalis gortschakovii* (116)
Ranunculaceae: *Thalictrum foetidum* (168), *Thalictrum minus* (167)

136. ALKALOID PO-3 $C_{19}H_{15}O_4N$ 321.1000
SOURCES: Synthesis (199)

137. NANDAZURINE $C_{19}H_{13}O_5N$ 335.0793
SOURCES: Fumariaceae: *Corydalis bulbosa* (136)

214. *N,O*-DIMETHYLLIRIODENDRONINE $C_{18}H_{13}O_3N$ 291.0895
SOURCES: Annonaceae: *Guatteria chrysopetala* (102)

216. OXOSTEPHANINE $C_{18}H_{11}O_4N$ 305.0687

SOURCES: Annonaceae: *Polyalthia cauliflora* var. *beccarii* (128)
Menispermaceae: *Stephania venosa* (182)

217. OXOPUKATEINE $C_{17}H_9O_4N$ 291.0531
SOURCES: Annonaceae: *Duguetia stelichantha* (63)

218. OXOPUTERINE $C_{18}H_{11}O_4N$ 305.0687
SOURCES: Annonaceae: *Guatteria sagotiana* (189), *Guatteria schomburgkiana* (22,55)

332. ISOMOSCHATOLINE $C_{18}H_{13}O_4N$ 307.0844
SOURCES: Annonaceae: *Guatteria dielsiana* (89), *Guatteria melosma* (1)

334. THAILANDINE $C_{19}H_{14}O_4N^+ X^-$ 320.0922
SOURCES: Annonaceae: *Polyalthia cauliflora* var. *beccarii* (128)

337. OXOANOLOBINE $C_{17}H_9O_4N$ 291.0531
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

340. OXOCREBANINE $C_{19}H_{13}O_5N$ 335.0793
SOURCES: Annonaceae: *Fissistigma glaucescens* (153)
Hernandiaceae: *Illigera pentaphylla* (196)
Menispermaceae: *Stephania venosa* (182)

4,5-Dioxoaporphines

176. CEPHARADIONE B $C_{19}H_{15}O_4N$ 321.1000
SOURCES: Synthesis (31)

177. CEPHARADIONE A $C_{18}H_{11}O_4N$ 305.0687
SOURCES: Aristolochiaceae: *Aristolochia chilensis* (236)

242. NORCEPHARADIONE B $C_{18}H_{13}O_4N$ 307.0844
SOURCES: Annonaceae: *Guatteria ouregou* (54)
Synthesis (31)

348. 4,5-DIOXODEHYDROASIMILOBINE $C_{17}H_{11}O_4N$ 293.0687
SOURCES: Aristolochiaceae: *Aristolochia chilensis* (236)

349. TUBEROSINONE $C_{17}H_9O_5N$ 307.0480
SOURCES: Aristolochiaceae: *Aristolochia cinabaria* (260), *Aristolochia tuberosa* (261)

350. TUBEROSINONE-*N*-β-D-GLUCOSIDE $C_{23}H_{19}O_{10}N$ 469.1007
SOURCES: Aristolochiaceae: *Aristolochia cinabaria* (260), *Aristolochia tuberosa* (261)

353. CORYDIONE $C_{20}H_{15}O_6N$ 365.0898
(4,5-Dioxodehydronantenine)
SOURCES: Fumariaceae: *Corydalis bulbosa* (136)

C-7 and/or C-4 Oxygenated Aporphines

138. NORUSHINSUNINE $C_{17}H_{15}O_3N$ 281.1051
SOURCES: Annonaceae: *Alphonsea sclerocarpa* (230), *Annona hayesii* (187), *Artabotrys venustus* (37), *Cymbopetalum brasiliense* (38), *Meiogyne virgata* (229), *Oncodostigma monosperma* (39), *Popowia pisocarpa* (127), *Unonopsis guatterioides* (73)

139. USHINSUNINE $C_{18}H_{17}O_3N$ 295.1207
SOURCES: Annonaceae: *Alphonsea sclerocarpa* (230), *Pseudoxandra sclerocarpa* (52)
Menispermaceae: *Stephania venosa* (46,182)
Synthesis (204)

140. GUATTERINE $C_{19}H_{19}O_4N$ 325.1313
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

142. OLIVERIDINE $C_{19}H_{19}O_4N$ 325.1313
SOURCES: Annonaceae: *Duguetia spixiana* (62,188)
Synthesis (134)

146. STEPORPHINE $C_{18}H_{17}O_3N$ 295.1207
SOURCES: Synthesis (68)

147. EPISTEPORPHINE $C_{18}H_{17}O_3N$ 295.1207
SOURCES: Synthesis (68)

148. CATALINE $C_{21}H_{25}O_5N$ 371.1731
SOURCES: Synthesis (98, 184)

220. PACHYCONFINE $C_{18}H_{19}O_3N$ 297.1364
SOURCES: Annonaceae: *Duguetia spixiana* (62), *Guatteria sagotiana* (189)

222. OLIVEROLINE $C_{18}H_{17}O_3N$ 295.1207
SOURCES: Annonaceae: *Guatteria sagotiana* (189)
Synthesis (204)

223. OLIVEROLINE *N*-OXIDE $C_{18}H_{17}O_4N$ 311.1156
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

227. GUATTERINE *N*-OXIDE $C_{19}H_{19}O_5N$ 341.1262
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

229. NOROLIVERIDINE $C_{18}H_{17}O_4N$ 311.1156
SOURCES: Annonaceae: *Duguetia spixiana* (62,188)
Synthesis (134)

230. OLIVERIDINE *N*-OXIDE $C_{19}H_{19}O_5N$ 341.1262
SOURCES: Annonaceae: *Duguetia spixiana* (62,188)

236. SRILANKINE $C_{20}H_{23}O_5N$ 357.1575
SOURCES: Synthesis (98,184)

356. NOROLIVEROLINE $C_{17}H_{15}O_3N$ 281.1051
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

358. SUKHODIANINE $C_{20}H_{21}O_5N$ 355.1418
SOURCES: Menispermaceae: *Stephania venosa* (46)

362. 4-HYDROXYCREBANINE $C_{20}H_{21}O_5N$ 355.1418
SOURCES: Menispermaceae: *Stephania venosa* (46)
Synthesis (145)

363. NORCATALINE $C_{20}H_{23}O_5N$ 357.1575
SOURCES: Synthesis (127)

366. GLAUFIDINE $C_{20}H_{23}O_5N$ 357.1575
SOURCES: Papaveraceae: *Glaucium corniculatum* (120), *Glaucium fimbrilligerum* (131), *Glaucium oxylobum* (130)

Dehydroaporphines (6a,7-Didehydroaporphines)

151. DEHYDROROEMERINE $C_{18}H_{15}O_2N$ 277.1102
SOURCES: Annonaceae: *Guatteria sagotiana* (189)
Menispermaceae: *Stephania micrantha* (50)
Papaveraceae: *Papaver apokrinomenon* (178,179), *Papaver pilosum* (178), *Papaver spicatum* (178), *Papaver strictum* (178)
Synthesis (174)

152. TETRADEHYDROROEMERINE $C_{18}H_{13}O_2N$ 275.0946
(Didehydroaporheine,
Didehydroroemerine)
SOURCES: Synthesis (27)

154. DEHYDROGLAUCINE $C_{21}H_{23}O_4N$ 353.1626
SOURCES: Fumariaceae: *Corydalis bulbosa* (136), *Corydalis turtschaninovii* (79,81)
Papaveraceae: *Glaucium corniculatum* ssp. *refractum* (210), *Papaver apokrinomenon* (178,179), *Papaver pilosum* (178), *Papaver spicatum* (178), *Papaver strictum* (178)
Synthesis (183)

156. DEHYDRONANTENINE $C_{20}H_{19}O_4N$ 337.1313
SOURCES: Fumariaceae: *Corydalis bulbosa* (136), *Corydalis turtschaninovii* (82)

157. DEHYDRODICENTRINE $C_{20}H_{19}O_4N$ 337.1313
SOURCES: Menispermaceae: *Stephania dicentzinifeza* (162)
Papaveraceae: *Glaucium corniculatum* ssp. *refractum* (210)

159. DEHYDROOCOTEINE $C_{21}H_{21}O_5N$ 367.1418
SOURCES: Ranunculaceae: *Thalictrum isopyroides* (9)

238. DEHYDROISOLAURELINE $C_{19}H_{17}O_3N$ 307.1208
SOURCES: Menispermaceae: *Stephania micrantha* (50)

369. DEHYDROSTEPHANINE $C_{19}H_{17}O_3N$ 307.1207
SOURCES: Menispermaceae: *Stephania dicentzinifeza* (162), *Stephania dielsiana* (161), *Stephania micrantha* (50)

372. DEHYDROCREBANINE $C_{20}H_{19}O_4N$ 337.1313
SOURCES: Menispermaceae: *Stephania succifera* (258), *Stephania venosa* (46,182)

376. DEHYDROCORYDINE $C_{20}H_{21}O_4N$ 339.1469
SOURCES: Papaveraceae: *Glaucium corniculatum* (120), *Glaucium oxylobum* (130)

Phenanthrenes

162. ARGENTININE $C_{19}H_{21}O_2N$ 295.1571
SOURCES: Annonaceae: *Popowia pisocarpa* (127), *Unonopsis stipitata* (73)

163. ATHEROSPERMININE $C_{20}H_{23}O_2N$ 309.1728
SOURCES: Annonaceae: *Duguetia spixiana* (62), *Fissistigma glaucescens* (153)
Synthesis (205,207)

164. METHOXYATHEROSPERMININE $C_{21}H_{25}O_3N$ 339.1833
SOURCES: Annonaceae: *Duguetia spixiana* (62)

169. THALICTHUBERINE $C_{21}H_{23}O_4N$ 353.1626
SOURCES: Annonaceae: *Unonopsis stipitata* (73)
Ranunculaceae: *Thalictrum hazarica* (100), *Thalictrum minus* ssp. *majus* (265)
Synthesis (205)

171. THALIGLUCINE $C_{21}H_{21}O_4N$ 351.1469
(Thalphenine methine)
SOURCES: Ranunculaceae: *Thalictrum minus* var. *adiantifolium* (158)

172. THALIGLUCINONE $C_{21}H_{19}O_5N$ 365.1262
SOURCES: Ranunculaceae: *Thalictrum longipedunculatum* (169), *Thalictrum minus* var. *adiantifolium* (158)

239. NORATHEROSPERMININE $C_{19}H_{21}O_2N$ 295.1571
SOURCES: Annonaceae: *Fissistigma glaucescens* (153)

241. SECOGLAUCINE (1-Methylaminoethyl-3,4,6,7-tetramethoxyphenanthrene) $C_{21}H_{25}O_4N$ 355.1782
SOURCES: Fumariaceae: *Corydalis yanhusuo* (108)
Synthesis (177,206)

379. ATHEROSPERMININE *N*-OXIDE $C_{22}H_{23}O_3N$ 325.1677
SOURCES: Annonaceae: *Duguetia spixiana* (62)

Miscellaneous

380. DUGUENAINE $C_{19}H_{15}O_3N$ 305.1051
SOURCES: Synthesis (61,150)

384. MENISPORPHINE $C_{19}H_{15}O_4N$ 321.1000
SOURCES: Menispermaceae: *Menispermum dauricum* (176)
Synthesis (146)

386. TRICLISINE $C_{17}H_{13}O_2N$ 263.0946
SOURCES: Synthesis (160)

390. RUFESCINE $C_{19}H_{17}O_4N$ 323.1156
SOURCES: Synthesis (18)

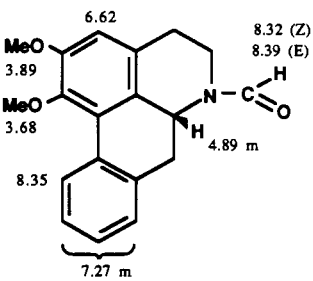
391. IMELUTEINE $C_{20}H_{19}O_5N$ 353.1262
SOURCES: Synthesis (18)

392. EUPOLAURIDINE $C_{14}H_8N_2$ 204.0687
SOURCES: Annonaceae: *Cleistopholis patens* (248)

TABLE 4. Completely New Aporphinoid Alkaloids[a]

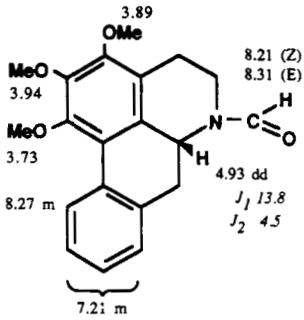
Aporphines sensu stricto

396. *N*-FORMYLNORNUCIFERINE $C_{19}H_{19}O_3N$ 309.1364
$[\alpha]_D$: (−) (54)
UV: (EtOH) 212 (4.48), 226 sh (4.32), 269 (4.26), 312 sh (3.74) (54)
IR: (film) 2910, 2840, 1660, 1590, 1450, 1410 (54)
^{1}H NMR: (90 MHz) (54)
MS: $[M]^+$ 309, 280, 251 (54)
SOURCES: Annonaceae: *Guatteria ouregou* (54)



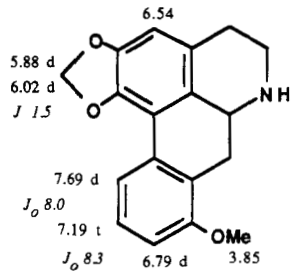
[a]Not previously reported in "Aporphine Alkaloids" Parts I, II, or III.

397. FORMOUREGINE



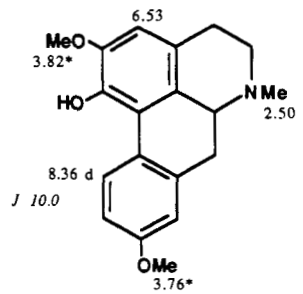
$C_{20}H_{21}O_4N$ 339.1469
$[\alpha]_D$: $-146°$ ($c = 0.02$, EtOH) (54)
UV: (EtOH) 222 (4.27), 233 sh (4.12), 274 (4.05) (54)
IR: (film) 2930, 2860, 1660, 1580, 1435, 1405, 1345, 1200, 1180, 1155, 1120, 1085, 1050, 1030, 1000, 760 (54)
^{1}H NMR: (90 MHz) (54)
MS: $[M]^+$ 339 (16), 307 (100), 281 (61), 266 (24) (54)
SOURCES: Annonaceae: *Guatteria ouregou* (54)

398. NORSTEPHANINE



$C_{18}H_{17}O_3N$ 295.1207
MP: 230° (dec) (128)
UV: (EtOH) 222 (4.28), 264 sh (3.90), 273 (4.03), 282 sh (4.02), 302 (3.54), 325 sh (3.31) (128)
^{1}H NMR: ($CDCl_3$-CD_3OD, 9:1; 60 MHz) (128)
MS: $[M]^+$ 295 (47), 294 (100), 280 (11), 264 (14) (128)
SOURCES: Synthesis (128)

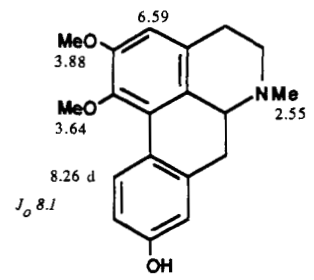
399. ORIENTININE



2 aromatic H at 6.70–6.95

$C_{19}H_{21}O_3N$ 311.1520
$[\alpha]_D$: $+62°$ ($c = 0.18$, MeOH) (123)
UV: 275, 315 sh (123)
^{1}H NMR: (60 MHz) (123)
MS: $[M]^+$ 311, 310, 296, 294, 281, 280, 268, 155.5 (123)
SOURCES: Papaveraceae: *Papaver orientale* (123)

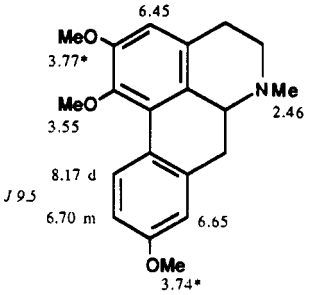
400. 1,2-DIMETHOXY-9-HYDROXY-APORPHINE



2 aromatic H at 6.74–6.80

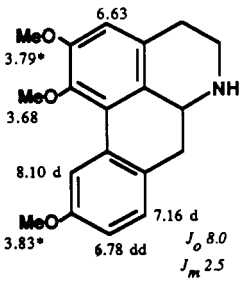
$C_{19}H_{21}O_3N$ 311.1520
MP: 220° (111)
UV: (EtOH) 213 (4.17), 235 sh (3.91), 280 (3.84) (111)
^{1}H NMR: (200 MHz) (111)
SOURCES: Synthesis (111)

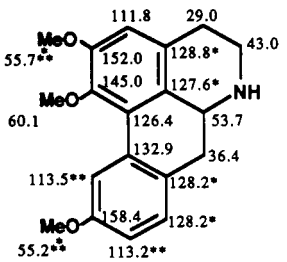
401. ORIENTINE



$C_{20}H_{23}O_3N$ 325.1677
$[\alpha]_D$: +70° (c = 0.16, MeOH) (122)
UV: (EtOH) 278 (4.25), 310 sh (3.21) (122)
^{1}H NMR: (60 MHz) (122)
MS: $[M]^+$ 325, 324 (100), 310, 294, 282, 162.5 (122)
SOURCES: Papaveraceae: *Papaver orientale* (122)

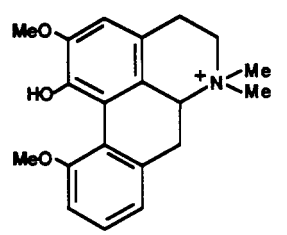
402. *O*-METHYLZENKERINE





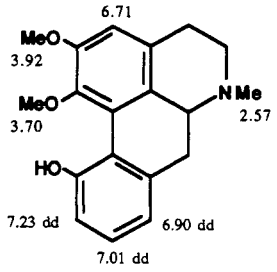
$C_{19}H_{21}O_3N$ 311.1520
^{1}H NMR: (24)
^{13}C NMR: (24)
SOURCES: Synthesis (24)

403. *N*-METHYLISOTHEBAINIUM CATION
(*N*-Methylisothebaine)



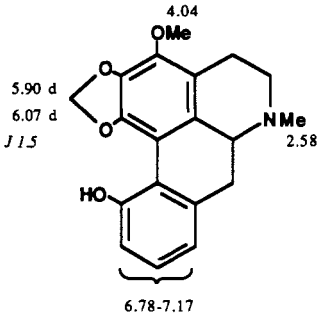
$C_{20}H_{24}O_3N^+ X^-$ 326.1755
MP: 254–256° (218)
$[\alpha]_D$: +194° (c = 0.51, MeOH) (218)
UV: (MeOH) 223 (4.65), 273 (4.13), 300 (3.98) (218)
IR: 3500, 3420, 3250 (218)
MS: 325 (3), 311 (15), 297 (10), 296 (7), 294 (4), 280 (9), 254 (14), 240 (31), 226 (6), 225 (15), 207 (10), 197 (9), 142, 127, 58 (100) (I^-) (67)
SOURCES: Papaveraceae: *Papaver bracteatum* (220), *Papaver pseudoorientale* (218,242)
Synthesis (67)

404. 1-*O*-METHYLISOTHEBAIDINE
(1,2-Dimethoxy-11-hydroxyaporphine)



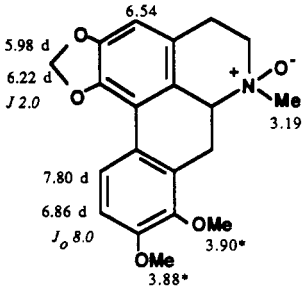
$C_{19}H_{21}O_3N$ 311.1520
MP: 230–231° (192)
[α]D: +160° (*c* = 0.038, MeOH) (91); +244° (*c* = 0.04, $CHCl_3$) (192)
UV: (EtOH) 220 (4.42), 265 (4.12), 270 (4.15) (192)
^{1}H NMR: (200 MHz) (91); also in DMSO-d_6 (300 MHz) (192)
MS: $[M]^+$ 311 (95), 310 (45), 296 (68), 294 (28), 281 (23), 280 (100), 268 (12), 206 (7), 165 (14) (91)
SOURCES: Rhamnaceae: *Discaria serratifolia* var. *montana* (192)
Synthesis (91)

405. *N*-METHYLELMERRILLICINE



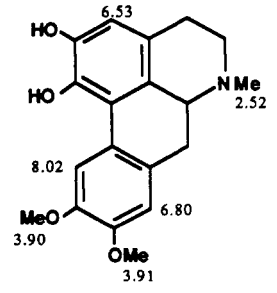
$C_{19}H_{19}O_4N$ 325.1313
[α]D: −73° (*c* = 0.26, EtOH) (189)
UV: (MeOH) 222 (4.46), 240 sh (4.23), 268 sh (4.12), 276 (4.15), 298 (3.98) (189)
^{1}H NMR: (60 MHz) (189)
MS: $[M]^+$ 325, 324, 310, 308, 294, 181, 165, 152 (189)
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

406. CREBANINE *N*-OXIDE

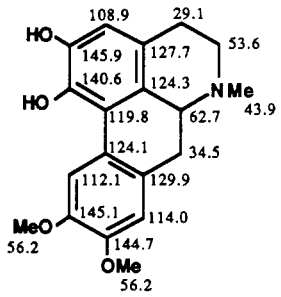


$C_{20}H_{21}O_5N$ 355.1418
MP: 132–134° (258)
[α]D: −66° (*c* = 0.05) (258)
UV: (EtOH) 218 (4.48), 240 sh (4.13), 280 (4.23), 290 (4.28), 320 (3.77) (258)
^{1}H NMR: (90 MHz) (258)
MS: $[M]^+$ 355 (11), 339 (10), 337 (18), 296 (100), 295 (40), 278 (5), 265 (5), 251 (5), 237 (5) (258)
SOURCES: Menispermaceae: *Stephania succifera* (258)

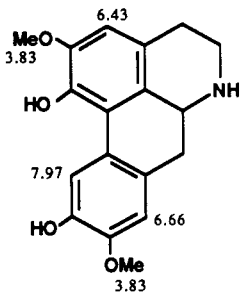
407. LASTOURVILLINE



$C_{19}H_{21}O_4N$ 327.1469
UV: (MeOH) 224 (4.08), 279 (3.64), 303 (3.69) (70)
IR: (KBr) 3450, 3000, 2950, 2850, 2800, 1600, 1590, 1510, 1480, 1460, 1405, 1370, 1330, 1310, 1280, 1240, 1160, 1110, 1080, 1020, 985, 960, 865, 820, 770, 755, 705 (70)
^{1}H NMR: (400 MHz) (70)
^{13}C NMR: (70)
MS: $[M]^+$ 327 (80), 326 (100), 312 (27), 296 (15), 284 (37), 269 (20), 253 (30) (70)
SOURCES: Annonaceae: *Artabotrys lastourvillensis* (70)

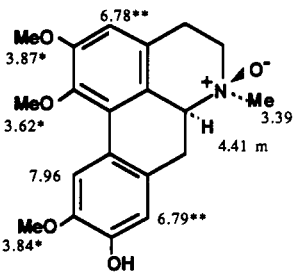


408. NORBRACTEOLINE



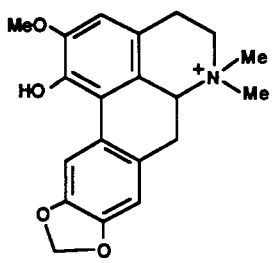
$C_{18}H_{19}O_4N$ 313.1313
$[\alpha]_D$: +41° (c = 0.4, MeOH) (120)
UV: (EtOH) 220, 280, 310 (120)
IR: (KBr) 3400, 3285, 1520 (120)
^1H NMR: (100 MHz) (120)
MS: $[M]^+$ 313, 312, 298, 296, 284, 282, 156.5 (120)
SOURCES: Papaveraceae: *Glaucium corniculatum* (120)

409. *N*-METHYLLAUROTETANINE β-*N*-OXIDE



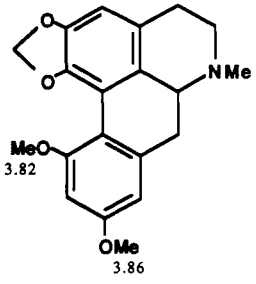
$C_{20}H_{23}O_5N$ 357.1575
$[\alpha]_D$: +49° (c = 0.15, MeOH) (166)
UV: (MeOH) 218 (4.55), 280 (4.15), 302 (4.10) (166)
^1H NMR: (CD_3OD, 360 MHz) (166)
MS: $[M]^+$ 357 (0.6), 355 (0.6), 341 (20), 340 (43), 339 (100), 337 (20), 324 (80), 310 (14), 296 (25), 281 (20), 266 (14) (166)
SOURCES: Monimiaceae: *Glossocalyx brevipes* (166)

410. *N*-METHYLDOMESTICINIUM CATION
(*N*-Methyldomesticine)



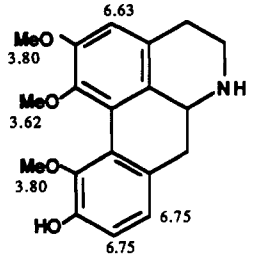
$C_{20}H_{22}O_4N^+ X^-$ 340.1548
MP: 255–256° (I^-) (223)
UV: 224 (4.64), 284 (3.95), 311 (4.06) (223)
IR: (KBr) 3410, 3230, 3000, 2920, 2850, 1600, 1500, 1490, 1470, 1120, 1080, 1060, 930, 885, 870, 860, 840, 830, 800, 700 (223)
MS: 339 (15), 325 (3), 324 (3), 311 (0.4), 310 (2), 308 (1), 294 (1), 282 (5), 281 (8), 268 (2), 267 (2), 266 (3), 238 (3), 165 (7), 152 (10), 142, 128, 127, 58 (100) (I^-) (67)
SOURCES: Papaveraceae: *Glaucium oxylobum* (223)

411. *N,O*-DIMETHYLFISSOLDINE
(*N,O*-Dimethylcalycinine)



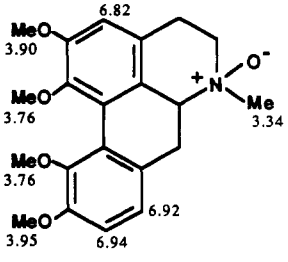
$C_{20}H_{21}O_4N$ 339.1469
$[\alpha]_D$: $-207°$ ($c = 0.5$, $CHCl_3$) (152)
^1H NMR: (60 MHz) (152)
SOURCES: Synthesis (152,193)

412. GLAUFININE[b]



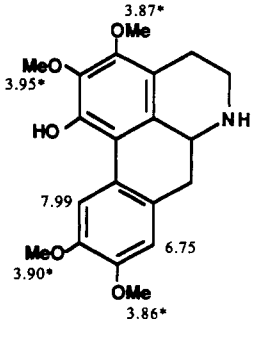
$C_{19}H_{21}O_4N$ 327.1469
$[\alpha]_D$: $+165°$ ($c = 0.4$, MeOH) (121)
UV: 222 (4.35), 270 (3.82), 309 (3.43) (121)
^1H NMR: (121)
MS: $[M]^+$ 327, 326, 312, 310, 298, 296, 103.5 (121)
SOURCES: Papaveraceae: *Glaucium fimbrilligerum* (121)

413. *O*-METHYLCORYDINE *N*-OXIDE



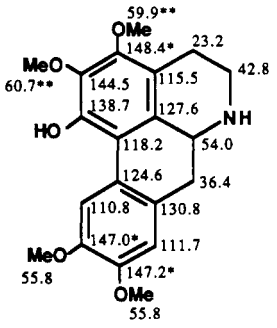
$C_{21}H_{25}O_5N$ 371.1731
$[\alpha]_D$: $+193°$ ($c = 1$, MeOH) (112)
UV: 222 (4.6), 271 (4.18), 302 (3.68) (112)
IR: (KBr) 1605, 1440, 1420, 1240, 1112, 1060, 820 (112)
^1H NMR: (90 MHz) (112)
MS: $[M]^+$ 371, 355, 340, 325, 310, 204 (112)
SOURCES: Berberidaceae: *Berberis chitria* (112)

414. NORPREOCOTEINE

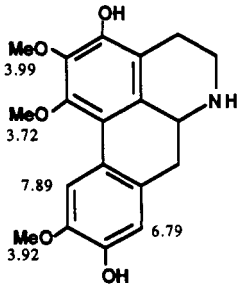


$C_{20}H_{23}O_5N$ 357.1575
UV: 280, 303, 317 (225)
^1H NMR: (100 MHz) (225)
^{13}C NMR: (225)
MS: $[M]^+$ 357 (100), 356 (87), 342 (30), 340 (22), 326 (16), 313 (7), 311 (10), 297 (13), 178 (14) (225)
SOURCES: Lauraceae: *Phoebe molicella* (225)

[b]This structure seems to be doubtful; data are very close to those given for norisocorydine **84**.

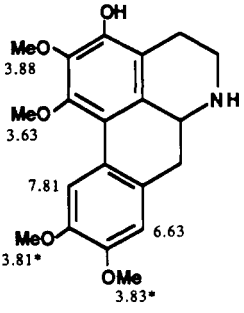


415. NORDELPORPHINE



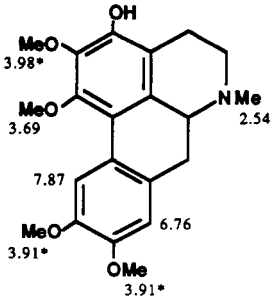
$C_{19}H_{21}O_5N$ 343.1418
UV: 220, 282, 303, 312 sh (32)
^{1}H NMR: (270 MHz) (32)
MS: (cims) (32)
SOURCES: Lauraceae: *Phoebe valeriana* (32)

416. THALBAICALINE



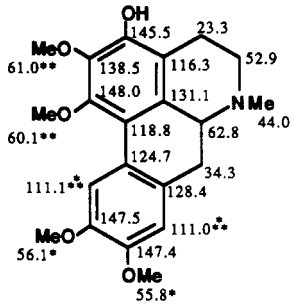
$C_{20}H_{23}O_5N$ 357.1575
[α]D: +61° (MeOH) (156)
UV: 220, 285, 303, 313 (156)
^{1}H NMR: (156)
SOURCES: Ranunculaceae: *Thalictrum baicalense* (154,156)

417. THALBAICALIDINE[c]
(3-Hydroxyglaucine,
N-Methylthalbaicaline)



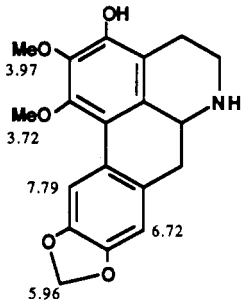
$C_{21}H_{25}O_5N$ 371.1731
MP: 193–195° (194)
[α]D: +74° (*c* = 0.6, MeOH) (194)
UV: 222 (4.53), 284 (4.19), 297 (4.15), 301 (4.15), 314 (4.07) (194)
IR: ($CHCl_3$) 3530 (194)
^{1}H NMR: (100 MHz) (194); also in DMSO-d_6 (194)
^{13}C NMR: (194); also in DMSO (194)
MS: $[M]^+$ 371 (100), 370 (75), 356 (65), 354 (33), 340 (45), 328 (52), 313 (25), 297 (53) (194)
SOURCES: Lauraceae: *Ocotea bucherii* (194), *Phoebe valeriana* (32)
Ranunculaceae: *Thalictrum baicalense* (156)
Synthesis (183)

[c]In view of the ^{1}H-nmr chemical shift assigned to 2-OMe (δ 3.98 ppm), the incompletely characterized *O*-demethylpurpureine **98** is probably identical to **417**.



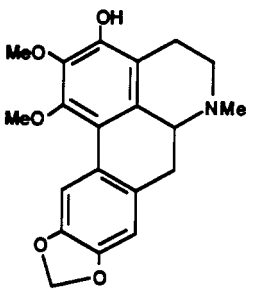
418. 3-HYDROXYNORNANTENINE
(1,2-Dimethoxy-3-hydroxy-9,
10-methylenedioxynoraporphine)

$C_{19}H_{19}O_5N$ 341.1262
UV: 220, 283, 302, 314 sh (32)
^{1}H NMR: (270 MHz) (32)
MS: $[M]^+$ 341, 340, 326, 324, 312, 297, 295, 281 (32)
SOURCES: Lauraceae: *Phoebe valeriana* (32)



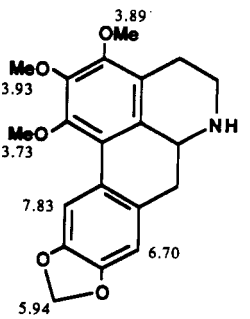
419. 3-HYDROXYNANTENINE[d]

$C_{21}H_{23}O_5N$ 369.1575
SOURCES: Lauraceae: *Phoebe valeriana* (32)

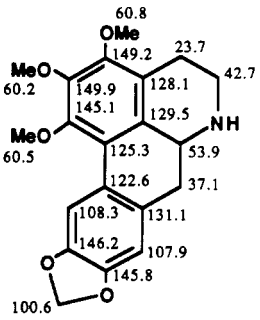


420. NORPHOEBINE
(*O*-Methylxyloguyelline,
1,2,3-trimethoxy-9,10-
methylenedioxynoraporphine)

$C_{20}H_{21}O_5N$ 355.1418
UV: 272 sh (4.00), 280 (4.21), 312 (4.17), 315 (4.18) (33)
^{1}H NMR: (33)
^{13}C NMR: (33)
MS: $[M]^+$ 355 (96), 354 (100), 340 (21), 338 (10), 326 (9), 324 (33), 311 (7), 309 (9), 295 (12), 194 (1), 132 (3) (33)
SOURCES: Lauraceae: *Phoebe pittieri* (33), *Phoebe valeriana* (32)

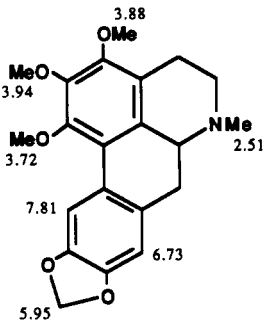


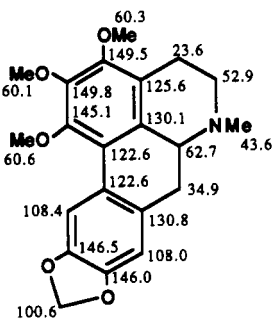
[d]Isolated in mixture with **418**.



421. PHOEBINE

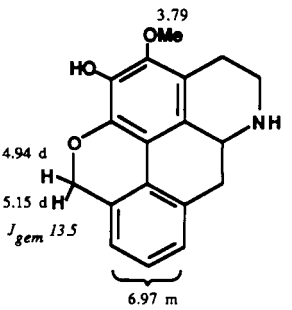
$C_{21}H_{23}O_5N$ 369.1575
MP: 114° (32)
$[\alpha]_D$: +50° (c = 6.2, $CHCl_3$) (32)
UV: 220, 282, 312 (32)
^1H NMR: (270 MHz) (32)
^{13}C NMR: (32)
MS: $[M]^+$ 369, 368, 354, 311, 309, 295 (32)
SOURCES: Lauraceae: *Phoebe valeriana* (32)



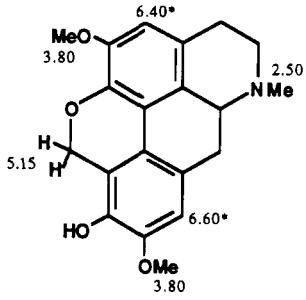


422. PENTOUREGINE

$C_{18}H_{17}O_3N$ 295.1207
$[\alpha]_D$: −61° (c = 0.14, EtOH) (53)
UV: 224 (4.31), 284 (4.14), 303 sh (3.98) (53)
^1H NMR: ($CDCl_3$-CD_3OD, 1:1) (90 MHz) (53)
MS: $[M]^+$ 295 (64), 294 (100), 280 (14), 278 (14), 266 (55), 251 (12), 235 (9) (53)
SOURCES: Annonaceae: *Guatteria ouregou* (53,54)



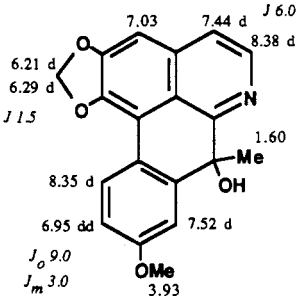
423. 1,11-METHYLENEOXY-APORPHINE
(2,9-Dimethoxy-10-hydroxy-1,11-methyleneoxy-aporphine)



$C_{20}H_{21}O_4N$ 339.1469
MP: 112–114° (164)
IR: 3400 (164)
^{1}H NMR: (100 MHz) (164)
SOURCES: Synthesis (164)

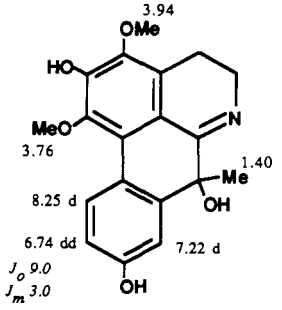
7-Hydroxy-7-methylaporphines

424. DEHYDROGUATTESCINE



$C_{19}H_{15}O_4N$ 321.1000
UV: 206 (4.39), 245 (4.44), 263 sh (4.32), 306 (3.76), 320 (3.80), 362 (3.65) [(HCl) 208 (4.35), 257 (4.42), 280 (4.36), 400 (3.50)] (55)
IR: (film) 2950, 2910, 2830, 1605, 1495, 1435, 1415, 1310, 1270, 1235, 1210, 1175, 1150, 1040, 955, 850 (55)
^{1}H NMR: (400 MHz) (55)
MS: $[M]^+$ 321 (10), 306 (100), 291 (3) (55)
SOURCES: Annonaceae: *Guatteria schomburgkiana* (55,56)

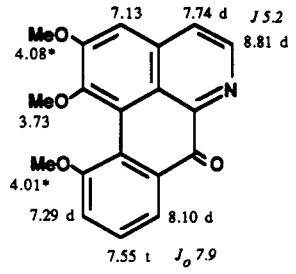
425. ISOGUATTOUREGIDINE



$C_{19}H_{19}O_5N$ 341.1262
UV: 216 (4.30), 235 sh (4.12), 268 (4.47), 308 (3.93), 355 (3.89) [(HCl) 217 (4.35), 279 (4.50), 346 (3.74), 450 (3.57)] (1)
IR: (KBr) 3380–3280, 2982, 2940, 2842, 1643, 1613, 1583, 1500, 1470, 1438, 1420, 1360, 1300, 1258, 1201, 1193, 1148, 1128, 1083, 1058, 1040, 988, 953, 880, 833, 798, 770 (1)
^{1}H NMR: (1)
MS: $[M]^+$ 341 (17), 326 (100), 311 (9), 310 (10), 293 (17), 163 (8) (1)
SOURCES: Annonaceae: *Guatteria melosma* (1)

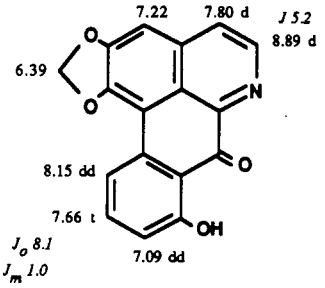
Oxoaporphines

426. 1,2,11-TRIMETHOXYOXO-APORPHINE



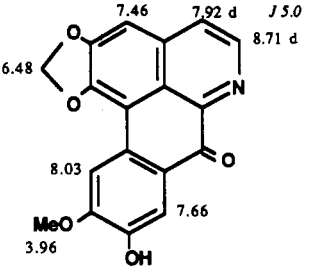
$C_{19}H_{15}O_4N$ 321.1000
^{1}H NMR: (250 MHz) (199)
SOURCES: Synthesis (199)

427. OXOSTEPHANOSINE



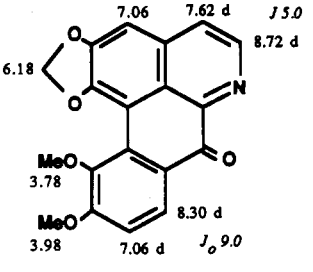
$C_{17}H_9O_4N$ 291.0531
UV: 215 (3.90), 245 (3.75), 275 (3.66), 320 (3.13), 364 (3.21), 448 (3.48) [(HCl) 257 (3.76), 292 (3.65), 344 (3.06), 381 (3.27), 496 (3.17)] (182)
IR: ($CHCl_3$) 3540, 1662 (182)
^{1}H NMR: (200 MHz) (182)
MS: $[M]^+$ 291 (85), 263 (100), 234 (17), 205 (31), 177 (17), 150 (19) (182)
SOURCES: Menispermaceae: *Stephania venosa* (182)

428. MACHIGLINE



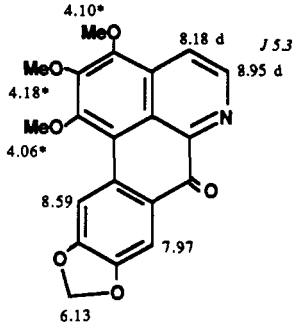
$C_{18}H_{11}O_5N$ 321.0636
MP: 315° (dec) (232)
UV: 249 (4.23), 272 (4.12), 285 (4.04), 351 (3.70), 385 (3.22), 430 (3.18) [(HCl) 258 (4.19), 281 (4.10), 379 (3.92), 509 (3.27)] (232)
IR: (KBr) 3520, 1635, 1575, 1522, 1465, 1426, 1355, 1280, 1212, 1140, 1092, 1055, 965, 863 (232)
^{1}H NMR: (DMSO-d_6) (232)
MS: $[M]^+$ 321 (100), 320 (4), 306 (6), 278 (14), 248 (2), 220 (4), 192 (3), 164 (10) (232)
SOURCES: Lauraceae: *Machilus glaucescens* (232)

429. OXO-*O*-METHYLBULBOCAPNINE



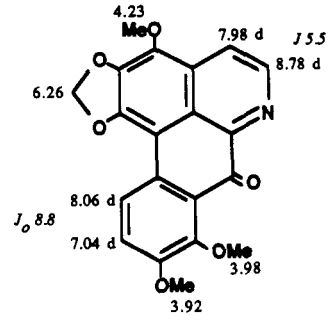
$C_{19}H_{13}O_5N$ 335.0793
MP: 235–236° (253)
UV: 256 (4.57), 360 (4.12), 410 (4.11) (253)
IR: (Nujol) 1665, 1044, 940 (253)
^{1}H NMR: (253)
SOURCES: Synthesis (253)

430. OXOPHOEBINE
(1,2,3-Trimethoxy-9,10-methylenedioxyoxo-aporphine)



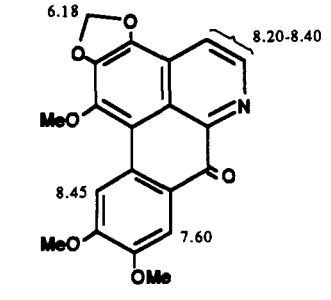
$C_{20}H_{15}O_6N$ 365.0898
UV: 210, 228, 272, 311 sh, 324 sh, 438 (32)
^{1}H NMR: (270 MHz) (32)
MS: $[M]^+$ 365, 350, 335, 322, 321, 307, 306, 292, 264 (32)
SOURCES: Lauraceae: *Phoebe valeriana* (32)

431. KUAFUMINE



$C_{20}H_{15}O_6N$ 365.0898
MP: 230–232° (253)
UV: 214 (4.32), 245 (4.14), 283 (4.38), 375 (3.38) (253)
IR: 1650 (253)
^{1}H NMR: (253)
MS: $[M]^+$ 365 (100), 350 (69), 334 (10), 320 (23), 249 (8), 175 (17) (253)
SOURCES: Annonaceae: *Fissistigma glaucescens* (253)

432. 7-OXOBAICALINE



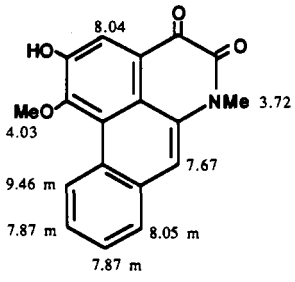
2 methoxy at 3.73 and 3.80

$C_{20}H_{15}O_6N$ 365.0898
MP: 240° (dec) (154)
UV: 250, 289, 380, 500 (154)
IR: (KBr) 1650 (154)
^{1}H NMR: (TFA) (154)[e]
MS: $[M]^+$ 365 (100), 350, 349, 336, 320, 307, 279, 223, 185.5 (154)
SOURCES: Ranunculaceae: *Thalictrum baicalense* (154)

[e]The ^{1}H-nmr values seem to be too upfield in such conditions.

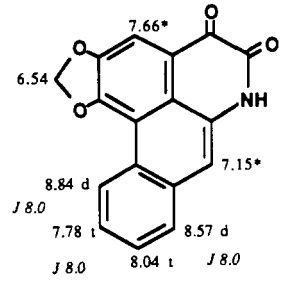
4,5-Dioxoaporphines

433. ARISTOLODIONE



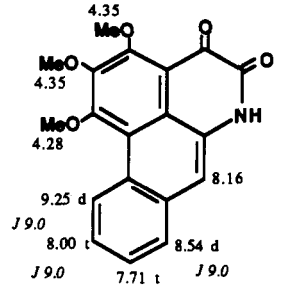
$C_{18}H_{13}O_4N$ 307.0844
UV: 239 (4.70), 273 (4.34), 290 (4.18), 302 (4.26), 314 (4.28), 438 (4.18) (236)
^{1}H NMR: (DMSO, 360 MHz) (236)
MS: $[M]^+$ 307 (100), 279 (62), 264 (97), 236 (50) (236)
SOURCES: Aristolochiaceae: *Aristolochia chilensis* (236)

434. NORCEPHARADIONE A



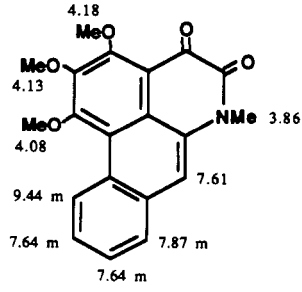
$C_{17}H_9O_4N$ 291.0531
UV: 221 (4.52), 250 (4.68), 264 sh (4.44), 330 (3.88), 360 (3.73), 470 (4.02) [(HCl) 243 sh, 250, 283, 330, 377, 440, 475, 508] (39)
IR: (KBr) 1660, 1615, 1590 (39)
^{1}H NMR: (TFA; 200 MHz) (39)
MS: $[M]^+$ 291 (20), 290 (100), 289 (6), 264 (8), 263 (24), 232 (4), 206 (3), 203 (5), 177 (9) (39)
SOURCES: Annonaceae: *Annona hayesii* (189), *Oncodostigma monosperma* (39)

435. OUREGIDIONE



$C_{19}H_{15}O_5N$ 337.0949
MP: >280° (54)
UV: 228 (4.21), 256 (4.50), 270 sh (4.26), 488 (3.80) (54)
IR: (film) 1665, 1630, 1590, 1530 (54)
^{1}H NMR: (TFA; 250 MHz) (54)
MS: $[M]^+$ 337 (22), 336 (100), 322 (12), 321 (58), 309 (6) (54)
SOURCES: Annonaceae: *Guatteria ouregou* (54)

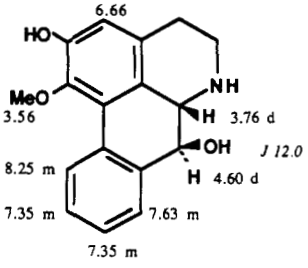
436. 3-METHOXYCEPHARADIONE B (1,2,3-Trimethoxy-4,5-dioxo-6a,7-dehydroaporphine)



$C_{20}H_{17}O_5N$ 351.1105
MP: 192–201 (157)
UV: 241 (4.49), 271 (4.15), 303 (3.97), 316 (4.06), 416 (3.97) (157)
IR: (KBr) 1665, 1620 (157)
^{1}H NMR: (80 MHz) (157)
MS: $[M]^+$ 351 (100), 336 (57), 308 (10), 294 (14), 278 (16), 265 (75), 250 (74), 235 (15) (157)
SOURCES: Annonaceae: *Pseuduvaria macrophylla* (157)

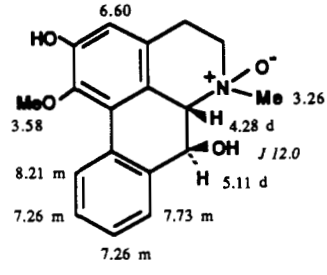
7- and/or 4-Oxygenated Aporphines

437. NORPACHYCONFINE



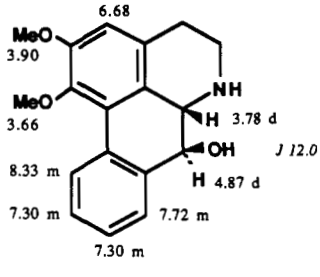
$C_{17}H_{17}O_3N$ 283.1207
$[\alpha]_D$: $-281°$ ($c = 0.07$, $CHCl_3$) (62)
UV: 230 (4.22), 272 (4.15), 312 (3.59) (62)
^1H NMR: ($CDCl_3$-CD_3OD 1 dp; 90 MHz) (62)
MS: $[M]^+$ 283 (49), 266, 248, 234, 192, 178 (100), 165, 152 (62)
CD: 0.2 (275), −1.6 (233), +0.6 (215) (62)
SOURCES: Annonaceae: *Duguetia spixiana* (62)

438. PACHYCONFINE *N*-OXIDE



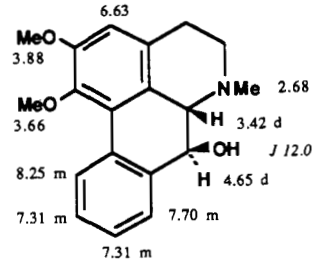
$C_{18}H_{19}O_4N$ 313.1313
MP: 176–180° (62)
$[\alpha]_D$: $-164°$ ($c = 0.41$, $CHCl_3$) (62)
UV: 232 (4.27), 276 (4.19), 310 (3.44) (62)
^1H NMR: ($CDCl_3$-CD_3OD, 1:1; 90 MHz) (62)
MS: $[M-16]^+$ 297, 296, 266, 248, 192, 165, 152 (62)
SOURCES: Annonaceae: *Duguetia spixiana* (62)

439. NORNUCIFERIDINE



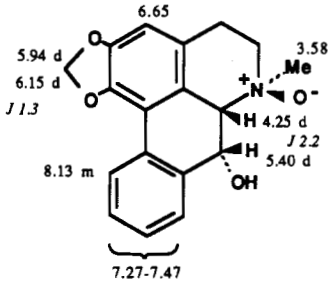
$C_{18}H_{19}O_3N$ 297.1364
$[\alpha]_D$: $-80°$ ($c = 0.16$, EtOH) (188)
UV: 230 (4.19), 263 sh (4.04), 273 (4.10), 282 sh (4.06), 310 (3.67) (188)
^1H NMR: (90 MHz) (188)
MS: $[M]^+$ 297 (82), 296 (30), 281 (8), 280 (13), 268 (21), 267 (68), 266 (100), 253 (14), 248 (15), 238 (13), 237 (18) (188)
CD: 0 (300), +7.0 (272), 0 (250), −43.1 (234), 0 (220) (188)
SOURCES: Annonaceae: *Duguetia spixiana* (188)

440. NUCIFERIDINE
(*O*-Methylpachyconfine)



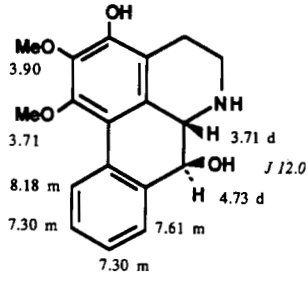
$C_{19}H_{21}O_3N$ 311.1520
$[\alpha]_D$: (−) ($CHCl_3$) (189)
UV: 230 sh (4.29), 272 (4.16), 305 sh (3.84) (189)
^1H NMR: (189)
MS: $[M]^+$ 311, 310, 296, 281, 280 (100) (189)
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

441. USHINSUNINE β-*N*-OXIDE



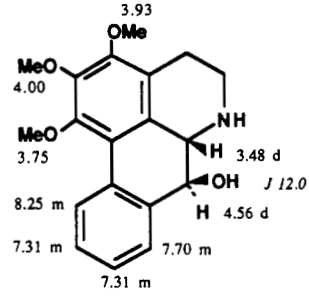
$C_{18}H_{17}O_4N$ 311.1156
[α]D: −52° (*c* = 0.06, MeOH) (46)
^{1}H NMR: (360 MHz) (46)
MS: $[M]^+$ 311 (3), 295 (100), 278 (42), 277 (26), 252 (91), 251 (64), 236 (30) (46)
SOURCES: Menispermaceae: *Stephania venosa* (46)

442. RURREBANIDINE



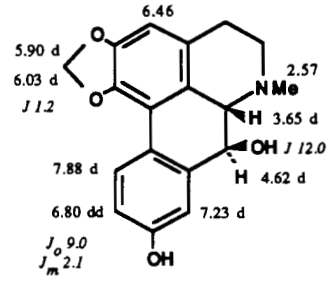
$C_{18}H_{19}O_4N$ 313.1313
[α]D: (−) (EtOH) (188)
UV: 243 sh (4.07), 285 (4.22) (188)
^{1}H NMR: (CD_3OD) (188), also in C_5D_5N (188)
MS: $[M]^+$ 313, 312, 298, 297, 296, 284, 283, 282, 268, 267, 254, 253, 252, 209, 208 (188)
CD: 0 (300), +2.5 (282), 0 (265), −38 (239), 0 (225) (188)
SOURCES: Annonaceae: *Duguetia spixiana* (188)

443. RURREBANINE



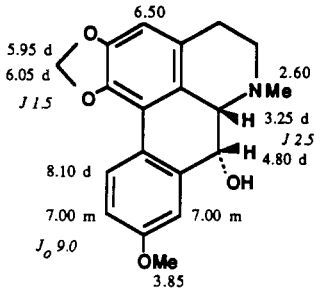
$C_{19}H_{21}O_4N$ 327.1469
[α]D: −43° (*c* = 0.72, EtOH) (188)
UV: 220 (4.41), 232 sh (4.24), 278 (4.24) (188)
^{1}H NMR: (90 MHz) (188)
MS: $[M]^+$ 327 (27), 312 (15), 298 (17), 297 (65), 296 (100), 268 (13), 267 (14) (188)
CD: 0 (305), +1.1 (275), 0 (253), −42 (238), 0 (224) (188)
SOURCES: Annonaceae: *Duguetia spixiana* (188)

444. ROEMEROLIDINE



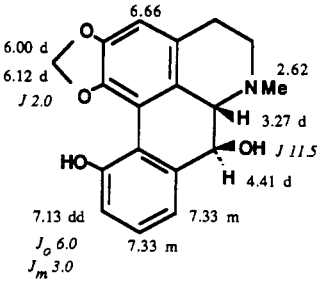
$C_{18}H_{17}O_4N$ 311.1156
[α]D: −23° (*c* = 0.24, EtOH) (188)
UV: 220 (4.26), 240 sh (4.07), 284 (4.18), 322 (3.58) (188)
^{1}H NMR: (90 MHz) (188)
MS: $[M]^+$ 311 (100), 310 (44), 281 (9), 280 (9), 269 (30), 268 (67), 267 (29), 253 (15), 252 (18), 251 (12) (188)
CD: 0 (300), +3.2 (275), 0 (265), −36.5 (236), 0 (223) (188)
SOURCES: Annonaceae: *Duguetia spixiana* (188)

445. 7-*epi*-OLIVERIDINE



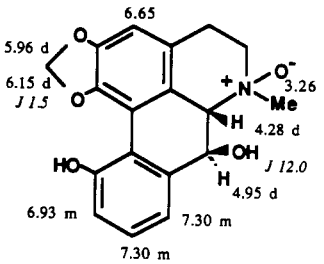
$C_{19}H_{19}O_4N$ 325.1313
MP: 139–140° (134)
UV: 206 (4.64), 279 (4.16), 320 (3.63) (134)
^{1}H NMR: (90 MHz) (134)
MS: $[M]^+$ 325, 324, 310, 307, 294, 282, 266, 265, 224, 190 (134)
SOURCES: Synthesis (134)

446. DUGUEXINE



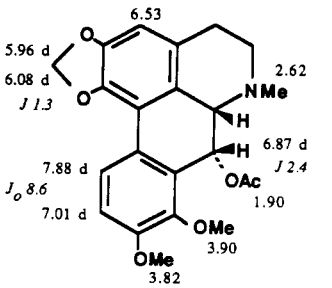
$C_{18}H_{17}O_4N$ 311.1156
^{1}H NMR: (500 MHz) (62)
MS: $[M]^+$ 311, 310, 268, 190 (62)
SOURCES: Annonaceae: *Duguetia spixiana* (62)

447. DUGUEXINE *N*-OXIDE



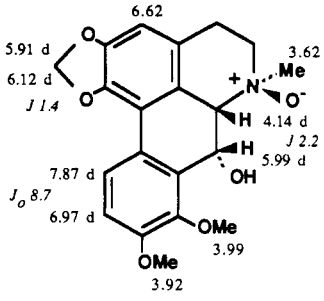
$C_{18}H_{17}O_5N$ 327.1105
UV: 235, 275, 302 (62)
^{1}H NMR: ($CDCl_3$-CD_3OD, 1:1) (62)
MS: $[M]^+$ 327, 311, 296, 268, 190 (62)
SOURCES: Annonaceae: *Duguetia spixiana* (62,188)

448. *O*-ACETYLSUKHODIANINE



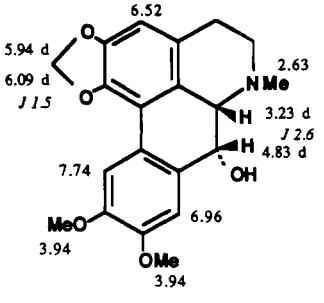
$C_{22}H_{23}O_6N$ 397.1524
$[\alpha]_D$: −68° (c = 0.06, $CHCl_3$) (182)
UV: 214 (4.35), 280 (4.14), 296 sh (3.73) (182)
IR: ($CHCl_3$) 1730 (182)
^{1}H NMR: (200 MHz) (182)
MS: $[M]^+$ 397 (1), 396 (1), 355 (19), 354 (85), 337 (100), 322 (40), 279 (13) (182)
SOURCES: Menispermaceae: *Stephania venosa* (182)

449. SUKHODIANINE β-*N*-OXIDE



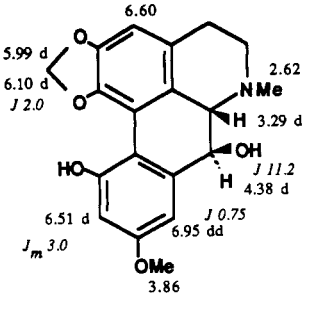
$C_{20}H_{21}O_6N$ 371.1367
[α]D: −13° (*c* = 0.07, MeOH) (46)
UV: 217 (4.42), 247 sh (3.91), 279 (4.15), 300 sh (3.91), 307 (3.76), 322 sh (3.63) (46)
^{1}H NMR: (360 MHz) (46)
MS: $[M]^+$ 371 (0.8), 355 (48), 354 (35), 353 (61), 340 (56), 338 (100), 336 (25), 324 (12), 323 (21), 322 (21), 254 (19), 190 (21) (46)
SOURCES: Menispermaceae: *Stephania venosa* (46)

450. DASYMACHALINE



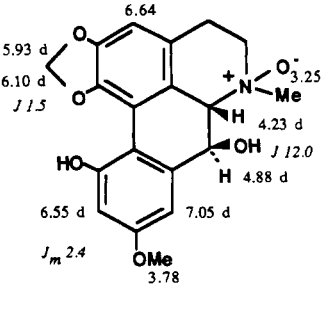
$C_{20}H_{21}O_5N$ 355.1418
[α]D: −47° (*c* = 0.34, $CHCl_3$) (45)
UV: 221 (4.37), 285 (4.12), 297 (4.07) (45)
IR: (CCl_4) 3500, 1605, 1515, 1460, 1400, 1380, 1340, 1300, 1270, 1245, 1220, 1090, 1050, 1035, 970, 940, 865, 820 (45)
^{1}H NMR: (100 MHz) (45)
SOURCES: Annonaceae: *Desmos dasymachalus* (45)

451. SPIXIANINE



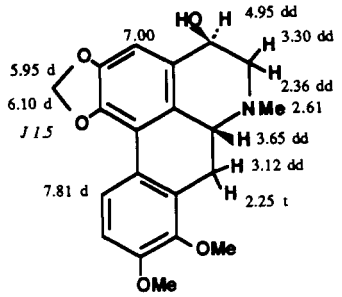
$C_{19}H_{19}O_5N$ 341.1262
UV: 278, 300 (62)
^{1}H NMR: (500 MHz) (62)
MS: $[M]^+$ 341, 340, 326, 310, 298, 190, 165 (62)
SOURCES: Annonaceae: *Duguetia spixiana* (62)

452. SPIXIANINE *N*-OXIDE



$C_{19}H_{19}O_6N$ 357.1211
[α]D: −84° (*c* = 0.68, $CHCl_3$) (62)
UV: 278 (4.05), 320 (3.95), 338 (3.85) (62)
IR: (film) 3200, 1610, 1460, 1410, 1230 (62)
^{1}H NMR: (90 MHz) (62)
MS: $[M-16]^+$ 341 (100), 340, 326, 324, 310, 298, 190, 152 (62)
CD: 0 (359), +45 (275), 0 (254), −142 (239), 0 (226), +68 (217) (62)
SOURCES: Annonaceae: *Duguetia spixiana* (62)

453. 4-*epi*-HYDROXYCREBANINE

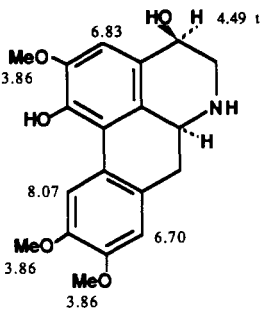


$J_{4,5a}$ 6.0 ; J_{gem} 10.5 ; $J_{4,5b}$ 9.5

$J_{7a,6a}$ 4.5 ; J_{gem} 14.5

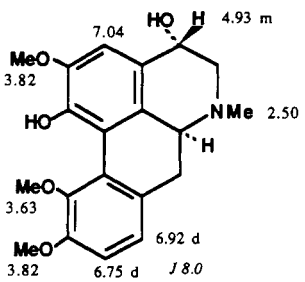
$C_{20}H_{21}O_5N$ 355.1418
MP: 195–196° (145)
UV: 248 sh (4.19), 278 (4.21), 323 sh (3.75) (145)
IR: (KBr) 3260 (145)
^{1}H NMR: (200 MHz) (145)
MS: $[M]^+$ 355 (30), 354 (27), 336 (11), 335 (17), 321 (14), 320 (14), 313 (21), 312 (100) (145)
SOURCES: Synthesis (145)

454. 4-HYDROXYWILSONIRINE



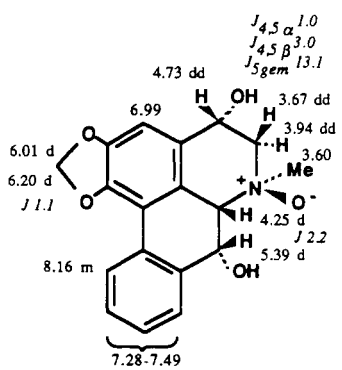
$C_{19}H_{21}O_5N$ 343.1418
[α]D: +60° (c = 0.33, MeOH) (127)
UV: 222 (4.48), 273 sh (3.99), 281 (4.09), 304 (4.12), 313 sh (4.09) (127)
^{1}H NMR: (90 MHz) (127)
MS: $[M]^+$ 343 (100), 326 (24), 315 (46), 314 (49), 311 (23), 299 (23), 283 (24) (127)
CD: −5.4 (312), −5.0 (304 sh), −3.1 (280), 0 (262), +28.8 (245) (127)
SOURCES: Annonaceae: *Popowia pisocarpa* (127)

455. EPIGLAUFIDINE[f]



$C_{20}H_{23}O_5N$ 357.1575
[α]D: +198° (c = 0.5, MeOH) (131)
UV: 224 (4.23), 270 (3.72), 305 (3.37) (131)
^{1}H NMR: (131)
MS: $[M]^+$ 357 (100), 356 (15), 342 (60), 340 (40), 326 (90), 314 (43), 285 (40) (131)
SOURCES: Papaveraceae: *Glaucium fimbrilligerum* (131)

456. STEPHADIOLAMINE β-*N*-OXIDE

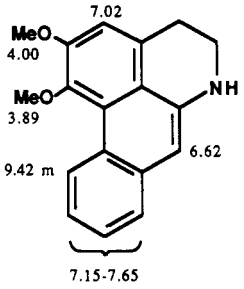


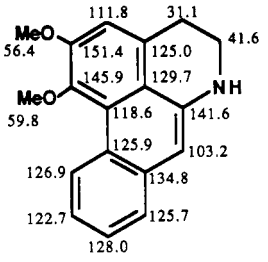
$C_{18}H_{17}O_5N$ 327.1105
[α]D: −37° (c = 0.06, MeOH) (46)
^{1}H NMR: (360 MHz) (46)
MS: $[M]^+$ 327 (1.2), 311 (31), 294 (13), 293 (12), 291 (10), 290 (22), 275 (25), 250 (100) (46)
SOURCES: Menispermaceae: *Stephania venosa* (46)

[f]Revised structure (94).

Dehydroaporphines (6a,7-Didehydroaporphines)

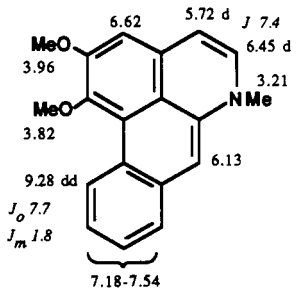
457. DEHYDRONORNUCIFERINE





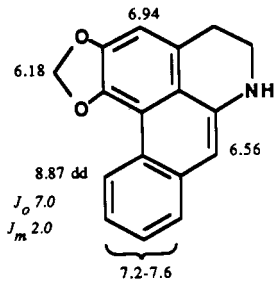
$C_{18}H_{17}O_2N$ 279.1258
MP: 149–150° (150)
UV: 252 (4.65), 261 (4.62), 293 (3.79), 326 (4.08), 380 (3.40) (150)
IR: (KBr) 3380, 3370, 3280, 1625 (150)
^{1}H NMR: (80 MHz) (150)
^{13}C NMR: (150)
SOURCES: Annonaceae: *Guatteria ouregou* (54)
Synthesis (150,199)

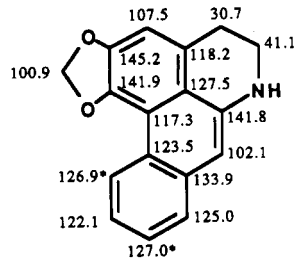
458. TETRADEHYDRONUCIFERINE



$C_{19}H_{15}O_2N$ 291.1258
MP: 170–172° (HBr) (27)
UV: 238, 272, 278, 361, 415, 440 (27)
^{1}H NMR: (80 MHz) (27)
MS: $[M]^+$ 291 (6), 276 (9), 182 (100) (27)
SOURCES: Synthesis (27)

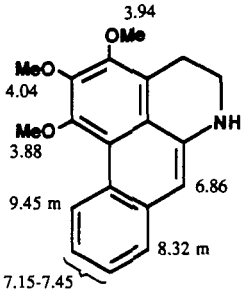
459. DEHYDROANONAINE





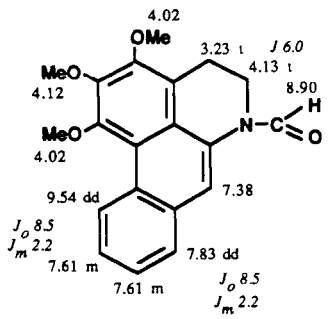
$C_{17}H_{13}O_2N$ 263.0946
MP: 135–136° (150)
UV: 253 (4.69), 258 (4.70), 332 (4.13), 380 (3.85) (150)
IR: (KBr) 3380, 1635 (150)
^{1}H NMR: (200 MHz) (150)
^{13}C NMR: (150)
SOURCES: Synthesis (150)

460. *O*-METHYLDEHYDROISOPILINE



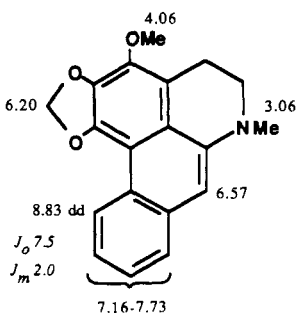
$C_{19}H_{19}O_3N$ 309.1364
UV: 214 (4.48), 268 (4.49), 327 (3.96) (54)
^{1}H NMR: (90 MHz) (54)
SOURCES: Annonaceae: *Guatteria ouregou* (54)

461. DEHYDROFORMOUREGINE



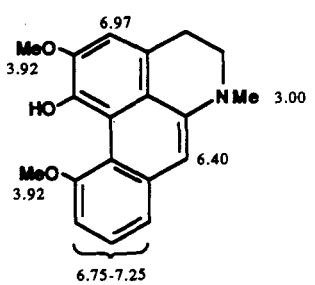
$C_{20}H_{19}O_4N$ 337.1313
MP: 120–122° (54)
UV: 221 (3.92), 251 sh (4.29), 263 (4.32), 310 (3.67) (54)
IR: (film) 3380, 2920, 2850, 1675, 1625, 1455, 1390, 1305, 1240, 1130, 1100, 1070, 1025 (54)
^{1}H NMR: (400 MHz) (54)
MS: $[M]^+$ 337 (100), 322 (22), 309 (6), 294 (12) (54)
SOURCES: Annonaceae: *Guatteria ouregoui* (54)

462. DEHYDROSTEPHALAGINE



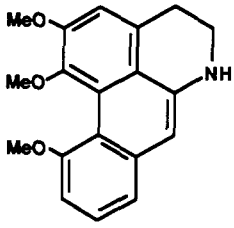
$C_{19}H_{17}O_3N$ 307.1207
UV: 264 (4.72), 330 (4.09) (189)
^{1}H NMR: (189)
MS: $[M]^+$ 307 (100), 292 (6), 291 (6), 279 (26), 277 (6), 276 (5), 275 (12) (189)
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

463. DEHYDROISOTHEBAINE



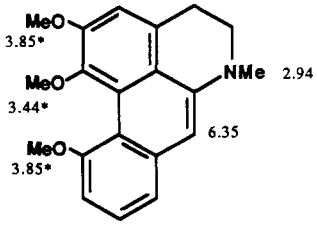
$C_{19}H_{19}O_3N$ 309.1364
UV: 267, 340, 391, 438 (123)
^{1}H NMR: (123)
MS: $[M]^+$ 309, 294, 154.5 (123)
SOURCES: Papaveraceae: *Papaver orientale* (123)

464. 1,2,11-TRIMETHOXY-6a,7-DEHYDRONORAPORPHINE
(Nororientidine)



$C_{19}H_{19}O_3N$ 309.1364
SOURCES: Synthesis (199)

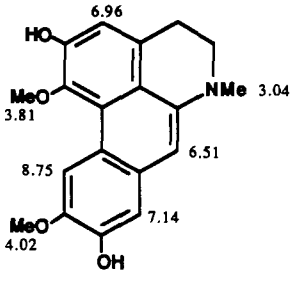
465. ORIENTIDINE



4 aromatic H at 6.60–7.29

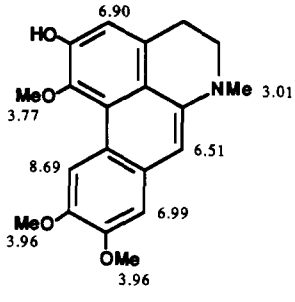
$C_{20}H_{21}O_3N$ 323.1520
UV: 215 (4.45), 271 (4.39), 340 (3.38) (122)
IR: (KBr) 1640, 1595, 1570, 1535 (122)
^{1}H NMR: (122)
MS: $[M]^+$ 323, 308 (122)
SOURCES: Papaveraceae: *Papaver orientale* (122)

466. DEHYDROBOLDINE



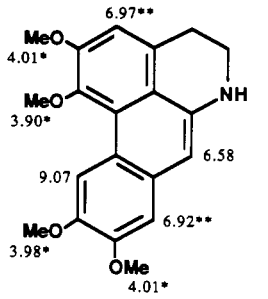
$C_{19}H_{19}O_4N$ 325.1313
MP: 178–179° (237)
UV: 263 (4.72), 327 (4.06) (237)
^{1}H NMR: (300 MHz) (237)
MS: $[M]^+$ 325 (100), 310 (91) (237)
SOURCES: Monimiaceae: *Peumus boldus* (237)

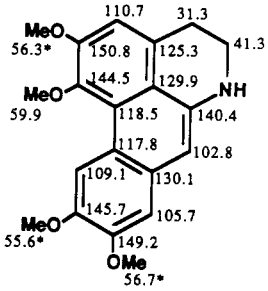
467. DEHYDROPREDICENTRINE



$C_{20}H_{21}O_4N$ 339.1469
MP: 198–199° (acetyl) (128)
UV: 215 (4.14), 243 sh (4.28), 262 (4.49), 270 sh (4.45), 294 sh (4.04), 329 (3.89), 380 sh (3.31) (128)
^{1}H NMR: (90 MHz) (128)
MS: $[M]^+$ 339 (100), 325 (20), 324 (95), 266 (26), 169.5 (29) (128)
SOURCES: Annonaceae: *Polyalthia cauliflora* var. *beccarii* (128)

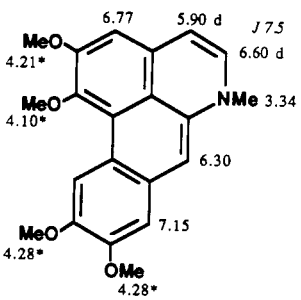
468. DEHYDRONORGLAUCINE





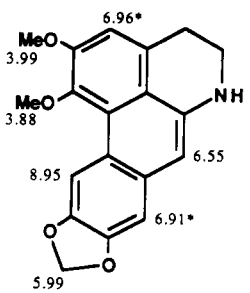
$C_{20}H_{21}O_4N$ 339.1469
MP: 180–183° (150)
UV: 242 sh (4.45), 260 (4.67), 270 (4.64), 335 (4.03), 381 (3.52) (150)
IR: (KBr) 3380, 3240, 1630 (150)
^{1}H NMR: (150)
^{13}C NMR: (150)
SOURCES: Synthesis (127,150,206)

469. TETRADEHYDROGLAUCINE
(Didehydroglaucine)



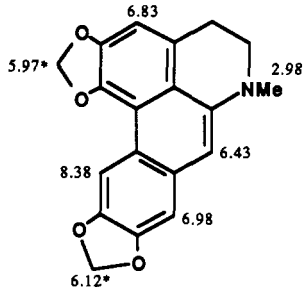
$C_{21}H_{21}O_4N$ 351.1469
UV: 243, 265, 358, 405, 415 (190)
IR: ($CHCl_3$) 1648, 1610 (190)
^{1}H NMR: (190)
SOURCES: Synthesis (27,190)

470. DEHYDRONORNANTENINE



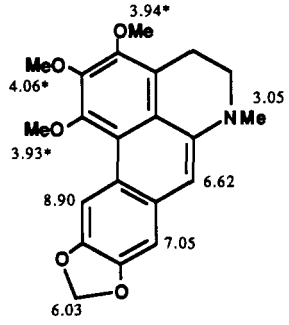
$C_{19}H_{17}O_4N$ 323.1156
MP: 208–209° (150)
UV: 240 sh (4.43), 260 (4.66), 294 (4.13), 335 (4.03), 382 (3.54) (150)
IR: (KBr) 3355, 1635 (150)
^{1}H NMR: (150)
SOURCES: Synthesis (150)

471. DEHYDRONEOLITSINE



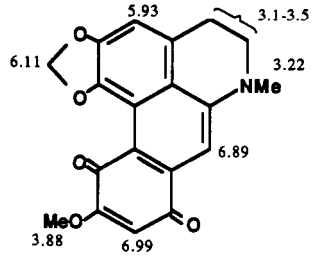
$C_{19}H_{15}O_4N$ 321.1000
MP: 201–203° (165)
UV: 262 (4.97), 305 (3.87), 338 (4.18) (36)
IR: (KBr) 933 (165)
^{1}H NMR: (36)
SOURCES: Annonaceae: *Guatteria goudotiana* (26)
Synthesis (36,165)

472. DEHYDROPHOEBINE
(1,2,3-Trimethoxy-9,10-methylenedioxy-6a,7-dehydroaporphine)



$C_{21}H_{21}O_5N$ 367.1418
UV: 218, 240 sh, 256, 266 sh, 328 (32)
^{1}H NMR: (270 MHz) (32)
MS: $[M]^+$ 367, 352, 336, 323 (32)
SOURCES: Lauraceae: *Phoebe valeriana* (32)

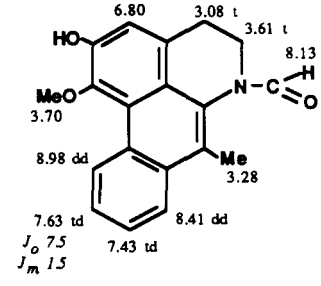
473. BULBODIONE



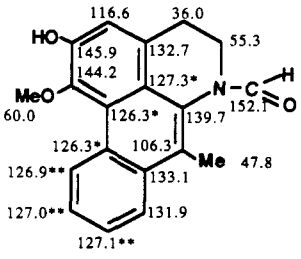
$C_{19}H_{15}O_5N$ 337.0949
MP: 248–250° (136)
UV: 225 (4.37), 292 (4.13), 336 (4.14), 368 sh (3.00), 600 (3.51) (136)
IR: (KBr) 1650, 1610, 1590, 1050 (136)
^{1}H NMR: (136)
MS: $[M]^+$ 337 (100), 322 (3), 308 (13), 294 (5), 266 (50), 238 (20), 208 (6) (136)
SOURCES: Fumariaceae: *Corydalis bulbosa* (136)

7-Methyl- or 7-Formyldehydroaporphines

474. DUGUESPIXINE

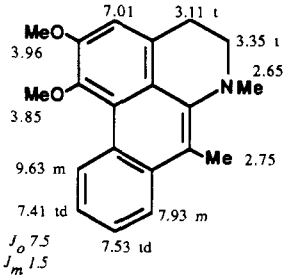


$C_{19}H_{17}O_3N$ 307.1207
UV: 208 (4.19), 222 (4.16), 254 (4.17), 278 sh (4.00), 430 (3.64) (61)
IR: (film) 1630 (61)
^{1}H NMR: (90 MHz) (61); also at 400 MHz (61)
^{13}C NMR: (62)
MS: $[M]^+$ 307 (61)
SOURCES: Annonaceae: *Duguetia spixiana* (60–62), *Guatteria sagotiana* (189)



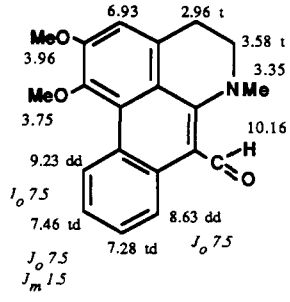
475. 7-METHYLDEHYDRONUCIFERINE
(1,2-Deimthoxy-7-methyl-dehydroaporphine)

$C_{20}H_{21}O_2N$ 307.1571
^{1}H NMR: (90 MHz) (62)
SOURCES: Synthesis (62)



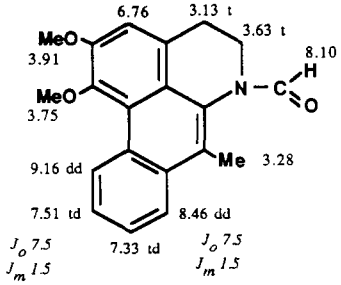
476. 7-FORMYLDEHYDRO-NUCIFERINE

$C_{20}H_{19}O_3N$ 321.1364
IR: (film) 1625 (62)
^{1}H NMR: (90 MHz) (62)
MS: $[M]^+$ 321 (100), 304, 292, 272, 153 (62)
SOURCES: Synthesis (61,62)

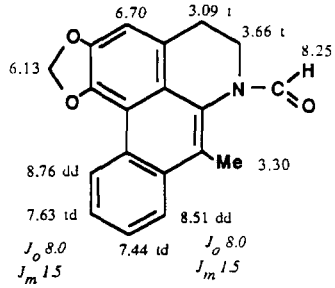


477. *O*-METHYLDUGUESPIXINE

$C_{20}H_{19}O_3N$ 321.1364
IR: (film) 1630 (62)
^{1}H NMR: (90 MHz) (62)
MS: $[M]^+$ 321, 306, 263 (62)
SOURCES: Synthesis (61,62)

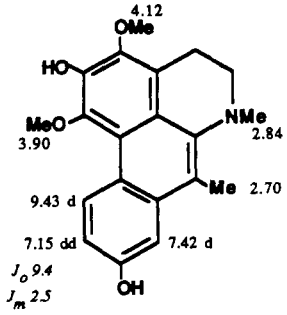


478. TRICHOGUATTINE



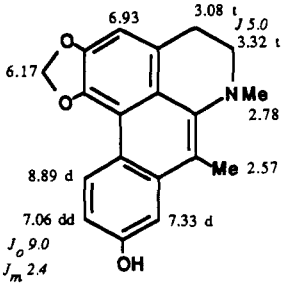
$C_{19}H_{15}O_3N$ 305.1051
UV: 234 (4.19), 249 (4.21), 267 (4.04), 279 (4.01), 292 sh (3.74), 304 sh (3.67), 340 (3.40), 430 (3.68), 450 sh (3.62) (189)
IR: (film) 1635 (189)
^{1}H NMR: (189)
MS: $[M]^+$ 305 (100), 295 (49), 294 (34), 291 (21), 280 (25), 277 (15), 264 (19), 262 (29), 252 (26), 165 (33), 152 (18) (189)
SOURCES: Annonaceae: *Guatteria sagotiana* (189)

479. GOUDOTIANINE



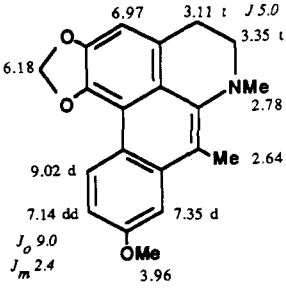
$C_{20}H_{21}O_4N$ 339.1469
UV: 220, 267, 285 sh, 323 (26)
^{1}H NMR: (26)
MS: $[M]^+$ 339 (100), 324 (25) (26)
SOURCES: Annonaceae: *Guatteria goudotiana* (26)

480. BELEMINE



$C_{19}H_{17}O_3N$ 307.1207
UV: 224 (4.25), 270 (4.47), 290 sh (4.05), 323 (3.82), 375 sh (2.78) (55)
IR: (film) 3300, 2930, 2850, 1610, 1540, 1490, 1460, 1410, 1400, 1380, 1365, 1350, 1300, 1260, 1215, 1155, 1110, 1070, 1050 (55)
^{1}H NMR: (90 MHz) (55)
MS: $[M]^+$ 307 (100), 306 (9), 292 (82), 290 (5), 278 (9), 264 (3), 262 (6), 248 (2) (55)
SOURCES: Annonaceae: *Guatteria schomburgkiana* (55,56)

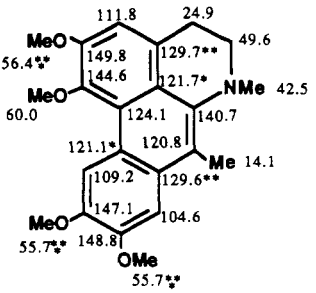
481. *O*-METHYLBELEMINE



$C_{20}H_{19}O_3N$ 321.1364
MP: 137–138° (55)
^{1}H NMR: (90 MHz) (55)
MS: $[M]^+$ 321 (100), 306 (53), 290 (2) (55)
SOURCES: Synthesis (55,56)

482. 7-METHYLDEHYDROGLAUCINE

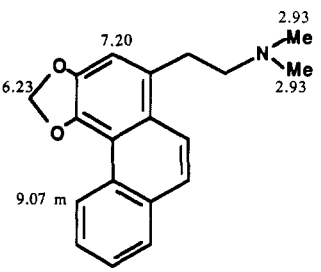
$C_{22}H_{25}O_4N$ 367.1782
^{13}C NMR: (29)
SOURCES: Synthesis (29)



Phenanthrenes

483. STEPHENANTHRINE
(Roemerine methine)

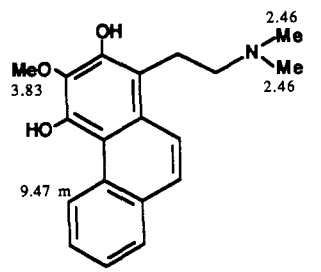
$C_{19}H_{19}O_2N$ 293.1415
MP: 234–236° (109)
UV: 213 (4.17), 239 (4.40), 249 (4.48), 284 (4.06), 320 (3.86), 351 (3.36), 368 (3.36) (109)
IR: (KBr) 1600, 1512, 938 (109)
^1H NMR: (109)
^{13}C NMR: (partially described) (109)
MS: $[M]^+$ 293 (12), 235 (1), 189 (1), 176 (2), 58 (100) (109)
SOURCES: Menispermaceae: *Stephania tetrandra* (109)



5 aromatic H at 7.51–7.97

484. STIPITATINE

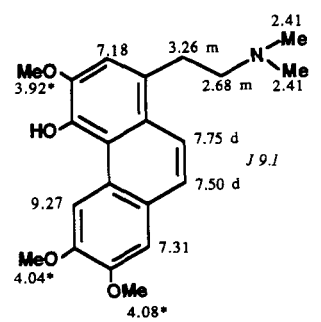
$C_{19}H_{21}O_3N$ 311.1520
UV: 232 (4.30), 250 (4.39), 256 (4.40), 276 (3.99), 300 (3.90), 310 (3.89), 344 (3.23), 366 (3.15) (73)
^1H NMR: (90 MHz) (73)
MS: $[M]^+$ 311 (2), 254 (1), 152 (3), 109 (3), 58 (100) (73)
SOURCES: Annonaceae: *Unonopsis stipitata* (73)



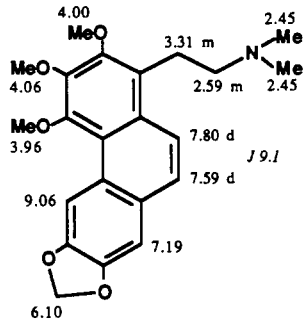
5 aromatic H at 7.52–7.89

485. THALIPORPHINE METHINE

$C_{21}H_{25}O_4N$ 355.1782
UV: 264 (4.32), 276 sh (4.05), 308 (3.62), 319 (3.61), 346 (2.82), 364 (2.66), 400 (2.30) (196)
^1H NMR: (360 MHz) (196)
MS: $[M]^+$ 355 (1), 397 (1), 266 (7), 58 (100) (196)
SOURCES: Hernandiaceae: *Illigera pentaphylla* (196)

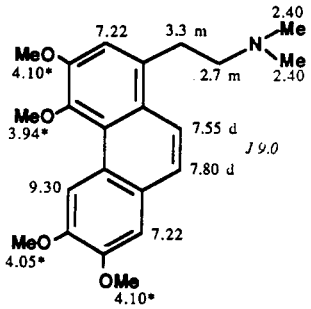


486. THALIHAZINE



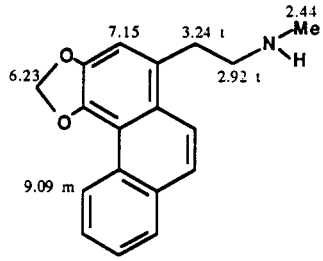
$C_{22}H_{25}O_5N$ 383.1731
UV: 261 (4.30), 283 (3.77), 315 (3.37), 344 (2.90) (100)
^1H NMR: (360 MHz) (100)
MS: $[M]^+$ 383 (7), 325 (5), 310 (1), 295 (2), 280 (1), 267 (3), 58 (100) (100)
SOURCES: Ranunculaceae: *Thalictrum hazarica* (100)

487. GLAUCINE METHINE



$C_{22}H_{27}O_4N$ 369.1940
^1H NMR: (100 MHz) (20)
SOURCES: Synthesis (20)

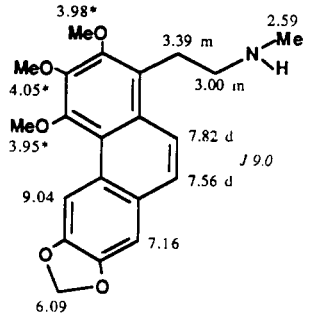
488. SECOROEMERINE



5 aromatic H at 7.54–7.62 (3H) and 7.81–7.89 (2H)

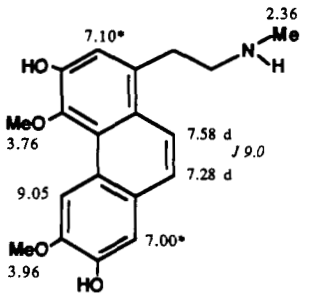
$C_{18}H_{17}O_2N$ 279.1258
MP: 224–226° (HCl) (206)
UV: 216, 240, 250, 284, 322, 354, 362 (206)
IR: (film) 3460–3340 (206)
^1H NMR: (250 MHz) (206)
SOURCES: Synthesis (206)

489. SECOPHOEBINE
(1-β-Methylaminoethyl-2,3,4-trimethoxy-6a,7-methylenedioxyphenanthrene)



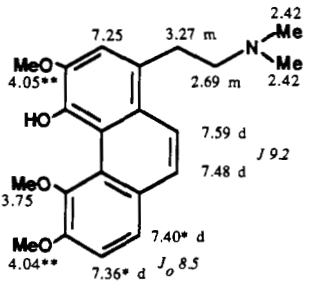
$C_{21}H_{23}O_5N$ 369.1575
UV: 234 sh, 262, 284, 304, 317, 344, 362 (32)
^1H NMR: (270 MHz) (32)
MS: $[M]^+$ 369, 326, 325, 311, 283, 268, 240, 209, 179, 163, 151, 44 (32)
SOURCES: Lauraceae: *Phoebe valeriana* (32)

490. SECOBOLDINE



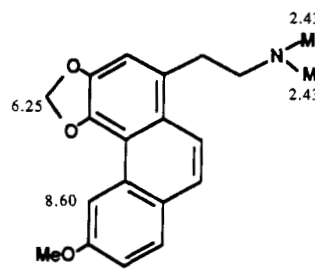
$C_{19}H_{21}O_4N$ 327.1469
MP: 214–215 (dec) (20)
UV: 263 (4.74), 280 sh (4.37), 304 (3.93), 317 (3.95), 345 (2.98), 363 (2.74) (20)
^{1}H NMR: (CD_3OD, 100 MHz) (20)
MS: $[M]^+$ 327, 283 (20)
SOURCES: Synthesis (20)

491. CORYDINE METHINE



$C_{21}H_{25}O_4N$ 355.1782
UV: 244 (4.32), 259 (3.94), 319 (3.92), 328 (3.35) (195)
IR: ($CHCl_3$) 3530, 2930, 1590, 1455, 1405, 1260 (195)
^{1}H NMR: (360 MHz) (195)
MS: $[M]^+$ 355 (2), 297 (1), 58 (100), 43 (8) (195)
SOURCES: Berberidaceae: *Berberis cretica* (195)

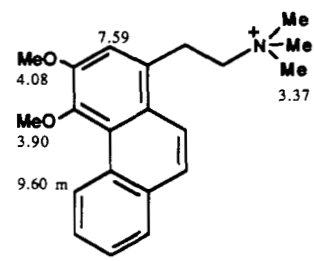
492. ISOUVARIOPSINE



5 aromatic H at 7.15–7.8

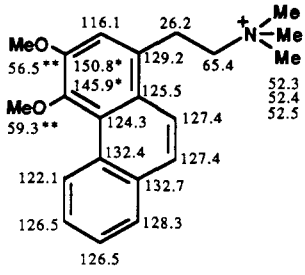
$C_{20}H_{21}O_3N$ 323.1520
MP: 155–157° (86)
UV: 218 (3.93), 250 (4.35), 260 (4.35), 313 (3.88), 325 (3.91), 360 (3.62), 378 (3.65) (86)
IR: ($CHCl_3$) 1610, 1590, 1500, 1450 (86)
^{1}H NMR: (270 MHz) (86)
MS: $[M]^+$ 323 (60), 308 (12), 292 (16), 278 (30), 265 (42), 247 (8), 222 (18), 205 (7), 176 (27), 163 (36), 58 (100) (86)
SOURCES: Monimiaceae: *Hedycarya angustifolia* (86)

493. *N*-METHYLATHERO-SPERMINIUM CATION

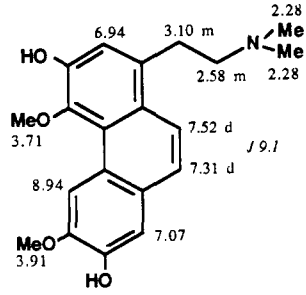


5 aromatic H at 7.70–7.80

$C_{21}H_{26}O_2N^+ X^-$ 324.1963
MP: 238–240° (153)
UV: 216 (4.43), 235 sh (4.46), 258 (4.64), 306 (4.28), 344 (3.42), 364 (3.42) (153)
IR: (KBr) 1580 (153)
^{1}H NMR: (100 MHz, DMSO-d_6) (153)
^{13}C NMR: (DMSO-d_6) (153)
MS: $[M]^+$ 324 (1), 323 (3), 300 (100), 285 (33), 264 (39), 257 (17), 251 (68), 236 (5), 208 (18), 193 (4), 165 (18) (153)
SOURCES: Annonaceae: *Fissistigma glaucescens* (153)



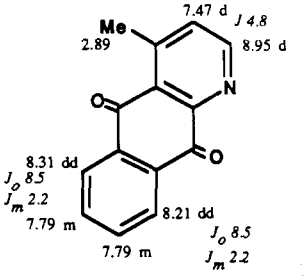
494. BOLDINE METHINE

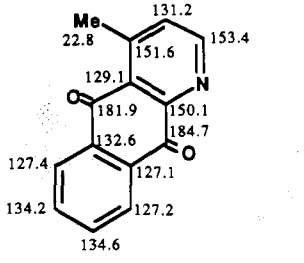


$C_{20}H_{23}O_4N$ 341.1626
MP: 228–229° dec (Hl) (20)
UV: 263 (4.48), 282 sh (4.11), 305 (4.11), 318 (3.75), 342 (3.07) (213)
^{1}H NMR: (200 MHz) (213)
MS: $[M]^+$ 341 (1), 283 (1), 240 (1), 58 (100) (213)
SOURCES: Synthesis (20,213)

Cleistopholine- and Onychine-type Alkaloids

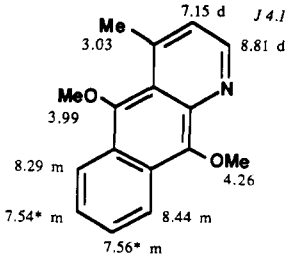
495. CLEISTOPHOLINE





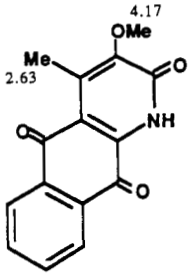
$C_{14}H_9O_2N$ 223.0633
MP: 185–190° (248)
UV: 250 (4.65), 263 sh (4.05), 322 (3.80) (248)
IR: (KCl) 1695, 1685, 1600, 1300, 980, 710 (248)
^{1}H NMR: (400 MHz) (229)
^{13}C NMR: (229)
MS: $[M]^+$ 223 (100), 195 (77), 180 (10), 167 (19), 166 (14), 140 (6), 77 (7) (248)
SOURCES: Annonaceae: *Annona hayesii* (187), *Cleistopholis patens* (248), *Meiogyne virgata* (229)

496. ANNOPHOLINE



$C_{16}H_{15}O_2N$ 253.1102
UV: 230 sh (4.25), 260 (4.63), 290 (4.07), 230 (3.68) (187)
^{1}H NMR: (500 MHz) (187)
MS: $[M]^+$ 253 (25), 239 (16), 238 (100), 224 (9), 223 (7), 209 (23), 195 (7), 180 (5), 167 (9), 166 (6), 139 (7), 91 (7), 77 (7) (187)
SOURCES: Annonaceae: *Annona hayesii* (187)

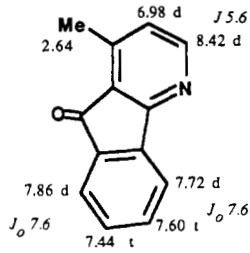
497. DIELSIQUINONE



4 aromatic H at 7.5–7.8 (2H)
and 8.0–8.3 (2H)

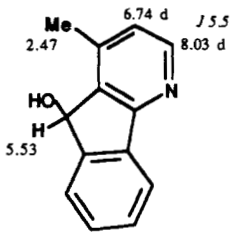
$C_{15}H_{11}O_4N$ 269.0687
MP: 250–252° (89)
UV: 247 sh (4.07), 274 (4.27), 291 (4.25), 322 sh (4.04) (89)
IR: (film) 3280, 2920, 1665, 1655, 1590, 1540, 1480, 1420, 1405, 1320, 1310, 1285, 1270, 1230, 1200, 1120, 1070, 1035, 1015, 970, 800, 780, 725 (89)
^{1}H NMR: ($CDCl_3$/CD_3OD) (89)
MS: $[M]^+$ 269 (100), 268 (30), 254 (15), 241 (6), 240 (16), 239 (8), 105 (8) (89)
SOURCES: Annonaceae: *Guatteria dielsiana* (89)

498. ONYCHINE[g]
(1-Methyl-4-azafluoren-9-one)



$C_{13}H_9ON$ 195.0684
MP: 133–135° (59)
UV: 253 (4.62), 279 (3.85), 289 (3.88), 308 (3.30) [(HCl) 252, 292 sh, 298, 320 sh, 331 sh] (59)
IR: (KCl) 1703, 1596, 1560, 1448, 1383, 920, 879, 831, 760, 681 (59)
^{1}H NMR: (400 MHz) (89)
MS: $[M]^+$ 195 (100), 167 (11), 166 (15), 140 (11), 139 (12) (59)
SOURCES: Annonaceae: *Cleistopholis patens* (248), *Guatteria dielsiana* (89), *Onychopetalum amazonicum* (59)
Synthesis (137)

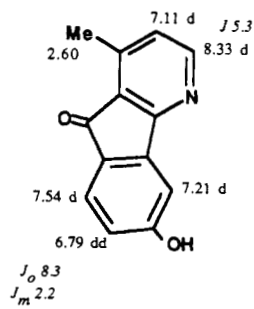
499. DIHYDROONYCHINE



4 aromatic H at 7.56–7.80 (2H)
and 7.47–7.30 (2H)

$C_{13}H_{11}ON$ 197.0840
MP: 156–158° (59)
UV: 283 (3.92), 298 (3.90), 310 (4.04); [(HCl) 296, 326] (59)
IR: (KBr) 3290–3160, 1607, 1573, 1390, 1260, 1250, 1200, 1089, 1040, 1030, 760 (59)
^{1}H NMR: (137)
SOURCES: Synthesis (59,137)

500. 6-HYDROXYONYCHINE[h]
(Oxylopinine)

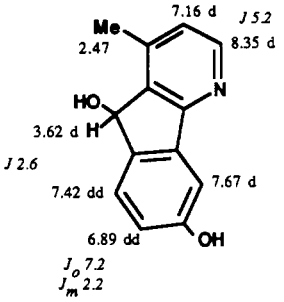


$C_{13}H_9O_2N$ 211.0633
MP: 245–248° (259)
UV: 238 sh (3.52), 270 sh (3.41), 282 (3.45), 293 (3.38), 328 (2.80), 340 (2.47); [(HCl) 240, 246, 284 sh, 296, 300, 343, 354] (259)
IR: (KBr) 3400, 3100, 3000, 1718, 1613, 1603, 1575, 1480, 1380, 1370, 1325, 1290, 1270, 1250, 1185, 1090, 908, 852, 802, 765, 753, 680, 645 (259)
^{1}H NMR: (CD_3OD, 90 MHz) (259)
MS: $[M]^+$ 211 (100), 194 (1), 183 (17), 182 (7), 155 (8), 154 (17), 153 (3), 129 (3), 128 (5), 127 (9), 105 (92), 101 (3), 100 (3), 92 (2), 91 (1), 77 (7), 76 (2) (259)

[g]Revised structure (137).
[h]Revised structure (259); original structure given for oxylopinine (72).

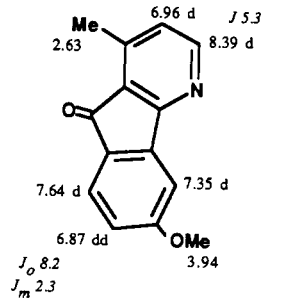
SOURCES: Annonaceae: *Oxandra xylopioides* (72,259)
Synthesis (259)

501. 6-HYDROXYDIHYDRO-ONYCHINE



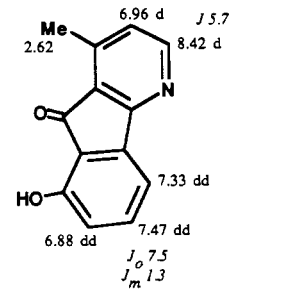
$C_{12}H_{11}O_2N$ 201.0789
UV: 280 sh (3.98), 289 (3.86), 315 (3.75) (259)
IR: (KBr) 3420, 2930, 2860, 1610, 1510, 1465, 1385 (259)
^{1}H NMR: (CD_3OD) (259)
SOURCES: Synthesis (259)

502. 6-METHOXYONYCHINE[i]



$C_{14}H_{11}O_2N$ 225.0789
UV: 214 (4.09), 225 (4.36), 235 (4.36), 245 (4.36), 276 sh (4.36), 280 (4.21), 292 (4.36), 326 (3.44), 340 (3.44); [(HCl) 216, 230 sh, 240 sh, 248, 276 sh, 283, 294, 308 sh, 328, 343] (228)
IR: (film) 1700, 1610, 1595, 1570, 1555, 1468, 1433, 1425, 1386, 1357, 1272, 1260, 1245, 1213, 1180, 1097, 1085, 1048, 1010, 928, 892, 872, 830, 792, 767 (228)
^{1}H NMR: (500 MHz) (228)
MS: $[M]^+$ 225 (100), 224 (11), 210 (10), 197 (1), 196 (11), 195 (14), 182 (8), 167 (6), 154 (7), 127 (9), 86 (13), 84 (23), 49 (33) (228)
SOURCES: Annonaceae: *Guatteria dielsiana* (89)
Synthesis (228)

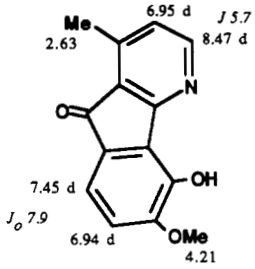
503. 8-HYDROXYONYCHINE

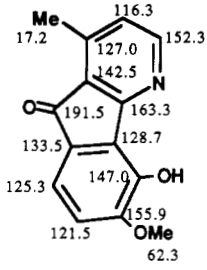


$C_{13}H_9O_2N$ 211.0633
MP: 140–142° (259)
UV: 226 (4.43), 247 (4.69), 288 (4.72), 300 (4.14), 362 (3.34); [(HCl) 226, 248, 290, 302, 373] (259)
IR: (KBr) 3400, 1700, 1600, 1580, 1570, 1240, 1120, 1035, 920, 800 (259)
^{1}H NMR: (90 MHz) (259)
MS: $[M]^+$ 211 (100), 183 (31), 164 (14), 154 (28), 126 (12), 92 (14) (259)
SOURCES: Synthesis (259)

[i]Revised structure (228).

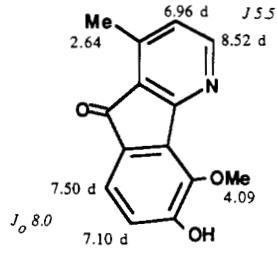
504. 5-HYDROXY-6-METHOXY-ONYCHINE[i]
(Oxylopine)





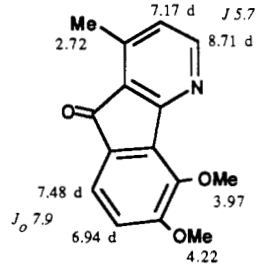
$C_{14}H_{11}O_3N$ 241.0738
MP: 140–142° (259)
UV: 243 sh (4.06), 250 (4.11), 280 sh (3.77), 289 (3.79), 300 (3.73), 355 (2.73); [(HCl) 243, 250 sh, 317] (259)
IR: (KBr) 3450, 1710, 1600, 1565, 1490, 1440, 1380, 1320, 1275, 1255, 1235, 1200, 1115, 1075, 1010, 940, 880, 815, 800, 740, 720 (259)
^{1}H NMR: (90 MHz) (259)
MS: $[M]^+$ 241 (73), 223 (84), 212 (67), 198 (29), 195 (60), 183 (74), 167 (29), 154 (49), 140 (30), 127 (30), 115 (34), 91 (25), 90 (7), 77 (100) (259)
SOURCES: Annonaceae: *Oxandra xylopioides* (71,259)

505 URSULINE[k]



$C_{14}H_{11}O_3N$ 241.0738
UV: 208 (3.98), 225 sh (3.92), 250 (4.04), 288 (3.47) (*O*-acetyl) (11)
IR: (film) 1735, 1708 (*O*-acetyl) (11)
^{1}H NMR: (250 MHz) (*O*-acetyl) (11)
MS: $[M]^+$ 283, 241, 223 (*O*-acetyl) (11)
SOURCES: Annonaceae: *Oxandra xylopioides* (erroneously described as *Oxandra* cf. *major*) (11)

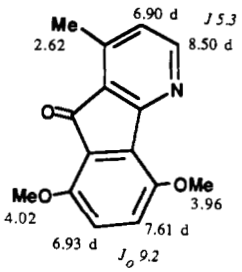
506. 5,6-DIMETHOXYONYCHINE



$C_{15}H_{13}O_3N$ 255.0895
MP: 148–150° (259)
UV: 244 sh (3.65), 250 (3.71), 277 sh (3.36), 287 (3.37), 299 (3.30), 350 (3.03); [(HCl) 225, 250, 314, 370 sh] (259)
IR: (KBr) 2930, 2850, 1710, 1635, 1610, 1555, 1500, 1490, 1470, 1450, 1435, 1365, 1290, 1270, 1242, 1200, 1168, 1140, 1080, 1050, 1030, 1005, 960, 915, 870, 845, 825, 790, 725 (259)
^{1}H NMR: (90 MHz) (259)
MS: $[M]^+$ 255 (32), 254 (33), 241 (7), 240 (59), 238 (12), 226 (83), 224 (47), 211 (42), 209 (100), 196 (31), 195 (69), 183 (55), 166 (56), 154 (28), 141 (26), 129 (5), 115 (11), 92 (6), 90 (29), 77 (78) (259)
SOURCES: Synthesis (259)

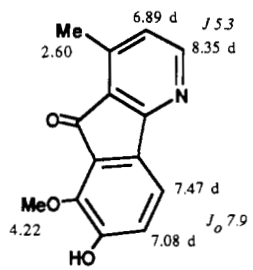
[i]Revised structure (259); original structure given for oxylopine (71).
[k]The complete structure has been established by A. Cavé and co-workers; see *J. Nat. Prod.*, **51**, 555 (1988).

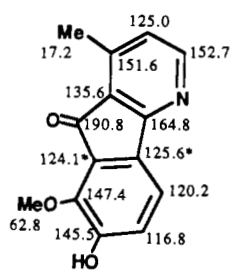
507. 5,8-DIMETHOXYONYCHINE



$C_{15}H_{13}O_3N$ 255.0895
MP: 140–145° (259)
UV: 228 (4.23), 248 (4.23), 299 (3.58), 312 (3.55), 420 (3.16); [(HCl) 250, 297, 325, 430] (259)
IR: (KBr) 1700, 1600, 1500, 1470, 1270, 1040, 810 (259)
^{1}H NMR: (90 MHz) (259)
MS: $[M]^+$ 255 (66), 254 (100), 240 (63) (259)
SOURCES: Synthesis (259)

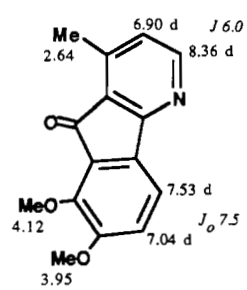
508. MACONDINE





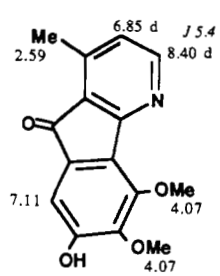
$C_{14}H_{11}O_3N$ 241.0738
UV: 203 (3.99), 237 (3.95), 265 (4.11), 294 sh (3.80), 303 (3.87) [no change with HCl] (11)
IR: (film) 3360, 1706, 1600, 1565 (11)
^{1}H NMR: (250 MHz) (11)
^{13}C NMR: (11)
MS: $[M]^+$ 241, 223, 195, 167 (11)
SOURCES: Annonaceae: *Oxandra xylopioides* (erroneously described as *Oxandra* cf. *major*) (11)

509. *O*-METHYLMACONDINE

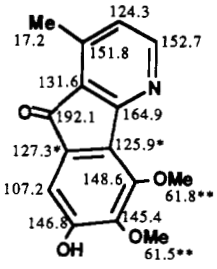


$C_{15}H_{13}O_3N$ 255.0895
^{1}H NMR: (250 MHz) (11)
SOURCES: Synthesis (11)

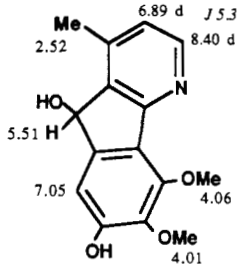
510. DARIENINE



$C_{15}H_{13}O_4N$ 271.0844
UV: 206 (4.09), 235 (4.03), 266 (4.33), 292 (4.02), 302 sh (4.00); [(HCl) 206, 226, 265, 292, 302 sh] (11)
IR: (film) 3350, 2920, 1708, 1600, 1565 (11)
^{1}H NMR: (250 MHz) (11)
^{13}C NMR: (11)
MS: $[M]^+$ 271 (41), 270 (21), 256 (100), 243 (3), 242 (20), 241 (28), 225 (22) (11)
SOURCES: Annonaceae: *Oxandra xylopioides* (erroneously described as *Oxandra* cf. *major*) (11)

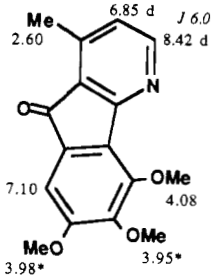


511. DIHYDRODARIENINE



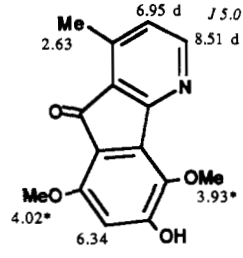
$C_{15}H_{15}O_4N$ 273.1000
MP: 85–88° (11)
UV: 205 (3.94), 230 sh (3.79), 295 (3.66), 308 (3.65); [(HCl) 205, 245 sh, 352] (11)
IR: (film) 3330, 1600, 1565 (11)
^{1}H NMR: (500 MHz) (11)
MS: $[M]^+$ 273, 258, 245, 244, 227 (11)
SOURCES: Synthesis (11)

512. *O*-METHYLDARIENINE



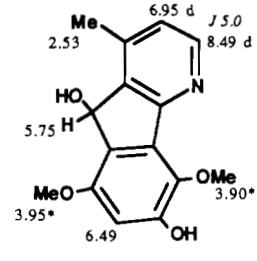
$C_{16}H_{15}O_4N$ 295.1000
^{1}H NMR: (250 MHz) (11)
SOURCES: Synthesis (11)

513. KINABALINE



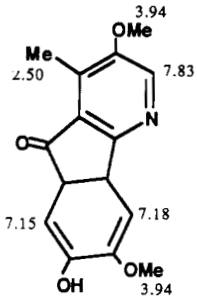
$C_{15}H_{13}O_4N$ 271.0844
UV: 208 (3.96), 222 (3.91), 231 (3.93), 246 sh (4.01), 254 (4.12), 280 sh (3.72), 292 (3.77), 304 (3.73), 388 (3.32); [(HCl) 209, 233, 252 sh, 292 sh, 304, 316, 410] (229)
^{1}H NMR: (229); also in DMSO-d_6 and in CD_3OD (229)
MS: $[M]^+$ 271 (72), 270 (54), 256 (10), 253 (9), 243 (17), 242 (100), 225 (23), 212 (12), 199 (10), 154 (15), 149 (11), 143 (13), 128 (30) (229)
SOURCES: Annonaceae: *Meiogyne virgata* (229)

514. DIHYDROKINABALINE



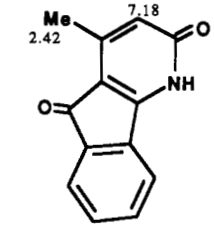
$C_{15}H_{15}O_4N$ 273.1000
^{1}H NMR: (500 MHz) (229)
SOURCES: Synthesis (229)

515. 2,6-DIMETHOXY-7-HYDROXY-ONYCHINE[l]
(Oxylopidine)



$C_{15}H_{13}O_4N$ 271.0844
MP: 271–273° (259)
UV: 223 (3.41), 252 (3.58), 267 sh (3.40), 300 (3.70), 334 (3.03), 350 sh (2.88); [(HCl) 252, 307 sh, 320, 375] (259)
IR: (KBr) 3440, 2940, 2840, 1710, 1600, 1575, 1485, 1460, 1440, 1365, 1340, 1290, 1265, 1240, 1215, 1180, 1140, 1065, 1023, 960, 870, 798, 753, 700, 640 (259)
^{1}H NMR: ($CDCl_3/CD_3OD$, 90 MHz) (259)
MS: $[M]^+$ 271 (88), 257 (12), 256 (100), 241 (11), 228 (56), 213 (29), 212 (5), 200 (6), 198 (12), 185 (21), 170 (10), 157 (13), 136 (39), 129 (21), 115 (17), 114 (25), 106 (11), 101 (28), 77 (15) (259)
SOURCES: Annonaceae: *Oxandra xylopioides* (72,259)

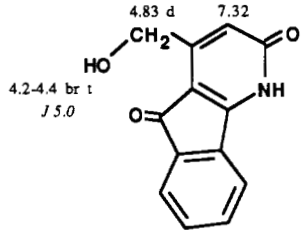
516. DIELSINE[m]



4 aromatic H at 7.07–7.09 (2H) and 8.0–8.3 (2H)

$C_{13}H_9O_2N$ 211.0633
MP: 254–256° (89)
UV: 243 sh (4.15), 256 (4.18), 262 sh (4.17), 272 sh (4.04), 282 (3.56), 341 (3.50) (89)
IR: (film) 3430, 3190, 1665, 1650, 1595, 1570, 1505, 1475, 1450, 1400, 1375, 1255, 1235, 1205, 1160, 1100, 1080, 1045, 925, 885, 815, 765, 750, 705 (89)
^{1}H NMR: (Me_2CO-d_6, 100 MHz) (89)
MS: $[M]^+$ 211 (100), 210 (64), 183 (4), 182 (15), 155 (11), 154 (29) (89)
SOURCES: Annonaceae: *Guatteria dielsiana* (89)

517. DIELSINOL[m]



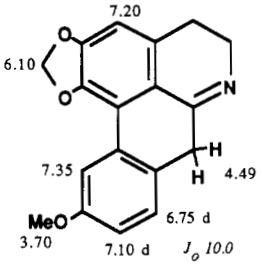
4 aromatic H at 7.07–7.09 (2H) and 8.0–8.2 (2H)

$C_{13}H_9O_3N$ 227.0582
MP: 252–254° (89)
UV: 253 (4.26), 269 sh (4.11), 283 (4.03), 333 (3.77) (89)
IR: (film) 3400, 3250, 2930, 1655, 1585, 1505, 1410, 1390, 1300, 1245, 1205, 1160, 1050, 1030, 1020, 930, 715 (89)
^{1}H NMR: (Me_2CO-d_6, 100 MHz) (89)
MS: $[M]^+$ 227 (100), 226 (25), 225 (11), 210 (12), 209 (7), 198 (28), 169 (12), 154 (32) (89)
SOURCES: Annonaceae: *Guatteria dielsiana* (89)

[l]Revised structure (259); original structure given for oxylopidine (72).
[m]Revised structure (228).

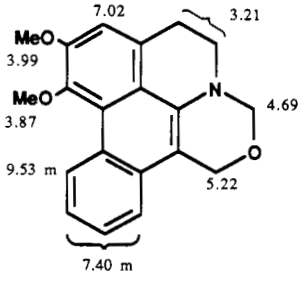
Miscellaneous[n]

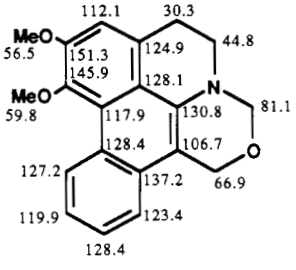
518. 6,6a-DEHYDRONORLAURELINE



$C_{18}H_{15}O_3N$ 293.1051
UV: 248 (4.32), 278 (4.08), 317 (3.83), 330 (3.85) (86)
IR: ($CHCl_3$) 1690, 1640, 1600 (86)
^1H NMR: (270 MHz) (86)
SOURCES: Monimiaceae: *Hedycarya angustifolia* (86)

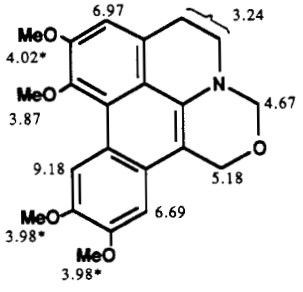
519. NO NAME
(1,2-Dimethoxy duguenaine analogue)





$C_{20}H_{19}O_3N$ 321.1364
MP: 132–135° (150)
UV: 255 (4.59), 263 (4.59), 327 (4.06), 380 (3.40) (150)
^1H NMR: (150)°
^{13}C NMR: (150)
SOURCES: Synthesis (150)

520. NO NAME
(1,2,9,10-Tetramethoxy duguenaine analogue)



$C_{22}H_{23}O_5N$ 381.1575
MP: 199–202° (150)
UV: 264 (4.65), 274 (4.63), 339 (4.08), 384 (3.54) (150)
^1H NMR: (150)°
SOURCES: Synthesis (150)

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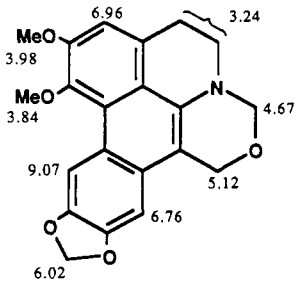
[n]6,6a-Dehydroaporphine: structure **518**; duguenaine-type aporphinoids: **519–521**; ring A quinonoid aporphinoids: **522–524**; oxoisoaporphines: **525–529**; azafluoranthene: **530**; diazafluoranthenes: **531**, **532**; 1-azaoxoaporphinoid: **533**; azahomoaporphines: **534–537**; catechol dioxygenase oxidized aporphinoids: **538–542**.

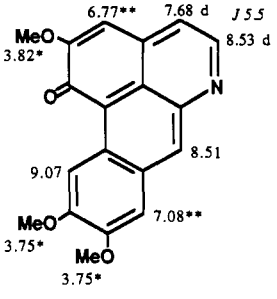
[o]The assignments of the oxazinic methylenes have been reversed to be in agreement with those for duguecalyne **381** [*J. Nat. Prod.*, **46**, 761 (1983)] for which a partial nOe study has been performed.

521. NO NAME
(1,2-Dimethoxy-9,10-methylenedioxy duguenaine analogue)



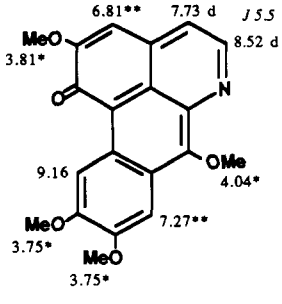
$C_{21}H_{19}O_5N$ 365.1262
MP: 206–207° (150)
UV: 264 (4.67), 296 sh (4.18), 339 (4.11), 386 (3.48) (150)
^{1}H NMR: (150)[P]
SOURCES: Synthesis (150)

522. PANCORIDINE



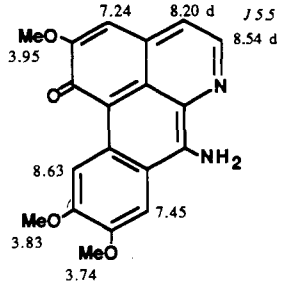
$C_{19}H_{15}O_4N$ 321.1000
UV: 218, 236, 259, 277, 298, 312, 340, 402, 466 (8)
IR: (KBr) 1635, 1580, 1505 (8)
^{1}H NMR: (CF_3COOH, 100 MHz) (8)
MS: $[M]^+$ 321, 306, 290, $[M]^{++}$ 160.5 (8)
SOURCES: Annonaceae: *Popowia pisocarpa* (127)
Fumariaceae: *Corydalis paniculigera* (8), *Corydalis stricta* (117)
Synthesis (35,147)

523. 7-METHOXYPANCORIDINE



$C_{20}H_{17}O_5N$ 351.1105
MP: 204–205° (8)
UV: 224, 234, 249, 278, 290, 302, 398, 482, 515 (8)
IR: (KBr) 1630, 1540, 1510, 1240 (8)
^{1}H NMR: (CF_3COOH, 100 MHz) (8)
MS: $[M]^+$ 351, 336, 322, 292 (8)
SOURCES: Synthesis (8)

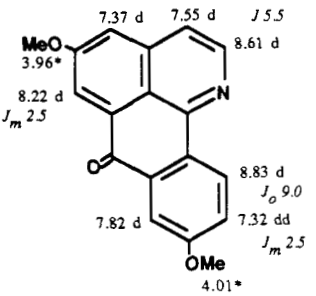
524. PANCORININE



$C_{19}H_{16}O_4N$ 336.1108
UV: 232, 247, 265, 276, 287, 296, 376, 412, 440, 526, 566 (8)
IR: (KBr) 1650, 1545, 1510, 1250 (8)
^{1}H NMR: (CF_3COOH, 100 MHz) (8)
MS: $[M]^+$ 336, 305, 292 (8)
SOURCES: Fumariaceae: *Corydalis paniculigera* (8), *Corydalis stricta* (117)
Synthesis (8)

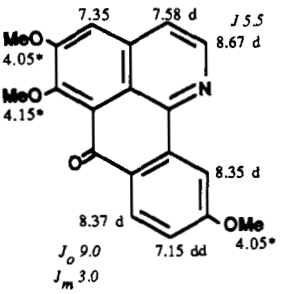
[P]The assignments of the oxazinic methylenes have been reversed to be in agreement with those for duguecalyne **381** for which a partial nOe study has been performed.

525. BIANFUGECINE



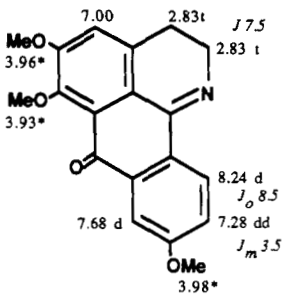
$C_{18}H_{13}O_3N$ 291.0895
MP: 199–201° (144)
UV: 254 (4.80), 286 (4.10), 316 (3.82), 329 (3.76), 382 (3.83), 413 (3.86); [(HCl) 258 (4.36), 267 (4.48), 296 (4.09), 324 (3.80), 327 (3.75), 396 (3.99), 420 (4.02)] (106)
IR: 1653, 1600, 1415, 1297, 1020 (106)
^{1}H NMR: (90 MHz) (106)
MS: $[M]^+$ 291 (100), 276 (14), 261 (6), 248 (4), 233 (2), 220 (12), 190 (6), 177 (14), 146 (7) (106)
SOURCES: Menispermaceae: *Menispermum dauricum* (105,106)
Synthesis (144)

526. 5,6,10-TRIMETHOXYOXO-ISOAPORPHINE
(5,6,10-Trimethoxy-7*H*-dibezol[*de*,*h*]quinolin-7-one)



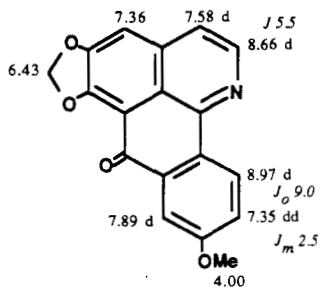
$C_{19}H_{15}O_4N$ 321.1000
MP: 195–196° (146)
UV: 217 (4.66), 254 (4.46), 262 (4.46), 270 sh (4.43), 280 sh (4.25), 302 sh (3.85), 315 (3.93), 346 (4.13), 376 (4.05) (146)
IR: (KBr) 1655 (146)
^{1}H NMR: (200 MHz) (146)
MS: $[M]^+$ 321 (100), 306 (32), 292 (35) (146)
SOURCES: Synthesis (146)

527. 2,3-DIHYDROMENISPORPHINE



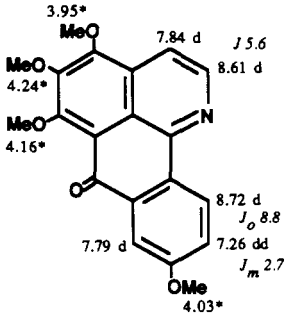
$C_{19}H_{17}O_4N$ 323.1156
MP: 177–180° (143)
UV: 225 (4.37), 255 sh (4.31), 274 (4.42), 372 (3.76) (143)
IR: (KBr) 1665 (143)
^{1}H NMR: (143)
MS: $[M]^+$ 323 (100), 321, 308, 306, 294, 292, 280, 278, 263 (143)
SOURCES: Menispermaceae: *Menispermum dauricum* (143,176)

528. BIANFUGEDINE



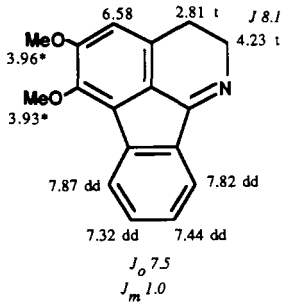
$C_{18}H_{11}O_4N$ 305.0687
UV: 212 (4.16), 254 (4.07), 272 (3.94), 291 (3.66), 305 (3.57), 316 (3.57), 332 (3.50), 360 (3.57), 410 (3.57), 422 (3.57); [(HCl) 217 (4.13), 265 (4.14), 290 (3.57), 300 (3.56), 315 (3.53), 329 (3.60), 354 (3.60), 413 (3.77), 434 (3.80)] (106)
IR: 1640, 1628, 1595, 866, 805, 745 (106)
^{1}H NMR: (90 MHz) (106)
MS: $[M]^+$ 305 (100), 290 (22), 275 (7), 262 (6), 234 (18), 204 (6), 176 (16), 149 (9), 88 (6), 74 (7) (106)
SOURCES: Menispermaceae: *Menispermum dauricum* (105,106)

529. DAURIPORPHINE
(Bianfugenine)



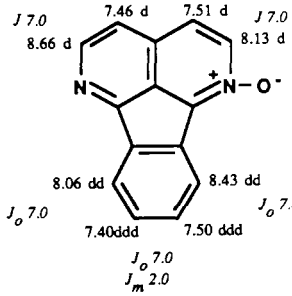
$C_{20}H_{17}O_5N$ 321.1105
MP: 167° (231)
UV: 214 (4.57), 226 (4.42), 260 (4.54), 314 (3.76), 328 (3.72), 344 (3.83), 410 (4.10); [(HCl) 215 (4.49), 270 (4.38), 292 (3.95), 304 (3.80), 321 (3.76), 417 (4.25)] (106)
IR: (KBr) 1640, 1600, 1585, 1570, 1395, 1350, 1275, 1200, 1120, 1080, 1020, 910, 825 (231)
^{1}H NMR: (100 MHz) (231); also in CF_3COOD (231)
MS: $[M]^+$ 351 (100), 336 (79), 308 (8), 293 (41), 278 (12), 263 (13), 250 (9), 222 (10), 194 (15), 166 (5), 165 (15) (231)
SOURCES: Menispermaceae: *Menispermum dauricum* (105,106,176,231)
Synthesis (143)

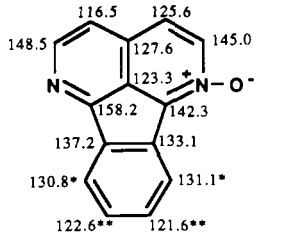
530. DIHYDROTRICLISINE



$C_{17}H_{15}O_2N$ 265.1102
MP: 212–214° (HCl) (160)
UV: 222 (3.78), 243 (4.08), 255 (4.09), 274 (3.91), 306 (3.22), 352 (3.54) (160)
^{1}H NMR: (160)
SOURCES: Synthesis (160)

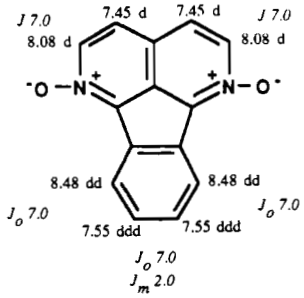
531. EUPOLAURIDINE *N*-OXIDE





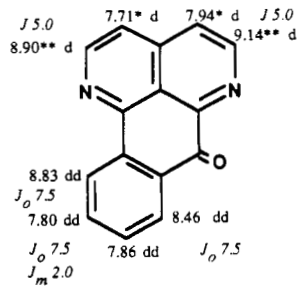
$C_{14}H_8ON_2$ 220.0636
MP: 186–188° (248)
UV: 245 (4.28), 275 sh (4.05), 284 (4.15), 301 sh (4.06), 333 (3.60), 349 (3.65), 395 (3.70) (248)
^{1}H NMR: (90 MHz) (248)
^{13}C NMR: (248)
MS: $[M]^+$ 220 (65), 204 (100), 177 (6), 165 (26), 151 (2), 102 (12) (248)
SOURCES: Annonaceae: *Cleistopholis patens* (248)

532. EUPOLAURIDINE DI-*N*-OXIDE



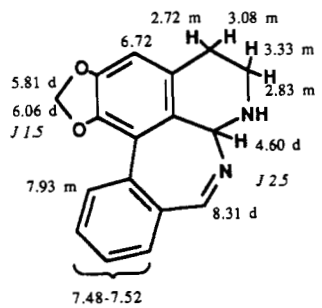
$C_{14}H_8O_2N_2$ 236.0585
UV: 230 (3.96), 250 (4.24), 295 (4.30), 405 (3.62), 440 (3.64) (248)
^{1}H NMR: (90 MHz) (248)
MS: $[M]^+$ 236 (41), 220 (100), 204 (33), 165 (14), 164 (13), 102 (2) (248)
SOURCES: Annonaceae: *Cleistopholis patens* (248)
Synthesis (248)

533. SAMPANGINE



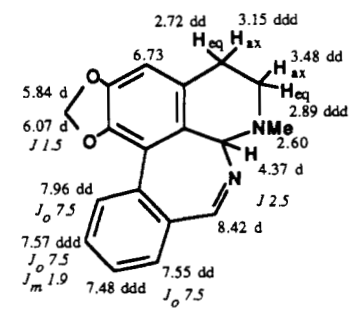
$C_{15}H_8ON_2$ 232.0636
MP: 210° (dec) (186)
UV: 220, 252, 312, 326, 392 (186)
IR: (KBr) 1680, 1620, 1402, 1380, 1320, 1275, 1225, 750 (186)
^{1}H NMR: (100 MHz) (186)
MS: $[M]^+$ 232 (100), 204 (92), 177 (18), 150 (24), 102 (31), 88.5 (15), 75 (52), 50 (27) (186)
SOURCES: Annonaceae: *Cananga odorata* (186)

534. NORDRAGABINE



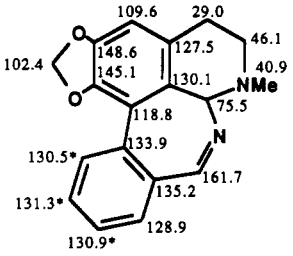
$C_{17}H_{14}O_2N_2$ 278.1054
UV: 228 (4.36), 264 sh (3.92), 297 (3.70); [(HCl) 228 (4.29), 318 (3.66), 375 (3.32)] (23)
IR: (film) 1665 (23)
^{1}H NMR: (23)
MS: $[M]^+$ 278 (97), 277 (100), 251 (11), 250 (81), 249 (42), 248 (53), 222 (23) (23)
SOURCES: Annonaceae: *Meiogyne virgata* (23)

535. DRAGABINE

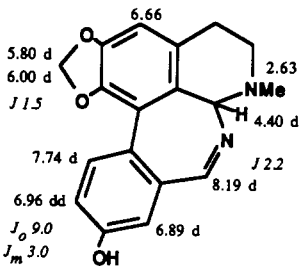


J_{4gem} 16.5; J_{5gem} 11.0; $J_{4ax,5ax}$ 12.7; $J_{4ax,5eq}$ 6.2; $J_{4eq,5ax}$ 3.5

$C_{18}H_{16}O_2N_2$ 292.1210
UV: 228 (4.43), 260 sh (4.02), 300 (3.78); [(HCl) 232 sh (4.35), 256 sh (4.13), 316 (3.81), 372 (3.65)] (23)
IR: (film) 1665 (23)
^{1}H NMR: (500 MHz) (23)
^{13}C NMR: (CD_3OD) (23)
MS: $[M]^+$ 292 (86), 291 (100), 265 (16), 264 (77), 263 (24), 262 (40), 249 (18), 222 (40) (23)
SOURCES: Annonaceae: *Guatteria sagotiana* (23,189)

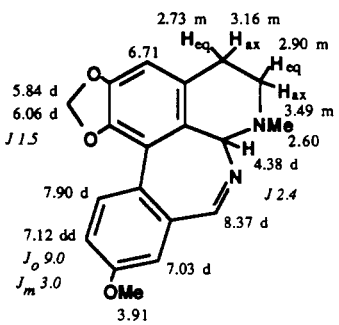


536. SPIGUETIDINE



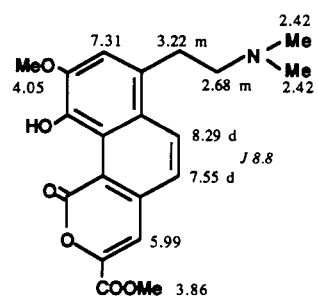
$C_{18}H_{16}O_3N_2$ 308.1159
UV: 230, 274, 292 [(HCl) 254, 290, 324, 350, 378] (188)
IR: (film) 1645 (188)
^{1}H NMR: (500 MHz) (188)
MS: $[M]^+$ 308, 307, 281, 280, 279, 278, 266, 265, 264, 252, 251, 239, 238 (188)
SOURCES: Annonaceae: *Duguetia spixiana* (188)

537. SPIGUETINE



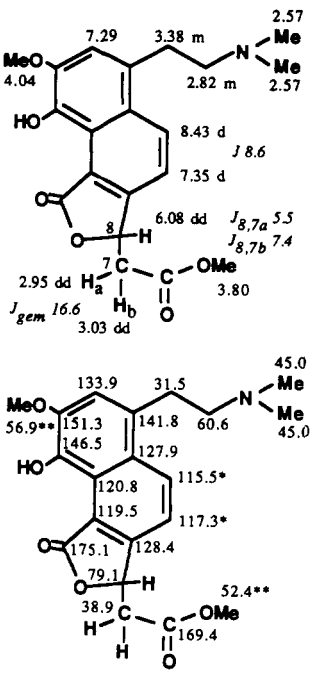
$C_{19}H_{18}O_3N_2$ 322.1316
UV: 232 (4.33), 266 (3.50), 310 (3.37) [(HCl) 246 (4.09), 330 (3.64), 374 (3.58)] (188)
IR: (film) 1650 (188)
^{1}H NMR: (500 MHz) (188)
MS: $[M]^+$ 322, 321, 307, 295, 294, 293, 280, 279, 265, 253, 252 (188)
SOURCES: Annonaceae: *Duguetia spixiana* (188)

538. ANDESINE



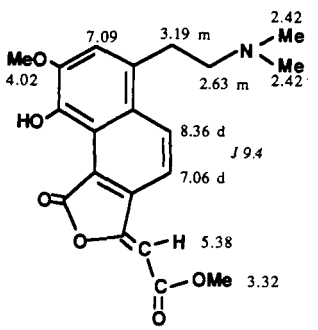
$C_{20}H_{21}O_6N$ 371.1367
UV: 220 (4.44), 312 (4.51), 344 (3.85), 362 (3.78) (251)
IR: ($CHCl_3$) 3480, 1680, 1655 (251)
^{1}H NMR: (200 MHz) (251)
MS: $[M]^+$ 371 (0.2), 370 (0.6), 313 (0.1), 312 (0.2), 280 (0.6), 58 (100) (251)
SOURCES: Berberidaceae: *Berberis actinacantha* (251), *Berberis darwinii* (251)

539. CHILOENAMINE



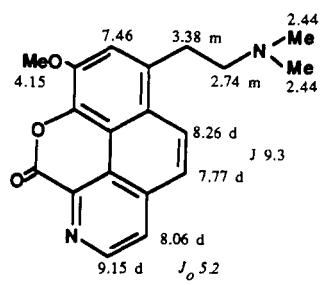
$C_{20}H_{23}O_6N$ 373.1524
UV: 215 (4.49), 269 (4.32), 327 (3.22), 341 (3.25), 387 (3.45) (212)
IR: ($CHCl_3$) 1740, 1710 (212)
^1H NMR: (360 MHz) (212)
^{13}C NMR: (212)
MS: $[M]^+$ 373 (0.3), 329 (0.2), 315 (0.4), 300 (0.3), 241 (0.7), 227 (0.2), 58 (100) (212)
SOURCES: Berberidaceae: *Berberis actinacantha* (212), *Berberis buxifolia* (212), *Berberis darwinii* (239)

540. CHILOENINE



$C_{20}H_{21}O_6N$ 371.1367
UV: 204 (4.19), 230 sh (4.02), 290 (3.49), 377 (3.14) (212)
IR: ($CHCl_3$) 1735, 1670 (212)
^1H NMR: (360 MHz) (212)
MS: $[M]^+$ 371 (0.8), 356 (0.5), 340 (0.6), 326 (1.8), 269 (0.4), 256 (0.8), 58 (100) (212)
SOURCES: Berberidaceae: *Berberis actinacantha* (212)

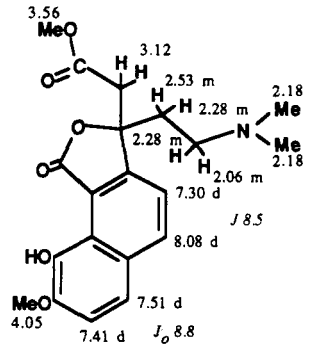
541. SANTIAGONAMINE

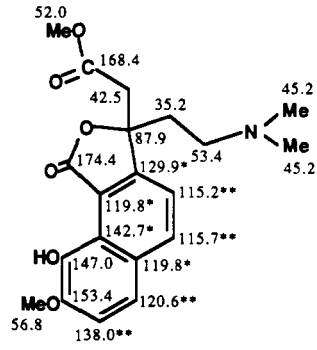


$C_{19}H_{18}O_3N_2$ 322.1316
UV: 225 (5.02), 253 (5.03), 273 sh (4.70), 310 (4.61), 366 (4.45); [(HCl) 229 (5.03), 258 (4.99), 267 sh (4.94), 278 sh (4.73), 298 (4.39), 309 (4.43), 329 (4.32), 368 (4.26), 391 (4.28), 396 (4.28), 400 (4.27), 434 (4.22)] (239)
IR: ($CHCl_3$) 1755 (239)
^1H NMR: (360 MHz)[q] (239)
MS: $[M]^+$ 322 (1), 264 (0.4), 236 (0.8), 221 (0.2), 206 (0.5), 193 (1), 58 (100) (239)
SOURCES: Berberidaceae: *Berberis darwinii* (239)

[q] ^1H-nmr assignments have been corrected by H. Guinaudeau, A.J. Freyer, and M. Shamma, not published.

542. ACONCAGUINE





$C_{20}H_{23}O_6N$ 373.1524
UV: 215 (4.45), 267 (4.42), 322 (3.66), 335 (3.64), 384 (3.68) (250)
IR: ($CHCl_3$) 1745, 1715 (250)
^1H NMR: (360 MHz) (250)
^{13}C NMR: (250)
MS: $[M]^+$ 373 (6), 342 (0.5), 315 (0.1), 301 (0.5), 300 (0.1), 242 (0.5), 227 (1), 213 (0.8), 58 (100) (250)
SOURCES: Berberidaceae: *Berberis actinacantha* (250)

TABLE 5. Calculated Molecular Weights of New Aporphinoids.

195.0684 Onychine **498**	$C_{13}H_9ON$	232.0636 Sampangine **533**	$C_{15}H_8ON_2$
197.0840 Dihydroonychine **499**	$C_{13}H_{11}ON$	236.0585 Eupolauridine di-*N*-oxide **532**	$C_{14}H_8O_2N_2$
201.0789 6-Hydroxydihydroonychine **501**	$C_{12}H_{11}O_2N$	241.0738 5-Hydroxy-6-methoxyonychine **504** Ursuline **505** Macondine **508**	$C_{14}H_{11}O_3N$
211.0633 6-Hydroxyonychine **500** 8-Hydroxyonychine **503** Dielsine **516**	$C_{13}H_9O_2N$	253.1102 Annopholine **496**	$C_{16}H_{15}O_2N$
220.0636 Eupolauridine *N*-oxide **531**	$C_{14}H_8ON_2$	255.0895 5,6-Dimethoxyonychine **506** 5,8-Dimethoxyonychine **507** *O*-Methylmacondine **509**	$C_{15}H_{13}O_3N$
223.0633 Cleistopholine **495**	$C_{14}H_9O_2N$	263.0946 Dehydroanonaine **459**	$C_{17}H_{13}O_2N$
225.0789 6-Methoxyonychine **502**	$C_{14}H_{11}O_2N$	265.1102 Dihydrotriclisine **530**	$C_{17}H_{15}O_2N$
227.0582 Dielsinol **517**	$C_{13}H_9O_3N$		

269.0687 $C_{15}H_{11}O_4N$
Dielsiquinone **497**

271.0844 $C_{15}H_{13}O_4N$
Darienine **510**
Kinabaline **513**
2,6-Dimethoxy-7-hydroxyonychine **515**

273.1000 $C_{15}H_{15}O_4N$
Dihydrodarienine **511**
Dihydrokinabaline **514**

278.1054 $C_{17}H_{14}O_2N_2$
Nordragabine **534**

279.1258 $C_{18}H_{17}O_2N$
Dehydronornuciferine **457**
Secoroemerine **488**

283.1207 $C_{17}H_{17}O_3N$
Norpachyconfine **437**

291.0531 $C_{17}H_9O_4N$
Oxostephanosine **427**
Norcepharadione A **434**

291.0895 $C_{18}H_{13}O_3N$
Bianfugecine **525**

291.1258 $C_{19}H_{15}O_2N$
Tetradehydronuciferine **458**

292.1210 $C_{18}H_{16}O_2N_2$
Dragabine **535**

293.1051 $C_{18}H_{15}O_3N$
6,6a-Dehydronorlaureline **518**

293.1415 $C_{19}H_{19}O_2N$
Stephenanthrine **483**

295.1000 $C_{16}H_{15}O_4N$
O-Methyldarienine **512**

295.1207 $C_{18}H_{17}O_3N$
Norstephanine **398**
Pentouregine **422**

297.1364 $C_{18}H_{19}O_3N$
Nornuciferidine **439**

305.0687 $C_{18}H_{11}O_4N$
Bianfugedine **528**

305.1051 $C_{19}H_{15}O_3N$
Trichoguattine **478**

307.0844 $C_{18}H_{13}O_4N$
Aristolodione **433**

307.1207 $C_{19}H_{17}O_3N$
Dehydrostephalagine **462**
Duguespixine **474**
Belemine **480**

307.1571 $C_{20}H_{21}O_2N$
7-Methyldehydronuciferine **475**

308.1159 $C_{18}H_{16}O_3N_2$
Spiguetidine **536**

309.1364 $C_{19}H_{19}O_3N$
N-Formylnornuciferine **396**
O-Methyldehydroisopiline **460**
Dehydroisothebaine **463**
1,2,11-Trimethoxy-6a,7-dehydro-noraporphine **464**

311.1156 $C_{18}H_{17}O_4N$
Ushinsunine β-*N*-oxide **441**
Roemerolidine **444**
Duguexine **446**

311.1520 $C_{19}H_{21}O_3N$
Orientinine **399**
1,2-Dimethoxy-9-hydroxyaporphine **400**
O-Methylzenkerine **402**
1-*O*-Methylisothebaidine **404**
Nuciferidine **440**
Stipitatine **484**

313.1313 $C_{18}H_{19}O_4N$
Norbracteoline **408**
Pachyconfine *N*-oxide **438**
Rurrebanidine **442**

321.0636 $C_{18}H_{11}O_5N$
Machigline **428**

321.1000 $C_{19}H_{15}O_4N$
Dehydroguattescine **424**
1,2,11-Trimethoxyoxoaporphine **426**
Dehydroneolitsine **471**
Pancoridine **522**
5,6,10-Trimethoxyoxoisoaporphine **526**

321.1105 $C_{20}H_{17}O_5N$
Dauriporphine **529**

321.1364 $C_{20}H_{19}O_3N$
7-Formyldehydronuciferine **476**
O-Methylduguespixine **477**
O-Methylbelemine **481**
1,2-Dimethoxy duguenaine analogue **519**

322.1316 $C_{19}H_{18}O_3N_2$
Spiguetine **537**
Santiagonamine **541**

323.1156 $C_{19}H_{17}O_4N$
Dehydronornantenine **470**
2,3-Dihydromenisporphine **527**

323.1520 $C_{20}H_{21}O_3N$
Orientidine **465**
Isouvariopsine **492**

324.1963 $C_{21}H_{26}O_2N$
N-Methylatherosperminium cation **493**

325.1313 $C_{19}H_{19}O_4N$
N-Methylelmerrillicine **405**
7-*epi*-Oliveridine **445**
Dehydroboldine **466**

325.1677 $C_{20}H_{23}O_3N$
Orientine **401**

326.1755 $C_{20}H_{24}O_3N$
N-Methylisothebainium cation **403**

327.1105 $C_{18}H_{17}O_5N$
Duguexine *N*-oxide **447**
Stephadiolamine β-*N*-oxide **456**

327.1469 $C_{19}H_{21}O_4N$
Lastourvilline **407**
Glaufinine **412**
Rurrebanine **443**
Secoboldine **490**

335.0793 $C_{19}H_{13}O_5N$
Oxo-*O*-methylbulbocapnine **429**

336.1108 $C_{19}H_{16}O_4N$
Pancorinine **524**

337.0949 $C_{19}H_{15}O_5N$
Ouregidione **435**
Bulbodione **473**

337.1313 $C_{20}H_{19}O_4N$
Dehydroformouregine **461**

339.1469 $C_{20}H_{21}O_4N$
Formouregine **397**
N,O-Dimethylfissoldine **411**
1,11-Methyleneoxyaporphine **423**
Dehydropredicentrine **467**
Dehydronorglaucine **468**
Goudotianine **479**

340.1548 $C_{20}H_{22}O_4N$
N-Methyldomesticinium cation **410**

341.1262 $C_{19}H_{19}O_5N$
3-Hydroxynornantenine **418**
Isoguattouregidine **425**
Spixianine **451**

341.1626 $C_{20}H_{23}O_4N$
Boldine methine **494**

343.1418 $C_{19}H_{21}O_5N$
Nordelporphine **415**
4-Hydroxywilsonirine **454**

351.1105 $C_{20}H_{17}O_5N$
3-Methoxycepharadione B **436**
7-Methoxypancoridine **523**

351.1469 $C_{21}H_{21}O_4N$
Tetradehydroglaucine **469**

355.1418 $C_{20}H_{21}O_5N$
Crebanine *N*-oxide **406**
Norphoebine **420**
Dasymachaline **450**
4-*epi*-Hydroxycrebanine **453**

355.1782 $C_{21}H_{25}O_4N$
Thaliporphine methine **485**
Corydine methine **491**

357.1211 $C_{19}H_{19}O_6N$
Spixianine *N*-oxide **452**

357.1575 $C_{20}H_{23}O_5N$
N-Methyllaurotetanine β-*N*-oxide **409**
Norpreocoteine **414**
Thalbaicaline **416**
Epiglaufidine **455**

365.0898 $C_{20}H_{15}O_6N$
Oxophoebine **430**
Kuafumine **431**
7-Oxobaicaline **432**

365.1262 $C_{21}H_{19}O_5N$
1,2-Dimethoxy-9,10-methylenedioxy duguenaine analogue **521**

367.1418 $C_{21}H_{21}O_5N$
Dehydrophoebine **472**

367.1782 $C_{22}H_{25}O_4N$
7-Methyldehydroglaucine **482**

369.1575 $C_{21}H_{23}O_5N$
3-Hydroxynantenine **419**
Phoebine **421**
Secophoebine **489**

369.1940 $C_{22}H_{27}O_4N$
Glaucine methine **487**

371.1367 $C_{20}H_{21}O_6N$
Sukhodianine β-*N*-oxide **449**
Andesine **538**
Chiloenine **540**

371.1731 $C_{21}H_{25}O_5N$
O-Methylcorydine *N*-oxide **413**
Thalbaicalidine **417**

373.1524 $C_{20}H_{23}O_6N$
Chiloenamine **539**
Aconcaguine **542**

381.1575 $C_{22}H_{23}O_5N$
1,2,9,10-Tetramethoxy duguenaine analogue **520**

383.1731 $C_{22}H_{25}O_5N$
Thalihazine **486**

397.1524 $C_{22}H_{23}O_6N$
O-Acetylsukhodianine **448**

TABLE 6. Botanical Sources of Aporphinoid Alkaloids.[a]

ANNONACEAE

Alphonsea
- Anonaine **7**
- Isoboldine **40**
- Laurotetanine **54**
- Liriodenine **116**
- Magnoflorine **72**
- Norushinsunine **138**
- Ushinsunine **139**

Annona
- Annopholine **496**
- Anonaine **7**
- Asimilobine **3**
- Cleistopholine **495**
- Corytuberine **71**
- 3-Hydroxynornuciferine **254**
- Isoboldine **40**
- Lanuginosine **120**
- Liriodenine **116**
- Litseferine **203**
- Lysicamine **115**
- Norcepharadione A **434**
- Nordomesticine **47**
- Nornantenine **61**
- Nornuciferine **5**
- Norushinsunine **138**
- Nuciferine **6**
- Roemerine **8**

Artabotrys
- Anonaine **7**
- Asimilobine **3**
- Glaucine **59**
- Lastourvilline **407**
- Lirinidine **2**
- Norcorydine **73**
- Nornuciferine **5**
- Norstephalagine **191**
- Norushinsunine **138**
- Nuciferine **6**

Cananga
- Liriodenine **116**
- Sampangine **533**

Cleistopholis
- Cleistopholine **495**
- Eupolauridine **392**
- Eupolauridine di-*N*-oxide **532**
- Eupolauridine *N*-oxide **531**
- Liriodenine **116**
- Onychine **498**

Cymbopetalum
- Asimilobine **3**
- Magnoflorine **72**
- Norushinsunine **138**

Desmos
- Dasymachaline **450**
- Dicentrinone **126**

Duguetia
- Anonaine **7**
- Atherosperminine **163**
- Atherosperminine *N*-oxide **379**
- Duguespixine **474**
- Duguexine **446**
- Duguexine *N*-oxide **447**
- 3-Hydroxynornuciferine **254**
- Lanuginosine **120**
- Lysicamine **115**
- Methoxyatherosperminine **164**
- *N*-Methylasimilobine **4**
- *O*-Methylisopiline **188**
- *O*-Methylmoschatoline **118**
- Nornuciferidine **439**
- Nornuciferine **5**
- Noroliveridine **229**
- Norpachyconfine **437**
- Oliveridine **142**
- Oliveridine *N*-oxide **230**
- Oxopukateine **217**
- Pachyconfine **220**
- Pachyconfine *N*-oxide **438**
- Roemerolidine **444**
- Rurrebanidine **442**
- Rurrebanine **443**
- Spiguetidine **536**
- Spiguetine **537**
- Spixianine **451**
- Spixianine *N*-oxide **452**

Fissistigma
- Anolobine **16**
- Asimilobine **3**
- Atherosperminine **163**
- Calycinine **278**
- Crebanine **38**
- Kuafumine **431**
- Liriodenine **116**
- *N*-Methylatherosperminium cation **493**
- Norannuradhapurine **271**
- Noratherosperminine **239**
- Oxocrebanine **340**
- Xylopine **18**

Goniothalamus
- Anolobine **16**
- Anonaine **7**
- Liriodenine **116**

Guatteria
- Anolobine **16**
- Anonaine **7**
- Belemine **480**

[a]Excluding those previously tabulated in "Aporphinoid Alkaloids" Parts I, II, and III.

Fumaria
Isoboldine **40**
Isocorydine **85**
Magnoflorine **72**

HERNANDIACEAE

Gyrocarpus
Domesticine **48**

Hernandia
Actinodaphnine **64**
Hernagine **286**
Hernandine **111**
Hernandonine **128**
Hernovine **76**
Laetine **285**
Laurotetanine **54**
N-Methylhernangerine **90**
N-Methylhernovine **77**
Nandigerine **89**
Ovigerine **94**

Illigera
Actinodaphnine **64**
Atheroline **123**
Boldine **50**
Dicentrinone **126**
Lanuginosine **120**
Laurelliptine **39**
Laurolitsine **49**
Laurotetanine **54**
Lindcarpine **78**
Lysicamine **115**
N-Methyllindcarpine **79**
Nordicentrine **204**
Oxocrebanine **340**
Oxonantenine **125**
Thaliporphine methine **485**

Sparattanthelium
Actinodaphnine **64**
Launobine **91**
Laurotetanine **54**
Nordomesticine **47**
Norisocorydine **84**

HYPECOACEAE

Hypecoum
Corydine **74**
Isoboldine **40**
Isocorydine **85**
Magnoflorine **72**

LAURACEAE

Licaria
Bracteoline **42**

Lindera
Boldine **50**
Launobine **91**
Laurolitsine **49**
Laurotetanine **54**
N-Methyllaurotetanine **55**

Litsea
Actinodaphnine **64**
Boldine **50**
Glaucine **59**
Isoboldine **40**
Laurolitsine **49**
Laurotetanine **54**
Litseferine **203**
N-Methylactinodaphnine **65**
Norcorydine **73**
Norisocorydine **84**

Machilus
Atheroline **123**
Machigline **428**

Neolitsea
Laurotetanine **54**

Ocotea
Thalbaicalidine **417**

Parabenzoin
N-Methylhernagine **287**
Nandigerine **89**

Phoebe
Dehydrophoebine **472**
3-Hydroxynantenine **419**
3-Hydroxynornantenine **418**
Lirioferine **201**
O-Methylmoschatoline **118**
Nantenine **62**
Nordelporphine **415**
Norlirioferine **275**
Norphoebine **420**
Norpreocoteine **414**
Norpurpureine **99**
Oxophoebine **430**
Phoebine **421**
Preocoteine **96**
Secophoebine **489**
Thalbaicalidine **417**
Thalicsimidine **100**
Thaliporphine **44**

Umbellularia
Domesticine **48**
Isoboldine **40**
Nordomesticine **47**

MAGNOLIACEAE

Liriodendron
N-Acetylnornuciferine **181**
Asimilobine **3**
Liriodenine **116**
Liriotulipiferine **199**
N-Methyllaurotetanine **55**
Nuciferine **6**
Predicentrine **52**

Magnolia
Asimilobine **3**
Liriodenine **116**

Talauma

Anolobine **16**
Asimilobine **3**
Lanuginosine **120**
Xylopine **18**

MENISPERMACEAE

Dioscoreophyllum
Magnoflorine **72**

Menispermum
Bianfugecine **525**
Bianfugedine **528**
Dauriporphine **529**
2,3-Dihydromenisporphine **527**
Menisporphine **384**

Pachygone
Isoboldine **40**
Liriodenine **116**
Magnoflorine **72**

Rhigiocarya
Menisperine **86**

Sciadotenia
Actinodaphnine **64**
Launobine **91**

Sinomenium
Liriodenine **116**

Stephania
O-Acetylsukhodianine **448**
Anonaine **7**
Apoglaziovine **21**
Asimilobine **3**
Crebanine **38**
Crebanine *N*-oxide **406**
Dehydrocrebanine **372**
Dehydrodicentrine **157**
Dehydroisolaureline **238**
Dehydroroemerine **151**
Dehydrostephanine **369**
Dicentrine **67**
Dicentrinone **126**
4-Hydroxycrebanine **362**
Lanuginosine **120**
Liriodenine **116**
Mecambroline **27**
N-Methylactinodaphnine **65**
Nuciferoline **26**
Oxocrebanine **340**
Oxostephanine **216**
Oxostephanosine **427**
Stephadiolamine β-*N*-oxide **456**
Stephanine **12**
Stephenanthrine **483**
Stesakine **272**
Sukhodianine **358**
Sukhodianine β-*N*-oxide **449**
Tuduranine **25**
Ushinsunine **139**
Ushinsunine β-*N*-oxide **441**

Tinospora
Magnoflorine **72**
Menisperine **86**

MONIMIACEAE[b]

Glossocalyx
Asimilobine **3**
Isoboldine **40**
Isocorydine **85**
Laurotetanine **54**
Liriodenine **116**
N-Methyllaurotetanine **55**
N-Methyllaurotetanine β-*N*-oxide **409**
Nantenine **62**
Norisodomesticine **200**
Tuduranine **25**

Hedycarya
Atheroline **123**
Boldine **50**
Corydine **74**
6,6a-Dehydronorlaureline **518**
Glaucine **59**
Isoboldine **40**
Isocorydine **85**
Isouvariopsine **492**
Laureline **29**
Laurotetanine **54**
Magnoflorine **72**
N-Methyllaurotetanine **55**
Norglaucine **58**
Norisocorydine **84**
Oxoglaucine **124**

Laurelia
Corydine **74**
Liriodenine **116**
Oxolaureline **121**
Pukateine **34**

Peumus
Boldine **50**
Dehydroboldine **466**
Isocorydine **85**
N-Methyllaurotetanine **55**
Norisocorydine **84**

Siparuna
Liriodenine **116**

PAPAVERACEAE

Argemone
Corydine **74**
Isocorydine **85**
Magnoflorine **72**

Dicranostigma
Corydine **74**

[b]Including Atherospermataceae and Siparunaceae.

Discaria
1-*O*-Methylisothebaidine **404**

RUTACEAE

Zanthoxylum
Liriodenine **116**
Magnoflorine **72**

TABLE 7. Names and Synonyms of Aporphinoids Cited in This Review.[a]

N-Acetylnornuciferine **181** *ia*
O-Acetylsukhodianine **448** *na*
Aconcaguine **542** *na*
Actinodaphnine **64** *ia*
Alkaloid PO-3 **136** *ia, sd*
Andesine **538** *na*
Annopholine **496** *na*
Anolobine **16** *ia*
Anonaine **7** *ia*
Apoglaziovine **21** *ia, sd*
Argentinine **162** *ia*
Aristolodione **433** *na*
Asimilobine **3** *ia*
Atheroline **123** *ia, sd*
Atherospermidine **119** *ia*
Atherosperminine **163** *ia, sd*
Atherosperminine *N*-oxide **379** *ia*
Baicalidine **297** *ia, sd*
Baicaline **296** *ia*
Belemine **480** *na*
Bianfugecine **525** *na*
Bianfugedine **528** *na*
Bianfugenine **529** *na*
Boldine **50** *ia*
Boldine methine **494** *na*
Bracteoline **42** *ia*
Bulbocapnine **92** *ia*
Bulbodione **473** *na*
Caaverine **1** *ia*
Calycinine **278** *ia*
Cassythicine **65** *ia*
Cataline **148** *ia, sd*
Cepharadione A **177** *ia, sd*
Cepharadione B **176** *ia*
Chiloenamine **539** *na*
Chiloenine **540** *na*
Cleistopholine **495** *na*
Corunnine **134** *ia*
Corydine **74** *ia*
Corydine methine **491** *na*
Corydione **353** *ia*
Corytuberine **71** *ia*
Crebanine **38** *ia*
Crebanine *N*-oxide **406** *na*
Darienine **510** *na*
Dasymachaline **450** *na*
Dauriporphine **529** *na*
Dehydroanonaine **459** *na*
Dehydroboldine **466** *na*
Dehydrocorydine **376** *ia*
Dehydrocrebanine **372** *ia*
Dehydrodicentrine **157** *ia*
Dehydroformouregine **461** *na*
Dehydroglaucine **154** *ia, sd*
Dehydroguattescine **424** *na*
Dehydroisolaureline **238** *ia*
Dehydroisothebaine **463** *na*
Dehydronantenine **156** *ia*
Dehydroneolitsine **471** *na*
Dehydronorglaucine **468** *na*
6,6a-Dehydronorlaureline **518** *na*
Dehydronornantenine **470** *na*
Dehydronornuciferine **457** *na*
Dehydroocoteine **159** *ia*
Dehydrophoebine **472** *na*
Dehydropredicentrine **467** *na*
Dehydroroemerine **151** *ia*
Dehydrostephalagine **462** *na*
Dehydrostephanine **369** *ia*
Delporphine **206** *ia*
Dicentrine **67** *ia*
Dicentrinone **126** *ia*
Didehydroaporheine **152** *ia, sd*
Didehydroglaucine **469** *na*
Didehydroroemerine **152** *ia, sd*
Dielsine **516** *na*
Dielsinol **517** *na*
Dielsiquinone **497** *na*
Dihydrodarienine **511** *na*
Dihydrokinabaline **514** *na*
2,3-Dihydromenisporphine **527** *na*
Dihydroonychine **499** *na*
Dihydrotriclisine **530** *na*
1,2-Dimethoxy duguenaine analogue **519** *na*
1,2-Dimethoxy-9-hydroxyaporphine **400** *na*
1,2-Dimethoxy-11-hydroxyaporphine **404** *na*
1,2-Dimethoxy-3-hydroxy-9,10-methylenedioxynoraporphine **418** *na*
2,9-Dimethoxy-10-hydroxy-1,11-methyleneoxyaporphine **423** *na*
2,6-Dimethoxy-7-hydroxyonychine **515** *na*
1,2-Dimethoxy-7-methyldehydroaporphine **475** *na*
1,2-Dimethoxy-9,10-methylenedioxy duguenaine analogue **521** *na*
5,6-Dimethoxyonychine **506** *na*

[a] *rs*: revised structure; *sd*: additional physical and spectral data; *ia*: known aporphinoid isolated again; *na*: new aporphinoid alkaloid.

5,8-Dimethoxyonychine **507** *na*
O,N-Dimethylcalycinine **411** *na*
O,O-Dimethylcorytuberine **88** *ia, sd*
O,O-Dimethylcorytuberine methiodide **289** *ia, sd*
N,O-Dimethylfissoldine **411** *na*
N,O-Dimethylisocorydine **289** *ia, sd*
O,N-Dimethylliriodendronine **214** *ia*
O,O-Dimethylmagnoflorine **289** *ia, sd*
4,5-Dioxodehydroasimilobine **348** *ia*
4,5-Dioxodehydronantenine **353** *ia*
Domesticine **48** *ia*
Dragabine **535** *na*
Duguenaine **380** *ia*
Duguespixine **474** *na*
Duguexine **446** *na*
Duguexine *N*-oxide **447** *na*
Elmerrillicine **198** *ia, sd*
Epiglaufidine **455** *na*
4-*epi*-Hydroxycrebanine **453** *na*
7-*epi*-Oliveridine **445** *na*
Episteporphine **147** *ia, sd*
Eupolauridine **392** *ia, sd*
Eupolauridine di-*N*-oxide **532** *na*
Eupolauridine *N*-oxide **531** *na*
Fissistigine A **278** *ia*
Fissoldine **278** *ia*
Floripavidine **247** *ia*
Formouregine **397** *na*
N-Formylanonaine **251** *ia*
7-Formyldehydronuciferine **476** *na*
N-Formylnornuciferine **396** *na*
N-Formylputerine **263** *ia*
Glaucine **59** *ia, sd*
Glaucine methine **487** *na*
Glaufidine **366** *ia, rs*
Glaufinine **412** *na*
Goudotianine **479** *na*
Guadiscine **319** *ia*
Guatterine **140** *ia*
Guatterine *N*-oxide **227** *ia*
Guattescidine **308** *ia*
Guattescine **310** *ia*
Hernagine **286** *ia*
Hernandine **111** *ia*
Hernandonine **128** *ia*
Hernangerine **89** *ia*
Hernovine **76** *ia*
Homomoschatoline **118** *ia*
4-Hydroxybulbocapnine **367** *sd*
4-Hydroxycrebanine **362** *ia, sd*
6-Hydroxydihydroonychine **501** *na*
3-Hydroxyglaucine **417** *na*
5-Hydroxy-6-methoxyonychine **504** *na*
3-Hydroxynantenine **419** *na*
3-Hydroxynornantenine **418** *na*
3-Hydroxynornuciferine **254** *ia, sd*
3-Hydroxynuciferine **13** (**187**) *ia*
6-Hydroxyonychine **500** *na*
8-Hydroxyonychine **503** *na*
9-Hydroxy-1,2,3,10-tetramethoxy-aporphine **295** *ia, sd*
4-Hydroxywilsonirine **454** *na*
Imeluteine **391** *ia, sd*
Isoboldine **40** *ia*
Isocorydine **85** *ia*
Isocorytuberine **70** *ia*
Isodomesticine **53** *ia*
Isoguattouregidine **425** *na*
Isomoschatoline **332** *ia*
Isopiline **184** *ia*
Isothebaidine **262** *ia, sd*
Isothebaine **31** *ia, sd*
Isouvariopsine **492** *na*
Kinabaline **513** *na*
Kuafumine **431** *na*
Laetine **285** *ia*
Lanuginosine **120** *ia*
Lastourvilline **407** *na*
Launobine **91** *ia*
Laureline **29** *ia*
Laurelliptine **39** *ia*
Laurolitsine **49** *ia*
Laurotetanine **54** *ia*
Lauterine **121** *ia*
Leucoxylonine **212** *ia*
Lindcarpine **78** *ia*
Lirinidine **2** *ia*
Lirinine **13** *ia*
Liriodenine **116** *ia, sd*
Lirioferine **201** *ia*
Liriotulipiferine **199** *ia*
Litseferine **203** *ia, sd*
Lysicamine **115** *ia*
Machigline **428** *na*
Macondine **508** *na*
Magnoflorine **72** *ia, sd*
Mecambroline **27** *ia*
Menisperine **86** *ia, sd*
Menisporphine **384** *ia, sd*
Methoxyatherosperminine **164** *ia*
3-Methoxycepharadione B **436** *na*
3-Methoxyglaucine **100** *ia*
10-Methoxyliriodenine **121** *ia*
3-Methoxynuciferine **189** *ia*
6-Methoxyonychine **502** *na*
7-Methoxypancoridine **523** *na*
N-Methylactinodaphnine cation **65** *ia*
1-Methylaminoethyl-3,4,6,7-tetramethoxy-phenanthrene **241** *ia*
1-β-Methylaminoethyl-2,3,4-trimethoxy-6a,7-methylenedioxyphenanthrene **489** *na*
N-Methylasimilobine **4** *ia*
O-Methylatheroline **124** *ia*
N-Methylatherosperminium cation **493** *na*
1-Methyl-4-azafluoren-9-one **498** *na*
N-Methylbaicaline **297** *ia, sd*
O-Methylbelemine **481** *na*
N-Methylbulbocapnine **291** *sd*
N-Methylcalycinine **279** *ia*
N-Methylcassythine **107** *ia*
N-Methylcorydine **75** *ia, sd*
O-Methylcorydine *N*-oxide **413** *na*

O-Methyldarienine **512** *na*
7-Methyldehydroglaucine **482** *na*
O-Methyldehydroisopiline **460** *na*
7-Methyldehydronuciferine **475** *na*
N-Methyldomesticine **410** *na*
N-Methyldomesticinium cation **410** *na*
O-Methylduguespixine **477** *na*
N-Methylfissoldine **279** *ia*
N-Methylelmerrillicine **405** *na*
1,11-Methyleneoxyaporphine **423** *na*
N-Methylhernagine **287** *ia, sd*
N-Methylhernangerine **90** *ia*
N-Methylhernovine **77** *ia*
O-Methylisoboldine **44** *ia*
N-Methylisocorydine **86** *ia, sd*
N-Methylisopiline **185** *ia, sd*
O-Methylisopiline **188** *ia*
1-*O*-Methylisothebaidine **404** *na*
N-Methylisothebaine **403** *na*
O-Methylisothebaine **32** *ia, sd*
N-Methylisothebainium cation **403** *na*
N-Methyllaunobine **92** *ia*
N-Methyllaurotetanine **55** *ia*
N-Methyllaurotetanine β-*N*-oxide **409** *na*
N-Methyllindcarpine **79** *ia*
O-Methyllirinine **189** *ia*
O-Methylmacondine **509** *na*
O-Methylmoschatoline **118** *ia*
N-Methylnandigerine **90** *ia*
O-Methylnorlirinine **188** *ia*
1-*O*-Methyloureguattidine **267** *ia, sd*
O-Methylpachyconfine **440** *na*
O-Methylpraecoxine **88** *ia, sd*
O-Methylpraecoxine methiodide **289** *ia, sd*
O-Methylpukateine **36** *ia*
N-Methylputerine **36** *ia*
N-Methylthalbaicaline **417** *na*
O-Methylxyloguyelline **420** *na*
N-Methylzenkerine **193** *ia, sd*
O-Methylzenkerine **402** *na*
Nandazurine **137** *ia*
Nandigerine **89** *ia*
Nantenine **62** *ia*
Neolitsine **69** *ia*
Norannuradhapurine **271** *ia, sd*
Noratherosperminine **239** *ia, sd*
Norboldine **49** *ia*
Norbracteoline **408** *na*
Norbulbocapnine **91** *ia*
Norcataline **363** *ia, sd*
Norcepharadione A **434** *na*
Norcepharadione B **242** *ia*
Norcorydine **73** *ia*
Nordelporphine **415** *na*
Nordicentrine **204** *ia*
Nordomesticine **47** *ia*
Nordragabine **534** *na*
Norglaucine **58** *ia*
Norisoboldine **39** *ia*
Norisocorydine **84** *ia*
Norisodomesticine **200** *ia*
Norlaureline **195** *ia, sd*
Norlirioferine **275** *ia, sd*
Nornantenine **61** *ia*
Nornuciferidine **439** *na*
Nornuciferine **5** *ia*
Noroliveridine **229** *ia*
Noroliveroline **356** *ia, sd*
Nororientidine **464** *na*
Norpachyconfine **437** *na*
Norphoebine **420** *na*
Norpreocoteine **414** *na*
Norpredicentrine **51** *ia*
Norpurpureine **99** *ia, sd*
Norstephalagine **191** *ia*
Norstephanine **398** *na*
Norushinsunine **138** *ia*
Nuciferidine **440** *na*
Nuciferine **6** *ia*
Nuciferoline **26** *ia, sd*
Obovanine **33** *ia*
Oconovine **102** *ia*
Ocoteine **109** *ia*
Oliveridine **142** *ia, sd*
Oliveridine *N*-oxide **230** *ia*
Oliveroline **222** *ia*
Oliveroline *N*-oxide **223** *ia*
Onychine **498** *na*
Orientidine **465** *na*
Orientine **401** *na*
Orientinine **399** *na*
Ouregidione **435** *na*
Oureguattine **267** *ia, sd*
Ovigerine **94** *ia*
Oxoanolobine **337** *ia*
7-Oxobaicaline **432** *na*
Oxocrebanine **340** *ia, sd*
Oxoglaucine **124** *ia*
Oxolaureline **121** *ia*
Oxo-*O*-methylbulbocapnine **429** *na*
Oxonantenine **125** *ia*
Oxonuciferine **115** *ia*
Oxophoebine **430** *na*
Oxopukateine **217** *ia*
Oxoputerine **218** *ia, sd*
Oxostephanine **216** *ia, sd*
Oxostephanosine **427** *na*
Oxoxylopine **120** *ia*
Oxylopidine **515** *na*
Oxylopine **504** *na*
Oxylopinine **500** *na*
Pachyconfine **220** *ia*
Pachyconfine *N*-oxide **438** *na*
Pancoridine **522** *na*
Pancorinine **524** *na*
Pentouregine **422** *na*
Phoebine **421** *na*
Praecoxine **287** *ia, sd*
Predicentrine **52** *ia*
Preocoteine **96** *ia, sd*
Prestephanine **255** *ia, sd*
Pukateine **34** *ia*

Pulchine **193** *ia, sd*
Purpureine **100** *ia*
Puterine **196** *ia*
Roemerine **8** *ia*
Roemerine methine **483** *na*
Roemerolidine **444** *na*
Rufescine **390** *ia, sd*
Rurrebanidine **442** *na*
Rurrebanine **443** *na*
Sampangine **533** *na*
Santiagonamine **541** *na*
Secoboldine **490** *na*
Secoglaucine **241** *ia, sd*
Secophoebine **489** *na*
Secoroemerine **488** *na*
Sparsiflorine **20** *ia*
Spiguetidine **536** *na*
Spiguetine **537** *na*
Spixianine **451** *na*
Spixianine *N*-oxide **452** *na*
Srilankine **236** *ia*
Stephadiolamine β-*N*-oxide **456** *na*
Stephanine **12** *ia, sd*
Stephenanthrine **483** *na*
Steporphine **146** *ia*
Stesakine **272** *ia*
Stipitatine **484** *na*
Subsessiline **122** *ia*
Sukhodianine **358** *ia*
Sukhodianine β-*N*-oxide **449** *na*
Tetradehydroglaucine **469** *na*
Tetradehydronuciferine **458** *na*
Tetradehydroroemerine **152** *ia, sd*
1,2,9,10-Tetramethoxy duguenaine analogue **520** *na*
Thailandine **334** *ia*
Thalbaicalidine **417** *na*
Thalbaicaline **416** *na*
Thalicmidine **44** *ia*
Thalicmine **109** *ia*
Thalicminine **130** *ia*
Thalicsimidine **100** *ia*
Thalicthuberine **169** *ia, sd*
Thaliglucine **171** *ia*
Thaliglucinone **172** *ia*
Thalihazine **486** *na*
Thaliporphine **44** *ia*
Thaliporphine methine **485** *na*
Thalisopynine **295** *ia, sd*
Thalphenine **114** *ia*
Thalphenine methine **171** *ia*
Trichoguattine **478** *na*
Triclisine **386** *ia*
1,2,10-Trimethoxyaporphine **261** *ia, sd*
1,2,11-Trimethoxyaporphine **32** *ia, sd*
1,2,11-Trimethoxy-6a,7-dehydro-noraporphine **464** *na*
5,6,10-Trimethoxy-7*H*-dibenzo[*de,h*]quinolin-7-one **526** *na*
1,2,3-Trimethoxy-4,5-dioxo-6a,7-dehydroaporphine **436** *na*
1,2,3-Trimethoxy-9,10-methylenedioxy-6a,7-dehydroaporphine **472** *na*
1,2,3-Trimethoxy-9,10-methylenedioxy-noraporphine **420** *na*
1,2,3-Trimethoxy-9,10-methylenedioxy-oxoaporphine **430** *na*
1,2,11-Trimethoxyoxoaporphine **426** *na*
5,6,10-Trimethoxyoxoisoaporphine **526** *na*
N,O,O-Trimethylsparsiflorine **261** *ia, sd*
Tuberosinone **349** *ia*
Tuberosinone-*N*-β-D-glucoside **350** *ia*
Tuduranine **25** *ia*
Ursuline **505** *na*
Ushinsunine **139** *ia*
Ushinsunine β-*N*-oxide **441** *na*
Wilsonirine **43** *ia*
Xanthoplanine **56** *ia, sd*
Xylopine **18** *ia*
Zenkerine **192** *ia, sd*

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