^{1}H NMR DATA OF MONOTERPENOID INDOLE ALKALOIDS

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Abstract - ^{1}H NMR data of 163 monoterpenoid indole alkaloids are presented in diagram form.

INTRODUCTION

Progress in nuclear magnetic resonance has been enormous during the past 15 years.[1] Modern instruments equipped with superconducting magnets and improved data processing systems allow structures of complex natural products to be completely solved. Along with ^{13}C NMR, high resolution ^{1}H NMR with its ability to distinguish all the individual protons of the unknown molecule has become a highly valued tool.

A few summaries of the ^{1}H NMR data of indole alkaloids have already been published. The reviews compiled by Crabb[2] cover the whole alkaloid field (including ^{13}C NMR), but rely on selected examples only. The earlier catalogues of indole alkaloids by Hesse[3] and Gabetta and Mustich[4] and some textbooks, e.g. the one by Cordell[5], contain fragmentary ^{1}H NMR information. The present review is intended to serve as a reference collection of indole alkaloid ^{1}H NMR data and assist in elucidating the structures of new alkaloids. The ^{1}H NMR characteristics of the main structural classes are presented in an easy-to-use form.

GENERAL REMARKS

The literature is covered from 1979 to mid-1985, with the inclusion of some earlier studies. Only completely or nearly completely assigned spectra are reviewed. Rearranged monoterpenoid indole alkaloids (e.g. Cinchona) are not included, and for the sake of manageability the review is limited to naturally occurring compounds and some of their simple derivatives (e.g. acetates).

The alkaloids are arranged in order of increasing molecular weight (monomers followed by bis-indole alkaloids). Each entry is provided with the alkaloid name (the one used in the original paper), molecular formula, spectrometer frequency, solvent and an abbreviated reference. Complete references, as well as the alphabetical list of alkaloids, are presented at the end of this review.

The structural formulae are drawn as in the original reports except in some cases where it was necessary to modify the original drawing slightly. For clarity, numbering of carbon atoms in the formulae has been omitted except for numbers that appear in the name of the alkaloid.

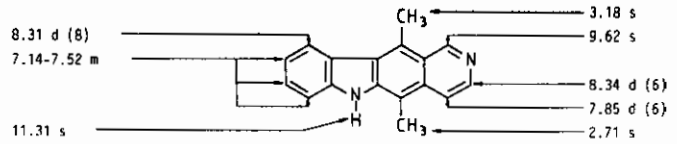
Chemical shifts are given as δ-values in ppm downfield from internal TMS (unless otherwise noted); $CDCl_3$ is preferred as solvent. Coupling constants are given in Hz and appear in parentheses in order of magnitude.

The common α / β -notation of protons is indicated normally. Notations a/b, A/B, R/S, axial/equatorial (ax/eq) and exo/endo (ex/en) are used as in the original paper. Other abbreviations used throughout this work are s (singlet), d (doublet), t (triplet), q (quartet), quint (quintet), sept (septet), m (multiplet), br (broad), na (narrow) and def (deformed). Superscriptions a, b, c etc. denote interchangeable assignments.

Additional data and remarks are gathered in notes. We apologize in advance for any omissions and errors that, despite careful proof-reading, may appear in the text. We hope that this collection will prove useful for chemists investigating alkaloids.

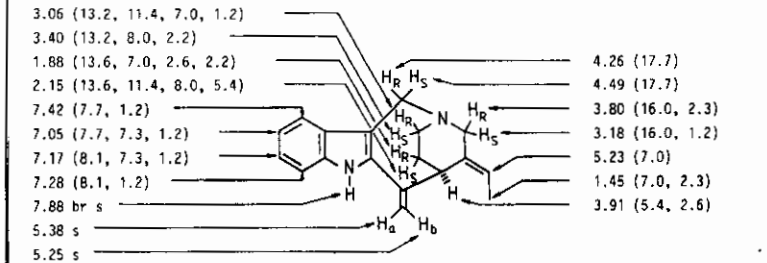
NAME: Ellipticine
FREQUENCY: 270 MHz SOLVENT: $(CD_3)_2SO$
REFERENCE: (6) S. Michel et al., Tetrahedron Lett., 1980, 21, 4027.
NOTES:

MW: 246
MF: $C_{17}H_{14}N_2$
NO: 1



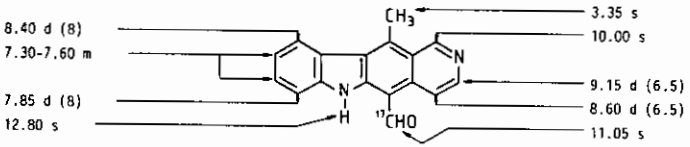
NAME: Apparicine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (7) T.A. van Beek et al., Planta Med., 1985, 277.
NOTES: For earlier data in $(CD_3)_2CO$, see Ref. 78.

MW: 264
MF: $C_{18}H_{20}N_2$
NO: 3



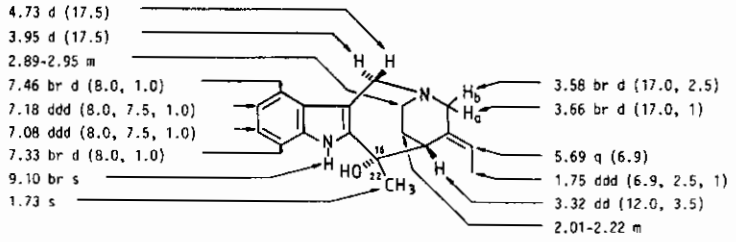
NAME: 17-Oxoellipticine
FREQUENCY: 270 MHz SOLVENT: $(CD_3)_2SO$
REFERENCE: (6) S. Michel et al., Tetrahedron Lett., 1980, 21, 4027.
NOTES:

MW: 260
MF: $C_{17}H_{12}N_2O$
NO: 2

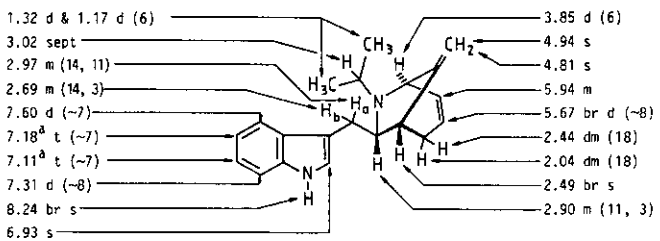


NAME: 16S-Hydroxy-16,22-dihydroapparicine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (8) P. Perera et al., J. Nat. Prod., 1984, 47, 835.
NOTES:

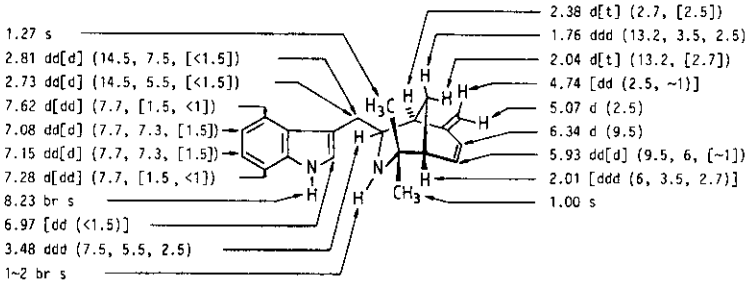
MW: 282
MF: $C_{18}H_{22}N_2O$
NO: 4



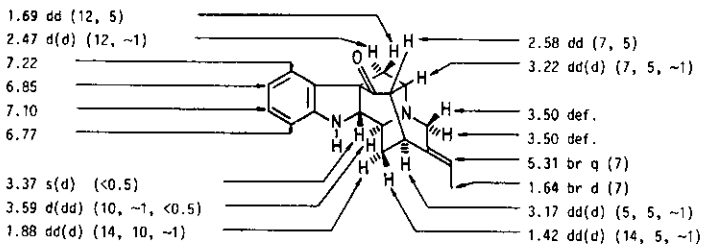
NAME: Peduncularine
MW: 292
FREQUENCY: 360 MHz · SOLVENT: $CDCl_3$
MF: $C_{20}H_{24}N_2$
REFERENCE: (9) H.-P. Ros et al., Helv. Chim. Acta, 1979, 62, 481. NO: 5
NOTES:



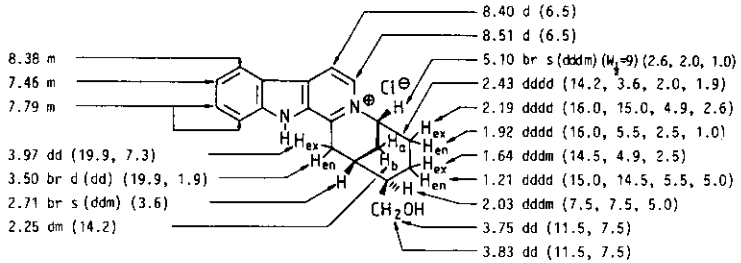
NAME: Sorelline
MW: 292
FREQUENCY: 200 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{24}N_2$
REFERENCE: (11) R. Kyburz et al., Helv. Chim. Acta, 1979, 62, 2539. NO: 7
NOTES:



NAME: Rauflorine
MW: 292
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{19}H_{20}N_2O$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503. NO: 6
NOTES:

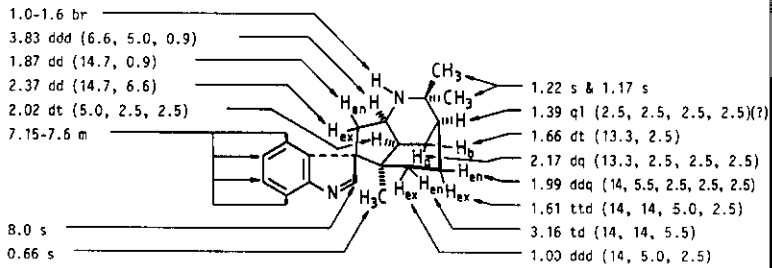


NAME: Melinonine-E
MW: 293
FREQUENCY: 200/400 MHz SOLVENT: CD_3OD
MF: $C_{19}H_{21}N_2O$
REFERENCE: (12) R.P. Borris et al., Helv. Chim. Acta, 1984, 67, 455.
NO: 8
NOTES:



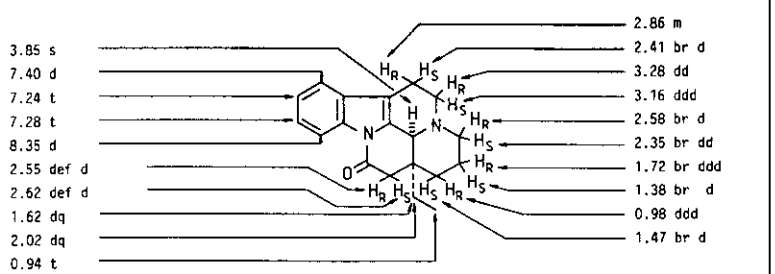
NAME: Aristoserratenine
FREQUENCY: - SOLVENT: -
REFERENCE: (13) M. A. Hai et al., Tetrahedron, 1984, 40, 4359.
NOTES:

MW: 294
MF: $C_{20}H_{26}N_2$
NO: 9



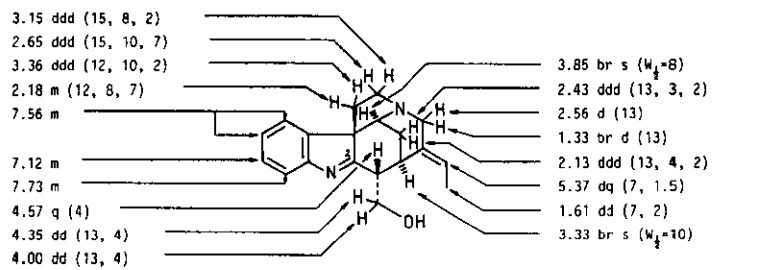
NAME: (-)-Eburnamonine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (15) X.Z. Feng et al., J. Nat. Prod., 1984, 47, 117.
NOTES:

MW: 294
MF: $C_{19}H_{22}N_2O$
NO: 11



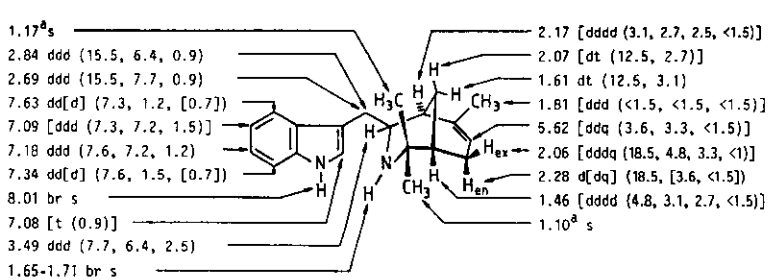
NAME: 1,2-Dehydrodeacetylretuline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (14) G. Massiot et al., Tetrahedron, 1983, 39, 3645.
NOTES:

MW: 294
MF: $C_{19}H_{22}N_2O$
NO: 10



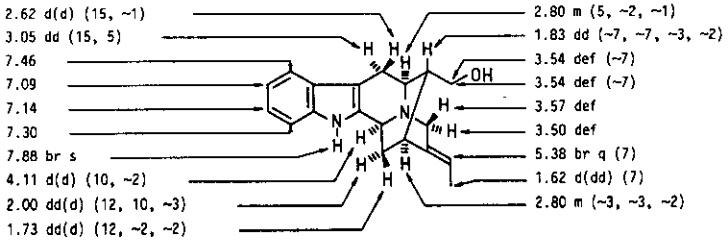
NAME: Hobartine
FREQUENCY: 200 MHz SOLVENT: $CDCl_3$
REFERENCE: (11) R. Kyburz et al., Helv. Chim. Acta, 1979, 62, 2539.
NOTES:

MW: 294
MF: $C_{20}H_{26}N_2$
NO: 12



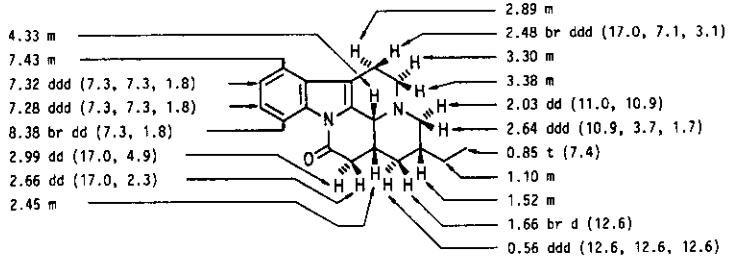
NAME: Normacusine B
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (16) M. Lounasmaa et al., Planta Med., 1985, 519.
NOTES:

MW: 294
MF: $C_{19}H_{22}N_2O$
NO: 13



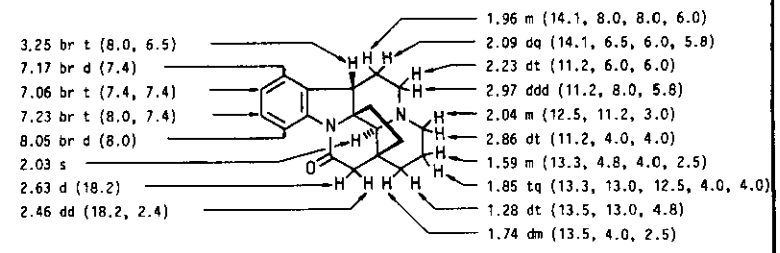
NAME: Tacamonine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (18) T.A. van Beek et al., Tetrahedron, 1984, 40, 737.
NOTES:

MW: 294
MF: $C_{19}H_{22}N_2O$
NO: 15



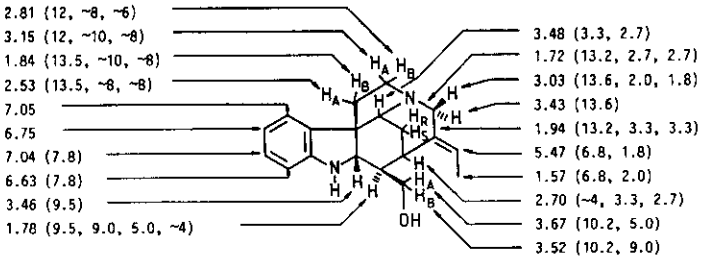
NAME: Strempeliopine
FREQUENCY: 200/360 MHz SOLVENT: $CDCl_3$
REFERENCE: (17) A. Laguna et al., Planta Med., 1984, 50, 285.
NOTES: Signals not assigned: 1.51 (1H, m) and 2.28 (3H, m).

MW: 294
MF: $C_{19}H_{22}N_2O$
NO: 14

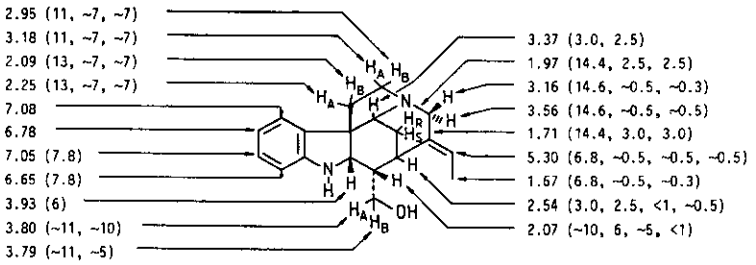


NAME: N-Deacetylisoretuline
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (19) D. Tavernier et al., Bull. Soc. Chim. Belg., 1978, 87, 595.
NOTES:

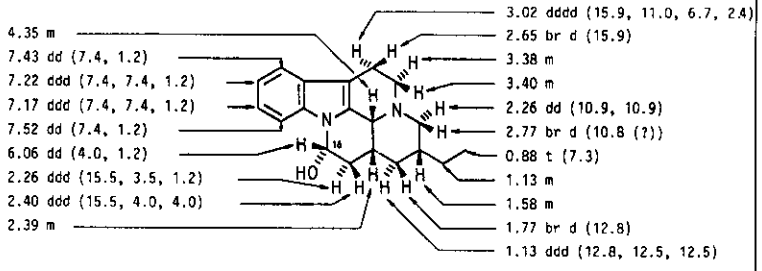
MW: 296
MF: $C_{19}H_{24}N_2O$
NO: 16



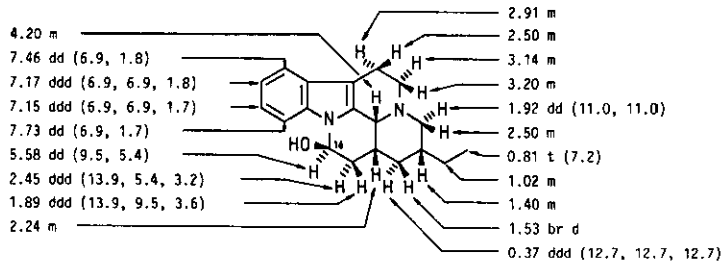
NAME: N-Deacetylretuline
MW: 296
FREQUENCY: 300 MHz SOLVENT:
MF: $C_{19}H_{24}N_2O$
REFERENCE: (19) D. Tavernier et al., Bull Soc. Chim. Belg., 1978, 87, 595.
NO: 17
NOTES:



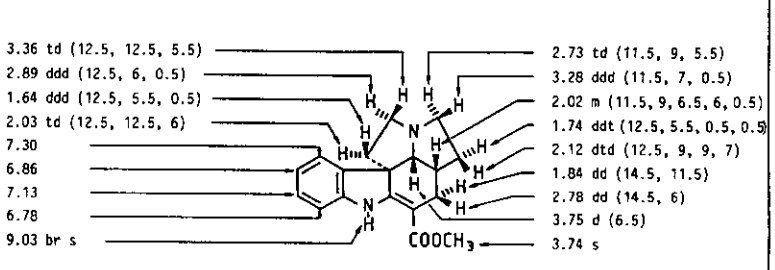
NAME: 16S-Decarbomethoxytacamine
MW: 296
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
MF: $C_{19}H_{24}N_2O$
REFERENCE: (18) T.A. van Beek et al., Tetrahedron, 1984, 40, 737.
NO: 19
NOTES:



NAME: 16R-Decarbomethoxytacamine
MW: 296
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
MF: $C_{19}H_{24}N_2O$
REFERENCE: (18) T.A. van Beek et al., Tetrahedron, 1984, 40, 737.
NO: 18
NOTES:

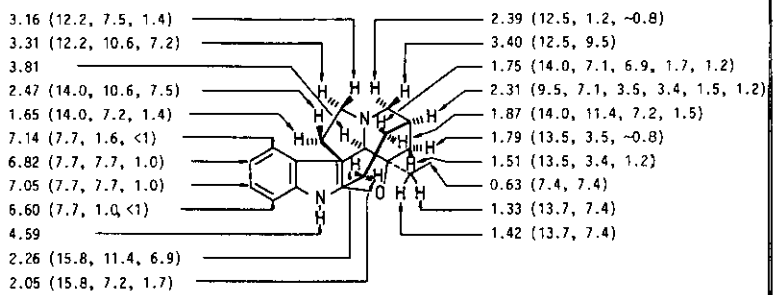


NAME: Deethylibophyllidine
MW: 296
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{18}H_{20}N_2O_2$
REFERENCE: (20) C. Kan et al., Tetrahedron Lett., 1980, 21, 55.
NO: 20
NOTES:



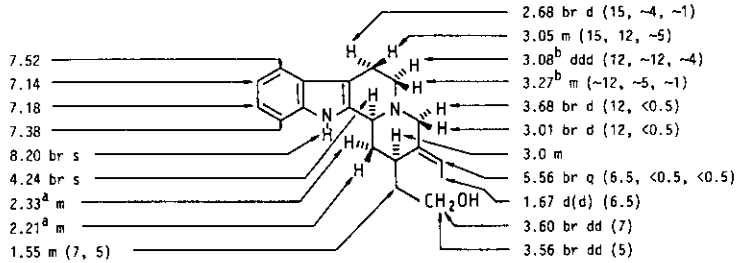
NAME: Dichomine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (21) P. Perera et al., Planta Med., 1983, 49, 232.
NOTES:

MW: 296
MF: $C_{19}H_{24}N_2O$
NO: 21



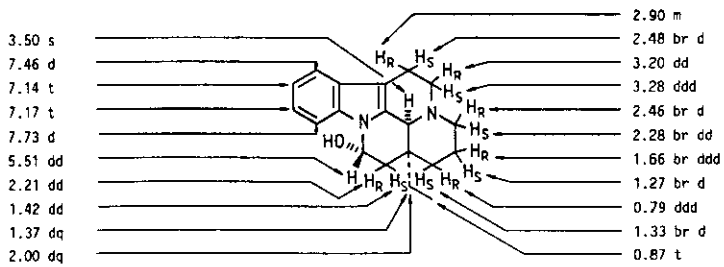
NAME: Geissoschizol
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (22) X.Z. Feng et al., Planta Med., 1982, 44, 212.
NOTES:

MW: 296
MF: $C_{19}H_{24}N_2O$
NO: 23



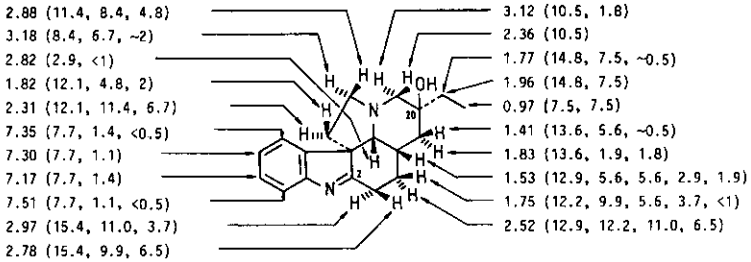
NAME: (+)-Eburnamine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (15) X.Z. Feng et al., J. Nat. Prod., 1984, 47, 117.
NOTES:

MW: 296
MF: $C_{19}H_{24}N_2O$
NO: 22



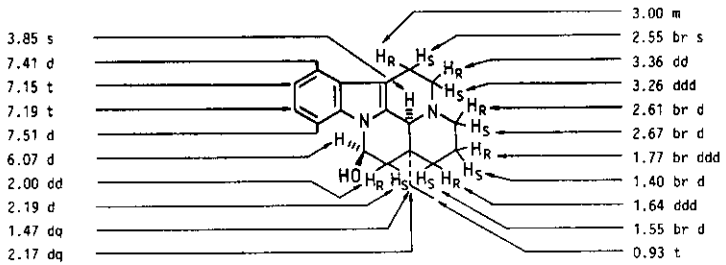
NAME: 20S-Hydroxy-1,2-dehydropseudoaspidospermidine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (18) T.A. van Beek et al., Tetrahedron, 1984, 40, 737.
NOTES:

MW: 296
MF: $C_{19}H_{24}N_2O$
NO: 24



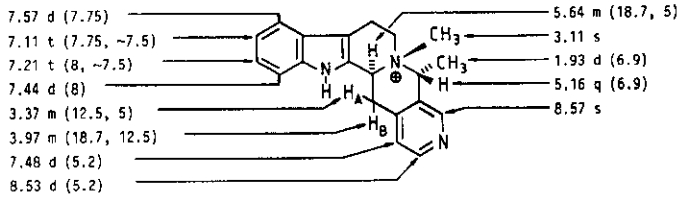
NAME: (-)-Isoeburnamine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (15) X.Z. Feng et al., J. Nat. Prod., 1984, 47, 117.
NOTES:

MW: 296
MF: $C_{19}H_{24}N_2O$
NO: 25



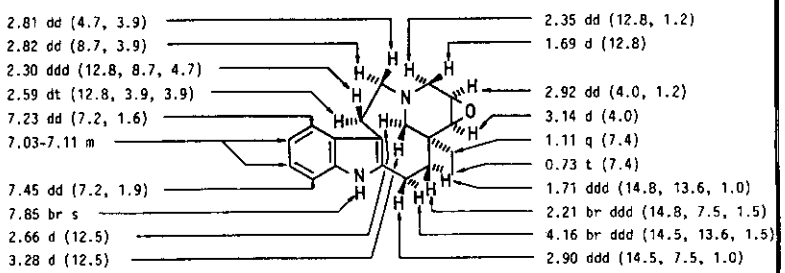
NAME: Isomalindine
FREQUENCY: 360 MHz SOLVENT: CD_3OD
REFERENCE: (24) M. Caprasse et al., Planta Med., 1984, 50, 27.
NOTES: The shifts of five protons not given.

MW: 304
MF: $C_{20}H_{22}N_3$
NO: 27



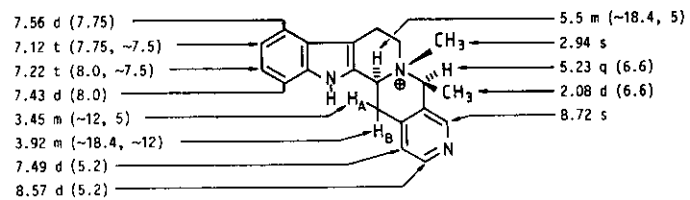
NAME: Voaphylline
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (23) P. Perera et al., Planta Med., 1983, 49, 28.
NOTES:

MW: 296
MF: $C_{19}H_{24}N_2O$
NO: 26

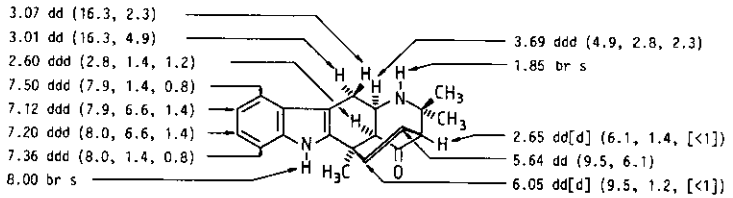


NAME: Malindine
FREQUENCY: 360 MHz SOLVENT: CD_3OD
REFERENCE: (24) M. Caprasse et al., Planta Med., 1984, 50, 27.
NOTES: The shifts of five protons not given.

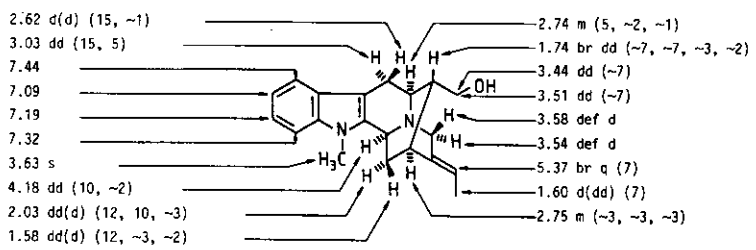
MW: 304
MF: $C_{20}H_{22}N_3$
NO: 28



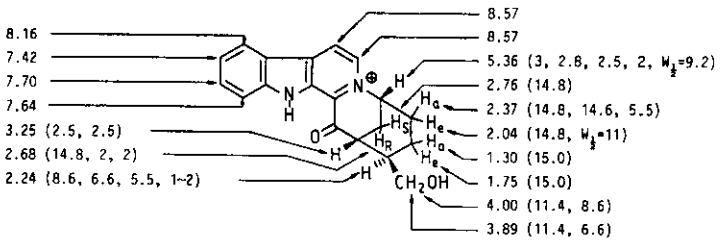
NAME: Peduncularistine
MW: 306
FREQUENCY: 200 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{22}N_2O$
REFERENCE: (25) R. Kyburz et al., Helv. Chim. Acta, 1984, 67, 804.
NO: 29
NOTES: Three CH_3-groups at 1.44 (s), 1.25 (s) and 1.03 (s).



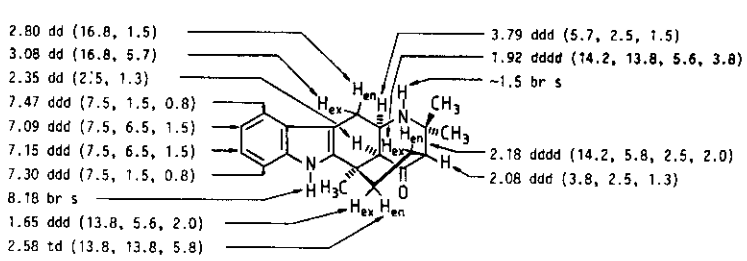
NAME: Affinisine
MW: 308
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{24}N_2O$
REFERENCE: (16) M. Lounasmaa et al., Planta Med., 1985, 519.
NO: 31
NOTES:



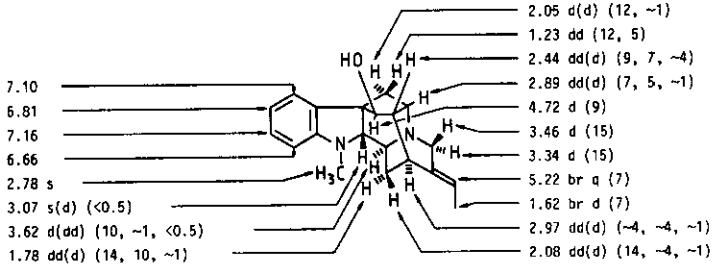
NAME: Strychnoxanthine
MW: 307
FREQUENCY: 360 MHz SOLVENT: D_2O
MF: $C_{19}H_{19}N_2O_2$
REFERENCE: (26) C. Coune et al., Planta Med., 1984, 50, 93.
NO: 30
NOTES:



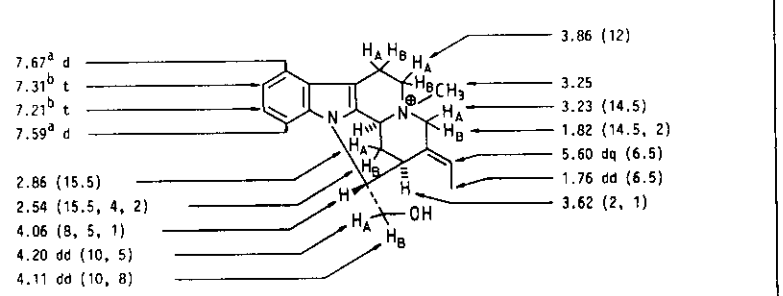
NAME: Aristoserratine
MW: 308
FREQUENCY: 200/270 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{24}N_2O$
REFERENCE: (27) M.A. Hai et al., Helv. Chim. Acta, 1980, 63, 2130.
NO: 32
NOTES: Three CH_3-groups at 1.38 (3H, s) and 1.19 (6H, s).



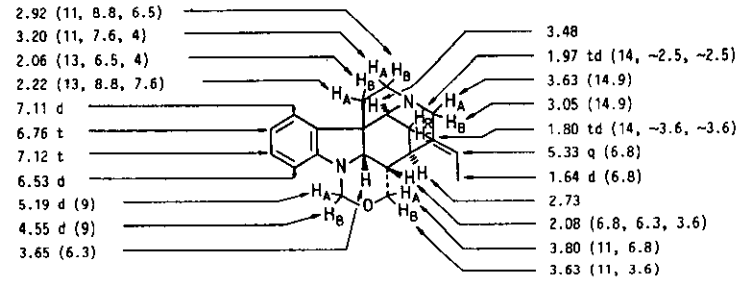
NAME: Mauiensine
MW: 308
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{24}N_2O$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503. NO: 33
NOTES:



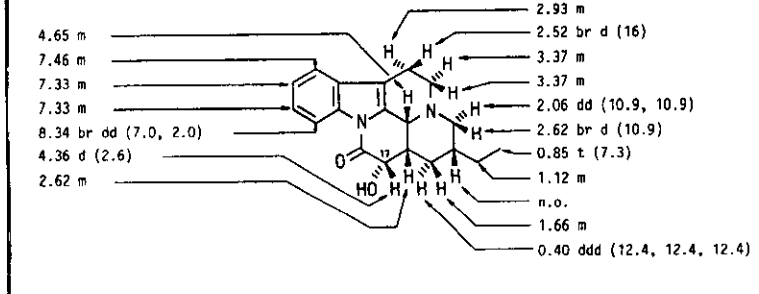
NAME: Mavacurine
MW: 309
FREQUENCY: 360 MHz SOLVENT: CD_3OD
MF: $C_{20}H_{25}N_2O$
REFERENCE: (29) M. Tits et al., Planta Med., 1981, 42, 371. NO: 35
NOTES: The shifts of five protons not given.



NAME: Rosibiline
MW: 308
FREQUENCY: 360 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{24}N_2O$
REFERENCE: (28) M. Tits et al., Phytochemistry, 1980, 19, 1531. NO: 34
NOTES:

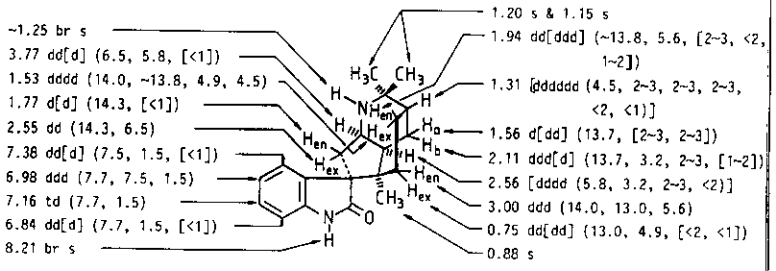


NAME: 17-Hydroxytacamonine
MW: 310
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
MF: $C_{19}H_{22}N_2O_2$
REFERENCE: (78) T.A. van Beek et al., Tetrahedron, 1984, 40, 737. NO: 36
NOTES:



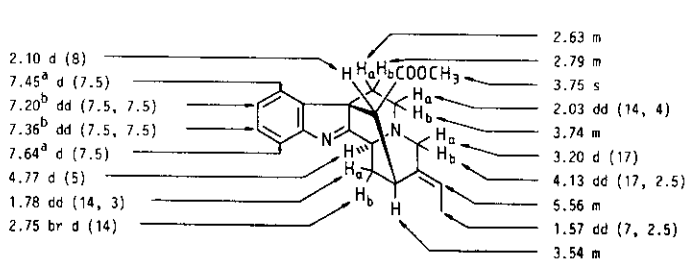
NAME: Tasmanine
FREQUENCY: 360 MHz SOLVENT: $CDCl_3$
REFERENCE: (30) R. Kyburz et al., Helv. Chim. Acta, 1981, 64, 2555.
NOTES:

MW: 310
MF: $C_{20}H_{26}N_2O$
NO: 37



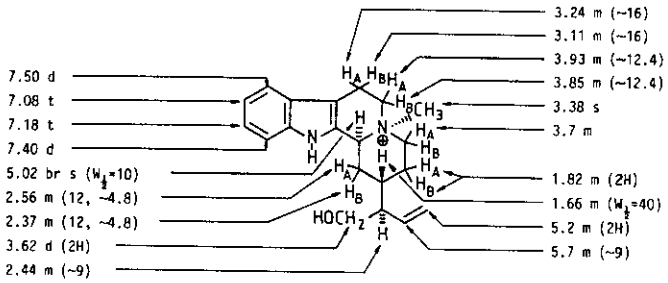
NAME: Deacetyldeformoakuammiline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (31) F. Guéritte et al., J. Nat. Prod., 1983, 46, 144.
NOTES:

MW: 322
MF: $C_{20}H_{22}N_2O_2$
NO: 39



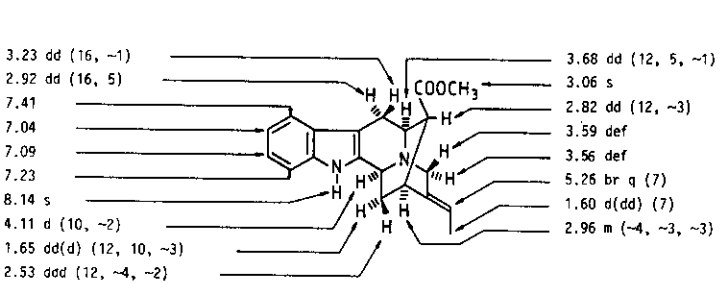
NAME: N_b-Methylantirhine
FREQUENCY: 360 MHz SOLVENT: CD_3OD
REFERENCE: (24) M. Caprasse et al., Planta Med., 1984, 50, 27.
NOTES: The shifts of three protons not given.

MW: 311
MF: $C_{20}H_{27}N_2O$
NO: 38

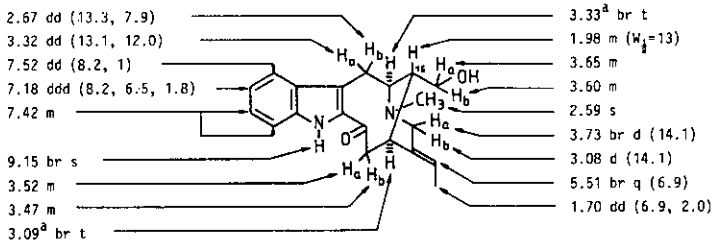


NAME: Pericyclivine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (16) M. Lounasmaa et al., Planta Med., 1985, 519.
NOTES:

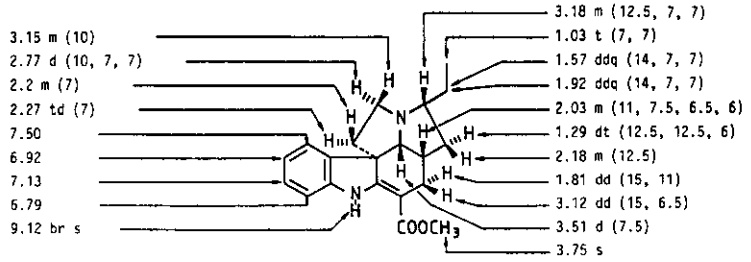
MW: 322
MF: $C_{20}H_{22}N_2O_2$
NO: 40



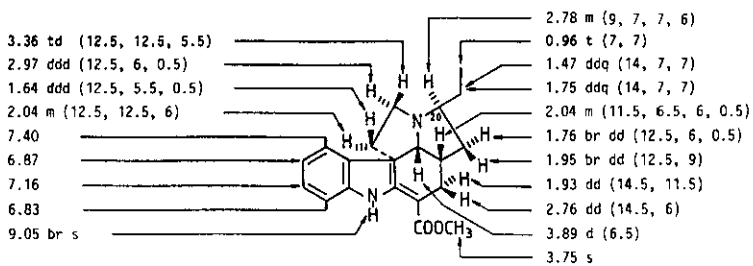
NAME: 16-Epiaffinine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (32) T.A. van Beek et al., Phytochemistry, 1984, 23, 1771.
NOTES:
MW: 324
MF: $C_{20}H_{24}N_2O_2$
NO: 41



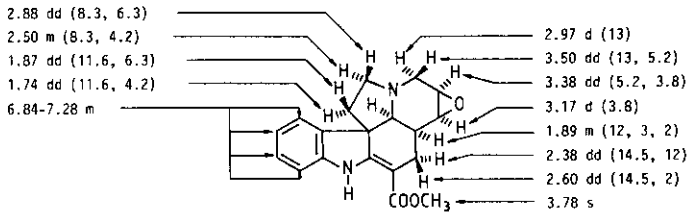
NAME: Ibophyllidine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (20) C. Kan et al., Tetrahedron Lett., 1980, 21, 55.
NOTES:
MW: 324
MF: $C_{20}H_{24}N_2O_2$
NO: 43



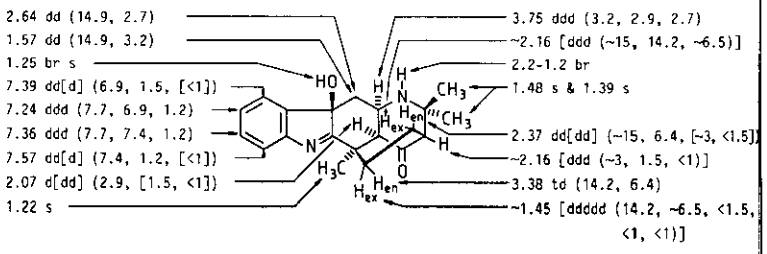
NAME: 20-Epi-ibophyllidine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (20) C. Kan et al., Tetrahedron Lett., 1980, 21, 55.
NOTES:
MW: 324
MF: $C_{20}H_{24}N_2O_2$
NO: 42



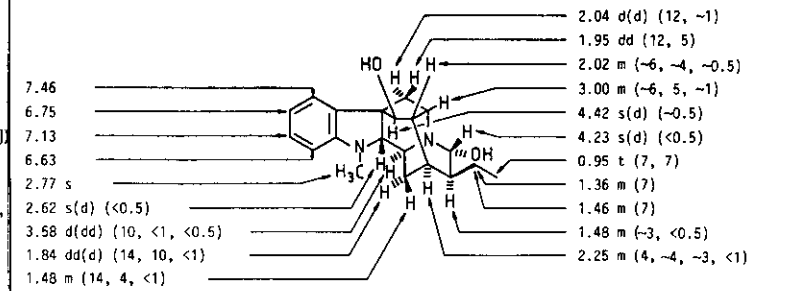
NAME: Rosicine
FREQUENCY: 250 MHz SOLVENT: $CDCl_3$
REFERENCE: (33) Atta-ur-Rahman et al., Tetrahedron Lett., 1984, 25, 6051.
NOTES: The shifts of two protons not given.
MW: 324
MF: $C_{19}H_{20}N_2O_3$
NO: 44



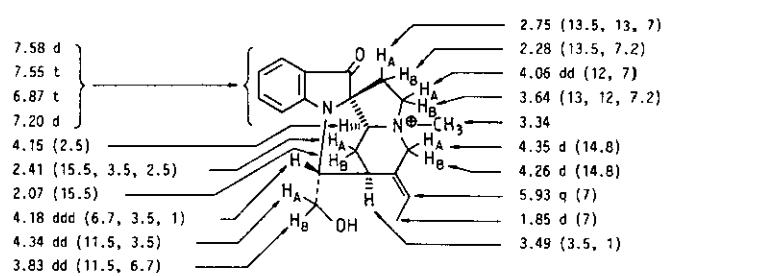
NAME: Triabunnine
MW: 324
FREQUENCY: 200 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{24}N_2O_2$
REFERENCE: (25) R. Kyburz et al., Helv. Chim. Acta, 1984, 67, 804. NO: 45
NOTES:



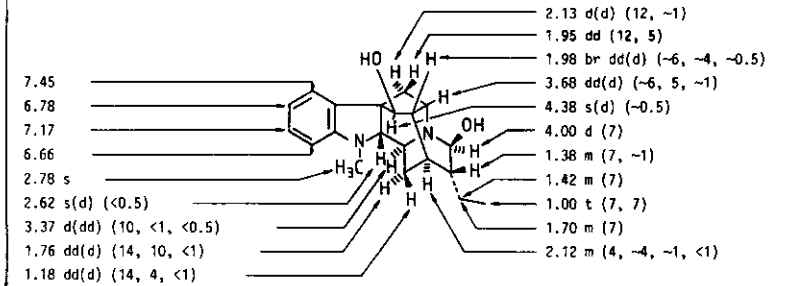
NAME: Ajmaline
MW: 326
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{26}N_2O_2$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503. NO: 47
NOTES:



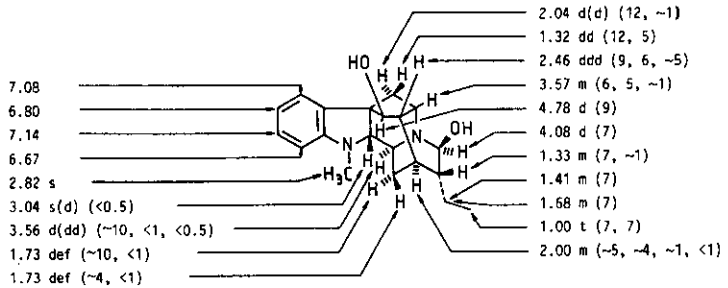
NAME: Fluorocurine
MW: 325
FREQUENCY: 360 MHz SOLVENT: CD_3OD
MF: $C_{20}H_{25}N_2O_2$
REFERENCE: (29) M. Tits et al., Planta Med., 1981, 42, 371. NO: 46
NOTES:



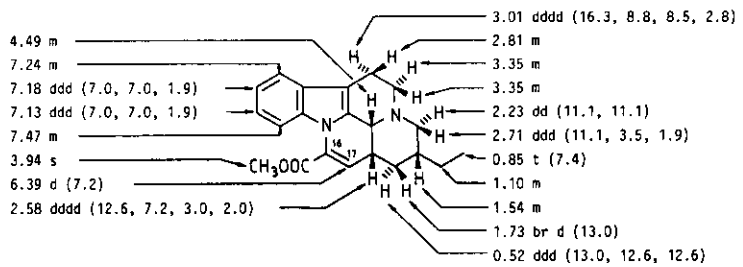
NAME: Isoajmaline
MW: 326
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{26}N_2O_2$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503. NO: 48
NOTES: 17R.



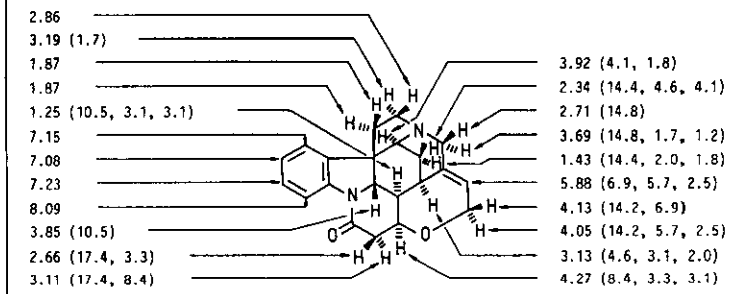
NAME: Isosandwichine
MW: 326
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{26}N_2O_2$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503. NO: 49
NOTES: 17S.



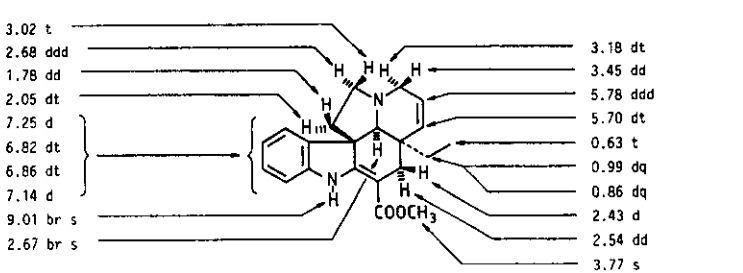
NAME: 16,17-Anhydrotacamine
MW: 336
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_2$
REFERENCE: (18) T.A. van Beek et al., Tetrahedron, 1984, 40, 737. NO: 51
NOTES:



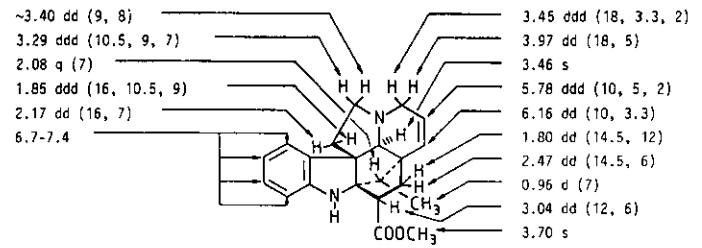
NAME: Strychnine
MW: 334
FREQUENCY: 220 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{22}N_2O_2$
REFERENCE: (34) E. Wenkert et al., J. Org. Chem., 1978, 43, 1099. NO: 50
NOTES: For relaxation and NOE measurements, see Ref. 79.



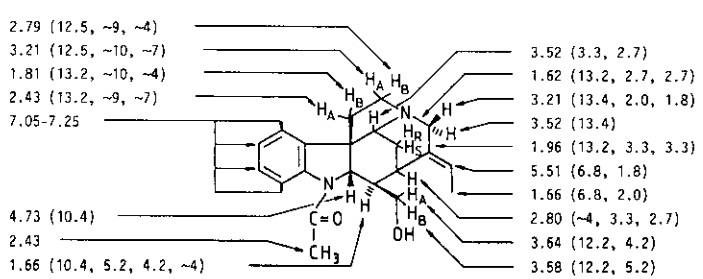
NAME: Tabersonine
MW: 336
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_2$
REFERENCE: (35) R. Wen et al., Heterocycles, 1984, 22, 1061. NO: 52
NOTES:



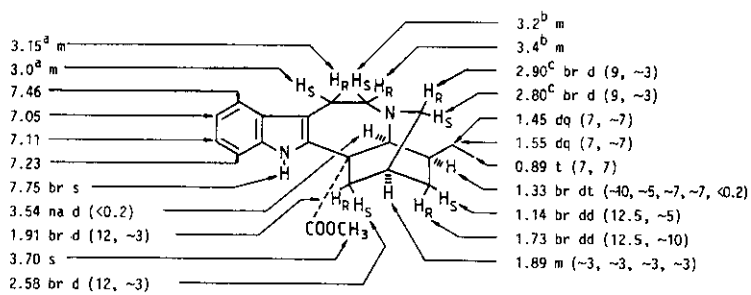
NAME: Vindolinine
MW: 336
FREQUENCY: 300 MHz SOLVENT:
MF: $C_{21}H_{24}N_2O_2$
REFERENCE: (36) L.J. Durham et al., Proc. Natl. Acad. Sci. USA, 1974, 71, 3897.
NO: 53
NOTES:



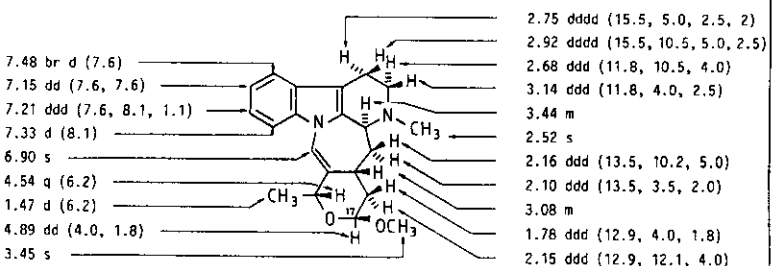
NAME: Isoretuline
MW: 338
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{26}N_2O_2$
REFERENCE: (19) D. Tavernier et al., Bull. Soc. Chim. Belg., 1978, 87, 595.
NO: 55
NOTES:



NAME: Coronaridine
MW: 338
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{26}N_2O_2$
REFERENCE: (37) C. Kan et al., Planta Med., 1981, 41, 72.
NO: 54
NOTES: For reassignment of aromatic protons, see Ref. 49.

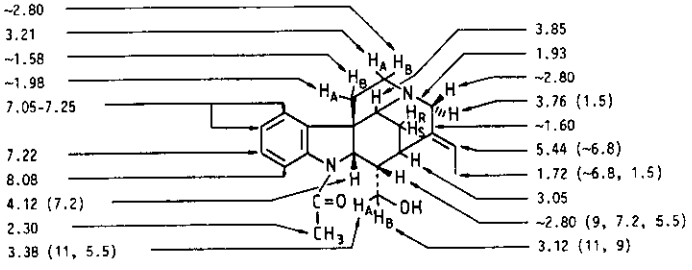


NAME: 17-O-Methylkribine
MW: 338
FREQUENCY: 500 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{26}N_2O_2$
REFERENCE: (38) R. Verpoorte et al., J. Chem. Soc., Perkin Trans 1, 1984, 1455.
NO: 56
NOTES:



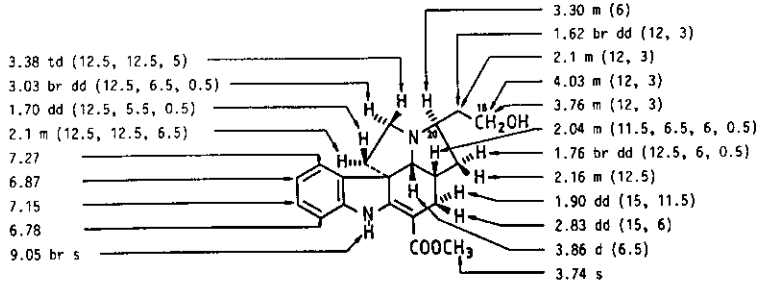
NAME: Retuline
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (19) D. Tavernier et al., Bull. Soc. Chim. Belg., 1978, 87, 595.
NOTES: Rotamer a.

MW: 338
MF: $C_{21}H_{26}N_2O_2$
NO: 57



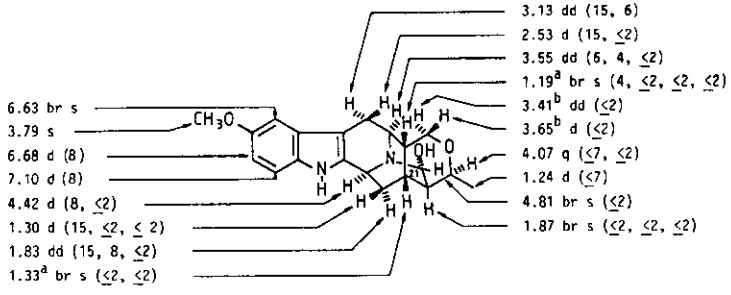
NAME: 18-Hydroxy-20-epi-ibophyllidine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (40) C. Kan et al., Tetrahedron Lett., 1980, 21, 3363.
NOTES:

MW: 340
MF: $C_{20}H_{24}N_2O_3$
NO: 59



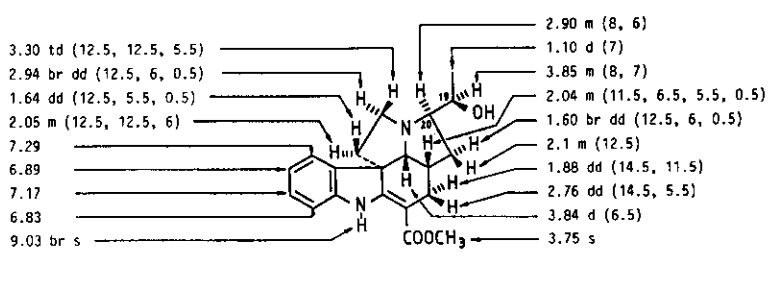
NAME: 21-Hydroxycyclolochnerine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (39) W. Kohl et al., Planta Med., 1984, 50, 242.
NOTES:

MW: 340
MF: $C_{20}H_{24}N_2O_3$
NO: 58

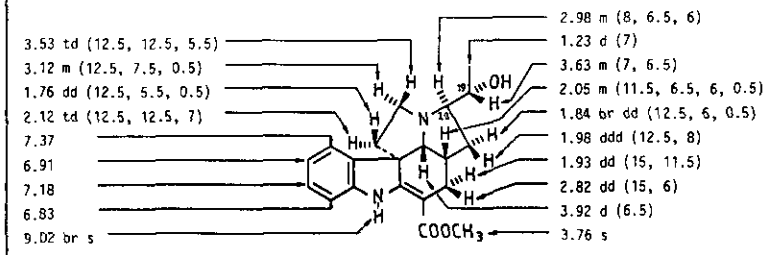


NAME: 19R-Hydroxy-20-epi-ibophyllidine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (40) C. Kan et al., Tetrahedron Lett., 1980, 21, 3363.
NOTES:

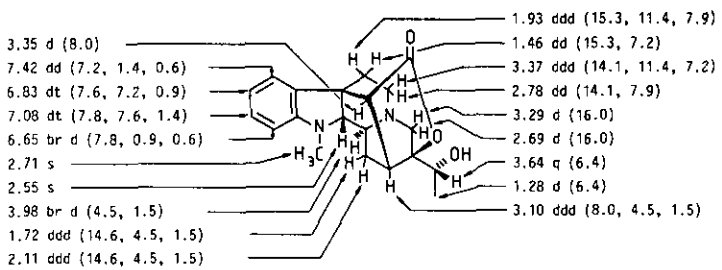
MW: 340
MF: $C_{20}H_{24}N_2O_3$
NO: 60



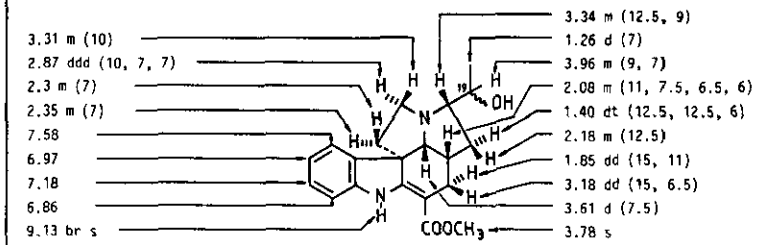
NAME: 19S-Hydroxy-20-epi-ibophyllidine
MW: 340
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{24}N_2O_3$
REFERENCE: (40) C. Kan et al., Tetrahedron Lett., 1980, 21, 3363.
NO: 61
NOTES:



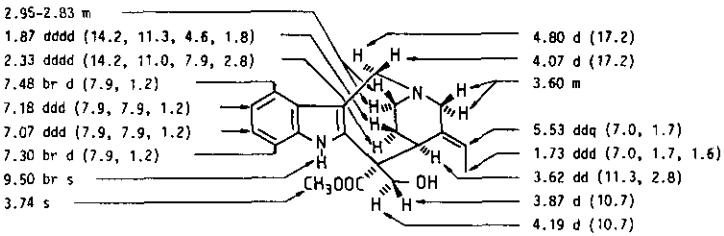
NAME: Raucubaine
MW: 340
FREQUENCY: 200 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{24}N_2O_3$
REFERENCE: (41) P. Sierra et al., Collect. Czech. Chem. Commun. 1982, 47, 2912.
NO: 63
NOTES:



NAME: 19-Hydroxyibophyllidine
MW: 340
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{20}H_{24}N_2O_3$
REFERENCE: (40) C. Kan et al., Tetrahedron Lett., 1980, 21, 3363.
NO: 62
NOTES:

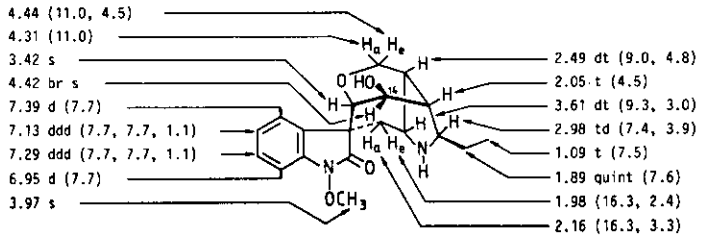


NAME: Vallesamine
MW: 340
FREQUENCY: 300 MHz SOLVENT: $CDCl_3/CD_3OD$
MF: $C_{20}H_{24}N_2O_3$
REFERENCE: (42) P. Perera et al., Planta Med., 1984, 50, 251.
NO: 64
NOTES:



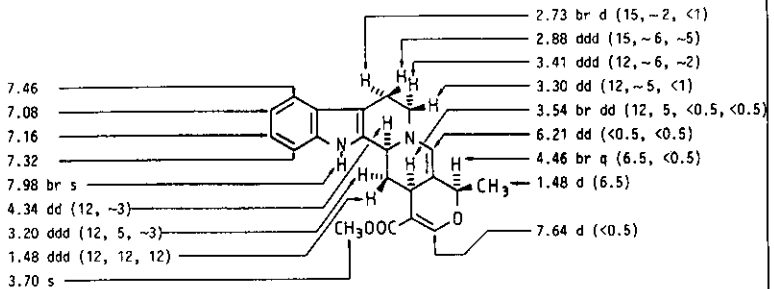
NAME: 14α-Hydroxygelsedine
FREQUENCY: 360 MHz SOLVENT: $CDCl_3$
REFERENCE: (43) Y. Schun and G.A. Cordell, J. Nat. Prod., 1985, 48, 788.
NOTES:

MW: 344
MF: $C_{19}H_{24}N_2O_4$
NO: 65



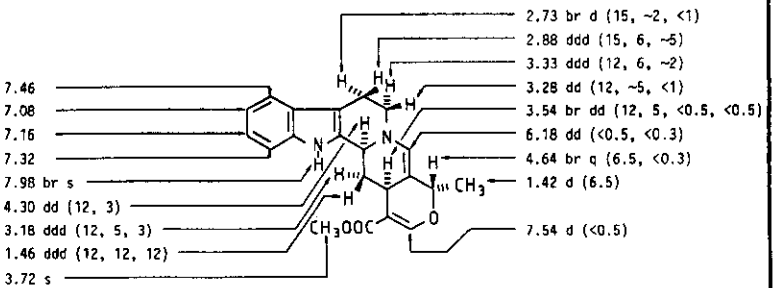
NAME: Epicathenamine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (44) C. Kan et al., Acta Chem. Scand., Ser. B, 1981, 35, 269.
NOTES:

MW: 350
MF: $C_{21}H_{22}N_2O_3$
NO: 67



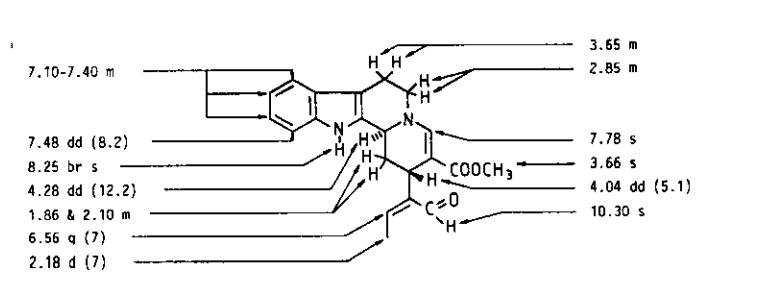
NAME: Cathenamine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (44) C. Kan et al., Acta Chem. Scand., Ser. B, 1981, 35, 269.
NOTES:

MW: 350
MF: $C_{21}H_{22}N_2O_3$
NO: 66

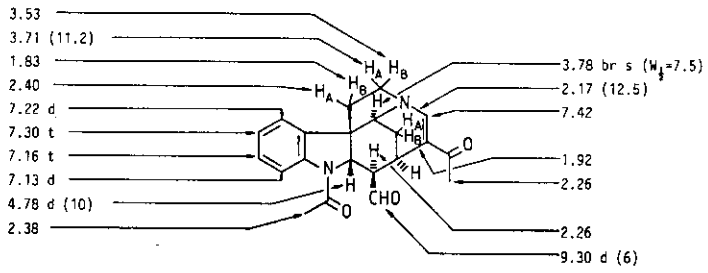


NAME: Isovallesiachotamine
FREQUENCY: 90 MHz SOLVENT: $CDCl_3$
REFERENCE: (45) P.G. Waterman and S. Zhong, Planta Med., 1982, 45, 28.
NOTES:

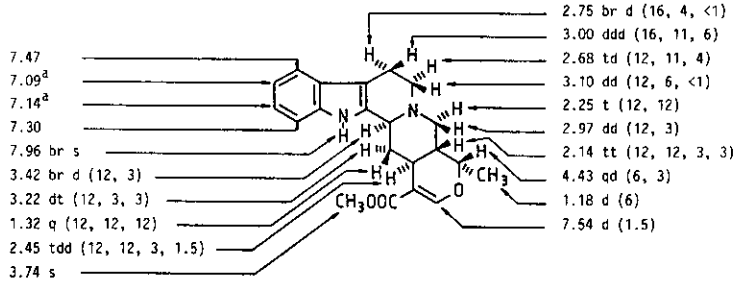
MW: 350
MF: $C_{21}H_{22}N_2O_3$
NO: 68



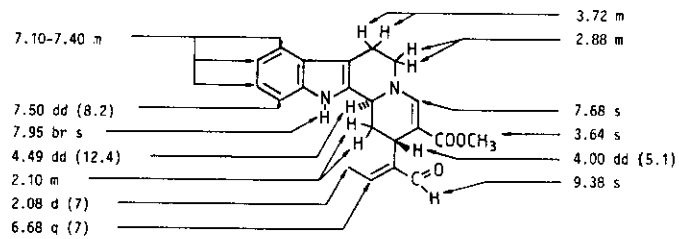
NAME: Strychnozairine
MW: 350
FREQUENCY: 360 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{22}N_2O_3$
REFERENCE: (46) M. Tits et al., Phytochemistry, 1985, 24, 205.
NO: 69
NOTES: Rotamer b. The shift of one proton not given.



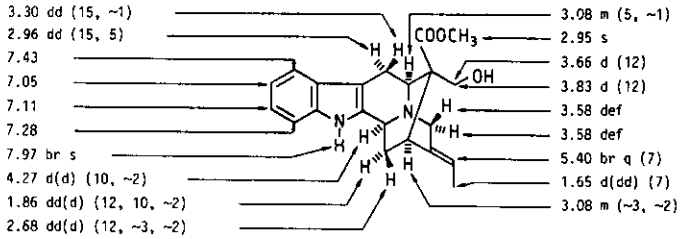
NAME: Ajmalicine
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (47) M. Lounasmaa and S.-K. Kan, Tetrahedron, 1980, 36, 1607.
NO: 71
NOTES:



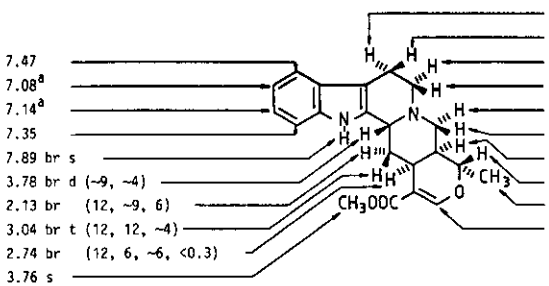
NAME: Vallesiachotamine
MW: 350
FREQUENCY: 90 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{22}N_2O_3$
REFERENCE: (45) P.G. Waterman and S. Zheng, Planta Med., 1982, 45, 28.
NO: 70
NOTES:



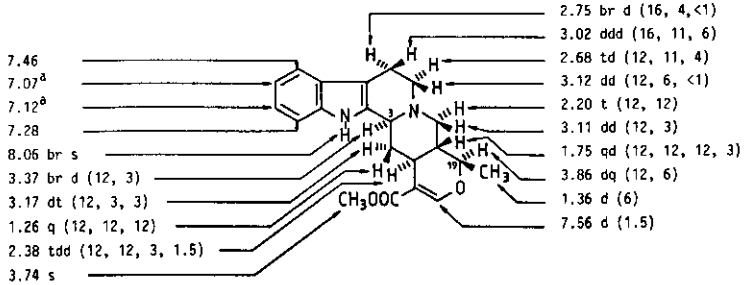
NAME: Akuammidine
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (16) M. Lounasmaa et al., Planta Med., 1985, 519.
NO: 72
NOTES: Recorded at 56°C.



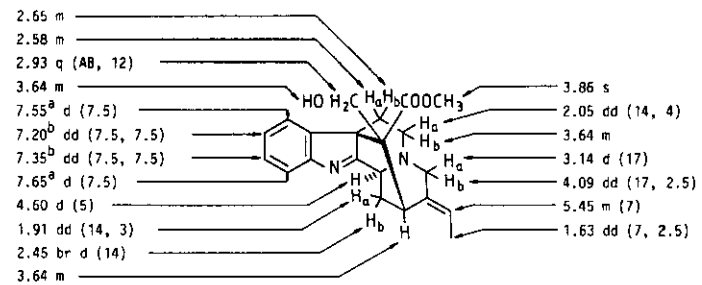
NAME: Akuammigine
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (47) M. Lounasmaa and S.-K. Kan, Tetrahedron, 1980, 36, 1607. NO: 73
NOTES: Recorded at 60°C.



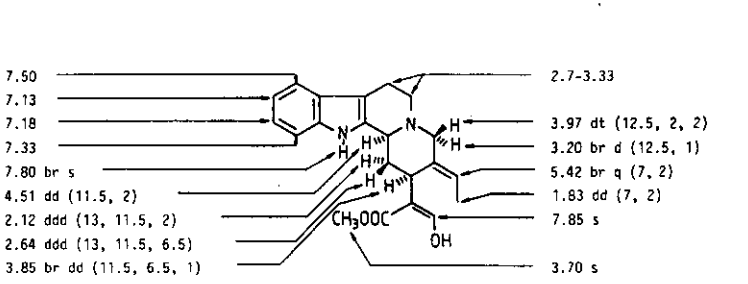
NAME: 19-Epiajmalicine
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (47) M. Lounasmaa and S.-K. Kan, Tetrahedron, 1980, 36, 1607. NO: 75
NOTES:



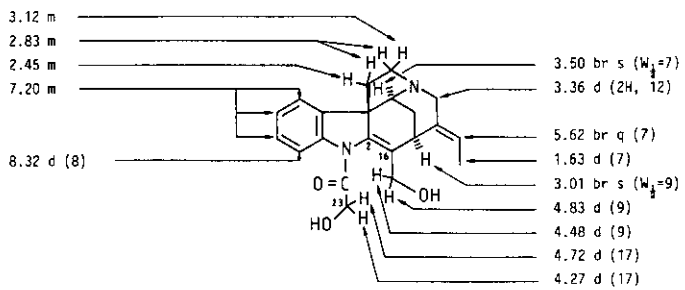
NAME: Deacetylakuammiline
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (31) F. Guéritte et al., J. Nat. Prod., 1983, 46, 144. NO: 74
NOTES: See also Ref. 52.



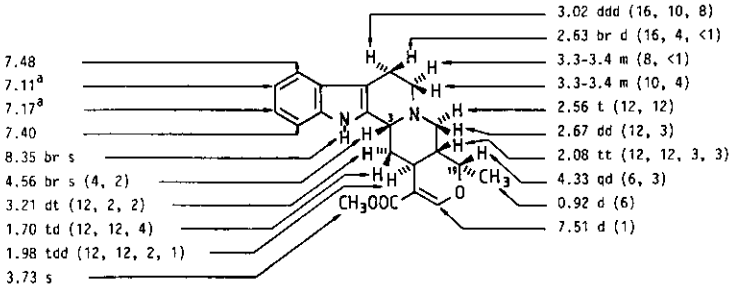
NAME: Geissoschizine
MW: 352
FREQUENCY: 270 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (48) G. Höfle et al., Planta Med., 1980, 40, 120. NO: 76
NOTES:



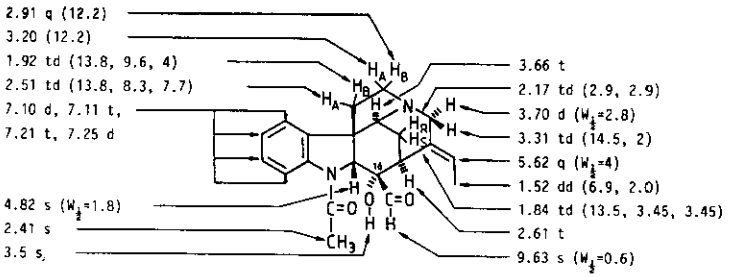
NAME: 23-Hydroxy-2,16-dehydroretuline
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (14) G. Massiot et al., Tetrahedron, 1983, 39, 3645. NO: 77
NOTES: The shifts of four protons not given.



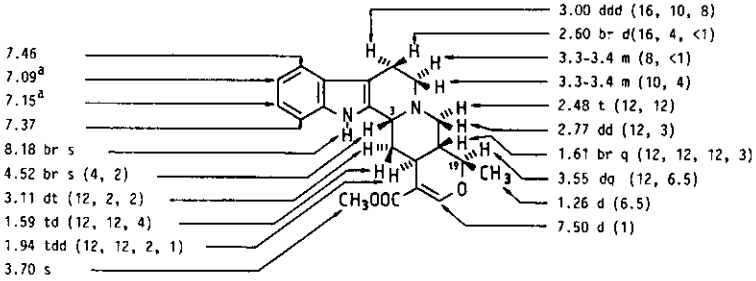
NAME: 3-Isoajmalicine
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (47) M. Lounasmaa and S.-K. Kan, Tetrahedron, 1980, 36, 1607. NO: 79
NOTES:



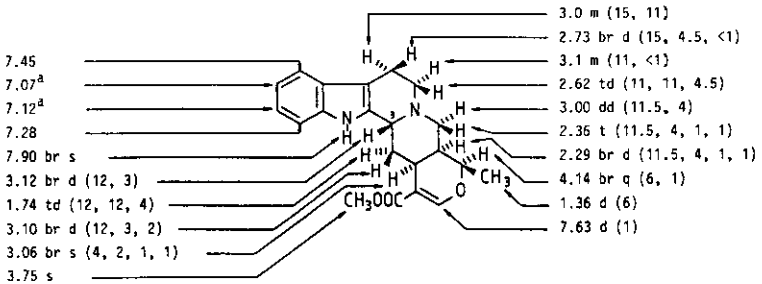
NAME: 16-Hydroxyisoretulinal
MW: 352
FREQUENCY: 360 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (28) M. Tits et al., Phytochemistry, 1980, 19, 1531. NO: 78
NOTES:



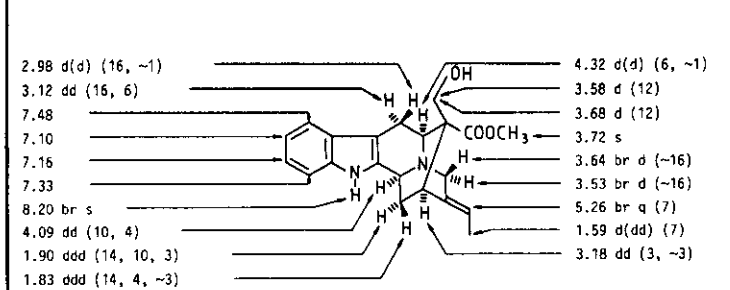
NAME: 3-Iso-19-epi-ajmalicine
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (47) M. Lounasmaa and S.-K. Kan, Tetrahedron, 1980, 36, 1607. NO: 80
NOTES: For reassignment of CH_3-C(19), see Ref. 80.



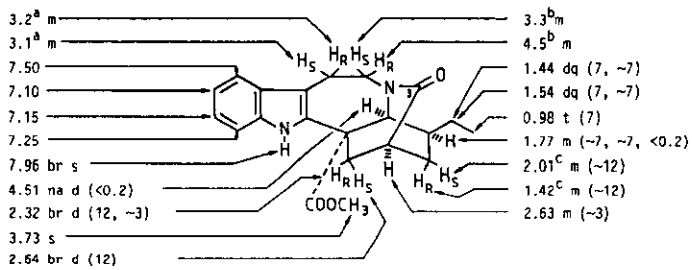
NAME: 3-Isorauniticine
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (47) M. Lounasmaa and S.-K. Kan, Tetrahedron, 1980, 36, 1607. NO: 81
NOTES:



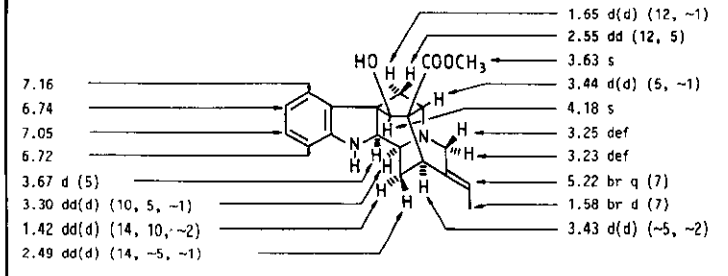
NAME: Polyneuridine
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (16) M. Lounasmaa et al., Planta Med., 1985, 519. NO: 83
NOTES:



NAME: 3-Oxocoronaridine
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (22) X.Z. Feng et al., Planta Med., 1982, 44, 212. NO: 82
NOTES: For reassignments, see Ref. 81.

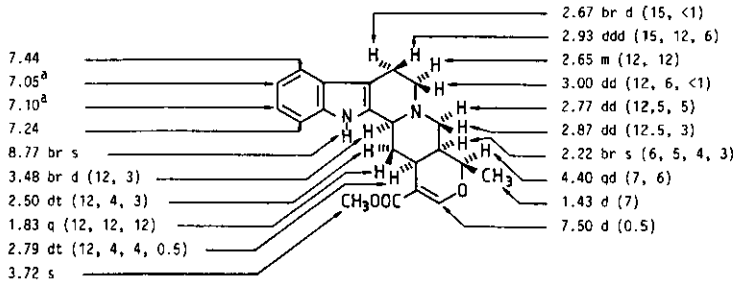


NAME: Quebrachidine
MW: 352
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{21}H_{24}N_2O_3$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503. NO: 84
NOTES:



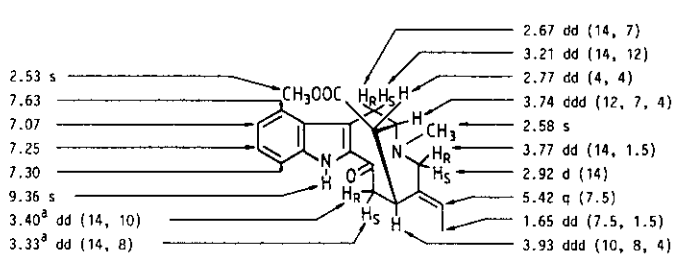
NAME: Rauniticine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (47) M. Lounasmaa and S.-K. Kan, Tetrahedron, 1980, 36, 1607.
NOTES: Recorded at 60°C.

MW: 352
MF: $C_{21}H_{24}N_2O_3$
NO: 85



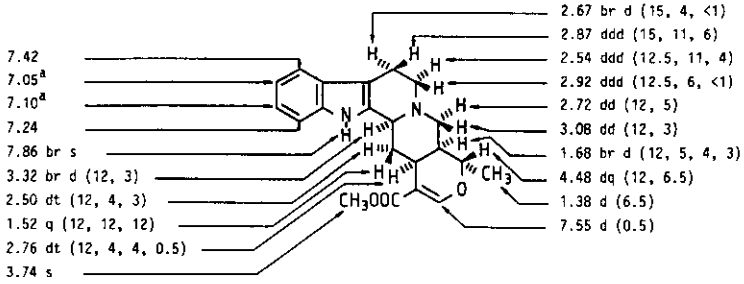
NAME: Vobasine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (49) X.-Z. Feng et al., J. Nat. Prod., 1981, 44, 670.
NOTES:

MW: 352
MF: $C_{21}H_{24}N_2O_3$
NO: 87



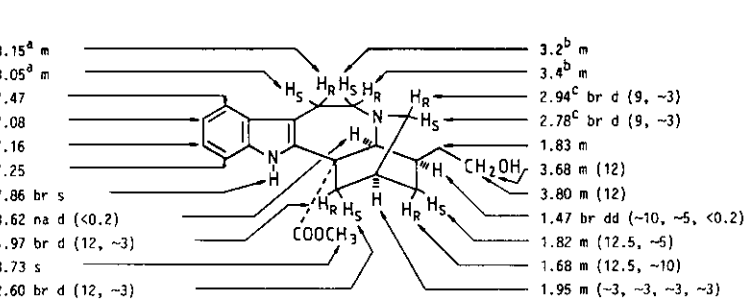
NAME: Tetrahydroalstonine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (47) M. Lounasmaa and S.-K. Kan, Tetrahedron, 1980, 36, 1607.
NOTES:

MW: 352
MF: $C_{21}H_{24}N_2O_3$
NO: 86



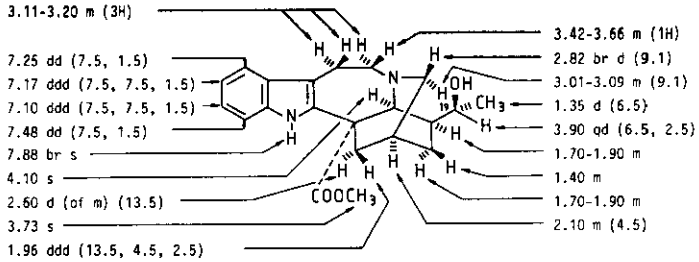
NAME: Albifloranine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (37) C. Kan et al., Planta Medica, 1981, 41, 72.
NOTES: For reassignment of aromatic protons, see Ref. 49.

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 88



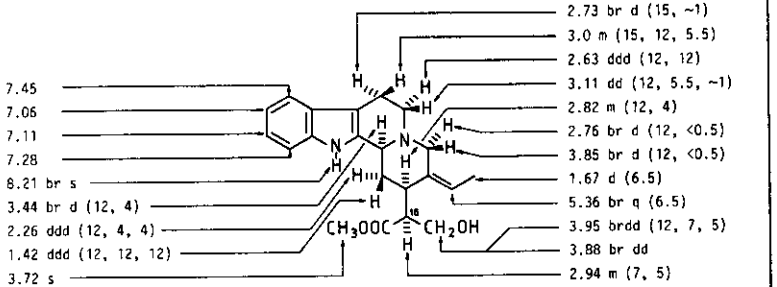
NAME: 19R-Epiheyneanine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (42) P. Perera et al., Planta Med., 1984, 50, 251.
NOTES:

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 89



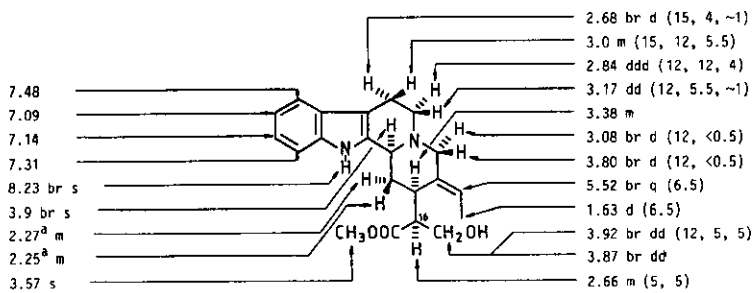
NAME: 16-Epi-Z-isositsirikine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (44) C. Kan et al., Acta Chem. Scand., Ser. B, 1981, 35, 269.
NOTES:

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 91



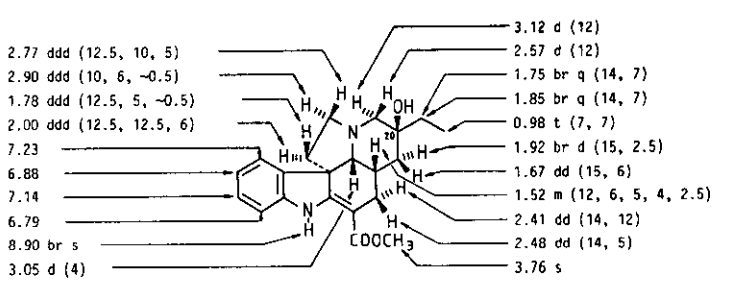
NAME: 16-Epi-E-isositsirikine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (44) C. Kan et al., Acta Chem. Scand., Ser. B., 1981, 35, 269.
NOTES:

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 90



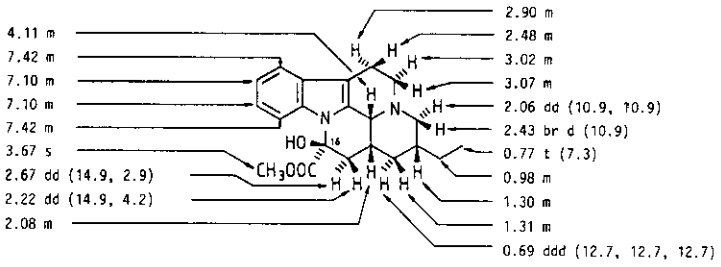
NAME: (+)-20-Epipandoline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (50) C. Kan et al., Planta Med., 1981, 41, 195.
NOTES:

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 92



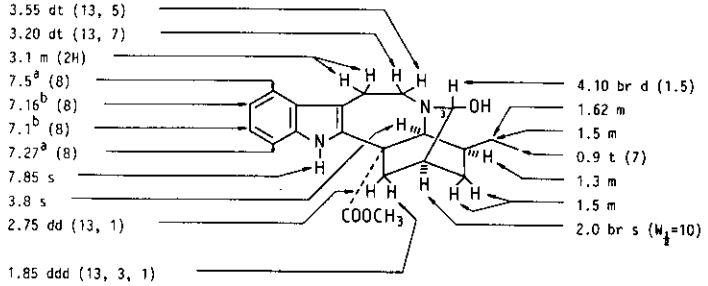
NAME: 16-Epitacamine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (18) T.A. van Beek et al., Tetrahedron, 1984, 40, 737.
NOTES:

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 93



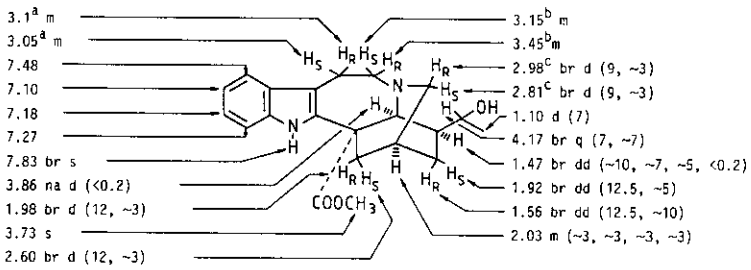
NAME: 3R-Hydroxycoronaridine
FREQUENCY: 400 MHz SOLVENT: -
REFERENCE: (51) L. Le Men-Olivier et al., Bull. Soc. Chim. Fr., 1985, 94.
NOTES: The shift of the $COOCH_3$ group not given.

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 95



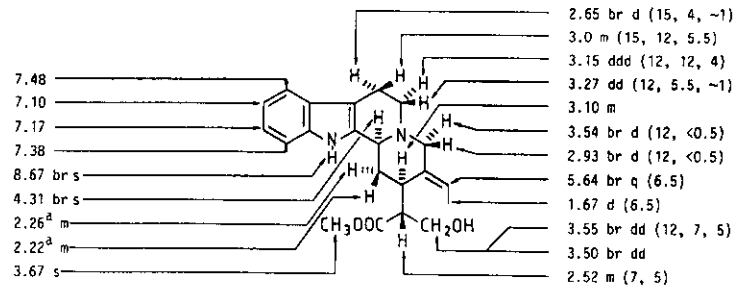
NAME: Heyneanine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (37) C. Kan et al., Planta Med., 1981, 41, 72.
NOTES: For reassignment of aromatic protons, see Ref. 49.

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 94



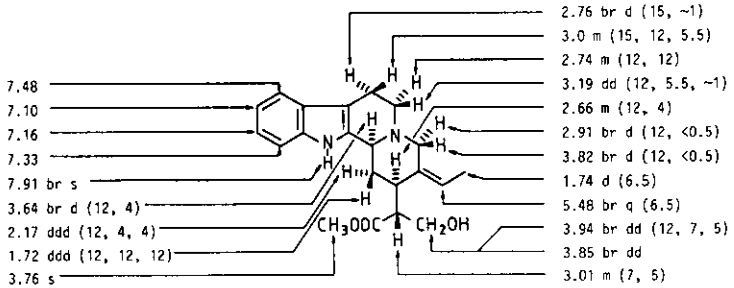
NAME: E-Isositsirikine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (44) C. Kan et al., Acta Chem. Scand., Ser. B, 1981, 35, 269.
NOTES:

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 96



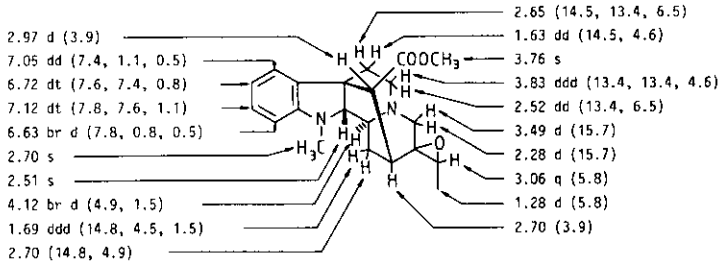
NAME: Z-Isositsirikine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (44) C. Kan et al., Acta Chem. Scand., Ser. B, 1981, 35, 269.
NOTES:

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 97



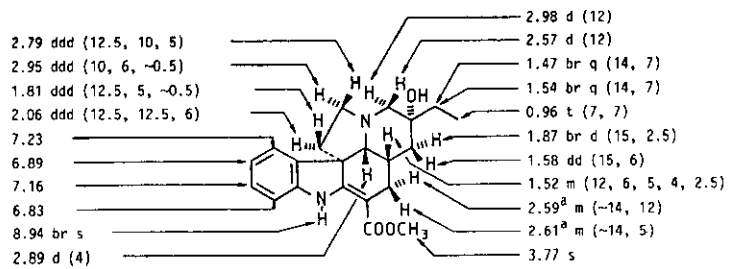
NAME: Raucubainine
FREQUENCY: 200 MHz SOLVENT:
REFERENCE: (41) P. Sierra et al., Collect. Czech. Chem. Commun. 1982, 47, 2912.
NOTES: Also known as quaternoxine, see Ref. 82.

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 99



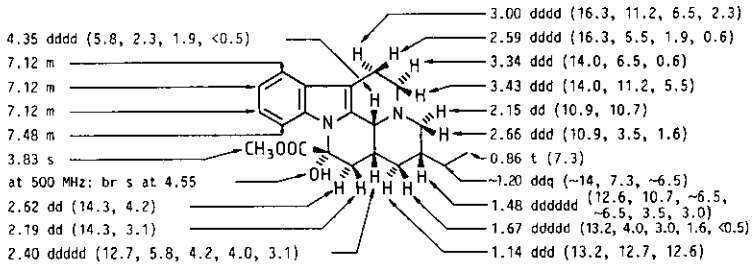
NAME: (+)-Pandoline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (50) C. Kan et al., Planta Med., 1981, 41, 195.
NOTES:

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 98



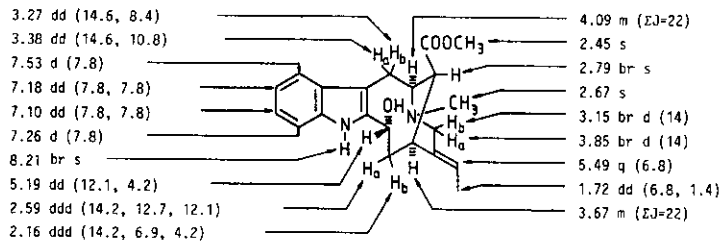
NAME: Tacamine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (18) T.A. van Beek et al., Tetrahedron, 1980, 40, 737.
NOTES: See also Ref. 83.

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 100



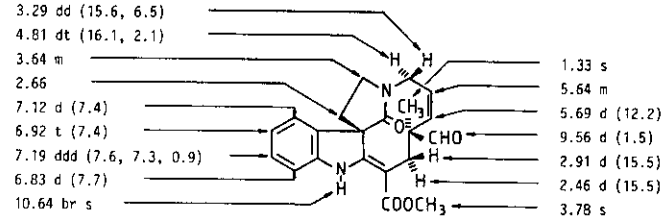
NAME: Vobasinol
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (52) T.A. van Beek et al., J. Nat. Prod., 1985, 48, 400.
NOTES:

MW: 354
MF: $C_{21}H_{26}N_2O_3$
NO: 101



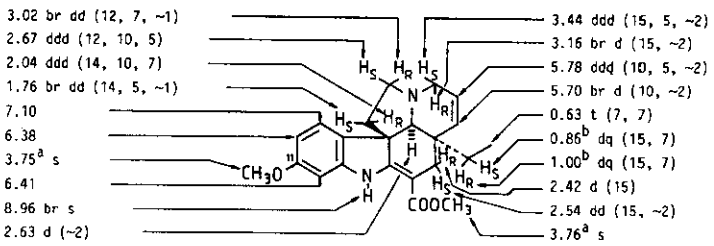
NAME: Trichophylline
FREQUENCY: 360 MHz SOLVENT: $CDCl_3$
REFERENCE: (54) S. Mukhopadhyay et al., Tetrahedron, 1983, 39, 3639.
NOTES:

MW: 366
MF: $C_{21}H_{22}N_2O_4$
NO: 103



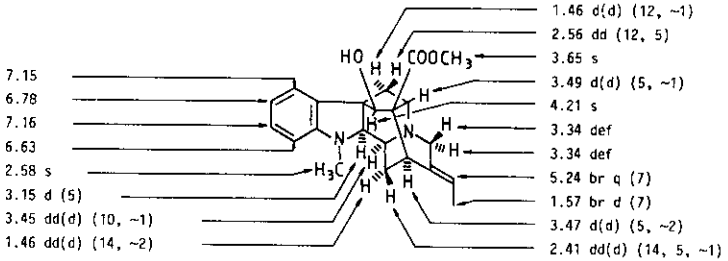
NAME: 11-Methoxytabersonine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (53) M. Lounasmaa and S.-K. Kan, Acta Chem. Scand., Ser. B, 1980, 34, 379.
NOTES:

MW: 366
MF: $C_{22}H_{26}N_2O_3$
NO: 102



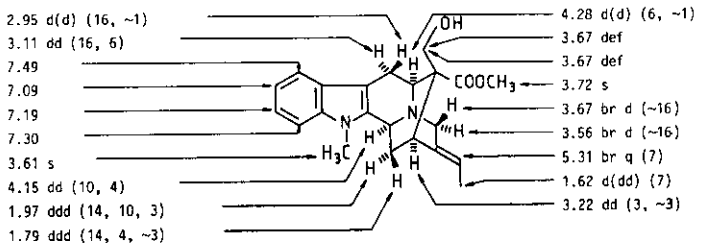
NAME: Vincamajine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503.
NOTES:

MW: 366
MF: $C_{22}H_{26}N_2O_3$
NO: 104



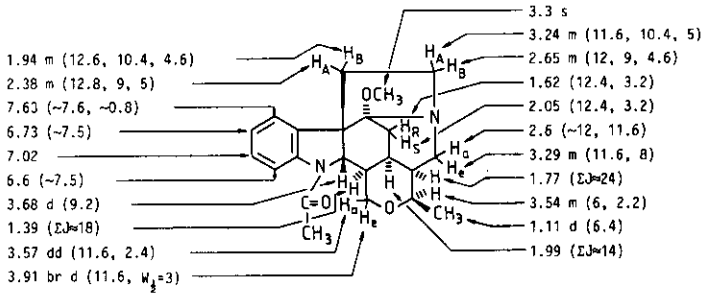
NAME: Voachalotine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (16) M. Lounasmaa et al., Planta Med., 1985, 519.
NOTES:

MW: 366
MF: $C_{22}H_{26}N_2O_3$
NO: 105



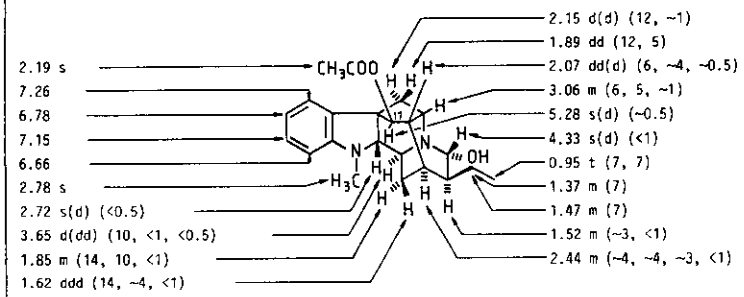
NAME: N_a-Acetyl-O-methylstrychnosplendine
FREQUENCY: 360 MHz SOLVENT: $CDCl_3$
REFERENCE: (55) M. Caprasse and L. Angenot, Planta Med., 1981, 42, 364.
NOTES: The shift of the N-acetyl group not given.

MW: 368
MF: $C_{22}H_{28}N_2O_3$
NO: 107



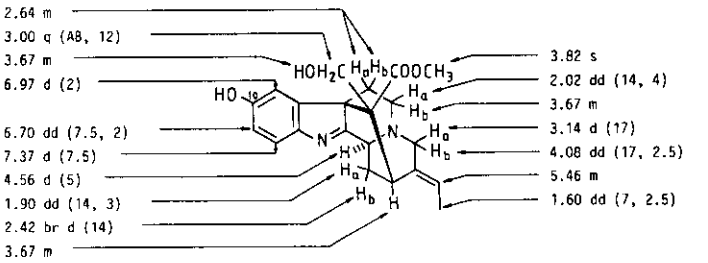
NAME: 17-O-Acetylajmaline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503. NO: 106
NOTES: Recorded at 52°C.

MW: 368
MF: $C_{22}H_{28}N_2O_3$



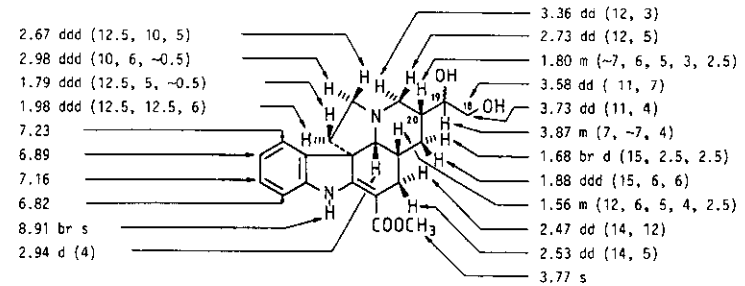
NAME: 10-Hydroxydeacetylakuammiline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (31) F. Guéritte et al., J. Nat. Prod., 1983, 46, 144.
NOTES:

MW: 368
MF: $C_{21}H_{24}N_2O_4$
NO: 108



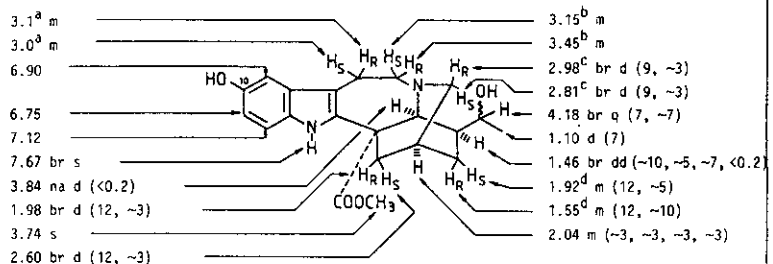
NAME: 20R-18,19-Dihydroxypseudovincadifformine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (50) C. Kan et al., Planta Med., 1981, 41, 195.
NOTES:

MW: 370
MF: $C_{21}H_{26}N_2O_4$
NO: 109



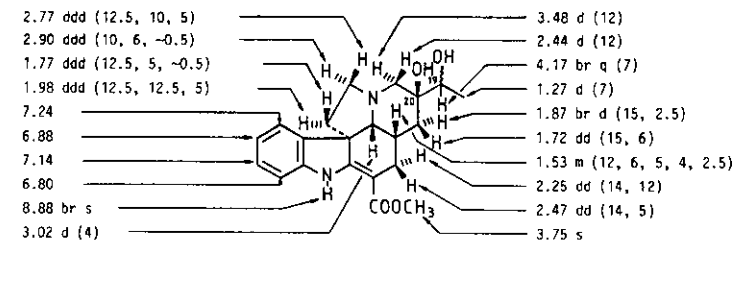
NAME: 10-Hydroxyheyneanine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (22) X.Z. Feng et al., Planta Med., 1982, 44, 212.
NOTES:

MW: 370
MF: $C_{21}H_{26}N_2O_4$
NO: 111



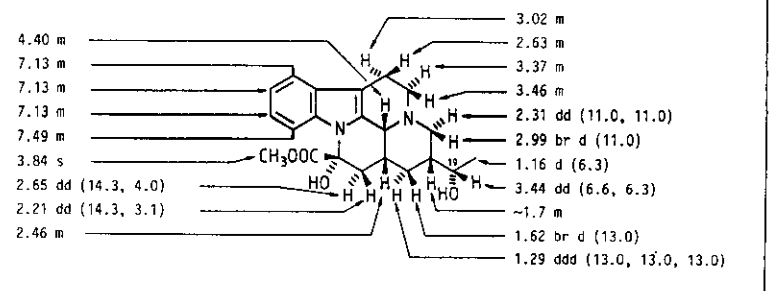
NAME: 19-Hydroxy-20-epipandoline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (50) C. Kan et al., Planta Med., 1981, 41, 195.
NOTES:

MW: 370
MF: $C_{21}H_{26}N_2O_4$
NO: 110

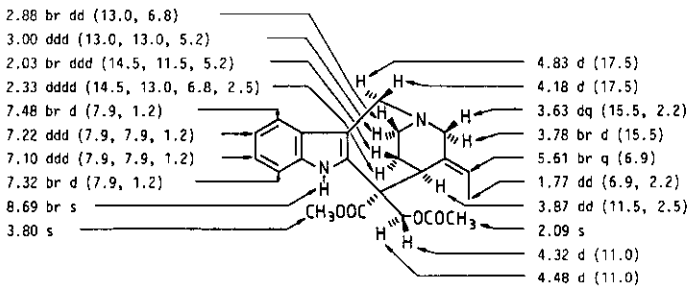


NAME: 19S-Hydroxytacamine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (18) T.A. van Beek et al., Tetrahedron, 1984, 40, 737.
NOTES:

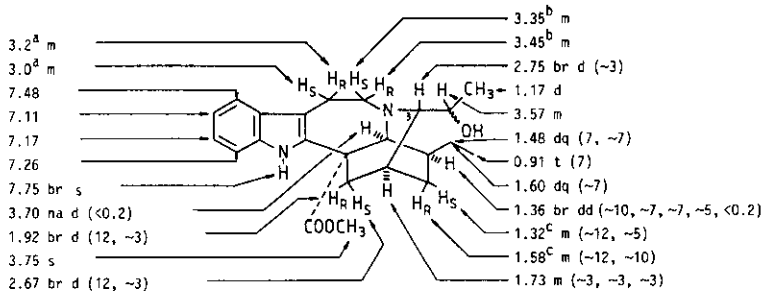
MW: 370
MF: $C_{21}H_{26}N_2O_4$
NO: 112



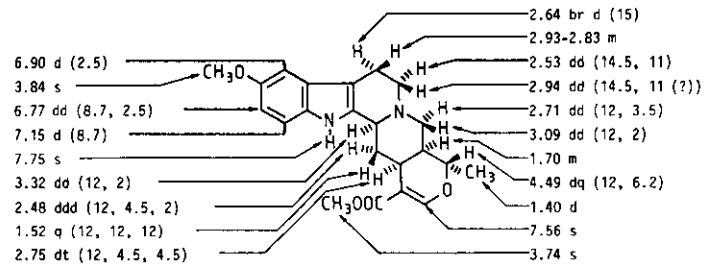
NAME: O-Acetylvallesamine
MW: 382
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
MF: $C_{22}H_{26}N_2O_4$
REFERENCE: (42) P. Perera et al., Planta Med., 1984, 50, 251.
NO: 113
NOTES:



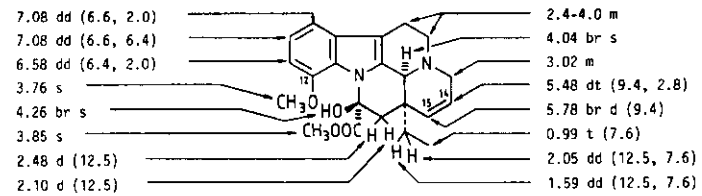
NAME: 3-(β-Hydroxyethyl)-coronaridine
MW: 382
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{23}H_{30}N_2O_3$
REFERENCE: (22) X.Z. Feng et al., Planta Med., 1982, 44, 212.
NO: 115
NOTES:



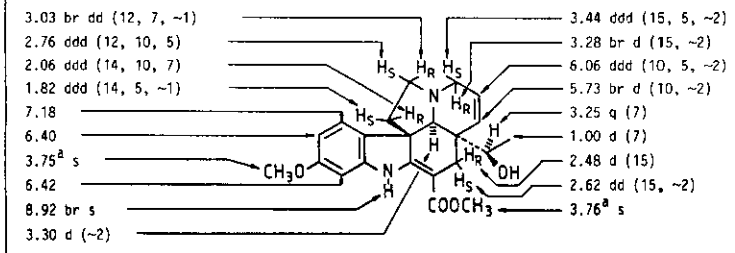
NAME: Aricine
MW: 382
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
MF: $C_{22}H_{26}N_2O_4$
REFERENCE: (56) R. Verpoorte et al., Planta Med., 1983, 48, 283.
NO: 114
NOTES:



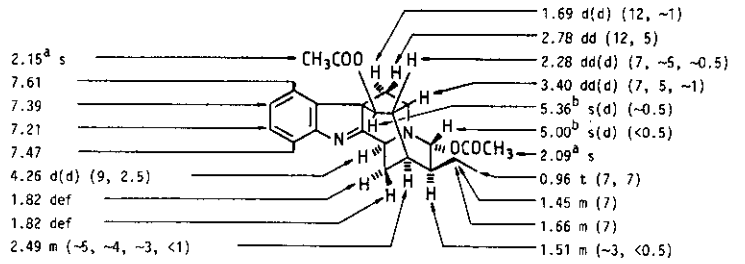
NAME: 12-Methoxy-14,15-dehydrovincamine
MW: 382
FREQUENCY: 100 MHz SOLVENT: $CDCl_3$
MF: $C_{22}H_{26}N_2O_4$
REFERENCE: (57) T.A. van Beek et al., Planta Med., 1983, 47, 83.
NO: 116
NOTES: One of the chemical shifts given for C(9)H and C(10)H seems to be erroneous.



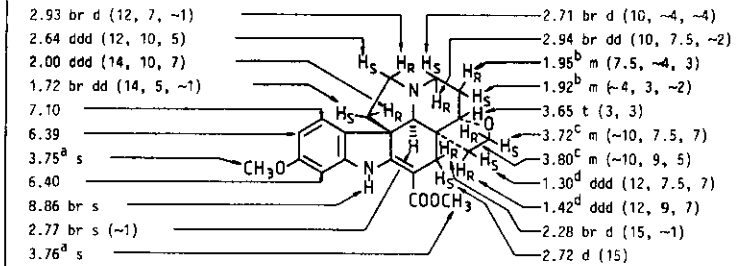
NAME: Vandrikidine
MW: 382
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{22}H_{26}N_2O_4$
REFERENCE: (53) M. Lounasmaa and S.-K. Kan, Acta Chem. Scand., Ser. B, NO: 117
1980, 34, 379.
NOTES: 19R.



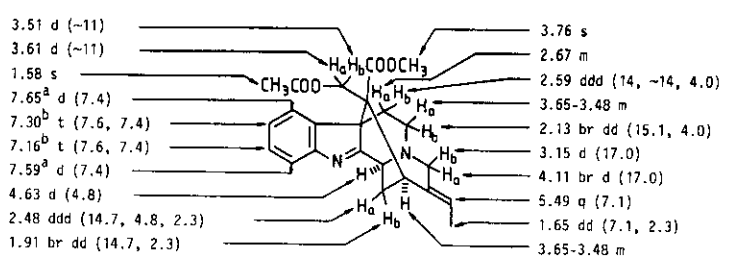
NAME: Acetyldihydrovomilenine
MW: 394
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{23}H_{26}N_2O_4$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503. NO: 119
NOTES:



NAME: Vandrikine
MW: 382
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{22}H_{26}N_2O_4$
REFERENCE: (53) M. Lounasmaa and S.-K. Kan, Acta Chem.Scand., NO: 118
Ser. B, 1980, 34, 379.
NOTES:

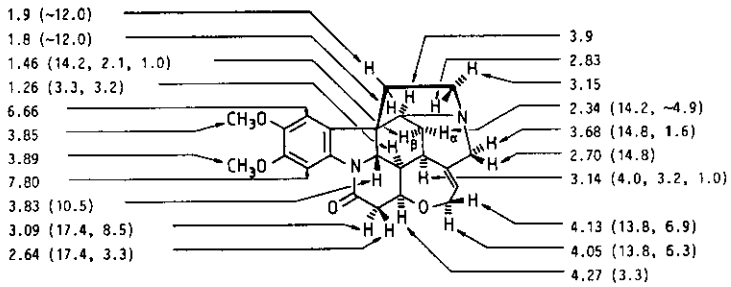


NAME: Akuammiline
MW: 394
FREQUENCY: 300 MHz
MF: $C_{23}H_{26}N_2O_4$
REFERENCE: (52) T.A. van Beek et al., J. Nat. Prod., 1985, 48, 400. NO: 120
NOTES:



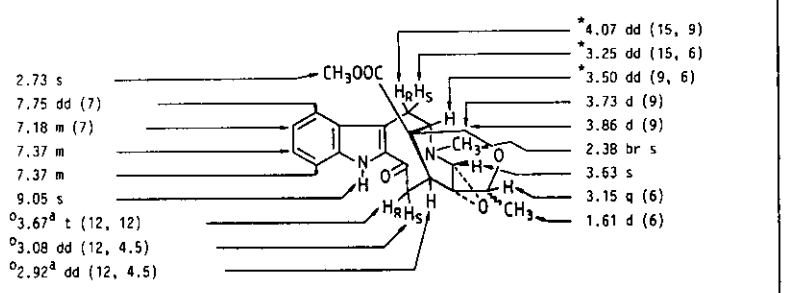
NAME: Brucine
FREQUENCY: 360 MHz SOLVENT: $CDCl_3$
REFERENCE: (58) M.A. Bernstein and L.D. Hall, Can. J. Chem., 1985, 63, 483.
NOTES: The shift of the olefinic proton not given.

MW: 394
MF: $C_{23}H_{26}N_2O_4$
NO: 121



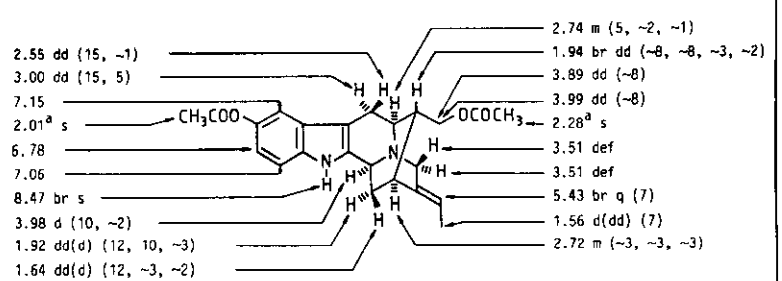
NAME: Difforlemenine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (59) J. Garnier and J. Mahuteau, Tetrahedron Lett., 1985, 26, 1513.
NOTES: Superscriptions ° and * denote interchangeable systems.

MW: 396
MF: $C_{22}H_{24}N_2O_5$
NO: 123



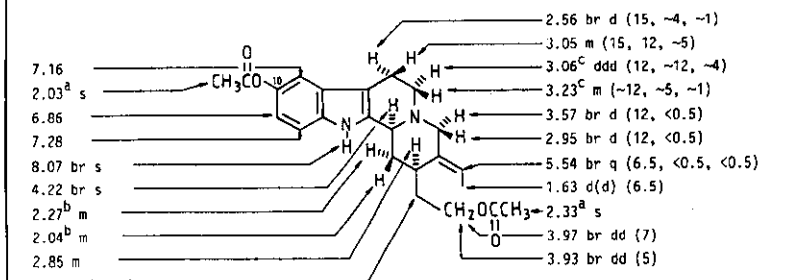
NAME: Diacetylsarpagine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (16) M. Lounasmaa et al., Planta Med., 1985, 519.
NOTES:

MW: 394
MF: $C_{23}H_{26}N_2O_4$
NO: 122



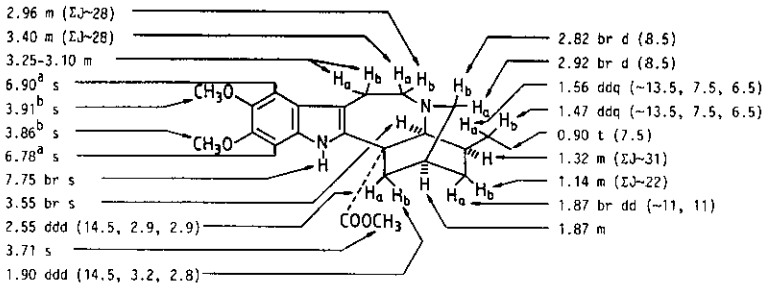
NAME: 10-Hydroxygeissoschizol diacetate
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (22) X.Z. Feng et al., Planta Med., 1982, 44, 212.
NOTES:

MW: 396
MF: $C_{23}H_{28}N_2O_4$
NO: 124



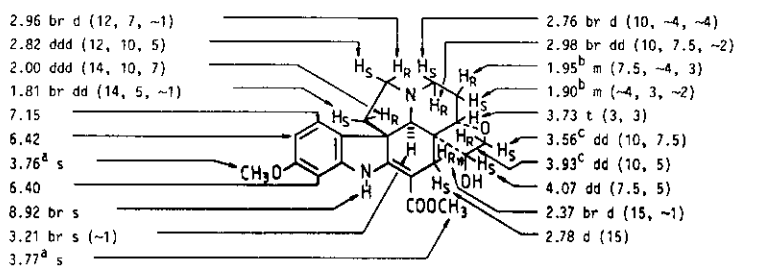
NAME: Conopharyngine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (52) T.A. van Beek et al., J. Nat. Prod., 1985, 48, 400.
NOTES:

MW: 398
MF: $C_{23}H_{30}N_2O_4$
NO: 125



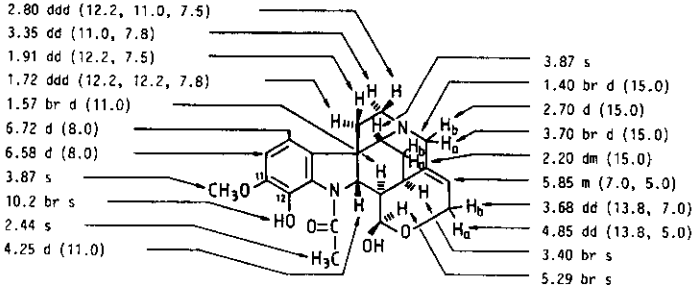
NAME: 19-Hydroxyvandrikine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (53) M. Lounasmaa and S.-K. Kan, Acta Chem. Scand., Ser. B, 1980, 34, 379.
NOTES:

MW: 398
MF: $C_{22}H_{26}N_2O_5$
NO: 127



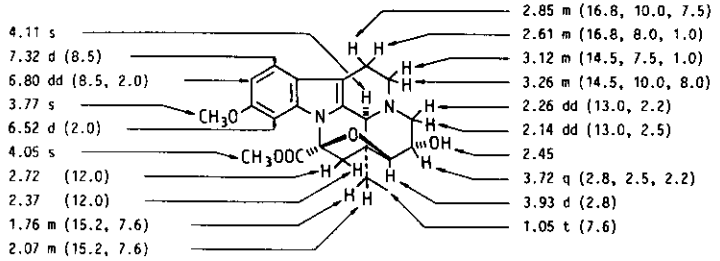
NAME: 12-Hydroxy-11-methoxydiaboline
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (60) F.C. Ohiri et al., Planta Med., 1984, 50, 446.
NOTES:

MW: 398
MF: $C_{22}H_{26}N_2O_5$
NO: 126



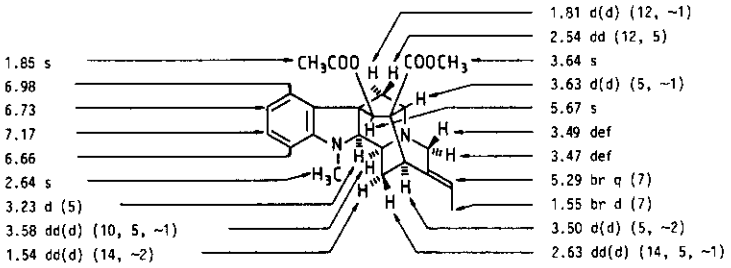
NAME: Vincarodine
FREQUENCY: 220 MHz SOLVENT: $CDCl_3/D_2O$
REFERENCE: (61) N. Neuss et al., Helv. Chim. Acta, 1973, 56, 2660.
NOTES:

MW: 398
MF: $C_{22}H_{26}N_2O_5$
NO: 128



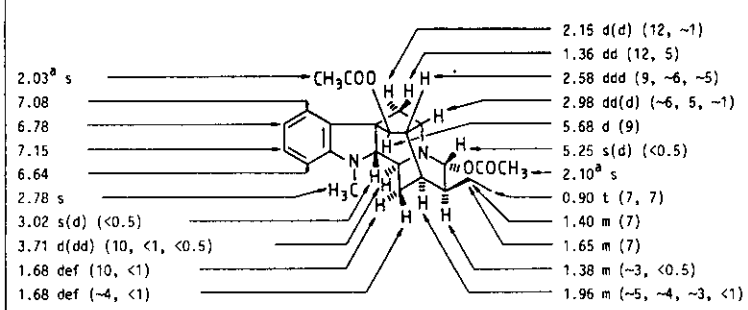
NAME: Vincamedine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503.
NOTES:

MW: 408
MF: $C_{24}H_{28}N_2O_4$
NO: 129



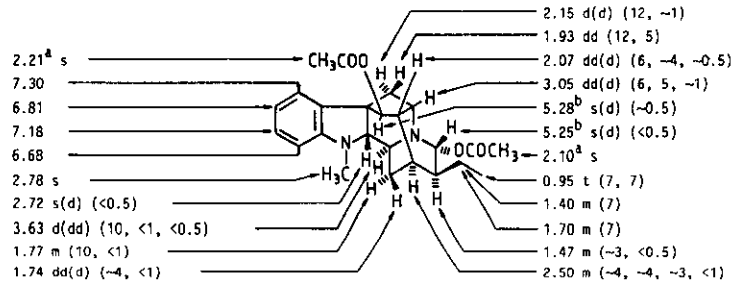
NAME: Diacetylsandwichine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503.
NOTES: 17S.

MW: 410
MF: $C_{24}H_{30}N_2O_4$
NO: 131



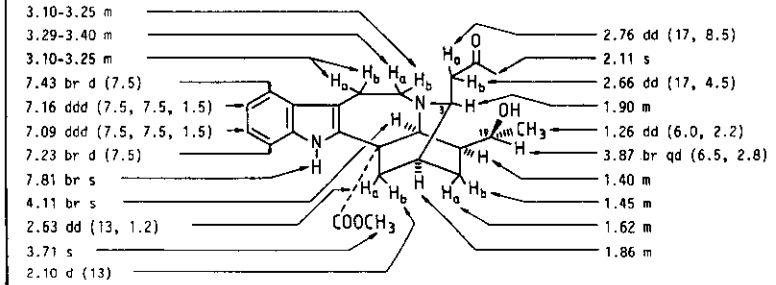
NAME: Diacetylajmaline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (10) M. Lounasmaa et al., Heterocycles, 1985, 23, 1503.
NOTES: 17R.

MW: 410
MF: $C_{24}H_{30}N_2O_4$
NO: 130



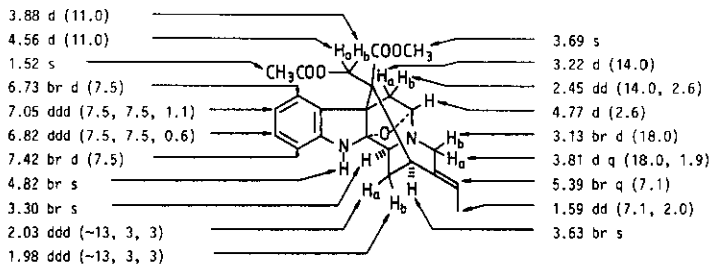
NAME: 3-Ketopropyl-19R-heyneanine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (62) P. Perera et al., Phytochemistry, 1985, 24, 2097.
NOTES:

MW: 410
MF: $C_{24}H_{30}N_2O_4$
NO: 132



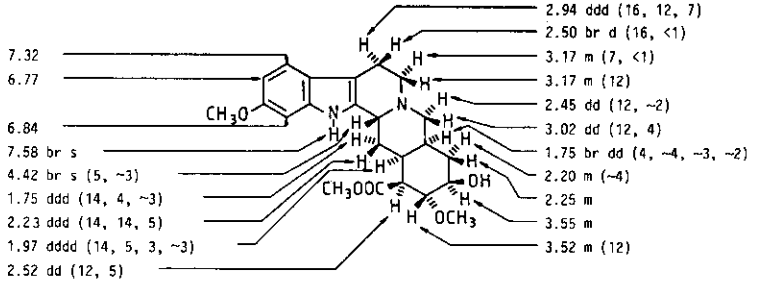
NAME: Picraline
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (52) T.A. van Beek et al., J. Nat. Prod., 1985, 48, 400.
NOTES:

MW: 410
MF: $C_{23}H_{26}N_2O_5$
NO: 133



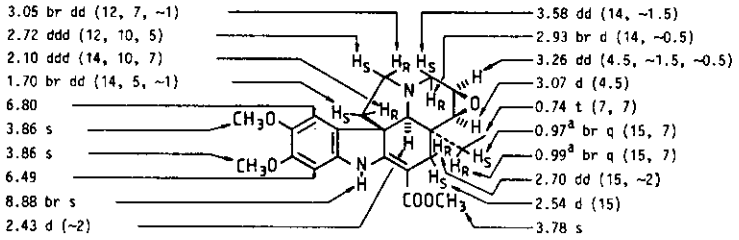
NAME: Methyl reserpate
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (63) M. Lounasmaa et al., Heterocycles, 1985, 23, 371.
NOTES: Three CH_3O-groups at 3.83 (s), 3.80 (s) and 3.58 (s).

MW: 414
MF: $C_{23}H_{30}N_2O_5$
NO: 135



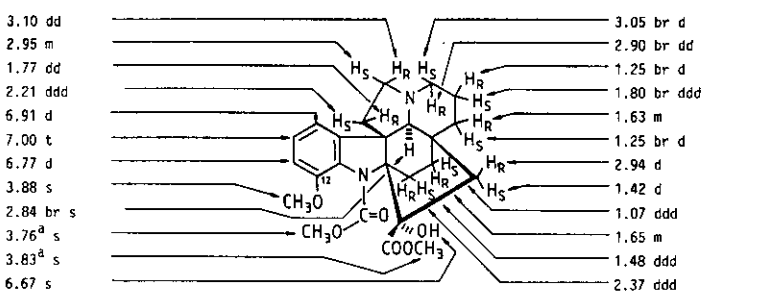
NAME: Hazuntinine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (53) M. Lounasmaa and S.-K. Kan, Acta Chem. Scand., Ser. B, 1980, 34, 379.
NOTES:

MW: 412
MF: $C_{23}H_{28}N_2O_5$
NO: 134

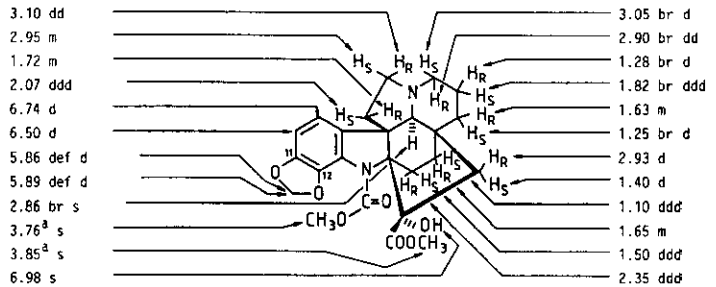


NAME: (-)-N-Methoxycarbonyl-12-methoxykopsinaline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (64) X.Z. Feng et al., Planta Med., 1983, 48, 280.
NOTES:

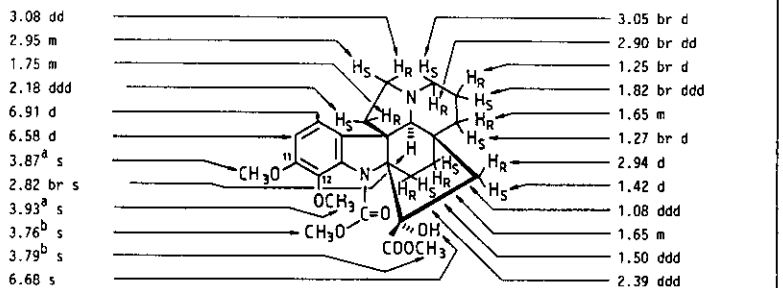
MW: 442
MF: $C_{24}H_{30}N_2O_6$
NO: 136



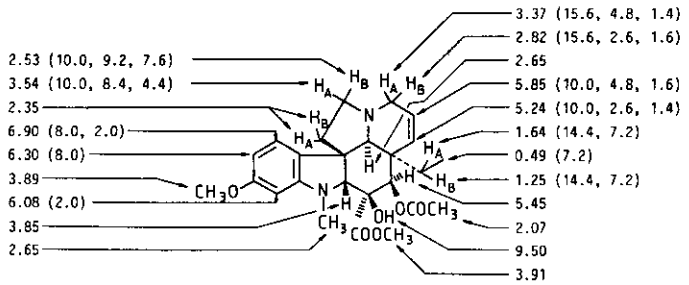
NAME: (-)-N-Methoxycarbonyl-11,12-methylenedioxykopsinaline
MW: 456
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{25}H_{32}N_2O_7$
REFERENCE: (64) X.Z. Feng et al., Planta Med., 1983, 48, 280.
NO: 137
NOTES:



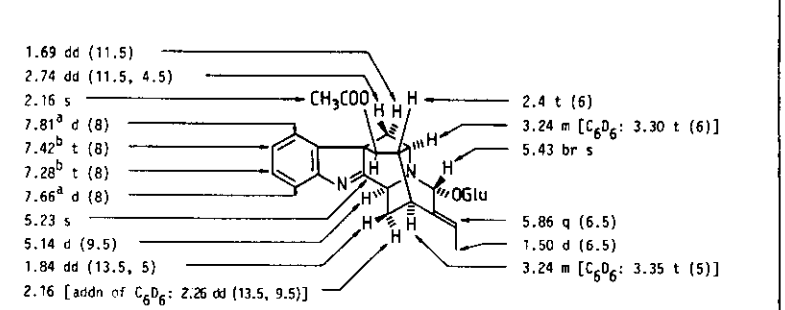
NAME: (-)-N-Methoxycarbonyl-11,12-dimethoxykopsinaline
MW: 472
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{25}H_{32}N_2O_7$
REFERENCE: (64) X.Z. Feng et al., Planta Med., 1983, 48, 280.
NO: 139
NOTES:



NAME: Vindoline
MW: 456
FREQUENCY: 360 MHz SOLVENT: $CDCl_3$
MF: $C_{25}H_{32}N_2O_5$
REFERENCE: (65) A. De Bruyn et al., Bull. Soc. Chim. Belg., 1981, 90, 185.
NO: 138
NOTES:

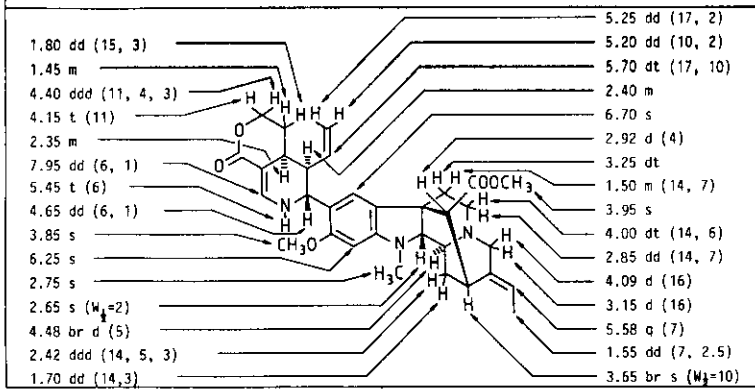


NAME. Raucaffricine
MW: 512
FREQUENCY: 300/400 MHz SOLVENT: C_5D_5N
MF: $C_{27}H_{32}N_2O_8$
REFERENCE: (66) H. Schübel et al., Helv. Chim. Acta, 1984, 67, 2078.
NO: 140
NOTES: Signals of the glucose unit: 5.29 (d, 8), 4.52 (dd, 12, 2), 4.33 (dd, 12, 5), 4.2-4.35 (2H, m), 4.1 (t, 8.0) and 3.94 (m).



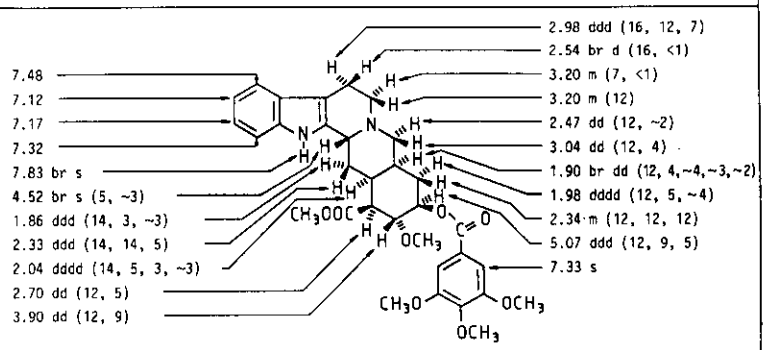
NAME: Gentiacraline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (67) G. Massiot et al., C.R. Acad. Sci., Sér. II, 1983, 296, 977.
NOTES: See also Ref. 84.

MW: 545
MF: $C_{32}H_{39}N_3O_5$
NO: 141



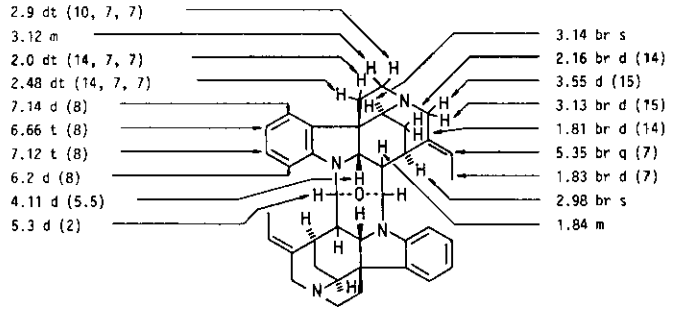
NAME: Deserpidine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (63) M. Lounasmaa et al., Heterocycles, 1985, 23, 371.
NOTES: Five CH_3O-groups at 3.89 (9H, s), 3.80 (3H, s) and 3.49 (3H, s).

MW: 578
MF: $C_{32}H_{38}N_2O_8$
NO: 143



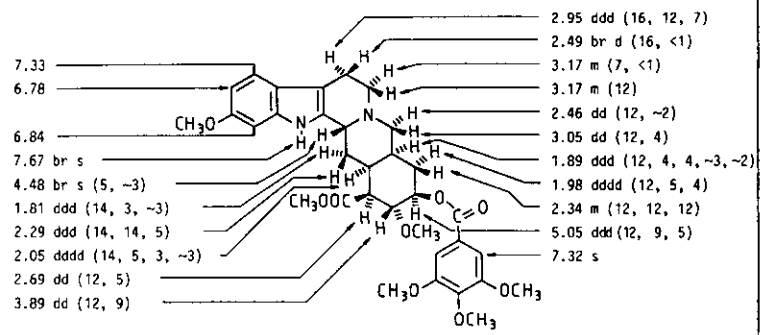
NAME: Matopensine
FREQUENCY: 401 MHz SOLVENT:
REFERENCE: (68) G. Massiot et al., Heterocycles, 1983, 20, 2339.
NOTES: See also Ref. 85.

MW: 570
MF: $C_{38}H_{42}N_4O$
NO: 142



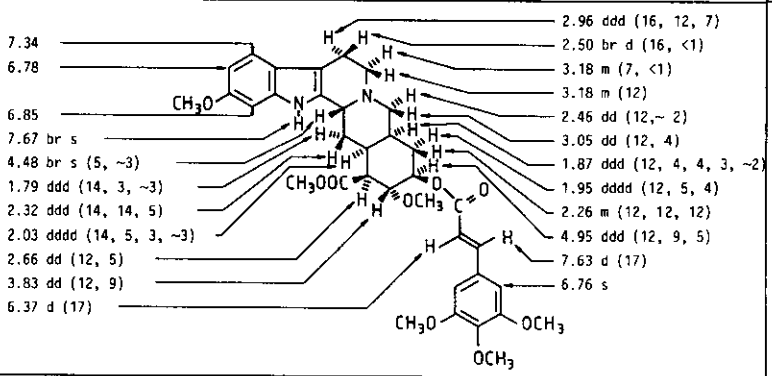
NAME: Reserpine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (63) M. Lounasmaa et al., Heterocycles, 1985, 23, 371.
NOTES: Six CH_3O-groups at 3.90 (9H, s), 3.81 (3H, s), 3.80 (3H, s) and 3.49 (3H, s).

MW: 608
MF: $C_{33}H_{40}N_2O_9$
NO: 144



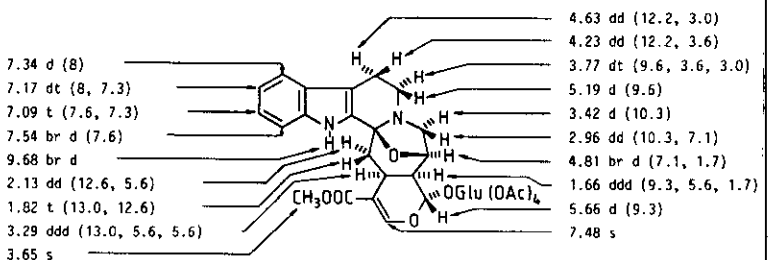
NAME: Rescinnamine
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (63) M. Lounasmaa et al., Heterocycles, 1985, 23, 371.
NOTES: Six CH_3O-groups at 3.91 (6H, s), 3.89 (3H, s), 3.84 (3H, s), 3.82 (3H, s) and 3.53 (3H, s).

MW: 634
MF: $C_{35}H_{42}N_2O_9$
NO: 145



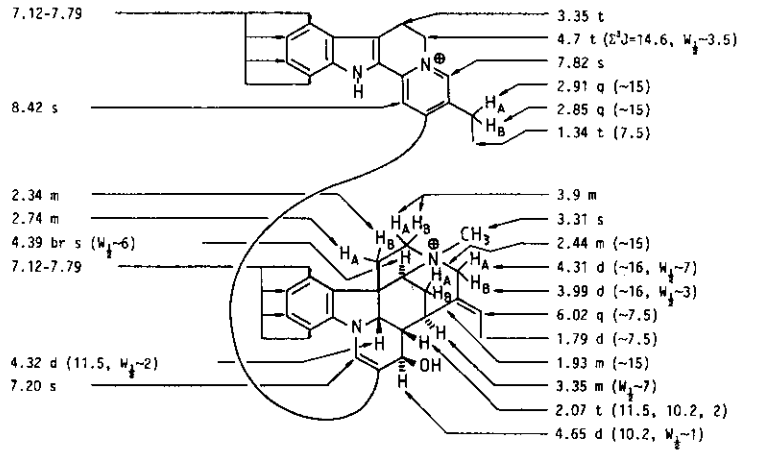
NAME: Cadambine tetraacetate
FREQUENCY: 270 MHz SOLVENT: $CDCl_3$
REFERENCE: (69) S.S. Handa et al., J. Nat. Prod., 1983, 46, 325.
NOTES: Signals of the glucose unit: 5.07-5.28 (4H, m), 3.21 (dt), 2.68-2.86 (2H, m), 2.08 (3H, s), 2.07 (3H, s), 2.03 (3H, s) and 2.01 (3H, s).

MW: 712
MF: $C_{35}H_{40}N_2O_{14}$
NO: 146



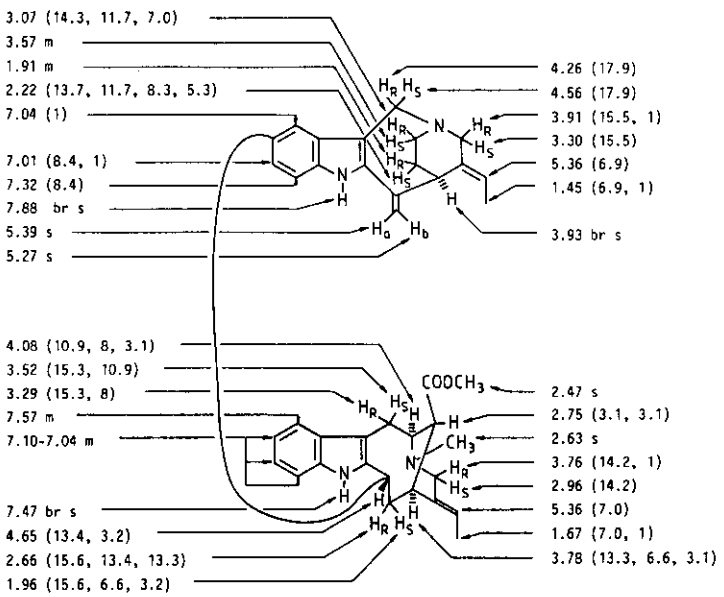
NAME: Afrocurarine
FREQUENCY: 360 MHz SOLVENT: D_2O
REFERENCE: (70) M. Caprasse et al., Planta Med., 1984, 50, 131.
NOTES:

MW: 582
MF: $C_{39}H_{42}N_4O$
NO: 147



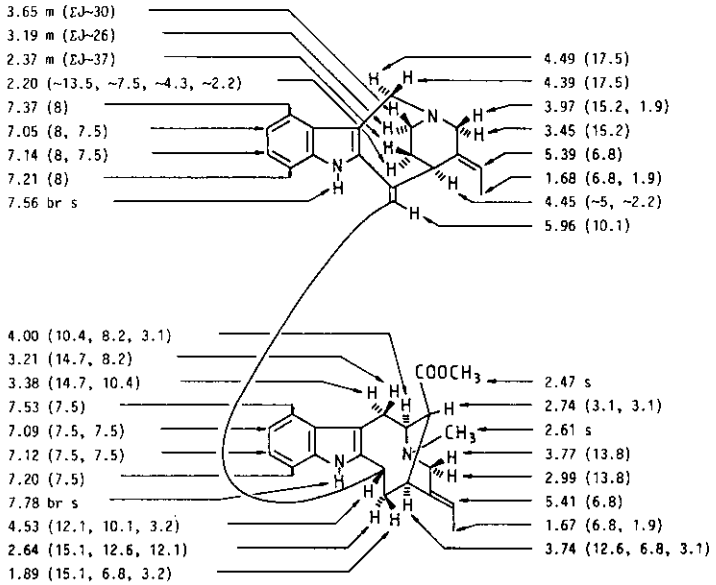
NAME: Pseudovobparicine
FREQUENCY: 300 MHz SOLVENT: $CDCl_3$
REFERENCE: (7) T.A. van Beek et al., Planta Med., 1985, 277.
NOTES:

MW: 600
MF: $C_{39}H_{44}N_4O_2$
NO: 148

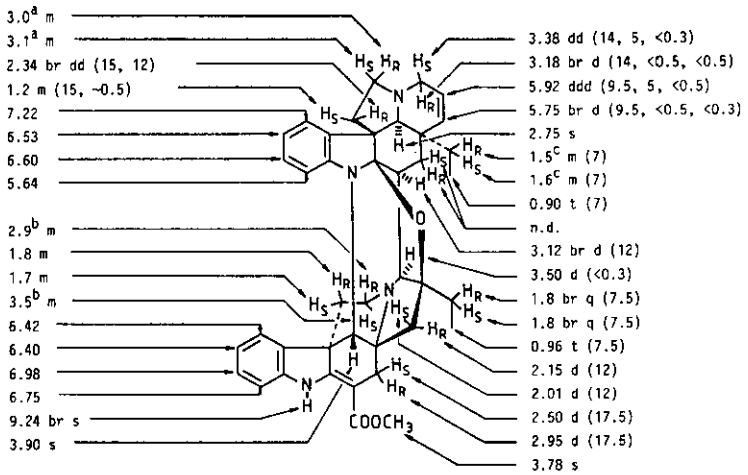


NAME: Vobparicine
FREQUENCY: 500 MHz SOLVENT: $CDCl_3$
REFERENCE: (71) T.A. van Beek et al., Tetrahedron Lett., 1984, 25, 2057.
NOTES:

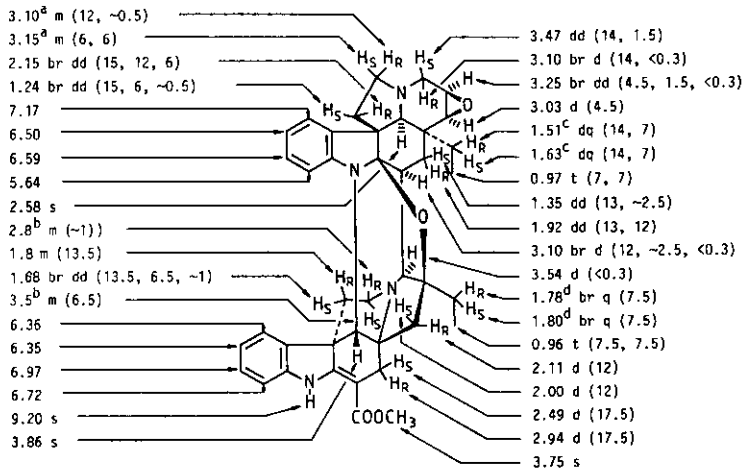
MW: 600
MF: $C_{39}H_{44}N_4O_2$
NO: 149



NAME: Ervafolene
MW: 628
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{40}H_{44}N_4O_3$
REFERENCE: (72) A. Henriques et al., Acta Chem. Scand., Ser. B, 1980, 34, 509.
NO: 150
NOTES:

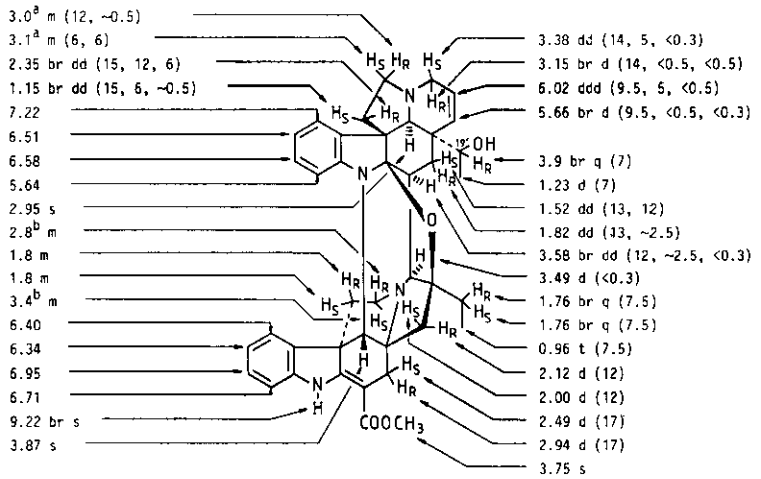


NAME: Ervafoline
MW: 644
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{40}H_{44}N_4O_4$
REFERENCE: (73) A. Henriques et al., Acta Chem. Scand., Ser. B, 1979, 33, 775.
NO: 151
NOTES:



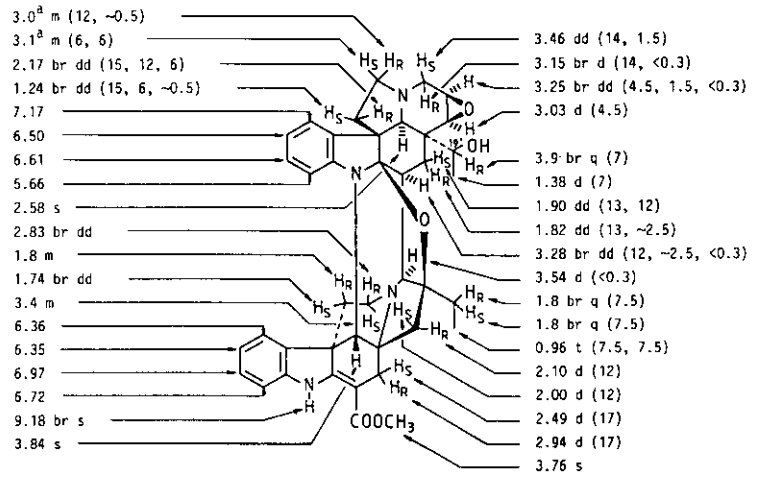
NAME: 19'-Hydroxyervafolene
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (72) A. Henriques et al., Acta Chem. Scand., Ser. B, 1980, 34, 509.
NOTES:

MW: 644
MF: $C_{40}H_{44}N_4O_4$
NO: 152



NAME: 19'-Hydroxyervafoline
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (72) A. Henriques et al., Acta Chem. Scand., Ser. B, 1980, 34, 509.
NOTES:

MW: 660
MF: $C_{40}H_{44}N_4O_5$
NO: 153



NAME: Voafrine A

MW: 670

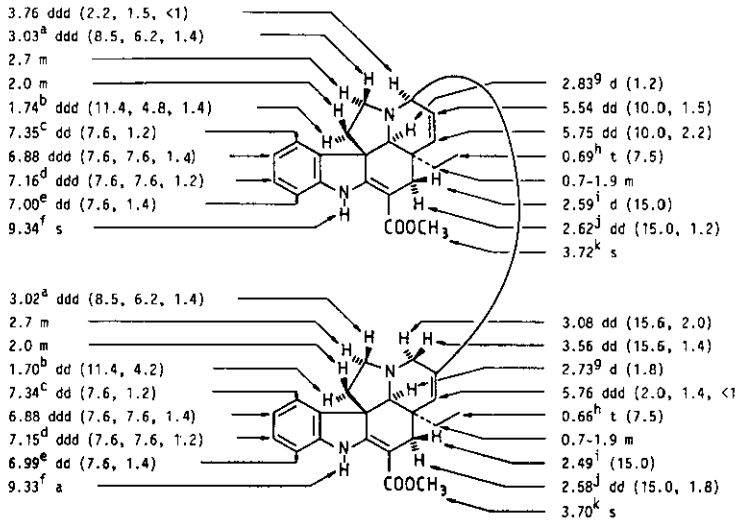
FREQUENCY: 300 MHz SOLVENT: $(CD_3)_2CO$

MF: $C_{42}H_{46}N_4O_4$

REFERENCE: (74) J. Stöckigt et al., Helv. Chim. Acta, 1983, 66, 2525.

NO: 154

NOTES:



NAME: Voafrine B

MW: 670

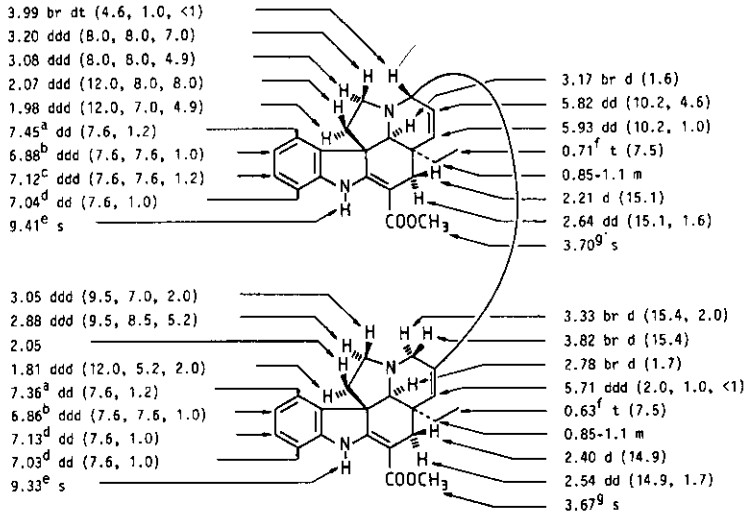
FREQUENCY: 500 MHz SOLVENT: $(CD_3)_2CO$

MF: $C_{42}H_{46}N_4O_4$

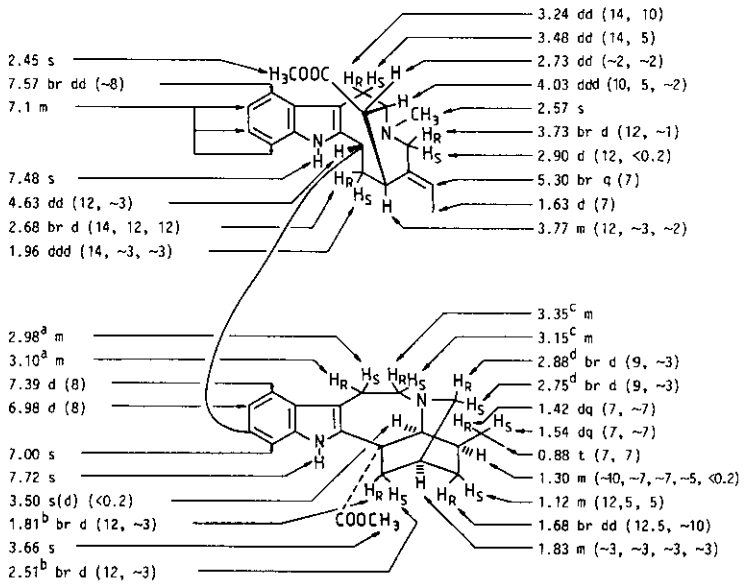
REFERENCE: (74) J. Stöckigt et al., Helv. Chim. Acta, 1983, 66, 2525.

NO: 155

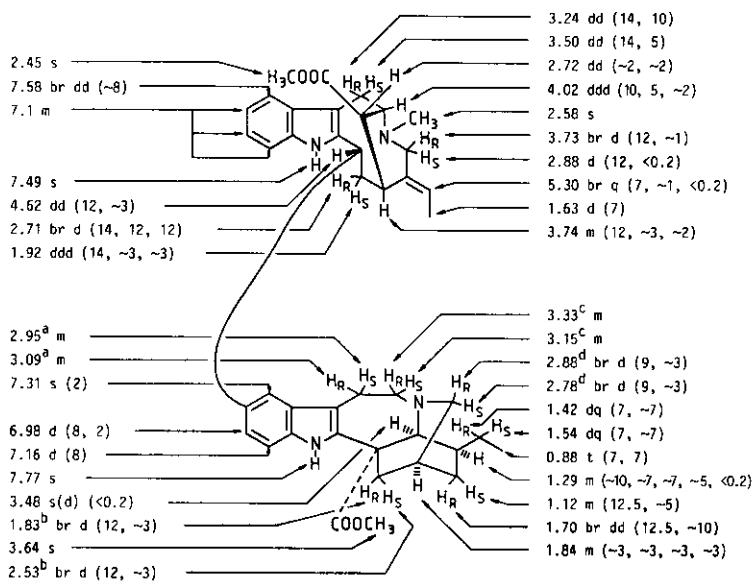
NOTES:



NAME: Ervahanine A
MW: 674
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{42}H_{50}N_4O_4$
REFERENCE: (49) X.-Z. Feng et al., J. Nat. Prod., 1981, 44, 670. NO: 156
NOTES:

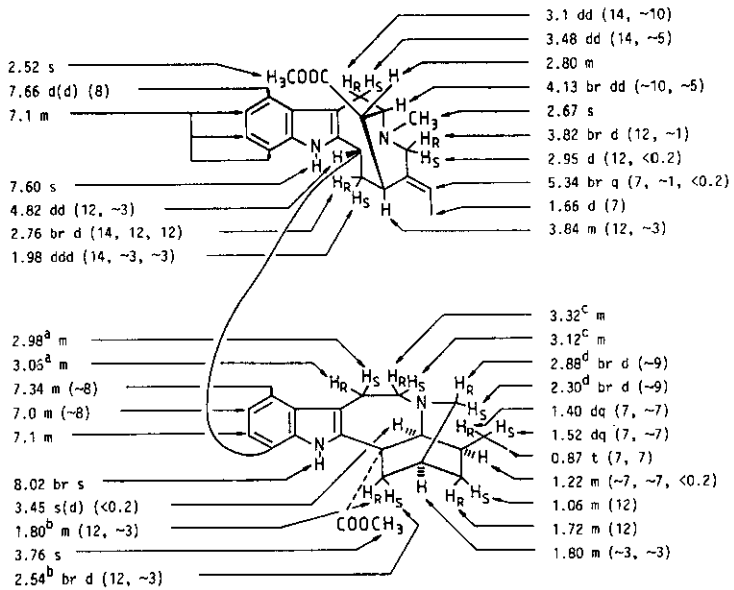


NAME: Ervahanine B
MW: 674
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
MF: $C_{42}H_{50}N_4O_4$
REFERENCE: (49) X.-Z. Feng et al., J. Nat. Prod., 1981, 44, 670. NO: 157
NOTES:



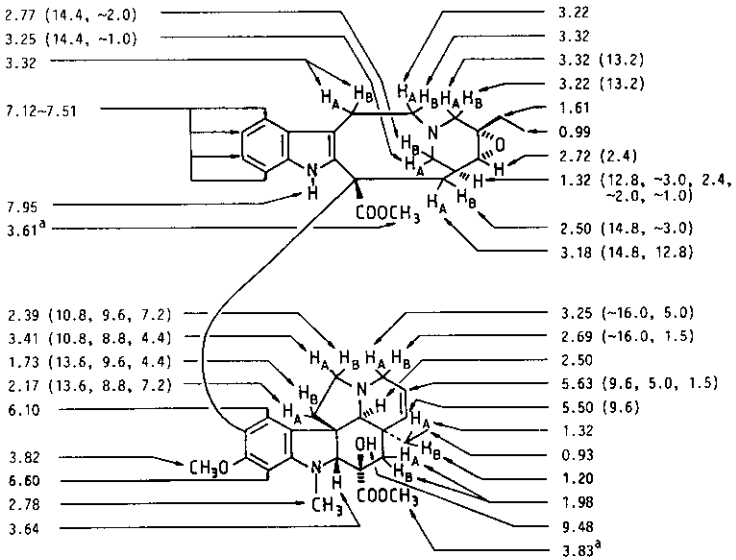
NAME: Ervahanine C
FREQUENCY: 400 MHz SOLVENT: $CDCl_3$
REFERENCE: (49) X.-Z. Feng et al., J. Nat. Prod., 1981, 44, 670.
NOTES:

MW: 674
MF: $C_{42}H_{50}N_4O_4$
NO: 158



NAME: 17-Deacetoxyleurosine
FREQUENCY: 360 MHz SOLVENT: $CDCl_3$
REFERENCE: (75) A. De Bruyn et al., Bull. Soc. Chim. Belg., 1982, 91, 75.
NOTES:

MW: 750
MF: $C_{44}H_{54}N_4O_7$
NO: 159



NAME: 17-Deacetoxyvinblastine

FREQUENCY: 360 MHz SOLVENT: $CDCl_3$

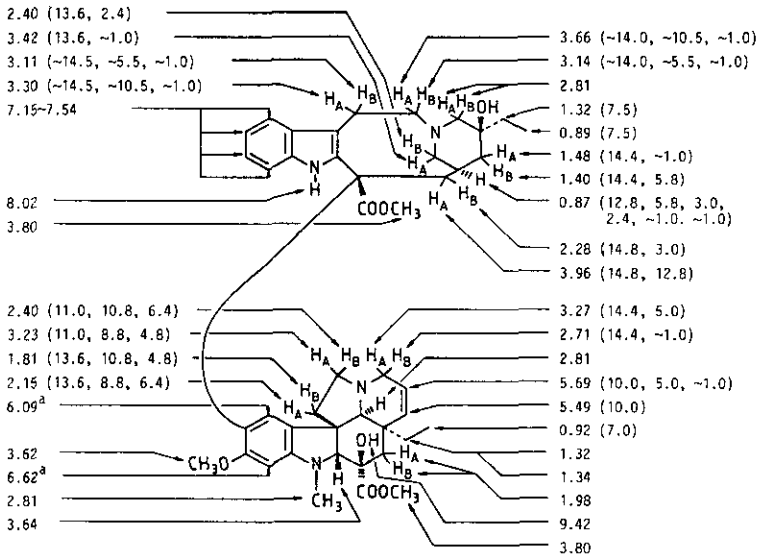
REFERENCE: (75) A. De Bruyn et al., Bull. Soc. Chim. Belg., 1982, 91, 75.

NOTES:

MW: 752

MF: $C_{44}H_{56}N_4O_7$

NO: 160



NAME: N-Deformylvincristine

FREQUENCY: 360 MHz SOLVENT: $CDCl_3$

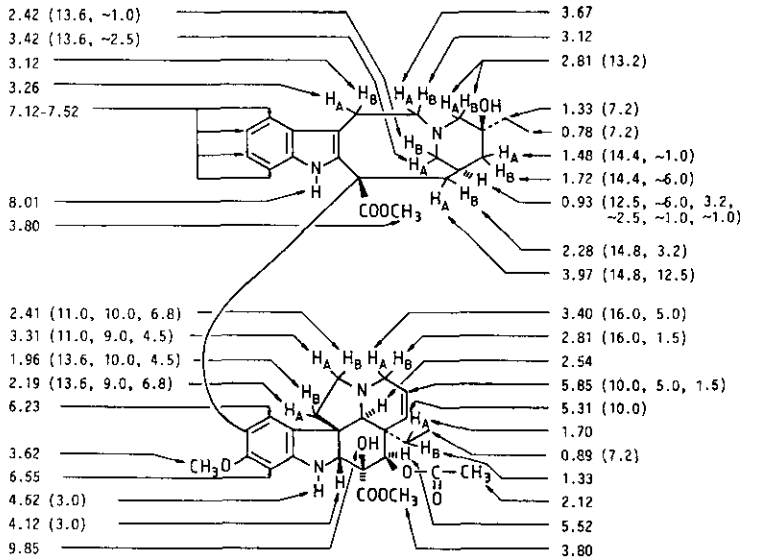
REFERENCE: (76) R. Simonds et al., Planta Med., 1984, 50, 274.

NOTES:

MW: 796

MF: $C_{46}H_{56}N_4O_9$

NO: 161



NAME: Leurosine

FREQUENCY: 360 MHz SOLVENT: $CDCl_3$

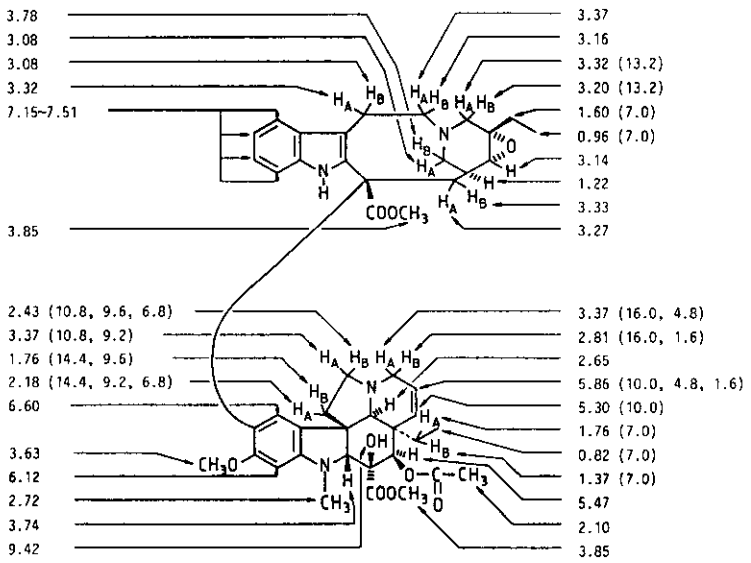
REFERENCE: (65) A. De Bruyn et al., Bull. Soc. Chim. Belg., 1981, 90, 185.

NOTES:

MW: 808

MF: $C_{46}H_{56}N_4O_9$

NO: 162



NAME: Vinblastine

FREQUENCY: 360 MHz SOLVENT: $CDCl_3$

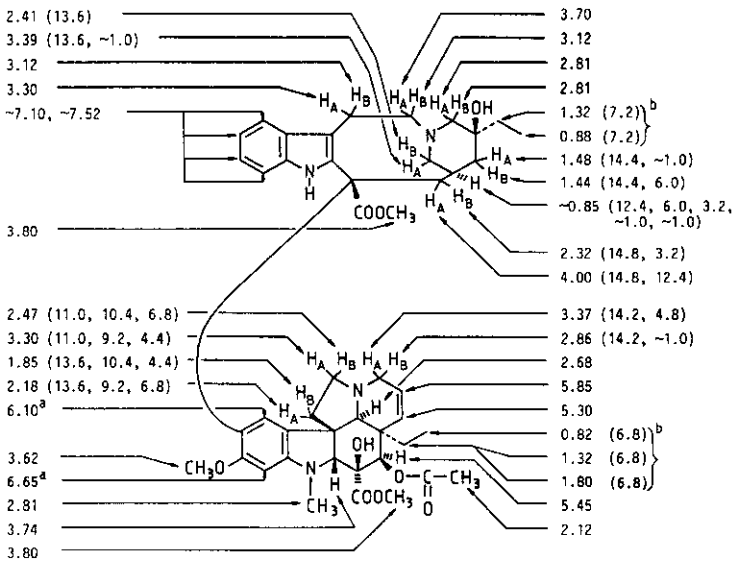
REFERENCE: (77) A. De Bruyn et al., Bull. Soc. Chim. Belg., 1980, 89, 629.

NOTES: For NOE measurements, see Ref. 86.

MW: 810

MF: $C_{46}H_{58}N_4O_9$

NO: 163



INDEX OF ALKALOIDS

	No	Ref.
S		
Sorelline	7	11
Strempeliopine	14	17
Strychnine	50	34
Strychnozairine	69	46
Strychnoxanthine	30	26
T		
Tabersonine	52	35
Tacamine	100	18
Tacamonine	15	18
Tasmanine	37	30
Tetrahydroalstonine	86	47
Triabunnine	45	25
Trichophylline	103	54
V		
Vallesiachotamine	70	45
Vallesamine	64	42
Vandrikidine	117	53
Vandrikine	118	53
Vinblastine	163	77
Vincamajine	104	10
Vincamedine	129	10
Vincarodine	128	61
Vindoline	138	65
Vindolinine	53	36
Voachalotine	105	16
Voafrine A	154	74
Voafrine B	155	74
Voaphylline	26	23
Vobasine	87	49
Vobasinol	101	52
Vobparicine	149	71

ACKNOWLEDGEMENT

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