and steroidal compounds one of which was sitosterol (mmp, IR).

The $CHCl_3$ extract gave a main mixed band (R_f 0·62) by preparative TLC (Si gel G with $CHCl_3$–EtOH, 9:1) not separable by crystallization or argentized TLC. NMR and MS indicated that the band was a mixture. Separation of the mixed acetylated methyl esters by GLC (2% XE60, on WHP (Aw-DMCS) with 30 ml/min N_2 at 250°) gave three peaks with R_fs equivalent to the derivatives of oleanolic, ursolic and micromeric acids.

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THE ALKALOIDS OF *NECTANDRA MEGAPOTAMICA*

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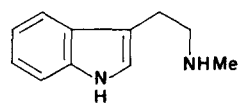
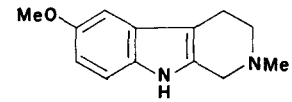
Key Word Index—*Nectandra megapotamica*; Lauraceae; indolealkylamine; *N*-methyltryptamine; 6-methoxy-N_b-methyl-1,2,3,4-tetrahydro-β-carboline, *Crithidia fasciculata* inhibition.

The genera *Nectandra* and *Ocotea* (Lauraceae) are well represented in the Brazilian flora. They are generally characterized by the occurrence of alkaloids of the benzylisoquinoline–aporphine group [1, 2]. We now report the occurrence in a *Nectandra* species of indoles which have previously been associated with hallucinogenic preparations from, for example, *Piptadenia* (Leguminosae) [3, 4] *Banisteriopsis* (Malpighiaceae) [5, 6] and *Virola* (Myristicaceae) [7] species. The bark of *Nectandra megapotamica* (Sprg.) Chodat et Hassler, a tree of medium height growing in the north-east of S. Paulo state, is popularly attributed with the property of relieving pain [8]. A chemical and pharmacological investigation was therefore undertaken. Two strong bases were isolated and shown to be indoles by UV spectrometry. One was identified as *N*-methyltryptamine (**1**). The other was identified by IR, UV and NMR spectroscopy and mass spectrometry as 6-methoxy-*N*-methyl-1,2,3,4-tetrahydro-β-carboline (**2**). Comparison with authentic samples [9] confirmed the identity.



(1)



(2)

Both alkaloids **1** and **2** inhibit the growth of *Crithidia fasciculata* (Trypanosomatidae) in brain heart infusion hemin medium at 6 μg/ml. It is not

yet known whether this activity is related to the previously reported pharmacological properties of the bases [5, 10].

EXPERIMENTAL

Isolation of the alkaloids. Finely powdered bark (5·7 kg) of *Nectandra megapotamica* was percolated with cold EtOH giving, after evaporation, a resinous extract (1200 g). This extract (950 g) was treated with dil. aq. tartaric acid at pH 4 at 5° for 15 hr and filtered. The filtrate (2·5 l.) was extracted successively with hexane, C_6H_6, and CH_2Cl_2 at pH 4. Three more CH_2Cl_2 extractions were then made at pH 7 (by addition of $NaHCO_3$), pH 9, pH 12 (by addition of Na_2CO_3) and pH 14 (by addition of NaOH). During the basification a semi-solid mass precipitated, and was separated at pH 14 by decantation. Little basic residue was obtained from the various organic extracts, but repeated Soxhlet extraction of the semi-solid mass with CH_2Cl_2 gave a brown residue (50 g) which exhibited 2 principal spots on TLC. The 2 components were separated by distribution between EtOAc and H_2O, followed by evaporation or lyophilization. The water soluble component slowly crystallized and after recrystallization from *n*-propanol gave *N*-methyltryptamine (0·57 g) as needles mp 168–169°. The alkaloid was identical with an authentic sample by TLC, mmp, IR and UV spectrometry. The NMR spectrum (100 MHz, D_2O) showed: 2·80 (3H singlet, N–C$\underline{H}_3$), 3·29 (4H, A_2B_2, Ar–CH_2CH_2–N), 7·2–7·8 (5H, multiplet, aromatic H) δ. The mass spectrum (Atlas, ion-source inlet, 70 eV) showed principal peaks at *m/e*: 174 (10%, M^+), 161 (27), 160 (21), 131 (42), 130 (38), 117 (16), 115 (12), 103 (22), 77 (25), 44 (100% $CH_2{=}N^+HCH_3$).

The EtOAc soluble component also crystallized on standing and after recrystallization from *n*-propanol gave 6-methoxy-*N*-methyl-1,2,3,4-tetrahydro-β-carboline (0·24 g) as rods, mp 183–184°, IR λ_{max}^{KBr} 6·28 (*m*), 6·68 (*m*), 8·28 (*s*), 8·74 (*s*), 9·73 (*s*), 10·36 (*m*), 10·95 (*m*), 12·12 (*s*), 12·75 (*s*) 14·33 (*m*) μ; λ_{max}^{EtOH} 227·5 and 283 nm (ϵ 27300, 8350); $\lambda_{infl.}^{EtOH}$ 297 nm (ϵ7340); λ_{min}^{EtOH} 252 nm (ϵ 3000); NMR (100 MHz, $CDCl_3$) 2·45 (3H, singlet, N–C$\underline{H}_3$), 2·79 (4H, singlet, Ar–C$\underline{H}_2$C$\underline{H}_2$–N), 3·67 (2H, singlet, Ar–C$\underline{H}_2$–N), 3·84 (3H, singlet, C$\underline{H}_3$O), 6·76 (1H, double doublet, *J* 8 and 2·5 Hz, C–7$\underline{H}$), 6·92 (1H, doublet, *J* 2·5 Hz, C–5$\underline{H}$), 7·13 (1H, doublet, J 8 Hz, C–8$\underline{H}$) and 7·93 (1H, broad, indolic N–$\underline{H}$); mass spectrum (Atlas, ion-source inlet, 70 eV). *m/e*: 216 (30%, M^+), 173 (100%), 158 (46%) [7].

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