

## EXPERIMENTAL

UV spectra were measured in MeOH and IR spectra as KBr discs. NMR spectra, unless otherwise stated, were determined for soln in deuteriochloroform. TLC was performed with Si gel G and preparative TLC with Kieselgel (PF<sub>254</sub>).

*Separation of the Fraction 4.* Fraction 4 (1 g) was chromatographed on polyamide (nylon 66, 100 g) eluting with MeOH-H<sub>2</sub>O (3:7) to give Fraction 4a (0.1 g), 4b (0.05 g) and 4c (0.25 g). Fraction 4c was then separated by preparative TLC (SiO<sub>2</sub>) with CHCl<sub>3</sub>-MeOH (17:3) gave Fraction 4c<sub>1</sub> (yellow band, *R<sub>f</sub>* 0.33) and 4c<sub>2</sub> (yellow band, *R<sub>f</sub>* 0.17). Recrystallization of each fraction (4a, 4b, 4c<sub>1</sub> and 4c<sub>2</sub>) from Me<sub>2</sub>CO-C<sub>6</sub>H<sub>6</sub> yielded compounds (3) (92 mg), (4) (34 mg), (7) (57 mg) and (8) (110 mg) respectively.

*Dehydrogenation of 3 nonacetate.* The nonacetate of 3 (11 mg), NBS (2 mg), benzoylperoxide (1 mg) in CCl<sub>4</sub> (10 ml) were refluxed under irradiation for 2 min. The soln became brown. KOAc (20 mg) was added and the whole refluxed for 5 min, during which brown red colour faded. After removal of CCl<sub>4</sub> *in vacuo*, added H<sub>2</sub>O gave a ppt, mp 154-157° (EtOH), which was identical with an authentic spicataside (7) nonacetate (TLC, IR and mmp).

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## PENTACYCLIC TRITERPENIC ACIDS: MICROMERIC ACID FROM *SALVIA HORMINUM*

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**Key word Index**—*Salvia horminum*; Labiatae; micromeric acid; sitosterol; four other triterpenic and steroidal alcohols.

## INTRODUCTION

The presence of triterpenes in some *Salvia* species has long been known. Ursolic and oleanolic acids were isolated from *S. officinalis* [1-5], *S. triloba* [6-8] and *S. apiana* [9], other triterpenes were obtained from *S. officinalis* [10-12] and *S. apiana* [9] and a new triterpene, anagadiol, was found in *S. broussonetti* [13].

*S. horminum*\* which grows in Turkey, has not been investigated until now. From the upper

ground parts of the plant ursolic, oleanolic and micromeric acids were isolated. Although micromeric, ursolic and oleanolic acids have been found together in other plants of the Labiatae, micromeric acid is reported for the first time in *Salvia*. The acid was first isolated from *Micromeria benthami* [14] and later, was found in the leaves of *Rosmarinus officinalis* [15].

## EXPERIMENTAL

*Salvia horminum* was collected from the Mediterranean coast of Turkey. The dried and powdered plant was extracted successively with light petrol and CHCl<sub>3</sub>. The petrol extract was fractioned on neutral Al<sub>2</sub>O<sub>3</sub> (activity III) giving five triterpenoid

\* The plant was identified by Prof. Dr. A. Baytop (Istanbul). A voucher sample ISTE 8032 is deposited in the Herbarium of Faculty of Pharmacy, University of Ist.

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

The  $\text{CHCl}_3$  extract gave a main mixed band ( $R_f$  0.62) by preparative TLC (Si gel G with  $\text{CHCl}_3$ -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  $\text{N}_2$  at  $250^\circ$ ) gave three peaks with  $R'_f$ s equivalent to the derivatives of oleanolic, ursolic and micromeric acids.

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## THE ALKALOIDS OF *NECTANDRA MEGAPOTAMICA*

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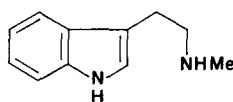
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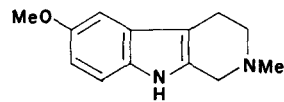
**Key Word Index**—*Nectandra megapotamica*; Lauraceae; indolealkylamine; *N*-methyltryptamine; 6-methoxy-*N*-methyl-1,2,3,4-tetrahydro- $\beta$ -carboline, *Crithidia fasciculata* inhibition.

The genera *Nectandra* and *Ocotea* (Lauraceae) are well represented in the Brazilian flora. They are generally characterized by the occurrence of alkaloids of the benzyloquinoline-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- $\beta$ -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  $\mu\text{g/ml}$ . It is not