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SHORT REPORTS

FERULOYLTYRAMINE FROM *HYPECOUM*

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Key Word Index—*Hypercoum parviflorum*; *H. imberbe*; Papaveraceae; natural amides; feruloyltyramine.

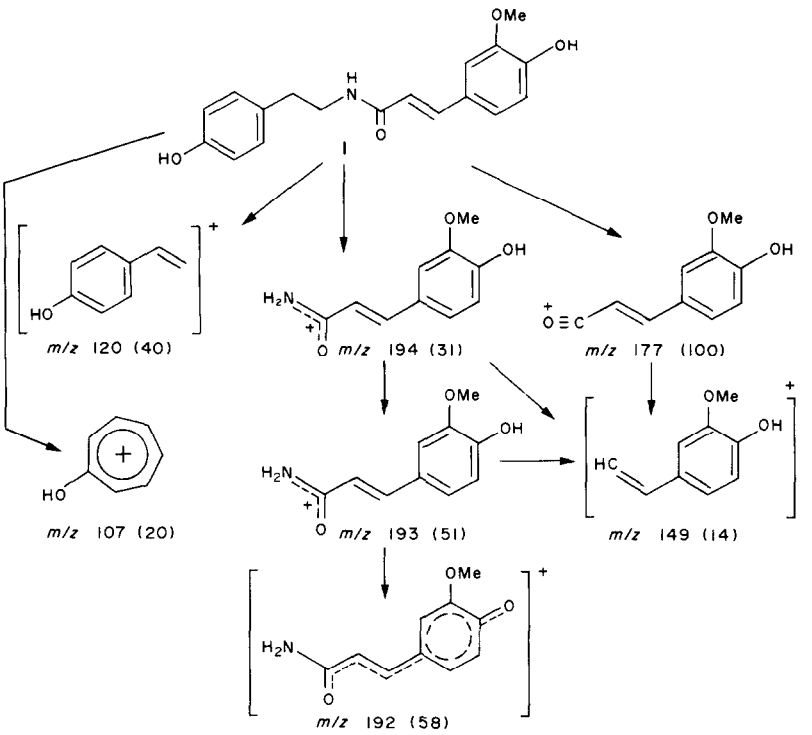
Abstract—Feruloyltyramine amide has been isolated from *Hypecoum parviflorum* and from *H. imberbe*.

INTRODUCTION

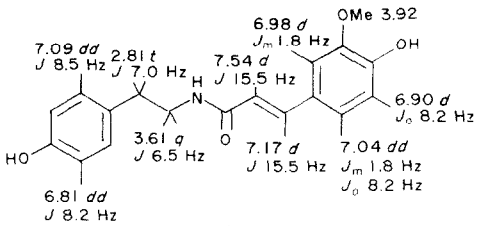
Various brief reports in the literature have indicated the presence of feruloyltyramine (**1**) in flowering plants [1–3]. We have now isolated this amide, for the first time in crystalline form, from two members of the Papaveraceae, namely *Hypecoum parviflorum* Kar. and Kir. collected near Peshawar, Pakistan, and *H. imberbe* Lam., gathered in Bornova, near Izmir, Turkey. We also wish to describe the mass spectral fragmentation, as well as the proton and ^{13}C NMR spectra of this alkaloid.

RESULTS AND DISCUSSION

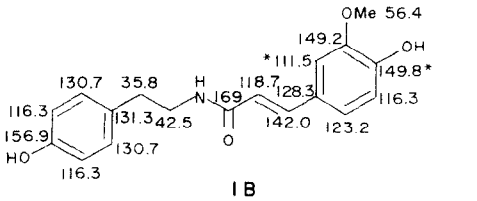
Feruloyltyramine, isolated by the procedure described in the Experimental, shows UV λ_{max}^{MeOH} nm: 220, 293, 319 (log ϵ 4.39, 4.16, 4.26); $\lambda_{max}^{MeOH-OH^-}$ nm: 210, 242, 306, 362 (log ϵ 4.80, 4.29, 3.88, 4.38). Significant fragments in the mass spectrum, besides the molecular ion *m/z* 313 ($C_{18}H_{19}O_4N$), include *m/z* 194 ($C_{10}H_{12}O_3N$), 193 ($C_{10}H_{11}O_3N$), 192 ($C_{10}H_{10}O_3N$), 177 (base, $C_{10}H_9O_3$), 149 ($C_9H_9O_2$), 120 (C_8H_8O), 107 (C_7H_7O) (Scheme 1). The proton and ^{13}C NMR spectra, summarized around expressions **1A** and **1B**, res-



Scheme 1.



I A



I B

pectively, provide conclusive evidence concerning the structure of this compound.

It has been tentatively suggested that analogs of feruloyltyramine could act in nature as precursors to 1-phenethylisoquinolines which could in turn be converted into colchicine, homoproaporphines or homoaporphines [4]. However, the acid-catalyzed cyclization of amides to form isoquinolines, commonly referred to as the Bischler–Napieralsky reaction, is not a natural process. Isoquinoline systems are instead formed *in vivo* through Pictet–Spengler-type cyclizations. It follows that feruloyltyramine and its close analogs in nature do not appear to act as precursors for any of the isoquinoline alkaloids.

EXPERIMENTAL

The ^{1}H NMR spectrum was recorded on a Bruker 360 MHz Supercon (FT) spectrometer in $CDCl_3$, and the ^{13}C NMR spectrum was obtained in MeOH-d_4 at 50.32 MHz using a Bruker WP-200 Supercon (FT) instrument. The MS was obtained on a MS 9/50 instrument. TLC was on Merck Si gel F-254 plates.

The EtOH extracts of *H. parviflorum* (5 kg of entire dried plants—A) and *H. imberbe* (215 g of entire dried plants—B) were worked-up separately as follows. The dried extracts were taken up in 5% HCl, filtered and the filtrate made alkaline with NH_4OH. The crude alkaloids were then extracted into $CHCl_3$. The concd extracts were passed through a column of Si gel. Elution with 2.5% MeOH in $CHCl_3$ supplied a fraction which was further purified by prep. TLC in MeCN–C_6H_6–EtOH–MeOH–18 M NH_4OH (8 : 4 : 6 : 1 : 1), (R_f 0.45), to provide feruloyltyramine (A, 79 mg; B, 4 mg), mp 92–93° $CHCl_3$.

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