Tetrahedron Letters No. 27, pp. 1917-1919, 1963. Pergamon Press Ltd.
Printed in Great Britain.

14-EPIVINCAMINE, A NEW ALKALOID FROM VINCA MINOR L.

J.Mokrý and I.Kompiš

Czechoslovak Academy of Sciences
Department of Alkaloids, Institute of Chemistry,
Slovak Academy of Sciences, Bratislava

(Received 29 August 1963; in revised form 1 October 1963)

TWO crystalline alkaloids were obtained through repeated counter-current distribution in benzene-*n*-butanol-85%-formic acid-McIlvain buffer pH=3.5, ratio 25:5:1:31; 460 resp.100 transfers, followed by chromatography on alumina, activity II, benzene + 0.5% MeOH, from fraction P_1 of the alkaloids from *Vinca minor* L.[1] The first alkaloid has been recognized as vincamine,[2] and the description of the second follows.

The new alkaloid (I) with melting point 181-185°, $[\alpha]_D^{22^\circ} = - 36,4 \pm 2^\circ$ (c = 1.036; chloroform) belongs on the basis of its ultra-violet spectrum, λ_{max}^{EtOH} 226 and 276 mμ, log ε 4.51 and 3.93; λ_{min}^{EtOH} 250 mμ, log ε 3.57 to the indole group of alkaloids. The infrared spectra in KBr and in CCl_4 indicated the presence of an unconjugated ester group (1742 cm^{-1}), hydroxy group (3530 cm^{-1}), no free NH group

---

[1] J.Mokrý, I.Kompiš, P.Šefčovič and Š.Bauer, *Coll.Czech.Chem. Communs.* **28**, 1309 (1963).

[2] E.Schlittler and A.Furlenmeier, *Helv.Chim.Acta* **36**, 2017 (1953) and other papers.

and a disubstituted benzene ring (745 cm^{-1}). Its molecular formula according to analysis is $C_{21}H_{26}N_2O_3$ which was also proven by mass spectrometry with a molecular ion peak at <u>m/e</u> 354. The mass spectrum with peaks at M-15, M-18, M-29, M-47, M-59, M-70 and the intensive peak M-102 was nearly identical with that of vincamine (II)[3], differing in the intensity of some peaks and mainly in the peak at <u>m/e</u> 266, which in the mass spectrum of vincamine is shifted to <u>m/e</u> 267. This fragmentation indicated a dihydroeburnamenine skeleton for this new alkaloid, so that it could conceivably be a diastereoisomer of vincamine (II), where either the functional groups at C-14 are exchanged, or the D/E ring juncture is trans rather than cis as in vincamine.[4]

The reduction of the alkaloid with $LiAlH_4$ was carried out in the same way as for vincamine[5] and diol III was obtained. The keton V (m.p. 174-175°) resulting from oxidation of diol III with periodic acid was identical with (-)-eburnamonine (= vincamone) (V), obtained through oxidation of vincaminol (IV)[5]. The infrared spectra were superimposable. The presence of formaldehyde was proven in the mother liquors after the oxidation.

---

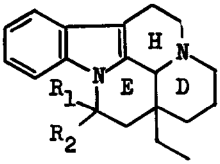
[3] M.Plat, D.Dohkao Manh, J.LeMen, M.M.Janot, H.Budzikiewicz, J.M.Wilson, L.J.Durham and C.Djerassi, <u>Bull.Soc.Chim. France</u>, <u>1962</u>, 1082.

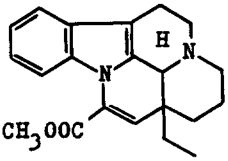
[4] J.Mokrý, M.Shamma and H.E.Soyster, <u>Tetrahedron Letters</u>, No.<u>15</u>. 999 (1963).

[5] J.Mokrý, I.Kompiš, J.Suchý, P.Šefčovič and Z.Voticky, <u>Chem.Zvesti</u>, <u>17</u>, 41 (1963).

Through heating of the alkaloid in dry methanol saturated with gaseous HCl apovincamine (VI), identical with the product obtained through dehydration of vincamine[6,7] was obtained in good yield.

These chemical proofs explicitly show the new alkaloid to be 14-epivincamine.





		R_1	R_2	
I	14-epivincamine	CH_3OOC-	HO-	VI apovincamine
II	vincamine	HO-	CH_3OOC-	
III	14-epivincaminol	HO-CH_2-	HO-	
IV	vincaminol	HO-	HO-CH_2-	
V	(-)-eburnamonine	O=		

The stereochemistry of vincamine and 14-epivincamine at C-14 will be discussed in the near future.

Acknowledgement: We wish to thank Dr.L.Dolejš, Institute of Organic Chemistry and Biochemistry of the Czechoslovak Academy of Sciences, Prague, for running the mass spectrum.

---

[6] J.Trojánek, O.Štrouf, J.Holubek and Z.Čekan, *Tetrahedron Letters*, No.**20**, 702 (1961).

[7] J.Mokrý, I.Kompiš, J.Suchý, P.Šefčovič and Z.Votický, *Chem.Zvesti*, **16**, 140 (1962).