Chemical Studies on Lichens

24.* Norsolorinic Acid in *Lecidea piperis*

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The American lichen *Lecidea piperis* (Spreng.) Nyl. (Lecideaceae) is characterized by a red-coloured medulla, the colour often penetrating through the cortex. The "lichen mass spectrum" [1] (Fig. 1)

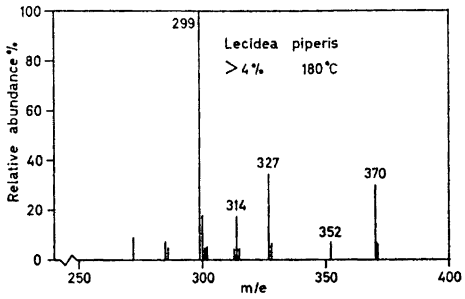
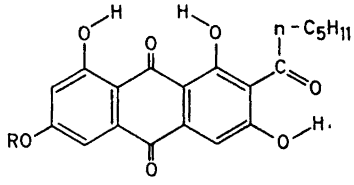


Fig. 1.

shows a striking similarity to the spectrum of solorinic acid (I),[1] although the peaks appear at 14 mass units below those of I.



I: R = CH_3

II: R = H

This suggests the presence of norsolorinic acid (II).

The $M^{+\cdot}$ ion appears at *m/e* 370, while the base peak at *m/e* 299 is due to the loss of n-C_5H_{11} from the side-chain. The peak at *m/e* 314 is best explained by the loss of C_4H_8 from the side-chain because of a McLafferty rearrangement.

II has been isolated from *L. piperis* in 1 % yield. It was identified by comparison with an authentic specimen, prepared by demethylation of I according to Anderson *et al.*[2] Previously II has been found only in *Solorina crocea* (L.) Ach. (Peltigeraceae),[2] where it occurs in minute quantities together with the far more abundant I.[3]

No traces of I could be found in *L. piperis*. I has not been found outside *S. crocea*.

Experimental. L. piperis (300 mg) from Minas Geraes, Brazil, collected by S. Henschen (voucher specimen to be found in UPS), was continuously extracted with acetone (5 ml, 24 h). The filtered extract was evaporated and the residue recrystallized from ethanol to give norsolorinic acid (I, 4 mg, 1 %) as red needles, m. p. 265–268° (lit.[2] 269–270), identified by comparison with an authentic sample (IR, MS, mixed m.p.).

The presence of I was also demonstrated in another sample of *L. piperis* (Wright, Lich. Cubae 191, voucher specimen in UPS) by lichen mass spectrometry and instant thin layer chromatography.[4]

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