PYRROLIZIDINE ALKALOID N-OXIDES FROM SYMPHYTUM TUBEROSUM

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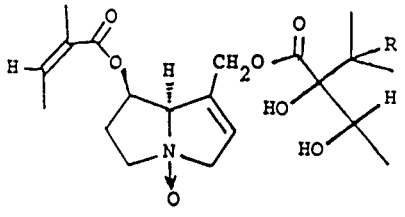
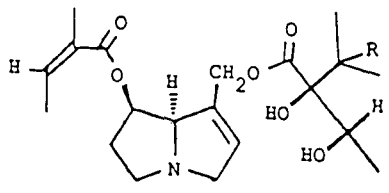
In a previous communication (Gray et al 1983) we reported the isolation of two pyrrolizidine alkaloids, symlandine (**3**) and echimidine (**4**) together with a large quantity of allantoin from the roots and rhizomes of Symphytum tuberosum L. (tuberous comfrey, fam. Boraginaceae). Allantoin is used in the treatment of psoriasis and other skin diseases andis a component of many cosmetics (Nakao et al 1982). The occurrence of pyrrolizidine alkaloids in Symphytum spp. is of considerable importance owing to their hepatotoxicity and carcinogenicity (Schoental 1982).

The dried leaves (2.5kg) of S. tuberosum (coll. May 1984 at the National Botanic Garden, Glasnevin, Dublin) were percolated with CHCl3 and then MeOH. Work up (cf. Gray et al 1983) led to the isolation of two pyrrolizidine N-oxides, symlandine-N-oxide (**1**, 0.0032% w/w) and echimidine-N-oxide (**2**, 0.004% w/w). The structures were determined on the basis of physico-chemical studies using high resolution lH-NMR with spin decoupling, l3C-NMR and MS, by comparison of spectral data with those of the free bases (**3** & **4**, respectively), which were also found in the CHCl3 extract, and by conversion into the free bases.





1 R=H
2 R=OH

3 R=H
4 R=OH

Once again (cf. Gray et al 1983) the yield of allantoin was high (0.98% w/w from the MeOH extract) and that of the pyrrolizidine alkaloids low in comparison with S. officinale L. (Tittel et al 1979), the species used in herbal medicine. This confirms that S. tuberosum is a useful alternative source of allantoin.

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