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MUSCI

ALKANES FROM FOUR SPECIES OF *SPHAGNUM* MOSS

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Key Word Index—*Sphagnum* spp; Musci; Moss; *n*-alkanes.

*Plants.** *Sphagnum fuscum* (Klinggr.); *S. magellanicum* (Brid.); *S. rubellum* (Wils.); *S. recurvum* (Klinggr.). *Sources.* The first three species were collected by C.S.O'C. on Monasterevan bog, Co. Kildare, Ireland. The last was collected by C.S.O'C. in Roundwood, Co. Wicklow, Ireland.

Previous work. On *S. fuscum*,[1] *S. imbricatum*,[2] unidentified *Sphagnum* species,[3–5] *S. teres.*[6]

Earlier work on *Sphagnum* has concentrated mainly on carbohydrates,[1] sterols,[2] triterpenes[3–5] and phenolics,[6] though Marsili *et al.*[5] have examined the alkane content of one *Sphagnum* species. An analysis of the *n*-alkanes of four species of moss, which are the dominant plants of the central raised bogs of Ireland is presented in Table 1.

TABLE 1. *n*-ALKANES IN FOUR *Sphagnum* SPECIES*

Species	C_{20}	C_{21}	C_{22}	C_{23}	C_{24}	C_{25}	C_{26}	C_{27}	C_{28}	C_{29}	C_{30}	C_{31}	C_{32}	Odd/even ratio
Sphagnum fuscum	1·0	4·2	1·1	15·5	2·5	35·0	2·7	15·0	1·6	4·2	1·3	8·7	1·0	9:1
S. magellanicum	1·0	6·5	1·1	13·8	3·0	27·7	3·1	5·6	2·7	5·9	2·6	17·7	1·4	6:1
S. recurvum	1·0	13·8	1·8	24·0	3·6	12·9	3·0	8·9	2·5	12·9	2·2	9·6	1·0	6:1
S. recurvum†	1·0	11·9	1·3	21·4	2·9	12·6	2·8	10·0	2·4	15·2	2·3	11·7	1·0	7:1
S. rubellum	1·0	11·6	2·0	20·0	4·1	23·9	3·2	6·8	2·3	4·4	1·9	11·6	1·0	5:1

* These values are percentages of the total alkane fraction.
† Extracted by dipping (see Experimental).

While no definite chemotaxonomic correlations could be made on the basis of results from only four species, some interesting points emerge. Differences in *n*-alkane content closely parallel the existing division of this family into sections.[7] The major alkane is either C_{23} or C_{25}, thus the usual pattern of C_{29} or C_{31} alkane predominating in higher plants[8] was not observed. In addition, the ratio of odd- to even-numbered alkanes is lower

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* Mosses were identified by Rev. J. J. Moore, S.J., Department of Botany, University College, Belfield, Dublin 4. Voucher specimens were deposited in the Herbarium of Trinity College, Dublin 2.

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than that found in higher plants.[9] A comparison of the two extraction methods used with *S. recurvum* shows only slight differences in alkane content due possibly to an increased amount of 'internal alkanes'[10] in the Soxhlet extracted material. We have also noted an increased alkane content (9%) in the sample extracted by dipping as opposed to 2·5% of alkanes in the Soxhlet extracted material.

EXPERIMENTAL

Isolation of the alkanes. Powdered air-dried mosses were exhaustively extracted with light petrol. in a Soxhlet. In addition, whole samples of *S. recurvum* were dipped in light petrol. for 2 × 30 min. The vacuum evaporated residues were chromatographed on 1 mm layers of Kieselgel PF254. After development with light petrol., marker strips were sprayed with Rhodamine B. The least polar band was eluted with $CHCl_3$, co-TLC and film-thin IR revealed the presence of alkanes only.

GLC analysis. The alkane mixtures were analysed on a Perkin–Elmer F11 (FID) using 2·5% SE 301 on Chromosorb G AW.DMCS in glass; nitrogen 43 ml/min. Temperatures (i) identification of alkanes n-C_{19} to n-C_{25}; 205°, (ii) identification of alkanes n-C_{26} to n-C_{35}; 230°, (iii) quantitative estimation 180–240° at 10° min. Alkanes were identified by comparison of their retention data with those of standard alkanes and from a plot of Hydrocarbon number V_s Log R_t. The relative amounts of each alkane was determined by peak area measurements.

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ANGIOSPERMAE DICOTYLEDONAE

AMARANTACEAE, ETC.

CRYSTALLINE CHEMICAL COMPONENTS OF SOME VEGETABLE DRUGS

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Key Word Index—*Achyranthes aspera*; Amarantaceae; *Betula utilis*; Betulaceae; *Quercus infectoria*; Fagaceae; *Punica granatum*; Punicaceae; sterols; triterpenoids.

In the course of our study of the chemistry of vegetable drugs used in Indian medicine from ancient times, we had occasion to reinvestigate the following plant materials in detail. A number of known compounds were isolated, some of them fairly common but also some very rare. The drugs were extracted with solvents of increasing polarity in succession and the solvent-free residues crystallised either directly or after purification by PC on silica gel. The substances were converted into appropriate derivatives and for confirming identity, comparisons were made with authentic samples in all the cases, employing m.p., m.m.p., $[\alpha]_D$, TLC and IR spectra as criteria. Results described in the earlier literature and as obtained by us are mentioned below. Rotations were taken in $CHCl_3$ except where stated otherwise.