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ISOLATION OF MANNITOL FROM *DESMARESTIA VIRIDIS*

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APART from their pigment pattern, the Phaeophyceae are characterized in their chemical constitution by the occurrence of D-mannitol which accumulates in the algae during photosynthesis to a considerable extent. The kinetics of its formation show that it should be regarded as analogous to the mono- and oligo-saccharides which are the primary products of photosynthesis in Chlorophyta and higher plants. Mannitol has been recorded in most of the brown algae which have been investigated.[1–3] However, *Desmarestia viridis* and two further species of brown algae are reported to contain no mannitol at all.[3–5] No additional information, however, is available as to what replaces mannitol as the major photosynthetic product in these algae.

Intact thalli of *Desmarestia viridis* (*O. F. Müller*) *Lamour.* and of *Desmarestia aculeata* (*L.*) *Lamour.* were collected from subtidal rocks near Helgoland (Northern Sea). Equivalent samples of these species were allowed to photosynthesize immediately in a sea-water medium containing $H^{14}CO_3^-$. The samples were fixed in boiling EtOH (80%), extracted, and analysed by PC.[6]

TABLE 1. DISTRIBUTION OF ^{14}C-ACTIVITY AMONG PHOTOSYNTHETIC PRODUCTS IN % OF LABELLING OF THE SOLUBLE FRACTION AFTER 10 min OF PHOTOSYNTHESIS

Species	P-Esters	Amino acids	Organic acids	Mannitol
D. aculeata	12·0	44·0	3·0	39·0
D. viridis	15·0	42·3	2·6	37·0

The analysis of the EtOH-soluble fraction showed that ^{14}C-mannitol occurred among various ^{14}C-labelled photosynthetic products in *Desmarestia aculeata*[7] and, unlike the findings of Kylin,[4] also in *Desmarestia viridis*. ^{14}C-Mannitol was obtained pure by repeated chromatography. The time course of ^{14}C-mannitol formation after short term photosynthesis in $H^{14}CO_3^-$ are rather similar in both species and resemble those reported for *Laminaria saccharina*.[6] The amount of ^{14}C fixed in mannitol increases rapidly with time of

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illumination, and reaches 37% of the total labelling after 10 min of photosynthesis. The distribution of ^{14}C-activity among the other compounds of the soluble fraction is shown in Table 1.

Unlike earlier reports,[3–5] therefore, *Desmarestia viridis*, as well as the other members of this genus,[7] clearly show the chemotaxonomical characteristics that have been established for all other Phaeophyceae.

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