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:sence of Sieve Plates in *Cystoseira* (Fucales, Fucophyceae)

Amelia GOMEZ GARRETA and M. Antonia RIBERA

Laboratorio Botanica, Facultad Farmacia, Universidad Barcelona (Spain)

The presence of sieve plates in the cells of Fucophycea been observed by a number of authors, in particular in Lami iales (PARKER & HUBER, 1965; SCHMITZ & SRIVASTAVA, 1974 5, 1976; SIDEMAN & SCHEIRER, 1977) and Fucales (BISALPUTRA 6, FULCHER & McCULLY, 1968; MOSS, 1983; FIELDING **et al.** 1987) latter works deal principally with diferent species of th us **Fucus** but, on the other hand, no description of thes uctures have been found in species of the genus **Cystoseira** only data for **Cystoseira** are two photographs of the siev tes in **C. stricta** (pictures by L. and M. Pellegrini) shown b ARDY-HALOS **et al.** (1984).

This study deals with the description of sieve plates i **editerranea**. The samples were collected in Blanes (Gerona, N in) in February 1990. In the preparation for TEM a number o ces from the middle zone of the cauloid of this species were arated and fixed in 4% paraformaldehyde and 4% gluteraldehyd 0.1 M sodium cacodylate buffer in sea water for 2 hours. Th oles were washed four times in the buffer and post-fixe osmium tetroxide (1%) in the same buffer for 1 hour. Th cimens were dehydrated through a graded acetone series an edded in Spurr's resin. Cut sections were then post-stained i nyl acetate and lead citrate, and examined with a Phillips 30 . The sieve plates were observed in the cells of the inne tex.

The thickness of the sieve plates is about 0.41 um (0.33- 1 um). This value is slightly higher than the values found b er authors in other species of Fucales and Laminariales (0.2 FIELDING **et al.**, 1987 for **F. vesiculosus, F. serratus** and F **alis;** 0.3 um: FULCHER & McCULLY, 1971 for **F. vesiculosus;** 0.2 SCHMITZ & SRIVASTAVA, 1975 for **Alaria marginata;** 0.2-0.4 um EMAN & SCHEIRER for **Laminaria saccharina**). The pores have meter of aproximately 0.11 um (0.10-0.12 um). This value is ner than the estimates values measured by other authors i us spp. (0.037 um: BISALPUTRA, 1966 for **F. evanescens;** 0.0 FIELDING **et al.**, 1987 for **F. vesiculosus, F. serratus** and F **alis;** 0.05 um: FULCHER & McCULLY, 1971 for **F. vesiculosus** lower than the values found in Laminariales (0.11-0.30 um 1ITZ & SRIVASTAVA, 1975 for **A. marginata;** 0.70 um: SIDEMAN & EIRER, 1977 for **L. saccharina;** 2.40-6.00 um: PARKER & HUBER 5 for **Macrocystis pyrifera**).

MOSS (1983) considered the pattern of pores in the sieve tes of **F. vesiculosus** to be irregularly distributed while LDING **et al.** (1987) suggest that the pores have an even dis- ɔution across the plate. Our observations tend to agree with se of the former author, as the pores in the plates of **C iterranea** appear much more irregularly and infrequently dis ɔuted than those of **F. vesiculosus** (FIELDING **et al.**, 1987), t which can also be readily seen in one of the photographs o se plates in **C. stricta** (L'HARDY-HALOS **et al.**, 1984).

Studies of the part of the cell wall where the sieve tes are located are currently being undertaken. We can state ever, that the plasmalemma fibres, which pass through the es, connect with the inner layers of the cell wall and pene- te them. The same observation has been reported by FIELDING **et** (1987) for **Fucus** spp.

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ERENCES

ALPUTRA, T. 1966. Electron microscopic study of the photoplas- mic continuity in certain brown algae. **Can. J. Bot. 44**:89- 93.

CHER, R.G. & M.E. McCULLY. 1968. Histological studies on the genus **Fucus**. III Fine structure and possible functions of the epidermal cells of the vegetative thallus. **J. Cell. Sci. 3**:1-16.

LDING, A.H., P.L. CARTER & C.A. SMITH. 1987. Sieve plates in **Fucus:** a reappraisal of size and pore distribution. **Phycolo- gia 26**(4):501-504.

ARDY-HALOS, M.Th., J.P. LARPENT, J. GAILLARD, L. et M. PELLE- GRINI. 1984. Morphogenèse expérimentale chez les algues. **Rev. Cytol. Biol. végét. Bot., 7**:311-362.

S, B.L. 1983. Sieve elements in the Fucales. **New Phytol. 93**:433-437.

ER, B.C. & J. HUBER. 1965. Translocation in **Macrocystis**. II Fine structure of sieve tubes. **J. Phycol. 1**:172-179.

1ITZ, K. & L.M. SRIVASTAVA. 1974. Fine structure and develop- ment of sieve tubes in **Laminaria groenlandica** Rosenv. **Cyto- biologia 10**:66-87.

1ITZ, K. & L.M. SRIVASTAVA. 1975. On the fine structure of sieve tubes and the physiology of assimilate transport in **Alaria marginata. Can. J. Bot. 53**:861-876.

1ITZ, K. & L.M. SRIVASTAVA. 1976. The fine structure of sieve elements of **Nereocystis lutkeana. Amer. J. Bot. 63**:679-693.

EMAN, E.J. & D.C. SCHEIRER. 1977. Some fine structural obser- vations on developing and mature sieve elements in the brown alga **Laminaria saccharina. Amer. J. Bot. 64**:649-657.