

## BRIEF COMMUNICATIONS

### ORGANELLES IN MEDULLA EXUDATE OF LAMINARIA

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#### SUMMARY

In the exudate from medullar filaments of *Laminaria*, the same organelles were found as in sections of the tissue, with the exception of the nuclei, which were possibly destroyed. It is concluded that these cellular contents are derived from drainage of the open ends of cut filaments.

In a previous paper VAN WENT & TAMMES (1972) described an experimental fluid flow in medulla filaments of *Laminaria digitata*. This flow occurs near a wound surface, and an exudate appears on the medulla area when a cauloid is cut through. Protoplasm is sieved out by the sieve plates and accumulates above them, but the part towards the wound is empty. So it seems that the cut open ends of the filaments are drained of their protoplasmic contents by the flow of fluid and thus must be present in the exudate.

The exudate was sampled in 25- $\mu$ litre capillaries. Frequent cutting is necessary to obtain sufficient exudate. Three capillaries per batch were emptied into the fixation fluid of 5% glutaraldehyde and 5% KCl buffered to pH 8 and left for 1.5 h at 4°C and then centrifuged for 10 min at 5,000 g. The pellets were postfixed at room temperature either in 2% KMnO<sub>4</sub> + 5% KCl for 2 h or in 1% OsO<sub>4</sub> + 5% KCl for 16 h. They were embedded in Epon 812 for electron microscopy.

In sections of the medullar tissue ZIEGLER & RUCK (1967) observed for the same species the following contents: a vesicular protoplasm; a nucleus with a membrane; mitochondria with sacculi; plastids with an onion scale structure; and laminar systems.

Electron microscopy of the pellet of the exudate showed the same plastids and mitochondria, further undefinable structures such as membranes, lamellae, fibrils, and granules. No nuclei were found, though it is possible that they had been destroyed (*plate I*). As the sampling of exudate was directly from the medullar surface, there is little chance of contamination from cortex cells. It seems, therefore, that the exudate is mixed with the protoplasmic contents of the cut open ends of the medulla filaments, as was expected.

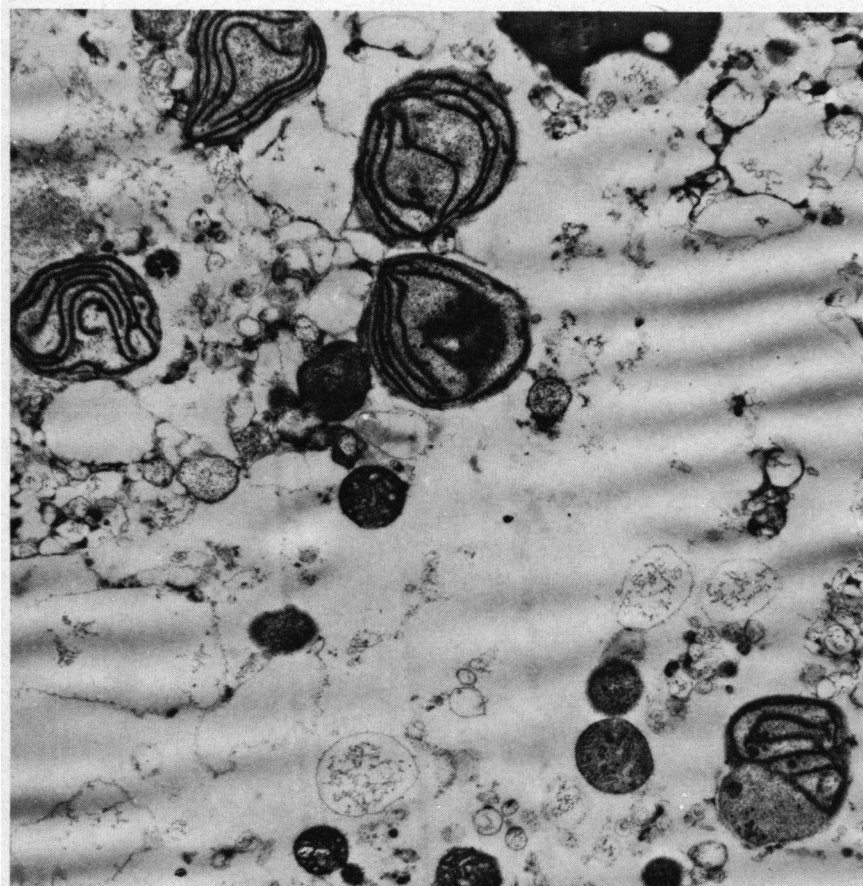


Plate. 1. Pellet of centrifuged exudate from *Laminaria*-medulla. Plastids with onion scale structure; mitochondria and undefinable structures (vesicles, fibrils and granules);  $\times 10,000$ ; glutaraldehyde followed by  $\text{OsO}_4$ .

#### REFERENCES

- WENT, J. L. VAN & P. M. L. TAMMES (1972): Experimental fluid flow through plasmodesmata of *Laminaria digitata*. *Acta Bot. Neerl.* **21**: 321-326.
- ZIEGLER, H. & RUCK (1967): Untersuchungen über die Feinstruktur des Phloems. III. Die Trompetenzellen von *Laminaria*-Arten. *Planta* **73**: 62-73.