OIL SUPPLEMENTATION OF ALGAL DIETS FOR SYDNEY ROCK OYSTER *SACCOSTREA COMMERCIALIS* LARVAE

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Gelatin-acacia microcapsules containing one of a number of oils were evaluated as a diet for Sydney rock oysters *Saccostrea commercialis* larvae. The inclusion of cod liver oil in the microcapsules was found to produce better growth rates than squid or modified fish oil, both of which contained higher concentrations of the C22:6W3 and C20:5W3 fatty acids.

The importance of the essential fatty acids C22:6W3 and C20:5W3 for oysters was clearly demonstrated by Enright et al. (1986a,b). The need for the C22:6W3 fatty acid in larval development was indicated by the effectiveness of including oyster lipid extract in gelatin-acacia microcapsules fed to oyster spat (Langdon and Waldock 1981).

Gelatin-acacia microcapsules containing approximately 81.1% oil (mean diameter 4.5 um) were prepared using 160 bloom, beef skin gelatin (Langdon and Waldock 1981). One day old D-stage Sydney rock oyster larvae were stocked at a density of 5/ml in lightly aerated aquaria (8l) maintained at 25 $\pm$1°C. Water in the aquaria was changed daily and experiments were carried out for eight days. Microcapsules were fed at 0.05 mg dry weight/l and algae (*Pavlova lutheri* and *Isochrysis* aff. *galbana*) were added to aquaria at 0.05 - 0.10 mg dry weight/l. The algae were fed on an equal dry weight basis; 0.10 mg algae/l was equivalent to a total of 4.8×10^3 cells/ml.

Gelatin-acacia microcapsules which contained cod liver oil were a most effective supplement for algal diets fed to Sydney rock oyster larvae. The optimum concentration for microcapsules as a supplement to algal diets was found to be 0.05 mg dry weight/l (1330 microcapsules/ml). These microcapsules were not adequate as a complete diet but were useful as a dietary supplement at a concentration of 0.05 mg/l (1330 microcapsules/ml), and reduced the requirement for microalgae. Of all oils tested (modified fish, olive, soybean, maize, squid and cod liver oil), cod liver oil produced the highest growth rates, although the squid and modified fish oil had much higher concentration of the two important long chain unsaturated fatty acids C22:6W3 and C20:5W3. This implies that the concentrations of the C22:6W3 and C20:5W3 fatty acids (8.8 and 9.5% respectively) in the cod liver oil were adequate for optimum larval development. Although the relatively high essential fatty acid content of the cod liver oil is likely to have enhanced larval growth rates, this oil may also be an important energy source for oyster larvae.

ENRIGHT, C.T., NEWKIRK, G.F., CRAIGIE, J.S. and CASTELL, J.D. (1986a). J.Exp. Biol. Ecol. 96:1.

ENRIGHT, C.T., NEWKIRK, G.F., CRAIGIE, J.S. and CASTELL, J.D. (1986b). J. Exp. Biol. Ecol. 96:15.

LANGDON, C.J. and WALDOCK, M.J. (1981). J. mar. biol Ass. U.K. 61:431

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