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Growth activation of the microalgae *Tetraselmis suecica* by the aqueous of the seaweed *Monostrama nitidium*

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Introduction

Mass culture of microalgae as feed for mollusc, crustaceans and fish is an important components of the mariculture industry (Metting Jr., 1996)

Growth activator for *Tetraselmis suecica* were screened in methanol and water soluble extracts of several seaweed tissues. Also examined in this study were change in growth rate, biochemical composition , and digestion efficiency, of *T.suecica* cultured with and without the most effective of these extracts, the water soluble component extracted form *M. nitidium.*

Material and Method

Microalgae culture

The Prasinophyte flagellate *T.suecica* was selected through percoll gradient centrifugation, antibiotics treatment and growth on an agar medium. The axenic isolate was cultured in f/2 medium with an initial cell density of 1.7×10^5cell mL^{-1}. Each seaweed extract was added to the medium and cultured under 70 umol $m^{-2}s^{-1}$ light intensity at 18℃ for 8d. Cells were counted under a microscope with a Hausser haemacytometer.

Seaweed extracts

Leafy thalli of seaweed were collected from the coast of Korea from September 1995 to May 1998. Extracts method was accorded to Jin et al,,(1997).

Analysis of growth biochemical composition

Tatal carbohydrate expressed as glucose was determined by the phenol-sulfuric acid method (Kocher, 1978). A common pigment chlorophyll a was extracted in 100% acetone ,and amount was calculated according to the chlorophyll a equation of Sterman(1988). Total lipid was extracted by the use of hexane and isopropanol (3:2) as a solvent (Radin, 1981) and quantified gravimetrically. The amount of soluble protein in the cell was estimated according to the method of Lowry et al. (1951).

Fatty acid analysis

Cells were collected by centrifugation at 1000 rpm for 10 min. The algal pellet was frozen and lyophilized fir fatty acid analysis. Metyl ester of fatty acid were prepared from 10 mg alga by in situ saponification and methylation with

mathanolic boron trifluoride (Whyte, 1998). Separation was on a db- wax column (30m×0.3mm ID, 0.25 um film).

Digestion efficiency

The feeding index of the microalgae were determined using 10 each of *Crassostrea gigas*(Pacific oyster), *Mytilus edulis* (blue mussel) and *Venerupes philippinatum* (Japanese littleneck clam). The amount of chlorophyll a and phaopigment were determined every 1 h during 12 h.

Result

Effect of seaweed extract

When the water soluble extract was added to medium, two seaweeds *Monostroma nitidium* and *Pachymeniopsis elliptica* showed growth activation of 1.7 fold and 1.6 fold respectively.

Gross biochemical composition

Amount o f gross biochemical composition of carbohydrate, chlorophyll a, lipid and protein were also similar in the cells cultured with and without the water extract.

Fatty acid composition

Fatty acids, especially EPA and DHA, are important in determining the nutritional values of diets for fish larvae survival and development. The proportion of EPA and DHA were similar in lipid from *T.suecica* cultured with and without the addition of the water extract.

Digestion efficiency

Digestion efficiency of Pacific oyster, blue mussels and Japanese littleneck clams were measured when fed *T.suecica* cultured with and without extract. No difference in bivalve feeding efficiency was evident .

Refernce

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