

EXPLORATORY STUDIES OF VEGETATIVE PROPOGATION OF MARINE AGLAE: PROCEDURE
FOR OBTAINING AXENIC TISSUES

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Introduction

We started a research project with a long range objective of developing techniques for vegetative propagation and breeding of economically interesting marine algae. We hope to devise procedures which will not only facilitate the propagation of these plants but will also permit a program of breeding and selection aimed at improving their properties. We are thinking of tissue cultures, culture of cell suspensions, cultivation of protoplasts and hybridization by protoplast fusion. These modern plant breeding techniques are also applicable to algae as is evident from a number of recent publications.

Schiff and coworkers (1972) mechanically disrupted the thallus of the green alga Prasiola and grew the isolated cells under defined culture conditions. They also defined the conditions which led to the attachment of the isolated cells to solid substratum (Bingham and Schiff, 1972). Chen and Taylor (1977) reported the development of techniques for isolation and axenic culture of medullary tissues of female gametophytic fronds of a commercially harvested strain of Chondrus crispus. Enriched sea water with added "growth-regulators" was used as the culture medium. They obtained fronds with normal morphology from tissue cubes 2 mm in dimension, cut from the colorless medulla of Chondrus plants. A Japanese patent was issued to the Kureha Chemical Company in 1974 for a method of agar production employing in vitro callus cultures of algae such as Gelidium and Gracilaria. From a small piece of a Gelidium thallus, callus was induced after growth for two days at 15° on an agar medium containing 2mg/l IAA and 0.2mg/l kinetin. The medium also contained