

STUDIES ON ALGIN FROM BROWN ALGAE OF TAIWAN^{1,2}

I. Estimation of yield and quality of algin

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ABSTRACT

The yield and quality of sodium alginate extracted from 31 specimens belonging to 19 species of Phaeophyta were studied. The results revealed: 1. The best yield and high viscosity of sodium alginate was extracted from *Endarachne binghamiae*. The viscosity of sodium alginate extracted from this as well as other algae deteriorates during the storage of raw materials. 2. The abundantly occurring species of *Sargassum* in the waters of Taiwan area also gave good yields and products of relatively high viscosity of sodium alginate, therefore, several species of *Sargassum*, such as *S. siliquosum*, *S. cristaeifolium*, *S. duplicatum* and *S. sandei* can be used as raw material of an alginate industry.

INTRODUCTION

Alginic acid is a typical constituent of brown algae and becomes more and more important in the utilization of phycocolloids (Nishide, 1976). Although most of the brown algae contain alginic acid, only a limited number of species are sufficiently abundant or suitable for commercial production. The most widely used species are those belonging to the order Laminariales (Levring *et al.*, 1969). None of these algae grows on the coast of Taiwan, however, there are many other brown algae, such as species of *Sargassum* which do grow abundantly in the waters around this island and its offshore islands.

So far, no alginate industry exists in Taiwan and the alginates used here are all imported. As the demands of alginates have been increasing in recent years, we thought it might be possible for us to use our own natural marine resources to manufacture alginates for our own use. For this reason, we have made a series of studies on this topic and have started analyzing the yield and quality of the alginates of the brown algae which grow in the waters around Taiwan.

MATERIALS AND METHODS

The algae studied were mostly collected along the northern and southern coasts of Taiwan during the spring and summer. Collecting dates and localities are shown in Table 1 and Fig. 1.

The fresh algae were washed thoroughly with tap water three times to remove salts and epiphytes, then they were air dried in room. After drying, 20.0 g of the material was cut into pieces of about 5 cm long, and soaked in 1% formalin for 24 hours. After the formalin treatment, the sample was washed once or twice with tap water, then was treated with 0.2 N H₂SO₄ overnight. The acid was removed by washing the sample with tap water, then 1 liter 1% Na₂CO₃ solution was added to the sample and stirred for an hour with an electric stirrer (350rpm.). The mixture was kept at room temperature overnight with occasional stirring. After

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