

## ALGINATE AND LAMINARINE COMPOSITION OF SOME BROWN ALGAE FROM RED SEA NEAR JEDDAH, SAUDI ARABIA

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### Abstract

Laminarin and alginic acid content of the brown algae, *Cystoseira myrica* J. Ag., *Padina pavonica* (L.) Thivy and *Sargassum dentifolium* (Turn.) C. Ag. collected from Abu Ali Island about 20 km south of Jeddah was recorded between March and June. *P. pavonica* contained highest amount of alginic acid as recorded in May and laminarin as recorded in September. *C. myrica* showed lowest amount of alginic acid with lowest of laminarin in *S. dentifolium* as recorded in September. All the three species of brown algae contained more alginic acid than laminarin.

### Introduction

*Cystoseira myrica*, *Padina pavonica* and *Sargassum dentifolium* in Phaeophyceae are commonly found along the eastern coast of the Red Sea bordering Saudi Arabia. The polysaccharides of the brown seaweeds such as laminarin or as membrane thickening material such as alginic acid are used as reserved materials. Alginic acid has been isolated from many species of brown algae (Yatsenko, 1962; Haug & Larsen, 1964; Tsapko, 1966; El Sayed, 1982) and comprises 14-40% of the dry weight of the plant (El-Sayed, 1982). Laminarin is a soluble reserve product occurring up to 30% mainly in Phaeophyceae. The amount of polysaccharide in various seaweeds varies with season, exposure, protection, current, depth and age of the plants (Volesky *et al.*, 1973; Khafaji, 1978). In the present paper differences in polysaccharide contents in three species of Phaeophyceae at different times of the year is reported.

### Materials and Methods

*Cystoseira myrica*, *Padina pavonica* and *Sargassum dentifolium* were collected at monthly interval from January to December 1984 from Abu-Ali Island about 20 km south of Jeddah and identified according to Khafaji & Meinesz (1984). The seaweeds were washed free from sand, sun-dried and powdered mechanically. Alginic acid and laminarin were extracted from finely powdered material using the method described by El-Sayed (1982). Three replicate measurements of each species were made every month.

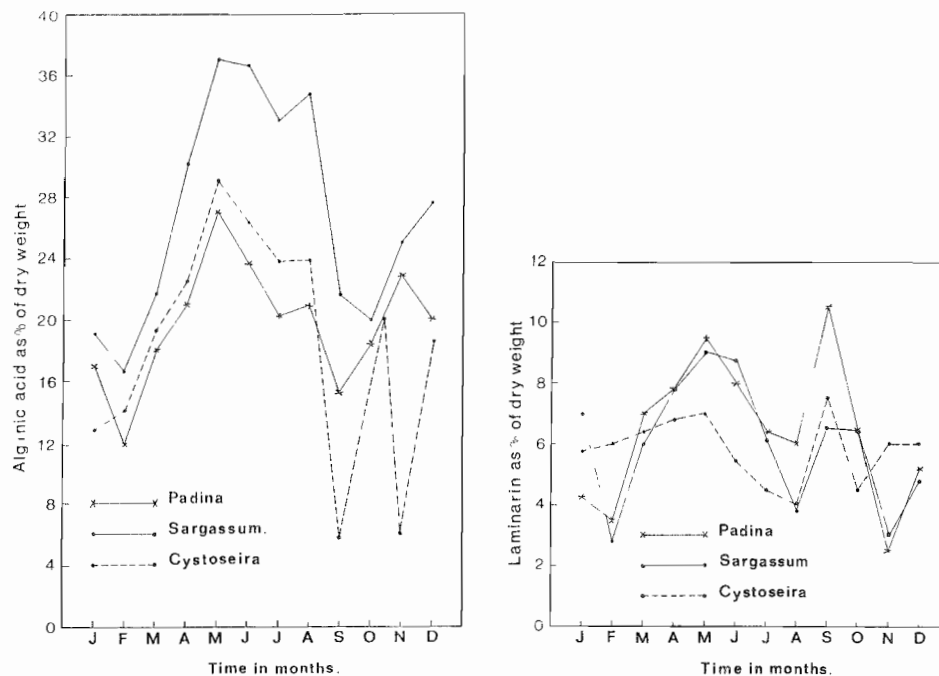


Fig. 1. Alginic acid & Laminarine composition of brown algae.

### Results and Discussion

Minimum amount of alginic acid was observed in winter between September and February with maximum amount in summer during May-August (Fig. 1). Volesky *et al.*, (1973) reported maximum value of alginic acid in Fucales and Laminariales in autumn. Laminarin was much less variable in all the three species tested. *P. pavonica* showed the highest value of 11% of the dry weight in September. Both alginic acid and laminarin showed a maximum value in summer months, with minimum values in winter months. This is presumably due to the seasonal growth since summer is a period of more active photosynthesis and there is more photosynthate available for alginic acid and laminarin.

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