Seaweed Res.Utiln.
16(1&2):13-16(1993)

SEASONAL VARIATION IN BIOCHEMICAL CONSTITUENTS OF SARGASSUM WIGHTII (GREVILLIE) WITH REFERENCE TO YIELD IN ALGINIC ACID CONTENT.

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Abstract

Seasonal variation in biochemical constituents of *S. wightii* with reference to yield in alginic acid content has been reported. The lipid content showed a reciprocal relation, while carbohydrate a positive correlation with alginic acid content.

Introduction

Species of *Sargassum* and *Turbinaria* are the major source of alginic acid in India. Studies were made on the alginic acid content of some brown algae from Goa coast (Solimabu *et al.*, 1975), Saurastra coast (Kappanna *et al.*, 1962) and Mandapam coast (Pillai, 1957). Seasonal variation in alginic acid content, growth and mannitol contents were carried out in *Sargassum wightii, Turbinaria conoides* and *T. ornata* (Umamaheswara Rao *et al.*, 1972). Seasonal variation on chemical composition of *S. ilicifolium* was also studied (Joshi, 1975). However no such work has been carried out to compare the biochemical constituents such as protein, carbohydrate and lipid with alginic acid content. The present study deals with the change in biochemical constituents with reference to yield in alginic acid of *S. wightii* collected from Gulf of Mannar.

Materials and Methods

S. wightii was collected every months from December 1987 to November 1988 from Gulf of Mannar off Pudumodam. The plants were washed thoroughly in tap water, dried and powdered. The powdered materials was used for the estimation of protein, carbohydrate, lipid and alginic acid. Estimation of protein, carbohydrate, lipid and alginic acid were done by standard procedures (Hatree, 1972, Dubois *et al.*, 1956, Barnes *et al.*, 1973, Suzuki, 1955).

Fig. 1. Seasonal variation of protein carbohydrate and alginic acid showing a positive relation (expressed in percentage)

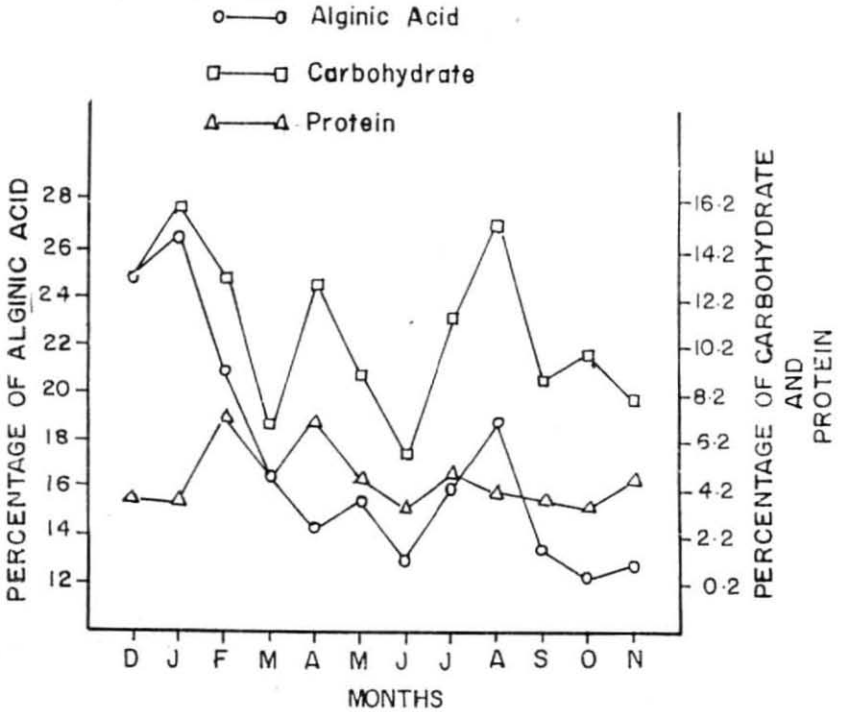
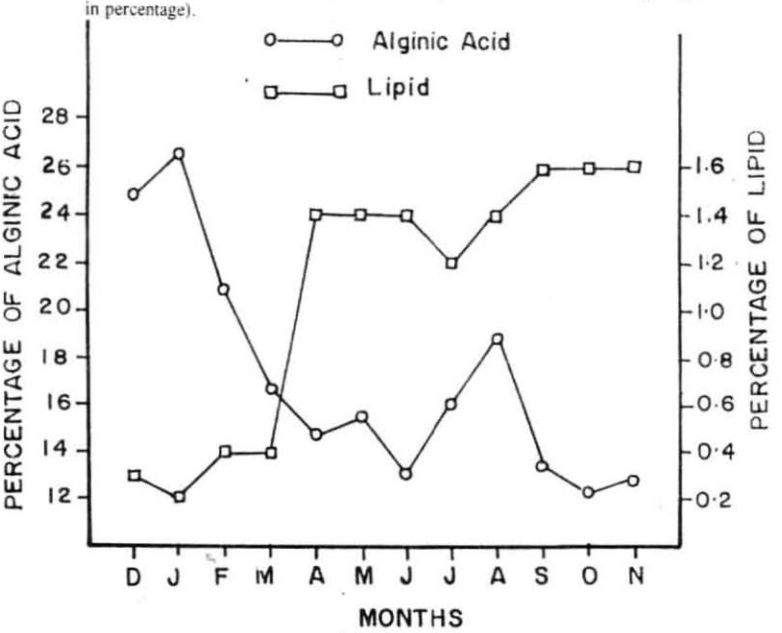


Fig. 2. Seasonal variation of lipid and alginic acid showing a reciprocal relationship (expressed in percentage).



Results and Discussions

Alginic acid content varied from 12.10 in October to 26.32 in January. The peak season of yield was from December to February. Seasonal; variation in yield of alginic acid content from March to November showed no particular trend. The carbohydrate content varied from 6.65 in March to 15.18 in January. Carbohydrate content was more during December to February when the yield was more, there by showing a positive correlation in carbohydrate content and yield in alginic acid content (Fig. 1).

Protein content varied from 3.15 in October to 7.20 in February. There was no perceptible trend in seasonal variation in protein content throughout the year except a peak value in the month of February. Variation in lipid content was from 0.159 in January to 1.551 in September which shows that when yield was more, there was a decline in lipid content. This result is in confirmity with the observation of Wort, 1955, that there is a reciprocal relationship between lipid content and alginic acid (Fig. 2). The lipid content has been found to be very less during December to March. During april to November there was no pattern in the seasonal variation of lipid content. In Gulf of Mannar, the biomass of *S. wightii* during December to March is very less (Kaliaperumal, personal communication) due to defoliation of leaf, which showed most of the lipid is utilised during senescence.

Acknowledgments

The author is thankful to Dr. P.S.B.R. James, Director, Central Marine Fisheries Research Institute for the necessary facilities provided to carry out the work.

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