

ECOLOGICAL AND ECONOMICAL IMPORTANCE OF PHAEOPHYTA (BROWN ALGAE)

Nese YILMAZ^{1*} and Senol ENDER²

^{1*}Department of Freshwater Resources and Management, Istanbul University Faculty of Aquatic Sciences, Ordu St. No:8, 34134, Laleli, Istanbul, Turkey, **e-mail:** nyilmaz@istanbul.edu.tr

²Department of General Surgery, Istanbul University, Istanbul Medical Faculty, 34093, Capa, Istanbul, Turkey, **e-mail:** senolender@istanbul.edu.tr

INTRODUCTION

- Algae are the main primer producers in aquatic environments and they also constitute the first step of the food chain.
- Phaeophyta or the common name as “brown algae”, is one of the important groups of eukaryotic marine algae which include chlorophyll-*a*, chlorophyll-*c*, abundant fucoxanthin, phycocolloid algin, and reserve food in the form of laminarin.
- Brown algae which are mostly filamentous or thalloid algae are multicellular marine species, ranging in length up to more than 100 meters and only a few species live in freshwaters.
- The importance of brown algae comes from both of their ecological and economic usages. The main areas of use of brown algae are food, agriculture, cosmetics, medicine, pharmacy, and industry.

USAGE AREAS AND OBTAINED PRODUCTS

- Alginic acid and alginates can be listed as the leading products obtained from brown algae.
- Fucoidan, Laminarin and Mannitol are alginic acid products.
- *Macrocystis*, *Laminaria*, *Nerocystis*, *Sargassum*, and *Cystoseira* are of the genera from whom alginates mainly obtained.
- Alginates are used in industries of paint, textile, paper, rubber, construction, cosmetic, dental, pharmaceutical, food, and alcohol and also for pest control.



Macrocystis pyrifera



Cystoseira sp.



Nereocystis leutkeana



Sargassum sp.



Laminaria sp.

USAGE AREAS



Fucus sp.



Ascophylum sp.

- Since brown algae are very rich in nutrients, various forms of them are consumed all over the world. Especially species of *Sargassum*, *Laminaria*, and *Fucus* are used as fodder for cattle and poultry. While *Fucus* and *Laminaria* are rich in iodine, *Macrocystis* is a good source for increasing the fertility of the soil for agriculture.
- Brown algae are widely used in the pharmaceutical industry. *Ascophylum* is used in the production of antibiotics and *Laminaria* for goiter medicines. Also, the composition of *Laminaria* is used to prepare medicines that prevent blood clotting.
- Alginates obtained from brown algae are beneficial for intestinal health. Besides, alginate polysaccharites bind metal ions very well and reduce the absorption of heavy metals from the system.
- Alginate acid, is used as a thickening agent in industries like baking, rubber, cosmetics, and the medical field.

CONCLUSION

- ✓ Brown algae, which are very rich in nutritional content and value, can create an important resource to meet the nutritional needs of people in the future due to their easy production and rapid development under suitable conditions.
- ✓ Nowadays, biotechnological studies on brown algae, which are of great ecological and economic importance, need to be developed and increased.