MACROMOLECULAR CHARACTERISTICS OF SULFATED POLYSACCHARIDES FROM *Chaetoceros muelleri*

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INTRODUCTION

Algae are considered a valuable source of polysaccharides with important bioactive characteristics that benefit human health, such as anti-tumor, antioxidant, and antiviral properties. Despite the recognized importance of these organisms, microalgae have been virtually unexplored relative to macroalgae (1).

Chaetoceros muelleri is a cosmopolitan planktonic diatom microalga present in the Sea of Cortez. Its biomass is essential in aquaculture as it is a source of high-value products. Several studies on sulfated exopolysaccharides (sEPS) from macroalgae have been reported; however, information on sEPS from microalgae is scarce (2,3).

For a better understanding of the different potential applications of polysaccharides, their macromolecular characteristics, microstructure and bioactivity must be considered, since these parameters determine their functional properties (4). Consequently, studying this structure-function relationship in polysaccharides from unexplored sources such as those present in some microalgae may represent the starting point in developing new bioactive products or biomaterials.

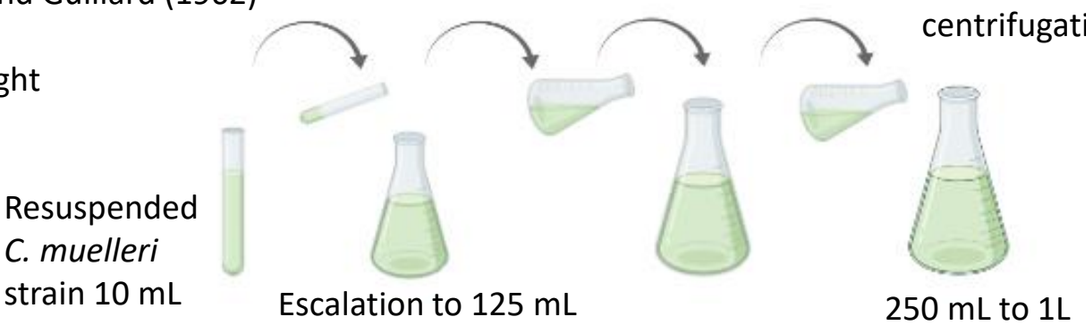
OBJECTIVE

This research aims to generate new knowledge about the macromolecular characteristics of sulfated polysaccharides from the diatom *Chaetoceros muelleri*.

METHODS

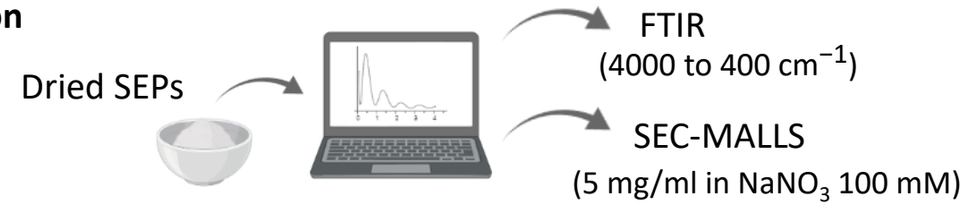
Microalgae culture

Using "F" medium of Ryther and Guillard (1962)
At 23 °C
White light



SEPs extraction

Characterization



RESULTS

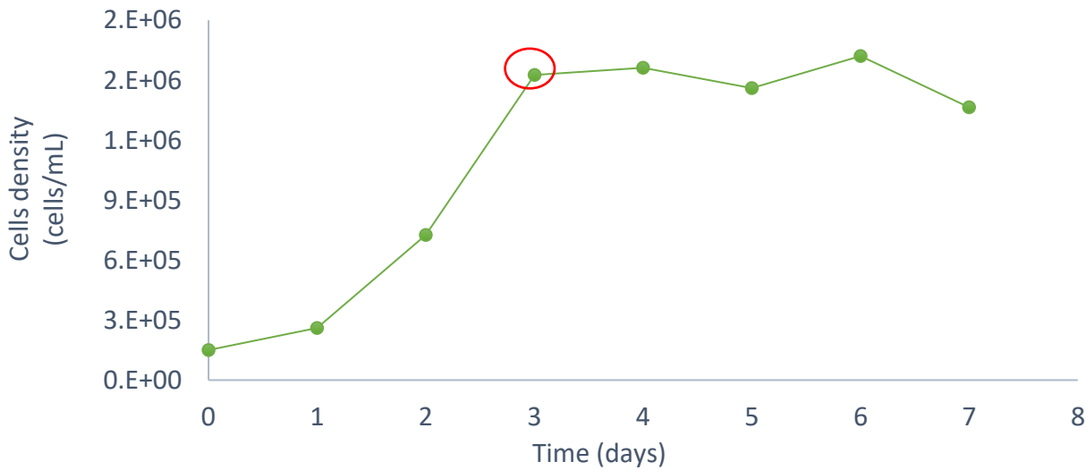


Figure 1. *Chaetoceros muelleri* growth curve.

Table 1. *Chaetoceros muelleri* culture yields

Cells concentration (cells/mL)	~ 1,500,000
Biomass yield (g/L)	0.66
Polysaccharide yield (% w/w)	2.3

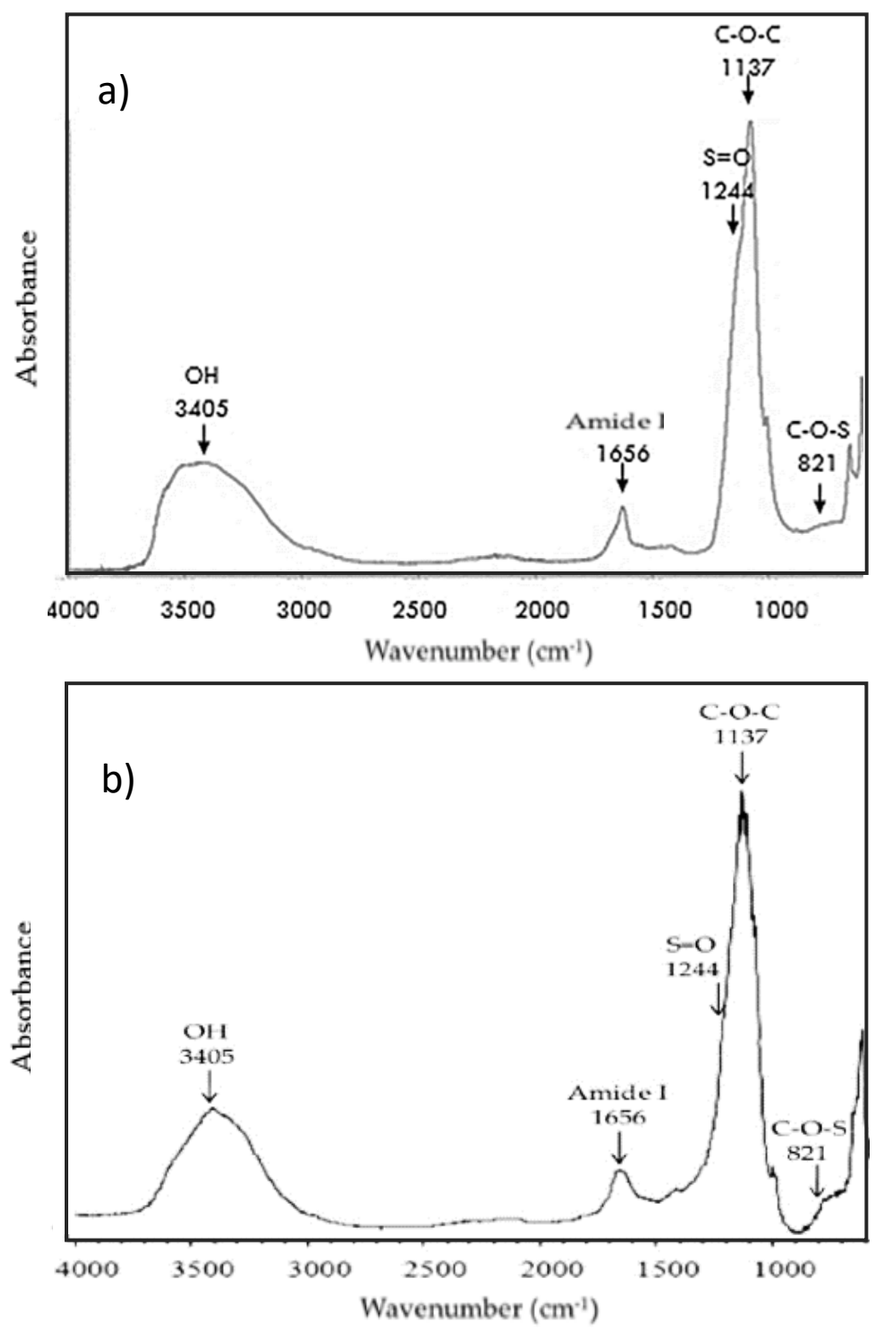


Figure 2. Comparison of Fourier Transformation Infrared (FTIR) spectra of SEPs extracted from: a) *Chaetoceros muelleri;* b) *Navicula sp* (4). The arrows indicate the absorption bands.

Table 2. Macromolecular characteristics of sEPS from *Chaetoceros muelleri*

Molecular weight (kDa)	Intrinsic viscosity (mL/g)	Polydispersity index
945	653	1.14

CONCLUSION

It was possible to extract sulfated polysaccharides from *Chaetoceros muelleri*. The yield obtained was 2.3% (w/w dry biomass). The sulfated polysaccharides presented characteristic bands by Fourier transform infrared spectroscopy (FTIR) (3405 to 821 cm^{-1}). The molecular weight and intrinsic viscosity values were 945 kDa and 653 mL/g, respectively, which are in the range reported for other polysaccharides from similar sources.

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