EXTRACTION AND CHEMICAL ANALYSIS OF GENUS LAURENCIA SAMPLE

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Red algae of the genus *Laurencia* are known to produce structurally diverse terpenes that have been investigated for their natural products; most of them are halogenated compounds with important ecological functions and significant potential for the discovery of new biotechnological applications. The objective for this project is to obtain and identify molecular network from *Laurencia* species based on efficient methodologies, such as Vacuum Liquid Chromatography (VLC), Thin Layer Chromatography (TLC), and liquid chromatography–mass spectrometry (LCMS).

ABSTRACT

BACKGROUND AND INTRODUCTION

Marine organisms, specifically algae, are potentially prolific sources of highly bioactive secondary metabolites that might represent useful leads in the development of new pharmaceutical agents. Algae can be classified into two main groups: micro-algae and macro-algae. Macro-algae (seaweeds) which includes green, brown and red algae. Red algae are considered as the most important source of many biologically active metabolites in comparison to other algal classes.

The Red algal genus *Laurencia* is a prolific producer of halogenated secondary metabolites such as sesquiterpenes, diterpenes, and triterpenes. Biological properties of halogenated compounds have been researched for the past decades, with results showing antibacterial, antifungal, antiviral, anti-inflammatory, insecticidal activity. By obtaining *Laurencia's* molecular network, we can discover and characterize new halogenated compounds, along with a remarkable effort toward the evaluation of their possible biomedical and biotechnological applications.

AQUIRED SAMPLE

151º 02. 510 E

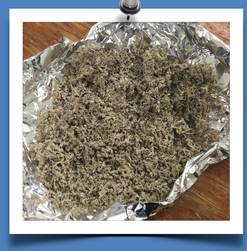
10º 32.763 S

DATE: 21 APR 2006

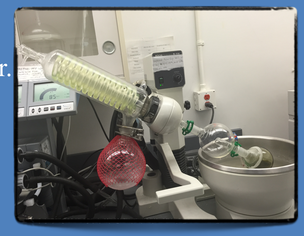
Purpose: To extract valuable crude from algae biomass

1. EXTRACTION

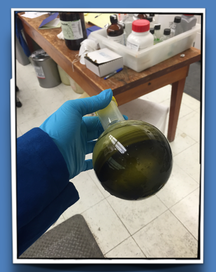
Soak the biomass in dichloromethane (DCM) and MeOH (2:1), cover for 30 minutes and remove liquid for Rotovap Repeat for 5 times until algae loses color.



Biomass: 52 grams



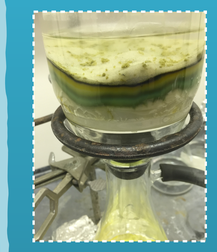
Rotovap



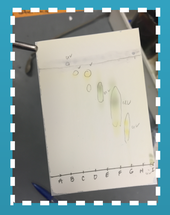
Extract crude: 4 grams

VLC & TLC

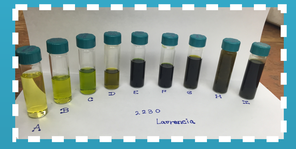
Purpose: Separation of different components within a mixture in a column based on each component's affinity (polarity and size).



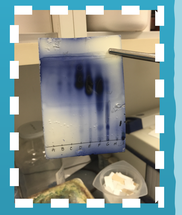
Column development: separation of different strands.



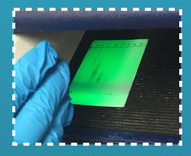
Primary TLC plate



VLC: Finished product - fractions



TLC plate after dye

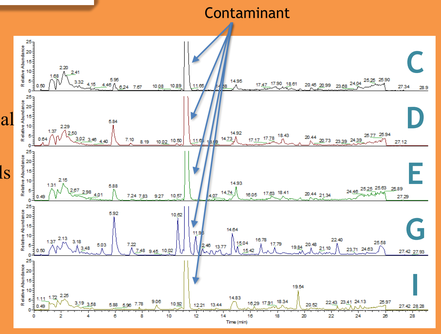


TLC plate under UV light: useful to detect hidden spots.

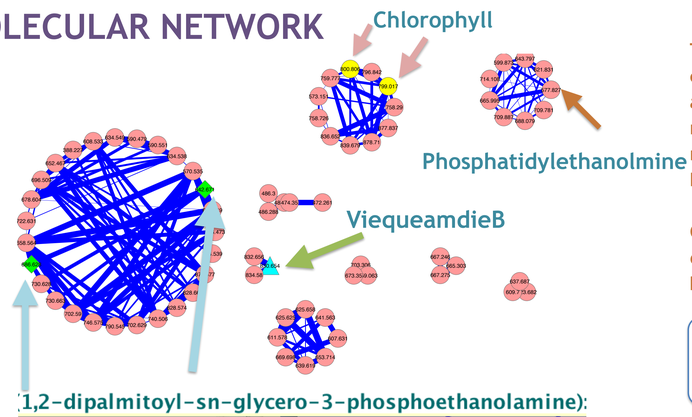
LC-MS PROFILE

LC-MS is a powerful technique that has very high sensitivity and selectivity. Its application is oriented towards the separation, general detection and potential identification of chemicals of particular masses in the presence of other chemicals (i.e., in complex mixtures).

Through liquid chromatography–mass spectrometry, molecular network can be developed.



MOLECULAR NETWORK

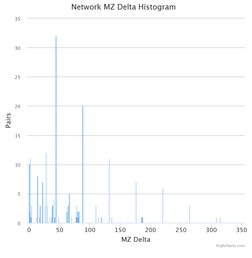


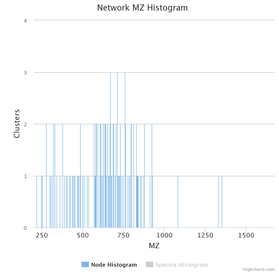
(1,2-dipalmitoyl-sn-glycero-3-phosphoethanolamine):

CONCLUSION

This sample contains known compounds such as chlorophyll and viequeamdieB. Future research needed for identifying new molecules in ten fraction I have created.

Crude's toxicity was not detected through brine shrimp biological essay.





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