

# IN-DEPTH ANALYSIS OF BROWN MACROALGAE *Sargassum hornschurchii* BY UHPLC-ESI-HRMS

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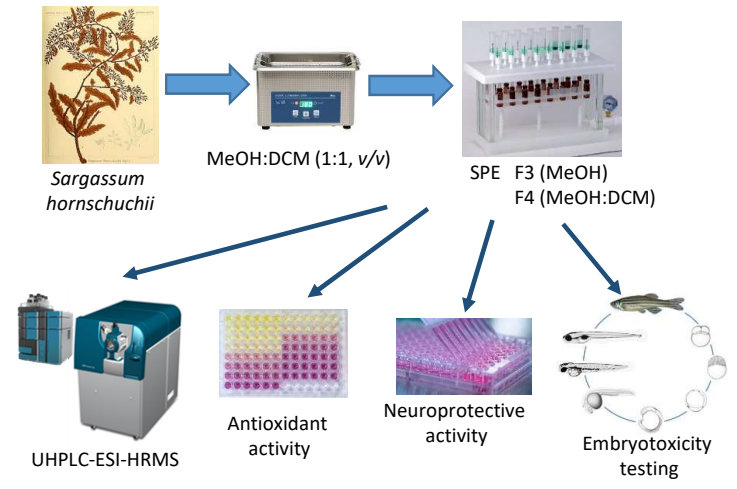
## INTRODUCTION

To overcome extreme environment which include high salinity, temperature fluctuations, oxygen concentrations decreasing with the increasing depth, intense UV radiation at the surface but low at the bottom, marine macroalgae developed bioactive compounds which have potential applications in cosmeceutical, pharmaceutical and food industries.

*S. hornschurchii* as other brown macroalgae, has such potentials that yet need to be explored.

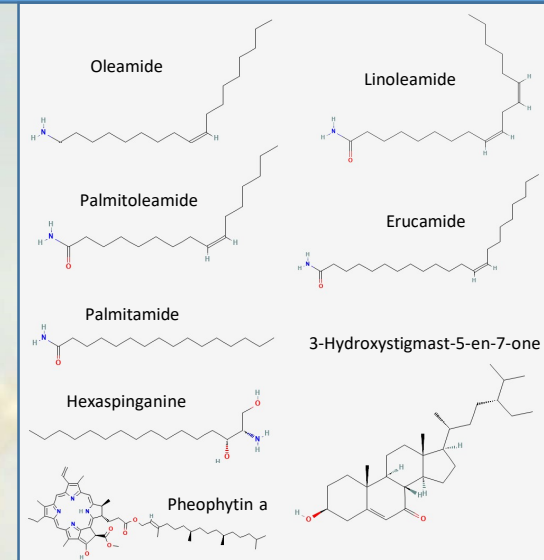
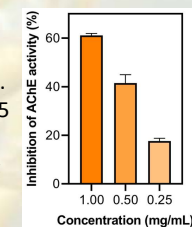


## METHODS AND MATERIALS



## RESULTS

- ❖ UHPLC-ESI-HRMS analysis revealed 30 compounds: fatty acid derivatives, terpenoids and steroids and pigments and derivatives.
- ❖ Oleamide was the most abundant compound. It is known as an endogenous bioactive signalling molecule and acts in diverse cell types which can lead to different biological and pharmacological effects triggering. It has also been suggested that has neuroprotective properties and the increase in antioxidant activity.
- ❖ The fraction tested proved to be extremely effective in inhibiting acetylcholinesterase, an enzyme associated with neurological disorders. Specifically, at concentrations of 1, 0.5 and 0.25 mg/ml, the fraction showed acetylcholinesterase inhibition rates of  $61.11 \pm 0.79\%$ ,  $41.48 \pm 3.48\%$  and  $17.60 \pm 1.18\%$ , respectively.
- ❖ F3 fraction at 1 mg/mL showed moderate antioxidant activity:
  - ❖ DPPH assay: inhibition of 27.93 mg/g AAE
  - ❖ ABTS assay: 16.49 mmol/g TE
- ❖ Embryotoxic potential: the concentration of the solvent (MeOH for F3, DMSO for F4) did not exceed 1%, with the maximum tested concentration being 50  $\mu$ g/mL. No negative impact on zebrafish development and survival was recorded during the test.



## CONCLUSIONS

- ❖ Results obtained on *S. hornschurchii* suggest a strong potential for preventing or slowing the progression of neurodegenerative diseases and stress-related conditions by inhibiting acetylcholinesterase and reducing oxidative stress.
- ❖ These neuroprotective properties and the increase in antioxidant activity could be due to presence of fatty acid primary amides but pigment derivatives as well.
- ❖ Further investigation on isolated compounds is in progress.

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