

Investigation the Chemical Composition and Biological Activities from Six Edible Macroalgae

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INTRODUCTION

Seaweeds offer an alternative to meet global food demand providing **nutrients** and **bioactive compounds** while containing **low fat and caloric** values, but their use is limited due to a misunderstanding of their flavor and aroma.

MATERIALS AND METHODS

This study aims to expand knowledge of **sensory**, **bioactive**, and **chemical** properties of macroalgae:

RAW MATERIALS:

Chondrus crispus



Gracilaria gracilis



Palmaria palmata



Porphyra dioica



Porphyra haitanensis



Ulva rigida



EXTRACTION: ethanol (80%) at 25°C for 60 min.

ANALYSIS: Chemical composition, volatile organic compounds profiles (HS-SPME/GC-MS), and *in vitro* screening to assess the bioactivity of the ethanolic algae extracts.

CONCLUSIONS

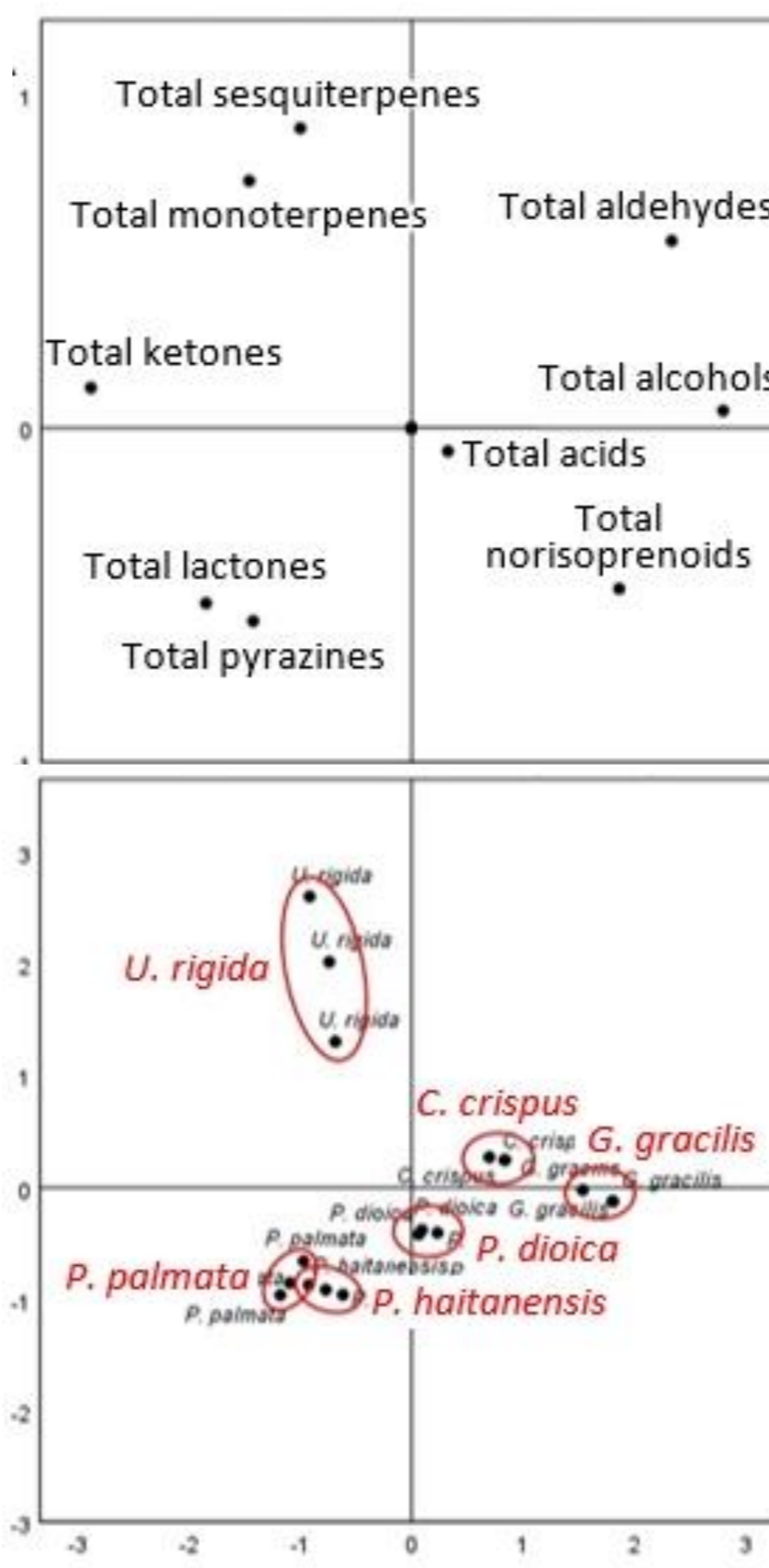
The study found that algae, especially red algae, were rich in **phenolic compounds**, **proteins**, and **sugars**. HS-SPME/GC-MS analysis revealed **distinct volatile organic compounds profiles** for each species. Bioactivity screening highlighted **strong antioxidant** and **anti-inflammatory** effects, particularly in *P. haitanensis*. The *Porphyra* species ability to inhibit lipid peroxidation suggests **potential applications in food preservation**. This research provides valuable insights into algae's culinary and functional uses.

REFERENCES

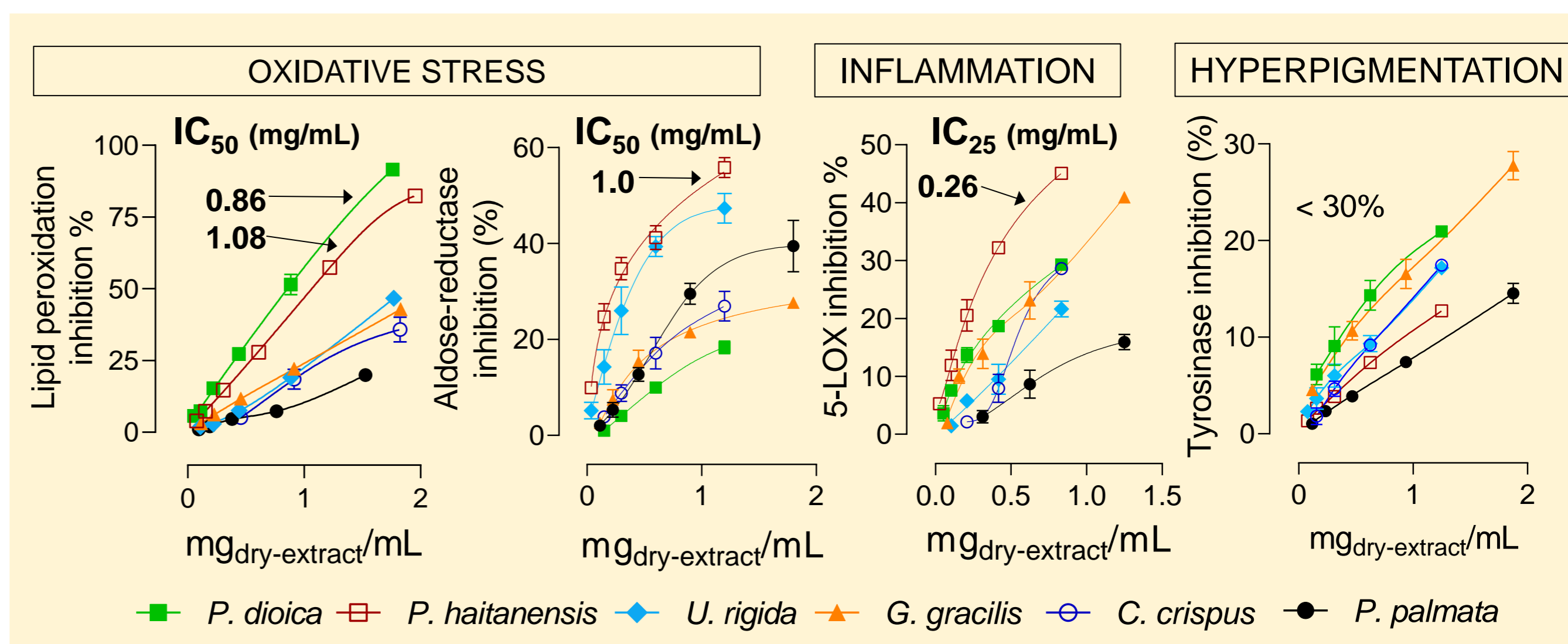
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RESULTS

CHEMICAL COMPOSITION



BIOLOGICAL ACTIVITY



(mg-Eq/g)	SUGARS	PROTEINS	AMINO ACIDS	TPC*
<i>C. crispus</i>	8.9±1.6 ^{bc}	1.09±0.08 ^c	31±2 ^a	3.54±0.06 ^a
<i>G. gracilis</i>	9.4±1.0 ^b	1.61±0.07 ^d	52±3 ^e	6.5±1.4 ^b
<i>P. dioica</i>	5.6±0.5 ^d	2.37±0.06 ^a	193±6 ^b	14.77±0.04 ^c
<i>P. haitanensis</i>	6.4±0.9 ^{cd}	1.00±0.03 ^c	64±10 ^e	10.78±0.05 ^d
<i>P. palmata</i>	22±4 ^a	0.43±0.05 ^b	11.8±0.7 ^c	1.76±0.03 ^e
<i>U. rigida</i>	5.7±0.9 ^d	2.43±0.14 ^a	1.4±0.3 ^d	1.07±0.01 ^f

*TPC = Total Phenolic Content

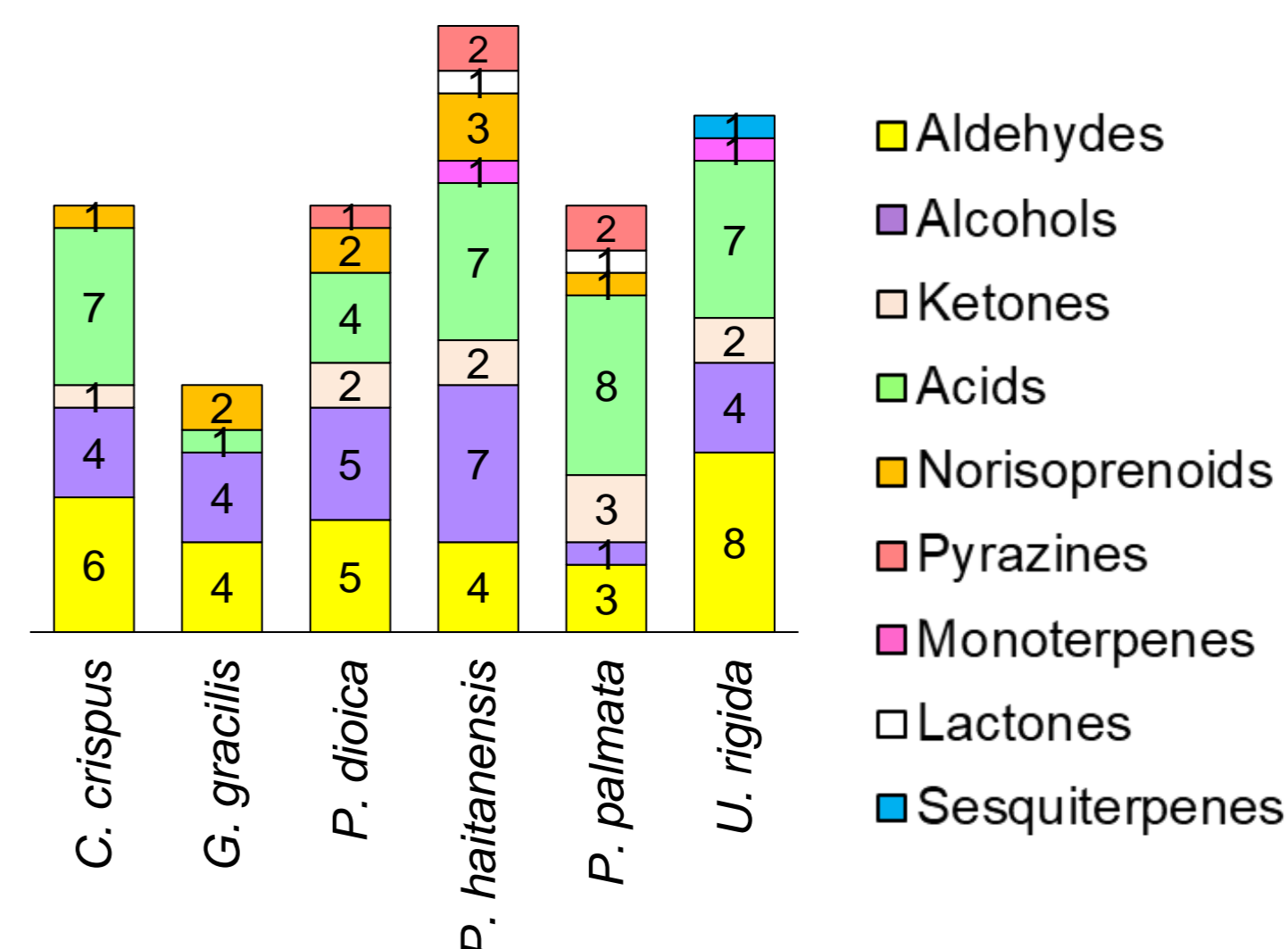
VOLATILE ORGANIC COMPOUNDS (47):

ACIDS (8), ALDEHYDES (14), ALCOHOLS (10)

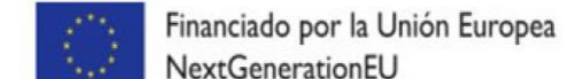
PYRAZINES = *P. dioica*, *P. haitanensis*, and *P. palmata*

TERPENES = *P. haitanensis* and *U. rigida*

LACTONES = *P. haitanensis* and *P. palmata*



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