

EXTRACTION AND EVALUATION OF THE BIOLOGICAL ACTIVITIES OF COMPOUNDS FROM RED SEAWEED *PORPHYRA* SP.

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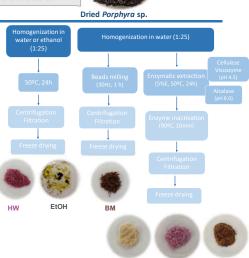
Aim of the study

The marine environment is a source of multiple organisms with unique biological properties which have been sparsely exploited. These biological activities include anticancer, antioxidant, anti-inflammatory, anti-diabetes, anti-obesity, among others. Marine algae belong to those organisms and have deserved particular attention due to their diversity, availability and ability to adjust to environment changes. However, within the same algae species the level of these compounds present some variability depending on the environmental growth conditions. The extraction conditions used also influences the efficiency and type of the bioactive compounds obtained. Thus, the objective of the current work was to evaluate the biological activities (antioxidant, anti-diabetic, anti-obesity and anti-hypertensive) of *Porphyra* sp. extracts prepared by enzymatic and chemical methods. The enzymatic methods involved the utilization of Alcalase (EAA), Viscozyme (EAV) or Cellulase (EAC) and hot water (HW), ethanol (EtOH) and beads milling extraction (BM).



PREPARATION OF PORPHYRA SP. EXTRACTS

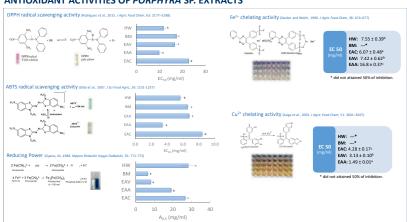




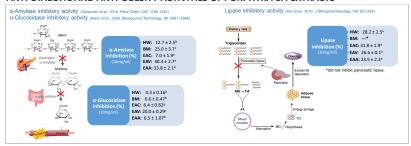
Extraction yield (%), nitrogen and total phenolic content (mg/ml) of *Porphyra* sp. extracts.

Extract	Nitrogen (%)	Yield (%)	Total phenolic content (mg/ml)
HW	2.88 ± 0.05^{b}	36.7 ± 6.7^{b}	50.4 ± 1.5 ^{bc}
EtOH		3.3 ± 0.9^{a}	
ВМ	3.95 ± 0.07 ^d	28.9 ± 2.0 ^b	52.0 ± 1.3°
EAC	2.13 ± 0.06ª	47.4 ± 0.6bc	34.4 ± 0.9a
EAV	3.42 ± 0.10°	56.5 ± 4.9°	45.5 ± 3.8 ^b
EAA	5.53 ± 0.01e	63.3 ± 4.8°	65.9 ± 1.1 ^d

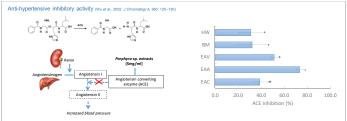
ANTIOXIDANT ACTIVITIES OF PORPHYRA SP. EXTRACTS



ANTI-DIABETIC AND ANTI-OBESITY ACTIVITIES OF PORPHYRA SP. EXTRACTS



ANTI-HYPERTENSIVE ACTIVITY OF PORPHYRA SP. EXTRACTS



Conclusions

- Extract resulting from Alcalase action presented the highest nitrogen content.
- ✓ Viscozyme and Alcalase had an enhancing effect on the extraction yield (57-63%).
- ✓ Total phenolic content varied significantly according to the extraction procedure and the highest values were found for the EAA extract.
- ✓ EAA exhibited the highest antioxidant and Cu²+ chelating activities but the lowest Fe²+ chelating activity.
- The highest α-amylase and α-glucosidase inhibition was achieved with the EAV extract but the extraction procedure did not significantly affect the lipase inhibitory activity.
- \checkmark EAA presented the highest anti-hypertensive activity (73.5 ± 3.3%).
- ✓ These results suggest that EAA exhibited the highest biological activities making them potentially useful ingredient in functional foods and nutraceuticals.



