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ABSTRACTS

KEYNOTE LECTURES, COMMUNICATIONS, POSTERS

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5. = INTERSPECIFIC VARIATION IN TOTAL PHENOLIC CONTENT IN TEMPERATE BROWN ALGAE

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Phlorotannins are polyphenolic secondary metabolites found in almost all brown algae that function as defense against grazers, pathogens and epiphytes but are also involved in photoprotection mechanisms (1, 2). These compounds, produced in the Golgi apparatus, are accumulated in the cytoplasm, within vesicles called physodes, or bound to the cell wall (1, 3, 4). The concentration of phlorotannins differs within and between species, showing geographical as well as ontogenetic variations but may be also affected by environmental (e.g. temperature, light intensity) or biotic (e.g. grazing, epiphytes) factors (2, 5, 6, 7). The aim of this study was to focus on interspecific variation of total phenolic contents (TPC) in temperate brown algae also considering their relationship with environmental conditions. In particular, we compared the TPC of four species characterized by different thallus morphology, growth cycle and bathymetric level: *Cystoseira amentacea* (C. Agardh) Bory, *Cystoseira compressa* (Esper) Gerloff & Nizamuddin, *Dictyopteris polypodioides* (A.P. De Candolle) J.V. Lamouroux and *Padina pavonica* (Linnaeus) Thivy, collected in summer 2011 from the north-western coast of Sicily.

The TPC was determined colorimetrically with the Folin-Ciocalteu reagent. Results showed significant differences in TPC among the four species with *D. polypodioides* showing the highest value ($0.74 \pm 0.001\%$ of DW) and *C. compressa* the lowest ($0.25 \pm 0.016\%$ of DW). Significant differences in TPC were observed between the two leathery algae ($p < 0.05$), with *C. amentacea* ($0.48 \pm 0.056\%$ of DW) showing higher TPC than *C. compressa*, and also between the two sheet-like algae ($p < 0.001$), with *D. polypodioides* showing a significantly higher TPC than *P. pavonica* ($0.30 \pm 0.024\%$ of DW).

We hypothesize that the variations of TPC observed among the four species might result from a combination of internal and external factors such as thallus morphology (two species are leathery and two sheet-like), growth cycle (three species are semi-perennant and one annual), bathymetric level (two species inhabit the infralittoral fringe and two the upper infralittoral zone) and herbivore pressure.

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