



XIV OPTIMA Meeting

September, 9-15 2013

Palermo

Abstracts



Fondazione
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Mediterraneo





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OPTIMA (Organization for the Phyto-Taxonomic Investigation of the Mediterranean Area)
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Seasonal variation in total phenolic content of *Dictyopteris polypodioides* (*Dictyotaceae*) and *Cystoseira amentacea* (*Sargassaceae*) from the Sicilian coast

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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. These compounds, produced in the Golgi apparatus, are accumulated in cytoplasm, within vesicles called physodes, or bound to the cell wall. The concentration of phlorotannins differs within and between species, shows geographical variations but may be also affected by abiotic or biotic factors. Aims of this study were to evaluate: (i) the temporal variation of total phenolic content in two brown algae, *Dictyopteris polypodioides* and *Cystoseira amentacea*, living respectively in the upper infralittoral zone and in the infralittoral fringe, and (ii) its relationship with depth. Thalli of both algae were collected from the north-western coast of Sicily.

Results showed significant differences in total phenol content between *D. polypodioides* and *C. amentacea* with a higher value observed in the first one. Both species showed a seasonal pattern of total phenolic contents and differences in the period of their maximum production were also observed between the two species. In *D. polypodioides* the peak was observed during winter and autumn (0.95 and 0.81% DW) whereas during spring and summer in *C. amentacea* (0.17 and 0.57% DW). The phenol concentration resulted negatively correlated with the air temperature and the medium solar radiation in *D. polypodioides* whereas the correlation was positive in *C. amentacea*.

Even though seaweeds living on the rocky intertidal habitats, subjected to large variations of environmental conditions, should invest more energy in defences, *D. polypodioides* showed a phenolic content higher than *C. amentacea*. Our results suggest that phenol content and seaweed zonation are not interdependent and that sheet-like algae such as *D. polypodioides*, resulting more attractive than thick leathery ones to herbivores, produce larger concentrations of these compounds in order to deter feeding by herbivores.