

Many sponges contain large populations of symbiotic microorganisms both autotrophic (cyanobacteria, zooxanthellae and zoochlorellae) and heterotrophic (bacteria). According to WILKINSON (1987) about 40 % of Caribbean and Great Barrier Reef sponges are involved in autotrophic relations. The cyanobacterial symbiosis is widely diffused in the tropical and temperate areas (SARA', 1966; WILKINSON, 1987), while zooxanthellae have been exclusively observed in several species of the genus *Cliona* (SARA' and LIACI, 1964; PANG, 1973). Finally zoochlorellae appear to be typical symbiotic elements of the green freshwater sponges (GILBERT and ALLEN, 1973; WILLIAMSON, 1979). These kinds of symbiosis have been studied mainly from morphological and ultrastructural aspects, while less quantitative data on pigments concentrations are generally available (GILBERT and ALLEN, 1973; WILKINSON, 1983). Utilizing the HPLC (MANTOURA, 1983; HECQ *et al.*, 1992), it is possible to obtain a quantitative analysis of a large spectrum of pigments. This kind of analyses should clarify several aspects of these relationships: for example, seasonal changes in pigment composition and primary productivity or trophic aspects between the algal component and the host. These first chromatographic analyses concern the symbiocortex of two common Mediterranean species, *Petrosia ficiformis* and *Cliona viridis* which show a symbiotic relationship with cyanobacteria (*Aphanocapsa feldmanni*) and zooxanthellae, respectively (SARA', 1966). The samples have been collected along the Portofino Promontory cliff (Ligurian Sea) at about 20 m depth, during November 1991. In the Tab. 1 the quantitative data ( $\mu\text{g}/\text{cm}^2$ ) are reported. The quantitative and qualitative differences between the pigment spectra are related to the different kind of symbionts and to possible contamination caused by epibiotic algae. A high percentage of Chl-a is noted in both the species, but only *Cliona* presents a large quantity of Chl-c and peridinine, typical zooxanthellae pigments. It is particularly interesting to note the complete absence of phaeophytines and phaeorbides, confirming the absence of ingestion of the alga by the host (WILKINSON, 1978).

Tab. 1. Pigment quantity ( $\mu\text{g}/\text{cm}^2$ ) in two Mediterranean sponges		
	<i>Petrosia ficiformis</i>	<i>Cliona viridis</i>
Total Chl-a	12.02	8.61
Chl-b	0	0.68
Chl-c3	0	0
Chl c1 + c2	0	1.26
Peridinine	0.06	2.60
Butanoyloxyfuco.	0	0.59
Fucoxanthin	0	0.59
Hexanoylfuco.	0.25	0.32
Zeaxanthin (?)	2.45	0.23
Diadinoxanthin	0	0.20
Diatoxanthin (?)	0.24	0
Alloxanthin	0	0.38
Total phaeophytines	0	0
Total pheorbides	0	0
$\alpha$ carotenoids	0	0.12
$\beta$ carotenoids	1.11	0.18

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