

OBSERVATIONS ON Scytosiphon lomentaria (Lyngb.) Link  
(PHAEOPHYTA, ECTOCARPALES) IN THE NORTH ADRIATIC SEA

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ABSTRACT

The ecology of S. lomentaria, its chemical composition and photosynthetic activity are studied with regard to the influence of sewage pollution.

RÉSUMÉ

L'écologie de la S. lomentaria, sa composition chimique et sa activité photosynthétique dans les eaux polluées sont discutés.

Scytosiphon lomentaria around Rovinj (North Adriatic) forms belts in some places during the end of winter and in spring. It is attached to the rocks in the mid-littoral and upper infralittoral zones. It is a boreal-arctic species (Wallentinus, 1974). In the North Adriatic the vegetative period occurred only when the sea temperatures were between 8-11°C. Some data about the chemical composition in S. lomentaria around Rovinj have been given by Munda (1973).

S. lomentaria has most luxurious growth in sheltered places where sewage enrichment with nutrients is mixed with sea water. Therefore, it was interesting to find out the effect of sewage pollution on photosynthetic activity and chemical composition during the growth of this species. The investigations were carried out in the months from February to May. The methods for determining the rate of photosynthetic activity and the chemical analyses were described earlier (Zavodnik, 1973).

In February the length of specimens varied between 10 and 20 cm, but at the end of April it has reached 60-70 cm. In less polluted areas S. lomentaria reached only 45 cm in maximal length. Its average biomass in polluted sites varied between 420 g/m<sup>2</sup> w.wt. in winter till 580 g/m<sup>2</sup> before it disappeared. In unpolluted area the highest density of settlements was only 300 g/m<sup>2</sup>.

The mean net daily production for an average S. lomentaria settlement per square meter and the chemical composition

from polluted and unpolluted areas are given in Table 1. In sewage polluted water an increase in the rate of net daily production occurred throughout the growth season. A correlation between the chemical composition of the alga and the chemical properties of the sea is also evident.

Table 1: Variations of some environmental parameters (A), chemical composition of Scytosiphon lomentaria as % of dry weight (B), content of algal pigments (C), and the rate of algal net daily production (D) in polluted and unpolluted Northern Adriatic localities.

Sea water quality	unpolluted	polluted
A. Salinity (‰)	37.72	36.57-37.63
NO <sub>3</sub> (µg-at/l)	0.55- 0.90	2.18- 3.42
P-PO <sub>4</sub> (µg-at/l)	0.15- 0.18	0.15- 0.35
B. Crude protein	12.7 -13.7	15.6 -23.2
Crude fat	0.5 - 1.0	0.7 - 2.4
Ash	19.9 -20.4	25.0 -25.8
Calcium	2.6 - 3.0	2.8 - 3.2
Phosphorus total	0.4	0.4 - 0.6
Chlorine	8.4 - 9.8	3.9 -11.3
Mannitol	6.3 - 9.4	4.1 - 8.7
C. Chlorophyll <u>a</u> (mg/g)	3.8 - 4.5	4.9 - 6.5
Carotenoids (m-SPU/g)	2.6 - 3.9	3.7 - 4.7
D. Net daily production (gC/m <sup>2</sup> )	2.5 - 3.2	3.5 -10.8

#### R e f e r e n c e s

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