PRELIMINARY RESULTS OF THE STUDY OF INORGANIC AND ORGANIC NUTRIENTS IN KAŠTELA BAY WATERS

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SUMMARY

Kaštela Bay is under very strong influence of industrial, agricultural and natural runoffs from the region of the town of Split. The results show that significant amount of several forms of dissolved N are constantly present in the water. Minimum values were found in spring when utilization of nutrients (N or P-salts) by phytoplankton is very significant. There are some evidences that phytoplankton population directly utilizes organic N components such as urea.

RESUME

La région de la Baie de Kastela est très fortement influencée par des effluents industriels, agricoles et naturels. Nos résultats ont prouvé la présence constante d'une quantité considérable de toutes les formes de sels nutritifs N et P dissous, dans les eaux de cette Baie. Les valeurs minimales ont été constatées en période printanière, où l'utilisation de ces sels de la part du phytoplancton s'est révélée la plus forte. On a remarqué, en outre, que le phytoplancton peut utiliser directement les composés organiques de l'azote, à savoir l'urée.

Samples of the sea were collected from five stations in the Kaštela Bay (Fig 1.) in winter and spring 1983. Inorganic nutrient salts were analysed by standard automatic method at Auto-Analyser. Total nitrogen and total phosphorous were estimated by photocombution method.

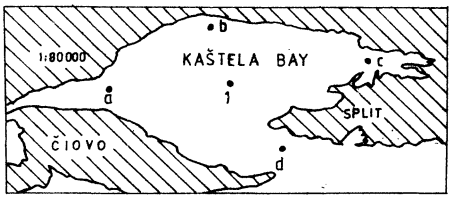

Fig. 1. Study area

RESULTS AND DISCUSSION

Table 1. Means of all forms of N and P salts and ratios of N to P in the Kaštela Bay

Stations	TDN	TIN	DON	TP	PO_4	P-org.	$TP/_{TN}$	NO_{3/PO_4}	$DON/_{DOP}$
1	9.28	2.76	6.53	0.13	0.06	0.07	71	20	99
1a	9.11	2.20	6.91	0.12	0.06	0.06	74	16	111
1b	9.99	2.46	7.53	0.16	0.08	0.08	62	12	94
1c	11.14	2.74	8.40	0.15	0.09	0.06	83	13	143
1d	10.30	2.12	8.20	0.12	0.06	0.06	84	14	138

The DON and DOP play an important part of the budget of nutrients in the sea. Usually, higher concentration of DON such as TN were localized in the vicinity of town sewage outfalls (Station 1c). Municipal sewage water, fresh water and dead phytoplankton are principal source of DON and DOP as well. It is evident that significant amount of dissolved N is always available.

There is now considerable evidence that some species of phytoplankton utilize at least part of the dissolved organic nitrogen directly, usually urea.

The ratio of various fractions of N and P show relatively constant ratio of NO_3:PO_4 compared to those of TN:TP and DON:DOP. Maximum values were found at station 1c which seems to be the most polluted location of the study area. In addition the values at station 1d, are rather high, particularly in the bottom layer, what is probably due to the influence of the outfalls from the other parts of the town of Split, or, maybe influence of outcoming sewage waters from Kaštela Bay.

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