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LITERATURE CITED


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PRELIMINARY RESULTS OF A STUDY ON THE IMPACT OF TOXIC AND NONTOXIC CYANOBACTERIA ON SOME FRESHWATER MICROCRUSTACEAN SPECIES

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Microcystis aeruginosa (Kutzing, 1833) is a common bloomforming species of Cyanobacteria occurring in Portugal (Branco & Guimarães, 1988; Silva, 1989). Some strains can produce toxins which affect not only vertebrates but
also crustaceans (Falconer et al., 1981; Hazanato & Yasuno, 1984; Fulton & Paerl, 1987).

Some survival experiments were carried out in order to analyse the effects of both toxic and nontoxic strains of *M. aeruginosa* (viz., NIVA CYA 57 and NIVA CYA 43) on some copepods and cladocerans.

The copepod *Acanthocyclops robustus* (Sars, 1863) showed an ability to utilize both toxic and nontoxic strains of the cyanobacteria, surviving up to 26 days. With the nontoxic strain some ovigerous females were produced but the eggs died before hatching.

*Daphnia longispina* (Müller, 1776) was able to utilise the nontoxic strain in a better way than the toxic one, growing from 512 to 720 μm, but it had 100% mortality, on an average, on the fourth day. The toxic strain is not utilised, killing all the cladocerans at the end of the second day.

*Ceriodaphnia pulchella* (Sars, 1862) survived up to the sixth day but no differences in the individual length were registered when fed with toxic and nontoxic strains of *M. aeruginosa*.

*Simocephalus vetulus* (Müller, 1776) can utilise the nontoxic strain, attaining a maximum length of 842 μm at the end of the thirteenth day. It survived for only two days when fed with the toxic strain.

The results we obtained show some differences in the impact of toxic and nontoxic strains of *M. aeruginosa* on some freshwater microcrustaceans. The toxic strain is usually not well accepted but some copepods and cladocerans can utilise nontoxic strains of *M. aeruginosa* as the only food source. However, they show a decrease in length and survival during blooms. Other species can not survive on a *M. aeruginosa* diet, disappearing during heavy concentrations of Cyanobacteria. This fact is important because it may mean that blooms of Cyanobacteria can act as selective agents on microcrustacean communities.

The tendency of small cladoceran species to utilise Cyanobacteria better than big ones (Lampert, 1982; Porter & McDonough, 1984) was not clearly shown by our experiments. However, bottom-dwelling species as *S. vetulus* can feed on nontoxic *M. aeruginosa*, which can represent the major food source when Cyanobacteria overwinter on the sediment surface (Preston et al., 1980).

Further work is in progress.

REFERENCES


