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Distribution of Technetium in *Mytilus edulis*

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The artificial element 43, technetium, is a metal which was virtually absent from the natural environment prior to the nuclear age. The most important isotope, from the radioprotection point of view is Tc-99, which decays to stable Ru-99 with a half-life of 2.1 x 10^5 years. Once in the aquatic environment, Tc-99, which is highly soluble and mobile, would probably remain available for quite a long time.
It was, thus, of interest to improve our knowledge on the biological behaviour of technetium in aquatic organisms. The mussel, Mytilus edulis, is a choice organism for investigating not only the uptake and loss processes, but also the tranfer along the food chain.
In previous studies, we have shown that technetium was accumulated mostly in the hepatopancreas (Verthé et al., 1984 ; Bouquegneau et al., 1985). On the other hand, it is well known from the literature that mussels are capable of synthesizing metal-binding proteins when they are exposed to heavy metals such as cadmium, copper and mercury (Noël-Lambot, 1976 ; Frazier, 1986 ; Viarengo et al., 1980 ; Roesijadi, 1982).
In our recent investigations we have observed that in mussels exposed to technetium (Tc-95m) for about three weeks, an important accumulation occurred in the hepatopancreas, where more than 50% was present in the cytosol compartment. However, analysis of cytosol fractions by column chromatography and by the Cd-109 saturation method (Nolan and Shaikh, 1986) did not reveal the presence of metallothioneins in animals supplied for about two weeks with 200 µg l^{-1} Tc-99. By contrast, cadmium, at the same concentration (200 µg l^{-1}), showed a good inductive capacity of the synthesis of metallothioneins (both Cd-BP20 and Cd-BP10 ; Frazier, 1986).

Our results suggest that, in contrast to cadmium, technetium is incapable of inducing the synthesis of metallothioneins, at the concentration of 200 µg l^{-1}. It would be of interest to investigate whether at higher concentrations, technetium has an inductive capacity and whether this element can bind to metallothioneins previously induced by other metals present in the marine environment. Another important question to be resolved is whether technetium can be sequestered in intracellular granules, as shown for other metals (Fowler, 1987 ; Chassard-Bouchaud et al., 1989).

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