

## MERCURY UPTAKE AND ENZYMATIC RESPONSE OF *POSIDONIA OCEANICA* AFTER AN EXPERIMENTAL EXPOSURE TO ORGANIC AND INORGANIC FORMS

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**Abstract**—The aim of this study was to examine the experimental uptake of mercury and the enzymatic response, i.e., glutathione *S*-transferase (GST) activity, to this metal introduced into the medium under organic (methylmercury chloride) and nonorganic (mercury chloride) forms. Shoots of *Posidonia oceanica* were collected in a nonpolluted area in the northwestern Mediterranean Sea and were treated in aquaria with increasing mercury concentrations/exposure times (48, 96, and 144 h). Compared with the controls, a significant uptake was noted in the blades contaminated by HgCl<sub>2</sub>, whereas in the sheaths, a significant decrease of total mercury was noted. The blades exposed to CH<sub>3</sub>HgCl exhibited higher mercury concentrations than the controls; after 144 h exposure to organic mercury, the levels found in the blades were approximately sevenfold the values of the controls. The uptake noted in the sheaths treated with organic mercury followed the same pattern as with HgCl<sub>2</sub> (decreased value compared with the controls) except after 144 h, where a slight increase in mercury was found in this tissue. The percentage of organic mercury in controls and treated blades and sheaths (treatment with both forms of mercury) represented always more than 50% of the total mercury in the plant. Glutathione *S*-transferase activities were significantly increased in the blades and sheaths of *P. oceanica* exposed to mercury chloride, whereas exposure to methylmercury was not significant. The presence of a GST isoform of 31 kDa was demonstrated by immunochemical methods (Western blotting) in the sheaths but not in the blades of the phanerogam.

**Keywords**—*Posidonia oceanica*    Organic mercury    Inorganic mercury    Translocation    Glutathione *S*-transferase

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