

Title	First and second line mechanisms of cadmium detoxification in the lichen photobiont <i>Trebouxia impressa</i> (Chlorophyta)
Author	L. Sanità di Toppi, B. Pawlik-Skowronska, E. Vurro, Z. Vattuone, R. Kalinowska, F.M. Restivo, R. Musetti, T. Skowronski
Journal	Environmental Pollution, Volume 151(2)
Abstract	<p>First line” defence mechanisms, such as phytochelatin biosynthesis, and “second line” mechanisms, such as stress protein induction, were investigated in cadmium-exposed cells of <i>Trebouxia impressa</i> Ahmadjian, a green microalgal species that is a common photobiont of the lichen <i>Physcia adscendens</i> (Fr.) H. Olivier. When <i>T. impressa</i> cells were exposed to 0, 9 and 18 μM Cd for 6, 18 and 48 h, glutathione and phytochelatins efficiently protected the cells against Cd damage. By contrast, the highest Cd concentration (36 μM) at the longest exposure-time (48 h) caused marked drops in glutathione and phytochelatin content, several types of ultrastructural damage, and decreases in cell density and total chlorophyll concentration. In this case, induction of stress proteins was observed, but only long after the induction of phytochelatins. Thus, stress proteins could represent a “second line” mechanism to counteract Cd stress, activated when there is a decline in the “first line” mechanism of Cd detoxification given by phytochelatins.</p> <p><i>Trebouxia impressa</i> photobionts protect themselves against cadmium stress by means of phytochelatins and stress proteins.</p>
Year	2008
Pages	280- 286
keywords	

Title	Copper, nickel and lead in lichen and tree bark transplants over different periods of time
Author	Mafalda S. Baptista, M. Teresa S.D. Vasconcelos, João Paulo Cabral, M. Carmo Freitas, Adriano M.G. Pacheco
Journal	Environmental Pollution, Volume 151(2)
Abstract	<p>This work aimed at comparing the dynamics of atmospheric metal accumulation by the lichen <i>Flavoparmelia caperata</i> and bark of <i>Platanus hybrida</i> over different periods of time. Transplants were exposed in three Portuguese coastal cities. Samples were retrieved (1) every 2 months (discontinuous exposure), or (2) after 2-, 4-, 6-, 8- and 10-month periods (continuous exposure), and analysed for Cu, Ni and Pb. Airborne accumulation of metals was essentially independent of climatic factors. For both biomonitors $[\text{Pb}] > [\text{Ni}] > [\text{Cu}]$ but Pb was the only element for which a consistent pattern of accumulation was observed, with the bark outperforming the lichen. The longest exposure periods hardly ever corresponded to the highest accumulation. This might have been partly because the biomonitors bound and released metals throughout the exposure, each with its own dynamics of accumulation, but both according to the environmental metal availability.</p> <p>Lichen and tree bark have distinct dynamics of airborne metal accumulation.</p>
Year	2008

Pages	408- 413
keywords	