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Pollutants toxicity towards aquatic macrophytes

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The indiscriminate discharge of pollutants, such as heavy metals, surfactants and drugs, generated by anthropogenic activities is causing a tremendous hazard to both aquatic and terrestrial habitats and to human health. Therefore in recent years, the interest towards the toxic effects of these molecules on living organisms has increased. Plants have to cope with the detrimental effects of pollutants, e.g., typical symptoms of their toxicity are decrease of growth rate and chlorophylls, root detachment and leaf chlorosis and necrosis. The ability of plants to survive depends on the metabolic responsiveness of detoxification mechanisms. In fact, consequence to the toxicity is the elicitation of stress response that involved changes in the activity of enzymes, such as peroxidases, as well as enzymes of phenylpropanoid pathway, which is responsible for the synthesis of a diverse array of phenolic metabolites. These compounds are often induced by stress and serve specific roles in plant protection as well as structural components of the cell wall. The ability of plants to withstand the toxicity and accumulate pollutants is the base of environmental phytotechnologies, since numerous species can be an interesting tool for remediation of contaminated soils and waters. The mechanisms of plant defence against pollutant toxicity have been studied in floating macrophyte-based model systems. The results obtained will be discussed together with the future perspective of phytoremediation of polluted waters.

Biography

Cinzia Forni is Professor of Botany and Group Leader of the Laboratory of Botany and Phytotechnologies of the Department of Biology at the University of Rome Tor Vergata. Her expertise is dealing with effects of abiotic and biotic stresses in plants and secondary metabolites production. She has published 63 papers in reputed journals and serving as referee in different journals. Current research projects are: a) phytoremediation; b) study on salt tolerant species; c) study on the production of flavonoids in crops and determination of their antitumor activity d) germplasm preservation.

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