

***Phase I* Xenobiotic Metabolic Systems in Plants**

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Phytoremediation uses living higher plants for the removal and biochemical decomposition of environmental pollutants. In this paper *Phase I* metabolic pathways in the biotransformation reactions of organic pollutants in plants are reviewed. These reactions result in the introduction of functional groups in the xenobiotic molecule or the exposure of preexisting functional groups and lead to the formation of more polar, more water-soluble, chemically more reactive and sometimes biologically more active derivatives. *Phase I* type reactions are most important in the phytoremediation of hydrophobic, chemically stable organic pollutants, such as polycyclic aromatic hydrocarbons and (poly)chlorinated aliphatic and aromatic hydrocarbons. Although *Phase I* reactions involve a wide range of chemical transformations from hydrolysis to reduction, oxidative processes catalyzed by cytochrome P450 containing monooxygenases are the most important. Transgenic plants with tailored *Phase I* enzymatic activities may play major roles in the removal of environmentally stable organic pollutants from contaminated fields.

Key words: Xenobiotics, Metabolism, Phytoremediation