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综合评述

藻类对多环芳香烃(PAHs)的富集和代谢

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摘要 概述了藻类对PAHs的富集和代谢的研究进展.环境中多环芳香烃(PAHs)的污染能导致严重的健康问题,利用生物特别是微生物去除污染环境中的PAHs是一项新的技术.藻类对PAHs 的富集与有机污染物的类型、藻类的种类及藻类的生物量有关,活细胞和死细胞对PAHs均有富集能力.还阐述了PAHs 在真菌、细菌和藻类体内代谢的途径以及代谢过程中起关键作用的酶,PAHs 在藻类中的代谢途径和细菌及真菌都不同,谷胱甘肽转移酶(GST)在藻类代谢PAH过程中起重要作用,但细胞色素P450酶所起的作用则不详.

关键词 多环芳香烃(PAHs) 生物富集 代谢 藻类

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Bioconcentration and Metabolism of Polycyclic Aromatic Hydrocarbons (PAHs) by Algae

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Abstract Contamination of polycyclic aromatic hydrocarbons (PAHs) in the environment is a serious health problem and new technology employing organisms especially microorganisms to remove PAHs from contaminated environments has been proposed. However, information related to the role of algae in bioconcentration and metabolism of PAHs are widely scattered in spite that hydrophobic chemicals may enter the food－chain by bioconcentration from water into the algae， and algae are capable of accumulating and metabolizing PAHs after their bioconcentration. This review presents the current knowledge about bioconcentration of PAHs by algae and metabolic pathways and enzymes involved in PAHs metabolism. The bioconcentration are detailed in compounds－dependent, species－dependent as well as biomass－dependent. The bioconcentration of PAHs by live and dead cells were also compared. In addition to the bioconcentration, the metabolic pathways of PAHs by fungi, bacteria and algae are included. Finally, the enzymes involved in metabolic process for organic chemicals in plants are presented.

Key words Polycyclic aromatic hydrocarbons (PAHs) Bioconcentration Metabolism Algae

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