

Bioremediation of Endocrine Disruptive Chemicals: The Power of Microbial Enzymes

ABSTRACT

Microbial enzymes have been established as a powerful tool in bioremediation. In this review, applications of microbial enzymes in degradation of endocrine disruptive chemicals are explained. Endocrine disruptive chemicals (EDCs) are a number of pollutants reported bringing negative impacts on human being and wildlife. Exposure to EDCs may cause effect on endocrine system thus detrimental to the health eminently on the developmental and reproductive abnormalities. Physical approaches such as ozonation, activated carbon, nanofiltration have been implemented to remove EDCs in waste water. Over the past decade, bioremediation has been a preference method in EDCs degradation due to its environmental friendly approach. Lignin-modifying enzymes; LMEs have been the attractive candidates in EDC treatment due to their characteristics such as broad selectivity in substrate affinity and ability to degrade either complex, individual pollutants or low water solubility compounds. Usage of microbial enzymes either by using the whole organism or free enzymes has been introduced in water treatment. Current technology by immobilizing enzymes to certain matrix allow the enzymatic recycling process thus giving an advantage in operational cost.