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## Diversity of catabolic genes in sediment samples of Santos and São Vicente Estuarine Systems, SP

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### Abstract

The catabolism of organic compounds in nature is one of the most important processes of nutrients recycle. Biodegradation process occurs by diversified enzymatic complex present in microorganisms, mainly in bacteria. Presence of catabolic genes encoding degradative enzymes can indicate a potential for bioremediation. The purpose of this work was to investigate the occurrence and diversity of catabolic genes in sediment samples of Santos and São Vicente Estuarine Systems, through culture-independent methods. Catabolic genes were detected through PCR technique using two sets of degenerated primers. One set was constructed based on conserved regions of *n*-alkanes hydroxylases enzymes (alkanes monooxygenases) and the second one considering enzymes responsible for aromatic ring hydroxylation (ARHDs). The specified group of genes was detected in all nine samples analyzed. Diversity of catabolic genes detected was studied from one pristine and one polluted sampling sites. Both samples presented sequences homologous to *alkB* genes, with prevalence of *alkB4* from *Rhodococcus* sp. These genes codified alkanes monooxygenases from Gram positive bacteria. Considering the genes required for aromatic ring hydroxylation, the sequences obtained from both samples were homologous to toluene, biphenyl, naphthalene and benzene dioxygenases. Results suggested that degenerated primers evaluated in these study were efficient to evaluate the diversity of catabolic genes in sediment samples of Santos and São Vicente estuarine area. Also, genotypes distributed in these region has the potential to biodegradation of local xenobiotic compounds.

**Key-words:** catabolic genes; oxygenases; xenobiotics; biodegradation; Santos and São Vicente estuarine; sediment.

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