

Analysis of naphthalene and phenanthrene degradation catabolic genes of phyllosphere bacterial strains, *Alcaligenes faecalis* and *Alcaligenes* sp. DN25

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The bacterial strains, *Alcaligenes faecalis* and *Alcaligenes* sp. DN25 which were isolated from the phyllosphere of four ornamental plant species, *Ixora chinensis*, *Ervatamia divaricata*, *Hibiscus rosa-sinensis* and *Amaranthus cruentus* in five highly polluted sites in Sri Lanka, showed the highest phenanthrene and naphthalene degradation ability. Transformation and plasmid curing results of them revealed, naphthalene and phenanthrene degradation ability of these bacterial strains were plasmid encoded character. The occurrence of naphthalene specific (*nahR* and *nahU*) genes and phenanthrene specific (*phnAc* and *phnG*) genes of these catabolic plasmids were analyzed by PCR using degenerate primers. According to the amplification results, plasmids of *Alcaligenes faecalis* and *Alcaligenes* sp. DN25 harbour *nahR*, *nahU* and *phnG* genes but, lack of *phnAc* gene. RFLP and sequence data of *nahU* and *nahR* amplicons revealed, both of these genes were homologous to these two bacterial strains. But, *phnG* gene of two phenanthrene and naphthalene degrading phyllosphere bacterial strains was coexistence as two distinct copies of alleles.

Keywords: Bioremediation, aromatic hydrocarbon, catabolic gene, plasmid.