



941/D

Isolation and characterization of bacteria capable of degrading Polycyclic Aromatic Hydrocarbons

S I D Silva^{1,2*}

¹*Department of Microbiology, University of Kelaniya, Kelaniya*

²*Quality Control Division, Astron limited, 688, Galle Road, Ratmalana*

Polycyclic aromatic hydrocarbons (PAHs) are chemical compounds that consist of fused aromatic rings. The biodegradation of PAHs is highly dependent on the number of aromatic rings they consist of. Anthracene, phenanthrene and pyrene are some of the polycyclic aromatic hydrocarbons that are known to display both mutagenic and carcinogenic properties. They are recalcitrant to microbial degradation in soil and water due to their complex molecular structure and low solubility in water. This study reports the isolation and characterization of a PAH (anthracene) degrading microbial consortium, isolated from PAH contaminated sites.

Isolation of PAH degrading cultures was carried *via* classical shaken liquid medium enrichment. Tanner Mineral Medium (TMM) was used as enrichment medium which contains anthracene as the sole source of carbon. Five bacterial strains were isolated from enrichment procedure. Two *Bacillus* sp. and a *Pseudomonas* sp. were isolated from soil samples of Sapugaskanda refinery. Another *Bacillus* sp. and *Pseudomonas* sp. were isolated from automobile service stations. The consortium and its monoculture isolates, utilized a variety of hydrocarbons including PAHs (anthracene and naphthalene), mono aromatic hydrocarbons (benzene, toluene and xylene), and aliphatic hydrocarbons (1-hexanol), and hydrocarbon mixtures (Petrol & diesel oil). In conclusion, the high PAH degradation rates and the wide spectrum of hydrocarbon utilization of the microbial consortium indicate that they can be used for bioremediation of soils.

Keywords: Biodegradation, bioremediation, enrichment, isolation, polycyclic aromatic hydrocarbons