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## BB15 BIODEGRADATION OF POLYCYCLIC AROMATIC HYDROCARBONS (PAH) BY ACTINOMYCETES STRAINS

Natalia Bourguignon[1], Paula Isaac[1], María J Amoroso[12], Marcela Ferrero[1].

[1]*PROIMI-CCT Tucumán-CONICET, Tucumán.* [2]*Instituto de Microbiología, Fac. de Bioquímica, Química y Farmacia, Universidad Nacional de Tucumán.*

natyb37@hotmail.com

Among the most abundant environmental pollutants, polycyclic aromatic hydrocarbons (PAH) are one of the major concerns because of their persistence and toxicity. PAH are ubiquitous in nature widespread along the environment in air, water, sediments and soil as a result of both natural and anthropogenic activities.

A high diversity of bacterial strains with the ability to degrade multiple PAH can be detected by combining selective enrichment and molecular analyses, in order to follow the enrichment process and to characterize those isolates grown in pure cultures. Due to their importance and metabolic versatility, actinomycetes strains were studied for their capability of degradation of naphthalene, phenantreneor pyrene. *Rhodococcus* sp. 20, *R. jostii*, *Streptomyces* sp. A2, *Streptomyces* sp. A12 isolated from contaminated soils were selectively growth on agar medium added with crystals of naphthalene, phenantrene or pyrene. Removal of PAH was performed in minimal medium (MM) supplemented with 0.2 mM of each hydrocarbon (stock solutions 25 mM in acetone) and 0.1% yeast extract. The medium was inoculated with spore suspension or 5% v/v. The flasks were incubated at 30 ± 1°C, 150 rpm, for 7 days. Residual PAH was extracted with acetone and furhter determined by HPLC. Bacterial growth was determined by dry weight.

Degradation of naphthalene was observed in all isolates at different rates, between 31.2 and 74.8 % of PAH added to the culture medium. *R. jostii* had the best performance with 74.8 % of degradation. However, *R. jostii* was unable to degrade phenantrene and pyrene. Degradation of phenantrene only occurred in cultures of *Streptomyces sp.* A2 (3.9 %) and *Streptomyces sp.* A12 (20 %), while pyrene only was degradaded by *Streptomyces sp.* A12 (4.3 %).

Because of the poor performance of the strains when growing on phenantrene and pyrene, *Streptomyces* sp. A2, *Streptomyces* sp. A12, *Rhodococcus* sp. 20 and *R. jostii* were challenged to an adaptation assay that consisted in streaks successive on plate with PAH (0.05 mM) and decreasing concentration of glucose (from 10 to 1.25 $gL^{-1}$). Then, adapted strains were precultured in a rich media for further inoculation (2g $L^{-1}$ or 5%v/v) on MM+PAH (phenantrene or pyrene 0.1 mM) and glucose (1.25 $gL^{-1}$) as a co-substrate. Culture conditions and residual phenantrene or pyrene quantification were followed as previously described.

An enhanced degradation of phenantrene and pyrene was observed in the presence of glucose as co-substrate of growth, even that strains who could not degrade these PAH: *Rhodococcus* strains in both phenantrene and pyrene reached degradation rates of 25% of phenantrene and 19% of pyrene. These results allow us to have hope for the usefulness of these actimycetes strains in bioremediation assays of PAH in the environment.

## BB16 *Pseudomonas aeruginosa* PA01- HEAVY METAL INTERACTIONS WITH ENVIRONMENTAL RELEVANCE

Irene C Lazzarini Behrmann[1], Diana L Vullo[21].

[1]*Área Microbiología, Depto. de Química Biológica, Facultad de Ciencias Exactas y Naturales (UBA) .* [2]*Área Química, Instituto de Ciencias, Universidad Nacional de General Sarmiento, Buenos Aires.* dvullo@ungs.edu.ar

*Pseudomonas aeruginosa* PA01 is a widely studied strain either for clinical or environmental purposes. Siderophore biosynthesis and their regulation mechanisms as well as other characteristics on biofilm development and motility are well described in literature. However, no studies about the effect of metals on different motility strategies are registered. The aim of this work is to study the bacterial behaviour in terms of swimming, swarming and chemotaxis in presence of Cd(II), Zn(II), Cu(II) and Cr(VI), metals commonly found in polluted environments as