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Echeverría MC[1], *Benimeli CS* [2,3]

1) Grupo de Investigación Sobre Temas Ambientales y Químicos (GISTAQ), Facultad Regional Resistencia, Universidad Tecnológica Nacional, Resistencia, Chaco, Argentina. 2) Planta Piloto de Procesos Industriales Microbiológicos (PROIMI-CONICET), San Miguel de Tucumán, Tucumán, Argentina. 3) Facultad de Ciencias Exactas y Naturales, Universidad Nacional de Catamarca, San Fernando del Valle de Catamarca, Catamarca, Argentina, Argentina

Many industries such as petrochemical, pulp and paper, pharmaceutical, and food industries involve processes that use or produce furfural. Furfural is a heterocyclic aldehyde obtained by dehydrating at high temperatures of xylose; therefore, it is a characteristic compound present in acid hydrolyzates in which the furfural concentration can usually reach 2–3 g l^{-1}. In the region Northeast of Argentina (NEA), furfural is produced from detanized quebracho sawdust. In NEA, wastewaters derived from furfural production contain around 800 mg l^{-1} of this compound, which can cause toxic effects on living systems if they are released into the environment without proper treatment. In the present work, the removal of different concentrations of furfural by actinobacteria from liquid systems was studied. Isolates of actinobacteria called L4, L6, L9 and L13 obtained from sediments of stabilization ponds of a furfural-producing plant in the NEA region, and *Streptomyces* sp. A5, A6, A12, A14 and M7, obtained from sites contaminated with other xenobiotic compounds, were selected on base of their tolerance to furfural in Starch Casein Agar medium. In order to select the most efficient actinobacteria with respect to their growth and furfural removal ability in liquid medium, Minimal Medium (MM) added with a furfural concentration of 418±1 mg l^{-1} as the only carbon and energy source was used. This selection was carried out by determining the minimum relationship between the concentration of residual furfural and the microbial growth. *Streptomyces* sp. A12 and M7 and strain L9 were selected because they showed the minimal relationship. Subsequently, the selected strains, as pure and mixed cultures, were inoculated in MM supplemented with furfural 807±10 mg l^{-1} as the only carbon and energy source. The results showed that the three pure cultures were able to grow and develop under these conditions; however, the culture for which the relationship mentioned above was minimal, was the consortium formed by the actinobacteria L9, A12 and M7. In order to evaluate the effectiveness of the bioremediation process, ecotoxicity tests were carried out using *Raphanus sativus* seeds (radish, Punta Blanca variety). The culture supernatants were evaluated before and after its treatment for each condition. In response, inhibition of germination and elongation of the radicle and hypocotyl were determined in the presence of furfural. Significant increases in these bioindicators ($p < 0.05$) were obtained when the treatment was carried out with the consortium formed by the actinobacteria L9, A12 and M7. The results obtained suggest that the selected actinobacteria consortium represents a promising bioremediation tool for the treatment of effluents containing furfural.

BB16-BIOREMEDIATION OF LINDANE AND CHROME (VI) CO-CONTAMINATED SOILS BY BIOAUGMENTATION WITH AN INDIGENOUS CONSORTIUM OF ACTINOBACTERIA

Bigliardo AL[1] , *Benimeli CS* [1,2] , *Polti MA* [1,3]

1) Planta Piloto de Procesos Industriales Microbiológicos (PROIMI-CONICET), San Miguel de Tucumán, Tucumán, Argentina. 2) Facultad de Ciencias Exactas y Naturales, Universidad Nacional de Catamarca, San Fernando del Valle de Catamarca, Catamarca, Argentina. 3) Facultad de Ciencias Naturales e

Instituto Miguel Lillo, Universidad Nacional de Tucumán (UNT), San Miguel de Tucumán, Tucumán, Argentina

The technological advances and the growth of the world population have created severe problems of mixed contamination in soils, by both organic and inorganic compounds. In particular, mixed pollution by chromium VI [Cr(VI)] and lindane (LIN) has been reported in different environments around the world, including the Northwest of Argentina. The treatment of co-contaminated soils is complex and presents numerous challenges. Bioremediation is a promising technology that could successfully remove mixed compounds. Bioaugmentation with actinobacteria represents an efficient biotechnological tool for the mixed polluted soil reclamation. The objective of the present work was to remove simultaneously LIN and Cr(VI) from silty loam soils, by the bioaugmentation with an actinobacteria consortium formed by *Streptomyces* sp. M7, MC1, A5, and *Amycolatopsis tucumanensis* AB0. Mesocosmos of 1 Kg of soil were prepared, contaminated with both pollutants and allowed to stabilize for a month at room temperature and 50% of water holding capacity. They were then inoculated at 0 and 30 d with the actinobacteria consortium (2 g Kg^{-1}, each strain in the same proportion). Mesocosms were incubated for 90 d with minimal intervention of environmental parameters. All corresponding controls were carried out. The contaminated system (CS), did not remove LIN until the end of the assay; however, the contaminated and bioaugmented system (CBS) showed 80% removal of the pesticide during 90 d of incubation. Both CS and CBS were able to remove almost all Cr(VI), however, CBS could do it faster and more efficiently. The microbial counts (MC) showed an inhibitory effect of the contaminants on the native flora of the soil, since the lowest MC were observed in CS (8.7 x 10^{7} UFC g^{-1}), which were significantly lower at the end of assay respect to 0 d (1.44 x 10^{8} CFU g^{-1}). The highest MC were reached in bioaugmented systems (BS) (1.6 x 10^{9} CFU g^{-1}), which showed a growing profile up to 40 d of incubation and remained constant until the end of the assay. The natural soil (NS), without any treatment, presented a constant profile in the MC throughout 90 d (1.70-2.71 x 10^{8} UFC g^{-1}), while the CBS showed a variable profile up to 40 d of incubation and then increased, reaching similar values to SB (1.2 x 10^{9} CFU g^{-1}). The enzymatic soil activities showed a negative effect of the contaminants on them, especially catalase, which was totally inhibited until 50 d of incubation; since then this activity was recovered, in coincidence with the greater removal of the contaminants. The fluorescein diacetate hydrolysis activity (FDA) showed a strong correlation with the MC. FDA ranged between 8.01 and 135.07 µg fluorescein g^{-1} h^{-1}; NS showed the lowest FDA. Acid phosphatase activity exhibited variable profiles, but following a certain correlation with the MC in all systems. The maximum value was 130.03 µg p-nitrophenol g^{-1} h^{-1} in NS, whereas the lowest was observed in CS (4.29 µg p-nitrophenol g^{-1} h^{-1}).

BB17-ISOLATED STRAIN FROM RESIDUAL SLUDGE WITH THE CAPACITY TO REMEDIATE THEM AND WITH BIOCONTROLLING AND PLANT GROWTH PROMOTION CHARACTERISTICS

Escalante J , Lencina N , Ottado J , Gottig N , Garavaglia B.

Institute of Molecular and Cellular Biology Rosario - Rosario - Santa Fe - Argentina

A bacterial isolate (OI43), obtained from vegetable oils acid residues, previously characterized by its exoenzyme production capacity, proved to be efficient in reducing the chemical oxygen demand of these residues. The evaluation of the toxicity of the treated residue was followed by the use of lettuce seedlings *(Lactuca sativa L)* and onion bulbs *(Allium cepa)*. In both models, it was shown that the residue treatment with the bacterial isolate OI43 reduced its toxicity, allowing its final disposal in soils destined for that purpose. On the other hand, in order to evaluate the plant growth promoting activity of OI43, lettuce seedlings were inoculated with culture suspensions of $3x10^{8}$ CFU/mL and biomass