Libro de Resúmenes

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019 - EXPLORING THE POTENTIAL OF *Rhodotorula mucilaginosa* LSL FOR MYCOREMEDIATION OF TEXTILE EFFLUENTS

Venturini V[1], Tagua B[1,2], Barbero B[1,2], Kurina-Sanz M [1,2], Bonilla JO[1,2], Magallanes-Noguera C[1,2]
[1]FQByF, UNSL. [2]Instituto de Investigaciones en Tecnología Química (INTEQUI, CONICET-UNSL). San Luis, Argentina.
E-mail: camagallanes@email.unsl.edu.ar

Environmental pollution resulting from industrial development has created an urgent need to pursue sustainable alternatives for remediating contaminated sites. Mycoremediation is an economical, effective and eco-friendly technology suitable for this purpose. In previous studies, our group isolated and identified *R. mucilaginosa* LSL from a landfarming area of a local chemical industry. In this work, we aim to study the potential of *R. mucilaginosa* LSL for biotreating textile wastewater from a local industry. The biomass of *R. mucilaginosa* LSL was obtained from cultures developed in three different culture media: yeast extract-glucose medium (YG), Czapeck medium (Cz) and Czapeck medium with the addition of 10% sterile effluent (Cze) by 60 h (stationary phase). Then, yeast biomass (1% w/v) was transferred to 40 mL of textile effluent and incubated at 150 rpm and 28 °C during 96 h. Physicochemical parameters such as pH, conductivity, chemical oxygen demand (COD) and decolorization were measured every 24 h. Data analysis was performed using ANOVA, and the means were compared with a 5% significance level according to Tukey's tests. The biomass grown in Cze medium was able to reduce the pH values from 8.56 to 7.96, while *R. mucilaginosa* LSL grown in Cz medium was the most efficient in reducing COD by 58%. In all treatments, the effluent color changed from black to purple, and new absorption peaks were detected in the UV region of the UV-VIS spectrum, which could indicate degradation of textile dyes. On the other hand, conductivity remained unchanged throughout the biotreatment. These results position *R. mucilaginosa* LSL as a potential extremophilic yeast competent for the development of degradation processes for xenobiotic compounds in industrial textile effluents.

020 - IDENTIFICATION OF RESISTANT MICROORGANISMS AND MICROBIAL ACTIVITY IN CONTAMINATED SOILS UNDER THREE BIOREMEDIATION APPROACHES

Salinas A[1], Dellavedova C[2], Amieva MI[5], Lijteroff R[3], Delfini C[4], Villegas L [4,5]
[1]Área de Biología. Dep. de Biología. Facultad de Química, Bioquímica y Farmacia. UNSL. [2]Área de Biología Molecular. Dep. de Bioquímica. Fac. de Química, Bioquímica y Farmacia. UNSL. [3]Área de Educación en Ciencias Naturales. Dep. de Biología. Fac. de Química, Bioquímica y Farmacia. UNSL. [4]Instituto de Química de San Luis (INQUISAL). UNSL-CONICET.[5]Área de Bromatología. Dep. de Farmacia. Facultad de Química, Bioquímica y Farmacia. UNSL asalinaskenny@gmail.com

The success of a bioremediation process primarily depends on the intrinsic ability of the system to create and maintain conditions to promote the biodegradation of contaminants at a sufficiently high rate. Strategies to accelerate the biodegradation of hydrocarbons and other compounds in the soil include stimulating indigenous microorganisms (bio-stimulation) by optimizing factors such as the inoculation of a mixed microbial culture in the soil (bio-augmentation). The aim of this work was to identify effluent-resistant strains isolated from a landfarming and to evaluate three bioremediation approaches for a soil contaminated with glycols. For this, a series of laboratory-scale experiments were carried out with different experimental conditions: natural attenuation, biostimulation and bioaugmentation with previously selected native strains. The strains selected in previous studies were cultivated into LB-glucose (g L-1): NaCl 5.0; yeast extract 5.0; peptone 10.0; Glucose 10.0. The identification was realized by molecular techniques: DNA was obtained using a biology kit; PCR amplification with universal primers the DNA concentration in the PCR products was determined using Epoch (Biotek) and the integrity of the samples was evaluated through 1% Agarose gel electrophoresis. The PCR products were sent to CERELA (Tucuman-Argentina) for their purification and sequencing. The sequences were edited with Molecular Evolutionary Genetics Analysis (MEGA v7.0) and were analyzed with BLASTn using NCBI databases (www.ncbi.nlm.nih.gov). For the microbial activity test, 70 grams of soil were weighed in glass jars. Then, 4 ml of distilled water and 3 drops of Bromothymol Blue1 indicator were placed in the test tubes. The assembly of the devices was completed and then a “control” jar was made without the soil, to ensure that the change produced in the indicator was due to microbial respiration. The selected microorganisms were identified as coming: *Penicillium, Bacillus and Acinetobacter*. In the microbial activity test, different shades from yellow to green pH (6.7/7.4) could be seen: the one that received the mixed crop sowing presented lower pH values, indicating higher concentrations of CO2 coming from microbial respiration, followed by the biostimulation process and finally the natural attenuation process. Therefore, bioaugmentation and biostimulation increased microbial activity, indicating improved landfarming performance.