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SELECTION OF FUNGAL STRAINS WITH THE CAPACITY TO BIOREMEDIATE HYDROCARBONS OF ENVIRONMENTAL IMPORTANCE

Ruiz, Gisela B.^{1,2} - Tejerina Marcos R.^{1,2} - Ramírez, Eduardo H¹. - Martínez, Iris G.¹ - González, Marcia A.¹ - Tolaba, Santos M. A.¹ - Rodríguez, Brisa R.¹ - Benitez Ahrendts Marcelo R.²

1) Catedra de Microbiología Ambiental, Facultad de Ciencias Agrarias, UNJu; San Salvador de Jujuy-Jujuy-Argentina.

2) Instituto de Ecorregiones Andinas, Consejo Nacional de Investigaciones Científicas y Técnicas (INECOA-CONICET). San Salvador de Jujuy-Jujuy-Argentina.

Contacto: giselaruiz@fcaunju.edu.ar

Mycoremediation, a biotechnological process, has shown great promise in environmental remediation. While various fungal strains have demonstrated the ability to remove polycyclic aromatic hydrocarbons, there is limited information on mycoremediation strains in the province of Jujuy. This study aimed to identify fungal strains from Jujuy with mycoremediation potential for the hydrocarbons benzene and toluene. The tested strains included *Pleurotus ostreatus*, *Aspergillus niger*, *Trametes hirsuta*, *Trichoderma* spp., and *Monascus* spp. These strains were sourced from the Agricultural Microbiology laboratory and were cultured in MEA medium at 28±1°C for 10 days. Two treatments were conducted, using an inoculum of each active colony resuspended in 25 mL of malt extract liquid media; 0.5 mL of benzene was added for treatment 1 and 0.5 mL of toluene for treatment 2, while the liquid medium without hydrocarbon addition served as a control. All assays were incubated for 10 days at 28±1°C. After the incubation time, the mycelia were separated from the supernatant of each medium, which was weighed fresh, then dried in paper envelopes at 80°C for 1 hour for later weighing. The biomass grown in each treatment was determined and compared with each other. All assays were performed in quadruplicate. Mycelium weights were expressed as mean±standard deviation. Statistical analysis was performed using ANOVA and the Tukey test for comparison between means with a 0.05 probability of committing a type I error. The results obtained showed that there were significant differences in growth compared to the treatments with the control in the strains *A. niger*, *P. ostreatus*, *Trichoderma* spp., and *T. hirsuta* with a $p < 0.0001$, while *Monascus* spp. differences were recorded at $p = 0.0005$. The control weights were for *A. niger* (1.21±0.07g), *P. ostreatus* (1.89±0.24g), for *Trichoderma* spp. (1.63±0.11g), for *T. hirsuta* (1.65±0.12g) and *Monascus* spp. (2.74±0.25g). The weight recorded with Toluene was *A. niger* (0.45±0.03g), for *P. ostreatus* (1.78±0.02g) *Trichoderma* spp. (0.32±0.05g), for *T. hirsuta* (1.64±0.04g) and *Monascus* spp. no growth was recorded with this treatment. The weight recorded with Benzene

was for *A. niger* ($1.21 \pm 0.08\text{g}$), for *P. ostreatus* ($0.48 \pm 0.13\text{g}$), for *Trichoderma* spp. ($0.66 \pm 0.04\text{g}$), for *T. hirsuta* ($1.99 \pm 0.09\text{g}$) and *Monascus* spp. (1.5 ± 0.08). The selected strains showed the ability to tolerate and degrade contaminating hydrocarbons, demonstrating a remarkable potential for the remediation of contaminants.

Palabras clave: Mycoremediation-Benzene-Toluene-Environments