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When insufficiently treated domestic wastewater (DW) are discharged into the environment, it can negatively affect the health of the population, mainly due to the pathogenic microorganism's load. The implementation of treatment wetlands (TW) with floating macrophytes is proposed as a strategy that allows an efficient disinfection of these waters. Therefore, the objective of this study was to compare the efficiency of the application of two different TW for the removal of total mesophilic microorganisms and total coliforms from DW at mesocosms scale exposed to environmental conditions. Additionally, the microorganisms count was correlated with the removal of organic matter and nutrients with the purpose of clarifying if the availability of these compounds is a determining factor of the microbial load in such systems. The TW used were a floating filter (FF) wetland using a native emergent macrophyte, *Schoenoplectus americanus* (Sa), and a TW with floating macrophytes using a duckweed mixture (DM). The mesocosms (in triplicate) consisted of containers with 10 L of DW exposed to Sa plants supported in flotation by means of expanded polystyrene sheets or to DM floating freely, in order to occupy 50% of the container surface in both cases. Assays with Sa were carried out only in summer and lasted 30 d, while with DM it was carried out in summer and winter, for 7 and 30 d. At the initial and final time, the total mesophilic aerobic count (TMAC), total coliforms (TC), organic matter content (determined through chemical oxygen demand, COD), total nitrogen (TN) and phosphorous (TP) were measured, expressing the results as removal efficiency (RE%).

It was determined that both TW were highly efficient in removing the microbial load at all exposure times and in both seasons, observing 99% RE for both TMAC and TC. In relation to the removal of organic matter, it was detected that the TW with Sa exhibited COD removal of 85% while with the DM the values were between 70-80% in both experimental times, both in summer and in winter. Regarding nutrients, Sa removed 83% and 97% of TN and TP, respectively, while with DM obtained RE were between 56-74% for NT and 72-93% for PT, highlighting that these values were higher as the exposure time increased, without observing significant differences between seasons. Additionally, a positive correlation was detected between reduction of the microbial load and the removal of organic matter and nutrients. Therefore, it is possible that the reduced availability of these compounds, consequence of plant removal, is a key factor for the microorganisms's viability in the DW. However, other factors could also determine this phenomenon, including the release of plant antimicrobial substances, among others.

Therefore, both macrophytes were efficient in reducing the mesophilic and coliform microbial load from effluents, so the use of TW with these plants would be promising for the disinfection of domestic wastewater.

BB09

FURFURAL REMOVAL FROM A POLLUTED EFFLUENT BY USING A FLUIDIZED BED REACTOR

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Furfural is a heterocyclic aromatic aldehyde and wastewaters derived from its production can contain around 800 mg l^{-1}, which can cause toxic effects on living systems if released into the environment without proper treatment. In the present work, the furfural removal from a simulated effluent by a fluidized bed bioreactor filled with an actinobacteria biofilm on vegetable sponge (*Luffa aegyptiaca*) support was studied. For this, a suspension of a mixed culture of *Nocardiopsis* sp. L9, *Streptomyces* sp. A12 and M7, in TSB medium ($D.O_{540nm}$=1) was prepared. The luffa support was cut in cubes of approximately 0.1 g, which were washed and sterilized. The bacterial biofilm production on luffa cubes was carried out in 250 ml Erlenmeyer flasks, which contained 0.5 g of the support and 60 ml of the bacterial suspension. After 96 h of incubation at 30 °C and 100 rpm, the colonized sponge cubes were introduced into the reactor for the bioremediation treatment. A laboratory-scale fluidized bed reactor was used, which had an inlet for the effluent to be treated in the lower side and an outlet for the treated effluent in the upper part. The furfural residual concentration in the treated effluent was evaluated by HPLC, every 24 h for 4 days. Ecotoxicity tests were carried out using *Raphanus sativus* seeds (radish, Punta Blanca variety). Bacterial colonization on vegetal sponge was also evaluated by scanning electron microscopy, before and after treatment. The analysis by HPLC showed a complete depletion of furfural in the effluent after 24 h of treatment. Microphotographs by scanning electron microscopy showed an increase in the presence of possible polymeric substances in luffa cubes at the end of treatment regarding to the initial time, as result of biofilm production by the actinobacterial consortium. The ecotoxicity tests with radish seeds showed significant increases (p<0.05) in the vegetable biomarkers of seedlings obtained in the treated effluent, indicating that the toxic effects caused by furfural were reversed, confirming the effectiveness of the bioremediation process.

BB10

AMPHOTERICIN B DEGRADATION MONITORED BY HPLC AND UV SPECTROPHOTOMETRY.

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Antibiotics play a critical role in defending against bacterial infections. Despite extensive use, these substances in the environment have recently gained limited attention. Evidence suggests bacteria in a natural environment can degrade synthetic complex molecules. Our objective was to assess whether bacterial strains present in petroleum hydrocarbon-contaminated soils could exclusively utilize antibiotics for energy and nutrients. Bacterial communities were isolated from hydrocarbon-contaminated soil by inoculating soil samples in a mineral salt medium containing 20 mg L^{-1} Amphotericin B (Amp.B) as the sole carbon source. This was achieved through ten successive subcultures before incubation at 28°C on a rotary shaker. The Amp.B degrading enrichment culture was incubated on an R2A agar plate and after that colony forming units (CFU) were counted on each plate. The bacterial community and isolated colonies from this bacterial community were cultured on a mineral salt medium with Amp. B. The cultures were incubated in a shaker for 7 days at 28°C. Cell growth was determined by optical density at 600 nm, and Amp.B concentration was monitored at 328 nm by UV spectrophotometry and HPLC-UV. Fatty acids from communities were extracted. The bacteria were identified by Sherlock-MIDI. The ability to produce biosurfactant was determined by hemolytic activity and emulsification index. Results showed significant degradation in the concentration of Amp.B during the first 7 days of treatment for the community and strains analyzed. Four *Pseudomonas aeruginosa* and