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Bacterial isolation capacity to metabolize organic waste from residual water

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Water pollution is an environmental problem; the waters are accompanied by organic matter, nutrients and trace amounts of metals. The physicochemical treatments allow partial removal of the organic load; however, the costs are high, therefore it is advisable the use of other processes as the biologic. Contaminated rivers represent an interesting source of microorganisms capable of degrading different substrates, considering candidates for isolation and purification processes used in contaminated water. The strategy of bioremediation technologies is the use of different metabolic pathways and increased degradation of native processes to eliminate or reduced the contaminating substances. The isolates were monitored in medium with different substrates (carbohydrates, proteins and glycerol). Nineteen bacterial isolates from the three monitored water bodies were obtained, the percentage of capacity to assimilate strains with different carbohydrates varied depending on the compound, 100% of the strains degraded dextrose and sucrose, degraded 86% starch, 66% casein and none of the isolates showed hydrolysis of gelatin and lipase production. Results are in close relation to the place where these bacteria were isolated; as different levels of contamination may influence the bacteria present characteristics to adapt to the use of a wide range of carbohydrates. Although the degradation of pollutants in nature is often the result of the activity of a microbial consortium rather than a single organism, the potential degrader consortium depends on the potential that microorganisms present individually in their interaction with specific pollutants, for this reason have isolated autochthonous capacity to remove organic matter is a pathway for future use.

Biography

Rivera-Tapia A has completed his undergraduate and graduate studies at the Benemérita Autonomous University of Puebla, Mexico obtaining his Doctorate in Environmental Sciences in 2009, he began working at the same university from 1997 to date. He currently directs Master's and Doctoral theses in the areas of Environmental Science and Technology. His research areas focus on environmental problems and microbiological tests. He has published more than 10 articles related to the topic of wastewater characterization within the city of Puebla; and participated in more than 15 national and international congresses on topics focused on the area of Environmental Sciences.

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