Isolation and Characterization of Microorganisms Growing in Soil Treated with Atrazine

Young, Ricardo

The excessive use of the herbicide atrazine has become one of the main problems in surface and groundwater contamination around the world. This compound can be degraded by several microorganisms, which are induced to produce specialized enzymes that allow them to take advantage of the abundant nitrogen in the compound. In this project we analyze the capacity of atrazine degradation of some bacterial species. To do this, bacteria were isolated from soil samples recurrently exposed to atrazine in pineapple cultivation fields in the Republic of Panama, using solid media with 50% of commercial atrazine as a sole source of nitrogen for intermediate metabolism. The isolated bacteria were subjected to biochemical, morphological, as well as genomic and plasmid DNA characterization using PCR to amplify genes from the atz cluster, which encodes for atrazine clorhidrase degrading enzyme. Subsequently, an electrophoresis analysis in agarose gel was made to observe the amplified products. Filamentous fungi and gram-negative bacteria like Pseudomonas fluorescens, Sphingomonas paucimobilis, Pantoea sp., and Bacillus sp., were isolated and thus considered as putative candidates for further studies.

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