Isolation of Native Soil Bacteria that Solubilizes the Phosphorus: A New Approach to Formulate an Agricultural Biofertilizer

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At present, the demand for food is growing day by day, with the priority of speeding up the growth of agriculture to meet the population's food demand. However, farmers indiscriminately use chemical fertilizers that cause contamination to microorganisms in the soil and the environment. On the other hand, insoluble phosphorus in soils does not allow the development of the plant, resulting in low agricultural production. Consequently, it is necessary to look for alternatives to replace chemical fertilizers and use insoluble phosphorus for the development of agriculture. The new biotechnological tools allow the use of microorganisms that have the capacity to solubilize the insoluble phosphorus of non-cultivated soils and develop an organic agriculture. In the present investigation, by microbiological techniques six bacterial strains were isolated from the rhizosphere of banana, in vitro tests showed that the bacteria have the ability to solubilize the phosphorus in the NBRIP medium, by forming the halo in said culture medium. In addition, three bacterial strains were identified at the molecular level, such as Citrobacter sp, Aeromonas veronii, Citrobacter sp, using the 16S rRNA gene, with 99% identity. In conclusion, three bacterial strains of the banana rhizosphere were isolated and identified at the molecular level, in order to solubilize phosphorus, being a new alternative for organic farming.

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