



ISOLATION OF INORGANIC PHOSPHATE SOLUBILIZING BACTERIA IN THE RHIZOSPHERE OF TOMATO CROPS IN YUCATAN

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Introduction. Phosphorus plays an important role in all processes required in plant nutrition. The availability of this element in the soil is low, because the phosphorus is in the form of insoluble salts. By using biofertilizers, the phosphorus can be exploited by plants. Species of the genus *Bacillus* have this property, so they can be used as plant growth promoting bacteria.

The aim of this work was to obtain inorganic phosphate solubilizing bacteria belonging to the genus *Bacillus* from a tomato crop in the state of Yucatan, for possible use as biofertilizer.

Methodology. Soil samples were taken from a tomato crop in a greenhouse of Too Yucatan region. Decimal dilutions were performed on samples, which were subjected to 80 ° C for 15 min. Subsequently the samples were cultured on SRS agar (Sundara Rao and Sinha) and colonies which formed around them a yellow halo were selected. Biochemical tests for *Bacillus* genus were performed (1). For the kinetics of growth of bacteria, different preculture times and inoculums concentrations were used in order to obtain in the exponential phase the minimum bacteria quantity needed for utilization as biofertilizer. Optical density was used by measuring absorbance at 590 nm. The measurements were performed during 24 hours with intervals of 2 hours.

Results. Six inorganic phosphate solubilizing isolates were obtained (Fig. 1). One of them, called APP was found to be Gram-positive bacillus and endospores presence (Fig. 2). The biochemical test results were in accordance to the *Bacillus* genus (2). The culture of APP with 10% inoculum concentration had a growth rate of 0.1952 generations / hr, reaching a population of 10⁹ CFU / mL at 10 hours of bacterial growth. The amount is suitable for testing biofertilization in plants (3).

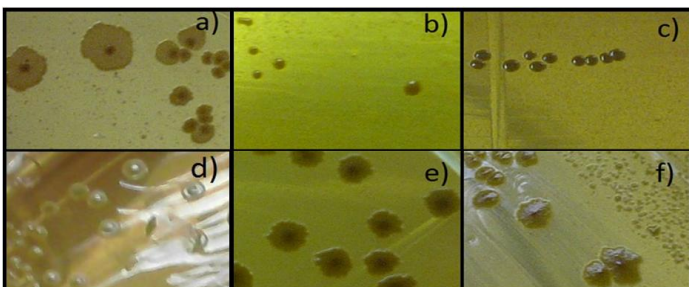


Fig. 1. Colonies with the yellow coloration indicate solubilization of inorganic phosphate. a) APO b) CACP c) RCOP d) RPO e) APP f) RPCM

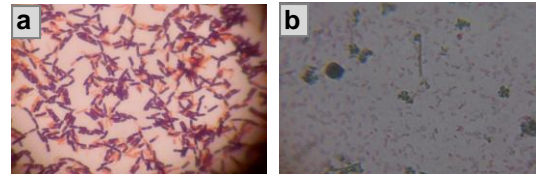
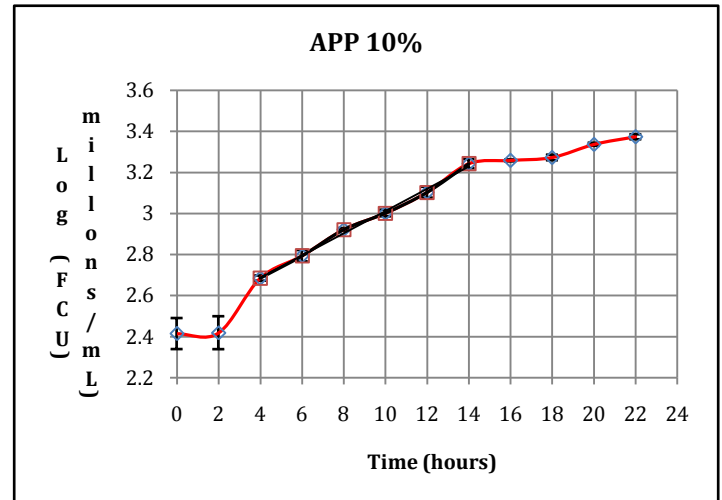


Fig. 2. a) Gram stain test. APP isolate was Gram-positive bacilli bacteria. b) APP isolate with presence of endospores. Spores are observed green.



Graphic 1. Growth kinetics APP isolation. The average growth rate was 0.1952 generations / hrs.

Conclusions. A phosphate solubilizing bacteria isolation was obtained from a tomato crop in Yucatan region with characteristics of the *Bacillus* genus. The 24 hours preculture of APP with 10% inoculum concentration reached a suitable bacteria population for biofertilization testing after 10 hours of growth.

References.

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