TITLE: IDENTIFICATION OF PHOSPHATE SOLUBILIZATION BACTERIA ASSOCIATED WITH AQUATIC MACROPHYTE *TYPHA DOMINGENSIS*

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ABSTRACT: Aquatic macrophytes are plants able to removing pollutants from water bodies, such as *Typha domingensis*, which is already used for bioremediation. This macrophyte is able that is involved in the formation of nucleic acids and membrane phospholipids, participates in energy metabolism and enzymatic regulation. Although abundant, most of the P is in insoluble forms, being unavailable to the vegetables. In this sense, the objective of the work was to characterize bacteria previously isolated from *T. domingensis* that solubilize phosphate. The experiment was performed with 40 isolates cultured in DYGS medium until reaching the growth phase. Then, a drop of 10 µL of each culture was inoculated into Basal medium containing 0.8 g L^{-1} of $Ca_3(PO_4)_2$ and the plates were kept in an oven at 30 ° C for 72 h to verify the presence of the solubilizing zone. The bacterium *Gluconacetobacter diazotrophicus* was used as a positive control, presenting the highest solubilizing zone (2.4 ± 0,08 cm) among the evaluated bacteria, in which 68.3% (28 isolates) were able to solubilize phosphate. *Serratia marcenses* (2.00 ± 0.22), *Pseudomonas oleovarans* (1.43 ± 0.15), *Raoultella ornithinolytica* (1.37 ± 0.21), *Klebsiella* to adapts to various environmental conditions due to its phenotypic plasticity. It is possible that microorganisms assist plants in this process. In this case, the phosphate solubilizing bacteria would act by providing inorganic phosphorus (P) to the plant. P is a macronutrient *variicola* (1.25 ± 0.14), *Enterobacter asburiae* (1.20 ± 0.00), *Pseudomonas pseudoalcaligenes* (1.18 ± 0.21), *Pseudomonas fulva* (1.17 ± 0.06), *Enterobacter cloacae* (1.00 ± 0.10), were the bacteria that presented solubilization zone like to or greater than 1 cm. Phosphor is the second most important mineral element after nitrogen in plant growth, these results show the potential of these bacteria to make this nutrient available to the macrophytes. Compared to works with terrestrial plants of agricultural interest, the study of the interaction between aquatic macrophytes and beneficial bacteria is scarce, ignoring its biotechnological potential. This is the first work that characterized phosphate solubilizing bacteria in *T. domingensis*, to our knowledge.

KEYWORDS: Aquatic environment, bioremediation, promotion of plant growth

DEVELOPMENT AGENCY: CNPq, FAPERJ, UENF