TITLE: THE BACTERIA *GLUCONACETOBACTER DIAZOTROPHICUS* PROMOTES THE GROWTH OF THE AQUATIC PLANT *SALVINIA AURICULATA*

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ABSTRACT: Plant growth promoting bacteria are epiphytic or endophytic microorganisms capable of promoting plant growth by various mechanisms. The inoculation of these bacteria into cultivars of interest has proved to be an effective tool in increasing productivity. *Gluconacetobacter diazotrophicus* is a diazotrophic endophytic bacterium capable of producing phytormonium, solubilizing nutrients and acting on the biocontrol of phytopathogens. These characteristics potentiate the use of *G. diazotrophicus* as a bioinoculant, reducing input expenditures. Its colonization in agricultural species is widely known, however the association with aquatic plants is not well defined. Studying the promotion of plant growth in aquatic plants may be the way to potentiate the recovery of polluted environments. In addition, the aquatic plant *Salvinia auriculata* is cosmopolitan, easy to cultivate, small size and fast vegetative growth, standing out as an interesting model for the study of plant-microorganism interaction. In this sense, the objective of the work was to determine the ability of G*. diazotrophicus* to promote the growth of *S. auriculata*. The plants were acclimated for 7 days in a greenhouse using Hoagland and Arnold solution with 1/4 of the force. Then, 0.5 g of plant was incubated in 500 mL of this same solution for another 15 days in a greenhouse. The treatment with bacteria received 108 cells of inoculum. After this period were evaluated fresh weight, dry weight and water content of the plants. For statistical analysis, the Tuckey test ($p \leq 0.05$) was used. As a result, the plants inoculated with the bacteria had a significantly higher fresh weight when compared to the uninoculated plants (mean ± 5.955 g and 4.5 ± 0.549 g, respectively), indicating a 20% increase in plant biomass treated with bacteria. This was not reflected in dry weight, where no significant difference was found between treatment with bacteria and control (0.19 ± 0.16 g and 0.19 ± 0.23 g respectively). The water content was higher in the plants treated with bacteria, indicating that *G. diazotrophicus* improves the water status of the plant, increasing the cellular turgor. Thus, the data show that the colonization of *G. diazotrophicus* in *S. auriculata* was efficient in promoting plant growth. Therefore, it is suggested that this interaction has the potential of biotechnological application in bioremediation processes.

Keywords: Bioinoculars, Plant growth promoting bactéria, Water plant

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