

TITLE: EVALUATION OF CHARACTERISTICS THAT AID STRAINS OF *AZOSPIRILLUM* SPP. IN THE COLONIZATION OF PLANT ROOTS

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ABSTRACT:

Bacteria of the genus *Azospirillum* have the potential to promote the growth of the plants with which they are associated. In the association, the key event is the colonization of the roots by *Azospirillum* sp. This work aims to analyze the characteristics of *Azospirillum* that ensure the success of the colonization of plant roots. The production of polysaccharides by *Azospirillum* was evaluated by the ability of congo red to bind to the isolates and by the biofilm formation test in glass wool. In the congo red binding assay, *Azospirillum* isolates were grown in liquid dygs medium at 28° C in agitator at 120 rpm. Then 10 µL of the cultures grown (DO560nm=0.8-0.9) were plated in solid NFb medium containing 45 µg/mL of congo red. After seven days of growth, the resulting colonies were analyzed for color and morphology. The strains type Sp7 and Sp59 were used as reference. To analyze the formation of biofilm in glass wool, the bacteria were inoculated in liquid dygs medium containing 50mg of glass wool, at 30° C and 120 rpm. After bacterial culture growth, 200µL of 1% crystal violet dye was added to the cultures and glass wool was washed with 0.9% saline solution three times, then ethyl alcohol was used for dye removal and the resulting solution was used to determine absorbance at 540nm. In the analyses, three repetitions were used for each isolate. Of the 27 isolates analyzed, 9 (33.3%) had whole edge and 18 (66.7%) wavy edge. With the rough interior were 19 (70.3%) and smooth 8 (29.7%). For staining 7 (26%) presented light red color and 20 (74%) dark red. Since congo red interacts with bacterial polysaccharides, it is concluded that the majority (74%) presented higher binding capacity to congo red and produced a higher amount of polysaccharides than Sp7 and Sp59 strains. In the preliminary test of biofilm formation in glass wool, isolates MAY10, MAY17 and MAY13 showed higher biofilm formation. The isolate MAY17 showed good ability to bind to Congo Red and produce biofilm in glass wool, showing potential for efficient colonization of the roots of the host plant.

Keywords: glass wool; biofilm formation; congo red; plant growth-promoting bacteria

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