

**Title: Isolation, characterization and selection of plant growth promoting microorganisms of *Vitis sp.***

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Grape cultivation in Brazil promotes economic development especially in the states of Rio Grande do Sul, Pernambuco, São Paulo, Paraná, Santa Catarina and Bahia who are the largest producers. The plant growth promoting bacterium (PGPB) colonize roots and/or rhizosphere and act both the biological pathogen control such as by directly promoting plant growth and increasing productivity and decreasing the need for use of chemical fungicides and fertilizers. This study aims to bioprospecting of bacterium as agents of plant growth, aimed at formulating a byproduct. This work aims bioprospecting bacterium as plant growth and pathogen biocontrol agents, aimed at formulating a biological product. For this work we were isolated microorganisms from soil samples in different properties of the Midwest of Santa Catarina. The following microorganism strains were evaluated for siderophores production, phosphate solubilization, indole acetic acid production, asymbiotic nitrogen fixation, cellulase production and antimicrobial activity *Fusarium oxysporum*. Microorganisms were selected and inoculated in plant substrate to evaluate vine growth. The experiment was conducted in a greenhouse were performed five treatments and a control: T1=Control, T2-T5= one bacteria each and T6=mix bacterial. A suspension containing 10<sup>8</sup> UFC/mL was inoculated in plant substrate of vine variety Paulsen 1103 (acclimatized for 30 days). For each treatment were employed 25 vessels, the experiment was evaluated in sixty days and checked at regular intervals the concentration of chlorophyll, shoot length, number of leaves. At the end of the period was determined fresh biomass and dry biomass. The total of 47 isolates, 87% produced indole acetic acid, 58.7% produced siderophores, 54.3% solubilized phosphate, 30% fixed nitrogen, 34.8% produced cellulase and only 9% were active against *Fusarium oxysporum*. The results obtained with these isolates indicated good biotechnological potential of these isolates.

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