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BACTERIAL BIOCONTROL POTENTIAL AGAINST *Colletotrichum gloeosporioides* IN POST-HARVEST GRAPES

LBV LABORATÓRIO DE BIOTECNOLOGIA VEGETAL

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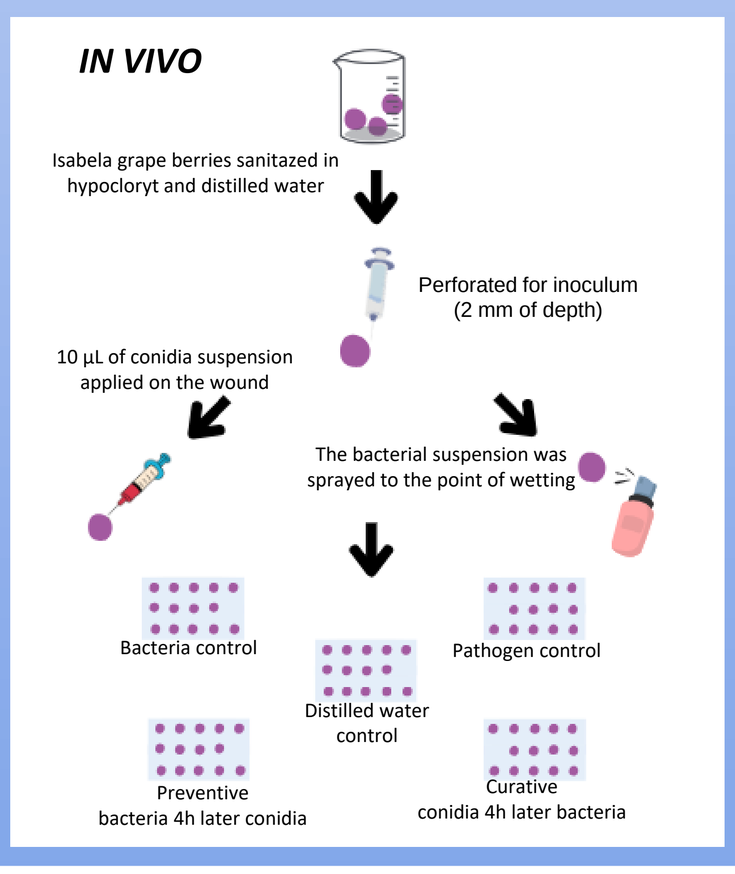
INTRODUCTION

Ripe rot is a fungal disease that can cause economic losses to post-harvest grapes worldwide. The causal agent is *Colletotrichum gloeosporioides* (Penz.) Penz. and Sacc, which is known to damage leaves, stems, and both pre and post-harvest fruit. This work aimed to evaluate the biocontrol potential of different isolates of *Bacillus* sp. against *C. gloeosporioides.*

MATERIAL AND METHODS

In the tests, endophytic and soil isolates bacteria were used. They were grown in liquid LB medium for 48 hours in a shaker with orbital agitation at 130 rpm at 28 °C, after the suspension was adjusted to a concentration of 1×10^8 CFU/mL. The pathogen was grown on Potato Dextrose Agar medium for 7 days in a culture chamber at 25 °C, after a suspension was adjusted to 1×10^6 conidia/mL.



The boxes were incubated in closed plastic bags for seven days in a room with controled temperature (25°C), relative humidity (80-90%) and a 16h photoperiod.

After the incubation, disease incidence and severity were assessed. Severity was visually evaluated using a scale from 0 to 100% as described previously by Pedrotti *et al.*, 2017.

RESULTS AND DISCUSSION

The bacterial isolates *Bacillus* sp. P121, *Bacillus velezensis* S26 and *Bacillus subtilis* F62 were selected in a previous dual culture assay as they presented the highest inhibition (more than 65%). For that reason they were tested in *in vivo* assay.

In *in vivo* test, we observed that the preventive treatment with *B. velezensis* S26 showed less than 35% incidence (Figure 1) of the pathogen, followed by *B. subtilis* F62 with less than 45%.

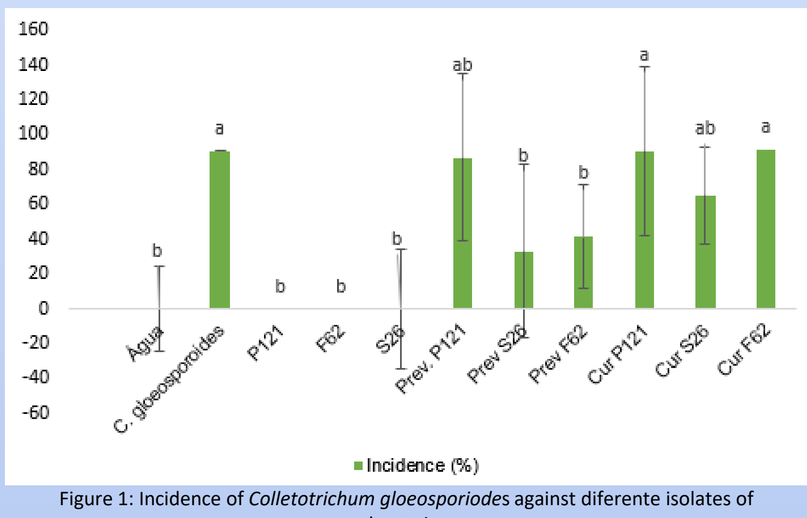


Figure 1: Incidence of *Colletotrichum gloeosporiode*s against diferente isolates of bacteria.

In comparison to the pathogen, these treatments showed 40% less incidence and 12% less severity (Figure 2) of the grape ripe rot symptoms.

Other studies using *Bacillus* sp. as biocontrol agent in different crops show inhibition of 40-90% against *C. gloeosporoides* disease.

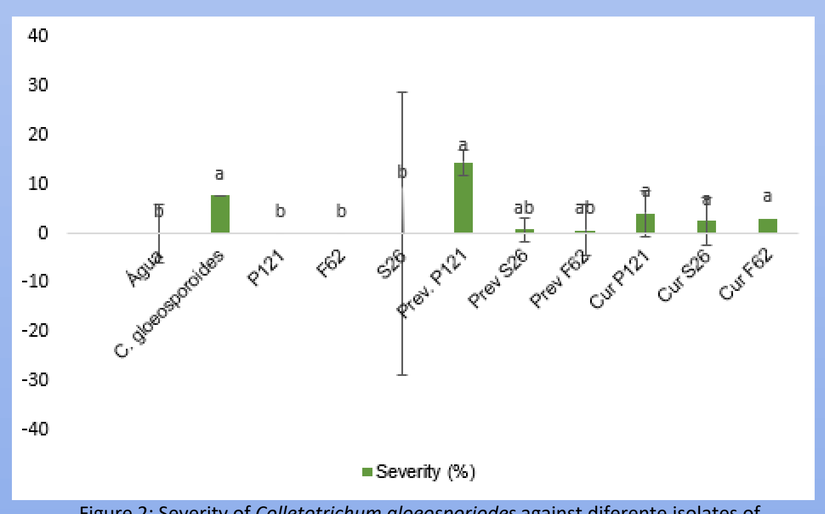


Figure 2: Severity of *Colletotrichum gloeosporiode*s against diferente isolates of bacteria.

This inhibition occurs because of the potential of *Bacillus* genus producing metabolites which gives plant protection against fungal diseases, controlling the pathogen in a eco-friendly manner duo to the enhanced activity of various defence-related enzymes.

CONCLUSION

The *Bacillus* bacteria inhibited *C. gloeosporioides in vitro* but didn´t showed high inhibitory effect in grape berries. Further studies are required to comprehend the mechanism of action of these bacteria as efficient agents for the biocontrol of ripe grape rot.

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