

SUSCEPTIBILITY OF *PYTHIUM INSIDIOSUM* FACE TO *GLIOCLADIUM VIRENS* AND GLIOTOXIN DETERMINED BY DUAL CULTURE

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Summary:

Secondary metabolites are produced during the development of microorganisms. They have been source of multiple pharmaceutical agents, ranging from antibiotic to immunosuppressors. *Gliocladium virens* is a soil saprophytic fungus, known by producing metabolites with antagonist activity over a diversity of plant pathogenic fungi, including *Pythium* spp. Although the Oomycota *Pythium insidiosum* is a phytopathogenic agent, it causes the pythiosis, a human and animal infection generating a pyogranulomatous disease of fast evolution and hard treatment. The gliotoxin, which is one of the metabolites produced by *G. virens*, besides the potent immunomodulator activity, exhibits a wide spectrum of biological activity, among them, antibacterial and antiviral. Due to the recent discovery of the *P. insidiosum* sensibility to antibiotic agents, this current research focused on evaluating the potential of the *G. virens* for biocontrol of *P. insidiosum*, as well as, the possible use of gliotoxin for the pythiosis treatment. The dual culture technique was utilized for the evaluation of biocontrol potential, in which the microorganisms were inoculated in opposite sides of culture plates. The growth measurement was daily registered and compared with a control plate. The percentage of mycelia growth inhibition (IG%) was calculated using the equation: $\% IG = [(R - R') / R] \times 100$. The susceptibility evaluation was done accordingly to the M38-A2 protocol of CLSI. Fifteen clinical isolates of *P. insidiosum* were tested, as well as, one strain of *G. virens* as an antagonistic and the gliotoxin, commercially bought. The growth inhibition was noticed from 72 hours after the incubation and the results are presented as an average of IG% \pm DP: IG% 72h = 62% \pm 1,55; IG% 96h = 69,3% \pm 1,27; IG% 120h = 73,05% \pm 1,06. The observed minimal inhibitory concentrations (MICs) vary from <0,06 – 8 μ g/mL (24h) and 0,125 – 8 μ g/mL (48h). Based on the results found, it is possible to notice the growth inhibition of *P. insidiosum* by both the presence of *G. virens* and use of one of the isolate metabolites, demonstrating the potential of application in the agriculture (biocontrol) and also for the disease treatment in humans and animals (gliotoxin).

Key-words: biocontrol, susceptibility, gliotoxin, *Gliocladium virens*, *Pythium insidiosum*

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