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ENVIRONMENTALLY FRIENDLY PROTECTION OF SWEET CHERRY AND QUINCE AGAINST MONILIOSIS

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Brown rot (moniliosis) is among the most destructive diseases affecting fruit crops. In stone fruit species, including sweet cherry, sour cherry, plum, apricot, and peach, the disease is caused by *Monilia cinerea* Bon. (syn. *Monilia laxa* Sacc.), whereas in pome fruit species, including quince, apple, and pear, it is caused by *Monilia fructigena* Pers. The disease occurs in two main forms: monilial blight, which affects flowers, leaves, young fruits, shoots, and branches, and fruit rot, which develops as fruits ripen. Cool, humid weather during spring flowering and the ripening of early sweet cherry cultivars favours disease development and, under severe conditions, losses of flower buds and fruits may reach 100%.

Because the use of chemical fungicides is constrained by pre-harvest intervals, environmentally friendly biological control methods represent an important alternative for sustainable disease management. This study aimed to evaluate the antagonistic and fungicidal activity of the biopreparations Gliocladin-SC and Rizoplan against the causal agents of moniliosis under *in vitro* conditions.

The phytopathogens *M. cinerea* and *M. fructigena* were isolated from naturally infected sweet cherry and quince fruits. The antagonistic activity of the biological agents was evaluated on potato dextrose agar (PDA) using the dual-culture method. The fungicidal activity of the biopreparations was assessed by the agar diffusion method using metal cylinders. After 10 days of incubation, antagonistic interactions and fungicidal effects were evaluated based on colony development and the formation of sterile inhibition zones around the cylinders.

The biological agent contained in Gliocladin-SC, *Trichoderma virens* CNMN-FD-13, completely overgrew the colonies of *M. cinerea* and *M. fructigena* within 7-8 days, reaching colony radii of 32.0 and 23.5 mm, respectively. The strain displayed fungistatic nutritional antagonism. The fungicidal activity of Gliocladin-SC was confirmed by sterile inhibition zones measuring 20.0 mm against *M. cinerea* and 35.0 mm against *M. fructigena*.

The biological agent contained in Rizoplan, *Pseudomonas fluorescens* AP-33-(V-3481), exhibited antibiosis in dual culture, producing sterile inhibition zones with radii of 28.3 mm against *M. cinerea* and 41.5 mm against *M. fructigena*. The fungicidal activity of Rizoplan was confirmed by inhibition zones measuring 16.8 and 23.3 mm against *M. cinerea* and *M. fructigena*, respectively.

Conclusions. The biological agents *T. virens* CNMN-FD-13 and *P. fluorescens* AP-33(V-3481), used in the biopreparations Gliocladin-SC and Rizoplan, respectively, effectively suppressed the development of *M. cinerea* and *M. fructigena* under *in vitro* conditions. *T. virens* exhibited fungistatic nutritional antagonism by overgrowing pathogen colonies, whereas *P. fluorescens* inhibited pathogen growth through antibiosis. Metabolites present in both biopreparations demonstrated pronounced fungicidal activity, as indicated by distinct sterile inhibition zones. These findings support the potential use of Gliocladin-SC and Rizoplan as environmentally friendly tools for the biological control of moniliosis in fruit crops.

Keywords: biopreparations; biological control; dual-culture method; moniliosis; phytopathogens

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