

Crab chitosan acts more as an antimicrobial than a resistance inducer on the protection of grapevine against downy mildew

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This study deals with the crab chitosan and the protection of grapevine against downy mildew. For this goal, two trials were design. In the first, 'Cabernet-Sauvignon' leaves were sprayed with 0.6 and 3.6 mL L⁻¹ of a commercial crab chitosan solution (Polymar®) two days before inoculation with a *Plasmopara viticola* suspension (5 x 10⁴ sporangia mL⁻¹). Downy mildew was monitored along 30-day interval to measure 'area under disease progress curves' (AUDPC) and % of protection. In the second trial, the same doses of substance were sprayed in plants, and their leaves were taken 12, 24, 48 and 72 hour after sprayings (HAS) for verifying % sporangia viability, zoospore activity and for evidencing systemic acquired resistance (SAR). Greenhouse and field experiments did evidence small (and non-significant) reductions on AUDPCs in grapevines treated with crab chitosan. It was observed a reduction on sporangia viability at 57.3%, and no zoospore activity when they were exposed to 3.6 mL L⁻¹ chitosan. Despite of drops in soluble proteins of leaves at 12-72 HAS, no significant alterations in activities (per mg of protein) of defense related enzymes, as polyphenol oxidases (PPO) and PR-proteins were evidenced at the same time interval. Nevertheless, it was evidenced an unexpected increase of lignin content of treated leaves, whose levels reached near 60% in fresh weight. Even though, such values did not differ significantly (P > 0.05) from non-treated leaves, at 72 HAS.

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