



ANTIFUNGAL ACTIVITY OF CHITOSAN AND ESSENTIAL OILS ON *RHIZOPUS STOLONIFER* (EHRENB.:FR.) VUILL CAUSAL AGENT OF SOFT ROT OF TOMATO.

ABSTRACT

Rhizopus stolonifer is the causal agent of soft rot, postharvest disease that causes important economic losses. Synthetic fungicides such as dichloran have been used to control this microorganism; however, it has been shown that fungicides represent a risk for the environment and human health. Actually, natural alternatives are looked for the control of postharvest rotting. *In vitro* and *in situ* experiments the antifungal effect of chitosan, essential oils of cinnamon (*Cinnamomum zeylanicum*), clove (*Syzygium aromaticum*), and thyme (*Thymus vulgaris*) and dichloran on *Rhizopus stolonifer* were evaluated. The most effective treatments for *in vitro* inhibition of *Rhizopus stolonifer* were obtained by chitosan to 10 mg mL^{-1} , with the three essential oils proved to the concentration of 0.3 mg mL^{-1} , the mixtures chitosan to 10 mg mL^{-1} with the oils at 0.3 mg mL^{-1} and dichloran at 1 mg mL^{-1} . *In situ* experiments showed that the individual treatment with chitosan was the best to reduce the infection percentage of the tomato (*Lycopersicon esculentum*) fruits inoculated with *Rhizopus stolonifer* and chitosan mixture with essential oils did not improve its antifungal activity. Chitosan and dichloran were the best treatments to reduce the weight loss of the fruits. Individual treatments with chitosan represent a natural alternative for the control of soft rot on tomato fruits.

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