

Antifungal action of chitosan in combination with fungicides in vitro and chitosan conjugate with gallic acid on tomatoes against *Botrytis cinerea*

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Abstract

In the present work, a positive effect was obtained by using low molecular weight chitosan compounds in combination with synthetic fungicides. Antifungal activity against *Botrytis cinerea*, determined by the radial growth method, was more than 75%, with a 25×10^{-10} g/L concentration of fludioxonil or difenoconazole in compounds. Metabolic activity of *B. cinerea* fungus was about 15% when using a chitosan compound containing fludioxonil at a concentration of 25×10^{-7} g/L. The combined action of chitosan with difenoconazole at a fungicide concentration of 25×10^{-4} g/L is 2–3 times more effective than the action of each component separately. Results of studies for artificially inoculated *B. cinerea* tomato fruit when treated with low molecular chitosan and chitosan conjugate with gallic acid reduced the frequency of rotting fruit by 50 and 83%, respectively. Chitosan-gallic acid conjugate were obtained from chitosans with Mw of 28 kDa (Ch28GA) was proved to be effective as a preventive treatment for 3 days and can potentially be used as a biofungicide against *B. cinerea* on tomatoes in the post-harvest period.