

**THE EFFECTIVENESS OF *Trichoderma harzianum* UPN16 SECONDARY METABOLITES AND CHITOSAN AT VARIOUS STORAGE TEMPERATURES FOR INHIBITING THE GROWTH OF *Colletotrichum* sp. ON POSTHARVEST CHILI FRUIT**

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**ABSTRACT**

Attack of *Colletotrichum* sp. in postharvest chilies is a crucial cause of the decline in the quality of chili yields. As an alternative from using chemical fungicides, secondary metabolites extracted from *Trichoderma harzianum* can be used, which include: enzymes, hormones, antibiotics, and toxins which are important in controlling plant diseases. Besides that, using chitosan as a coating can also protect the chili fruit from physical and mechanical damage. The temperature of 5-10°C is also influential in suppressing the growth of microorganisms such as pathogenic fungi. The hypothesis put forward in this study is that the application of *Trichoderma harzianum* UPN16 (MS UPN16) and chitosan combined with storage at 5-10°C can suppress the growth rate of *Colletotrichum* sp. on postharvest chilies. The research was conducted at the UPN "Veteran" Yogyakarta, on Plant Protection Laboratory from September 2022 to January 2023. The research was conducted in vitro and in vivo according to Completely Randomized Design (CRD) with 1 treatment factor with the attached treatment design. Each treatment was repeated 3 times. Application of various treatment was carried out once after inoculation of *Colletotrichum* sp. on cayenne pepper (*Capsicum frutescens* L.). Observations were made on day 1 to day 14 to see the treatment's inhibition of the growth of *Colletotrichum* sp. The results showed that the application of secondary metabolites of *Trichoderma harzianum* and chitosan placed at 5-10°C could increase the growth inhibit level of *Colletotrichum* sp., whether placed in mixed or separate formulations.

Keywords: Cayenne pepper (*Capsicum frutescens* L.), Secondary metabolite *Trichoderma harzianum* UPN16, Chitosan, Storage temperature, *Colletotrichum* sp.