

ABSTRACT

Athaya Dhiya, Aulia Kirana. 24020221140044. Identification and In Vitro Antagonism Test of Endophytic Fungi from Potato Plant Tissue as Inhibitors against *Alternaria solani*. Under the guidance of Susiana Purwantisari and Wijanarka.

Potato is a type of tuber crop and ranks as the fourth most important staple food in the world after rice, wheat, and maize, serving as a significant source of carbohydrates. Plant diseases caused by pathogenic fungi, such as *Alternaria solani*, pose a major problem in potato cultivation, potentially reducing both yield and crop quality. Plant-based biocontrol approaches have emerged as environmentally friendly alternatives for pathogen control. This study aims to isolate, identify, and evaluate the antagonistic ability of endophytic fungi from potato plants (*Solanum tuberosum* L.) against *Alternaria solani* in vitro. The research was conducted using a Completely Randomized Design (CRD) with five treatments of endophytic fungal isolates (PE1 = *Aspergillus* sp.1, PE2 = *Aspergillus* sp.2, PE3 = *Aspergillus* sp.3, PE4 = *Penicillium* sp., and PE5 = *Mucor* sp.), each tested against the pathogen *Alternaria solani* with three replications. The methodology included the isolation and identification of endophytic and pathogenic fungi from potato plants, followed by in vitro antagonism testing. Fungal isolation was performed on healthy leaves, stems, and tubers, while identification was conducted both macroscopically and microscopically. Antagonistic activity was assessed using the dual culture method to observe and calculate the inhibition of *A. solani* mycelial growth. The results of isolation and identification revealed five endophytic fungal isolates: three *Aspergillus* spp., one *Penicillium* sp., and one *Mucor* sp., each exhibiting varying degrees of antagonistic activity against *A. solani*. Antagonism tests showed that the *Aspergillus* sp.3 isolate (PE3) had the highest inhibition percentage against *A. solani* mycelial growth at 76.06%, categorized as strong inhibition. All isolates exhibited antibiosis mechanisms, while only PE1, PE3, and PE4 demonstrated competition for space and nutrients. This study indicates that endophytic fungi from potato tissues have potential to be developed as effective and environmentally friendly biocontrol agents for managing plant diseases caused by *Alternaria solani*.

Keywords: *Alternaria solani*, *Solanum tuberosum*, antagonism,