EFFICACY OF ISOLATED ENDOPHYTIC FUNGUS ON CONTROLLING BROWN SPOT DISEASE IN RICE CAUSED BY *Bipolaris oryzae*

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Brown spot disease caused by *Bipolaris oryzae* is one of the major rice diseases in Sri Lanka. The main symptom of this disease is the occurrence of brown spots on leaves and panicles which mainly affects the grain quality. Agrochemicals are frequently used to control the disease due to absence of total resistant varieties for the disease. Since the continuous use of agrochemicals causes hazardous effects on human health and the environment, it is crucial to experiment on other alternative methods such as biological control methods to minimize the risk. Endophytes are microorganisms that dwell within plant tissues having a symbiotic association and they are widely used as biological control agents in disease control. Therefore, this study was aimed to isolate an endophytic fungus, which carries the potential to be used in brown spot disease management. Diseased leaf samples of Bg90-2 were used to isolate the pathogen, and the isolated pathogen was identified as *B. oryzae* based on mycelial, conidial, and colony morphology. Leaves of partially resistant varieties, Bw312 and Ld371, were used for the isolation of endophytes. Four endophytic fungal species were isolated and were tested for their capacity to inhibit the growth of *B. oryzae* using *in vitro* dual culture assay. The percentage growth inhibition of four isolated fungal endophytes: 1-E, 2-E, 3-E, 4-E were 53.33%, 55.55%, 46.66%, and 46.66%, respectively. The endophyte 2-E was chosen, and its competence in the pathogen growth inhibition analysis was repeated. The endophyte 2-E exhibited a significant inhibitory activity against *B. oryzae* ($P \leq 0.05$) under *in-vitro* conditions. Furthermore, the fungal endophyte 2-E isolate was morphologically characterized. The results indicated that the endophytic fungus 2-E has the potential to be used in *B. oryzae* management system as a biocontrol agent.

Keywords: Antagonistic activity, Biocontrol, Fungal endophytes, *Oryza sativa*, Rice brown spot