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Germination Potential of *Aspergillus niger* and *Fusarium solani* Spores on Live *Gyrinops walla* Stem Tissues

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Abstract

Gyrinops walla (Walla patta) is the only member of the family Thymelaeaceae naturally growing in Sri Lanka which produces agarwood, a fragrant resinous tissue which is highly demanded in the world market. Since natural formation is rare, fungal inoculations are commonly practiced to induce agarwood formation in *Aquilaria* species. However, the response of live wood tissues of *G. walla* for the growth of fungi has not been investigated, the present study was conducted to identify the behavior of the fungal spores on the *G. walla* stem tissues after the inoculation. Non-resinous, non-wounded, fresh *G. walla* stem samples were collected minimising contaminations and water loss from three different mature trees with the age of 10-15 years in three different locations. Samples were cut into 3.0×3.0×3.0 cm and cutting surfaces were sterilised and 5 ml of spore suspension of 10⁷ spores ml⁻¹ and 10⁵ spores ml⁻¹ of *Aspergillus niger* and *Fusarium solani* respectively were applied to four vertical surfaces of the wood cube until those were saturated and placed in a sterile moist chamber. Three replicates were used for each tree for both fungal species and spore germination in sterile distilled water was used as the control. Percentage of spore germination on live tissues was determined at every 3 hour intervals for 36 hours and data were analysed by Kruskal-Wallis test using MINITAB software. Results revealed that the percentage of germination was higher in *F. solani* spores than *A. niger* after 3 hours of incubation on fresh *G. walla* tissues. Further at the 15th hour, germination was almost equal in both *A. niger* and *F. solani*. Though *A. niger* germination was lower until the 15th hour, it was gradually increased with time and obtained the maximum germination percentage at about nearly 70% at the stationary phase. However, *F. solani* germination was lower after the 15th hour and reached its maximum level of about 66%. However, the germination of *A. niger* and *F. solani* spores on live *G. walla* wood were not significantly different (p=0.817). The findings of the present study showed that percentage of spore germination of *A. niger* on live wood (70%) was higher than in water (60%). Similarly *F. solani* also showed an increment of germination on live wood (66%) than in water (53%). Results revealed that the germination on live wood tissues of *A. niger* and *F. solani* was not inhibited by biochemical/ phytochemical compounds in wood of *G. walla* on the cutting surface. The findings demonstrated the compatible interactions between two tested fungal species and *G. walla* stem tissues.

Keywords: Germination, *Gyrinops walla*, *Aspergillus niger*, *Fusarium solani*, Wood tissues