Antifungal effects of Trichoderma spp. and vermiwash against rice blast fungus (Magnaporthe oryzae)

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ABSTRACT
Rice blast caused by *Magnaporthe oryzae* is a devastating fungal disease of rice globally affecting all plant parts and seeds. Use of fungicides is the major management method of the disease; however, fungicides have negative impacts on environment and human health. The objective of this study was to determine the potential efficacy of *Trichoderma* isolates, BG-1, SYA-E, BRO-2, SYA-C, EM-B and vermiwash against rice blast fungus *(M. oryzae).* The assay was carried out in the laboratory in a Completely Randomized Design (CRD) with three replications. *M. oryzae* fungus was isolated from naturally infected rice tissues of variety ITA-310 in west Kano irrigation scheme by sporulation of the pathogen on a moist chamber and then streaked on 2% water agar media and cultured for five days. Both *Trichoderma* and *M. oryzae* isolates were cultured in PDA (Potato Dextrose Agar) for 7 days and inhibition tested using dual culture method. A disc plug of 8 mm radius of *M. oryzae* and 5 *Trichoderma* isolates were picked from the periphery of the mycelium and placed 7cm apart in 9cm PDA plates under aseptic conditions. Rice straw vermiwash harvested after 14 days from the vermicomposting structure and diluted to 10% was streaked at the edge of the agar plate with a test pathogen aseptically. The inoculated petri dishes were incubated at 25±2 ^{o}C and data on radial growth in mm of the 5 *Trichoderma spp* and vermiwash against *M. oryzae* colonies was collected after 48hrs, then after every 24hrs for 7 days. The 6 bio controls were significantly different for antifungal activity at $p \leq 0.0001$. However, the control was significantly different to all the biocontrol's at $p \leq 0.05$. The biocontrol that exhibited the highest antifungal activity against M. oryzae were Vermiwash, EM-B, SYA-C, and BRO-2 with inhibition of 72.81%, 71.49% and 71.05%, respectively exhibiting potential to be used as controls for rice blast disease. Additional research of the selected best performing *Trichoderma* isolates and vermiwash need to be evaluated under green house and field experiments to suppress rice blast disease for enhanced rice productivity.
Keywords: Biocontrol, Invitro, Isolates, rice blast, vermiwash