

Potential of Using Endophytes of Sugarcane for Biological Control of Sugarcane Smut

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Sugarcane smut disease caused by *Sporisorium scitamineum* results in heavy economic losses to cane production. As effective management measures of the disease are limited, the objectives of the study were to isolate endophytic microorganisms effective against smut pathogen and to identify the potential endophytic microbes by molecular methods. Ten smut-resistant varieties of sugarcane were selected from the pool of germplasm in Sri Lanka and endophytic microbes were isolated from the stalk, leaf and leaf bud tissues using four different culture media. Resulted in yeast, actinomycete and fungal colonies were assayed by dual culture plate technique to select potential antagonists of *S. scitamineum*. Microbial cultures giving more than 50% colony growth inhibition of *S. scitamineum* were subjected to PCR. ITS1 and ITS4 universal primers were used for PCR amplification of yeast and fungal antagonists and 27F and 1492R universal primers were used for actinomycete antagonists. PCR products were sequenced and homology search was done to identify the potential antagonists. One fungal and 12 yeast isolates with distinct colony morphology were isolated from stalks. From leaves, 1 fungal, 2 actinomycete and 8 yeast colonies were isolated. Nine morphologically different microbial colonies (3 fungal, 5 yeast and 1 actinomycete) were isolated from bud tissues. Two yeast isolates obtained from stalk tissues gave more than 50% growth inhibition of the causal pathogen. One fungal and one yeast isolate from leaf tissues and two fungal, one actinomycete and two yeast isolates from bud tissues gave more than 50% growth inhibition of the smut pathogen. A yeast isolate present in all three types of tissues which effectively inhibits the colony growth of *S. scitamineum* was identified as a species of Order *Saccharomycetale*.

Keywords: Endophytic yeast, *In vitro* antagonism , Order *Saccharomycetale*

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