

ISOLATION AND SCREENING OF SOIL CHITINOLYTIC FUNGI AND THEIR POTENTIAL IN CONTROL OF PLANT DISEASES

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Chitin is the major component of the fungal cell wall. Chitinases, which break down chitin are implicated in plant defense response against fungal pathogens. Genes encoding chitinases have been used to genetically engineer plants to enhance their chitinase production against fungal pathogens. The aim of this research project was to isolate chitinolytic fungi from some selected agricultural soils in Sri Lanka and to screen their chitinase enzyme activity to identify high chitinase producers. To achieve this aim, soil fungi were extracted through dilution plate technique from three different locations in Sri Lanka. Thirty five chitinolytic fungal isolates were isolated, through preliminary identification process by preparing slide cultures, duplicates were removed and finally twenty four fungal isolates were maintained on potato dextrose agar medium. Growth rates of each isolate were determined. Colony diameter was measured for seven days and four fungal isolates with the highest growth rate were selected for screening enzymatic activity. A1C4, A1C5, A3C2 and C2C9 were the most potent chitinolytic fungal isolates. Each selected isolates were inoculated to a chitin broth and maintained as still cultures for eight days. Crude supernatants were collected every 48 hours and chitinase activity was determined colorimetrically by quantifying the release of reducing sugars (N-acetyl glucosamine) from chitin substrate. Supernatants from A1C4 and A1C5 isolates showed the highest level of enzyme activity. These isolates could be useful as high chitinase producers to isolate chitinase genes for engineering resistance in crop plants.

Key words: Chitinase activity, Chitin media, Soil chitinolytic fungi