Determination of Pectinase and Cellulase Activity of Fungi Species Isolated from Unsanitary Landfill in Badulla

T.M.A.R.S. Thennakoon, I.D. Singhalage* and W.A.H. Maheshika

Department of Science and Technology, Uva Wellassa University, Badulla, Sri Lanka

Municipal solid waste is one of the major sources for microbes having potent enzymatic activities. The positive impacts of such microbes could use for finding a suitable solution to overcome waste-related problems. The present study aimed at isolating and determining pectinase and cellulase activity of fungal strains living in unsanitary landfills. Fungi species were isolated in Potato Dextrose Agar medium. The isolated fungal strains were distinguished from each other by examining their morphological features through the light microscope after culturing them in slides. All fungal isolates were tested for cellulase and pectinase activities by using Carboxymethylcellulose and Vincent's agar plates respectively. The good diffusion method was used in both assays. The diameter of the clearance zone around the wells was measured after the incubation. Data were analysed by ANOVA in Minitab 17.1. According to the results, a total of 29 fungal species were isolated and coded from F1-F29. Among them, 21 species were positive for pectinase activity whereas 20 species were positive for cellulase activity. The significant ($p < 0.05$) mean diameter for pectinase activity was given by F22 (40 mm) and for cellulase activity by F9 (19 mm). Eight fungi isolates (F22, F16, F23, F9, F24, F25, F15, and F2) were shown both pectinase and cellulase activities. Thus, such cultures having positive pectinase and cellulase activities could be useful in organic waste management in unsanitary landfills. The fungal species having pectinase and cellulase activities yet to be identified.

Keywords: Unsanitary landfill, Fungi, Pectinase, Cellulase

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