

Optimizing Cellulase Production from Municipal Solid Wastes (MSW) Following a Solid State Fermentation (SSF) by *Trichoderma reesei* and *Aspergillus niger*

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Abstract : Solid-state fermentation (SSF) is an alternative to liquid fermentations for the production of commercially important products such as antibiotics, single cell proteins, enzymes, organic acids, or biofuels from lignocellulosic material. This paper describes the optimisation of SSF on municipal solid waste (MSW) for the production of cellulase enzyme. Production of cellulase enzymes was optimised by *Trichoderma reesei* or *Aspergillus niger* for temperature, moisture content, inoculation, and period of incubation. Also, presence of minerals, and alternative carbon and nitrogen sources. Optimisation revealed that production of cellulolytic enzymes was optimal when using *Trichoderma* spp at 30°C with an incubation period of 168 hours with a 60% moisture content. Crude enzymes produced from MSW, by *Trichoderma* were evaluated for the saccharification of MSW and compared with activity of a commercially available enzyme, results demonstrated that MSW can be used as inexpensive lignocellulosic material for the production of cellulase enzymes using *Trichoderma reesei*.

Keywords : SSF, enzyme hydrolysis, municipal solid waste (MSW), optimizing conditions, enzyme hydrolysis

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