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Effect of bacterial cellulase on phytopathogenic fungi

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Abstract: *This study aim at isolation and screening of bacteria from soil that are efficient cellulase producers and observing the effect of bacterial cellulase on phytopathogenic fungi. Soil samples were collected from the Patna region for the isolation of bacteria while phytopathogenic fungal cultures were procured from the Department of Microbiology, Patna Women's College. To observe the zone of cellulose hydrolysis for confirmation of cellulase production, the observed isolates were screened on CMC media. Five isolates (29%) showed production of cellulase on CMC media. These isolates were further used for crude enzyme production. The crude enzyme produced from these isolates showed slight variations on phytopathogenic fungi. The bacterial cellulases were positively capable of inhibiting the growth of phytopathogenic fungi that causes disease in plants. Out of 05 crude enzymes more than three has shown considerable positive effect in control against plant pathogens.*

Keywords: *Cellulase, phytopathogenic, enzyme, Bihar region.*

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Introduction:

Cellulose being a linear polymer of about 14000 anhydroglucose residues that are held together by β-1,4 linkages in their chair configuration. It is known to be the most abundant carbohydrate present in nature and it is regarded as the most important renewable resource for bio-conservation.

The major constituent in plant cell walls are cellulose, hemicellulose and lignin, with cellulose as the most plentiful component (Han et al., 2003 and Keegstra et al., 2010). Cellulase is regarded as the most important enzyme for degradation of cellulose and is majorly produced by bacteria and fungi. The growth rate of bacteria is higher than fungi hence it has been widely used for the production of cellulase under various culture conditions.

The cellulases can efficiently hydrolyze cellulose into glucose unit via the associative actions of the enzymes- endo-β-1,4 glucanase, cellobiohydrolase and β-D-glucosidase.