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Isolation, Screening and Characterization of Cellulase Producing Bacterial isolates from garbage dumping sites

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Abstract : *Cellulolytic bacteria were isolated and screened from dumping site of different areas of Patna. Selective media Carboxy methyl cellulose (CMC) agar was used to screen cellulose degrading bacteria from bacterial colonies obtained on nutrient agar (NA) plates. CMC agar medium supplemented with 1% CMC was used. On flooding with Gram's iodine clear zone on CMC agar medium plates were observed showing hydrolysis of cellulose on the plate. Value of total surface area of clear zone is directly proportional to the level of cellulose production. Based upon the morphological, cultural and biochemical characterisation six isolated strain were identified as Bacillus sp. (T1, B1, B3), Pseudomonas sp. (M2), Serratia sp (M1), Streptococcus sp. (M3). A basal medium containing CMC, KH_2PO_4, K_2HPO_4, MgSO4 and $FeSO_4$ at pH 7.0 was used for cellulase production. The assay of cellulase in term of CMCase activity was performed by measuring the release of reducing sugar using DNS method. Physicochemical parameters like incubation time, temperature and pH were optimised for maximum cellulase production. Maximum cellulase was produced by Pseudomonas sp.(M2) and Bacillus sp.(T1) at 37°C and 50°C respectively. All the other isolates showed maximum cellulase production at temperature range of 37-45°C. The pH of initial media affected the crude enzyme production significantly at pH range of 5.5-7.5. All the isolates showed high enzyme activity at pH range of 5.5-7.5, whereas Bacillus sp. (T1) being acidophilic showed its maximum activity at pH 4.0.*

Keywords: *Cellulase; CMCase activity; Filter paper;*

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