



Isolation of laccase enzyme producing bacteria and optimization of its production parameters to obtain maximum yield

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Abstract : *Enzymes are among the most beneficial products obtained for human needs through microbial sources and they have come up as a sustainable alternative to the use of harsh chemicals in industries. Laccase, a multicopper oxidoreductase, able to catalyse oxidation of phenolic and other toxic compounds, finds a potent substrate in the lignocellulosic agro-industrial residues. For the purpose of study, soil containing dumped saw dust were collected from two small scale saw mills located in Rajendra Nagar and Pirmuhani*

areas of Patna respectively. Bacterial population from these samples were isolated and screened for laccase activity on a guaiacol supplemented medium. Results indicated five strains to exhibit a positive response. However only one among them (Lac4) was found to show a visibly significant activity. On biochemical analysis, the strain was identified to be of Bacillus species. The enzyme production was carried out and assayed under normal conditions by spectrophotometric analysis. For optimization of production conditions, three parameters were kept under observation, i.e.; Incubation time and temperature, pH and different carbon sources. Study revealed that the maximum enzyme activity was obtained at 37°C after 24 hours of incubation if the pH is kept at 6 and Dextrose (1%) supplemented as carbon source. The methods used were practical for a microbiology laboratory that chooses to perform enzyme assay by spectrophotometric analysis and assures a significant rate of accuracy in the result.

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