

Isolation and Identification of a Cellulase Producing Bacterial Strain

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Cellulolytic organisms could be isolated from diverse natural sources and the best bacterial candidate could be used to produce cellulase. The objective of the study was to isolate a thermostable alkaline cellulase producing bacterial strain from diverse natural sources. The samples obtained from multiple sources such as goat excreta, cow dung, tropical soil, and organic matters. Opened hot cellulose agar plate were transferred on to the selective CMC agar media and incubated for 2 days at 37 °C. The samples were cultured on Nutrient Agar in order to isolate cellulolytic bacteria. Bacteria isolated were screened for cellulolytic activity using serial dilution and pour-plate method after which they were characterized. The bacterial isolate showing highest carboxymethylcellulose (CMC) hydrolytic capacity was obtained from cow dung and used for further studies. Based on the morphological, biochemical and cultural analysis, the strain from cow dung was confirmed as *Bacillus* sp. Pure culture of this bacterial strain was grown overnight for DNA extraction and 16S rDNA was amplified by a Thermocycler using universal primers. When the amplified 16S rDNA PCR product was sequenced using automated sequencer and sequence similarity search was done for the 16S rDNA sequence using BLAST. BLAST in search resulted unknown organism and confirmed as *Bacillus cereus* in comparison with the GeneBank accession no AF290555. This thermostable alkaline cellulase producer was the best strain and further studies are underway to improve the strain and to optimize the fermentation medium and culture conditions to increase the cellulase production.

Keywords: Alkaline, cellulase, CMC agar media, cow dung, thermostable