

# Molecular characterization and identification of an alkalophilic bacterial strain isolated from a local hot spring Atri, Khurda District, Odisha, India

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The present study was conducted to isolate, identify, characterize and to determine the enzymatic activities of the thermophiles from Atri hot spring of odisha. The optimal temperature for growth of these isolates was 55 °C and the optimal pH was 8. These bacterial cells were Gram positive rods and endospore forming. All the strains were amylase, catalase and oxidase positive but gelatinase and caseinase negative but isolate A1 showed the best amylase producing. The phenotypic characterization of those isolates was confirmed by genotypic method using 16S rDNA sequence analysis. Maximal homology of isolate A1 to genus *Geobacillus* was observed. Isolate A1 showed 96 per cent homology with *Geobacillus* sp. *WCH 70* (Accession no. NC 012793.1). Therefore, 16S rDNA gene sequence analysis can be considered as a valuable genotypic tool for the identification and characterization of this thermophilic bacterium at genus level. Moreover, enzymatic products of these isolates could receive considerable attention due to their potential applications in biotechnology.

**Key words :** Thermophiles, Enzymes, Hot spring, 16S rDNA.

**How to cite this paper :** Nayak, S.K., Ray, P. and Sahoo, P.K. (2013). Molecular characterization and identification of an alkalophilic bacterial strain isolated from a local hot spring Atri, Khurda District, Odisha, India. *Asian J. Bio. Sci.*, **8** (2) : 189-193.