

Identification of Cellulose-Hydrolytic Thermophiles Isolated from Sg. Klah Hot Spring Based on 16S rDNA Gene Sequence

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Abstract : In this study, six bacterial isolates of a slightly thermophilic organism from the Sg. Klah hot spring, Malaysia were successfully isolated and designated as M7T55D1, M7T55D2, M7T55D3, M7T53D1, M7T53D2 and M7T53D3 respectively. The bacterial isolates were screened for their cellulose hydrolytic ability on Carboxymethylcellulose agar medium. The isolated bacterial strains were identified morphologically, biochemically and molecularly with the aid of 16S rDNA sequencing. All of the bacteria showed their optimum growth at a slightly alkaline pH of 7.5 with a temperature of 55°C. All strains were Gram-negative, non-spore forming type, strictly aerobic, catalase-positive and oxidase-positive with the ability to produce thermostable cellulase. Based on BLASTn results, bacterial isolates of M7T55D2 and M7T53D1 gave the highest homology (97%) with similarity to *Tepidimonas ignava* while isolates M7T55D1, M7T55D3, M7T53D2 and M7T53D3 showed their closest homology (97%-98%) with *Tepidimonas thermarum*. These cellulolytic thermophiles might have a commercial potential to produce valuable thermostable cellulase.

Keywords : cellulase, cellulolytic, thermophiles, 16S rDNA gene

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