

PROTEIN EXPRESSION AND PURIFICATION OF A MOLECULAR CHAPERON IN ASSOCIATION WITH HEAT STRESS TOLERANCE IN BACILLUS SUBTILIS (D18) ISOLATED FROM HOT SPRING OF INDIA

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ABSTRACT

A thermo tolerant bacterial strain was isolated from hot spring of Sohna, Haryana, India, classified and named as *B.subtilis*D18 after morphological and 16S rRNA gene sequence analysis. This isolate was used to amplify *groEL* gene, which encodes molecular chaperon GroEL. The full length gene was 1.6 kb in length encoding a polypeptide of 108 amino acid residues. The calculated molecular weight and pI of the protein were nearly 60 kDa and 4.75, respectively. The amino acid sequence of the gene was similar to other *groEL* proteins and the homologous *groEL* of different microorganisms. The *groEL* gene of *B. subtilis* was successfully expressed in *Escherichia coli*BL21 (DE3) strain using pET expression systems and purified by polyhistidine tag using Ni-NTA (nitrilotriacetic acid) resin column. Heterologous expression of *groEL* of *B.subtilis* in *E. coli* BL21(DE3) allows the growth of *E.coli* up to 42°C for 16 h, suggesting that *groEL* from *B.subtilis* imparts tolerance to host cells under elevated temperatures.

KEYWORDS: *Bacillus Subtilis*, Molecular Chaperone, Expression Vector, Heterogenous Expression, His-Tag Purification

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