

# Physicochemical Characteristics of a Thermostable Gellan Lyase from *Geobacillus stearothermophilus* 98

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A purified thermostable gellan lyase, produced by a thermophilic bacterium, *Geobacillus stearothermophilus* 98, was characterized in relation to its physicochemical properties. The gellan lyase was established to have a molecular weight of 216 kDa, defined by capillary gel electrophoresis. Amino acid analysis revealed high quantities of Lys, His, Ala, Val, Ile, Glx, and Pro residues. The circular dichroism revealed 45%  $\alpha$ -structure and practically lack of  $\beta$ -spiral domains. Kinetic studies showed high affinity of the enzyme to gellan as a substrate ( $K_m = 0.21$  M). The thermal denaturation investigated by circular dichroism showed a highly cooperative transition with a midpoint ( $T_m$ ) at about 75 °C. A single product was identified after enzyme action on gellan. Large exothermic aggregation near  $T_m$  was observed by differential scanning calorimetry. Two types of gellan lyase crystals were reproducibly isolated.

**Key words:** Thermostable Gellan Lyase, Amino Acid Composition, Crystals