

CHARACTERIZATION OF THERMOPHILIC AMYLASE FROM AN OBLIGATE THERMOPHILE, *THERMOACTINOMYCES VULGARIS*

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Abstract: Amylase finds a wide range of applications in starch industries, i.e., baking, brewing, distillery. The wild-type (1227) and mutant strains (1261 and 1286) of *Thermoactinomyces vulgaris* were screened for the production of amylase using 1% soluble starch. The maximum production of amylase was observed after 12 h of incubation at 50°C in wild-type strain 1227 of *T. vulgaris*. The amylase was found to be thermophilic, exhibiting its optimal activity at 75°C and at pH 6.0 in this obligate thermophile; and it preferred soluble starch as its substrate. Among the metal ions tested, Mn²⁺ was most stimulatory, while Hg²⁺ was most inhibitory to the activity of amylase. Thus, *T. vulgaris* amylase is a thermophilic metalloenzyme, requiring Mn²⁺ for its high-temperature catalysis, which can be exploited for amylase-based industries of diverse interests.

Keywords: Amylase, Metalloenzyme, *Thermoactinomyces vulgaris*, Thermophilic amylase

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