



## THERMOPHILIC ACTINOBACTERIA ISOLATED FROM TLEGHMA HOT SPRING: A POTENTIAL SOURCE OF THERMOSTABLE $\alpha$ -AMYLASE

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### ABSTRACT

Thermostable  $\alpha$ -amylase is a commercial enzyme that has found several biotechnological applications in recent years. This prompts researchers to check out the hot ecosystems the least explored to find producing microorganisms. Thermal waters are a poorly studied ecological niche compared to other ecosystems. Actinobacteria are known for their unique metabolic abilities to produce the most innovative bio-molecules. In this study, the isolation by conventional microbiological methods, allowed to obtain 13 thermophilic actinobacteria from a hot spring of TLEGHMA located in the eastern Algerian. All these isolates were characterized morphologically and by physiological methods. Molecular identification by sequencing of the rRNA16s gene, allowed to assign them to the genus *Streptomyces sp.* Among these isolates, 9 actinobacteria showed abilities to produce a thermostable  $\alpha$ -amylase active at a temperature of 55°C. Two isolates named TA3 and TA4 are however, the most successful. They were assigned to *Streptomyces albidofalvus* and *Streptomyces cavourensis* respectively. they are able to produce a thermostable  $\alpha$ -amylase at 55°C with an activity rate of 110.33U/ml by strain TA3 and 224U/ml by strain TA4 and with an optimum of activity in a pH equal to 9. These results show that these thermophilic *Streptomyces* from these hot waters, are a very important source of thermostable and alkalophilic  $\alpha$ -amylase

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