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Diversity of Actinobacteria in Thermal Waters of Eastern Algeria: An Unsuspected Source of Hydrolytic Thermoenzymes

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Abstract:

Actinobacteria are highly sought after because of their ability to produce different biomolecules with multiple interests. Research on these bacteria in extreme ecosystems has long been neglected, in favor of soils and waters, which offer limited biodiversity (Hayakawa et al., 2000; Katleen et al., 2005). More recently, researchers have focused on the least explored habitats in order to isolate innovative species that can offer interesting metabolic capabilities, which can be used in all sectors of biotechnology, like biodegradation of pollutants and bioremediation of hot ecosystems. In this work, the presence of actinobacteria was highlighted for the first time in the thermal waters of eastern Algeria. In these waters, 69 actinobacteria were selected and identified by sequencing their 16S rRNA genes. The majority of these bacteria (82%) belong to the genus Streptomyces. Les autres genres isolés sont Rhodococcus, Thermoactinomyces, Ghordonia et Rhathayibacter. The majority of isolates showed the ability to produce heat-resistant hydrolytic enzymes such as cellulases, xylanases, lipases and proteases. To our knowledge, this is the first time that this result has been described for actinobacteria in thermal waters. These innovative investigations deserve, in our opinion, to be continued.

Keywords:

Actinobacteria, hot spring, enzymes, biotechnology.