

An Investigation in to Distribution Pattern and Molecular Evaluation of Facultative Anaerobic Thermophilic Bacteria in Hot Spring Sehezar Iran

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Background & Objectives: Generally, hot areas such as hot springs are areas with high potential for thermophilic bacteria,that abundant applications in Industrial Microbiology and Biotechnology. One of the most important and most diverse groups of thermophiles is bacillaceae family. that many species of these families are Extremophiles. Recently, scientists have found a Tendency to study bacteria thermophiles, Because in a very good source of biotechnology for industrial products are heat-stable enzymes.

Methods: In this study, the samples enrichment and cultivation in Special conditions in a medium modified mBTM and picked single colonies. Then, by testing morphology, biochemical and molecular have show characteristics phenotyping and genotyping this single colonies.

Results: According to results of this study, isolated colonies are the two genera Bacillus and Geobacillus thermophiles. Examining the characteristics of morphology, biochemical, and molecular have been evaluated by testing of common and specific API, PCR-RFLP, 16s rRNA, HRM. The results of this analysis, are a new species and a few new strains. In this study, we in addition isolated and identify species of thermophilic bacteria of way cultivation methods in a selective medium, to use molecular and biochemical Methods for detection and classification.

Conclusion: As to that so many studies done in other countries on hot springs sources, This studies are very low in our country and is don temporarily and limit. In comparison with similar works in other countries the each section work must to compare and evaluate to one researcher.As Adiquzel (2009) and Abou –Shanab (2007) use of non-selective media have in comparison with our results isolated is low their diversity. So, Markassray (2000) in his research on thermophiles used the API kit that is similar this study. Many research techniques in the 16s rRNA has been used in this study we have used this technique. Hongba (2011)and Shanghuan (2000) of methods PCR-RFLP in his research have used for the study of thermophiles and Bacillus that results of their work is similar as part of our study.Finally, the HRM technique is a new technique, that Alpha we use of this technique in study of isolated thermophiles. However, similar studies of this technique done on Lactobacillus (Kenikn2011) and *Bcillus antheracis* (Derzelle 2011).

Keywords: Thermophiles; Extremophiles; MBTM; API; HRM