Isolation and Identification of Novel Lipase-Producing Microbacterium From Coastal Soils of The Caspian Sea (North of Iran)

Razieh Sadati*[1]; Amin Barghi[2]; Mostafa Jafarpour[1]

1-Young Researchers Club,Tonekabon Branch, Islamic Azad University, Tonekabon, Iran

2-Young Researchers Club,Lahijan Branch, Islamic Azad University, Lahijan , Iran

razisadati@yahoo.com

Background & Objectives: Coastal soils of the Caspian Sea are one of the most valuable ecosystems in the world and contain a high diversity of actinobacteriumspecies with capable of producing the enzyme. Lipases (triacylglycerol acylhydrolases, EC 3.1.1.3) are glycerol ester hydrolases that catalyze the hydrolysis of triglycerides to free fatty acids and glycerol. Lipases occur widely in nature, but only microbial lipases are commercially significant. The aim of this study was isolation and identification of lipase-producing actinobacteriumfrom coastal soils of the Caspian Sea.

Methods: In this study a Gram-positive, violet pigmented actinobacterium was isolated from different soil samples collected from coastal soils of the Caspian Sea in summer 2011. For isolation the samples were cultured on Starch Casein Agar (SCA), and isolates were investigated for their ability to produce lipase on Tributyrin agar. After DNA extraction, PCR amplification and sequencing was performed.

Results: The lipase activity of this new specie at 3.5 mm, based on hydrolysis halo on Tributyrin agar (H) relative to cell colony size (C) was obtained at optimized conditions of pH 6 and temperature of 30 ◦C.Identification tests and molecular tests showed that this isolate belonged to Microbacterium. This specie released on NCBI database with accession number of JQ228447.

Conclusion: The interest in microbial lipase production specially actinobacterium has increased in the last decades, because of its large potentials in industrial applications as an additive in foods, chemicals, detergents, waste water treatment, and medical analysis. We hope that these investigations will be helpful in further scaling-up processes of this industrial enzyme.

Keywords: Isolation; Novel Microbacterium; Lipase; Coastal Soils; North of Iran