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RAPD PCR profiling of lipase producing bacterial isolates from Anthoni hot spring, central India

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Microbial lipases are in high demand due to their specificity of reaction and less energy consumption and play very important role in the biotechnological applications. Nowadays scientists are showing great interest in their investigation. The present study was aimed to study the physicochemical properties of water and determination of diversity of lipase producing bacterial isolates of Anthoni hot water spring located at Pachmarhi biosphere reserve of central India using random amplified polymorphic DNA (RAPD). The hot spring is sulfurous spring with acidic in nature. The water sample obtained were subjected to physicochemical analysis like pH, TDS, conductivity, chlorine, salinity, dissolved oxygen (DO), biological oxygen demand (BOD) and chemical oxygen demand (COD) and results were compared with WHO limit. A total of 15 bacterial isolates producing lipase were purified and used for RAPD analysis. DNA was extracted from bacterial isolates and amplified using 10 RAPD primers. Total 71 fragments were generated, of which 68 were polymorphic with an average of 6.8 bands per primer. The size of the product varied from 141 bp to 2670 bp. The similarity index of the isolates within each group, estimated on the basis of Jaccard's similarity coefficient ranged from 0.128 to 0.552. Our findings also indicate that primer RBa-7 produced the maximum number of fragments whereas minimum number of fragments was produced with primer RBa 10. Regardless of the oligonucleotide primer employed the 15 bacterial isolates studied were separated into three genetic group composed of HSM1, HSM3, HSM4 and HSM5 (group 1), HSM 6A, HSM6B, HSM 7, HSM8, HSM9 and CA1 (group 2) and CA2, CA4, CA5, CA6 and CA7 (group 3). The distribution pattern of genetic information about bacterial isolates obtained from the result indicates that RAPD profiling constitutes an effective, reliable and efficient tool to study the genetic diversity. To the best of our knowledge this is the first attempt for analyzing the bacterial genetic diversity of hot springs from central India. This study will be useful for conservation of industrially important bacteria in the future.

Biography

Anita Tilwari has completed her PhD in Biotechnology from Rajiv Gandhi Technical University (RGTU) and Postdoctoral studies from University of Sains Malaysia, Institute for Research in Molecular Medicine (INFORMM). Currently she is working as a Senior Scientist at Centre of Excellence in Biotechnology, Madhya Pradesh Council of Science and Technology with 10 years of research experience. She has published more than 25 papers in reputed journals and has been serving as an Editorial Board Member of repute. She is an author of more than 25 peer-reviewed papers and more than 5 proceedings for national and international conference. She has also published a book on diversity of medicinal plant. She has also served as a Reviewer for several journals. Her current research interests are bioprospecting of microorganism associated with hot springs of India and also on biodiversity conservation.

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