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Micro-heterogenicity analysis, the antecedent for single nucleotide based allele specific invasive cleavages in multiple copy genes: Exemplified with 23S rRNA restriction profiling for detection and categorizing clonal, pathogenic and phylo groups of *E. coli*

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Correlation of micro-heterogenicity of ribosomal repeats with restriction profiling targeting conserved mismatches is a more efficacious and cost-effective approach to identify microbes. An attempt to peruse restriction profiling of 23S ribosomal assemblage was ventured for detecting *E. coli* from its colony morphovars and to establish the clonal nature of the same. MSA of ribosomal repeats from 57 *E. coli* genomes (NCBI) followed by virtual restriction profiling of each ribosomal gene abetted in selecting two regions within 23S rDNA to achieve the objective. Amplified ribosomal DNA restriction analysis of 23S P1₈₈₀ with Bfa I discriminated *E. coli* from other members in gamma-enterobacteriaceae family, whereas Hae III digestion of 23SP2₆₈₂ amplicons assisted in establishing distinct clonal groups of *E. coli*. Four distinct Hae III profiles were observed with varying degree of predominance. K-12 and its descendants showed type-1 pattern whereas *E. coli*-B and its descendants exhibited type-4. A near pristine association between phylogroups and Hae III profiles with presumable correlation between the clonal groups and different pathovars were established. The generic nature, conservation and barcode gap of 23S rRNA gene makes it as an ideal choice and substitute to 16S rRNA gene, the most preferred region for molecular diagnostics in bacteria.

Biography

Sunita Singh has completed her PhD from Department of Atomic Energy, Mumbai University. She is currently working as an Associate Professor at the School of Biotechnology and Bioinformatics, D Y Patil University. She has also worked as an Associate Faculty, BSc (Biomedical Sciences and Molecular Biology), University of Central Lancashire, United Kingdom. She is a member of various national and international organizations. She has published over 14 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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