Comparison of Six Different Techniques for Characterization and Subtyping of Foodborne and Environmental Isolates of Escherichia coli. (A05-hahm125901-Poster)

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Abstract:

A total of 54 isolates were analyzed using six different DNA subtyping methods: multiplex PCR of toxin genes, REP-PCR, BOX-PCR, PFGE, ribotyping and AFLP. The known-pathogenic strains tested were from food and clinical research (34 strains) including O157:H7, O111:H8, O111:H11, O91:H21 and O55:H7, and a type strain of O157:H7 (ATCC 43890). An additional 17 strains from fecal samples and two type-cultures, E. coli K12 (ATCC 29425) and DUP-101 (ATCC 51739), were used as non-pathogenic strains. The genetic fingerprints generated by these methods were compared using UPGMA cluster analysis of Jaccard similarity indices. All methods revealed a greater similarity between each E. coli O157:H7 strains than the other isolates with the exception of multiplex PCR. The pathogenic strains could not be distinguished with this method. In summary, although there are differences between the dendrograms from each method, we propose that AFLP and rep-PCR (REP and BOX-PCR) methods are fast and easy discriminatory screening techniques for O157:H7 isolates. The PFGE is more time consuming, but the best to discriminate between subtypes of O157:H7 associated with specific outbreak investigations.

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