Subtyping of Salmonella enterica serovar Muenchen by Pulsed-Field Gel Electrophoresis, Plasmid Profiling and Antimicrobial Susceptibility Testing


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Abstract

The genetic relatedness of 16 Salmonella enterica serovar Muenchen strains from clinical and food samples in Malaysia was determined by pulsed field gel electrophoresis (PFGE), plasmid profiling and antibiotic susceptibility tests. All 16 strains were resistant to tetracycline and two gave additional resistance to streptomycin. Plasmid analysis generated eight unique patterns consisting of one to 10 plasmids. The only food isolate had the highest numbers of plasmids. PFGE with three restriction enzymes (RE)  AvrII, SpeI, and XbaI resulted in 11, 9 and 12 distinct profiles respectively. XbaI was therefore the most discriminative RE. Salmonella Muenchen strains were quite diverse with 13 different combined subtypes. Three strains (SMC 5, 6, 8) isolated from different parts of Malaysia between March to August 1997, were indistinguishable by all the tests, indicating the prevalence of this subtype of S. Muenchen during study period. Based on SpeI and AvrII restriction, the food isolate was indistinguishable with one the clinical isolates (SMC 16). This study reiterates the usefulness of PFGE for both long-term and short-term epidemiological study of salmonellosis. The technique is highly discriminative, reproducible, and easy to perform and results could be obtained within 2 days. The data also suggest that multiple subtypes of Salmonella Muenchen are endemic in Malaysia and coexist simultaneously to cause sporadic cases of gastroenteritis.

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