

SUMMARY

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- *Salmonella* are gram-negative rods that cause enterocolitis, enteric fevers such as typhoid fever and septicemia.
- Over one-third of human outbreaks of food borne diseases are due to *Salmonellas*.
- Typhoid fever represents a major public health concerns. It has a large and economic impact.
- The epidemiology of *Salmonella* infection is related to the ingestion of food and water contaminated by human and animal wastes.
- The most reliable method of diagnosis of typhoid fever is the isolation of the incriminated pathogens through culturing of blood, urine and stool. Other methods of diagnosis include detection of antihodies in sera and antigens in body fluids.
- Plasmid fingerprinting has been used for the identification of bacterial strains involved in epidemics, through evaluation the degree of IS200 polymorphism in *S. typhi* isolated from typhoid patients, with respect to copy numbers and locations of insertion element in the bacterial genome.
- The integration sites of the IS200 mobile element is characterized by an inverse PCR-based assay. Inverse PCR is a useful technique for amplifying unknown DNA sequences.

So, PCR is important for molecular typing of *Salmonella typhi*, and is potentially useful in studying the epidemiology of typhoid fever. The IS200 typing is essential for characterizing the potential causes and the

possible routes of transmission of *Salmonella typhi* strains in typhoid epidemic.

- This study was carried on 35 typhoid patients. The blood, stool and urine culture techniques, were done to the patients.
- Widal test was done to all cases and it was positive especially (O-agglutinins)
- Bronchoalveolar lavage culture was done to typhoid patients with chest problems for detection of *Salmonella typhi* and the culture results were negative for *S. typhi*.
- DNA fingerprinting was carried on 30 isolates of *S. typhi* and yielding high molecular weight DNA whose size distribution was intact.
- The PCR products, IS bands, were amplified when the DNA templates were digested by *Pst*I restriction endonuclease and ligated with T4 DNA ligase before PCR.
- These IS200 bands were corresponding to insertion sites carried on *Pst*I fragments.
- All 30 (*S. typhi*) isolates were found to possess at least eight copies of the IS200 element distributed in the bacterial genome.
- An agarose gel electropherogram of the IS200 fingerprints showed 14 clonal lines among the 30 *S. typhi* isoates.
- Among the 30 (*S. typhi* isoates), clonal line 5 was the most frequent (20%) line followed by clonal line 1 (13.3%).

- Cluster analysis identified four IS200 finger printing patterns (PAT) among the 14 *S. typhi* clonal lines observed in this study. The IS200 PAT1 was the most frequent (46.6 %) pattern while IS200 PAT3 and IS200 PAT4 were the least frequent patterns (10% each).
- The results of the PCR-based IS200 molecular typing of the 30 (*S. typhi*) isolates provided a circumstantial evidence against a relatively high nosocomial transmission rate. The low degree of similarity among the isolates studied indicates that multiple sources of infection, due to deficient sanitary conditions, must exist.