

## **Biofilm production by Salmonella species from acute (Enteric Fever) and chronic cases (Cholelithiasis)**

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### **Introduction**

The current study was undertaken to understand the basis of development of carrier state in Salmonella species due to biofilm production and to evaluate their ability to produce exopolysaccharide glycocalyx in vitro. We examined a number of stains of salmonella species recovered from patients with acute (enteric fever, septicemia) and chronic (cholelithiasis with cholecystitis) infections for biofilm production.

### **Methodology**

A total of 26 representative isolates of Salmonella species were analysed from acute and chronic infections from a total of 287 isolates, by random selection. From acute cases blood samples were processed. Samples from chronic cases were gall bladder, bile, and gallstones recovered during cholecystectomy. Gall bladder, bile and gall stones were subjected to complete microbiological and histopathological examination. The isolates were identified by routine biochemical tests and antimicrobial susceptibility was put up using standard

guidelines. The biofilm production was analysed using crystal violet, Ruthenium Red and periodic acid Schiff by light Microscopy. These were also analysed using Confocal scanning microscopy and Transmission electron microscopy.

### **Results**

A total of 26 representative isolates of salmonella species were recovered from acute (enteric fever, septicemia) and chronic (cholelithiasis and cholecystitis) from a total of 387 isolates. These comprised of Salmonella Typhi (23), Salmonella Typhimurium (2), Salmonella ParaTyphi A (1). Out of the total of 26 isolates 12 produced biofilms as detected, at least, by one of the methods of light microscopy, Confocal or Electron microscopy.

### **Conclusions**

Biofilm production by salmonella species on gallstones contribute to establishment chronic carrier state and cholelithiasis. Out of the methods, analysed Electron microscopy is the gold standard for detection of biofilms.