

Occurrence of *Yersinia enterocolitica* in diarrhoeic pigs and humans in selected farms and Hospitals in Ogun State, Southwestern Nigeria

Mabekeje Oladele O

Caleb University, Nigeria.

Yersinia enterocolitica is a food-borne enterotoxigenic microorganism associated with human gastroenteritis and septicemia especially among children. Pigs constitute a major source of infection for man. The increase in pig farms and pork consumption in Southwestern Nigeria necessitated investigation into the occurrence of *Yersinia enterocolitica* in diarrhoeic pigs and humans in selected farms and hospitals in Ogun State, Nigeria. Seven hundred diarrhoeic samples were collected, 300 from pigs raised in three selected farms, 120 from children aged 1-7 years and 280 adults (22-50 years) in medical wards of two selected hospitals located in the study areas. *Yersinia enterocolitica* was isolated from faecal samples and identified biochemically by standard bacteriological methods. Antisera were raised in rabbits to serotype the *Yersinia enterocolitica* isolates into groups A, B, C and D using slide agglutination technique. The serotypes were further identified with commercial latex agglutination kit (CLAK). Susceptibility of *Yersinia enterocolitica* to antibiotics was determined by disc diffusion method. Minimum inhibitory concentrations of some antibiotics were determined for the resistant isolates. Plasmid transfer of R-determinants to *E. coli* 356 k12 resistant to 200 µg/mL streptomycin was performed. The kinetics of phenotypic expression of ampicillin, chloramphenicol, tetracycline and amoxicillin were determined. Heat-stable enterotoxin of *Yersinia enterocolitica* isolates was assayed using rabbit ileal loop test. Sereny test for invasiveness of isolates was performed by instilling 2.0x10¹⁰ cfu/mL/ animal in to the right eyes of guinea pigs while 1.0 mL sterile tryptone-soy broth was instilled into the left eyes as

control. Histopathology of the eyes was carried out. Data were analyzed using descriptive statistics and ANOVA at $p < 0.05$. Ninety *Yersinia enterocolitica* isolates comprising 30 from humans: 16 and 14 from the two selected hospitals and 60 from pigs: 20, 16 and 24 from the three selected farms were identified. There was significant difference between the occurrence of human and pig isolates. Slide agglutination technique yielded serotype occurrence of *Yersinia enterocolitica* as A(5), B(63), C(8) and D(14), while CLAK gave serotypes A(0:3), B(0:5), C(0:8) and 2 of the 14 D isolates were serotype 0:9. *Yersinia enterocolitica* isolates were identified as biotypes 1A (77), 2(8), 4(5), serotypes 0:3, 0:5, 0:8 and 0:9 while 12(E) were non-typable. Eleven and 13 antibiotic resistant patterns were observed in humans and pig isolates, respectively. R-determinants were transferred to the recipient en bloc. However, few segregations were observed indicating chromosomal transfer. Ampicillin and chloramphenicol had the highest kinetics of phenotypic expression for the transconjugants for human and pig isolates respectively. The isolates induced accumulation of fluid in ileal loops of rabbits, corneal oedema and haemorrhagic keratoconjunctivitis in guinea pigs. Invasive, enterotoxigenic and multi-resistant *Yersinia enterocolitica* that harboured transferable R-plasmid were isolated in humans and pigs. These organisms may constitute great public health hazard, hence proper piggery hygiene and disposal of waste is advocated to prevent contamination of water and food of humans. Legislation on misuse and abuse of antibiotics should be enforced to prevent drug resistance.