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List of Abbreviations

C. Culture	: Cloacal swab culture
ELISA	: Enzyme linked immunosorbent assay
Flagellar TA	: Flagellar tube agglutination test
MAG	: Micro-antiglobulin test
MAT	: Micro-agglutination test
ONPG	: O-nitro phenyl-B. D. galactopyranozide
RSAT	: Rapid serum agglutination test
TA	: Tube agglutination
WBAT	: Whole blood agglutination test

6. SUMMARY

Serological studies on the different antigens of avian salmonellae

Salmonella infections are considered to be the most important disease affecting ducks, geese, turkeys and chickens. The disease causes severe damage among young birds with a high mortality rate. Adult birds are often chronic carriers of salmonella organisms without outward signs. So, this study was planned to follow up the disease through detection of salmonella carrier birds, isolation of the organisms from these birds and evaluation of different salmonella antigens by different serological tests:

1. Salmonella organisms were isolated from different poultry farms using (cloacal swabs, floor litter, drag swabs) with total isolation of: 2.8% (turkey farms), 4.17% (duck farm), 4.4% (chicken farm) and 2.6% geese farm.
2. About 162 isolates of salmonella were identified (48 isolates from ducks, 30 isolates from geese, 51 isolates from chickens and 33 isolates from turkeys) and the isolates were serotypes as: *S. typhimurium*, *S. enteritidis*, *S. virchow*, *S. pullorum*, *S. meleagridis*, *S. infantis*, *S. anatum*, *S. montevideo* and *S. heidelberg*.



3. Different salmonella antigens were made from the 5 strains (*S. typhimurium*, *S. enteritidis*, *S. virchow*, *S. pullorum*, *S. meleagridis*) which representing group B, C, D, E of salmonellae.
4. Serological survey for detection of salmonella carriers by the rapid whole blood agglutination test using the polyvalent stained salmonella antigen. Out of 4000 birds, the incidence ratios were: 9% for ducks, 10.5% for geese, 16.4% for chicken and 7.5% for turkey.
5. Comparing the efficiency of different stained monovalent and polyvalent antigen for testing 2000 birds (500 of each of ducks, geese, turkeys and chickens). The polyvalent antigen detected the highest positivity as: 7.4% (geese), 12.2% (turkeys), 10.4% (ducks) and 9% (chickens).
6. It was clear from experimental study after oral inoculation of ducks, geese, turkeys and chickens with *S. enteritidis*, *S. meleagridis*, *S. typhimurium*, *S. pullorum* and *S. virchow*, the following results were obtained: by using the different agglutination test (Rapid whole blood agglutination test, rapid serum agglutination test, tube agglutination test, micro-agglutination test and flagellar tube agglutination test):
 - a. Serological testing of turkeys experimentally infected by *S. meleagridis*, *S. typhimurium*, *S. virchow*, *S. enteritidis* and *S. pullorum* recorded the highest positivity by tube agglutination and micro-agglutination as: 90%, 70%, 60%, 60% and 77.7% respectively.



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- b. Serological testing of chickens experimentally infected by *S. meleagridis*, *S. typhimurium*, *S. virchow*, *S. enteritidis* and *S. pullorum* recorded that highest positivity by the tube and micro-agglutination test as: 70%, 70%, 60%, 90% and 90% respectively.
 - c. Serological testing of ducks experimentally infected by *S. meleagridis*, *S. typhimurium*, *S. virchow*, *S. enteritidis* and recorded the highest positivity by the tube and micro-agglutination as 60%, 88.8%, 70%, 100% and 66.6% (*S. pullorum*) by rapid serum agglutination test respectively.
 - d. Serological testing of geese experimentally infected by *S. meleagridis*, *S. typhimurium*, *S. virchow*, *S. enteritidis* and *S. pullorum* recorded the highest positivity by tube agglutination and micro-agglutination as: 70%, 70%, 60%, 70% and 70%.
7. Concerning the incidence of positive reactors as tested by ELISA technique using the three subcellular antigens (lipopolysaccharide, sonicated antigen and flagellar antigen). The following results were obtained:
- a. The highest positive reaction of antibodies induced by *S. enteritidis* experimentally infected chickens was 100% during 4-7 weeks post infection by the use of lipopolysaccharide antigen.
 - b. Lipopolysaccharide antigen detected 90% of chickens experimentally infected by *S. pullorum* on the 4th week post infection.



- c. 80% was the highest positive reaction in experimentally infected chickens using lipopolysaccharide antigen on the 4th week in *S. typhimurium* experimentally infected chickens.
 - d. The incidence of positive reactors was 70% as detected lipopolysaccharide in experimentally infected chickens with *S. virchow* within 5th - 7th weeks post infection.
 - e. The 100% immune response of chickens experimentally infected by *S. meleagridis* during the period from 5th - 7th weeks as detected by lipopolysaccharide.
8. Indirect ELISA was applied to detect the antibodies in egg yolk of naturally infected layer flock with *S. enteritidis*, the recorded results were 2.5% was detected by lipopolysaccharide of *S. enteritidis* and 1.75% by pullorum lipopolysaccharide.
 9. Shedding period of salmonella was 2-4 weeks in ducks, chickens, geese and turkeys experimentally infected by salmonella (*pullorum*, *enteritidis*, *typhimurium*, *meleagridis*, *virchow*).

