**APPENDIX A1**

**Appendix A1** Morphological and biochemical characteristics of presumptive S*almonella* isolates

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ISOLATES** | **SAMPLE SOURCE** | **MEDIA** | **COLOUR** | **SHAPE** | **OPACITY** | **GRAM STAIN** | **GRAM SHAPE** | **TRIPLE SUGAR IRON TEST** | **SIMMON CITRATE TEST** | **UREASE TEST** | **INDOLE TEST** | ***INV*A** |
| **ALKALINITY** | **ACID** | **H2S** | **GAS** |
| **1** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | -VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **2** | Broiler  | SSA | CWB | CIR | TRSLT | -VE | ROD | -VE | W | W | -VE | W | -VE | -VE | +VE |
| **3** | Broiler  | SSA | CLLS | CIR | TRSLT | -VE | ROD | -VE | +VE | -VE | +VE | +VE | W | -VE | +VE |
| **4** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | W | +VE | +VE | -VE | +VE | W | -VE | +VE |
| **5** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | -VE | +VE | +VE | +VE | W | -VE | -VE | +VE |
| **6** | Broiler  | SSA | CWB | ENT | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **7** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | W | W | +VE | -VE | -VE | +VE |
| **8** | Layer  | SSA | PWB | CIR | OPAQ | -VE | ROD | -VE | +VE | -VE | +VE | +VE | -VE | W | +VE |
| **9** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | -VE | +VE | W | W | -VE | -VE | +VE |
| **10** | Layer  | SSA | PWB | CIR | OPAQ | -VE | ROD | -VE | +VE | -VE | -VE | +VE | -VE | -VE | +VE |
| **11** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE |  -VE | +VE | -VE | +VE | -VE | -VE | +VE |
| **12** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | -VE | +VE | -VE | -VE | +VE |
| **13** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | W | +VE | -VE | +VE | +VE | -VE | -VE | +VE |
| **14** | Indigenous  | SSA | PWB | ENT | OPAQ | -VE | ROD | +VE | +VE | +VE | W | +VE | -VE | -VE | +VE |
| **15** | Indigenous  | SSA | CWB | CIR | TRSLT | -VE | ROD | -VE | +VE | -VE | +VE | +VE | -VE | -VE | +VE |
| **16** | Indigenous  | SSA | CWB | CIR | TRSLT | -VE | ROD | -VE | +VE | -VE | +VE | +VE | -VE | -VE | +VE |
| **17** | Indigenous  | SSA | CWB | CIR | TRSLT | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **18** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **19** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **20** | Indigenous  | SSA | CWB | CIR | TRSLT | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **21** | Indigenous  | SSA | CWB | CIR | TRSLT | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **22** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **23** | Indigenous  | SSA | CWB | CIR | TRSLT | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **24** | Indigenous  | SSA | CWB | CIR | TRSLT | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **25** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **26** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | -VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **27** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | -VE | +VE | +VE | -VE | -VE | +VE |
| **28** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **29** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **30** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **31** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | -VE |
| **32** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | -VE |
| **33** | Broiler  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **34** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **35** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **36** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **37** | Layer  | SSA | PINK | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | -VE |
| **38** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **39** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | -VE |
| **40** | Layer  | SSA | PINK | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | W | +VE |
| **41** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **42** | Layer  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **43** | Indigenous  | SSA | PINK | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | -VE |
| **44** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **45** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **46** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **47** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **48** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **49** | Indigenous  | SSA | CWB  | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **50** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **51** | Indigenous  | SSA | PWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **52** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **53** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | W | -VE |
| **54** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **55** | Indigenous  | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | -VE | +VE | -VE | -VE | +VE |
| **56** | Control 1 | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **57** | Control 2 | SSA | CWB | CIR | OPAQ | -VE | ROD | +VE | +VE | +VE | +VE | +VE | -VE | -VE | +VE |
| **58** | Control 3 | EMB | MLG | CIR | OPAQ | -VE | ROD | -VE | -VE | -VE | -VE | +VE | +VE | +VE | -VE |

**Notes:** Control 1 = *Salmonella* Typhimurium, Control 2 = *Salmonella* Enteritidis, Control 3 = *Escherichia coli*. **Abbreviations:** SSA = *Salmonella* Shigella Agar; CWB = Colourless with Black Centre; PWB = Pink with Black Centre; CLLS = Colourless without black centre; Cir = Circular; Opaq = Opaque; ENT = Entire; TRSLT = Translucent; -VE = Negative reaction; +VE = Positive reaction; W = Weak reaction, EMB = Eosin methylene blue agar, MLG = Metallic green.

**APPENDIX A2**

**Appendix A2** Percentage occurrence of *Salmonella* isolated from chicken in Mafikeng, South Africa

**APPENDIX A3**

**Appendix A3** Antibiotics sensitivity of *Salmonella* isolates from chicken in Mafikeng, South Africa

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sources** |  | **AMP** **N (%)** | **OXT** **N (%)** | **CIP****N (%)** | **STR****N (%)** | **GCN****N (%)** | **SXT****N (%)** | **C30****N (%)** | **ERY****N (%)** | **NOR****N (%)** | **KF****N (%)** | **NAL****N (%)** |
| **Total (N=55)** | ***Resistant***  | 31(56.36) | 38(69.09) | 17(30.90) | 52(94.54) | 2(3.63) | 43(78.18) | 7(12.72) | 55(100) | 27(49.09) | 19(34.54) | 26(47.27) |
|  | ***Intermediate*** | 10(18.18) | 9(16.36) | 11[7] | 2(3.63) | 1(1.81) | 0 | 8(14.54) | 0 | 5(9.09) | 15(27.27) | 5(9.09) |
|  | ***Susceptible*** | 14(25.45) | 8(14.54) | 27(49.09) | 0 | 52(94.54) | 12(21.81) | 40(72.72) | 0 | 23(41.81) | 21(38.18) | 24(43.63) |
| **Broilers (N=14)** | ***Resistant*** | 5(35.71) | 12(85.71) | 3(21.42) | 13(92.85) | 0 | 9(64.28) | 2(14.28) | 14(100) | 7(50) | 8(57.14) | 8(57.14) |
|  | ***Intermediate*** | 4(28.57) | 1(7.14) | 5(35.71) | 1(7.14) | 1(7.14) | 0 | 4(28.57) | 0 | 1(7.14) | 0 | 0 |
|  | ***Susceptible*** | 5(35.71) | 1(7.14) | 6(42.85) | 0 | 13(92.85) | 5(35.71) | 8(57.14) | 0 | 6(42.85) | 6(42.85) | 6(42.85) |
| **Layers (N=15)** | ***Resistant*** | 4(26.66) | 9(60) | 5(33.33) | 15(100) | 1(6.66) | 12(80) | 3[7] | 15(100) | 6(40) | 3[7] | 9(60) |
|  | ***Intermediate*** | 5(33.33) | 4(26.66) | 3[7] | 0 | 0 | 0 | 2(13.33) | 0 | 0 | 7(46.66) | 1(6.66) |
|  | ***Susceptible*** | 6(40) | 2(13.33) | 7(46.66) | 0 | 14(93.33) | 3[7] | 10(66.67) | 0 | 9(60) | 5(33.33) | 5(33.33) |
| **Indigenous(N=26)** | ***Resistant*** | 21(80.76) | 17(65.38) | 10(38.46) | 25(96.15) | 1(3.84) | 22(84.61) | 2(7.69) | 26(100) | 14(53.84) | 8(30.76) | 9(34.61) |
|  | ***Intermediate*** | 1(3.84) | 4(15.38) | 2(7.69) | 1(3.84) | 0 | 0 | 2(7.69) | 0 | 4(15.38) | 8(30.76) | 4(15.38) |
|  | ***Susceptible*** | 4(15.38) | 5(19.23) | 14(53.84) | 0 | 25(96.15) | 4(15.38) | 22(84.61) | 0 | 8(30.76) | 10(38.44) | 13(50) |

**Abbreviations**: Ampicillin [53] 10 μg; Chloramphenicol (C30) 30 μg; Nalidixic acid (NAL) 30 μg; Streptomycin (STR) 10 μg; Oxy-tetracycline (OXT) 30 μg; Cephalothin (KF) 30 μg; Erythromycin (ERY) 15 μg; Suphamethoxazole/Trimethoprim (SXT) 22 μg; Gentamycin (GCN) 10μg; Ciprofloxacin (CIP) 10 μg; Norfloxacin (NOR) 10 μg, N(%) = number of *Salmonella* isolates and percent occurrence.