

Table S1. Characteristics of 31 farmers /farms in Kelantan, Terengganu, and Pahang states, Malaysia.

Variables	Household farms
Demographic characteristics of the farmer	
Age of farm manager (years), median (IQR)	45(39-54)
Gender	
Female	5(16.1%)
Male	26 (83.9%)
Education	
Primary	9(29.0%)
Secondary	14(45.2%)
College	8(25.8%)
Characteristics of 31 farms	
Use of antibiotics	
Yes	31 (100%)
No	0
Vaccines	
Yes	31(100%)
No	0
Recent disease history	
Yes	22(71.0%)
No	9(29.0%)
Animal contact	
Yes	2 (6.5%)
No	29(93.5%)
Production system	
Broiler	16(51.6%)
Layer	5(16.1%)
Mixed	10 (32.3%)
Management system	
Intensive	16(51.6%)
Semi-intensive	12 (38.7%)
Mixed	3(9.7%)
Farm size	
Small	10(32.3%)
Medium	13(41.9%)
Large	8(25.8%)
Flock origin	
Local	3(9.7%)
Imported	9(29.0%)
Both	19(61.3%)
States	
Kelantan	13(41.9%)
Terengganu	7(22.6%)
Pahang	11(35.5%)
Districts	
Bachok	2(6.5%)

Kota Bharu	3(9.7%)
Machang	1(3.2%)
Pasir Mas	2(6.5%)
Pasir Puteh	2(6.5%)
Jeli	3(9.7%)
Kuantan	6(19.4%)
Maran	1(3.2%)
Pekan	4(12.9%)
Kuala terengganu	3(9.7%)
Marang	4(12.9%)
Sewage system	
Excellent	11(35.5%)
Good	17(54.8%)
Poor	3(9.7%)
Visitors	
Yes	19(61.3%)
No	12(38.7%)
PPE	
Yes	19(61.3%)
No	12(38.7%)
Washing facilities	
Yes	25(80.6%)
No	6(19.4%)
Use of disinfectant	
Yes	21(67.7%)
No	10(32.3%)
Source of antibiotic	
Drug supplier	20(64.5%)
Feed store	11(35.5%)
Veterinary services	
Yes	31(100%)
No	0
Source of feed	
Endogenous	12(38.7%)
Exogenous	16(51.6%)
Water source	
Surface water	6(19.4%)
Bond water	13(41.9%)
Pump water	12 (38.7%)

Table S2. Summary of prevalence of resistance to at least one antimicrobial and their associated risk factors.

Risk Factors	No antimicrobial resistance (n = 24)	Resistance to at least one antimicrobial (n = 153)
Age		
Young	12(50%)	74(48.4%)
Adult	12(50%)	79(51.6%)
Origin of the poultry		
Local	3(12.5%)	9(5.9%)
Imported	5(20.8%)	68(44.4%)
Both	16(66.7%)	76(49.7%)
Management system		
Intensive	7(29.2%)	88(57.5%)
Semi-intensive	14(58.3)	56(36.6%)
Mixed	3(12.5%)	9(5.9%)
Production System		
Broiler	13(54.2%)	96(62.7%)
Layer	1(4.2%)	24(15.7%)
Mixed	10(41.7%)	33(21.6%)
Farm size		
Small	9(37.5%)	41(26.8%)
Medium	14(58.3%)	83(54.2%)
Large	1(4.2%)	29(19%)
Source of sample		
Cloacal swab	20(83.3%)	100(65.4%)
Faecal sample	0	50(32.7%)
sewage	2(8.3%)	3(2%)
Tap water	2(8.3%)	0
Water source		
Surface water	6(25%)	32(20.9%)
Bond water	7(29.2%)	65(42.5%)
Pump water	11(45.8%)	56(36.6%)
Sewage system		
Excellent	4(16.7%)	60(39.2%)
Good	16(66.7%)	76(49.7%)
Poor	4(16.7%)	17(11.1%)
Feed source		
Endogenous	8(33.3%)	53(34.6%)
Exogenous	15(62.5%)	88(57.5%)
Other	1(4.2%)	12(7.8%)
Farms		
Farm 1	0	16(10.5%)

Farm 2	3(12.5%)	9(5.9%)
Farm 3	3(12.5%)	6(3.9%)
Farm 4	1(4.2%)	12(7.8%)
Farm 5	5(20.8%)	12(7.8%)
Farm 6	4(16.7%)	8(5.2%)
Farm 7	0	7(4.6%)
Farm 8	0	12(7.8%)
Farm 9	1(4.2%)	8(5.2%)
Farm 10	1(4.2%)	17(11.1%)
Farm 11	3(12.5%)	20(13%)
Farm 12	0	10(6.5%)
Farm 13	1(4.2%)	7(4.6%)
Farm 14	2(8.3%)	9(5.9%)

Table S3. Number of samples per farm in east coast of peninsular Malaysia

Farms	Cloacal swabs	Faecal	Sewage	Tap water
Farm 1	20	6	1	1
Farm 2	18	6	1	1
Farm 3	18	6	1	1
Farm 4	18	6	1	1
Farm 5	18	6	1	1
Farm 6	18	6	1	1
Farm 7	20	5	1	1
Farm 8	18	7	1	1
Farm 9	18	6	1	1
Farm 10	18	6	1	1
Farm 11	19	6	1	1
Farm 12	18	6	1	1
Farm 13	18	6	1	1
Farm 14	20	6	1	1
Total	259	84	14	14

Table S4. The set of primers used for each gene.

Genes	Primer sequence(5'to3')	PCR condition	Product size	References
Tetracyclines <i>tetA</i>	F GTAATTCTGAGCACTGTCTG R CTGCCTGGACAACATTGCCT	3 min at 94 °C; 30 cycles of 30 s at 94 °C, 30 s at 62 °C and 1 min at 72 °C; 7 min at 72 °C	957	[48]
Tetracyclines <i>tetB</i>	F CTCAGTATTCCAAGCCTTTG R ACTCCCCTGAGCTTGAGGGG	3 min at 94 °C; 30 cycles of 30 s at 94 °C, 30 s at 62 °C and 1 min at 72 °C; 7 min at 72 °C	414	[49]
Sulfonamide <i>sul1</i>	F TCACCGAGGACTCCTTCTTC R CAGTCCGCCTCAGCAATATC	3 min at 94 °C; 30 cycles of 30 s at 94 °C, 30 s at 53 °C and 1 min at 72 °C; 7 min at 72 °C	331	[50]
Sulfonamide <i>Sul2</i>	F GCGCTCAAGGCAGATGGCAT R GCGTTTGATACCGGCACCCT	3 min at 94 °C; 30 cycles of 30 s at 94 °C, 30 s at 53 °C and 1 min at 72 °C; 7 min at 72 °C	293	[48]
Chloramphenic ol <i>cat1</i>	F CTTGTCGCCTTGCGTATAAT R AACGGCATGATGAACCTGA	10 min at 95 °C; 30 cycles of 30 s at 95 °C, 1 min at 55 °C and 1 min at 72 °C; 7min 72 °C	508	[50]
Chloramphenic ol <i>Cat2</i>	F AACGGCATGATGAACCTGAA R ATCCCAATGGCTCGTAAAG	10 min at 95 °C; 30 cycles of 30 s at 95 °C, 1 min at 55 °C and 1 min at 72 °C; 7min 72 °C	547	[50]
Chloramphenic ol <i>floR</i>	F CTGAGGGTGTCTCATCTAC R GCTCCGACAATGCTGACTAT	10 min at 95 °C; 30 cycles of 30 s at 95 °C, 1 min at 55 °C and 1 min at 72 °C; 7min 72 °C	673	[50]
<i>blaTEM</i>	F ATGAGTATTCAACATTTCCG R ACCAATGCTTAATCAGTGAG	3 min at 94 °C; 25 cycles of 1 min at 94 °C, 1 min. at 50 °C and 1 min at 72 °C; 10 min at 72 °C	857	[49]

Table S5. The biochemical characteristics and PCR confirmation of *Salmonella* spp.

The biochemical characteristics of <i>Salmonella</i> spp		
Characteristics	<i>Salmonella</i>	
Simmons citrate	+ve	
Urease	-ve	
Indole	-ve	
Methyl red	+ve	
Triple Sugar Iron (TSI)	Alkaline/Acid, gas	
H ₂ S	+ve	
Lysine Iron Agar	+ve	
PCR confirmation of <i>Salmonella</i> spp.		
Primer sequence(5'to3')	PCR condition	Product size
F GTG AAA TTA TCG CCA CGT TCG GGC AA R TCA TCG CAC CGT CAA AGG AAC C	1 min at 94 °C; 35 cycles of 1 min at 94 °C, 30 s at 55 °C and 45 s min at 72 °C; 7min at 72 °C	284 bp