



Molecular characterization of multidrug-resistant avian pathogenic *Escherichia coli* isolated from poultry and poultry products

ONKAR DESHMUKH¹, RAHUL SURYAWANSHI¹✉, NITIN KURKURE², MEGHA KAORE²,
 SHWETA BADAR², ONKAR SHINDE¹, SUDHAKAR AWANDKAR¹ and NANDKUMAR GAIKWAD¹

College of Veterinary and Animal Sciences, Udgir, Maharashtra 413 517 India

Received: 6 January 2023; Accepted: 8 May 2023

Supplementary Table 1. Antimicrobial susceptibility pattern of *E. coli*

Antibiotic	Antibiotic class	No. of isolates			Percentage %		
		S	M	R	S	M	R
Amoxicillin/ Clavulanic acid	β lactam	00	13	21	00	38.23	61.76
Tetracycline	Tetracyclines	03	02	29	8.82	5.88	85.29
Cefalexin	1 st Generation Cephalosporins	08	02	24	23.52	5.88	70.58
Cefaclor	2nd Generation Cephalosporins	09	09	16	26.47	26.47	47.05
Cefotaxime	3rd Generation Cephalosporins	28	00	06	82.35	00	17.64
Cefepime	4th Generation Cephalosporins	06	14	14	17.64	41.17	41.17
Ciprofloxacin	Floroquinolones	15	03	16	44.11	8.82	47.05
Enrofloxacin	Floroquinolones	01	01	32	2.94	2.94	94.11
Ofloxacin	Floroquinolones	06	05	23	17.64	14.70	67.64
Azithromycin	Macrolides	16	13	05	47.05	38.23	14.70
Gentamicin	Aminoglycosides	30	01	03	88.23	2.94	8.82
Lincomycin	Lincosamides	02	03	29	5.88	8.82	85.29
Nalidixic Acid	Quinilones	02	04	28	5.88	11.76	82.35
Trimethoprim	DHFR Inhibitors	20	01	13	58.82	2.94	38.23
Vancomycin	Glycopeptides	03	03	28	8.82	8.82	82.35

Supplementary Table 2. Group wise antibiotic resistance pattern of isolates

Antimicrobial agent	Faecal / cloacal isolates (N=13)	Environmental isolates (N=04)	Retailer's shop's isolates (N=10)	Restaurant isolates (N=07)
Amoxicillin/ Clavulanic acid	53.84%	75%	60%	71.42%
Azithromycin	00	50%	10%	28.57%
Cefaclor	46.15%	75%	30%	57.14%
Cefalexin	46.15%	100%	70%	100%
Cefepime	53.84%	25%	40%	28.57%
Cefotaxime	23.07%	25%	20%	00%
Ciprofloxacin	61.53%	25%	30%	57.14%
Enrofloxacin	92.30%	75%	100%	100%
Gentamicin	15.38%	25%	00%	00%
Lincomycin	76.92%	100%	90%	85.71%
Nalidixic Acid	76.92%	75%	90%	85.71%
Ofloxacin	61.53%	50%	70%	85.71%
Tetracycline	76.92%	75%	90%	100%
Trimethoprim	30.76%	50%	60%	14.28%
Vancomycin	61.53%	100%	90%	100%

Supplementary Table 3. Antibiotic resistance pattern of isolates according to type of samples

Isolates number	Type of sample	Resistant to antibiotics	Resistance to number of antibiotics
O1a3	Faecal samples	OF, VA, TE, CIP, EX, NA	06
O1a7	Faecal samples	OF, VA, TE, L, CIP, EX, NA	07
O1a12	Faecal samples	OF, CPM, TE, L, CIP, EX, NA	07
O1a16	Faecal samples	OF, CIP, AMC, EX, NA	05
O1a19	Faecal samples	CPM, VA, TE, L, AMC, EX, TR	07
O1a21	Faecal samples	CN, CF, CPM, VA, L, EX, NA	07
O1a29	Faecal samples	CN, TE, L, AMC, EX, NA	06
O1a33	Faecal samples	CN, VA, TE, L, EX, NA	06
O1a47	Faecal samples	OF, CN, CF, VA, TE, AZM, L, AMC, EX, NA, TR	11
O1b8	Cloacal samples	OF, VA, L, CIP, EX, NA, TR	07
O1b14	Cloacal samples	CF, VA, TE, EX	04
O1b27	Cloacal samples	OF, CN, TE, L, CIP, AMC, EX, NA, TR	09
O1b31	Cloacal samples	CN, CF, VA, L, AMC	05
O1Ia33	Water samples	CN, CF, CTX, CPM, VA, L, AMC	07
O1Ib9	Feed samples	OF, CF, CPM, TE, L, CIP, EX, NA	08
O1Ic26	Litter samples	OF, CN, CF, CTX, CPM, VA, GEN, TE, L, CIP, AMC, EX, NA, TR	14
O1Ic44	Litter samples	OF, CN, CF, CTX, CPM, VA, GEN, TE, L, CIP, AMC, EX, NA, TR	14
O1IIa35	Raw chicken meat sample	OF, CN, CF, CTX, CPM, VA, GEN, TE, AZM, L, CIP, AMC, EX, NA, TR	15
O1IIa36	Raw chicken meat sample	OF, CN, CF, CPM, VA, TE, L, AMC, EX, NA, TR	11
O1IIa42	Raw chicken meat sample	CN, CPM, VA, TE, L, EX, NA	07
O1IIa50	Raw chicken meat sample	OF, CN, CF, CPM, VA, TE, L, AMC, EX, NA	10
O1IIb9	Swabs of chopping board/ knives	OF, CN, CPM, VA, TE, L, AMC, EX, NA	09
O1IIb17	Swabs of chopping board/ knives	OF, CF, TE, L, EX, NA, TR	07
O1IIb28	Swabs of chopping board/ knives	OF, CN, VA, TE, L, CIP, EX, N, TR	09
O1IIb31	Swabs of chopping board/ knives	CTX, VA, TE, L, AMC, EX, NA	07
O1IIb39	Swabs of chopping board/ knives	CN, VA, TE, L, AMC, EX, NA, TR	08
O1IIb46	Swabs of chopping board/ knives	OF, CN, CTX, VA, TE, AZM, CIP, AMC, EX, TR	10
O1IVa11	Chicken products from restaurants	CN, VA, TE, L, EX, NA	06
O1IVa39	Chicken products from restaurants	OF, CN, CPM, VA, TE, AZM, AMC, EX, NA	09
O1IVb4	Chicken products from small chicken meat vendors	OF, CN, CF, CPM, VA, TE, L, AMC, EX, NA	10
O1IVb13	Chicken products from small chicken meat vendors	OF, CN, VA, TE, L, CIP, AMC, EX	08
O1IVb27	Chicken products from small chicken meat vendors	OF, CN, CF, VA, TE, L, CIP, AMC, EX, NA	10
O1IVb44	Chicken products from small chicken meat vendors	OF, CN, CF, VA, TE, L, CIP, AMC, EX, NA	10
O1IVb49	Chicken products from small chicken meat vendors	OF, CN, CF, VA, TE, AZM, L, CIP, EX, NA, TR	11

AMC, Amoxicillin/Clavulanic acid; CF, Cefaclor; CN, Cefalexin; CPM, Cefepime; CTX, Cefotaxime; AZM, Azithromycin; CIP, Ciprofloxacin; EX, Enrofloxacin; OF, Ofloxacin; GEN, Gentamicin; L, Lincomycin; NA, Nalidixic Acid; TE, Tetracycline; TR, Trimethoprim; VA, Vancomycin.