

Salmonella in Animals 2015

Table 1: *Salmonella* in breeding and commercial poultry flocks

Age/Stage	Tested	Positive	Species
Convenience Sampling			
Grandparent breeder flocks (<i>Gallus gallus</i>)	10	0	
Parent breeding flocks (<i>Gallus gallus</i>)	155	0	
Laying hens (<i>Gallus gallus</i>)	165	0	
Broilers (<i>Gallus gallus</i>)	37	0	
Breeding flocks (Turkeys)	4	0	
Fattening flocks (turkeys)	7	0	
Total	378	0	
Suspect Sampling			
Broilers (<i>Gallus gallus</i>)	159	7 (4.4%)	<i>S. Enteritidis</i> (n = 7)
Turkeys (unspecified)	26	0	
Total	185	7 (3.8%)	<i>S. Enteritidis</i> (n = 7)
Overall total	563	7 (1.2%)	<i>S. Enteritidis</i> (n = 7)

Source: Department of Agriculture, Food and the Marine (DAFM)

Table 2: *Salmonella* spp. in other animals

Animal	Tested	Positive	Species
Suspect Sampling			
Badgers	1	0	
Birds (wild)	100	0	
Cats (domestic)	5	0	
Cattle adult (bovine >2 years)	1582	35 (2.2%)	<i>Salmonella</i> (n = 1) <i>S. Dublin</i> (n = 27) <i>S. Enteritidis</i> (n = 1) <i>S. Typhimurium</i> (n = 6)
3/Cattle calves (bovine under 1 year)	4239	79 (1.9%)	<i>Salmonella</i> (n = 1) <i>S. Dublin</i> (n = 75) <i>S. Typhimurium</i> (n = 3)
Cattle (bovine animals – other)	2778	121 (4.4%)	<i>S. Dublin</i> (n = 116) <i>S. Montevideo</i> (n = 5)
Deer (farmed)	3	0	
Dogs	167	0	
Foxes	3	0	
Goats	46	0	
Pheasants	23	0	
Pigeons	6	0	
Pigs (breeders)	15	0	
Pigs (fattening)	519	75 (14.5%)	<i>Salmonella</i> (n = 7) <i>S. Derby</i> (n = 1) <i>S. Dublin</i> (n = 1) <i>S. group B</i> (n = 8) <i>S. Kentucky</i> (n = 5) <i>S. typhimurium</i> (n = 53)
Rabbits (pets)	28	0	
Sheep	1499	14 (0.9%)	<i>Salmonella</i> (n = 6) <i>S. Dublin</i> (n = 8)
Solipeds	66	0	
Zoo animals (unspecified)	24	0	
Total	11104	324 (2.9%)	<i>Salmonella</i> (n = 15) <i>S. Derby</i> (n = 1) <i>S. Dublin</i> (n = 227) <i>S. Enteritidis</i> (n = 1) <i>S. group B</i> (n = 8) <i>S. Kentucky</i> (n = 5) <i>S. Montevideo</i> (n = 5) <i>S. Typhimurium</i> (n = 62)

Source: DAFM

Table 3: *Salmonella* spp. in animal feed materials

Type of feed material	Tested	Positive	Species
Convenience Sampling			
<i>Feed material of land animal origin</i>			
Dairy products	1	0	
<i>Feed material of vegetable origin</i>			
Cereals	78	0	
Oilseeds or fruits	50	0	
Other feed material	20	0	
<i>Feed material of marine animal origin</i>			
Fish meal	3	0	
<i>Compound feed for:</i>			
Cattle	89	0	
Pig	30	0	
Poultry (non-specified)	2	0	
Poultry (Breeders)	1	0	
Poultry (laying hens)	10	0	
Poultry (broilers)	3	0	
Horses	4	0	
Sheep	12	0	
Total	303	0	

Source: DAFM

Antimicrobial Resistance in *S. Typhimurium* and Non *S. Typhimurium* Poultry Isolates

Table 4: Percentage of *S. Typhimurium* poultry isolates (including the monophasic variant 4,[5],12:i:-) resistant to antimicrobials in 2013, 2014 and 2015*

Year	2013	2014	2015
Number of isolates tested	n = 2	n = 5	n = 1
Antimicrobial	Percentage of resistant isolates		
Ampicillin	0	20	0
Chloramphenicol	0	0	0
Streptomycin	50	- ¹	0
Sulfamethoxazol	0	20	0
Tetracycline	0	20	0
Trimethoprim	0	0	0
Nalidixic acid	0	0	0
Isolates resistant to one or more antimicrobials (%)	50	20	0
Isolates susceptible to all tested antimicrobials (%)	50	80	100

*Isolated from dust, boot swabs and neck skin.

¹No *S. Typhimurium* poultry isolates were tested for streptomycin resistance in 2014

Source: Central Research Veterinary Laboratory (CVRL)

Table 5: Percentage of Non *S. Typhimurium* poultry isolates resistant to antimicrobials in 2013, 2014 and 2015*

Year	2013	2014	2015
Number of isolates tested	n = 63	n = 40	n = 67
Antimicrobial	Percentage of resistant isolates		
Ampicillin	6	2.5	0
Chloramphenicol	5	0	0
Streptomycin	35	- ¹	0
Sulfamethoxazol	6	2.5	1.5
Tetracycline	8	0	0
Trimethoprim	2	0	1.5
Nalidixic acid	8	0	0
Ceftazidime	0	2.5	0
Cefotaxime	2	2.5	0
Ciprofloxacin	11	0	0
Gentamicin	0	0	0
Isolates resistant to one or more antimicrobials (%)	48	7.5	1.5
Isolates susceptible to all tested antimicrobials (%)	52	92.5	98.5

*Isolated from faeces, boot swabs and neck skin.

¹No *S. Typhimurium* poultry isolates were tested for streptomycin resistance in 2014

Source: CVRL

Antimicrobial Resistance in *S. Typhimurium* and Non *S. Typhimurium* Bovine Isolates

Table 6: Percentage of *S. Typhimurium* bovine isolates (including the monophasic variant 4,[5],12:i:-) resistant to antimicrobials in 2013, 2014 and 2015*

Year	2013	2014	2015
Number of isolates tested	n=39	n = 8	n = 15
Antimicrobial	Percentage of resistant isolates		
Ampicillin	62	100	0
Chloramphenicol	28	0	0
Streptomycin	62	100	0
Sulfamethoxazol	69	100	0
Tetracycline	59	100	0
Trimethoprim	3	0	0
Nalidixic acid	0	0	0
Gentamicin	3	0	0
Florfenicol	0	0	0
Ciprofloxacin	3	0	0
Ceftazidime	0	0	0
Cefotaxime	0	0	0
Azithromycin	NT	0	0
Tigecycline	NT	0	0
Meropenem	0	0	0
Cefepime	0	0	0
Isolates resistant to one or more antimicrobials (%)	72	100	0
Isolates susceptible to all tested antimicrobials (%)	28	0	100

*Isolated from foetus, faeces and live animals

NT: Not tested

Source: National Salmonella, Shigella and Listeria Research Laboratory (NSSLRL)

Table 7: Percentage of Non *S. Typhimurium* bovine isolates resistant to antimicrobials in 2013, 2014 and 2015

Year	2013	2014	2015
Number of isolates tested	n=13	n = 0	n = 4
Antimicrobial	Percentage of resistant isolates		
Ampicillin	0	NT	0
Chloramphenicol	0	NT	0
Streptomycin	23	NT	0
Sulfamethoxazol	0	NT	0
Tetracycline	0	NT	0
Trimethoprim	0	NT	0
Nalidixic acid	0	NT	0
Gentamicin	0	NT	0
Florfenicol	0	NT	0
Ciprofloxacin	0	NT	0
Ceftazidime	0	NT	0
Cefotaxime	0	NT	0
Azithromycin	NT	NT	0
Tigecycline	NT	NT	0
Meropenem	0	NT	0
Cefepime	0	NT	0
Isolates resistant to one or more antimicrobials (%)	23	0	0
Isolates susceptible to all tested antimicrobials (%)	77	0	100

NT: Not tested

Source: NSSLRL

Antimicrobial Resistance in *S. Typhimurium* and Non *S. Typhimurium* Porcine Isolates

Table 8: Percentage of *S. Typhimurium* porcine isolates (including the monophasic variant 4,[5],12:i:-) resistant to antimicrobials in 2013, 2014 and 2015

Year	2013	2014	2015
Number of isolates tested	n=48	n = 2*	n = 35
Antimicrobial	Percentage of resistant isolates		
Ampicillin	90	100	74.28
Chloramphenicol	48	0	42.85
Streptomycin	83	100	NT
Sulfamethoxazol	94	100	91.43
Tetracycline	83	100	74.29
Trimethoprim	25	50	37.14
Nalidixic acid	6	0	34.29
Gentamicin	2	50	28.57
Florfenicol	NT	0	NT
Ciprofloxacin	13	0	2.86
Kanamycin	NT	0	NT
Ceftazidime	0	0	0
Cefotaxime	0	0	0
Azithromycin	NT	0	0
Tigecycline	NT	0	17.14
Meropenem	0	0	0
Cefepime	0	0	NT
Isolates resistant to one or more antimicrobials (%)	98	100	100
Isolates susceptible to all tested antimicrobials (%)	2	0	0

*Isolated from live swine

NT: Not tested

Source: NSSLRL

Table 9: Percentage of Non *S. Typhimurium* porcine isolates resistant to antimicrobials in 2013, 2014 and 2015

Year	2013	2014	2015
Number of isolates tested	n=13	n = 2*	n = 31
Antimicrobial	Percentage of resistant isolates		
Ampicillin	5	50	35.48
Chloramphenicol	10	50	3.23
Streptomycin	25	100	NT
Sulfamethoxazol	30	100	51.62
Tetracycline	45	100	48.39
Trimethoprim	20	100	9.68
Nalidixic acid	5	0	0
Gentamicin	0	0	16.13
Florfenicol	NT	0	NT
Ciprofloxacin	20	0	0
Kanamycin	NT	0	NT
Ceftazidime	0	0	0
Cefotaxime	0	0	0
Azithromycin	NT	0	0
Tigecycline	NT	0	6.68
Meropenem	0	0	0
Cefepime	0	0	0
Isolates resistant to one or more antimicrobials (%)	70	100	70.96
Isolates susceptible to all tested antimicrobials (%)	30	0	29.03

*Isolated from raw swine meat

NT: Not tested

Source: NSSLRL

Sources of data:

CVRL, DAFM: Unpublished data submitted to FSAI.

NSSLRL: Unpublished data.