

NETHERLANDS

The Report referred to in Article 9 of Directive 2003/99/EC

TRENDS AND SOURCES OF ZOONOSSES AND ZOOTIC AGENTS IN HUMANS, FOODSTUFFS, ANIMALS AND FEEDSTUFFS

including information on foodborne outbreaks,
antimicrobial resistance in zoonotic agents and some
pathogenic microbiological agents.

IN 2010

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Netherlands

Reporting Year:

Laboratory name	Description	Contribution
CVI	Central Veterinary Institute	
VMDC	Veterinary Microbiological Diagnostic Centre	
PVE	Product Boards for Livestock, Meat and Eggs	
PDV	Product Board Animal Feed	
GD	Animal Health Service	
RIVM	National Institute for Public Health and the Environment	
VWA	Food and Consumer Product Safety Authority	

PREFACE

This report is submitted to the European Commission in accordance with Article 9 of Council Directive 2003/99/ EC*. The information has also been forwarded to the European Food Safety Authority (EFSA).

The report contains information on trends and sources of zoonoses and zoonotic agents in Netherlands during the year 2010 .

The information covers the occurrence of these diseases and agents in humans, animals, foodstuffs and in some cases also in feedingstuffs. In addition the report includes data on antimicrobial resistance in some zoonotic agents and commensal bacteria as well as information on epidemiological investigations of foodborne outbreaks. Complementary data on susceptible animal populations in the country is also given. The information given covers both zoonoses that are important for the public health in the whole European Community as well as zoonoses, which are relevant on the basis of the national epidemiological situation.

The report describes the monitoring systems in place and the prevention and control strategies applied in the country. For some zoonoses this monitoring is based on legal requirements laid down by the Community Legislation, while for the other zoonoses national approaches are applied.

The report presents the results of the examinations carried out in the reporting year. A national evaluation of the epidemiological situation, with special reference to trends and sources of zoonotic infections, is given. Whenever possible, the relevance of findings in foodstuffs and animals to zoonoses cases in humans is evaluated.

The information covered by this report is used in the annual Community Summary Report on zoonoses that is published each year by EFSA.

* Directive 2003/ 99/ EC of the European Parliament and of the Council of 12 December 2003 on the monitoring of zoonoses and zoonotic agents, amending Decision 90/ 424/ EEC and repealing Council Directive 92/ 117/ EEC, OJ L 325, 17.11.2003, p. 31

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1. ANIMAL POPULATIONS

The relevance of the findings on zoonoses and zoonotic agents has to be related to the size and nature of the animal population in the country.

Table Susceptible animal populations

* Only if different than current reporting year

Animal species	Category of animals	Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
		Data	Year*	Data	Year*	Data	Year*	Data	Year*
Cattle (bovine animals)	meat production animals			49000		1202000			
	dairy cows and heifers			538000		1518000		17519	2010
	calves (under 1 year)			1500200		2758000			
	- in total			2043100		439620		51289	2010
Ducks	- in total					921624		59	
Gallus gallus (fowl)	breeding flocks, unspecified - in total					8886413		423	
	broilers			464732300		44137369		642	
	laying hens			14285100		34215038		1108	
	- in total			479101200		87228820		2524	
Goats	milk goats							580	
	- in total			108838	2010	352828		10423	
Pigs	breeding animals					1226993			
	fattening pigs					5904172			

Table Susceptible animal populations

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Pigs	- in total			13993348	2010	12254072		12348	
Sheep	- in total			585876		1511850		26912	
Solipeds, domestic	horses - in total			2458					
Turkeys	- in total			1200		1012104		113	

2. INFORMATION ON SPECIFIC ZOOLOSES AND ZOONOTIC AGENTS

Zoonoses are diseases or infections, which are naturally transmissible directly or indirectly between animals and humans. Foodstuffs serve often as vehicles of zoonotic infections. Zoonotic agents cover viruses, bacteria, fungi, parasites or other biological entities that are likely to cause zoonoses.

2.1 SALMONELLOSIS

2.1.1 General evaluation of the national situation

2.1.2 Salmonella in foodstuffs

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at processing plant		---						
Meat from broilers (Gallus gallus) (fresh, at retail, selective sampling)	VWA	Single	25g	17	0			
Meat from broilers (Gallus gallus) - fresh - at retail (objective sampling)	VWA	Single	25g	1092	51	2		49
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	262	4			4
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	25	0			
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	76	2			2
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	5	0			

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from duck - meat products - at retail (selective sampling)	VWA	Single	25g	1	0			
Meat from turkey - fresh - at retail (objective sampling)	VWA	Single	25g	153	5		1	4
Meat from turkey - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	22	1			1

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Cheeses made from cows' milk - hard - made from pasteurised milk - at retail (selective sampling)	VWA	Single	25g	5	0			
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail (selective sampling)	VWA	Single	25g	4	0			
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - at retail (selective sampling)	VWA	Single	25g	2	0			
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at retail (selective sampling)	VWA	Single	25g	2	0			
Milk, cows' - raw - intended for direct human consumption - at farm (suspective sampling)	VWA	Single	25g	1	0			
Other processed food products and prepared dishes - at retail (porridge and desserts, selective sampling)	VWA	Single	25g	12	0			
Other processed food products and prepared dishes - ices and similar frozen desserts - at retail (ice cream, objective sampling)	VWA	Single	25g	780	0			
Other processed food products and prepared dishes - ices and similar frozen desserts - at retail (ice cream, selective sampling)	VWA	Single	25g	21	0			
Other processed food products and prepared dishes - ices and similar frozen desserts - at retail (milkshake, objective sampling)	VWA	Single	25g	205	0			

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Other processed food products and prepared dishes - ices and similar frozen desserts - at retail (milkshake, selective sampling)	VWA	Single	25g	2	0			

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Fishery products, unspecified - at retail (objective sampling)	VWA	Single	25g	22	0			
Other food - at retail (insects for human consumption, objective sampling)	VWA	Single	25g	55	0			
Other food - at retail (meat dishes, objective sampling)	VWA	Single	25g	279	0			
Other food - at retail (other dishes, objective sampling)	VWA	Single	25g	323	0			
Other food - at retail (poultry dishes, objective sampling)	VWA	Single	25g	176	1	1		
Other food - at retail (rice dishes, objective sampling)	VWA	Single	25g	47	0			
Other food of non-animal origin - at retail (melon, objective sampling)	VWA	Single	25g	458	0			
Other food of non-animal origin - at retail (sesamy seeds, objective sampling)	VWA	Single	25g	111	1			1
Spices and herbs - at retail ¹⁾	VWA	Single	25g	126	1	1		
Spices and herbs - at retail (alium) ²⁾	VWA	Single	25g	91	0			
Spices and herbs - at retail (alium, objective sampling)	VWA	Single	2.5g	5	0			
Spices and herbs - at retail (basil) ³⁾	VWA	Single	25g	258	8			8
Spices and herbs - at retail (basil, objective sampling)	VWA	Single	2.5g	82	1			1

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Spices and herbs - at retail (celery) ⁴⁾	VWA	Single	25g	87	0			
Spices and herbs - at retail (celery, objective sampling)	VWA	Single	2.5g	15	0			
Spices and herbs - at retail (coriander) ⁵⁾	VWA	Single	25g	264	2			2
Spices and herbs - at retail (coriander, objective sampling)	VWA	Single	2.5g	50	0			
Spices and herbs - at retail (cummin, objective sampling)	VWA	Single	2.5g	2	0			
Spices and herbs - at retail (curry, objective sampling)	VWA	Single	25g	480	0			
Spices and herbs - at retail (dille, objective sampling)	VWA	Single	25g	23	0			
Spices and herbs - at retail (ginger, objective sampling)	VWA	Single	25g	112	1			1
Spices and herbs - at retail (mint) ⁶⁾	VWA	Single	25g	98	6			6
Spices and herbs - at retail (mint, objective sampling)	VWA	Single	2.5g	20	4			4
Spices and herbs - at retail (mixed spices, objective sampling)	VWA	Single	25g	18	1			1
Spices and herbs - at retail (objective sampling)	VWA	Single	2.5g	188	4			4
Spices and herbs - at retail (other) ⁷⁾	VWA	Single	25g	225	15			15
Spices and herbs - at retail (parsley) ⁸⁾	VWA	Single	25g	166	0			

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Spices and herbs - at retail (parsley, objective sampling)	VWA	Single	2.5g	30	0			
Spices and herbs - at retail (rosemary, objective sampling)	VWA	Single	25g	17	0			
Spices and herbs - at retail (tijm, objective sampling)	VWA	Single	25g	18	0			
Spices and herbs - at retail (turmeric, objective sampling)	VWA	Single	25g	115	0			

Comments:

- ¹⁾ cummin, objective sampling
- ²⁾ objective sampling
- ³⁾ objective sampling
- ⁴⁾ objective sampling
- ⁵⁾ objective sampling
- ⁶⁾ objective sampling
- ⁷⁾ objective sampling
- ⁸⁾ objective sampling

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from bovine animals - meat preparation - intended to be eaten raw - at retail	VWA	Single	25g	1222	5		1	4
Meat from sheep - minced meat		---						
Meat from bovine animals - fresh - at retail (objective sampling)	VWA	Single	25g	667	5		2	3
Meat from bovine animals - fresh - at retail - domestic production (selective sampling)	VWA	Single	25g	10	0			
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	29	1			1
Meat from bovine animals - meat preparation - intended to be eaten raw - at retail (selective sampling)	VWA	Single	25g	110	1			1
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	95	0			
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail (selective sampling)	VWA	Single	25g	14	0			
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	80	3		3	
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	380	1		1	

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail (selective sampling)	VWA	Single	25g	27	0			
Meat from horse - fresh - at retail (objective sampling)	VWA	Single	25g	1	0			
Meat from other animal species or not specified - fresh - at retail (antelope, objective sampling)	VWA	Single	25g	3	0			
Meat from other animal species or not specified - fresh - at retail (antidorcas marsupialis, objective sampling)	VWA	Single	25g	34	1			1
Meat from other animal species or not specified - fresh - at retail (bison, objective sampling)	VWA	Single	25g	30	0			
Meat from other animal species or not specified - fresh - at retail (blesbok, objective sampling)	VWA	Single	25g	13	1			1
Meat from other animal species or not specified - fresh - at retail (chamois, objective sampling)	VWA	Single	25g	1	0			
Meat from other animal species or not specified - fresh - at retail (crocodile, objective sampling)	VWA	Single	25g	15	3			3
Meat from other animal species or not specified - fresh - at retail (deer, objective sampling)	VWA	Single	25g	2	0			
Meat from other animal species or not specified - fresh - at retail (equus africanus, objective sampling)	VWA	Single	25g	1	0			
Meat from other animal species or not specified - fresh - at retail (impala, objective sampling)	VWA	Single	25g	11	0			

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from other animal species or not specified - fresh - at retail (kangaroo, objective sampling)	VWA	Single	25g	56	13			13
Meat from other animal species or not specified - fresh - at retail (kudu, objective sampling)	VWA	Single	25g	17	1			1
Meat from other animal species or not specified - fresh - at retail (orix, objective sampling)	VWA	Single	25g	1	0			
Meat from other animal species or not specified - fresh - at retail (ostrich, objective sampling)	VWA	Single	25g	53	0			
Meat from other animal species or not specified - fresh - at retail (ovis ammon, objective sampling)	VWA	Single	25g	1	0			
Meat from pig - fresh - at retail (objective sampling)	VWA	Single	25g	642	3		2	1
Meat from pig - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	141	2		1	1
Meat from pig - meat preparation - intended to be eaten cooked - at retail (selective sampling)	VWA	Single	25g	7	0			
Meat from pig - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	31	0			
Meat from pig - meat products - cooked, ready-to-eat - at retail (selective sampling)	VWA	Single	25g	23	0			
Meat from pig - meat products - raw but intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	172	2		1	1
Meat from pig - meat products - raw but intended to be eaten cooked - at retail (selective sampling)	VWA	Single	25g	9	0			

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from pig - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	22	0			
Meat from sheep - fresh - at retail (objective sampling)	VWA	Single	25g	122	0			
Meat from sheep - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	5	0			
Meat, mixed meat - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	1	0			
Meat, mixed meat - meat preparation - intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	4	0			
Meat, mixed meat - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	29	0			
Meat, mixed meat - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	15	2			2
Other products of animal origin - at retail (shoarma meat, objective sampling)	VWA	Single	25g	670	2			2

2.1.3 Salmonella in animals

Table Salmonella in breeding flocks of Gallus gallus

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-
Gallus gallus (fowl) - grandparent breeding flocks for broiler production line - adult - at farm - Control and eradication programmes (faeces)	122	PPE	Flock	122	0						
Gallus gallus (fowl) - grandparent breeding flocks for broiler production line - day-old chicks - at farm - Control and eradication programmes (faeces)	108	PPE	Flock	108	0						
Gallus gallus (fowl) - grandparent breeding flocks for broiler production line - during rearing period - at farm - Control and eradication programmes (faeces)	108	PPE	Flock	108	0						
Gallus gallus (fowl) - grandparent breeding flocks for egg production line - adult - at farm - Control and eradication programmes (faeces)	69	PPE	Flock	69	0						
Gallus gallus (fowl) - grandparent breeding flocks for egg production line - day-old chicks - at farm - Control and eradication programmes (faeces)	60	PPE	Flock	60	0						
Gallus gallus (fowl) - grandparent breeding flocks for egg production line - during rearing period - at farm - Control and eradication programmes (faeces)	60	PPE	Flock	60	0						
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult - at farm - Control and eradication programmes (faeces)	688	PPE	Flock	688	5	4			1		

Table Salmonella in breeding flocks of Gallus gallus

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks - at farm - Control and eradication programmes (faeces)	428	PPE	Flock	428	0						
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period - at farm - Control and eradication programmes (faeces)	428	PPE	Flock	428	0						
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult - at farm - Control and eradication programmes (faeces)	46	PPE	Flock	46	1	1					
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks - at farm - Control and eradication programmes (boxpaper)	12	PPE	Flock	12	0						
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - at farm - Control and eradication programmes (faeces)	12	PPE	Flock	12	0						
		Salmonella spp., unspecified									
Gallus gallus (fowl) - grandparent breeding flocks for broiler production line - adult - at farm - Control and eradication programmes (faeces)											
Gallus gallus (fowl) - grandparent breeding flocks for broiler production line - day-old chicks - at farm - Control and eradication programmes (faeces)											

Table Salmonella in breeding flocks of Gallus gallus

	Salmonella spp., unspecified
Gallus gallus (fowl) - grandparent breeding flocks for broiler production line - during rearing period - at farm - Control and eradication programmes (faeces)	
Gallus gallus (fowl) - grandparent breeding flocks for egg production line - adult - at farm - Control and eradication programmes (faeces)	
Gallus gallus (fowl) - grandparent breeding flocks for egg production line - day-old chicks - at farm - Control and eradication programmes (faeces)	
Gallus gallus (fowl) - grandparent breeding flocks for egg production line - during rearing period - at farm - Control and eradication programmes (faeces)	
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult - at farm - Control and eradication programmes (faeces)	
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks - at farm - Control and eradication programmes (faeces)	
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period - at farm - Control and eradication programmes (faeces)	
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult - at farm - Control and eradication programmes (faeces)	

Table Salmonella in breeding flocks of Gallus gallus

	Salmonella spp., unspecified
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks - at farm - Control and eradication programmes (boxpaper)	
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - at farm - Control and eradication programmes (faeces)	

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Derby	S. Dublin	S. Emek
Cattle (bovine animals) ¹⁾	GD	Animal	2769	14				4		10	
Cattle (bovine animals) - calves (under 1 year) ²⁾	VWA	Holding	181	12		4	1		1	3	1
Goats ³⁾	GD	Animal	206	0							
Pigs ⁴⁾	GD	Animal	3505	27		25	2				
Sheep ⁵⁾	GD	Animal	403	4		2		2			
Solipeds, domestic ⁶⁾	VMDC	Animal	177	8				8			
Birds - pet animals - in total - Clinical investigations ⁷⁾	VMDC	Animal	98	3				3			
Cats - pet animals - in total - Clinical investigations ⁸⁾	VMDC	Animal	301	2				2			
Cattle (bovine animals) - at farm - animal sample - faeces - Clinical investigations	GD	Animal	3720	210				210			
Dogs - pet animals - in total - Clinical investigations ⁹⁾	VMDC	Animal	529	12				12			
Dogs - pet animals - unspecified - Clinical investigations ¹⁰⁾	VMDC	Animal									
Goats - at farm - animal sample - faeces - Clinical investigations	GD	Animal	10	0							
Other animals - exotic pet animals - Clinical investigations (feces)	VMDC	Animal	350	2				2			
Pigs - at farm - animal sample - faeces - Clinical investigations	GD	Animal	552	32				32			

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Derby	S. Dublin	S. Emek
Reptiles - Clinical investigations (feces)	VMDC	Animal	14	2				2			
Sheep - at farm - animal sample - faeces - Clinical investigations	GD	Animal	15	1		1					

	S. Mbandaka	S. Montevideo	S. Tennessee	S. enterica subsp. enterica
Cattle (bovine animals) ¹⁾				
Cattle (bovine animals) - calves (under 1 year) ²⁾	1	1	1	1
Goats ³⁾				
Pigs ⁴⁾				
Sheep ⁵⁾				
Solipeds, domestic ⁶⁾				
Birds - pet animals - in total - Clinical investigations ⁷⁾				
Cats - pet animals - in total - Clinical investigations ⁸⁾				
Cattle (bovine animals) - at farm - animal sample - faeces - Clinical investigations				
Dogs - pet animals - in total - Clinical investigations ⁹⁾				

Table Salmonella in other animals

	S. Mbandaka	S. Montevideo	S. Tennessee	S. enterica subsp. enterica
Dogs - pet animals - unspecified - Clinical investigations ¹⁰⁾				
Goats - at farm - animal sample - faeces - Clinical investigations				
Other animals - exotic pet animals - Clinical investigations (feces)				
Pigs - at farm - animal sample - faeces - Clinical investigations				
Reptiles - Clinical investigations (feces)				
Sheep - at farm - animal sample - faeces - Clinical investigations				

Comments:

- ¹⁾ clinical invest
- ²⁾ faeces at farm monitoring more isolates found at some holdings
- ³⁾ clinical invest
- ⁴⁾ clinical invest
- ⁵⁾ clinical invest
- ⁶⁾ feces
- ⁷⁾ fecrs
- ⁸⁾ feces
- ⁹⁾ feces

Table Salmonella in other animals

Comments:

¹⁰⁾ synovia

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Gallus gallus (fowl) - laying hens - during rearing period ¹⁾	1217	PPE	Flock	1217		0	0		
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling ²⁾	2411	PPE	Flock	2411		26	0		
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - suspect sampling	2411	PPE	Flock	45		26			
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling ³⁾	18036	PPE	Flock	18036	557	34	23		500
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official and industry sampling ⁴⁾	229	PPE	Flock	229	6				6

Comments:

¹⁾ blood/faeces²⁾ faeces³⁾ faeces⁴⁾ faeces

Footnote:

When the 'units tested' is not filled in, the data is not available

2.1.4 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Agona	S. Livingstone	S. Mbandaka
Compound feedingstuffs for cattle - final product	PDV	Batch	25g	1111	2			2			
Compound feedingstuffs for pigs - final product	PDV	Batch	25g	2080	6				1		
Compound feedingstuffs for poultry (non specified) - final product	PDV	Batch	25g	370	0						
Compound feedingstuffs for poultry - laying hens - final product	PDV	Batch	25g	2196	5					1	1
Compound feedingstuffs for poultry - breeders - final product	PDV	Batch	25g	618	0						
Compound feedingstuffs for poultry - broilers - final product	PDV	Batch	25g	1334	0						
Compound feedingstuffs for horses	PDV	Batch	25g	34	0						
Compound feedingstuffs for poultry (non specified) (ducks)	PDV	Batch	25g	66	0						
Compound feedingstuffs for poultry (non specified) (turkeys - broilers)	PDV	Batch	25g	54	0						
Compound feedingstuffs for poultry (non specified) (turkeys)	PDV	Batch	25g	159	0						
Compound feedingstuffs for rabbits	PDV	Batch	25g	16	0						
Compound feedingstuffs for sheep	PDV	Batch	25g	11	0						

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Agona	S. Livingstone	S. Mbandaka
Compound feedingstuffs for sheep (lambs milkreplacers)	PDV	Batch	25g	3	0						
Compound feedingstuffs for sheep (lambs)	PDV	Batch	25g	8	0						
Compound feedingstuffs, not specified	PDV	Batch	25g	48	0						
Compound feedingstuffs, not specified (goats)	PDV	Batch	25g	17	0						
Pet food	PDV	Batch	25g	1	0						
Pet food (cats)	PDV	Batch	25g	146	0						
Pet food (dogs)	PDV	Batch	25g	238	0						
Pet food (fur animals)	PDV	Batch	25g	5	0						
Pet food (tropical birds)	PDV	Batch	25g	5	1	1					
Premixtures	PDV	Batch	25g	67	0						
Premixtures (cattle feed)	PDV	Batch	25g	28	0						
Premixtures (horse feed)	PDV	Batch	25g	2	0						
Premixtures (petfood)	PDV	Batch	25g	2	0						
Premixtures (pig feed)	PDV	Batch	25g	29	0						
Premixtures (poultry feed)	PDV	Batch	25g	29	0						
Premixtures (sheep feed)	PDV	Batch	25g	7	0						

Table Salmonella in compound feedingstuffs

	S. Oranienburg	S. Senftenberg	S. Tennessee	S. group B
Compound feedingstuffs for cattle - final product				
Compound feedingstuffs for pigs - final product		4		1
Compound feedingstuffs for poultry (non specified) - final product				
Compound feedingstuffs for poultry - laying hens - final product	1	1	1	
Compound feedingstuffs for poultry - breeders - final product				
Compound feedingstuffs for poultry - broilers - final product				
Compound feedingstuffs for horses				
Compound feedingstuffs for poultry (non specified) (ducks)				
Compound feedingstuffs for poultry (non specified) (turkeys - broilers)				
Compound feedingstuffs for poultry (non specified) (turkeys)				
Compound feedingstuffs for rabbits				
Compound feedingstuffs for sheep				
Compound feedingstuffs for sheep (lambs milkreplacers)				
Compound feedingstuffs for sheep (lambs)				
Compound feedingstuffs, not specified				

Table Salmonella in compound feedingstuffs

	S. Oranienburg	S. Senftenberg	S. Tennessee	S. group B
Compound feedingstuffs, not specified (goats)				
Pet food				
Pet food (cats)				
Pet food (dogs)				
Pet food (fur animals)				
Pet food (tropical birds)				
Premixtures				
Premixtures (cattle feed)				
Premixtures (horse feed)				
Premixtures (petfood)				
Premixtures (pig feed)				
Premixtures (poultry feed)				
Premixtures (sheep feed)				

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Anatum	S. Livingstone	S. Montevideo
Feed material of land animal origin - animal fat	PDV	Batch	25g	5	0						
Feed material of land animal origin - feather meal	PDV	Batch	25g	1	0						
Feed material of land animal origin - greaves	PDV	Batch	25g	16	3				1	1	
Feed material of land animal origin - meat and bone meal	PDV	Batch	25g	14	3			2			
Feed material of land animal origin - meat meal	PDV	Batch	25g	47	0						
Feed material of land animal origin - poultry offal meal	PDV	Batch	25g	14	0						
Feed material of marine animal origin - fish meal	PDV	Batch	25g	175	6			2			1
Feed material of marine animal origin - fish oil	PDV	Batch	25g	1	0						
Feed material of marine animal origin - other fish products	PDV	Batch	25g	16	0						
All feedingstuffs (milk products)	PDV	Batch	25g	317	0						
Feed material of land animal origin (cheese products)	PDV	Batch	25g	2	0						
Feed material of land animal origin (eggs shells - heat treated)	PDV	Batch	25g	15	0						
Feed material of land animal origin (haemaglobin powder)	PDV	Batch	25g	1	0						
Feed material of land animal origin - egg powder	PDV	Batch	25g	17	0						

Table Salmonella in feed material of animal origin

	S. Oranienburg	S. Senftenberg	S. group C1
Feed material of land animal origin - animal fat			
Feed material of land animal origin - feather meal			
Feed material of land animal origin - greaves		1	
Feed material of land animal origin - meat and bone meal		1	
Feed material of land animal origin - meat meal			
Feed material of land animal origin - poultry offal meal			
Feed material of marine animal origin - fish meal	1		2
Feed material of marine animal origin - fish oil			
Feed material of marine animal origin - other fish products			
All feedingstuffs (milk products)			
Feed material of land animal origin (cheese products)			
Feed material of land animal origin (eggs shells - heat treated)			
Feed material of land animal origin (haemaglobin powder)			
Feed material of land animal origin - egg powder			

Table Salmonella in feed material of animal origin

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Agona	S. Havana	S. Infantis
Feed material of cereal grain origin - barley derived	PDV	Batch	25g	101	0						
Feed material of cereal grain origin - maize	PDV	Batch	25g	131	0						
Feed material of cereal grain origin - maize - derived	PDV	Batch	25g	110	16			1			
Feed material of cereal grain origin - other cereal grain derived	PDV	Batch	25g	50	0						
Feed material of cereal grain origin - wheat derived	PDV	Batch	25g	841	0						
Feed material of oil seed or fruit origin - groundnut derived	PDV	Batch	25g	3	0						
Feed material of oil seed or fruit origin - linseed derived	PDV	Batch	25g	9	0						
Feed material of oil seed or fruit origin - other oil seeds derived	PDV	Batch	25g	7	0						
Feed material of oil seed or fruit origin - palm kernel derived	PDV	Batch	25g	68	0						
Feed material of oil seed or fruit origin - rape seed derived	PDV	Batch	25g	2257	17		2	1		1	2
Feed material of oil seed or fruit origin - soya (bean) derived	PDV	Batch	25g	2375	24	1		6	1	1	
Feed material of oil seed or fruit origin - sunflower seed derived	PDV	Batch	25g	506	5		1		1		
Other feed material - forages and roughages	PDV	Batch	25g	19	0						

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Agona	S. Havana	S. Infantis
Other feed material - legume seeds and similar products	PDV	Batch	25g	67	0						
Other feed material - other plants	PDV	Batch	25g	37	0						
Other feed material - tubers, roots and similar products	PDV	Batch	25g	31	1						
	S. Lexington	S. Livingstone	S. Mbandaka	S. Minnesota	S. Montevideo	S. Oranienburg	S. Rissen	S. Schwarzengrund	S. Senftenberg	S. Tennessee	S. group B
Feed material of cereal grain origin - barley derived											
Feed material of cereal grain origin - maize											
Feed material of cereal grain origin - maize - derived		7	3						5		
Feed material of cereal grain origin - other cereal grain derived											
Feed material of cereal grain origin - wheat derived											
Feed material of oil seed or fruit origin - groundnut derived											
Feed material of oil seed or fruit origin - linseed derived											
Feed material of oil seed or fruit origin - other oil seeds derived											

Table Salmonella in other feed matter

	S. Lexington	S. Livingstone	S. Mbandaka	S. Minnesota	S. Montevideo	S. Oranienburg	S. Rissen	S. Schwarzengrund	S. Senftenberg	S. Tennessee	S. group B
Feed material of oil seed or fruit origin - palm kernel derived											
Feed material of oil seed or fruit origin - rape seed derived		1	1			1			3	4	1
Feed material of oil seed or fruit origin - soya (bean) derived	3	2	1	1			1	1	4		1
Feed material of oil seed or fruit origin - sunflower seed derived						1			2		
Other feed material - forages and roughages											
Other feed material - legume seeds and similar products											
Other feed material - other plants											
Other feed material - tubers, roots and similar products					1						

	S. group C
Feed material of cereal grain origin - barley derived	
Feed material of cereal grain origin - maize	
Feed material of cereal grain origin - maize - derived	

Table Salmonella in other feed matter

	S. group C
Feed material of cereal grain origin - other cereal grain derived	
Feed material of cereal grain origin - wheat derived	
Feed material of oil seed or fruit origin - groundnut derived	
Feed material of oil seed or fruit origin - linseed derived	
Feed material of oil seed or fruit origin - other oil seeds derived	
Feed material of oil seed or fruit origin - palm kernel derived	
Feed material of oil seed or fruit origin - rape seed derived	
Feed material of oil seed or fruit origin - soya (bean) derived	1
Feed material of oil seed or fruit origin - sunflower seed derived	
Other feed material - forages and roughages	
Other feed material - legume seeds and similar products	
Other feed material - other plants	
Other feed material - tubers, roots and similar products	

Table Salmonella in other feed matter

2.1.5 Salmonella serovars and phagetype distribution

The methods of collecting, isolating and testing of the Salmonella isolates are described in the chapters above respectively for each animal species, foodstuffs and humans. The serotype and phagetype distributions can be used to investigate the sources of the Salmonella infections in humans. Findings of same serovars and phagetypes in human cases and in foodstuffs or animals may indicate that the food category or animal species in question serves as a source of human infections. However as information is not available from all potential sources of infections, conclusions have to be drawn with caution.

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Other food - Monitoring (feed)		Other food of non-animal origin - Surveillance (herbs and spices)
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	
Sources of isolates													
Number of isolates in the laboratory	48		30		115							46	30
Number of isolates serotyped	46	0	29	0	114	0	0	0	0	0	0	44	27
Number of isolates per serovar													
S. 13,23:-:-													1
S. 4,5,12:-:1,2												1	
S. 4,5,12:b:-												2	
S. 4,5,12:d:-			2										1

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Other food - Monitoring (feed)		Other food of non-animal origin - Surveillance (herbs and spices)
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory	48		30		115							46	30
Number of isolates serotyped	46	0	29	0	114	0	0	0	0	0	0	44	27
Number of isolates per serovar													
S. 4,5,12:i:-	4		8		4								
S. 6,7:-:-													1
S. Aberdeen												1	
S. Adelaide													1
S. Agona					3								
S. Anatum					1							1	1
S. Bovismorbificans			2									3	
S. Braenderup												1	
S. Brandenburg			1		1								1

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Other food - Monitoring (feed)		Other food of non-animal origin - Surveillance (herbs and spices)
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory	48		30		115							46	30
Number of isolates serotyped	46	0	29	0	114	0	0	0	0	0	0	44	27
Number of isolates per serovar													
S. Bredeney	1												
S. Derby	2		2										
S. Dublin	13												
S. Emek	1												
S. Enteritidis					8							2	5
S. Fresno													1
S. Hadar												1	
S. Havana												1	1
S. Heidelberg					2							1	

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Other food - Monitoring (feed)		Other food of non-animal origin - Surveillance (herbs and spices)
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory	48		30		115							46	30
Number of isolates serotyped	46	0	29	0	114	0	0	0	0	0	0	44	27
Number of isolates per serovar													
S. Hvittingfoss												2	
S. Indiana					1								
S. Infantis			1		9								
S. Javiana					1							1	
S. Kentucky					1								
S. Kirkee												1	
S. Kottbus	1												
S. Liverpool													1
S. Livingstone					1								1

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Other food - Monitoring (feed)		Other food of non-animal origin - Surveillance (herbs and spices)
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory	48		30		115							46	30
Number of isolates serotyped	46	0	29	0	114	0	0	0	0	0	0	44	27
Number of isolates per serovar													
S. Mbandaka	2				3							3	2
S. Meleagridis													1
S. Minnesota					10								
S. Montevideo	1												1
S. Newport			1		1								1
S. Ohio					1								
S. Ouakam													1
S. Paratyphi B var. Java					61								
S. Reading												3	

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Other food - Monitoring (feed)		Other food of non-animal origin - Surveillance (herbs and spices)
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory	48		30		115							46	30
Number of isolates serotyped	46	0	29	0	114	0	0	0	0	0	0	44	27
Number of isolates per serovar													
S. Rissen												1	
S. Saintpaul					1								
S. Senftenberg					1							1	5
S. Tennessee	3				1								
S. Thompson			1									3	
S. Typhimurium	18		11		3								1
S. Virchow												1	
S. Weltevreden												14	

Table Salmonella serovars in food

Serovar	Other food of non-animal origin - Surveillance (herbs and spices)
Sources of isolates	Surveillance
Number of isolates in the laboratory	
Number of isolates serotyped	0
Number of isolates per serovar	
S. 13,23:-:-	
S. 4,5,12:-:1,2	
S. 4,5,12:b:-	
S. 4,5,12:d:-	
S. 4,5,12:i:-	
S. 6,7:-:-	
S. Aberdeen	
S. Adelaide	
S. Agona	

Table Salmonella serovars in food

Serovar	Other food of non-animal origin - Surveillance (herbs and spices)
Sources of isolates	Surveillance
Number of isolates in the laboratory	
Number of isolates serotyped	0
Number of isolates per serovar	
S. Anatum	
S. Bovismorbificans	
S. Braenderup	
S. Brandenburg	
S. Bredeney	
S. Derby	
S. Dublin	
S. Emek	
S. Enteritidis	

Table Salmonella serovars in food

Serovar	Other food of non-animal origin - Surveillance (herbs and spices)
Sources of isolates	Surveillance
Number of isolates in the laboratory	
Number of isolates serotyped	0
Number of isolates per serovar	
S. Fresno	
S. Hadar	
S. Havana	
S. Heidelberg	
S. Hvitittingfoss	
S. Indiana	
S. Infantis	
S. Javiana	
S. Kentucky	

Table Salmonella serovars in food

Serovar	Other food of non-animal origin - Surveillance (herbs and spices)
	Surveillance
Sources of isolates	
Number of isolates in the laboratory	
Number of isolates serotyped	0
Number of isolates per serovar	
S. Kirkee	
S. Kottbus	
S. Liverpool	
S. Livingstone	
S. Mbandaka	
S. Meleagridis	
S. Minnesota	
S. Montevideo	
S. Newport	

Table Salmonella serovars in food

Serovar	Other food of non-animal origin - Surveillance (herbs and spices)
Sources of isolates	Surveillance
Number of isolates in the laboratory	
Number of isolates serotyped	0
Number of isolates per serovar	
S. Ohio	
S. Ouakam	
S. Paratyphi B var. Java	
S. Reading	
S. Rissen	
S. Saintpaul	
S. Senftenberg	
S. Tennessee	
S. Thompson	

Table Salmonella serovars in food

Serovar	Other food of non-animal origin - Surveillance (herbs and spices)
Sources of isolates	Surveillance
Number of isolates in the laboratory	
Number of isolates serotyped	0
Number of isolates per serovar	
S. Typhimurium	
S. Virchow	
S. Weltevreden	

Table Salmonella Enteritidis phagetypes in food

Phagetype	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Other food - Monitoring (feed)	
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
Sources of isolates												
Number of isolates in the laboratory					8						5	
Number of isolates phagetyped	0	0	0	0	8	0	0	0	0	0	5	0
Number of isolates per phagetype												
PT 21					3						1	
PT 3					2						4	
PT 4					1						0	
PT 6c					2						0	

2.1.6 Antimicrobial resistance in Salmonella isolates

Table Antimicrobial susceptibility testing of Salmonella in Cattle (bovine animals)

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. Dublin		S. enterica subsp. enterica	
Isolates out of a monitoring program (yes/no)			yes		yes		yes		yes	
Number of isolates available in the laboratory			14		9		10		3	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n
Fully sensitive			14	0	9	8	10	9	3	0
Resistant to 1 antimicrobial			14	1	9	0	10	1	3	0
Resistant to 2 antimicrobials			14	0	9	0	10	0	3	0
Resistant to 3 antimicrobials			14	3	9	0	10	0	3	0
Resistant to 4 antimicrobials			14	6	9	1	10	0	3	3
Resistant to >4 antimicrobials			14	3	9	0	10	0	3	0
Number of multiresistant S. Typhimurium - with penta resistance			14	4						

Footnote:

The data for S. enterica subsp. enterica are the data from the monophasic variant S. subsp. enterica 4,[5],12:i:-

Table Antimicrobial susceptibility testing of Salmonella in humans

Salmonella Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. Kentucky		S. Newport		S. enterica subsp. enterica	
	no		no		no		no		no		no	
	480		461		373		21		21		140	
	N	n	N	n	N	n	N	n	N	n	N	n
Fully sensitive	480	420	461	88	373	279	21	3	21	16	140	1
Resistant to 1 antimicrobial	480	50	461	61	373	32	21	2	21	1	140	9
Resistant to 2 antimicrobials	480	7	461	11	373	14	21	1	21	0	140	1
Resistant to 3 antimicrobials	480	1	461	27	373	13	21	0	21	0	140	14
Resistant to 4 antimicrobials	480	1	461	140	373	13	21	0	21	0	140	102
Resistant to >4 antimicrobials	480	1	461	134	373	22	21	15	21	4	140	13
Number of multiresistant S. Typhimurium - with penta resistance			461	124								

Footnote:

Number of salmonella typhimurium resistant to other antimicrobials no data inserted, not clear when to call a strain multiresistant", but data on resistance to 1, 2, 3 and 4 are inserted.

Table Antimicrobial susceptibility testing of Salmonella in meat from bovine animals

Salmonella	Salmonella spp.		S. Dublin		S. Typhimurium	
	Isolates out of a monitoring program (yes/no)		yes		yes	
	Number of isolates available in the laboratory		6		7	
	N	n	N	n	N	n
Antimicrobials:						
Amphenicols - Chloramphenicol			6	0	7	5
Amphenicols - Florfenicol			6	0	7	5
Fluoroquinolones - Ciprofloxacin			6	0	7	3
Quinolones - Nalidixic acid			6	0	7	3
Trimethoprim			6	0	7	2
Aminoglycosides - Streptomycin			6	0	7	4
Aminoglycosides - Gentamicin			6	0	7	0
Aminoglycosides - Kanamycin			6	0	7	0
Penicillins - Ampicillin			6	0	7	5
Tetracyclines - Tetracycline			6	0	7	5
Fully sensitive			6	4	7	1
Resistant to 1 antimicrobial			6	2	7	0
Resistant to 2 antimicrobials			6	0	7	0
Resistant to 3 antimicrobials			6	0	7	0
Resistant to 4 antimicrobials			6	0	7	1
Resistant to >4 antimicrobials			6	0	7	5
Cephalosporins - Cefotaxim			6	0	7	0
Cephalosporins - Ceftazidim			6	0	7	0
Polymyxins - Colistin			6	2	6	0

Table Antimicrobial susceptibility testing of Salmonella in meat from bovine animals

Salmonella	Salmonella spp.		S. Dublin		S. Typhimurium	
Isolates out of a monitoring program (yes/no)			yes		yes	
Number of isolates available in the laboratory			6		7	
Antimicrobials:	N	n	N	n	N	n
Sulphonamides - Sulfamethoxazol			6	0	7	6

Table Antimicrobial susceptibility testing of Salmonella in Pigs

Salmonella Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. 4,12:i:-		S. Derby	
			yes		yes		yes		yes	
			7		36		6		47	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n
Fully sensitive			7	1	36	32	6	0	47	44
Resistant to 1 antimicrobial			7	1	36	4	6	0	47	2
Resistant to 2 antimicrobials			7	0	36	0	6	0	47	0
Resistant to 3 antimicrobials			7	3	36	0	6	1	47	0
Resistant to 4 antimicrobials			7	2	36	0	6	3	47	0
Resistant to >4 antimicrobials			7	0	36	0	6	2	47	1
Number of multiresistant S. Typhimurium - with penta resistance			7	1						

Footnote:

The data for S. 4,12:i:- are the data from the monophasic variant S. subsp. enterica 4,[5],12:i:-

Table Antimicrobial susceptibility testing of Salmonella in meat from pig

Salmonella	Salmonella spp.		S. Typhimurium	
	Isolates out of a monitoring program (yes/no)		yes	
	Number of isolates available in the laboratory		7	
	N	n	N	n
Antimicrobials:				
Amphenicols - Chloramphenicol			7	4
Amphenicols - Florfenicol			7	4
Fluoroquinolones - Ciprofloxacin			7	0
Quinolones - Nalidixic acid			7	0
Trimethoprim			7	0
Aminoglycosides - Streptomycin			7	4
Aminoglycosides - Gentamicin			7	0
Aminoglycosides - Kanamycin			7	0
Penicillins - Ampicillin			7	5
Tetracyclines - Tetracycline			7	6
Fully sensitive			7	1
Resistant to 1 antimicrobial			7	0
Resistant to 2 antimicrobials			7	0
Resistant to 3 antimicrobials			7	1
Resistant to 4 antimicrobials			7	1
Resistant to >4 antimicrobials			7	4
Cephalosporins - Cefotaxim			7	0
Cephalosporins - Ceftazidim			7	0
Polymyxins - Colistin			6	0

Table Antimicrobial susceptibility testing of Salmonella in meat from pig

Salmonella	Salmonella spp.		S. Typhimurium	
Isolates out of a monitoring program (yes/no)			yes	
Number of isolates available in the laboratory			7	
Antimicrobials:	N	n	N	n
Sulphonamides - Sulfamethoxazol			7	6

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl)

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. enterica subsp. enterica	
Isolates out of a monitoring program (yes/no)	yes		yes				yes	
Number of isolates available in the laboratory	24		5				8	
Antimicrobials:	N	n	N	n	N	n	N	n
Fully sensitive	24	20	5	1			8	0
Resistant to 1 antimicrobial	24	4	5	0			8	0
Resistant to 2 antimicrobials	24	0	5	0			8	0
Resistant to 3 antimicrobials	24	0	5	0			8	1
Resistant to 4 antimicrobials	24	0	5	4			8	7
Resistant to >4 antimicrobials	24	0	5	0			8	0
Number of multiresistant S. Typhimurium - with penta resistance			5	0				

Footnote:

The data for S. enterica subsp. enterica are the data from the monophasic variant S. subsp. enterica 4,[5],12:i:-

Table Antimicrobial susceptibility testing of Salmonella in meat from broilers (Gallus gallus)

Salmonella	Salmonella spp.		S. Enteritidis		S. Infantis		S. Minnesota		S. Paratyphi B var. Java		S. Typhimurium	
	Isolates out of a monitoring program (yes/no)		yes		yes		yes		yes		yes	
	Number of isolates available in the laboratory		5		9		10		56		4	
	N	n	N	n	N	n	N	n	N	n	N	n
Antimicrobials:												
Amphenicols - Chloramphenicol			5	0	9	1	10	0	56	1	4	2
Amphenicols - Florfenicol			5	0	9	0	10	0	56	0	4	2
Fluoroquinolones - Ciprofloxacin			5	0	9	2	10	0	56	33	4	0
Quinolones - Nalidixic acid			5	2	9	2	10	0	56	32	4	0
Trimethoprim			5	0	9	0	10	2	56	56	4	1
Aminoglycosides - Streptomycin			5	0	9	0	10	2	56	20	4	1
Aminoglycosides - Gentamicin			5	0	9	0	10	0	56	4	4	1
Aminoglycosides - Kanamycin			5	0	9	0	10	5	56	5	4	0
Penicillins - Ampicillin			5	0	9	1	10	1	56	33	4	4
Tetracyclines - Tetracycline			5	0	9	3	10	10	56	14	4	4
Fully sensitive			5	1	9	4	10	0	56	0	4	0
Resistant to 1 antimicrobial			5	3	9	2	10	0	56	5	4	0
Resistant to 2 antimicrobials			5	1	9	0	10	3	56	4	4	0
Resistant to 3 antimicrobials			5	0	9	0	10	4	56	13	4	0
Resistant to 4 antimicrobials			5	0	9	2	10	2	56	12	4	1
Resistant to >4 antimicrobials			5	0	9	1	10	1	56	22	4	3
Cephalosporins - Cefotaxim			5	0	9	1	10	0	56	7	4	0
Cephalosporins - Ceftazidim			5	0	9	1	10	0	56	7	4	0
Polymyxins - Colistin			5	2	9	0	8	1	47	10	4	0

Table Antimicrobial susceptibility testing of Salmonella in meat from broilers (Gallus gallus)

Salmonella	Salmonella spp.		S. Enteritidis		S. Infantis		S. Minnesota		S. Paratyphi B var. Java		S. Typhimurium	
	Isolates out of a monitoring program (yes/no)		yes		yes		yes		yes		yes	
	Number of isolates available in the laboratory		5		9		10		56		4	
	N	n	N	n	N	n	N	n	N	n	N	n
Antimicrobials:												
Sulphonamides - Sulfamethoxazol			5	0	9	5	10	10	56	33	4	4

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - laying hens

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.	
Isolates out of a monitoring program (yes/no)					yes	
Number of isolates available in the laboratory					32	
Antimicrobials:	N	n	N	n	N	n
Fully sensitive					32	23
Resistant to 1 antimicrobial					32	6
Resistant to 2 antimicrobials					32	1
Resistant to 3 antimicrobials					32	2
Resistant to 4 antimicrobials					32	0
Resistant to >4 antimicrobials					32	0

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - broilers

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. Paratyphi B var. Java	
	Isolates out of a monitoring program (yes/no)				yes		yes	
	Number of isolates available in the laboratory				64		60	
Antimicrobials:	N	n	N	n	N	n	N	n
Fully sensitive					64	34	60	0
Resistant to 1 antimicrobial					64	6	60	8
Resistant to 2 antimicrobials					64	10	60	11
Resistant to 3 antimicrobials					64	9	60	17
Resistant to 4 antimicrobials					64	2	60	6
Resistant to >4 antimicrobials					64	2	60	15

Table Antimicrobial susceptibility testing of *S. Typhimurium* in Humans - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Humans																								
	no																								
	461																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	461	128										13	310	10	1	1	126						2	64
Amphenicols - Florfenicol	16	461	126										131	199	5	66	45	15						2	64
Tetracyclines - Tetracycline	8	461	335								4	116	5	1	1	45	71	218						1	64
Fluoroquinolones - Ciprofloxacin	0.06	461	99		52	310		18	78	1	2													0.008	8
Quinolones - Nalidixic acid	16	461	95										334	28	4		95							4	64
Trimethoprim	2	461	144							315	2						144							0.5	32
Aminoglycosides - Streptomycin	32	461	175										5	173	97	11	56	60	59					2	128
Aminoglycosides - Gentamicin	2	461	2						83	307	62	7	1				1							0.25	32
Aminoglycosides - Kanamycin	8	461	4										441	16			1		3					4	128
Penicillins - Ampicillin	4	461	307							1	64	82	7				307							0.5	32
Cephalosporins - Cefotaxim	0.5	461	1				143	264	51	2				1										0.06	4
Cephalosporins - Ceftazidim	2	461	2						342	115	2		2											0.25	16
Sulphonamides - Sulfamethoxazol	256	461	304											120	31	6						304		8	1024

Table Antimicrobial susceptibility testing of *S. Enteritidis* in Humans - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Enteritidis	Humans																								
	no																								
	480																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	480	1										23	449	7			1							
Amphenicols - Florfenicol	16	480	0										289	189	2										
Tetracyclines - Tetracycline	8	480	5								18	439	18					5							
Fluoroquinolones - Ciprofloxacin	0.06	480	47		21	406	6	7	29	11															
Quinolones - Nalidixic acid	16	480	48										406	25	1			48							
Trimethoprim	2	480	1							472	7						1								
Aminoglycosides - Streptomycin	32	480	1									120	326	28	4	1			1						
Aminoglycosides - Gentamicin	2	480	1						260	203	12	4				1									
Aminoglycosides - Kanamycin	8	480	1										470	9	1										
Penicillins - Ampicillin	4	480	16							1	98	354	11	1			15								
Cephalosporins - Cefotaxim	0.5	480	1				76	365	35	3				1											
Cephalosporins - Ceftazidim	2	480	1						419	58	2		1												
Sulphonamides - Sulfamethoxazol	256	480	2											249	180	46	2	1				2			

Table Antimicrobial susceptibility testing of S. enterica subsp. enterica in Humans - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. enterica subsp. enterica Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Humans																								
	no																								
	140																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	140	5										4	129	2		1	4							
Amphenicols - Florfenicol	16	140	4										71	64	1	1		3							
Tetracyclines - Tetracycline	8	140	129									11							129						
Fluoroquinolones - Ciprofloxacin	0.06	140	3		14	120	3			2		1													
Quinolones - Nalidixic acid	16	140	2										118	19	1	1		1							
Trimethoprim	2	140	7							133							7								
Aminoglycosides - Streptomycin	32	140	128											6	5	1			128						
Aminoglycosides - Gentamicin	2	140	5						25	85	22	3	1		1		3								
Aminoglycosides - Kanamycin	8	140	7										128	5	2	1			4						
Penicillins - Ampicillin	4	140	125							1	7	7					125								
Cephalosporins - Cefotaxim	0.5	140	2				38	83	17					2											
Cephalosporins - Ceftazidim	2	140	2						97	38	3					2									
Sulphonamides - Sulfamethoxazol	256	140	129											10	1						129				

Footnote:
This table reports antimicrobial resistance of S. subsp. enterica 4,[5],12:i:-, or monophasic variant.

Table Antimicrobial susceptibility testing of *S. Kentucky* in Humans - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Kentucky	Humans																								
	no																								
	21																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	21	0										1	19	1										
Amphenicols - Florfenicol	16	21	0										10	10	1										
Tetracyclines - Tetracycline	8	21	15									6						15							
Fluoroquinolones - Ciprofloxacin	0.06	21	17			4								8	9										
Quinolones - Nalidixic acid	16	21	17										4					17							
Trimethoprim	2	21	1							20							1								
Aminoglycosides - Streptomycin	32	21	10											2	4	5	6	1	3						
Aminoglycosides - Gentamicin	2	21	14						3	4					11	3									
Aminoglycosides - Kanamycin	8	21	0										21												
Penicillins - Ampicillin	4	21	16								4	1					16								
Cephalosporins - Cefotaxim	0.5	21	0					16	4	1															
Cephalosporins - Ceftazidim	2	21	0							8	13														
Sulphonamides - Sulfamethoxazol	256	21	16											3	2							16			

Table Antimicrobial susceptibility testing of *S. Newport* in Humans - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Newport	Humans																								
	no																								
	21																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	21	4										4	13				4							
Amphenicols - Florfenicol	16	21	4										11	6		4									
Tetracyclines - Tetracycline	8	21	4								2	14	1					4							
Fluoroquinolones - Ciprofloxacin	0.06	21	5		9	6	1	2	2		1														
Quinolones - Nalidixic acid	16	21	5										15	1		1		4							
Trimethoprim	2	21	4							17							4								
Aminoglycosides - Streptomycin	32	21	4										4	13					4						
Aminoglycosides - Gentamicin	2	21	4						9	8					4										
Aminoglycosides - Kanamycin	8	21	1										19	1					1						
Penicillins - Ampicillin	4	21	4								11	5	1				4								
Cephalosporins - Cefotaxim	0.5	21	0				11	6	4																
Cephalosporins - Ceftazidim	2	21	0						17	4															
Sulphonamides - Sulfamethoxazol	256	21	4											16		1						4			

Table Antimicrobial susceptibility testing of Other serovars in Humans - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Other serovars	Humans																								
	no																								
	373																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	373	8										43	280	42			8							
Amphenicols - Florfenicol	16	373	0										178	185	10										
Tetracyclines - Tetracycline	8	373	53								47	236	31	6	3	1	6	43							
Fluoroquinolones - Ciprofloxacin	0.06	373	81		78	210	4	5	28	30	16	2													
Quinolones - Nalidixic acid	16	373	63										268	25	17	4	1	58							
Trimethoprim	2	373	33							335	5						33								
Aminoglycosides - Streptomycin	32	373	30									2	53	152	92	44	12	3	15						
Aminoglycosides - Gentamicin	2	373	5						93	226	43	6	1			3	1								
Aminoglycosides - Kanamycin	8	373	10										348	15	4				6						
Penicillins - Ampicillin	4	373	37							6	196	117	17	2			35								
Cephalosporins - Cefotaxim	0.5	373	1				142	191	36	3				1											
Cephalosporins - Ceftazidim	2	373	1						228	138	5	1				1									
Sulphonamides - Sulfamethoxazol	256	373	46											262	57	7	1			1		45			

Table Antimicrobial susceptibility testing of *S. Enteritidis* in *Gallus gallus* (fowl) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Enteritidis	Gallus gallus (fowl)																								
	yes																								
	24																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	24	0										3	21											
Amphenicols - Florfenicol	16	24	0										10	14											
Tetracyclines - Tetracycline	8	24	0								3	20	1												
Fluoroquinolones - Ciprofloxacin	0.06	24	2			22		1	1																
Quinolones - Nalidixic acid	16	24	2										19	3				2							
Trimethoprim	2	24	0							24															
Aminoglycosides - Streptomycin	32	24	0									7	15	1		1									
Aminoglycosides - Gentamicin	2	24	0						10	14															
Aminoglycosides - Kanamycin	8	24	0										24												
Penicillins - Ampicillin	4	24	1								8	15					1								
Cephalosporins - Cefotaxim	0.5	24	0				7	15	2																
Cephalosporins - Ceftazidim	2	24	0						22	2															
Sulphonamides - Sulfamethoxazol	256	24	1											13	8	2						1			

Table Antimicrobial susceptibility testing of *S. Typhimurium* in *Gallus gallus* (fowl) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Gallus gallus (fowl)																								
	yes																								
	5																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	5	2											3				2							
Amphenicols - Florfenicol	16	5	2										2	1			2								
Tetracyclines - Tetracycline	8	5	4									1					2	2							
Quinolones - Nalidixic acid	16	5	0										5												
Trimethoprim	2	5	0							5															
Aminoglycosides - Streptomycin	32	5	2											1		2			2						
Aminoglycosides - Gentamicin	2	5	0						1	4															
Aminoglycosides - Kanamycin	8	5	0										5												
Penicillins - Ampicillin	4	5	4								1						4								
Cephalosporins - Cefotaxim	0.5	5	0				2	2	1																
Cephalosporins - Ceftazidim	2	5	0						3	2															
Sulphonamides - Sulfamethoxazol	256	5	4											1								4			

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to																											
Other serovars	Gallus gallus (fowl)																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Penicillins - Ampicillin	4	10	10														10										

Table Antimicrobial susceptibility testing of S. enterica subsp. enterica in Gallus gallus (fowl) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. enterica subsp. enterica	Gallus gallus (fowl)																								
	yes																								
	8																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	8	0											8											
Amphenicols - Florfenicol	16	8	0										6	2											
Tetracyclines - Tetracycline	8	8	7									1						7							
Fluoroquinolones - Ciprofloxacin	0.06	8	0			8																			
Quinolones - Nalidixic acid	16	8	0										7	1											
Trimethoprim	2	8	0							8															
Aminoglycosides - Streptomycin	32	8	8																8						
Aminoglycosides - Gentamicin	2	8	0							6	2														
Aminoglycosides - Kanamycin	8	8	0										8												
Penicillins - Ampicillin	4	8	8														8								
Cephalosporins - Cefotaxim	0.5	8	0					5	3																
Cephalosporins - Ceftazidim	2	8	0						5	2	1														
Sulphonamides - Sulfamethoxazol	256	8	8																			8			

Footnote:
This table reports antimicrobial resistance of S. subsp. enterica 4,[5],12:i:-, or monophasic variant.

Table Antimicrobial susceptibility testing of *S. Paratyphi B* var. Java in *Gallus gallus* (fowl) - broilers - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Paratyphi B var. Java	Gallus gallus (fowl) - broilers																									
	yes																									
	60																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																										
Amphenicols - Chloramphenicol	16	60	1										5	37	17			1								
Amphenicols - Florfenicol	16	60	0									3	22	28	7											
Tetracyclines - Tetracycline	8	60	11								2	28	19					11								
Fluoroquinolones - Ciprofloxacin	0.06	60	37		1	20	2	2	15	8	9	3														
Quinolones - Nalidixic acid	16	60	35										20	4	1			35								
Trimethoprim	2	60	60														60									
Aminoglycosides - Streptomycin	32	60	20													40	8	9	3							
Aminoglycosides - Gentamicin	2	60	5						47	6	2			3	1	1										
Aminoglycosides - Kanamycin	8	60	8										52						8							
Penicillins - Ampicillin	4	60	32								11	12	5	1			31									
Cephalosporins - Cefotaxim	0.5	60	5				6	24	17	8	1			4												
Cephalosporins - Ceftazidim	2	60	4						6	39	10	1	1	2		1										
Sulphonamides - Sulfamethoxazol	256	60	33											21	4	1	1					33				

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - broilers - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Other serovars	Gallus gallus (fowl) - broilers																								
	yes																								
	64																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	64	2										5	45	12	2									
Amphenicols - Florfenicol	16	64	0										18	37	9										
Tetracyclines - Tetracycline	8	64	17								3	31	12	1				17							
Fluoroquinolones - Ciprofloxacin	0.06	64	12		9	40	3	1	2	3	4		1		1										
Quinolones - Nalidixic acid	16	64	9										47	6	2	1		8							
Trimethoprim	2	64	5							58	1						5								
Aminoglycosides - Streptomycin	32	64	6										8	17	19	14	5	1							
Aminoglycosides - Gentamicin	2	64	2						17	35	9	1		1		1									
Aminoglycosides - Kanamycin	8	64	6										58			1			5						
Penicillins - Ampicillin	4	64	11								29	19	5	1			10								
Cephalosporins - Cefotaxim	0.5	64	4				16	34	9	1				4											
Cephalosporins - Ceftazidim	2	64	4						23	32	5		1			3									
Sulphonamides - Sulfamethoxazol	256	64	16											40	8					1		15			

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Other serovars	Gallus gallus (fowl) - laying hens																								
	yes																								
	32																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	32	0										1	19	12										
Amphenicols - Florfenicol	16	32	0										6	16	10										
Tetracyclines - Tetracycline	8	32	0								1	17	7	7											
Fluoroquinolones - Ciprofloxacin	0.06	32	2		4	13	13			1	1														
Quinolones - Nalidixic acid	16	32	6										16	2	8	4		2							
Trimethoprim	2	32	4							26	2						4								
Aminoglycosides - Streptomycin	32	32	0										3	7	5	17									
Aminoglycosides - Gentamicin	2	32	0						5	24	3														
Aminoglycosides - Kanamycin	8	32	0										30	2											
Penicillins - Ampicillin	4	32	2							1	11	11	7				2								
Cephalosporins - Cefotaxim	0.5	32	0				5	13	13	1															
Cephalosporins - Ceftazidim	2	32	0						11	20	1														
Sulphonamides - Sulfamethoxazol	256	32	2											22	3	4			1			2			

Table Antimicrobial susceptibility testing of *S. Typhimurium* in Cattle (bovine animals) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Cattle (bovine animals)																								
	yes																								
	14																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	14	8											6				8							
Amphenicols - Florfenicol	16	14	4										9	1			4								
Tetracyclines - Tetracycline	8	14	9									5					4	5							
Fluoroquinolones - Ciprofloxacin	0.06	14	1		1	12			1																
Quinolones - Nalidixic acid	16	14	1										12	1				1							
Trimethoprim	2	14	4							10							4								
Aminoglycosides - Streptomycin	32	14	13											1			4	3	6						
Aminoglycosides - Gentamicin	2	14	0						3	11															
Aminoglycosides - Kanamycin	8	14	0										13	1											
Penicillins - Ampicillin	4	14	7								3	4				7									
Cephalosporins - Cefotaxim	0.5	14	0				4	9	1																
Cephalosporins - Ceftazidim	2	14	0						11	2	1														
Sulphonamides - Sulfamethoxazol	256	14	13											1								13			

Table Antimicrobial susceptibility testing of *Salmonella* spp. in Meat from pig - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Salmonella spp.	Meat from pig																								
	yes																								
	15																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	15	5	0	0	0	0	0	0	0	0	1	7	2	0	0	5	0	0	0	0	0	0	2	64
Amphenicols - Florfenicol	16	15	3	0	0	0	0	0	0	0	0	4	5	1	2	3	0	0	0	0	0	0	0	2	64
Tetracyclines - Tetracycline	8	15	10	0	0	0	0	0	0	0	4	1	0	0	0	4	6	0	0	0	0	0	0	1	64
Fluoroquinolones - Ciprofloxacin	1	15	0	3	9	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.06	8
Quinolones - Nalidixic acid	16	15	2	0	0	0	0	0	0	0	0	10	3	0	0	0	2	0	0	0	0	0	0	4	64
Trimethoprim	4	15	1	0	0	0	0	0	14	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0.5	32
Aminoglycosides - Streptomycin	32	15	4	0	0	0	0	0	0	0	0	0	2	4	3	2	0	4	0	0	0	0	0	2	128
Aminoglycosides - Gentamicin	4	15	0	0	0	0	0	5	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	32
Aminoglycosides - Kanamycin	16	15	1	0	0	0	0	0	0	0	0	14	0	0	0	0	0	1	0	0	0	0	0	4	128
Penicillins - Ampicillin	8	15	7	0	0	0	0	0	0	2	4	2	0	0	0	7	0	0	0	0	0	0	0	0.5	32
Cephalosporins - Cefotaxim	2	15	0	0	0	5	4	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.06	4
Cephalosporins - Ceftazidim	8	15	0	0	0	0	0	9	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	16
Polymyxins - Colistin	2	15	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	2	4
Sulphonamides - Sulfamethoxazol		15	15	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0	9	0	0	8	1024

Table Antimicrobial susceptibility testing of S. Dublin in Cattle (bovine animals) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Dublin	Cattle (bovine animals)																								
	yes																								
	10																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	10	0										3	7											
Tetracyclines - Tetracycline	8	10	0										6	4											
Fluoroquinolones - Ciprofloxacin	0.06	10	0		7	3																			
Quinolones - Nalidixic acid	16	10	0										8	2											
Trimethoprim	2	10	0							10															
Aminoglycosides - Streptomycin	32	10	1											5	4				1						
Aminoglycosides - Gentamicin	2	10	0						5	5															
Aminoglycosides - Kanamycin	8	10	0										10												
Penicillins - Ampicillin	4	10	0							3	6	1													
Cephalosporins - Cefotaxim	0.5	10	0				6	4																	
Cephalosporins - Ceftazidim	2	10	0						10																
Sulphonamides - Sulfamethoxazol	256	10	0											10											

Table Antimicrobial susceptibility testing of *Salmonella* spp. in Meat from bovine animals - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Salmonella spp.	Meat from bovine animals																								
	yes																								
	17																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	17	5	0	0	0	0	0	0	0	0	2	10	0	0	0	5	0	0	0	0	0	0	2	64
Amphenicols - Florfenicol	16	17	0	0	0	0	0	0	0	0	0	7	5	0	5	0	0	0	0	0	0	0	0	2	64
Tetracyclines - Tetracycline	8	17	6	0	0	0	0	0	0	0	10	1	0	0	1	3	2	0	0	0	0	0	0	1	64
Fluoroquinolones - Ciprofloxacin	1	17	0	6	7	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.06	8
Quinolones - Nalidixic acid	16	17	4	0	0	0	0	0	0	0	0	12	1	0	0	0	4	0	0	0	0	0	0	4	64
Trimethoprim	4	17	2	0	0	0	0	0	12	2	1	0	0	0	0	2	0	0	0	0	0	0	0	0.5	32
Aminoglycosides - Streptomycin	32	17	2	0	0	0	0	0	0	0	0	0	5	4	3	3	1	1	0	0	0	0	0	2	128
Aminoglycosides - Gentamicin	4	17	0	0	0	0	0	10	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	32
Aminoglycosides - Kanamycin	16	17	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	4	128
Penicillins - Ampicillin	8	17	7	0	0	0	0	0	3	6	1	0	0	0	0	7	0	0	0	0	0	0	0	0.5	32
Cephalosporins - Cefotaxim	2	17	0	0	0	12	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.06	4
Cephalosporins - Ceftazidim	8	17	0	0	0	0	0	13	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	16
Polymyxins - Colistin	2	17	2	0	0	0	0	0	0	0	15	0	2	0	0	0	0	0	0	0	0	0	0	2	4
Sulphonamides - Sulfamethoxazol		17	17	0	0	0	0	0	0	0	0	0	0	0	6	1	3	0	0	0	7	0	0	8	1024

Table Antimicrobial susceptibility testing of *S. enterica* subsp. *enterica* in Cattle (bovine animals) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. enterica subsp. enterica	Cattle (bovine animals)																										
	yes																										
	3																										
	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	16	3	0											3													
Amphenicols - Florfenicol	16	3	0										3														
Tetracyclines - Tetracycline	8	3	3															3									
Fluoroquinolones - Ciprofloxacin	0.06	3	0			3																					
Quinolones - Nalidixic acid	16	3	0										3														
Trimethoprim	2	3	0							3																	
Aminoglycosides - Streptomycin	32	3	3																3								
Aminoglycosides - Gentamicin	2	3	0							1	1	1															
Aminoglycosides - Kanamycin	8	3	0										3														
Penicillins - Ampicillin	4	3	3														3										
Cephalosporins - Cefotaxim	0.5	3	0				2	1																			
Cephalosporins - Ceftazidim	2	3	0						2	1																	
Sulphonamides - Sulfamethoxazol	256	3	3																			3					

Footnote:

This table reports the antimicrobial resistance of *S. subsp. enterica* 4,[5],12:i:-, or monophasic variant.

Table Antimicrobial susceptibility testing of *Salmonella* spp. in Meat from turkey - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Salmonella spp.	Meat from turkey																								
	yes																								
	5																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	5	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	2	64
Amphenicols - Florfenicol	16	5	0	0	0	0	0	0	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0	2	64
Tetracyclines - Tetracycline	8	5	1	0	0	0	0	0	0	0	1	1	2	0	0	0	1	0	0	0	0	0	0	1	64
Fluoroquinolones - Ciprofloxacin	1	5	1	0	1	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0.06	8
Quinolones - Nalidixic acid	16	5	4	0	0	0	0	0	0	0	0	1	0	0	0	0	4	0	0	0	0	0	0	4	64
Trimethoprim	4	5	1	0	0	0	0	0	3	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0.5	32
Aminoglycosides - Streptomycin	32	5	1	0	0	0	0	0	0	0	0	0	1	0	1	2	1	0	0	0	0	0	0	2	128
Aminoglycosides - Gentamicin	4	5	2	0	0	0	0	1	0	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0.25	32
Aminoglycosides - Kanamycin	16	5	0	0	0	0	0	0	0	0	0	3	0	0	2	0	0	0	0	0	0	0	0	4	128
Penicillins - Ampicillin	8	5	3	0	0	0	0	0	0	1	0	1	0	0	0	3	0	0	0	0	0	0	0	0.5	32
Cephalosporins - Cefotaxim	2	5	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.06	4
Cephalosporins - Ceftazidim	8	5	0	0	0	0	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	16
Polymyxins - Colistin	2	5	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	2	4
Sulphonamides - Sulfamethoxazol		5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	0	8	1024

Table Antimicrobial susceptibility testing of Other serovars in Cattle (bovine animals) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Other serovars	Cattle (bovine animals)																								
	yes																								
	9																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	9	0											9											
Amphenicols - Florfenicol	16	9	0										3	6											
Tetracyclines - Tetracycline	8	9	0									8	1												
Fluoroquinolones - Ciprofloxacin	0.06	9	0		5	4																			
Quinolones - Nalidixic acid	16	9	0										9												
Trimethoprim	2	9	1							8							1								
Aminoglycosides - Streptomycin	32	9	1											4	2	2			1						
Aminoglycosides - Gentamicin	2	9	0							7	2														
Aminoglycosides - Kanamycin	8	9	0										9												
Penicillins - Ampicillin	4	9	1								7	1					1								
Cephalosporins - Cefotaxim	0.5	9	0				2	7																	
Cephalosporins - Ceftazidim	2	9	0						3	6															
Sulphonamides - Sulfamethoxazol	256	9	1											7	1							1			

Table Antimicrobial susceptibility testing of *Salmonella* spp. in Meat from broilers (*Gallus gallus*) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Salmonella spp.	Meat from broilers (Gallus gallus)																										
	yes																										
	108																										
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	16	108	5	0	0	0	0	0	0	0	1	4	81	16	1	0	5	0	0	0	0	0	0	2	64		
Amphenicols - Florfenicol	16	108	0	0	0	0	0	0	0	0	1	45	50	10	2	0	0	0	0	0	0	0	0	2	64		
Tetracyclines - Tetracycline	8	108	39	0	0	0	0	0	0	1	48	20	0	0	0	2	37	0	0	0	0	0	0	1	64		
Fluoroquinolones - Ciprofloxacin	1	108	1	13	51	4	2	18	9	8	2	1	0	0	0	0	0	0	0	0	0	0	0	0.008	8		
Quinolones - Nalidixic acid	16	108	39	0	0	0	0	0	0	0	0	60	6	1	2	0	39	0	0	0	0	0	0	4	64		
Trimethoprim	4	108	60	0	0	0	0	0	46	2	0	0	0	0	0	60	0	0	0	0	0	0	0	0.5	32		
Aminoglycosides - Streptomycin	32	108	13	0	0	0	0	0	0	0	1	4	11	27	36	16	3	10	0	0	0	0	0	2	128		
Aminoglycosides - Gentamicin	4	108	5	0	0	0	0	80	21	2	0	0	0	2	2	1	0	0	0	0	0	0	0	0.25	32		
Aminoglycosides - Kanamycin	16	108	12	0	0	0	0	0	0	0	0	93	3	0	0	0	0	12	0	0	0	0	0	4	128		
Penicillins - Ampicillin	8	108	48	0	0	0	0	0	1	26	21	12	0	0	0	48	0	0	0	0	0	0	0	0.5	32		
Cephalosporins - Cefotaxim	2	108	12	0	0	10	56	25	5	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0.06	4		
Cephalosporins - Ceftazidim	8	108	5	0	0	0	0	32	51	13	0	3	2	2	5	0	0	0	0	0	0	0	0	0.25	16		
Polymyxins - Colistin	2	92	1	0	0	0	0	0	0	0	90	1	1	0	0	0	0	0	0	0	0	0	0	2	4		
Sulphonamides - Sulfamethoxazol		108	108	0	0	0	0	0	0	0	0	0	0	4	5	24	12	0	1	0	62	0	0	8	1024		

Table Antimicrobial susceptibility testing of *S. Typhimurium* in Pigs - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Typhimurium	Pigs																								
	yes																								
	7																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	7	2											5		1		1							
Amphenicols - Florfenicol	16	7	1										2	3	1		1								
Tetracyclines - Tetracycline	8	7	3									3	1				1	2							
Fluoroquinolones - Ciprofloxacin	0.06	7	0			6	1																		
Quinolones - Nalidixic acid	16	7	0										6		1										
Trimethoprim	2	7	2							5							2								
Aminoglycosides - Streptomycin	32	7	5											1	1			1	4						
Aminoglycosides - Gentamicin	2	7	0							4	3														
Aminoglycosides - Kanamycin	8	7	0										5	2											
Penicillins - Ampicillin	4	7	6									1					6								
Cephalosporins - Cefotaxim	0.5	7	0				1	4	2																
Cephalosporins - Ceftazidim	2	7	0						2	5															
Sulphonamides - Sulfamethoxazol	256	7	5											2								5			

Table Antimicrobial susceptibility testing of S. enterica subsp. enterica in Pigs - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. enterica subsp. enterica	Pigs																								
	yes																								
	6																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	6	1											5				1							
Amphenicols - Florfenicol	16	6	0											5	1										
Tetracyclines - Tetracycline	8	6	6															6							
Fluoroquinolones - Ciprofloxacin	0.06	6	0		1	5																			
Quinolones - Nalidixic acid	16	6	0										6												
Trimethoprim	2	6	2							4							2								
Aminoglycosides - Streptomycin	32	6	6																6						
Aminoglycosides - Gentamicin	2	6	0							3	3														
Aminoglycosides - Kanamycin	8	6	0										6												
Penicillins - Ampicillin	4	6	5									1					5								
Cephalosporins - Cefotaxim	0.5	6	0				1	4	1																
Cephalosporins - Ceftazidim	2	6	0						6																
Sulphonamides - Sulfamethoxazol	256	6	6																			6			

Footnote:
This table reports the antimicrobial resistance of S. subsp. enterica 4,[5], 12:i:- or monophasic variant.

Table Antimicrobial susceptibility testing of Other serovars in Pigs - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Other serovars	Pigs																								
	yes																								
	36																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	36	0											34	2										
Amphenicols - Florfenicol	16	36	0										2	34											
Tetracyclines - Tetracycline	8	36	2									30	2	2	2										
Fluoroquinolones - Ciprofloxacin	0.06	36	0			36																			
Quinolones - Nalidixic acid	16	36	0										35	1											
Trimethoprim	2	36	0							36															
Aminoglycosides - Streptomycin	32	36	1											14	17	4	1								
Aminoglycosides - Gentamicin	2	36	0						3	25	7	1													
Aminoglycosides - Kanamycin	8	36	0										34	2											
Penicillins - Ampicillin	4	36	0								11	25													
Cephalosporins - Cefotaxim	0.5	36	0				7	27	2																
Cephalosporins - Ceftazidim	2	36	0						27	8	1														
Sulphonamides - Sulfamethoxazol	256	36	1											31	4							1			

Table Antimicrobial susceptibility testing of *S. Derby* in Pigs - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data
[Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

S. Derby	Pigs - at slaughterhouse - animal sample - faeces - Monitoring																										
	yes																										
	47																										
	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	16	47	0											24	23												
Amphenicols - Florfenicol	16	47	0											46	1												
Tetracyclines - Tetracycline	8	47	2									42	2	1				2									
Fluoroquinolones - Ciprofloxacin	0.06	47	0			45	2																				
Quinolones - Nalidixic acid	16	47	0										44	3													
Trimethoprim	2	47	1							45	1						1										
Aminoglycosides - Streptomycin	32	47	2											13	27	5	1		1								
Aminoglycosides - Gentamicin	2	47	0						1	37	7	2															
Aminoglycosides - Kanamycin	8	47	1										44	2	1												
Penicillins - Ampicillin	4	47	1								11	33	2				1										
Cephalosporins - Cefotaxim	0.5	47	0					35	12																		
Cephalosporins - Ceftazidim	2	47	0						1	45	1																
Sulphonamides - Sulfamethoxazol	256	47	1											46								1					

Table Cut-off values for antibiotic resistance testing of Salmonella in Animals

Test Method Used	Standard methods used for testing
Broth dilution	NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol	EUCAST	16	
	Florfenicol	EUCAST	16	
Tetracyclines	Tetracycline	EUCAST	8	
Fluoroquinolones	Ciprofloxacin	EUCAST	0.06	
Quinolones	Nalidixic acid	EUCAST	16	
Trimethoprim	Trimethoprim	EUCAST	2	
Sulphonamides	Sulfamethoxazol	CLSI	256	
Aminoglycosides	Streptomycin	EUCAST	32	
	Gentamicin	EUCAST	2	
	Kanamycin	EUCAST	8	
Cephalosporins	Cefotaxim	EUCAST	0.5	
	Ceftazidim	EUCAST	2	
Penicillins	Ampicillin	EUCAST	4	

Table Cut-off values for antibiotic resistance testing of Salmonella in Animals

Table Cut-off values for antibiotic resistance testing of Salmonella in Feed

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.06	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulphonamides	Sulphonamides		256	
Aminoglycosides	Streptomycin		32	
	Gentamicin		2	
Cephalosporins	Cefotaxim		0.5	
Penicillins	Ampicillin		4	

Table Cut-off values for antibiotic resistance testing of Salmonella in Food

Test Method Used	Standard methods used for testing
Broth dilution	NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
	Florfenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		1	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		4	
Sulphonamides	Sulphonamides		256	
Aminoglycosides	Streptomycin		32	
	Gentamicin		4	
	Kanamycin		16	
Cephalosporins	Cefotaxim		2	
	Ceftazidim		8	
Penicillins	Ampicillin		8	

Table Cut-off values for antibiotic resistance testing of Salmonella in Food

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Polymyxins	Colistin		2	

Table Cut-off values for antibiotic resistance testing of Salmonella in Humans

Test Method Used	Standard methods used for testing
Broth dilution	NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol	EUCAST	16	
	Florfenicol	EUCAST	16	
Tetracyclines	Tetracycline	EUCAST	8	
Fluoroquinolones	Ciprofloxacin	EUCAST	0.06	
Quinolones	Nalidixic acid	EUCAST	16	
Trimethoprim	Trimethoprim	EUCAST	2	
Sulphonamides	Sulfamethoxazol	CLSI	256	
Aminoglycosides	Streptomycin	EUCAST	32	
	Gentamicin	EUCAST	2	
	Kanamycin	EUCAST	8	
Cephalosporins	Cefotaxim	EUCAST	0.5	
	Ceftazidim	EUCAST	2	
Penicillins	Ampicillin	EUCAST	4	

Table Cut-off values for antibiotic resistance testing of Salmonella in Humans

2.2 CAMPYLOBACTERIOSIS

2.2.1 General evaluation of the national situation

2.2.2 Campylobacter in foodstuffs

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from bovine animals - fresh - at retail ¹⁾	VWA	Single	25g	595	2					2
Meat from pig - fresh - at retail ²⁾	VWA	Single	25g	617	0					
Meat from sheep - fresh - at retail ³⁾	VWA	Single	25g	115	6					6
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	5	0					
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	3	0					
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	49	0					
Meat from pig - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	2	0					
Meat from pig - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	4	0					

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from pig - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	5	0					
Meat from sheep - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	1	0					
Meat from sheep - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	1	0					
Meat from sheep - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	1	0					
Other food - at retail (alium, objective sampling)	VWA	Single	25g	80	0					
Other food - at retail (basil, objective sampling)	VWA	Single	25g	131	0					
Other food - at retail (celery, objective sampling)	VWA	Single	25g	70	0					
Other food - at retail (coriander, objective sampling)	VWA	Single	25g	190	0					
Other food - at retail (cummin, objective sampling)	VWA	Single	25g	124	0					
Other food - at retail (curry, objective sampling)	VWA	Single	25g	469	0					
Other food - at retail (dille, objective sampling)	VWA	Single	25g	20	0					
Other food - at retail (ginger, objective sampling)	VWA	Single	25g	111	0					
Other food - at retail (mint, objective sampling)	VWA	Single	25g	54	0					
Other food - at retail (other spices or herbs, objective sampling)	VWA	Single	25g	10	0					

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Other food - at retail (parsley, objective sampling)	VWA	Single	25g	131	0					
Other food - at retail (rosemary, objective sampling)	VWA	Single	25g	14	0					
Other food - at retail (tijm, objective sampling)	VWA	Single	25g	14	0					
Other food - at retail (turmeric, objective sampling)	VWA	Single	25g	114	0					

Comments:

- ¹⁾ objective sampling
- ²⁾ objective sampling
- ³⁾ objective sampling

Table Campylobacter in poultry meat

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus) - fresh - at retail ¹⁾	VWA	Single	25g	1023	101					101
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at retail ²⁾	VWA	Single	25g	66	6		6			
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail ³⁾	VWA	Single	25g	2	0					
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at retail ⁴⁾	VWA	Single	25g	6	0					
Meat from duck - at retail ⁵⁾	VWA	Single	25g	1	0					
Meat from turkey - fresh - at retail ⁶⁾	VWA	Single	25g	135	9					9
Meat from turkey - meat preparation - intended to be eaten cooked - at retail ⁷⁾	VWA	Single	25g	17	0					

Comments:

- ¹⁾ objective sampling
²⁾ objective sampling
³⁾ objective sampling
⁴⁾ objective sampling
⁵⁾ objective sampling
⁶⁾ objective sampling

Table Campylobacter in poultry meat

Comments:

⁷⁾ objective sampling

2.2.3 Campylobacter in animals

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Cats ¹⁾	VMDC	Animal	56	14					14
Dogs ²⁾	VMDC	Animal	235	112					112
Gallus gallus (fowl) - broilers - at farm ³⁾	GD	Flock	1629	17					17
Goats ⁴⁾	GD	Animal	268	2					2
Sheep ⁵⁾	GD	Animal	495	8					8
Birds - pet animals - unspecified - Clinical investigations ⁶⁾	VMDC	Animal	81	17					17
Cats - pet animals - in total - Clinical investigations	GD	Animal	2	0					
Cattle (bovine animals) - in total - Clinical investigations	GD	Animal	2793	16					16
Dogs - pet animals - in total - Clinical investigations	GD	Animal	7	3					3
Other animals - exotic pet animals - unspecified - Clinical investigations ⁷⁾	VMDC	Animal	321	49					49

Comments:

¹⁾ feces

²⁾ feces

Table Campylobacter in animals

Comments:

- 3) clinical invest
- 4) clinical invest
- 5) clinical invest
- 6) feces
- 7) feces

2.2.4 Antimicrobial resistance in Campylobacter isolates

Table Antimicrobial susceptibility testing of Campylobacter in Meat from bovine animals

Campylobacter Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Campylobacter spp., unspecified	
	yes	
	2	
Antimicrobials:	N	n
Fully sensitive	2	0
Resistant to 1 antimicrobial	2	0
Resistant to 2 antimicrobials	2	0
Resistant to 3 antimicrobials	2	1
Resistant to 4 antimicrobials	2	0
Resistant to >4 antimicrobials	2	1

Table Antimicrobial susceptibility testing of Campylobacter in Meat from pig

Campylobacter Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Campylobacter spp., unspecified	
	yes	
	4	
Antimicrobials:	N	n
Fully sensitive	4	0
Resistant to 1 antimicrobial	4	1
Resistant to 2 antimicrobials	4	0
Resistant to 3 antimicrobials	4	3
Resistant to 4 antimicrobials	4	0
Resistant to >4 antimicrobials	4	0

Table Antimicrobial susceptibility testing of Campylobacter in Pigs

Campylobacter	Campylobacter spp., unspecified		C. coli	
	Isolates out of a monitoring program (yes/no)		yes	
	Number of isolates available in the laboratory		106	
Antimicrobials:	N	n	N	n
Fully sensitive			106	2
Resistant to 1 antimicrobial			106	8
Resistant to 2 antimicrobials			106	29
Resistant to 3 antimicrobials			106	40
Resistant to 4 antimicrobials			106	20
Resistant to >4 antimicrobials			106	7

Table Antimicrobial susceptibility testing of Campylobacter in Meat from broilers (Gallus gallus)

Campylobacter Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Campylobacter spp., unspecified		C. coli		C. jejuni	
	yes		yes		yes	
	28		61		171	
	N	n	N	n	N	n
Fluoroquinolones - Ciprofloxacin	28	16	61	50	171	96
Quinolones - Nalidixic acid	28	17	61	50	171	96
Macrolides - Erythromycin	28	3	61	24	171	1
Penicillins - Ampicillin	28	9	61	39	171	97
Tetracyclines - Tetracycline	28	12	61	51	171	80
Fully sensitive	28	5	61	1	171	14
Resistant to 1 antimicrobial	28	4	61	5	171	30
Resistant to 2 antimicrobials	28	4	61	3	171	27
Resistant to 3 antimicrobials	28	5	61	9	171	28
Resistant to 4 antimicrobials	28	4	61	14	171	45
Resistant to >4 antimicrobials	28	6	61	29	171	27
Amphenicols - Chloramphenicol	28	0	61	0	171	1
Macrolides - Clarithromycin	28	3	61	24	171	1
Macrolides - Tulathromycin	28	6	61	24	171	4
Sulphonamides - Sulfamethoxazol	28	11	61	12	171	108

Table Antimicrobial susceptibility testing of Campylobacter in Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring

Campylobacter Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	C. coli		C. jejuni	
	yes		yes	
	82		65	
	N	n	N	n
Antimicrobials:				
Fully sensitive	82	2	65	4
Resistant to 1 antimicrobial	82	2	65	18
Resistant to 2 antimicrobials	82	9	65	17
Resistant to 3 antimicrobials	82	22	65	20
Resistant to 4 antimicrobials	82	17	65	4
Resistant to >4 antimicrobials	82	30	65	2

Table Antimicrobial susceptibility testing of Campylobacter in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring

Campylobacter Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	C. coli		C. jejuni	
	yes		yes	
	21		97	
	N	n	N	n
Antimicrobials:				
Fully sensitive	21	2	97	20
Resistant to 1 antimicrobial	21	7	97	21
Resistant to 2 antimicrobials	21	3	97	36
Resistant to 3 antimicrobials	21	6	97	19
Resistant to 4 antimicrobials	21	3	97	1
Resistant to >4 antimicrobials	21	0	97	0

Table Antimicrobial susceptibility testing of Campylobacter in Pigs - at slaughterhouse - animal sample - faeces - Monitoring

Campylobacter Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	C. coli	
	yes	
	106	
	N	n
Fully sensitive	106	2
Resistant to 1 antimicrobial	106	8
Resistant to 2 antimicrobials	106	29
Resistant to 3 antimicrobials	106	40
Resistant to 4 antimicrobials	106	20
Resistant to >4 antimicrobials	106	7

Table Antimicrobial susceptibility testing of Campylobacter in Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring

Campylobacter Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	C. jejuni	
	yes	
	36	
	N	n
Fully sensitive	36	29
Resistant to 1 antimicrobial	36	5
Resistant to 2 antimicrobials	36	2
Resistant to 3 antimicrobials	36	0
Resistant to 4 antimicrobials	36	0
Resistant to >4 antimicrobials	36	0

Table Antimicrobial susceptibility testing of Campylobacter in Meat from turkey - Monitoring

Campylobacter Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Campylobacter spp., unspecified	
	yes	
	5	
Antimicrobials:	N	n
Fully sensitive	5	1
Resistant to 1 antimicrobial	5	0
Resistant to 2 antimicrobials	5	1
Resistant to 3 antimicrobials	5	0
Resistant to 4 antimicrobials	5	1
Resistant to >4 antimicrobials	5	2

Table Antimicrobial susceptibility testing of Campylobacter in Meat from sheep - Monitoring

Campylobacter Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Campylobacter spp., unspecified	
	yes	
	2	
Antimicrobials:	N	n
Fully sensitive	2	0
Resistant to 1 antimicrobial	2	1
Resistant to 2 antimicrobials	2	0
Resistant to 3 antimicrobials	2	0
Resistant to 4 antimicrobials	2	0
Resistant to >4 antimicrobials	2	1

Table Antimicrobial susceptibility testing of C. coli in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

C. coli	Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring																									
	Isolates out of a monitoring program (yes/no)																									
	yes																									
	Number of isolates available in the laboratory																									
Antimicrobials:	21																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Amphenicols - Chloramphenicol	16	21	0										16	5										2	128	
Tetracyclines - Tetracycline	2	21	11							9	1							11						0.5	64	
Fluoroquinolones - Ciprofloxacin	1	21	18					2			1		7	5	3	3								0.125	16	
Quinolones - Nalidixic acid	32	21	18										2	1			1	14	3					1	128	
Aminoglycosides - Streptomycin	4	21	3								15	1	2		1	2								1	128	
Aminoglycosides - Gentamicin	2	21	0						12	9														0.25	32	
Aminoglycosides - Neomycin	2	21	0							17	4													0.5	64	
Penicillins - Ampicillin	16	21	7										3	8	3		7							0.25	32	
Macrolides - Clarithromycin	32	21	1							8	6	5	1					1						0.5	64	
Macrolides - Erythromycin	16	21	1							8	8	3	1					1						0.5	64	
Macrolides - Tulathromycin	16	21	1							20							1							0.5	64	
Sulphonamides - Sulfamethoxazol	256	21	3											8	4	5	1			2	1			8	1024	

Footnote:
The lowest and highest values of MICs tested mentioned in this table are used for all susceptibility tests in campylobacter coli and campylobacter jejuni in all animal species.

Table Antimicrobial susceptibility testing of C. coli in Pigs - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

C. coli Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory		Concentration (µg/ml), number of isolates with a concentration of inhibition equal to																									
		Pigs - at slaughterhouse - animal sample - faeces - Monitoring																									
		yes																									
		106																									
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	16	106	0									9	38	52	7												
Tetracyclines - Tetracycline	2	106	94							6	3	3		1	1	2	3	87									
Fluoroquinolones - Ciprofloxacin	1	106	8					71	23	4			1	6		1											
Quinolones - Nalidixic acid	32	106	9										39	51	7			4	5								
Aminoglycosides - Streptomycin	4	106	89								16	1		2	49	25	4		9								
Aminoglycosides - Gentamicin	2	106	0						47	52	5	2															
Aminoglycosides - Neomycin	2	106	6							70	26	4	5		1												
Penicillins - Ampicillin	16	106	18						1	1	1	3	18	40	24	5	13										
Macrolides - Clarithromycin	32	106	27							4	11	32	27	4	1			27									
Macrolides - Erythromycin	16	106	28							2	17	28	27	4		1	1	26									
Macrolides - Tulathromycin	16	106	28							55	20	2		1		7	13	8									
Sulphonamides - Sulfamethoxazol	256	106	57											20	16	3	3	1	6	34	20	3					

Table Antimicrobial susceptibility testing of C. coli in Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

C. coli	Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring																									
	yes																									
	82																									
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Amphenicols - Chloramphenicol	16	82	3										7	59	13	3										
Tetracyclines - Tetracycline	2	82	79							2	1							79								
Fluoroquinolones - Ciprofloxacin	1	82	73					7	2				2	21	35	15										
Quinolones - Nalidixic acid	32	82	73									1	4	2	2			21	52							
Aminoglycosides - Streptomycin	4	82	58								20	3	1	1	9	33	7	2	6							
Aminoglycosides - Gentamicin	2	82	3						16	55	8						3									
Aminoglycosides - Neomycin	2	82	14							33	34	1		1		1		12								
Penicillins - Ampicillin	16	82	27									1	2	15	37	15	12									
Macrolides - Clarithromycin	32	82	18							1	5	28	18	11	1			18								
Macrolides - Erythromycin	16	82	18							1	6	25	25	7				18								
Macrolides - Tulathromycin	16	82	18							37	23	1	3			2	2	14								
Sulphonamides - Sulfamethoxazol	256	82	38											5	8	20	10	1		14	12	12				

Table Antimicrobial susceptibility testing of *C. jejuni* in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

C. jejuni	Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring																									
	yes																									
	97																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																										
Amphenicols - Chloramphenicol	16	97	0								40	31	16	10												
Tetracyclines - Tetracycline	2	97	45						37	10	5	2	1	2	5	7	28									
Fluoroquinolones - Ciprofloxacin	1	97	52					35	7	2	1	3	3	16	14	16										
Quinolones - Nalidixic acid	16	97	47								9	27	12	2	0	1	16	30								
Aminoglycosides - Streptomycin	2	97	1							93	3	1														
Aminoglycosides - Gentamicin	1	97	1						88	6	2					1										
Aminoglycosides - Neomycin	1	97	1							92	4		1													
Penicillins - Ampicillin	8	97	53							1	5	23	15	10	10	33										
Macrolides - Clarithromycin	8	97	0							29	42	16	9	1												
Macrolides - Erythromycin	4	97	0							34	46	12	5													
Macrolides - Tulathromycin	16	97	0							87	8	1	1													
Sulphonamides - Sulfamethoxazol	256	97	6											1	13	19	33	19	6	4	2					

Table Antimicrobial susceptibility testing of *C. jejuni* in Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

C. jejuni	Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring																									
	yes																									
	36																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																										
Amphenicols - Chloramphenicol	16	36	0								18	17	1													
Tetracyclines - Tetracycline	2	36	4						29		3	1					3									
Fluoroquinolones - Ciprofloxacin	1	36	3					30	2	1		1	2													
Quinolones - Nalidixic acid	16	36	3								9	16	8					3								
Aminoglycosides - Streptomycin	2	36	0							35	1															
Aminoglycosides - Gentamicin	1	36	0						33	1	2															
Aminoglycosides - Neomycin	1	36	1							35						1										
Penicillins - Ampicillin	8	36	1							1	1	4	21	8	1											
Macrolides - Clarithromycin	8	36	0							9	9	12	4	2												
Macrolides - Erythromycin	4	36	0							11	15	7	3													
Macrolides - Tulathromycin	16	36	0							36																
Sulphonamides - Sulfamethoxazol	256	36	0											3	7	6	11	9								

Table Antimicrobial susceptibility testing of *C. jejuni* in Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

C. jejuni	Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring																								
	yes																								
	65																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	65	0									21	35	7	2										
Tetracyclines - Tetracycline	2	65	59							4		2					7	52							
Fluoroquinolones - Ciprofloxacin	1	65	30					29	5	1				12	13	5									
Quinolones - Nalidixic acid	16	65	30									2	21	10	2			9	21						
Aminoglycosides - Streptomycin	2	65	8								55	2	1	3	2	1			1						
Aminoglycosides - Gentamicin	1	65	1						59	1	4		1												
Aminoglycosides - Neomycin	1	65	18							47		3		2	2	6	2	3							
Penicillins - Ampicillin	8	65	21									2	24	18	3	1	17								
Macrolides - Clarithromycin	8	65	0							5	30	25	5												
Macrolides - Erythromycin	4	65	1							10	33	16	5	1											
Macrolides - Tulathromycin	16	65	1							52	9	3				1									
Sulphonamides - Sulfamethoxazol	256	65	0												5	15	26	17	2						

Table Antimicrobial susceptibility testing of *Campylobacter* spp., unspecified in Meat from pig - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to																											
Campylobacter spp., unspecified		Meat from pig - Monitoring																									
		yes																									
		4																									
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol		4	4	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0				
Tetracyclines - Tetracycline		4	4	0	0	0	0	0	0	1	0	0	0	0	0	0	2	1	0	0	0	0	0				
Fluoroquinolones - Ciprofloxacin		4	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Quinolones - Nalidixic acid		4	4	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0				
Aminoglycosides - Streptomycin		4	4	0	0	0	0	0	0	0	1	0	0	0	2	1	0	0	0	0	0	0	0				
Aminoglycosides - Gentamicin		4	4	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
Aminoglycosides - Neomycin		4	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0				
Penicillins - Ampicillin		4	4	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0				
Macrolides - Clarithromycin		4	4	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0				
Macrolides - Erythromycin		4	4	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0				
Macrolides - Tulathromycin		4	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0				
Sulphonamides - Sulfamethoxazol		3	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0				

Table Antimicrobial susceptibility testing of *Campylobacter* spp., unspecified in Meat from bovine animals - Monitoring - quantitative data
[Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Campylobacter spp., unspecified	Meat from bovine animals - Monitoring																										
	yes																										
	2																										
	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol		2	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0				
Tetracyclines - Tetracycline		2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0				
Fluoroquinolones - Ciprofloxacin		2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0				
Quinolones - Nalidixic acid		2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0				
Aminoglycosides - Streptomycin		2	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0				
Aminoglycosides - Gentamicin		2	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Aminoglycosides - Neomycin		2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
Penicillins - Ampicillin		2	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0				
Macrolides - Clarithromycin		2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0				
Macrolides - Erythromycin		2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0				
Macrolides - Tulathromycin		2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0				
Sulphonamides - Sulfamethoxazol		2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0				

Table Antimicrobial susceptibility testing of Campylobacter spp., unspecified in Meat from sheep - Monitoring (sheep and lamb) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Campylobacter spp., unspecified	Meat from sheep - Monitoring (sheep and lamb)																										
	yes																										
	2																										
	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol		2	2	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0				
Tetracyclines - Tetracycline		2	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0				
Fluoroquinolones - Ciprofloxacin		2	2	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0				
Quinolones - Nalidixic acid		2	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0				
Aminoglycosides - Streptomycin		2	2	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0				
Aminoglycosides - Gentamicin		2	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0				
Aminoglycosides - Neomycin		2	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0				
Penicillins - Ampicillin		2	2	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0				
Macrolides - Clarithromycin		2	2	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0				
Macrolides - Erythromycin		2	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0				
Macrolides - Tulathromycin		2	2	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0				
Sulphonamides - Sulfamethoxazol		2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0				

Table Antimicrobial susceptibility testing of *Campylobacter* spp., unspecified in Meat from turkey - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Campylobacter spp., unspecified	Meat from turkey - Monitoring																									
	yes																									
	5																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																										
Amphenicols - Chloramphenicol		5	5	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0			
Tetracyclines - Tetracycline		5	5	0	0	0	0	0	0	2	0	0	0	0	0	0	1	2	0	0	0	0	0			
Fluoroquinolones - Ciprofloxacin		5	5	0	0	0	0	0	1	0	0	0	1	1	2	0	0	0	0	0	0	0	0			
Quinolones - Nalidixic acid		5	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	0	0	0	0			
Aminoglycosides - Streptomycin		5	5	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0			
Aminoglycosides - Gentamicin		5	5	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Aminoglycosides - Neomycin		5	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0			
Penicillins - Ampicillin		5	5	0	0	0	0	0	0	0	0	0	3	0	1	0	1	0	0	0	0	0	0			
Macrolides - Clarithromycin		5	5	0	0	0	0	0	0	1	2	1	0	0	0	0	0	1	0	0	0	0	0			
Macrolides - Erythromycin		5	5	0	0	0	0	0	0	3	0	1	0	0	0	0	0	1	0	0	0	0	0			
Macrolides - Tulathromycin		5	5	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	0	0			
Sulphonamides - Sulfamethoxazol		5	5	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0	0	0			

Table Antimicrobial susceptibility testing of *Campylobacter* spp., unspecified in Meat from broilers (*Gallus gallus*) - Monitoring - quantitative data
 [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

Campylobacter spp., unspecified	Meat from broilers (Gallus gallus) - Monitoring																									
	yes																									
	28																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:		28	28	0	0	0	0	0	0	0	0	13	7	6	2	0	0	0	0	0	0	0	0			
Amphenicols - Chloramphenicol		28	28	0	0	0	0	0	0	0	0	13	7	6	2	0	0	0	0	0	0	0	0			
Tetracyclines - Tetracycline		28	28	0	0	0	0	0	0	12	2	1	0	0	0	0	8	5	0	0	0	0	0			
Fluoroquinolones - Ciprofloxacin		28	28	0	0	0	0	10	2	0	0	3	0	7	3	3	0	0	0	0	0	0	0			
Quinolones - Nalidixic acid		28	28	0	0	0	0	0	0	0	0	3	7	1	0	0	1	6	10	0	0	0	0			
Aminoglycosides - Streptomycin		28	28	0	0	0	0	0	0	0	22	1	0	1	0	2	0	1	1	0	0	0	0			
Aminoglycosides - Gentamicin		28	28	0	0	0	0	0	24	1	0	1	1	0	1	0	0	0	0	0	0	0	0			
Aminoglycosides - Neomycin		28	28	0	0	0	0	0	0	24	0	0	1	0	0	0	1	2	0	0	0	0	0			
Penicillins - Ampicillin		28	28	0	0	0	0	0	1	0	2	2	5	9	0	1	8	0	0	0	0	0	0			
Macrolides - Clarithromycin		28	28	0	0	0	0	0	0	11	10	3	1	0	0	0	0	3	0	0	0	0	0			
Macrolides - Erythromycin		28	28	0	0	0	0	0	0	17	3	5			0	0	0	3	0	0	0	0	0			
Macrolides - Tulathromycin		28	28	0	0	0	0	0	0	20	2	0	0	0	2	1	0	3	0	0	0	0	0			
Sulphonamides - Sulfamethoxazol		24	24	0	0	0	0	0	0	0	0	0	0	2	3	5	7	4	3	0	0	0	0			

Table Antimicrobial susceptibility testing of *C. jejuni* in Meat from broilers (*Gallus gallus*) - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

C. jejuni	Meat from broilers (Gallus gallus) - Monitoring																									
	yes																									
	171																									
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Amphenicols - Chloramphenicol	16	171	1	0	0	0	0	0	0	0	0	81	46	29	14	0	1	0	0	0	0	0	0			
Tetracyclines - Tetracycline	2	801	80	0	0	0	0	0	0	711	2	8	3	2	2	2	19	52	0	0	0	0	0			
Fluoroquinolones - Ciprofloxacin	1	171	96	0	0	0	0	66	7	2	0	1	3	39	24	29	0	0	0	0	0	0	0			
Quinolones - Nalidixic acid	16	171	96	0	0	0	0	0	0	0	1	18	47	8	1	0	0	33	63	0	0	0	0			
Aminoglycosides - Streptomycin	2	171	5	0	0	0	0	0	0	0	164	2	0	2	0	0	3	0	0	0	0	0	0			
Aminoglycosides - Gentamicin	1	171	0	0	0	0	0	0	167	2	2	0	0	0	0	0	0	0	0	0	0	0	0			
Aminoglycosides - Neomycin	1	171	5	0	0	0	0	0	0	165	1	0	0	1	4	0	0	0	0	0	0	0	0			
Penicillins - Ampicillin	8	171	97	0	0	0	0	0	1	0	0	14	37	22	12	18	67	0	0	0	0	0	0			
Macrolides - Clarithromycin	8	171	1	0	0	0	0	0	0	29	116	22	3	0	0	0	0	1	0	0	0	0	0			
Macrolides - Erythromycin	4	171	1	0	0	0	0	0	0	102	55	12	1	0	0	0	0	1	0	0	0	0	0			
Macrolides - Tulathromycin	4	171	4	0	0	0	0	0	0	138	28	1	0	3	0	1	0		0	0	0	0	0			
Sulphonamides - Sulfamethoxazol	32	168	105	0	0	0	0	0	0	0	0	0	0	7	21	35	48	40	15	2	0	0	0			

Table Antimicrobial susceptibility testing of *C. coli* in Meat from broilers (*Gallus gallus*) - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

C. coli	Meat from broilers (Gallus gallus) - Monitoring																									
	yes																									
	61																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																										
Amphenicols - Chloramphenicol	16	61	0	0	0	0	0	0	0	0	0	9	22	29	1	0	0	0	0	0	0	0	0			
Tetracyclines - Tetracycline	2	61	51	0	0	0	0	0	0	5	5	0	0	0	0	0	0	51	0	0	0	0	0			
Fluoroquinolones - Ciprofloxacin	1	50	50	0	0	0	0	0	0	0	0	0	4	15	20	11	0	0	0	0	0	0	0			
Quinolones - Nalidixic acid	32	49	38	0	0	0	0	0	0	0	0	0	7	3	1	0	0	38								
Aminoglycosides - Streptomycin	4	61	6	0	0	0	0	0	0	0	50	5	0	1	2	3	0	0	0	0	0	0	0			
Aminoglycosides - Gentamicin	2	61	0	0	0	0	0	0	53	8	0	0	0	0	0	0	0	0	0	0	0	0	0			
Aminoglycosides - Neomycin	2	61	5	0	0	0	0	0	0	56	0	0	0	1	2	1	1	0	0	0	0	0	0			
Penicillins - Ampicillin	16	61	28	0	0	0	0	0	0	0	0	0	3	19	11	3	25	0	0	0	0	0	0			
Macrolides - Clarithromycin	8	61	24	0	0	0	0	0	0	9	8	14	6	0	0	0	2	22	0	0	0	0	0			
Macrolides - Erythromycin	16	61	24	0	0	0	0	0	0	11	7	16	3	0	0	0	1	23	0	0	0	0	0			
Macrolides - Tulathromycin	4	61	24	0	0	0	0	0	0	34	2	1	0	0	0	2	10	12	0	0	0	0	0			
Sulphonamides - Sulfamethoxazol	64	61	12	0	0	0	0	0	0	0	0	0	0	6	8	22	13	3	0	9	0	0	0			

Table Cut-off values used for antimicrobial susceptibility testing of *C. coli* in Animals

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline	EUCAST	2	
Fluoroquinolones	Ciprofloxacin	EUCAST	1	
Quinolones	Nalidixic acid	EUCAST	32	
Aminoglycosides	Gentamicin	EUCAST	2	
	Streptomycin	EUCAST	4	
	Neomycin	EUCAST	2	
Macrolides	Erythromycin	EUCAST	16	
	Clarithromycin	EUCAST	32	
	Tulathromycin	EUCAST	16	
Penicillins	Ampicillin	EUCAST	16	
Sulphonamides	Sulfamethoxazol	EUCAST	256	
Amphenicols	Chloramphenicol	EUCAST	16	

Table Cut-off values used for antimicrobial susceptibility testing of C. coli in Animals

Table Cut-off values used for antimicrobial susceptibility testing of *C. coli* in Feed

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline		2	
Fluoroquinolones	Ciprofloxacin		1	
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Macrolides	Erythromycin		16	

Table Cut-off values used for antimicrobial susceptibility testing of *C. coli* in Food

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI ISO 20776		

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline	CD 2007-516-EC	2	
Fluoroquinolones	Ciprofloxacin	CD 2007-516-EC	1	
Quinolones	Nalidixic acid	EUCAST	32	
Aminoglycosides	Gentamicin	CD 2007-516-EC	2	
	Streptomycin	EUCAST	4	
	Neomycin	EUCAST	2	
Macrolides	Erythromycin	CD 2007-516-EC	16	
	Clarithromycin	own	8	
	Tulathromycin	own	4	
Penicillins	Ampicillin	EUCAST	16	
Sulphonamides	Sulfamethoxazol	own	64	
Amphenicols	Chloramphenicol	EUCAST	16	

Table Cut-off values used for antimicrobial susceptibility testing of C. coli in Food

Table Cut-off values used for antimicrobial susceptibility testing of *C. jejuni* in Animals

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline	EUCAST	2	
Fluoroquinolones	Ciprofloxacin	EUCAST	1	
Quinolones	Nalidixic acid	EUCAST	16	
Aminoglycosides	Gentamicin	EUCAST	1	
	Streptomycin	EUCAST	2	
	Neomycin	EUCAST	1	
Macrolides	Erythromycin	EUCAST	4	
	Clarithromycin	EUCAST	8	
	Tulathromycin	EUCAST	16	
Penicillins	Ampicillin	EUCAST	8	
Sulphonamides	Sulfamethoxazol	EUCAST	256	
Amphenicols	Chloramphenicol	EUCAST	16	

Table Cut-off values used for antimicrobial susceptibility testing of *C. jejuni* in Animals

Test Method Used	Standard methods used for testing

Tetracyclines	Tetracycline		2	
Fluoroquinolones	Ciprofloxacin		1	
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
Macrolides	Erythromycin		4	

Table Cut-off values used for antimicrobial susceptibility testing of *C. jejuni* in Food

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI ISO 20776		

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline	CD 2007-516-EC	2	
Fluoroquinolones	Ciprofloxacin	CD 2007-516-EC	1	
Quinolones	Nalidixic acid	EUCAST	16	
Aminoglycosides	Gentamicin	CD 2007-516-EC	1	
	Streptomycin	EUCAST	2	
	Neomycin	EUCAST	1	
Macrolides	Erythromycin	CD 2007-516-EC	4	
	Clarithromycin	own	8	
	Tulathromycin	own	4	
Penicillins	Ampicillin	EUCAST	8	
Sulphonamides	Sulfamethoxazol	own	32	
Amphenicols	Chloramphenicol	EUCAST	16	

Table Cut-off values used for antimicrobial susceptibility testing of *C. jejuni* in Food

2.3 LISTERIOSIS

2.3.1 General evaluation of the national situation

2.3.2 Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but ≤ 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses made from cows' milk - hard - made from pasteurised milk - at retail ¹⁾	VWA	Single	25g	6	0	2	0	6	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail ²⁾	VWA	Single	25g	388	0	374	0	382	0	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at retail ³⁾	VWA	Single	25g	35	0	35	0	35	0	0
Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk - at retail ⁴⁾	VWA	Single	25g	3	0	3	0	3	0	0
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at retail ⁵⁾	VWA	Single	25g	6	0	6	0	6	0	0

Comments:

¹⁾ objective sampling

²⁾ objective sampling

³⁾ objective sampling

Table Listeria monocytogenes in milk and dairy products

Comments:

⁴⁾ objective sampling

⁵⁾ objective sampling

Table *Listeria monocytogenes* in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for <i>L. monocytogenes</i>	Units tested with detection method	<i>Listeria monocytogenes</i> presence in x g	Units tested with enumeration method	> detection limit but ≤ 100 cfu/g	<i>L. monocytogenes</i> > 100 cfu/g
Meat from bovine animals - fresh ¹⁾	VWA	Single	25g	153	2	0	0	153	1	1
Meat from broilers (<i>Gallus gallus</i>) - meat products - cooked, ready-to-eat - at retail ²⁾	VWA	Single	25g	49	2	45	2	49	0	0
Fish - smoked - at retail (eel, objective sampling)	VWA	Single	25g	111	5	111	5	109	0	0
Fish - smoked - at retail (herring, objective sampling)	VWA	Single	25g	125	4	121	4	125	0	0
Fish - smoked - at retail (mackerel, objective sampling)	VWA	Single	25g	346	4	345	4	346	1	0
Fish - smoked - at retail (salmon, objective sampling)	VWA	Single	25g	320	45	309	45	320	3	1
Fish - smoked - at retail (trout, objective sampling)	VWA	Single	25g	115	3	115	3	114	0	0
Meat from bovine animals - meat preparation - intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	1209	3	3	0	1209	3	0
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	31	0	4	0	31	0	0
Meat from pig - meat preparation - intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	219	25	219	25	9	1	0
Meat from pig - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	106	11	105	11	106	0	0

Comments:

Table Listeria monocytogenes in other foods

Comments:

- 1) at retail, objective sampling
- 2) objective sampling

2.3.3 Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals) ¹⁾	GD	Animal	2807	29		29
Gallus gallus (fowl) ²⁾	GD	Animal	1544	0		
Goats ³⁾	GD	Animal	400	17		17
Pigs ⁴⁾	GD	Animal	3505	0		
Sheep ⁵⁾	GD	Animal	405	9		9
Other animals - exotic pet animals - in total - Clinical investigations ⁶⁾	VMDC	Animal	313	1	1	

Comments:

¹⁾ clinical invest

²⁾ clinical invest

³⁾ clinical invest

⁴⁾ clincial invest

⁵⁾ clinical invest

⁶⁾ post mortem, organs

2.4 E. COLI INFECTIONS

2.4.1 General evaluation of the national situation

2.4.2 Escherichia coli, pathogenic in foodstuffs

Table VT E. coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from bovine animals - fresh - at retail ¹⁾	VWA	Single	25g	620	0	0	0	0
Meat from bovine animals - minced meat - intended to be eaten raw - at retail ²⁾	VWA	Single	25g	120	0	0	0	0
Meat from pig - fresh ³⁾	VWA	Single	25g	642	0	0	0	0
Meat from pig - minced meat - intended to be eaten raw ⁴⁾	VWA	Single	25g	5	0	0	0	0
Meat from sheep - fresh - at retail ⁵⁾	VWA	Single	25g	121	0	0	0	0
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	7	0	0	0	0
Meat from bovine animals - meat preparation - intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	1189	1	1	0	0
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	30	0	0	0	0

Table VT E. coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	78	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (antelope, objective sampling)	VWA	Single	25g	4	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (antidorcas marsupialis, objective sampling)	VWA	Single	25g	34	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (bison, objective sampling)	VWA	Single	25g	30	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (blesbok, objective sampling)	VWA	Single	25g	13	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (chamois, objective sampling)	VWA	Single	25g	1	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (crocodile, objective sampling)	VWA	Single	25g	16	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (deer, objective sampling)	VWA	Single	25g	2	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (equus africanus, objective sampling)	VWA	Single	25g	1	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (impala, objective sampling)	VWA	Single	25g	11	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (kangaroo, objective sampling)	VWA	Single	25g	56	0	0	0	0

Table VT E. coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from other animal species or not specified - fresh - at retail (kudu, objective sampling)	VWA	Single	25g	17	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (orix, objective sampling)	VWA	Single	25g	1	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (ostrich, objective sampling)	VWA	Single	25g	54	0	0	0	0
Meat from other animal species or not specified - fresh - at retail (ovis ammon, objective sampling)	VWA	Single	25g	1	0	0	0	0
Meat from pig - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	8	0	0	0	0
Meat from pig - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	95	1	1	0	0
Meat, mixed meat - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	164	0	0	0	0

Comments:

- ¹⁾ objective sampling
- ²⁾ objective sampling
- ³⁾ at retail, objective sampling
- ⁴⁾ at retail, objective sampling
- ⁵⁾ objective sampling

2.4.3 Escherichia coli, pathogenic in animals

Table VT E. coli in animals

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Cattle (bovine animals) - calves (under 1 year) ¹⁾	VWA	Holding	25g	182	32	32		
Cattle (bovine animals) - dairy cows - at farm ²⁾	VWA	Herd	25g	16	1	1		
Cattle (bovine animals) - calves (under 1 year) - at farm (5 for herd)	VWA	Herd	25g	864	67	67		
Cattle (bovine animals) - meat production animals - at slaughterhouse - animal sample - Survey (swab hide, 400cm ²) ³⁾	VWA	Animal		9999	27	27		

Comments:

¹⁾ faeces at farm

²⁾ 5 for herd

³⁾ the number of units tested is unknown, 9999 is fictive

2.4.4 Antimicrobial resistance in Escherichia coli, pathogenic isolates

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Humans

Escherichia coli, pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Verotoxigenic E. coli (VTEC) - VTEC O157	
	yes	
	58	
Antimicrobials:	N	n
Fully sensitive	58	50
Resistant to 1 antimicrobial	58	1
Resistant to 2 antimicrobials	58	4
Resistant to 3 antimicrobials	58	1
Resistant to 4 antimicrobials	58	1
Resistant to >4 antimicrobials	58	1

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Meat from bovine animals - Monitoring

Escherichia coli, pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, pathogenic, unspecified	
	yes	
	37	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	37	1
Amphenicols - Florfenicol	37	0
Tetracyclines - Tetracycline	37	3
Fluoroquinolones - Ciprofloxacin	37	0
Quinolones - Nalidixic acid	37	0
Trimethoprim	37	1
Aminoglycosides - Streptomycin	37	2
Aminoglycosides - Gentamicin	37	0
Aminoglycosides - Kanamycin	37	2
Cephalosporins - Cefotaxim	37	0
Cephalosporins - Ceftazidim	37	0
Fully sensitive	37	29
Polymyxins - Colistin	37	0
Resistant to 1 antimicrobial	37	4
Resistant to 2 antimicrobials	37	2
Resistant to 3 antimicrobials	37	0
Resistant to 4 antimicrobials	37	1
Resistant to >4 antimicrobials	37	1
Sulphonamides - Sulfamethoxazol	37	7

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Meat from bovine animals - Monitoring

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Meat from pig - Monitoring

Escherichia coli, pathogenic	E.coli, pathogenic, unspecified	
	yes	
	8	
	N	n
Isolates out of a monitoring program (yes/no)		
Number of isolates available in the laboratory		
Antimicrobials:		
Amphenicols - Chloramphenicol	8	0
Amphenicols - Florfenicol	8	0
Tetracyclines - Tetracycline	8	4
Fluoroquinolones - Ciprofloxacin	8	0
Quinolones - Nalidixic acid	8	0
Trimethoprim	8	2
Aminoglycosides - Streptomycin	8	2
Aminoglycosides - Gentamicin	8	0
Aminoglycosides - Kanamycin	8	1
Penicillins - Ampicillin	8	1
Cephalosporins - Cefotaxim	8	0
Cephalosporins - Ceftazidim	8	0
Fully sensitive	8	4
Polymyxins - Colistin	8	0
Resistant to 1 antimicrobial	8	1
Resistant to 2 antimicrobials	8	0
Resistant to 3 antimicrobials	8	1
Resistant to 4 antimicrobials	8	1
Resistant to >4 antimicrobials	8	1

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Meat from pig - Monitoring

Escherichia coli, pathogenic	E.coli, pathogenic, unspecified	
	yes	
	8	
	N	n
Antimicrobials:		
Sulphonamides - Sulfamethoxazol	8	3

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Meat from broilers (Gallus gallus) - Monitoring

Escherichia coli, pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, pathogenic, unspecified	
	yes	
	277	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	277	52
Amphenicols - Florfenicol	277	10
Tetracyclines - Tetracycline	277	156
Fluoroquinolones - Ciprofloxacin	277	119
Quinolones - Nalidixic acid	277	114
Trimethoprim	277	129
Aminoglycosides - Streptomycin	277	148
Aminoglycosides - Gentamicin	277	23
Aminoglycosides - Kanamycin	277	43
Penicillins - Ampicillin	277	180
Cephalosporins - Cefotaxim	277	52
Cephalosporins - Ceftazidim	277	49
Fully sensitive	277	36
Polymyxins - Colistin	277	0
Resistant to 1 antimicrobial	277	19
Resistant to 2 antimicrobials	277	26
Resistant to 3 antimicrobials	277	26
Resistant to 4 antimicrobials	277	38
Resistant to >4 antimicrobials	277	132

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Meat from broilers (Gallus gallus) - Monitoring

Escherichia coli, pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	E.coli, pathogenic, unspecified	
	yes	
	277	
	N	n
Sulphonamides - Sulfamethoxazol	277	172

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Cattle (bovine animals) - Monitoring (cow, hide isolates)

Escherichia coli, pathogenic	Verotoxigenic E. coli (VTEC) - VTEC O157	
	Isolates out of a monitoring program (yes/no)	
	yes	
Antimicrobials:	Number of isolates available in the laboratory	
	N	n
Amphenicols - Chloramphenicol	35	2
Amphenicols - Florfenicol	35	0
Tetracyclines - Tetracycline	35	4
Fluoroquinolones - Ciprofloxacin	35	0
Quinolones - Nalidixic acid	35	0
Trimethoprim	35	2
Aminoglycosides - Streptomycin	35	4
Aminoglycosides - Gentamicin	35	0
Aminoglycosides - Kanamycin	35	2
Penicillins - Ampicillin	35	2
Cephalosporins - Cefotaxim	35	0
Cephalosporins - Ceftazidim	35	0
Fully sensitive	35	31
Polymyxins - Colistin	35	0
Resistant to 1 antimicrobial	35	0
Resistant to 2 antimicrobials	35	0
Resistant to 3 antimicrobials	35	2
Resistant to 4 antimicrobials	35	0
Resistant to >4 antimicrobials	35	2

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Cattle (bovine animals) - Monitoring (cow, hide isolates)

Escherichia coli, pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Verotoxigenic E. coli (VTEC) - VTEC O157	
	yes	
	35	
Antimicrobials:	N	n
Sulphonamides - Sulfamethoxazol	35	4

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Cattle (bovine animals) - calves (under 1 year) - Monitoring (faeces isolates)

Escherichia coli, pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Verotoxigenic E. coli (VTEC) - VTEC O157	
	yes	
	67	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	67	0
Amphenicols - Florfenicol	67	0
Tetracyclines - Tetracycline	67	10
Fluoroquinolones - Ciprofloxacin	67	0
Quinolones - Nalidixic acid	67	0
Trimethoprim	67	4
Aminoglycosides - Streptomycin	67	11
Aminoglycosides - Gentamicin	67	0
Aminoglycosides - Kanamycin	67	4
Penicillins - Ampicillin	67	5
Cephalosporins - Cefotaxim	67	0
Cephalosporins - Ceftazidim	67	0
Fully sensitive	67	56
Polymyxins - Colistin	67	0
Resistant to 1 antimicrobial	67	0
Resistant to 2 antimicrobials	67	0
Resistant to 3 antimicrobials	67	6
Resistant to 4 antimicrobials	67	0

Table Antimicrobial susceptibility testing of Escherichia coli, pathogenic in Cattle (bovine animals) - calves (under 1 year) - Monitoring (faeces isolates)

Escherichia coli, pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Verotoxigenic E. coli (VTEC) - VTEC O157	
	yes	
	67	
Antimicrobials:	N	n
Resistant to >4 antimicrobials	67	5
Sulphonamides - Sulfamethoxazol	67	11

Table Antimicrobial susceptibility testing of E.coli, pathogenic, unspecified in Meat from bovine animals - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E.coli, pathogenic, unspecified	Meat from bovine animals - Monitoring																									
	yes																									
	37																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																										
Amphenicols - Chloramphenicol	16	37	1	0	0	0	0	0	0	0	0	3	30	3	0	0	1	0	0	0	0	0	0	2	64	
Amphenicols - Florfenicol	16	37	0	0	0	0	0	0	0	0	0	3	33	1	0	0	0	0	0	0	0	0	0	2	64	
Tetracyclines - Tetracycline	8	37	3	0	0	0	0	0	0	1	14	18	1	0	0	1	2	0	0	0	0	0	0	1	64	
Fluoroquinolones - Ciprofloxacin	0.003	37	37	1	27	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	8	
Quinolones - Nalidixic acid	16	37	0	0	0	0	0	0	0	0	0	36	1	0	0	0	0	0	0	0	0	0	0	46		
Trimethoprim	2	37	1	0	0	0	0	0	30	5	1	0	0	0	0	1	0	0	0	0	0	0	0	0.5	32	
Aminoglycosides - Streptomycin	16	37	2	0	0	0	0	0	0	0	0	0	32	3	0	0	0	2	0	0	0	0	0	2	128	
Aminoglycosides - Gentamicin	4	37	0	0	0	0	0	1	23	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	32	
Aminoglycosides - Kanamycin	8	37	1	0	0	0	0	0	0	0	0	35	0	1	0	0	0	1	0	0	0	0	0	4	128	
Penicillins - Ampicillin	8	37	1	0	0	0	0	0	0	1	8	26	0	1	0	1	0	0	0	0	0	0	0	0.5	32	
Cephalosporins - Cefotaxim	0.25	37	0	0	0	32	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.06	4	
Cephalosporins - Ceftazidim	0.5	37	0	0	0	0	0	36	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	16	
Polymyxins - Colistin	2	37	0	0	0	0	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	2	4	
Sulphonamides - Sulfamethoxazol	128	37	7	0	0	0	0	0	0	0	0	0	2	9	19	0	0	0	0	0	7	0	0	8	1024	

Table Antimicrobial susceptibility testing of Verotoxigenic E. coli (VTEC) - VTEC O157 in Humans - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

VTEC O157 Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory		Humans																									
		yes																									
		58																									
		Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:	16	58	1	0	0	0	0	0	0	0	0	0	1	54	2	0	0	1	0	0	0	0	0	2	64		
Amphenicols - Chloramphenicol	16	58	1	0	0	0	0	0	0	0	0	0	15	42	0	0	0	1	0	0	0	0	0	2	64		
Amphenicols - Florfenicol	8	58	3	0	0	0	0	0	0	0	0	40	14	1	0	0	1	2	0	0	0	0	0	1	64		
Tetracyclines - Tetracycline	0.06	58	0	0	37	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	8		
Fluoroquinolones - Ciprofloxacin	16	58	0	0	0	0	0	0	0	0	0	0	58	0	0	0	0	0	0	0	0	0	0	4	64		
Quinolones - Nalidixic acid	2	58	1	0	0	0	0	0	0	57	0	0	0	0	0	0	1	0	0	0	0	0	0	0.5	32		
Trimethoprim	16	58	6	0	0	0	0	0	0	0	0	4	41	7	0	1	0	2	3	0	0	0	0	2	128		
Aminoglycosides - Streptomycin	2	58	0	0	0	0	0	0	26	27	4	1	0	0	0	0	0	0	0	0	0	0	0	0.25	32		
Aminoglycosides - Gentamicin	8	58	0	0	0	0	0	0	0	0	0	0	56	2	0	0	0	0	0	0	0	0	0	4	128		
Aminoglycosides - Kanamycin	8	58	3	0	0	0	0	0	0	0	0	12	43	0	0	0	3	0	0	0	0	0	0	0.5	32		
Penicillins - Ampicillin	0.25	58	1	0	0	0	53	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0.06	4		
Cephalosporins - Cefotaxim	0.5	58	2	0	0	0	0	0	55	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0.25	16		
Cephalosporins - Ceftazidim	256	58	6	0	0	0	0	0	0	0	0	0	0	51	1	0	0	0	0	0	0	6	0	8	1024		
Sulphonamides - Sulfamethoxazol																											

Table Antimicrobial susceptibility testing of E.coli, pathogenic, unspecified in Meat from pig - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E.coli, pathogenic, unspecified	Meat from pig																								
	yes																								
	8																								
Antimicrobials:	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	8	0	0	0	0	0	0	0	0	0	1	6	1	0	0	0	0	0	0	0	0	0	2	64
Amphenicols - Florfenicol	16	8	0	0	0	0	0	0	0	0	0	2	5	1	0	0	0	0	0	0	0	0	0	2	64
Tetracyclines - Tetracycline	8	8	4	0	0	0	0	0	0	0	0	4	0	0	1	0	3	0	0	0	0	0	0	1	64
Fluoroquinolones - Ciprofloxacin	0.003	8	8	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	8
Quinolones - Nalidixic acid	16	8	0	0	0	0	0	0	0	0	0	7	1	0	0	0	0	0	0	0	0	0	0	4	64
Trimethoprim	2	6	0	0	0	0	0	0	3	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0.5	32
Aminoglycosides - Streptomycin	16	8	2	0	0	0	0	0	0	0	0	0	4	2	0	0	0	2	0	0	0	0	0	2	128
Aminoglycosides - Gentamicin	4	8	0	0	0	0	0	2	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	32
Aminoglycosides - Kanamycin	8	8	1	0	0	0	0	0	0	0	0	6	1	0	0	0	0	1	0	0	0	0	0	4	128
Penicillins - Ampicillin	8	8	1	0	0	0	0	0	0	0	4	2	1	0	0	1	0	0	0	0	0	0	0	0.5	32
Cephalosporins - Cefotaxim	0.25	8	0	0	0	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.06	4
Cephalosporins - Ceftazidim	0.5	8	0	0	0	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	16
Polymyxins - Colistin	2	8	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	2	4
Sulphonamides - Sulfamethoxazol	128	8	3	0	0	0	0	0	0	0	0	0	2	1	1	1	0	0	0	0	3	0	0	8	1024

Table Antimicrobial susceptibility testing of E.coli, pathogenic, unspecified in Meat from broilers (Gallus gallus) - Monitoring - quantitative data
[Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E.coli, pathogenic, unspecified	Meat from broilers (Gallus gallus) - Monitoring																										
	yes																										
	277																										
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Antimicrobials:																											
Amphenicols - Chloramphenicol	16	277	40	0	0	0	0	0	0	0	0	26	168	31	12	10	30	0	0	0	0	0	0	2	64		
Amphenicols - Florfenicol	16	277	3	0	0	0	0	0	0	0	0	39	181	47	7	0	3	0	0	0	0	0	0	2	64		
Tetracyclines - Tetracycline	8	277	156	0	0	0	0	0	0	9	62	45	5	0	2	36	118	0	0	0	0	0	0	1	64		
Fluoroquinolones - Ciprofloxacin	0.003	277	277	103	55	2	7	51	26	6	3	2	4	18	0	0	0	0	0	0	0	0	0	0.008	8		
Quinolones - Nalidixic acid	16	277	111	0	0	0	0	0	0	0	0	155	7	1	3	7	104	0	0	0	0	0	0	4	64		
Trimethoprim	2	277	129	0	0	0	0	0	109	26	13	0	1	0	0	128	0	0	0	0	0	0	0	0.5	32		
Aminoglycosides - Streptomycin	16	277	128	0	0	0	0	0	0	0	0	13	79	37	20	22	20	86	0	0	0	0	0	2	128		
Aminoglycosides - Gentamicin	4	277	19	0	0	0	0	11	108	115	20	4	0	5	7	7	0	0	0	0	0	0	0	0.25	32		
Penicillins - Ampicillin	8	277	178	0	0	0	0	0	0	2	21	59	15	2	0	178	0	0	0	0	0	0	0	0.5	32		
Cephalosporins - Cefotaxim	0.25	277	51	0	0	142	74	9	1	1	5	11	34	0	0	0	0	0	0	0	0	0	0	0.06	4		
Cephalosporins - Ceftazidim	0.5	277	40	0	0	0	0	201	27	9	7	7	13	10	3	0	0	0	0	0	0	0	0	0.25	16		
Polymyxins - Colistin	2	277	0	0	0	0	0	0	0	0	277	0	0	0	0	0	0	0	0	0	0	0	0	2	4		
Sulphonamides - Sulfamethoxazol	128	277	172	0	0	0	0	0	0	0	0	0	9	12	68	13	3	0	0	2	170	0	0	8	1024		

Table Antimicrobial susceptibility testing of Verotoxigenic E. coli (VTEC) - VTEC O157 in Cattle (bovine animals) - Monitoring (cow. hide isolates) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

VTEC O157	Cattle (bovine animals) - Monitoring (cow. hide isolates)																									
	yes																									
	35																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Amphenicols - Chloramphenicol	16	35	2	0	0	0	0	0	0	0	0	33	0	0	0	2	0	0	0	0	0	0	2	64		
Amphenicols - Florfenicol	16	35	0	0	0	0	0	0	0	0	0	10	25	0	0	0	0	0	0	0	0	0	2	64		
Tetracyclines - Tetracycline	8	35	4	0	0	0	0	0	0	0	7	24	0	0	0	0	4	0	0	0	0	0	1	64		
Fluoroquinolones - Ciprofloxacin	0.003	35	35	20	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	8		
Quinolones - Nalidixic acid	16	35	0	0	0	0	0	0	0	0	0	33	2	0	0	0	0	0	0	0	0	0	4	64		
Trimethoprim	2	35	2	0	0	0	0	0	33	0	0	0	0	0	0	2	0	0	0	0	0	0	0.5	32		
Aminoglycosides - Streptomycin	16	35	4	0	0	0	0	0	0	0	0	23	7	1	0	2	1	1	0	0	0	0	2	128		
Aminoglycosides - Gentamicin	4	35	0	0	0	0	0	7	23	5	0	0	0	0	0	0	0	0	0	0	0	0	0.25	32		
Aminoglycosides - Kanamycin	8	35	2	0	0	0	0	0	0	0	0	32	1	0	0	0	0	2	0	0	0	0	4	128		
Penicillins - Ampicillin	8	35	2	0	0	0	0	0	0	0	0	33	0	0	0	2	0	0	0	0	0	0	0.5	32		
Cephalosporins - Cefotaxim	0.25	35	0	0	0	35	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0.06	4		
Cephalosporins - Ceftazidim	0.5	35	0	0	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	16		
Polymyxins - Colistin	2	35	0	0	0	0	0	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0	2	4		
Sulphonamides - Sulfamethoxazol	128	35	4	0	0	0	0	0	0	0	0	0	13	15	3	0	0	0	0	0	4	0	0	8	1024	

Table Antimicrobial susceptibility testing of Verotoxigenic E. coli (VTEC) - VTEC O157 in Cattle (bovine animals) - calves (under 1 year) - Monitoring (faeces isolates) - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

VTEC O157	Cattle (bovine animals) - calves (under 1 year) - Monitoring (faeces isolates)																										
	yes																										
	67																										
	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	16	67	3	0	0	0	0	0	0	0	0	0	63	1	0	0	3	0	0	0	0	0	0	2	64		
Amphenicols - Florfenicol	16	67	0	0	0	0	0	0	0	0	0	18	49	0	0	0	0	0	0	0	0	0	0	2	64		
Tetracyclines - Tetracycline	8	67	10	0	0	0	0	0	0	0	12	45	0	0	0	2	8	0	0	0	0	0	0	1	64		
Fluoroquinolones - Ciprofloxacin	0.003	67	67	27	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	8		
Quinolones - Nalidixic acid	16	67	0	0	0	0	0	0	0	0	0	65	2	0	0	0	0	0	0	0	0	0	0	4	64		
Trimethoprim	2	67	4	0	0	0	0	0	61	2	0	0	0	0	0	4	0	0	0	0	0	0	0	0.5	32		
Aminoglycosides - Streptomycin	16	67	8	0	0	0	0	0	0	0	0	42	13	1	3	3	2	3	0	0	0	0	0	2	128		
Aminoglycosides - Gentamicin	4	67	0	0	0	0	0	11	54	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.25	32		
Aminoglycosides - Kanamycin	8	67	4	0	0	0	0	0	0	0	0	62	1	0	0	0	0	4	0	0	0	0	0	4	128		
Penicillins - Ampicillin	8	67	5	0	0	0	0	0	0	0	0	60	2	0	0	5	0	0	0	0	0	0	0	0.5	32		
Cephalosporins - Cefotaxim	0.25	67	0	0	0	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.06	4		
Cephalosporins - Ceftazidim	0.5	67	0	0	0	0	0	66	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	16		
Polymyxins - Colistin	2	67	0	0	0	0	0	0	0	0	67	0	0	0	0	0	0	0	0	0	0	0	0	2	4		
Sulphonamides - Sulfamethoxazol	128	67	11	0	0	0	0	0	0	0	0	0	24	18	14	0	0	0	0	0	11	0	0	8	1024		

VTEC O157

Isolates out of a monitoring program (yes/no)
Number of isolates available in the laboratory

Antimicrobials:

Table Cut-off values for antibiotic resistance testing of *Escherichia coli*, pathogenic in Food

Test Method Used	Standard methods used for testing
Broth dilution	NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol	EUCAST	16	
	Florfenicol	EUCAST	16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin	EUCAST	0.003	
Quinolones	Nalidixic acid	EUCAST	16	
Trimethoprim	Trimethoprim		2	
Sulphonamides	Sulfamethoxazol	'own'	128	
Aminoglycosides	Streptomycin	EUCAST	16	
	Gentamicin	EUCAST	4	
	Kanamycin	EUCAST	8	
Cephalosporins	Cefotaxim	EUCAST	0.25	
	Ceftazidim	EUCAST	0.5	
Penicillins	Ampicillin	EUCAST	8	

Table Cut-off values for antibiotic resistance testing of *Escherichia coli*, pathogenic in Food

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Polymyxins	Colistin	EUCAST	2	

Table Cut-off values for antibiotic resistance testing of *Escherichia coli*, pathogenic in Animals

Test Method Used	Standard methods used for testing
Broth dilution	NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol	EUCAST	16	
	Florfenicol	EUCAST	16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin	EUCAST	0.003	
Quinolones	Nalidixic acid	EUCAST	16	
Trimethoprim	Trimethoprim		2	
Sulphonamides	Sulfamethoxazol	own	128	
Aminoglycosides	Streptomycin	EUCAST	16	
	Gentamicin	EUCAST	4	
	Kanamycin	EUCAST	8	
Cephalosporins	Cefotaxim	EUCAST	0.25	
	Ceftazidim	EUCAST	0.5	
Penicillins	Ampicillin	EUCAST	8	

Table Cut-off values for antibiotic resistance testing of Escherichia coli, pathogenic in Animals

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Polymyxins	Colistin	EUCAST	2	

Table Cut-off values for antibiotic resistance testing of *Escherichia coli*, pathogenic in Human

Test Method Used	Standard methods used for testing
Broth dilution	NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol	EUCAST	16	
	Florfenicol	EUCAST	16	
Tetracyclines	Tetracycline	EUCAST	8	
Fluoroquinolones	Ciprofloxacin	MARAN	0.06	
Quinolones	Nalidixic acid	EUCAST	16	
Trimethoprim	Trimethoprim	EUCAST	2	
Sulphonamides	Sulfamethoxazol	CLSI	256	
Aminoglycosides	Streptomycin	EUCAST	16	
	Gentamicin	EUCAST	2	
	Kanamycin	EUCAST	8	
Cephalosporins	Cefotaxim	EUCAST	0.25	
	Ceftazidim	EUCAST	0.5	
Penicillins	Ampicillin	EUCAST	8	

Table Cut-off values for antibiotic resistance testing of Escherichia coli, pathogenic in Human

2.5 TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1 General evaluation of the national situation

2.5.2 Mycobacterium in animals

Table Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified
Goats ¹⁾	GD	Animal	206	0			
Pigs ²⁾	GD	Animal	3505	0			
Sheep ³⁾	GD	Animal	403	0			
Gallus gallus (fowl) - in total - Clinical investigations	GD	Animal	1544	0			
Pet animals, all - in total - Clinical investigations (dogs/cats)	GD	Animal	163	0			

Comments:

¹⁾ clinical invest

²⁾ clinical invest

³⁾ clinical invest

Table Bovine tuberculosis in countries and regions that do not receive Community co-financing for eradication programmes

If present, the row "Total -1" refers to analogous data of the previous year.

Region	Total number of existing bovine		Officially free herds		Infected herds		Routine tuberculin testing		Number of tuberculin tests carried out before the introduction into the herds (Annex A(I)(2)(c) third indent (1) of Directive 64/432/EEC)	Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological	Number of animals detected positive in bacteriological examination
	Herds	Animals	Number of herds	%	Number of herds	%	Interval between routine tuberculin tests	Number of animals tested			
Nederland	51289	4536091	51283	99.99	6	.01	no routine test			75	15
Total : ¹⁾	51289	4536091	51283	99.99	6	.01	N.A.	0	0	75	15

Comments:

¹⁾ N.A.

2.6 BRUCELLOSIS

2.6.1 General evaluation of the national situation

2.6.2 Brucella in animals

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis	Brucella spp., unspecified
Deer - at farm - Control and eradication programmes	GD	Animal	32	0				
Lamas - at farm - Control and eradication programmes	GD	Animal	16	0				
Pigs - at farm - Control and eradication programmes	GD	Animal	6310	0				

Table Ovine or Caprine Brucellosis in countries and regions that do not receive Community co-financing for eradication programme

If present, the row "Total -1" refers to analogous data of the previous year.

Region	Total number of existing		Officially free herds		Infected herds		Surveillance			Investigations of suspect cases				
	Herds	Animals	Number of herds	%	Number of herds	%	Number of herds tested	Number of animals tested	Number of infected herds	Number of animals tested with serological blood tests	Number of animals positive serologically	Number of animals examined microbiologically	Number of animals positive microbiologically	Number of suspended herds
Nederland	50900	1211850	50900	100	0	0	147	14081	0	13				0
Total : ¹⁾	50900	1211850	50900	100	0	0	147	14081	0	13	0	0	0	0

Comments:

¹⁾ N.A.

Table Bovine brucellosis in countries and regions that do not receive Community co-financing for eradication programme

If present, the row "Total -1" refers to analogous data of the previous year.

	Total number of existing bovine		Officially free herds		Infected herds		Surveillance						Investigations of suspect cases								
							Serological tests			Examination of bulk milk			Information about			Epidemiological investigation					
	Herds	Animals	Number of herds	%	Number of herds	%	Number of bovine herds tested	Number of animals tested	Number of infected herds	Number of bovine herds tested	Number of animals or pools tested	Number of infected herds	Number of notified abortions whatever cause	Number of isolations of Brucella infection	Number of abortions due to Brucella abortus	Number of animals tested with serological blood tests	Number of suspended herds	Number of positive animals		Number of animals examined microbiologically	Number of animals positive microbiologically
Region																		Sero logically	BST		
Nederland	51289	4536091	51289	100	0	0	0	0	0	0	0	0	11149	0	0	11149	113	10	0	10	0
Total : ¹⁾	51289	4536091	51289	100	0	0	0	0	0	0	0	0	11149	0	0	11149	113	10	0	10	0

Comments:

¹⁾ N.A.

2.7 YERSINIOSIS

2.7.1 General evaluation of the national situation

2.7.2 Yersinia in animals

Table Yersinia in animals

	Source of information	Sampling unit	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp., unspecified	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - Y. enterocolitica, unspecified
Cattle (bovine animals) ¹⁾	GD	Animal	2770	0						
Goats ²⁾	GD	Animal	206	2	2					2
Pigs ³⁾	GD	Animal	3505	0						
Poultry, unspecified ⁴⁾	GD	Animal	1544	0						
Sheep ⁵⁾	GD	Animal	403	2	2					2
Other animals - exotic pet animals - in total - Clinical investigations (inclusive birds) ⁶⁾	VMDC	Animal	135	6	2	4				2

Comments:

¹⁾ clinical invest

²⁾ clinical invest

³⁾ clinical invest

⁴⁾ clinical invest

Table Yersinia in animals

Comments:

- 5) clinical invest
- 6) live/dead - feces/organs

Footnote:

The diagnostic method used for all of this samples: culture method and biochemical identifications with AP120E system

2.8 TRICHINELLOSIS

2.8.1 General evaluation of the national situation

2.8.2 Trichinella in animals

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Foxes ¹⁾	RIVM	Animal	91	1		1
Pigs ²⁾	VWA	Animal	14016937	0		
Solipeds, domestic ³⁾	VWA	Animal	3434	0		
Wild boars - wild ⁴⁾	RIVM	Animal	441	0		
Wild boars - in total (digestive method)	VWA	Animal	2505	0		

Comments:

¹⁾ muscle samples underleg

²⁾ digestive method

³⁾ digestive method

⁴⁾ sera

2.9 ECHINOCOCCOSIS

2.9.1 General evaluation of the national situation

2.9.2 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling unit	Region	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals) ¹⁾	RIVM	Animal	Nederland	2	0			
Foxes ²⁾	RIVM	Animal	Oost-Nederland	94	0			
Cattle (bovine animals) - in total - Clinical investigations	GD	Animal	Nederland	2769	0			

Comments:

¹⁾ meat inspection, livercysts

²⁾ wild, intestinal scrapings, PCR

2.10 TOXOPLASMOSIS

2.10.1 General evaluation of the national situation

2.10.2 Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii
Cats ¹⁾	RIVM	Animal	450	91	91
Cattle (bovine animals) ²⁾	GD	Animal	2769	0	
Dogs ³⁾	VMDC	Animal	44	15	15
Goats ⁴⁾	GD	Animal	206	0	
Sheep ⁵⁾	GD	Animal	403	4	4
Cats - pet animals - in total - Clinical investigations ⁶⁾	VMDC	Animal	9	2	2
Other animals - exotic pet animals - in total - Clinical investigations ⁷⁾	VMDC	Animal	1	1	1

Comments:

¹⁾ household, sera

²⁾ clinical invest, Latex method

³⁾ serum

Table Toxoplasma in animals

Comments:

- 4) clinical invest, Latex method
- 5) clinical invest, Latex method
- 6) serum
- 7) serum

2.11 RABIES

2.11.1 General evaluation of the national situation

2.11.2 Lyssavirus (rabies) in animals

Table Rabies in animals

	Source of information	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Lyssavirus, unspecified	Classical rabies virus (genotype 1)	European Bat Lyssavirus - unspecified	European Bat Lyssavirus 1 (EBL 1)
Bats - wild	VWA	Animal	Nederland	129	10				10
Cats ¹⁾	VWA	Animal	Nederland	8	0				
Dogs ²⁾	VWA	Animal	Nederland	7	0				
Foxes - wild	VWA	Animal	Nederland	6	0				

Comments:

¹⁾ clinical investigations

²⁾ clinical investigation

2.12 STAPHYLOCOCCUS INFECTION

2.12.1 General evaluation of the national situation

2.12.2 Staphylococcus in animals

Table Staphylococcus in Animals

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcus	Total units positive for S. aureus, methicillin resistant (MRSA)	S. aureus, methicillin resistant (MRSA) - spa-type t011	S. aureus, methicillin resistant (MRSA) - spa-type t108	S. aureus, methicillin resistant (MRSA) - spa-type t034	S. aureus, methicillin resistant (MRSA) - MRSA, unspecified	Staphylococcus spp., unspecified
Dogs - pet animals	VMDC	Animal		4990	1189	2				2	1187
Solipeds, domestic	VMDC	Animal		805	117	32				32	85

2.13 Q-FEVER

2.13.1 General evaluation of the national situation

2.13.2 Coxiella (Q-fever) in animals

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii
Goats ¹⁾	CVI	Animal	2	0	
Sheep ²⁾	CVI	Animal	2	0	
Goats - in total (bulk milk samples)	CVI	Animal	71	28	28
Sheep - in total (bulk milk samples)	CVI	Animal	5	3	3

Comments:

¹⁾ clinical investigations

²⁾ clinical investigations

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1 ESCHERICHIA COLI, NON-PATHOGENIC

3.1.1 General evaluation of the national situation

3.1.2 Antimicrobial resistance in Escherichia coli, non-pathogenic

Table Antimicrobial susceptibility testing of E. coli in Pigs

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	282	
Antimicrobials:	N	n
Fully sensitive	282	63
Resistant to 1 antimicrobial	282	32
Resistant to 2 antimicrobials	282	35
Resistant to 3 antimicrobials	282	35
Resistant to 4 antimicrobials	282	48
Resistant to >4 antimicrobials	282	69

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	264	
Antimicrobials:	N	n
Fully sensitive	264	249
Resistant to 1 antimicrobial	264	5
Resistant to 2 antimicrobials	264	1
Resistant to 3 antimicrobials	264	5
Resistant to 4 antimicrobials	264	1
Resistant to >4 antimicrobials	264	3

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse
- animal sample - faeces - Monitoring

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	172	
Antimicrobials:	N	n
Fully sensitive	172	46
Resistant to 1 antimicrobial	172	21
Resistant to 2 antimicrobials	172	10
Resistant to 3 antimicrobials	172	11
Resistant to 4 antimicrobials	172	7
Resistant to >4 antimicrobials	172	77

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	284	
Antimicrobials:	N	n
Fully sensitive	240	19
Resistant to 1 antimicrobial	240	26
Resistant to 2 antimicrobials	240	15
Resistant to 3 antimicrobials	240	27
Resistant to 4 antimicrobials	240	33
Resistant to >4 antimicrobials	240	164

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E.coli, non-pathogenic, unspecified	Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring																										
	yes																										
	264																										
	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	16	264	2	0	0	0	0	0	0	0	0	0	9	199	54	0	0	2	0	0	0	0	0				
Amphenicols - Florfenicol	16	264	2	0	0	0	0	0	0	0	0	0	13	213	36	0	0	2	0	0	0	0	0				
Tetracyclines - Tetracycline	8	264	12	0	0	0	0	0	0	0	14	134	101	3	0	0	1	11	0	0	0	0	0				
Fluoroquinolones - Ciprofloxacin	0.06	264	1	0	191	72	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0				
Quinolones - Nalidixic acid	16	264	1	0	0	0	0	0	0	0	0	0	254	9	0	0	0	1	0	0	0	0	0				
Trimethoprim	2	264	1	0	0	0	0	0	0	262	1	0	0	0	0	0	1	0	0	0	0	0	0				
Aminoglycosides - Streptomycin	16	264	11	0	0	0	0	0	0	0	0	3	97	142	11	1	3	3	4	0	0	0	0				
Aminoglycosides - Gentamicin	2	264	4	0	0	0	0	0	18	154	72	16	3	0	0	0	1	0	0	0	0	0	0				
Aminoglycosides - Kanamycin	8	264	4	0	0	0	0	0	0	0	0	0	241	19	2	0	0	0	2	0	0	0	0				
Penicillins - Ampicillin	8	264	5	0	0	0	0	0	0	0	9	57	175	18	0	0	5	0	0	0	0	0	0				
Cephalosporins - Cefotaxim	0.25	264	2	0	0	0	206	53	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0				
Cephalosporins - Ceftazidim	0.5	264	1	0	0	0	0	0	253	10	0	1	0	0	0	0	0	0	0	0	0	0	0				
Sulphonamides - Sulfamethoxazol	256	264	8	0	0	0	0	0	0	0	0	0	0	256	0	0	0	0	0	0	0	8	0				

Footnote:

Test ranges identical to E. coli in Gallus gallus.

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E.coli, non-pathogenic, unspecified	Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring																									
	yes																									
	172																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																										
Amphenicols - Chloramphenicol	16	172	50	0	0	0	0	0	0	0	0	0	7	87	28	1	9	40	0	0	0	0	0			
Amphenicols - Florfenicol	16	172	38	0	0	0	0	0	0	0	0	0	13	99	22	11	2	25	0	0	0	0	0			
Tetracyclines - Tetracycline	8	172	125	0	0	0	0	0	0	0	9	13	24	1	0	1	16	108	0	0	0	0	0			
Fluoroquinolones - Ciprofloxacin	0.06	172	33	0	110	28	1	4	11	6	2	0	0	10	0	0	0	0	0	0	0	0	0			
Quinolones - Nalidixic acid	16	172	30	0	0	0	0	0	0	0	0	0	137	3	2	0	0	30	0	0	0	0	0			
Trimethoprim	2	172	75	0	0	0	0	0	0	95	2	0	0	0	0	0	75	0	0	0	0	0	0			
Aminoglycosides - Streptomycin	16	172	91	0	0	0	0	0	0	0	0	0	26	41	14	8	9	17	57	0	0	0	0			
Aminoglycosides - Gentamicin	2	172	18	0	0	0	0	0	8	74	61	11	3	1	3	5	6	0	0	0	0	0	0			
Aminoglycosides - Kanamycin	8	172	33	0	0	0	0	0	0	0	0	0	125	14	2	1	1	0	29	0	0	0	0			
Penicillins - Ampicillin	8	172	73	0	0	0	0	0	0	0	2	32	63	2	1	0	72	0	0	0	0	0	0			
Cephalosporins - Cefotaxim	0.25	172	3	0	0	0	127	35	7	2	1	0	0	0	0	0	0	0	0	0	0	0	0			
Cephalosporins - Ceftazidim	0.5	172	3	0	0	0	0	0	156	13	2	1	0	0	0	0	0	0	0	0	0	0	0			
Sulphonamides - Sulfamethoxazol	256	172	91	0	0	0	0	0	0	0	0	0	0	81	0	0	0	0	0	0	0	91	0			

Footnote:

Test ranges identical to E. coli in Gallus gallus.

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Pigs - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E.coli, non-pathogenic, unspecified	Pigs - at slaughterhouse - animal sample - faeces - Monitoring																									
	yes																									
	282																									
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																										
Amphenicols - Chloramphenicol	16	282	33	0	0	0	0	0	0	0	0	0	23	185	41	10	5	18	0	0	0	0	0			
Amphenicols - Florfenicol	16	282	4	0	0	0	0	0	0	0	0	3	36	194	45	4	0	0	0	0	0	0	0			
Tetracyclines - Tetracycline	8	282	179	0	0	0	0	0	0	0	12	59	29	3	5	5	25	144	0	0	0	0	0			
Fluoroquinolones - Ciprofloxacin	0.06	282	1	0	211	70	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Quinolones - Nalidixic acid	16	282	1	0	0	0	0	0	0	0	0	0	273	8	0	0	0	1	0	0	0	0	0			
Trimethoprim	2	282	138	0	0	0	0	0	0	142	1	1	0	0	0	0	138	0	0	0	0	0	0			
Aminoglycosides - Streptomycin	16	282	156	0	0	0	0	0	0	0	0	0	32	68	26	33	24	30	69	0	0	0	0			
Aminoglycosides - Gentamicin	2	282	4	0	0	0	0	0	23	145	91	19	3	1	0	0	0	0	0	0	0	0	0			
Aminoglycosides - Kanamycin	8	282	15	0	0	0	0	0	0	0	0	0	249	18	6	2	0	0	7	0	0	0	0			
Penicillins - Ampicillin	8	282	94	0	0	0	0	0	0	0	7	58	114	9	0	0	94	0	0	0	0	0	0			
Cephalosporins - Cefotaxim	0.25	282	2	0	0	0	238	42	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0			
Cephalosporins - Ceftazidim	0.5	282	2	0	0	0	0	0	270	10	1	0	1	0	0	0	0	0	0	0	0	0	0			
Sulphonamides - Sulfamethoxazol	256	282	154	0	0	0	0	0	0	0	0	0	0	128	0	0	0	0	0	0	1	153	0			

Footnote:

Test ranges identical to E. coli in Gallus gallus.

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E.coli, non-pathogenic, unspecified	Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring																										
	yes																										
	284																										
	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	16	284	74	0	0	0	0	0	0	0	0	2	12	158	38	10	20	44	0	0	0	0	0	2	64		
Amphenicols - Florfenicol	16	284	9	0	0	0	0	0	0	0	0	2	22	187	64	8	1	0	0	0	0	0	0	2	64		
Tetracyclines - Tetracycline	8	284	170	0	0	0	0	0	0	0	13	48	50	3	0	0	19	151	0	0	0	0	0	1	64		
Fluoroquinolones - Ciprofloxacin	0.06	284	181	0	68	33	2	8	104	36	11	1	1	11	9	0	0	0	0	0	0	0	0	0.008	8		
Quinolones - Nalidixic acid	16	284	180	0	0	0	0	0	0	0	0	0	101	1	2	1	12	167	0	0	0	0	0	4	64		
Trimethoprim	2	284	172	0	0	0	0	0	0	110	2	0	0	0	0	0	172	0	0	0	0	0	0	0.5	32		
Aminoglycosides - Streptomycin	16	284	190	0	0	0	0	0	0	0	0	0	23	56	15	19	25	27	119	0	0	0	0	2	128		
Aminoglycosides - Gentamicin	2	284	27	0	0	0	0	0	5	135	102	15	3	6	9	6	3	0	0	0	0	0	0	0.25	32		
Aminoglycosides - Kanamycin	8	284	45	0	0	0	0	0	0	0	0	0	217	22	4	1	0	0	40	0	0	0	0	4	128		
Penicillins - Ampicillin	8	284	217	0	0	0	0	0	0	0	2	25	39	1	0	0	217	0	0	0	0	0	0	0.5	32		
Cephalosporins - Cefotaxim	0.25	284	52	0	0	0	167	60	5	1	1	2	2	46	0	0	0	0	0	0	0	0	0	0.06	4		
Cephalosporins - Ceftazidim	0.5	284	50	0	0	0	0	0	213	21	9	10	10	6	12	3	0	0	0	0	0	0	0	0.25	16		
Sulphonamides - Sulfamethoxazol	256	284	202	0	0	0	0	0	0	0	0	0	0	81	1	0	0	0	0	3	1	198	0	8	1024		

Isolates out of a monitoring program (yes/no)
Number of isolates available in the laboratory

Antimicrobials:

Table Cut-off values used for antimicrobial susceptibility testing of *Escherichia coli*, non-pathogenic in Animals

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol	EUCAST	16	
	Florfenicol	EUCAST	16	
Tetracyclines	Tetracycline	EUCAST	8	
Fluoroquinolones	Ciprofloxacin	MARAN	0.06	
Quinolones	Nalidixic acid	EUCAST	16	
Trimethoprim	Trimethoprim	EUCAST	2	
Sulphonamides	Sulfamethoxazol	CLSI	256	
Aminoglycosides	Streptomycin	EUCAST	16	
	Gentamicin	EUCAST	2	
	Kanamycin	EUCAST	8	
Cephalosporins	Cefotaxim	EUCAST	0.25	
	Ceftazidim	EUCAST	0.5	
Penicillins	Ampicillin	EUCAST	8	

Table Cut-off values used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Animals

Table Cut-off values used for antimicrobial susceptibility testing of *Escherichia coli*, non-pathogenic in Feed

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.03	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulphonamides	Sulphonamides		256	
Aminoglycosides	Streptomycin		16	
	Gentamicin		2	
Cephalosporins	Cefotaxim		0.25	
Penicillins	Ampicillin		8	

Table Cut-off values used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Food

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.03	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulphonamides	Sulphonamides		256	
Aminoglycosides	Streptomycin		16	
	Gentamicin		2	
Cephalosporins	Cefotaxim		0.25	
Penicillins	Ampicillin		8	

3.2 ENTEROCOCCUS, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring

Enterococcus, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E. faecalis		E. faecium	
	yes		yes	
	144		215	
Antimicrobials:	N	n	N	n
Fully sensitive	144	12	215	10
Resistant to 1 antimicrobial	144	25	215	10
Resistant to 2 antimicrobials	144	19	215	18
Resistant to 3 antimicrobials	144	79	215	23
Resistant to 4 antimicrobials	144	8	215	51
Resistant to >4 antimicrobials	144	1	215	103

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring

Enterococcus, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	E. faecalis		E. faecium	
	yes		yes	
	14		53	
	N	n	N	n
Fully sensitive	14	11	53	18
Resistant to 1 antimicrobial	14	2	53	30
Resistant to 2 antimicrobials	14	1	53	5
Resistant to 3 antimicrobials	14	0	53	0
Resistant to 4 antimicrobials	14	0	53	0
Resistant to >4 antimicrobials	14	0	53	0

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring

Enterococcus, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	E. faecalis		E. faecium	
	yes		yes	
	35		70	
	N	n	N	n
Fully sensitive	35	16	70	6
Resistant to 1 antimicrobial	35	5	70	27
Resistant to 2 antimicrobials	35	3	70	8
Resistant to 3 antimicrobials	35	2	70	14
Resistant to 4 antimicrobials	35	8	70	5
Resistant to >4 antimicrobials	35	1	70	10

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Pigs - at slaughterhouse - animal sample - faeces - Monitoring

Enterococcus, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E. faecalis		E. faecium	
	yes		yes	
	38		92	
	N	n	N	n
Antimicrobials:				
Fully sensitive	38	6	92	5
Resistant to 1 antimicrobial	38	12	92	15
Resistant to 2 antimicrobials	38	12	92	34
Resistant to 3 antimicrobials	38	5	92	13
Resistant to 4 antimicrobials	38	2	92	15
Resistant to >4 antimicrobials	38	1	92	10

Table Antimicrobial susceptibility testing of *E. faecalis* in *Gallus gallus* (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E. faecalis	Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring																										
	yes																										
	144																										
	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Antimicrobials:	32	144	5	0	0	0	0	0	0	0	0	5	131	3	0	3	2	0	0	0	0	0	0	1	128		
Amphenicols - Chloramphenicol	32	144	5	0	0	0	0	0	0	0	0	5	131	3	0	3	2	0	0	0	0	0	0	1	128		
Amphenicols - Florfenicol	8	144	0	0	0	0	0	0	0	0	2	32	110	0	0	0	0	0	0	0	0	0	0	1	64		
Tetracyclines - Tetracycline	2	144	115	0	0	0	0	0	0	20	8	1	0	0	1	32	42	40	0	0	0	0	0	0.5	64		
Fluoroquinolones - Ciprofloxacin	4	144	7	0	0	0	0	0	0	28	106	3	0	0	2	5	0	0	0	0	0	0	0	0.5	64		
Aminoglycosides - Streptomycin	512	144	80	0	0	0	0	0	0	0	0	0	0	0	0	0	3	47	13	1	0	80	0	8	1024		
Aminoglycosides - Gentamicin	32	144	2	0	0	0	0	0	0	0	0	0	0	30	110	2	0	0	0	0	2	0	0	4	512		
Penicillins - Ampicillin	4	144	0	0	0	0	0	0	0	0	124	19	1	0	0	0	0	0	0	0	0	0	1	128			
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	144	0	0	0	0	0	0	0	0	71	62	11	0	0	0	0	0	0	0	0	0	0.5	64			
Ionophores - Salinomycin	4	144	10	0	0	0	0	0	0	5	24	30	75	10	0	0	0	0	0	0	0	0	0.5	64			
Macrolides - Erythromycin	4	144	118	0	0	0	0	0	0	0	16	9	1	1	7	7	0	2	101	0	0	0	0	1	128		
Oxazolidines - Linezolid	4	144	0	0	0	0	0	0	0	3	69	72	0	0	0	0	0	0	0	0	0	0	0.25	32			
Streptogramins - Quinupristin/Dalfopristin	32	144	0	0	0	0	0	0	0	0	0	0	1	45	90	8	0	0	0	0	0	0	0.25	32			

Table Antimicrobial susceptibility testing of *E. faecalis* in Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E. faecalis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring																										
	yes																										
	14																										
	Cut-off value	N	n	≤0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	32	14	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0				
Amphenicols - Florfenicol	8	14	0	0	0	0	0	0	0	0	0	6	8	0	0	0	0	0	0	0	0	0	0				
Tetracyclines - Tetracycline	2	14	2	0	0	0	0	0	0	10	2	0	0	0	0	0	2	0	0	0	0	0	0				
Fluoroquinolones - Ciprofloxacin	4	14	1	0	0	0	0	0	0	0	12	1	0	0	0	1	0	0	0	0	0	0	0				
Aminoglycosides - Streptomycin	512	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	2	0	0	0	0				
Aminoglycosides - Gentamicin	32	14	0	0	0	0	0	0	0	0	0	0	0	1	10	3	0	0	0	0	0	0	0				
Penicillins - Ampicillin	4	14	0	0	0	0	0	0	0	0	13	1	0	0	0	0	0	0	0	0	0	0	0				
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	14	0	0	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0				
Ionophores - Salinomycin	4	14	0	0	0	0	0	0	0	2	12	0	0	0	0	0	0	0	0	0	0	0	0				
Macrolides - Erythromycin	4	14	1	0	0	0	0	0	0	0	5	6	2	1	0	0	0	0	0	0	0	0	0				
Oxazolidinones - Linezolid	4	14	0	0	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0				
Streptogramins - Quinupristin/Dalfopristin	32	14	0	0	0	0	0	0	0	0	0	1	0	12	1	0	0	0	0	0	0	0	0				

Footnote:

Test ranges identical to *E. faecalis* in *Gallus gallus*.

Table Antimicrobial susceptibility testing of E. faecalis in Pigs - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data
[Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to																											
E. faecalis	Pigs - at slaughterhouse - animal sample - faeces - Monitoring																										
	Isolates out of a monitoring program (yes/no)																										
	yes																										
	Number of isolates available in the laboratory																										
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	32	38	4	0	0	0	0	0	0	0	0	0	3	29	2	0	2	2	0	0	0	0	0				
Amphenicols - Florfenicol	8	38	0	0	0	0	0	0	0	0	0	6	32	0	0	0	0	0	0	0	0	0	0				
Tetracyclines - Tetracycline	2	38	32	0	0	0	0	0	0	4	2	0	0	0	0	1	14	17	0	0	0	0	0				
Fluoroquinolones - Ciprofloxacin	4	38	1	0	0	0	0	0	0	1	34	2	0	0	0	1	0	0	0	0	0	0	0				
Aminoglycosides - Streptomycin	512	38	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	7	0	0	5	0				
Aminoglycosides - Gentamicin	32	38	3	0	0	0	0	0	0	0	0	0	0	5	28	2	0	0	0	0	3	0	0				
Penicillins - Ampicillin	4	38	0	0	0	0	0	0	0	0	34	4	0	0	0	0	0	0	0	0	0	0	0				
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	38	0	0	0	0	0	0	0	0	28	9	1	0	0	0	0	0	0	0	0	0	0				
Ionophores - Salinomycin	4	38	0	0	0	0	0	0	0	7	29	2	0	0	0	0	0	0	0	0	0	0	0				
Macrolides - Erythromycin	4	38	20	0	0	0	0	0	0	0	6	10	2	1	0	1	0	0	18	0	0	0	0				
Oxazolidines - Linezolid	4	38	0	0	0	0	0	0	0	0	6	32	0	0	0	0	0	0	0	0	0	0	0				
Streptogramins - Quinupristin/Dalfopristin	32	38	0	0	0	0	0	0	0	0	0	0	0	12	24	2	0	0	0	0	0	0	0				

Footnote:
Test ranges identical to E. faecalis in Gallus gallus.

Table Antimicrobial susceptibility testing of E. faecalis in Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to																											
E. faecalis	Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring																										
	Isolates out of a monitoring program (yes/no) yes																										
	Number of isolates available in the laboratory 35																										
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	32	35	10	0	0	0	0	0	0	0	0	0	2	23	0	0	9	1	0	0	0	0	0				
Amphenicols - Florfenicol	8	35	1	0	0	0	0	0	0	0	0	4	30	0	0	0	0	1	0	0	0	0	0				
Tetracyclines - Tetracycline	2	35	18	0	0	0	0	0	0	11	6	0	0	0	0	1	1	16	0	0	0	0	0				
Fluoroquinolones - Ciprofloxacin	4	35	1	0	0	0	0	0	0	9	20	5	0	0	0	1	0	0	0	0	0	0	0				
Aminoglycosides - Streptomycin	512	35	10	0	0	0	0	0	0	0	0	0	0	0	0	2	2	17	4	0	0	10	0				
Aminoglycosides - Gentamicin	32	35	0	0	0	0	0	0	0	0	0	0	5	5	25	0	0	0	0	0	0	0	0				
Penicillins - Ampicillin	4	35	0	0	0	0	0	0	0	0	30	5	0	0	0	0	0	0	0	0	0	0	0				
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	35	1	0	0	0	0	0	0	0	22	11	1	0	0	0	0	1	0	0	0	0	0				
Ionophores - Salinomycin	4	35	0	0	0	0	0	0	0	9	26	0	0	0	0	0	0	0	0	0	0	0	0				
Macrolides - Erythromycin	4	35	13	0	0	0	0	0	0	0	10	7	5	2	0	0	0	0	11	0	0	0	0				
Oxazolidines - Linezolid	4	35	1	0	0	0	0	0	0	0	2	32	0	1	0	0	0	0	0	0	0	0	0				
Streptogramins - Quinupristin/Dalfopristin	32	35	0	0	0	0	0	0	0	0	0	1	1	22	11	0	0	0	0	0	0	0	0				

Footnote:
Test ranges identical to E. faecalis in Gallus gallus.

Table Antimicrobial susceptibility testing of E. faecium in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to																											
E. faecium	Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Monitoring																										
	Isolates out of a monitoring program (yes/no)																										
	yes																										
	Number of isolates available in the laboratory																										
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Amphenicols - Chloramphenicol	32	215	2	0	0	0	0	0	0	0	0	0	13	116	35	49	2	0	0	0	0	0	0				
Amphenicols - Florfenicol	8	215	0	0	0	0	0	0	0	0	0	17	194	4	0	0	0	0	0	0	0	0	0				
Tetracyclines - Tetracycline	2	215	165	0	0	0	0	0	0	50	0	0	0	2	3	6	31	123	0	0	0	0	0				
Fluoroquinolones - Ciprofloxacin	4	215	26	0	0	0	0	0	0	0	19	47	123	24	2	0	0	0	0	0	0	0	0				
Aminoglycosides - Streptomycin	128	215	122	0	0	0	0	0	0	0	0	0	0	0	0	1	42	50	2	0	6	114	0				
Aminoglycosides - Gentamicin	32	215	10	0	0	0	0	0	0	0	0	0	2	62	111	30	0	5	1	0	4	0	0				
Penicillins - Ampicillin	4	215	95	0	0	0	0	0	0	0	28	41	51	66	6	1	3	12	7	0	0	0	0				
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	215	1	0	0	0	0	0	0	110	89	13	2	0	0	0	0	1	0	0	0	0	0				
Ionophores - Salinomycin	4	215	135	0	0	0	0	0	0	0	19	8	53	135	0	0	0	0	0	0	0	0	0				
Macrolides - Erythromycin	4	215	167	0	0	0	0	0	0	0	30	16	2	1	2	0	2	1	161	0	0	0	0				
Oxazolidines - Linezolid	4	215	0	0	0	0	0	0	0	0	13	190	12	0	0	0	0	0	0	0	0	0	0				
Streptogramins - Quinupristin/Dalfopristin	1	215	167	0	0	0	0	0	0	15	33	19	107	35	5	1	0	0	0	0	0	0	0				

Footnote:
Test range identical to E. faecalis in Gallus gallus.

Table Antimicrobial susceptibility testing of *E. faecium* in Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E. faecium	Cattle (bovine animals) - dairy cows - at slaughterhouse - animal sample - faeces - Monitoring																									
	yes																									
	53																									
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Amphenicols - Chloramphenicol	32	53	0	0	0	0	0	0	0	0	0	0	7	46	0	0	0	0	0	0	0	0	0			
Amphenicols - Florfenicol	8	53	0	0	0	0	0	0	0	0	0	3	50	0	0	0	0	0	0	0	0	0	0			
Tetracyclines - Tetracycline	2	53	1	0	0	0	0	0	0	51	1	0	0	0	0	1	0	0	0	0	0	0	0			
Fluoroquinolones - Ciprofloxacin	4	53	4	0	0	0	0	0	0	0	28	6	15	4	0	0	0	0	0	0	0	0	0			
Aminoglycosides - Streptomycin	128	53	1	0	0	0	0	0	0	0	0	0	0	0	0	2	27	23	1	0	0	0	0			
Aminoglycosides - Gentamicin	32	53	0	0	0	0	0	0	0	0	0	0	2	15	20	16	0	0	0	0	0	0	0			
Penicillins - Ampicillin	4	53	0	0	0	0	0	0	0	0	9	38	6	0	0	0	0	0	0	0	0	0	0			
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	53	0	0	0	0	0	0	0	24	27	2	0	0	0	0	0	0	0	0	0	0	0			
Ionophores - Salinomycin	4	53	0	0	0	0	0	0	0	0	29	24	0	0	0	0	0	0	0	0	0	0	0			
Macrolides - Erythromycin	4	53	3	0	0	0	0	0	0	0	22	19	9	3	0	0	0	0	0	0	0	0	0			
Oxazolidines - Linezolid	4	53	0	0	0	0	0	0	0	0	0	48	5	0	0	0	0	0	0	0	0	0	0			
Streptogramins - Quinupristin/Dalfopristin	1	53	31	0	0	0	0	0	0	20	2	10	21	0	0	0	0	0	0	0	0	0	0			

Footnote:

Test ranges identical to *E. faecalis* in *Gallus gallus*.

Table Antimicrobial susceptibility testing of *E. faecium* in Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to

E. faecium	Cattle (bovine animals) - calves (under 1 year) - at slaughterhouse - animal sample - faeces - Monitoring																									
	yes																									
	70																									
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Amphenicols - Chloramphenicol	32	70	4	0	0	0	0	0	0	0	0	3	9	50	1	3	4	0	0	0	0	0	0			
Amphenicols - Florfenicol	8	70	7	0	0	0	0	0	0	0	0	8	55	0	0	0	5	2	0	0	0	0	0			
Tetracyclines - Tetracycline	2	70	35	0	0	0	0	0	0	34	1	0	0	0	1	0	2	32	0	0	0	0	0			
Fluoroquinolones - Ciprofloxacin	4	70	2	0	0	0	0	0	0	5	23	15	25	2	0	0	0	0	0	0	0	0	0			
Aminoglycosides - Streptomycin	128	70	26	0	0	0	0	0	0	0	0	0	0	0	1	4	26	13	1	0	1	24	0			
Aminoglycosides - Gentamicin	32	70	5	0	0	0	0	0	0	0	0	0	5	24	28	8	0	0	0	1	4	0	0			
Penicillins - Ampicillin	4	70	9	0	0	0	0	0	0	0	27	27	7	5	0	0	1	1	2	0	0	0	0			
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	70	0	0	0	0	0	0	0	36	24	9	1	0	0	0	0	0	0	0	0	0	0			
Ionophores - Salinomycin	4	70	0	0	0	0	0	0	0	1	41	28	0	0	0	0	0	0	0	0	0	0	0			
Macrolides - Erythromycin	4	70	30	0	0	0	0	0	0	0	14	14	12	4	0	1	0	0	25	0	0	0	0			
Oxazolidines - Linezolid	4	70	2	0	0	0	0	0	0	0	9	47	12	2	0	0	0	0	0	0	0	0	0			
Streptogramins - Quinupristin/Dalfopristin	1	70	48	0	0	0	0	0	0	14	8	18	23	6	0	1	0	0	0	0	0	0	0			

Footnote:

Test ranges identical to *E. faecalis* in *Gallus gallus*.

Table Antimicrobial susceptibility testing of E. faecium in Pigs - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data
[Dilution method]

Concentration (µg/ml), number of isolates with a concentration of inhibition equal to																											
E. faecium		Pigs - at slaughterhouse - animal sample - faeces - Monitoring																									
		Isolates out of a monitoring program (yes/no)																									
		yes																									
		Number of isolates available in the laboratory																									
Antimicrobials:		92																									
		Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Amphenicols - Chloramphenicol		32	92	0	0	0	0	0	0	0	0	0	5	74	9	4	0	0	0	0	0	0	0	0			
Amphenicols - Florfenicol		8	92	0	0	0	0	0	0	0	0	4	87	1	0	0	0	0	0	0	0	0	0	0			
Tetracyclines - Tetracycline		2	92	70	0	0	0	0	0	0	22	0	0	0	0	0	0	42	28	0	0	0	0	0			
Fluoroquinolones - Ciprofloxacin		4	92	2	0	0	0	0	0	0	16	42	20	12	1	1	0	0	0	0	0	0	0	0			
Aminoglycosides - Streptomycin		128	92	12	0	0	0	0	0	0	0	0	0	0	0	0	0	53	27	0	1	2	9	0			
Aminoglycosides - Gentamicin		32	92	0	0	0	0	0	0	0	0	0	14	42	31	5	0	0	0	0	0	0	0	0			
Penicillins - Ampicillin		4	92	20	0	0	0	0	0	0	0	9	17	46	18	1	1	0	0	0	0	0	0	0			
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin		4	92	1	0	0	0	0	0	0	80	9	1	1	0	0	0	0	1	0	0	0	0	0			
Ionophores - Salinomycin		4	92	17	0	0	0	0	0	0	0	50	19	6	17	0	0	0	0	0	0	0	0	0			
Macrolides - Erythromycin		4	92	28	0	0	0	0	0	0	0	12	41	11	2	0	0	0	0	26	0	0	0	0			
Oxazolidines - Linezolid		4	92	0	0	0	0	0	0	0	0	3	74	15	0	0	0	0	0	0	0	0	0	0			
Streptogramins - Quinupristin/Dalfopristin		1	92	84	0	0	0	0	0	1	5	2	24	55	5	0	0	0	0	0	0	0	0	0			

Footnote:
Test ranges identical to E. faecalis in Gallus gallus.

Table Cut-off values for antibiotic resistance of *E. faecalis* in Animals

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Streptomycin	EUCAST	512	
	Gentamicin	EUCAST	32	
Amphenicols	Chloramphenicol	EUCAST	32	
	Florfenicol	EUCAST	8	
Penicillins	Ampicillin	EUCAST	4	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin	EUCAST	4	
Macrolides	Erythromycin	EUCAST	4	
Streptogramins	Quinupristin/Dalfopristin	EUCAST	32	
Tetracyclines	Tetracycline	EUCAST	2	
Oxazolidines	Linezolid	EUCAST	4	
Fluoroquinolones	Ciprofloxacin	EUCAST	4	
Ionophores	Salinomycin	EUCAST	4	

Table Cut-off values for antibiotic resistance of *E. faecalis* in Animals

Table Cut-off values for antibiotic resistance of *E. faecalis* in Feed

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Streptomycin	EUCAST	512	
	Gentamicin	EUCAST	32	
Amphenicols	Chloramphenicol	EUCAST	32	
Penicillins	Ampicillin	EUCAST	8	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin	EUCAST	4	
	Bacitracin	EUCAST	32	
Macrolides	Erythromycin	EUCAST	4	
Streptogramins	Quinupristin/Dalfopristin	OWN	8	
Tetracyclines	Tetracycline	EUCAST	4	
Oxazolidinones	Linezolid	EUCAST	4	
Orthosomycins	Avilamycin	EUCAST	8	
Fluoroquinolones	Ciprofloxacin	EUCAST	4	
Ionophores	Salinomycin	EUCAST	4	

Table Cut-off values for antibiotic resistance of *E. faecalis* in Feed

Table Cut-off values for antibiotic resistance of *E. faecalis* in Food

Test Method Used	Standard methods used for testing
Broth dilution	NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Streptomycin	EUCAST	512	
	Gentamicin	EUCAST	32	
Amphenicols	Chloramphenicol	EUCAST	32	
Penicillins	Ampicillin	EUCAST	8	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin	EUCAST	4	
	Bacitracin	EUCAST	32	
Macrolides	Erythromycin	EUCAST	4	
Streptogramins	Quinupristin/Dalfopristin	OWN	8	
Tetracyclines	Tetracycline	EUCAST	4	
Oxazolidinones	Linezolid	EUCAST	4	
Orthosomycins	Avilamycin	EUCAST	8	
Fluoroquinolones	Ciprofloxacin	EUCAST	4	
Ionophores	Salinomycin	EUCAST	4	

Table Cut-off values for antibiotic resistance of *E. faecalis* in Food

Table Cut-off values for antibiotic resistance of *E. faecium* in Animals

Test Method Used		Standard methods used for testing		
Broth dilution		NCCLS/CLSI		

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Streptomycin	EUCAST	128	
	Gentamicin	EUCAST	32	
Amphenicols	Chloramphenicol	EUCAST	32	
	Florfenicol	EUCAST	8	
Penicillins	Ampicillin	EUCAST	4	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin	EUCAST	4	
Macrolides	Erythromycin	EUCAST	4	
Streptogramins	Quinupristin/Dalfopristin	EUCAST	1	
Tetracyclines	Tetracycline	EUCAST	2	
Oxazolidines	Linezolid	EUCAST	4	
Fluoroquinolones	Ciprofloxacin	EUCAST	4	
Ionophores	Salinomycin	EUCAST	4	

Table Cut-off values for antibiotic resistance of *E. faecium* in Animals

Table Cut-off values for antibiotic resistance of E. faecium in Feed

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Streptomycin		128	
	Gentamicin		32	
Amphenicols	Chloramphenicol		32	
Penicillins	Ampicillin		4	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Streptogramins	Quinupristin/Dalfopristin		1	
Tetracyclines	Tetracycline		2	
Oxazolidines	Linezolid		4	

Table Cut-off values for antibiotic resistance of *E. faecium* in Food

Test Method Used	Standard methods used for testing
Broth dilution	NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Streptomycin	EUCAST	512	
	Gentamicin	EUCAST	32	
Amphenicols	Chloramphenicol	EUCAST	32	
Penicillins	Ampicillin	EUCAST	8	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin	EUCAST	4	
	Bacitracin	EUCAST	32	
Macrolides	Erythromycin	EUCAST	4	
Streptogramins	Quinupristin/Dalfopristin	EUCAST	4	
Tetracyclines	Tetracycline	EUCAST	4	
Oxazolidinones	Linezolid	EUCAST	4	
Orthosomycins	Avilamycin	EUCAST	16	
Fluoroquinolones	Ciprofloxacin	EUCAST	4	
Ionophores	Salinomycin	'own'	8	

Table Cut-off values for antibiotic resistance of *E. faecium* in Food

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 ENTEROBACTER SAKAZAKII

4.1.1 General evaluation of the national situation

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

4.3 STAPHYLOCOCCAL ENTEROTOXINS

4.3.1 General evaluation of the national situation

5. FOODBORNE

Foodborne outbreaks are incidences of two or more human cases of the same disease or infection where the cases are linked or are probably linked to the same food source. Situation, in which the observed human cases exceed the expected number of cases and where a same food source is suspected, is also indicative of a foodborne outbreak.

Table Foodborne Outbreaks: summarised data

	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Salmonella - S. Typhimurium	2	4	0	0	4	6
Salmonella - S. Enteritidis	6	17	3	1	0	6
Salmonella - Other serovars	6	17	5	0	0	6
Campylobacter	15	43	3	0	2	17
Listeria - Listeria monocytogenes	0	unknown	unknown	unknown	0	0
Listeria - Other Listeria	0	unknown	unknown	unknown	0	0
Yersinia	0	unknown	unknown	unknown	0	0
Escherichia coli, pathogenic -	0	unknown	unknown	unknown	0	0
Bacillus - B. cereus	7	24	unknown	unknown	5	12
Bacillus - Other Bacillus	0	unknown	unknown	unknown	0	0
Staphylococcal enterotoxins	2	4	unknown	unknown	0	2
Clostridium - Cl. botulinum	0	unknown	unknown	unknown	0	0
Clostridium - Cl. perfringens	0	unknown	unknown	unknown	0	0
Clostridium - Other Clostridia	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Brucella	0	unknown	unknown	unknown	0	0

	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Other Bacterial agents - Shigella	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Other Bacterial	0	unknown	unknown	unknown	0	0
Parasites - Trichinella	0	unknown	unknown	unknown	0	0
Parasites - Giardia	0	unknown	unknown	unknown	0	0
Parasites - Cryptosporidium	0	unknown	unknown	unknown	0	0
Parasites - Anisakis	0	unknown	unknown	unknown	0	0
Parasites - Other Parasites	0	unknown	unknown	unknown	0	0
Viruses - Norovirus	2	14	0	0	1	3
Viruses - Hepatitis viruses	0	unknown	unknown	unknown	1	1
Viruses - Other Viruses	0	unknown	unknown	unknown	0	0
Other agents - Histamine	0	unknown	unknown	unknown	0	0
Other agents - Marine biotoxins	0	unknown	unknown	unknown	0	0
Other agents - Other Agents	0	unknown	unknown	unknown	0	0
Unknown agent	198	878	1	unknown	0	198