European Food Safety Authority

ZOONOSES MONITORING

NETHERLANDS

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

TRENDS AND SOURCES OF ZOONOSES AND ZOONOTIC AGENTS IN HUMANS, FOODSTUFFS, ANIMALS AND FEEDINGSTUFFS

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

IN 2009

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 ad 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 2009 .

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.

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* 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

		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*
Cattle (bovine animals)	- in total							51592	
Gallus gallus (fowl)	elite breeding flocks, unspecified - in total					998420		66	
	breeding flocks for egg production line - in total					1093671		75	
	broilers							638	
	elite breeding flocks for meat production line			458734500		43285129			
	laying hens					45546731		1422	
	breeding flocks for meat production line - in total			13838000		6933953		299	
	- in total			472572500		96859484		2402	
	breeding flocks, unspecified (in total)					8027624		374	
Goats	mixed herds							12839	
	meat production animals					100124			
	animals over 1 year					254348			
	milk goats					274060			

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*
Goats	animals under 1 year					119836			
	- in total			80900		374184		10303	
Pigs	fattening pigs					5872351		6508	
Pigs - breeding animals - unspecified	breeding animals - unspecified - sows and gilts					1245603		3120	
Pigs	- in total			13856916		12186453		9628	
Sheep	animals over 1 year					561312			
	mixed herds							12839	
	milk ewes			75400					
	animals under 1 year (lambs)			595500		555197			
	- in total			670900		1116509		28350	
Solipeds, domestic	horses - in total			2193		144924		15847	
Wild boars	farmed - in total					1111333		61	

2. INFORMATION ON SPECIFIC ZOONOSES 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	S. Paratyphi B var. Java
Meat from broilers (Gallus gallus) - fresh - at retail [1)]	VWA	Single	25g	615	47	10		6	31
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at retail [2)]	VWA	Single	25g	339	27	3		10	14
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail [3)]	VWA	Single	25g	22	1			1	
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at retail [4)]	VWA	Single	25g	4	0				

Comments:

[1)] monitoring
[2)] monitoring
[3)] monitoring
[4)] monitoring

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 - fresh - at retail [1)]	VWA	Single	25g	21	0			
Meat from bovine animals - meat preparation - intended to be eaten raw - at retail [2)]	VWA	Single	25g	1328	2			2
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail [3)]	VWA	Single	25g	431	3	1	1	1
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail [4)]	VWA	Single	25g	37	0			
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail [5)]	VWA	Single	25g	6	1			1
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail [6)]	VWA	Single	25g	287	4			4
Meat from pig - fresh - at retail [7)]	VWA	Single	25g	313	5	1	2	2
Meat from pig - meat preparation - intended to be eaten cooked - at retail [8)]	VWA	Single	25g	127	1			1
Meat from pig - meat products - cooked, ready-to-eat - at retail [9)]	VWA	Single	25g	334	2		1	1
Meat from pig - minced meat - intended to be eaten cooked - at retail [10)]	VWA	Single	25g	28	0			
Meat from sheep - fresh - at retail [11)]	VWA	Single	25g	69	0			
Meat from sheep - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	3	0			
Meat from sheep - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	6	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 sheep - minced meat - at retail (objective sampling)	VWA	Single	25g	7	0			
Meat, mixed meat - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	8	0			
Meat, mixed meat - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	99	0			
Meat, mixed meat - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	9	0			

Comments:

[1)] objective sampling
[2)] objective sampling
[3)] objective sampling
[4)] objective sampling
[5)] objective sampling
[6)] objective sampling
[7)] Objective sampling
[8)] objective sampling
[9)] objective sampling
[10)] objective sampling
[11)] objective sampling

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	S. Abaetetuba	S. Aberdeen	S. Amsterdam
Crustaceans - unspecified - cooked - at retail [1)]	VWA	Single	25g	15	0						
Eggs - table eggs - at retail [2)]	VWA	Single	25g	16	0						
Live bivalve molluscs [3)]	VWA	Single	25g	5	0						
Seeds, sprouted - ready-to-eat [4)]	VWA	Single	2.5g and 25g	174	1						
Fish - raw - at retail (objective sampling)	VWA	Single	25g	13	0						
Fish - smoked - at retail (objective sampling)	VWA	Single	25g	12	0						
Other food of non-animal origin - at retail (Dry specis, objective sampling)	VWA	Single	25g	1857	63		1			2	
Other food of non-animal origin - at retail (Fresh herbs imported, objective sampling)	VWA	Single	25g	410	32			1		3	4
Other food of non-animal origin - at retail (Fresh herbs, objective sampling)	VWA	Single	25g	768	14				1		

	S. Anatum	S. Bareilly	S. Bispebjerg	S. Brancaster	S. Bredeney	S. Caracas	S. Corvallis	S. Cubana	S. Eastbourne	S. Give	S. Hadar
Crustaceans - unspecified - cooked - at retail [1)]											
Eggs - table eggs - at retail [2)]											
Live bivalve molluscs [3)]											
Seeds, sprouted - ready-to-eat [4)]											
Fish - raw - at retail (objective sampling)											

Table Salmonella in other food

	S. Anatum	S. Bareilly	S. Bispebjerg	S. Brancaster	S. Bredeney	S. Caracas	S. Corvallis	S. Cubana	S. Eastbourne	S. Give	S. Hadar
Fish - smoked - at retail (objective sampling)											
Other food of non-animal origin - at retail (Dry specis, objective sampling)	22	3	1	1		5	1	1			
Other food of non-animal origin - at retail (Fresh herbs imported, objective sampling)							3		1	1	
Other food of non-animal origin - at retail (Fresh herbs, objective sampling)					1						1

	S. Halle	S. Hvittingfoss	S. Javiana	S. Kentucky	S. Kibusi	S. Kingabwa	S. Krefeld	S. Lexington	S. Mbandaka	S. Mikawasima	S. Montevideo
Crustaceans - unspecified - cooked - at retail [1)]											
Eggs - table eggs - at retail [2)]											
Live bivalve molluscs [3)]											
Seeds, sprouted - ready-to-eat [4)]											
Fish - raw - at retail (objective sampling)											
Fish - smoked - at retail (objective sampling)											
Other food of non-animal origin - at retail (Dry specis, objective sampling)	2	1			1	1			6	5	1
Other food of non-animal origin - at retail (Fresh herbs imported, objective sampling)		1	1				1		1		
Other food of non-animal origin - at retail (Fresh herbs, objective sampling)				1				2			

Table Salmonella in other food

	S. Newport	S. Orientalis	S. Ouakam	S. Poona	S. Reading	S. Rubislaw	S. Senftenberg	S. Stanley	S. Virchow	S. Wandsworth	S. Weltevreden
Crustaceans - unspecified - cooked - at retail [1)]											
Eggs - table eggs - at retail [2)]											
Live bivalve molluscs [3)]											
Seeds, sprouted - ready-to-eat [4)]											1
Fish - raw - at retail (objective sampling)											
Fish - smoked - at retail (objective sampling)											
Other food of non-animal origin - at retail (Dry specis, objective sampling)			1			1	2				1
Other food of non-animal origin - at retail (Fresh herbs imported, objective sampling)				1				1	2	3	7
Other food of non-animal origin - at retail (Fresh herbs, objective sampling)	2	1			1						3

	S. enterica subsp. enterica	S. enterica subsp. salamae
Crustaceans - unspecified - cooked - at retail [1)]		
Eggs - table eggs - at retail [2)]		
Live bivalve molluscs [3)]		
Seeds, sprouted - ready-to-eat [4)]		
Fish - raw - at retail (objective sampling)		
Fish - smoked - at retail (objective sampling)		

Table Salmonella in other food

	S. enterica subsp. enterica	S. enterica subsp. salamae
Other food of non-animal origin - at retail (Dry specis, objective sampling)	2	2
Other food of non-animal origin - at retail (Fresh herbs imported, objective sampling)	1	
Other food of non-animal origin - at retail (Fresh herbs, objective sampling)	1	

Comments:

[1)] objective sampling
[2)] objective sampling
[3)] at retail, objective sampling
[4)] at retail, objective sampling

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 - soft and semi-soft - made from pasteurised milk - at retail [1)]	VWA	Single	25g	10	0			
Dairy products (excluding cheeses) - cream - made from raw or low heat-treated milk - at retail (objective sampling)	VWA	Single	25g	2	0			
Dairy products (excluding cheeses) - dairy desserts - at retail (objective sampling)	VWA	Single	25g	6	0			
Dairy products (excluding cheeses) - ice-cream - at retail (objective sampling)	VWA	Single	25g	20	0			

Comments:

[1)] objective sampling

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	Salmonella spp., unspecified
Gallus gallus (fowl) - grandparent breeding flocks for broiler production line - in total - Control and eradication programmes (feces)	111	PPE	Flock	111	0						
Gallus gallus (fowl) - grandparent breeding flocks for egg production line - at farm - Control and eradication programmes (feces)	18	PPE	Flock	18	0						
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks - in total - Control and eradication programmes (box paper)	395	PPE	Flock	395	0						
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period - in total - Control and eradication programmes (feces)	395	PPE	Flock	395	1						1
Gallus gallus (fowl) - parent breeding flocks for broiler production line - in total - Control and eradication programmes (production period, feces)	662	PPE	Flock	662	5	3			1		1
Gallus gallus (fowl) - parent breeding flocks for egg production line - at farm - Control and eradication programmes (production period, feces)	59	PPE	Flock	59	0						
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks - at farm - Control and eradication programmes (box paper)	59	PPE	Flock	59	0						

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	Salmonella spp., unspecified
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - at farm - Control and eradication programmes (feces)	59	PPE	Flock	59	0						

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	Salmonella spp., unspecified
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling [1)]	2240	PPE	Flock	2240		29	4	
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	29193	PPE	Flock	29193	774	21	39	714
Gallus gallus (fowl) - broilers - day-old chicks - in total (box paper)	29099	PPE	Flock	29099	112	28	30	54
Gallus gallus (fowl) - laying hens - during rearing period - in total - Control and eradication programmes (blood/feces)	1235	PPE	Flock	1235	0			

Comments:

[1)] feces

Footnote:

For Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling: total units positive for Salmonella not available

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Typhimurium - FT 507	S. 4,12:i:-	S. Cubana	S. Dublin
Cattle (bovine animals) [1)]	VMDC	Animal	103	2		1	1				
Solipeds, domestic [2)]	VMDC	Animal	258	14		11	3				
Cats - pet animals - in total - Clinical investigations [3)]	VMDC	Animal	245	3		2	1				
Cattle (bovine animals) - at farm - Clinical investigations [4)]	GD	Animal	2934	154		27	44				83
Cattle (bovine animals) - calves (under 1 year) - at farm - animal sample - faeces - Surveillance	VWA	Herd	175	10		1		1		1	4
Cattle (bovine animals) - dairy cows - at farm - animal sample - faeces - Surveillance	VWA	Herd	155	8		2			1		4
Cattle (bovine animals) - in total - Clinical investigations	GD	Animal	2648	34		15	4				15
Deer - at farm - Clinical investigations (faeces)	GD	Animal	1	0							
Dogs - pet animals - in total - Clinical investigations [5)]	VMDC	Animal	454	3		3					
Goats - at farm - Clinical investigations (faeces)	GD	Animal	62	0							
Goats - in total - Clinical investigations	GD	Animal	302	0							
Other animals - at zoo - Clinical investigations	GD	Animal	28	1			1				
Pigs - at farm - Clinical investigations (faeces)	GD	Animal	548	58		43	15				
Pigs - in total - Clinical investigations	GD	Animal	3541	10		4	2				4
Sheep - at farm - Clinical investigations [6)]	GD	Animal	42	2							2
Sheep - in total - Clinical investigations	GD	Animal	502	2			2				

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Typhimurium - FT 507	S. 4,12:i:-	S. Cubana	S. Dublin
Solipeds, domestic - donkeys - at farm - Clinical investigations (faeces)	GD	Animal	3	0							
Solipeds, domestic - horses - at farm - Clinical investigations (faeces)	GD	Animal	323	15	3	8	2				2

	S. Mbandaka	S. Montevideo	S. enterica subsp. enterica - rough
Cattle (bovine animals) [1)]			
Solipeds, domestic [2)]			
Cats - pet animals - in total - Clinical investigations [3)]			
Cattle (bovine animals) - at farm - Clinical investigations [4)]			
Cattle (bovine animals) - calves (under 1 year) - at farm - animal sample - faeces - Surveillance	1	3	
Cattle (bovine animals) - dairy cows - at farm - animal sample - faeces - Surveillance			1
Cattle (bovine animals) - in total - Clinical investigations			
Deer - at farm - Clinical investigations (faeces)			
Dogs - pet animals - in total - Clinical investigations [5)]			
Goats - at farm - Clinical investigations (faeces)			

Table Salmonella in other animals

	S. Mbandaka	S. Montevideo	S. enterica subsp. enterica - rough
Goats - in total - Clinical investigations			
Other animals - at zoo - Clinical investigations			
Pigs - at farm - Clinical investigations (faeces)			
Pigs - in total - Clinical investigations			
Sheep - at farm - Clinical investigations [6)]			
Sheep - in total - Clinical investigations			
Solipeds, domestic - donkeys - at farm - Clinical investigations (faeces)			
Solipeds, domestic - horses - at farm - Clinical investigations (faeces)			

Comments:

[1)] faeces
[2)] faeces
[3)] faeces
[4)] faeces
[5)] faeces
[6)] faeces

Footnote:

Cattle, calves, surveillance VWA: in 1 herd 2 samples tested positive: 1 S. montevideo and 1 S. Mbandaka

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Pigeons [1)]	GD	Animal	25	5		4	1
Ducks - in total - Clinical investigations	GD	Animal	2	1			1
Parrots - in total - Clinical investigations	GD	Animal	1	0			

Comments:

[1)] clinical investigation

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. Infantis	S. Livingstone	S. Mbandaka
Compound feedingstuffs for cattle - final product [1)]	PDV	Batch	25g	2287	2			1		1	
Compound feedingstuffs for pigs - final product [2)]	PDV	Batch	25g	2842	5			1	2		1
Compound feedingstuffs for poultry (non specified) - final product [3)]	PDV	Batch	25g	268	0						
Compound feedingstuffs for poultry - laying hens - final product [4)]	PDV	Batch	25g	3692	10			2	1	4	
Compound feedingstuffs for poultry -breeders - final product [5)]	PDV	Batch	25g	2165	0						
Compound feedingstuffs for poultry - broilers - final product [6)]	PDV	Batch	25g	1828	1			1			
Pet food - dog snacks (pig ears, chewing bones) [7)]	PDV	Batch	25g	20	0						
Compound feedingstuffs for fur animal (mink) [8)]	PDV	Batch	25g	5	0						
Compound feedingstuffs for horses [9)]	PDV	Batch	25g	52	0						
Compound feedingstuffs for poultry (non specified) (ducks) [10)]	PDV	Single	25g	35	0						
Compound feedingstuffs for poultry (non specified) (turkeys) [11)]	PDV	Batch	25g	248	0						
Compound feedingstuffs for poultry (non specified) (turkeys, breedproduction) [12)]	PDV	Batch	25g	94	0						
Compound feedingstuffs for poultry (non specified) (turkeys, broilers) [13)]	PDV	Batch	25g	81	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. Infantis	S. Livingstone	S. Mbandaka
Compound feedingstuffs for rabbits [14)]	PDV	Batch	25g	9	0						
Compound feedingstuffs for rabbits (meat) [15)]	PDV	Batch	25g	6	0						
Compound feedingstuffs for sheep [16)]	PDV	Batch	25g	19	0						
Compound feedingstuffs for sheep (artificial milk lambs) [17)]	PDV	Batch	25g	32	0						
Compound feedingstuffs for sheep - final product (lambs) [18)]	PDV	Batch	25g	5	0						
Compound feedingstuffs, not specified [19)]	PDV	Batch	25g	173	0						
Compound feedingstuffs, not specified (goats) [20)]	PDV	Batch	25g	14	0						
Pet food [21)]	PDV	Batch	25g	40	0						
Pet food - final product (cat food) [22)]	PDV	Batch	25g	44	0						
Pet food - final product - in total (dog feed) [23)]	PDV	Batch	25g	144	0						
Pet food - in total (tropical bird feed) [24)]	PDV	Batch	25g	2	0						
Premixtures [25)]	PDV	Batch	25g	16	0						
Premixtures (calves) [26)]	PDV	Batch	25g	10	0						
Premixtures (cattle) [27)]	PDV	Batch	25g	16	0						
Premixtures (horses) [28)]	PDV	Batch	25g	1	0						
Premixtures (petfood) [29)]	PDV	Batch	25g	8	0						
Premixtures (piglets) [30)]	PDV	Batch	25g	21	0						
Premixtures (poultry) [31)]	PDV	Batch	25g	25	0						
Premixtures (sheep) [32)]	PDV	Batch	25g	3	0						

Table Salmonella in compound feedingstuffs

	S. Rissen	S. Senftenberg	S. group B
Compound feedingstuffs for cattle - final product [1)]			
Compound feedingstuffs for pigs - final product [2)]	1		
Compound feedingstuffs for poultry (non specified) - final product [3)]			
Compound feedingstuffs for poultry - laying hens - final product [4)]		2	1
Compound feedingstuffs for poultry -breeders - final product [5)]			
Compound feedingstuffs for poultry - broilers - final product [6)]			
Pet food - dog snacks (pig ears, chewing bones) [7)]			
Compound feedingstuffs for fur animal (mink) [8)]			
Compound feedingstuffs for horses [9)]			
Compound feedingstuffs for poultry (non specified) (ducks) [10)]			
Compound feedingstuffs for poultry (non specified) (turkeys) [11)]			
Compound feedingstuffs for poultry (non specified) (turkeys, breedproduction) [12)]			
Compound feedingstuffs for poultry (non specified) (turkeys, broilers) [13)]			
Compound feedingstuffs for rabbits [14)]			
Compound feedingstuffs for rabbits (meat) [15)]			
Compound feedingstuffs for sheep [16)]			

Table Salmonella in compound feedingstuffs

	S. Rissen	S. Senftenberg	S. group B
Compound feedingstuffs for sheep (artificial milk lambs) [17)]			
Compound feedingstuffs for sheep - final product (lambs) [18)]			
Compound feedingstuffs, not specified [19)]			
Compound feedingstuffs, not specified (goats) [20)]			
Pet food [21)]			
Pet food - final product (cat food) [22)]			
Pet food - final product - in total (dog feed) [23)]			
Pet food - in total (tropical bird feed) [24)]			
Premixtures [25)]			
Premixtures (calves) [26)]			
Premixtures (cattle) [27)]			
Premixtures (horses) [28)]			
Premixtures (petfood) [29)]			
Premixtures (piglets) [30)]			
Premixtures (poultry) [31)]			
Premixtures (sheep) [32)]			

Comments:

[1)] monitoring
[2)] monitoring

Table Salmonella in compound feedingstuffs

[3] monitoring
[4] monitoring
[5] monitoring
[6] monitoring
[7] monitoring
[8] monitoring
[9] monitoring
[10] monitoring
[11] monitoring
[12] monitoring
[13] monitoring
[14] monitoring
[15] monitoring
[16] monitoring
[17] monitoring
[18] monitoring
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[22] monitoring
[23] monitoring
[24] monitoring
[25] monitoring
[26] monitoring
[27] monitoring
[28] monitoring
[29] monitoring
[30] monitoring
[31] monitoring
[32] monitoring

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. Anatum	S. Cerro
Feed material of cereal grain origin - barley derived [1)]	PDV	Batch	25g	178	0						
Feed material of cereal grain origin - maize [2)]	PDV	Batch	25g	36	0						
Feed material of cereal grain origin - maize - derived [3)]	PDV	Batch	25g	156	1			1			
Feed material of cereal grain origin - wheat derived [4)]	PDV	Batch	25g	676	2			1			
Feed material of oil seed or fruit origin - groundnut derived [5)]	PDV	Batch	25g	1	0						
Feed material of oil seed or fruit origin - linseed derived [6)]	PDV	Batch	25g	46	1			1			
Feed material of oil seed or fruit origin - other oil seeds derived [7)]	PDV	Batch	25g	14	0						
Feed material of oil seed or fruit origin - palm kernel derived [8)]	PDV	Batch	25g	120	0						
Feed material of oil seed or fruit origin - rape seed derived [9)]	PDV	Batch	25g	3971	19			5			
Feed material of oil seed or fruit origin - soya (bean) derived [10)]	PDV	Batch	25g	3081	41			6	1	1	1
Feed material of oil seed or fruit origin - sunflower seed derived [11)]	PDV	Batch	25g	706	3			3			
Other feed material - forages and roughages [12)]	PDV	Batch	25g	21	0						
Other feed material - legume seeds and similar products [13)]	PDV	Batch	25g	104	0						
Other feed material - other plants [14)]	PDV	Batch	25g	253	1			1			

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. Anatum	S. Cerro
Other feed material - other seeds and fruits [15)]	PDV	Batch	25g	35	0						
Other feed material - tubers, roots and similar products [16)]	PDV	Batch	25g	100	0						
Feed material of cereal grain origin [17)]	PDV	Batch	25g	152	0						

	S. Cubana	S. Havana	S. Infantis	S. Kentucky	S. Lexington	S. Livingstone	S. Mbandaka	S. Minnesota	S. Montevideo	S. Oranienburg	S. Ouakam
Feed material of cereal grain origin - barley derived [1)]											
Feed material of cereal grain origin - maize [2)]											
Feed material of cereal grain origin - maize - derived [3)]											
Feed material of cereal grain origin - wheat derived [4)]											
Feed material of oil seed or fruit origin - groundnut derived [5)]											
Feed material of oil seed or fruit origin - linseed derived [6)]											
Feed material of oil seed or fruit origin - other oil seeds derived [7)]											
Feed material of oil seed or fruit origin - palm kernel derived [8)]											
Feed material of oil seed or fruit origin - rape seed derived [9)]		3					1			3	

Table Salmonella in other feed matter

	S. Cubana	S. Havana	S. Infantis	S. Kentucky	S. Lexington	S. Livingstone	S. Mbandaka	S. Minnesota	S. Montevideo	S. Oranienburg	S. Ouakam
Feed material of oil seed or fruit origin - soya (bean) derived [10)]	2	1	1	1	1	5	1	1	1		1
Feed material of oil seed or fruit origin - sunflower seed derived [11)]											
Other feed material - forages and roughages [12)]											
Other feed material - legume seeds and similar products [13)]											
Other feed material - other plants [14)]											
Other feed material - other seeds and fruits [15)]											
Other feed material - tubers, roots and similar products [16)]											
Feed material of cereal grain origin [17)]											

	S. Rissen	S. Senftenberg	S. group B	S. group G
Feed material of cereal grain origin - barley derived [1)]				
Feed material of cereal grain origin - maize [2)]				
Feed material of cereal grain origin - maize - derived [3)]				
Feed material of cereal grain origin - wheat derived [4)]			1	

Table Salmonella in other feed matter

	S. Rissen	S. Senftenberg	S. group B	S. group G
Feed material of oil seed or fruit origin - groundnut derived [5)]				
Feed material of oil seed or fruit origin - linseed derived [6)]				
Feed material of oil seed or fruit origin - other oil seeds derived [7)]				
Feed material of oil seed or fruit origin - palm kernel derived [8)]				
Feed material of oil seed or fruit origin - rape seed derived [9)]	1	6		
Feed material of oil seed or fruit origin - soya (bean) derived [10)]	8	8		1
Feed material of oil seed or fruit origin - sunflower seed derived [11)]				
Other feed material - forages and roughages [12)]				
Other feed material - legume seeds and similar products [13)]				
Other feed material - other plants [14)]				
Other feed material - other seeds and fruits [15)]				
Other feed material - tubers, roots and similar products [16)]				
Feed material of cereal grain origin [17)]				

Comments:

[1)] monitoring

Table Salmonella in other feed matter

[2)] monitoring
[3)] monitoring
[4)] monitoring
[5)] monitoring
[6)] monitoring
[7)] monitoring
[8)] monitoring
[9)] monitoring
[10)] monitoring
[11)] monitoring
[12)] monitoring
[13)] monitoring
[14)] monitoring
[15)] monitoring
[16)] monitoring
[17)] monitoring

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. Infantis	S. group C1
Feed material of land animal origin - animal fat [1)]	PDV	Batch	25g	3	0					
Feed material of land animal origin - feather meal [2)]	PDV	Batch	25g	1	0					
Feed material of land animal origin - meat and bone meal [3)]	PDV	Batch	25g	8	0					
Feed material of land animal origin - meat meal [4)]	PDV	Batch	25g	18	2					2
Feed material of land animal origin - poultry offal meal [5)]	PDV	Batch	25g	40	1					1
Feed material of marine animal origin - fish meal [6)]	PDV	Batch	25g	234	1					1
Feed material of marine animal origin - other fish products [7)]	PDV	Batch	25g	22	0					
All feedingstuffs (milk products) [8)]	PDV	Batch	25g	547	0					
Feed material of land animal origin (egg shell, heated) [9)]	PDV	Batch	25g	67	0					
Feed material of land animal origin (hemoglobin powder) [10)]	PDV	Batch	25g	3	0					
Feed material of land animal origin (lambs meal) [11)]	PDV	Batch	25g	4	0					
Feed material of land animal origin (rabbit meal) [12)]	PDV	Batch	25g	4	1			1		
Feed material of land animal origin - egg powder [13)]	PDV	Batch	25g	15	0					

Comments:

[1)] monitoring
[2)] monitoring
[3)] monitoring

Table Salmonella in feed material of animal origin

[4] monitoring
[5] monitoring
[6] monitoring
[7] monitoring
[8] monitoring
[9] monitoring
[10] monitoring
[11] monitoring
[12] monitoring
[13] monitoring

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 animals

Serovar	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Cattle (bovine animals) - calves (under 1 year)	
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
Number of isolates in the laboratory	15								18	
Number of isolates serotyped	13	0	0	0	0	0	0	0	18	0
Number of isolates per serovar										
Other serotypes	1									
S. Cubana									4	
S. Dublin	9								7	
S. Mbandaka									1	
S. Montevideo									3	
S. Typhimurium	3								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 of non-animal origin (Dry spices)	Other food of non-animal origin (Fresh herbs imported)	Other food of non-animal origin (Fresh herbs)	Seeds, sprouted
Sources of isolates	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
Number of isolates in the laboratory									
Number of isolates serotyped	10	8	74	0	0	63	31	14	1
Number of isolates per serovar									
Other serotypes	1	3	1						
S. Abaetetuba								1	
S. Aberdeen						2	3		
S. Altona	1								
S. Amsterdam							4		
S. Anatum						22			
S. Bareilly						3			
S. Bispebjerg						1			
S. Brancaster						1			
S. Bredeney								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 of non-animal origin (Dry spices)	Other food of non-animal origin (Fresh herbs imported)	Other food of non-animal origin (Fresh herbs)	Seeds, sprouted
Sources of isolates	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
Number of isolates in the laboratory									
Number of isolates serotyped	10	8	74	0	0	63	31	14	1
Number of isolates per serovar									
S. Caracas						5			
S. Corvallis						1	3		
S. Cubana						1			
S. Derby	1	1							
S. Dublin	3	1							
S. Eastbourne							1		
S. Enteritidis	1	1	13						
S. Give							1		
S. Hadar			1					1	
S. Halle						2			
S. Heidelberg			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 of non-animal origin (Dry spices)	Other food of non-animal origin (Fresh herbs imported)	Other food of non-animal origin (Fresh herbs)	Seeds, sprouted
Sources of isolates	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
Number of isolates in the laboratory									
Number of isolates serotyped	10	8	74	0	0	63	31	14	1
Number of isolates per serovar									
S. Hvittingfoss						1	1		
S. Indiana			2						
S. Infantis			8						
S. Javiana							1		
S. Kentucky								1	
S. Kiambu			1						
S. Kibusi						1			
S. Kingabwa						1			
S. Krefeld							1		
S. Lexington								2	
S. Livingstone			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 of non-animal origin (Dry spices)	Other food of non-animal origin (Fresh herbs imported)	Other food of non-animal origin (Fresh herbs)	Seeds, sprouted
Sources of isolates	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
Number of isolates in the laboratory									
Number of isolates serotyped	10	8	74	0	0	63	31	14	1
Number of isolates per serovar									
S. Mbandaka			1			6	1		
S. Mikawasima						5			
S. Montevideo						1			
S. Newport								2	
S. Orientalis								1	
S. Ouakam						1			
S. Paratyphi B var. Java	1		45						
S. Poona							1		
S. Reading								1	
S. Rubislaw						1			
S. Senftenberg						2			

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 of non-animal origin (Dry spices)	Other food of non-animal origin (Fresh herbs imported)	Other food of non-animal origin (Fresh herbs)	Seeds, sprouted
Sources of isolates	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
Number of isolates in the laboratory									
Number of isolates serotyped	10	8	74	0	0	63	31	14	1
Number of isolates per serovar									
S. Stanley							1		
S. Typhimurium	2	2				1			
S. Virchow							2		
S. Wandsworth							3		
S. Weltevreden						1	7	3	1
S. enterica subsp. enterica						2	1	1	
S. enterica subsp. salamae						2			

Table Salmonella Typhimurium phagetypes in animals

Phagetype	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry	
	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
	33							
	6	0	0	0	0	0	0	0
4	2							
FT 507	2							
Not typeable	1							
Other	1							

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
	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
	1	1	13		
	1	1	13	0	0
Not typeable	1	1			
PT 1			1		
PT 21			5		
PT 4			5		
PT 51			1		
PT 6a			1		

Table Salmonella Typhimurium 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
	Monitoring	Monitoring	Monitoring	Monitoring	Monitoring
	1	3	0	0	0
FT 506	1				
Other		3			

2.1.6 Antimicrobial resistance in Salmonella isolates

Table Antimicrobial susceptibility testing of Salmonella in Turkeys

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes	
Isolates out of a monitoring program (yes/no)	no		no				no	
Number of isolates available in the laboratory	0		0				2	
Antimicrobials:	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol							2	0
Amphenicols - Florfenicol							2	0
Cephalosporins - 3rd generation cephalosporins							2	0
Fluoroquinolones - Ciprofloxacin							2	1
Quinolones - Nalidixic acid							2	1
Trimethoprim							2	0
Sulfonamides - Sulfonamide							2	0
Aminoglycosides - Streptomycin							2	0
Aminoglycosides - Gentamicin							2	0
Aminoglycosides - Neomycin							2	0
Aminoglycosides - Kanamycin							2	0
Penicillins - Ampicillin							2	2
Tetracyclines - Tetracycline							2	1
Fully sensitive							2	0
Resistant to 1 antimicrobial							2	1
Resistant to 2 antimicrobials							2	0
Resistant to 3 antimicrobials							2	1
Resistant to 4 antimicrobials							2	0

Table Antimicrobial susceptibility testing of Salmonella in Turkeys

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes	
Isolates out of a monitoring program (yes/no)	no		no				no	
Number of isolates available in the laboratory	0		0				2	
Antimicrobials:	N	n	N	n	N	n	N	n
Resistant to >4 antimicrobials							2	0

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

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes		S. Infantis		S. Paratyphi B var. Java	
Isolates out of a monitoring program (yes/no)	no		no				no		no		no	
Number of isolates available in the laboratory	34		0				175		16		77	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol	34	0					175	6	16	0	77	5
Amphenicols - Florfenicol	34	0					175	1	16	0	77	1
Cephalosporins - 3rd generation cephalosporins	34	0					175	20	16	0	77	17
Fluoroquinolones - Ciprofloxacin	34	2					175	56	16	2	77	44
Quinolones - Nalidixic acid	34	2					175	52	16	2	77	40
Trimethoprim	34	0					175	85	16	1	77	77
Sulfonamides - Sulfonamide	34	0					175	70	16	2	77	50
Aminoglycosides - Streptomycin	34	0					175	50	16	2	77	36
Aminoglycosides - Gentamicin	34	0					175	7	16	1	77	6
Aminoglycosides - Kanamycin	34	0					175	21	16	1	77	10
Penicillins - Ampicillin	34	2					175	57	16	1	77	48
Tetracyclines - Tetracycline	34	0					175	38	16	1	77	16
Fully sensitive	34	30					175	57	16	10	77	0
Resistant to 1 antimicrobial	34	4					175	16	16	4	77	4
Resistant to 2 antimicrobials	34	0					175	17	16	0	77	7
Resistant to 3 antimicrobials	34	0					175	39	16	1	77	28
Resistant to 4 antimicrobials	34	0					175	14	16	1	77	10
Resistant to >4 antimicrobials	34	0					175	32	16	0	77	28

Table Antimicrobial susceptibility testing of Salmonella in Pigs

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes		S. Bovismorbificans		S. Brandenburg		S. Derby		S. Infantis		S. Livingstone	
Isolates out of a monitoring program (yes/no)			no				no		yes		yes		no		yes		yes	
Number of isolates available in the laboratory			21				25		5		4		7		6		2	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol			21	5					5	0	4	0	7	1	6	0	2	0
Amphenicols - Florfenicol			21	5				0	5	0	4	0	7	0	6	0	2	0
Cephalosporins - 3rd generation cephalosporins			21	0				0					7	0				
Fluoroquinolones - Ciprofloxacin			21	1				0	5	0	4	0	7	0	6	0	2	0
Quinolones - Nalidixic acid			21	1				0	5	0	4	0	7	0	6	0	2	0
Trimethoprim			21	5					5	0	4	2	7	2	6	0	2	0
Sulfonamides - Sulfonamide			21	12									7	3				
Aminoglycosides - Streptomycin			21	9					5	0	4	0	7	3	6	2	2	0
Aminoglycosides - Gentamicin			21	0				0	5	0	4	0	7	0	6	0	2	0
Aminoglycosides - Kanamycin			21	0					5	0	4	0	7	1	6	0	2	0
Penicillins - Ampicillin			21	14					5	0	4	0	7	1	6	0	2	0
Tetracyclines - Tetracycline			21	16					5	0	4	3	7	2	6	0	2	0
Fully sensitive			21	2					5	5	4	1	7	4	6	4	2	2
Resistant to 1 antimicrobial			21	5						0	4	1	7	0	6	2		0
Resistant to 2 antimicrobials			21	1						0	4	2	7	0		0		0
Resistant to 3 antimicrobials			21	3						0	4	0	7	0		0		0
Resistant to 4 antimicrobials			21	5						0	4	0	7	2		0		0
Resistant to >4 antimicrobials			21	5						0	4	0	7	1		0		0
Number of multiresistant S. Typhimurium - with penta resistance			21	5														
Number of multiresistant S. Typhimurium - resistant to other antimicrobials			21	0														

Table Antimicrobial susceptibility testing of Salmonella in Pigs

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes		S. Bovismorbificans		S. Brandenburg		S. Derby		S. Infantis		S. Livingstone	
Isolates out of a monitoring program (yes/no)			no				no		yes		yes		no		yes		yes	
Number of isolates available in the laboratory			21				25		5		4		7		6		2	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Cephalosporins - Cefotaxim									5	0	4	0			6	0	2	0
Cephalosporins - Ceftazidim									5	0	4	0			6	0	2	0
Polymyxins - Colistin									5	0	4	0			6	0	2	0

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)	no					
Number of isolates available in the laboratory	8					
Antimicrobials:	N	n	N	n	N	n
Amphenicols - Chloramphenicol	8	0				
Amphenicols - Florfenicol	8	0				
Cephalosporins - 3rd generation cephalosporins	8	0				
Fluoroquinolones - Ciprofloxacin	8	0				
Quinolones - Nalidixic acid	8	0				
Trimethoprim	8	0				
Sulfonamides - Sulfonamide	8	0				
Aminoglycosides - Streptomycin	8	0				
Aminoglycosides - Gentamicin	8	0				
Aminoglycosides - Kanamycin	8	0				
Penicillins - Ampicillin	8	0				
Tetracyclines - Tetracycline	8	0				
Fully sensitive	8	8				
Resistant to 1 antimicrobial	8	0				
Resistant to 2 antimicrobials	8	0				
Resistant to 3 antimicrobials	8	0				
Resistant to 4 antimicrobials	8	0				
Resistant to >4 antimicrobials	8	0				

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

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.	
Isolates out of a monitoring program (yes/no)	no		no			
Number of isolates available in the laboratory	26		0			
Antimicrobials:	N	n	N	n	N	n
Amphenicols - Chloramphenicol	26	0				
Amphenicols - Florfenicol	26	0				
Cephalosporins - 3rd generation cephalosporins	26	0				
Fluoroquinolones - Ciprofloxacin	26	2				
Quinolones - Nalidixic acid	26	2				
Trimethoprim	26	0				
Sulfonamides - Sulfonamide	26	0				
Aminoglycosides - Streptomycin	26	0				
Aminoglycosides - Gentamicin	26	0				
Aminoglycosides - Kanamycin	26	0				
Penicillins - Ampicillin	26	2				
Tetracyclines - Tetracycline	26	0				
Fully sensitive	26	22				
Resistant to 1 antimicrobial	26	4				
Resistant to 2 antimicrobials	26	0				
Resistant to 3 antimicrobials	26	0				
Resistant to 4 antimicrobials	26	0				
Resistant to >4 antimicrobials	26	0				

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

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes		S. Dublin	
Isolates out of a monitoring program (yes/no)			no				no		no	
Number of isolates available in the laboratory			12				14		47	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol			12	3			14	0	47	0
Amphenicols - Florfenicol			12	3			14	0	47	0
Cephalosporins - 3rd generation cephalosporins			12	0			14	0	47	0
Fluoroquinolones - Ciprofloxacin			12	1			14	1	47	2
Quinolones - Nalidixic acid			12	1			14	1	47	2
Trimethoprim			12	3			14	0	47	0
Sulfonamides - Sulfonamide			12	7			14	7	47	0
Aminoglycosides - Streptomycin			12	5			14	8	47	1
Aminoglycosides - Gentamicin			12	0			14	0	47	0
Aminoglycosides - Kanamycin			12	0			14	0	47	0
Penicillins - Ampicillin			12	7			14	7	47	1
Tetracyclines - Tetracycline			12	6			14	3	47	2
Fully sensitive			12	3					47	43
Resistant to 1 antimicrobial			12	2					47	3
Resistant to 2 antimicrobials			12	1					47	0
Resistant to 3 antimicrobials			12	1					47	1
Resistant to 4 antimicrobials			12	2					47	0
Resistant to >4 antimicrobials			12	3					47	0
Number of multiresistant S. Typhimurium - with penta resistance			12	3						
Number of multiresistant S. Typhimurium - resistant to other antimicrobials			12	0						

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

Salmonella	Salmonella spp.		S. Enteritidis		S. Heidelberg		S. Indiana		S. Infantis		S. Livingstone		S. Mbandaka		S. Minnesota		S. Paratyphi B var. Java		S. Thompson		S. Virchow	
Isolates out of a monitoring program (yes/no)			yes		yes		yes		yes		yes		yes		yes		yes		yes		yes	
Number of isolates available in the laboratory			2		1		2		7		1		1		5		3		4		1	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol			2	0	1	1	2	0	7	0	1	0	1	0	5	0	3	0	4	0	1	0
Fluoroquinolones - Ciprofloxacin			2	0	1	0	2	0	7	2	1	0	1	0	5	0	3	2	4	3	1	0
Quinolones - Nalidixic acid			2	0	1	0	2	0	7	2	1	0	1	0	5	0	3	2	4	3	1	0
Trimethoprim			2	0	1	1	2	0	7	2	1	0	1	0	5	0	3	2	4	0	1	0
Aminoglycosides - Streptomycin			2	0	1	1	2	0	7	3	1	0	1	1	5	2	3	2	4	1	1	0
Aminoglycosides - Gentamicin			2	0	1	0	2	0	7	2	1	0	1	0	5	0	3	0	4	0	1	0
Aminoglycosides - Kanamycin			2	0	1	0	2	0	7	0	1	1	1	0	5	2	3	0	4	3	1	0
Penicillins - Ampicillin			2	0	1	1	2	0	7	0	1	0	1	0	5	0	3	1	4	0	1	0
Tetracyclines - Tetracycline			2	0	1	0	2	0	7	3	1	1	1	0	5	5	3	0	4	3	1	0
Fully sensitive			2	2			2	2	7	4							3	1	4	1	1	1
Resistant to 1 antimicrobial				0									1	1	5	1						
Resistant to 2 antimicrobials				0							1	1			5	4						
Resistant to 3 antimicrobials				0					7	1												
Resistant to 4 antimicrobials				0													3	1	4	2		
Resistant to >4 antimicrobials				0	1	1			7	2							3	1	4	1		
Cephalosporins - Cefotaxim			2	0	1	1	2	0	7	0	1	0	1	0	5	0	3	0	4	0	1	0
Cephalosporins - Ceftazidim			2	0	1	1	2	0	7	0	1	0	1	0	5	0	3	0	4	0	1	0
Polymyxins - Colistin			2	0	1	0	2	0	7	0	1	0	1	0	5	0	3	0	4	0	1	0

Table Antimicrobial susceptibility testing of Salmonella in meat from pig

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

Table Antimicrobial susceptibility testing of Salmonella in meat from bovine animals

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

Table Antimicrobial susceptibility testing of Salmonella in humans

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes		S. 4,5,12:i:-		S. Infantis		S. Kentucky		S. Newport		S. Virchow	
Isolates out of a monitoring program (yes/no)	no		no				no		no		no		no		no		no	
Number of isolates available in the laboratory	368		317				430		82		34		16		25		16	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol	368	2	317	75			430	17	82	5	34	3	16	0	25	0	16	0
Amphenicols - Florfenicol	368	1	317	66			430	9	82	1	34	2	16	0	25	0	16	0
Cephalosporins - 3rd generation cephalosporins	368	1	317	1			430	3	82	1	34	1	16	0	25	0	16	0
Fluoroquinolones - Ciprofloxacin	368	52	317	19			430	77	82	1	34	8	16	15	25	0	16	11
Quinolones - Nalidixic acid	368	50	317	16			430	67	82	0	34	8	16	15	25	0	16	10
Trimethoprim	368	2	317	74			430	38	82	8	34	4	16	0	25	0	16	5
Sulfonamides - Sulfonamide	368	7	317	178			430	129	82	69	34	7	16	11	25	1	16	5
Aminoglycosides - Streptomycin	368	9	317	122			430	120	82	66	34	5	16	11	25	1	16	4
Aminoglycosides - Gentamicin	368	1	317	0			430	20	82	3	34	0	16	10	25	0	16	1
Aminoglycosides - Kanamycin	368	1	317	2			430	18	82	3	34	3	16	1	25	0	16	0
Penicillins - Ampicillin	368	29	317	155			430	96	82	61	34	1	16	7	25	0	16	0
Tetracyclines - Tetracycline	368	18	317	138			430	134	82	72	34	7	16	12	25	1	16	6
Fully sensitive	368	296	317	82			430	197	82	3	34	26	16	1	25	24	16	5
Resistant to 1 antimicrobial	368	48	317	51			430	81	82	9	34	1	16	1	25	0	16	4
Resistant to 2 antimicrobials	368	13	317	61			430	36	82	1	34	0	16	2	25	0	16	2
Resistant to 3 antimicrobials	368	3	317	10			430	52	82	12	34	1	16	1	25	1	16	0
Resistant to 4 antimicrobials	368	5	317	36			430	33	82	51	34	1	16	1	25	0	16	2
Resistant to >4 antimicrobials	368	3	317	77			430	31	82	6	34	5	16	10	25	0	16	3
Number of multiresistant S. Typhimurium - with penta resistance			317	51														
Number of multiresistant S. Typhimurium - resistant to other antimicrobials			317	26														

Table Antimicrobial susceptibility testing of Salmonella in Pigs - Monitoring

Salmonella	S. Derby		S. Typhimurium	
Isolates out of a monitoring program (yes/no)	yes		yes	
Number of isolates available in the laboratory	2		12	
Antimicrobials:	N	n	N	n
Amphenicols - Florfenicol	2	0	12	2
Tetracyclines - Tetracycline	2	0	12	2
Fluoroquinolones - Ciprofloxacin	2	0	12	11
Fluoroquinolones - Enrofloxacin	2	0	12	0
Trimethoprim	2	0	12	0
Sulfonamides - Sulfonamide	2	0	12	0
Aminoglycosides - Gentamicin	2	0	12	4
Aminoglycosides - Neomycin	2	0	12	0
Trimethoprim + sulfonamides	2	0	12	0
Cephalosporins - Cefotaxim	2	0	12	4
Sulfonamides	2	0	12	0
Fully sensitive	2	0	12	0
Polymyxins - Colistin	2	0	12	0
Resistant to 1 antimicrobial	2	2	12	1
Resistant to 2 antimicrobials			12	7
Resistant to 4 antimicrobials			12	2

Table Antimicrobial susceptibility testing of Salmonella in Cattle (bovine animals) - calves (under 1 year) - Monitoring

Salmonella	S. Dublin	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	9	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	9	0
Amphenicols - Florfenicol	9	0
Tetracyclines - Tetracycline	9	3
Fluoroquinolones - Ciprofloxacin	9	0
Quinolones - Nalidixic acid	9	0
Trimethoprim	9	0
Aminoglycosides - Streptomycin	9	1
Aminoglycosides - Gentamicin	9	0
Aminoglycosides - Kanamycin	9	0
Penicillins - Ampicillin	9	1
Cephalosporins - Cefotaxim	9	0
Cephalosporins - Ceftazidim	9	0
Fully sensitive	9	6
Polymyxins - Colistin	9	0
Resistant to 1 antimicrobial	9	2
Resistant to 2 antimicrobials	9	0
Resistant to 3 antimicrobials	9	1
Resistant to 4 antimicrobials	9	0
Resistant to >4 antimicrobials	9	0

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																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	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	5										3	13				5						2	64
Amphenicols - Florfenicol	2	21	5										8	8		1	2	2						2	64
Tetracyclines - Tetracycline	8	21	16									3	2			4	4	8						1	64
Fluoroquinolones - Ciprofloxacin	0.06	21	1		6	14			1															0.008	8
Quinolones - Nalidixic acid	16	21	1										20					1						4	64
Trimethoprim		21	5							16				1			4							0.5	32
Aminoglycosides - Streptomycin	32	21	9										2	3	5	2		4	5					2	128
Aminoglycosides - Gentamicin	4	21	0						3	16	2													0.25	32
Aminoglycosides - Kanamycin	16	21	0										19	2										4	128
Penicillins - Ampicillin	4	21	14								2	5					14							0.5	32
Cephalosporins - Cefotaxim	0.5	21	0				10	10	1															0.06	4
Sulfonamides	256	21	12												8	1						12		8	1024

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

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

S. Derby	Pigs																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	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	1											5	1			1						2	64
Amphenicols - Florfenicol	2	7	0											6	1									2	64
Tetracyclines - Tetracycline	8	7	2									5						2						1	64
Fluoroquinolones - Ciprofloxacin	0.06	7	0		2	5																		0.008	8
Quinolones - Nalidixic acid	16	7	0										7											4	64
Trimethoprim	2	7	2							5							2							0.5	32
Aminoglycosides - Streptomycin	32	7	3											1	3			1	2					2	128
Aminoglycosides - Gentamicin	2	7	0						1	3	3													0.25	32
Aminoglycosides - Kanamycin	16	7	1										5	1					1					4	128
Penicillins - Ampicillin	4	7	1								3	3					1							0.5	32
Cephalosporins - Cefotaxim	0.5	7	0					7																0.06	4
Sulfonamides	256	7	3											4									3	8	1024

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

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

Other serotypes	Pigs																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	25																							
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	25	1										2	21	1			1						2	64
Amphenicols - Florfenicol	2	25	0										10	15										2	64
Tetracyclines - Tetracycline	8	25	10								1	14			1		1	8						1	64
Fluoroquinolones - Ciprofloxacin	0.06	25	0		6	17	2																	0.008	8
Quinolones - Nalidixic acid	16	25	0										24	1										4	64
Trimethoprim	2	25	4							21							4							0.5	32
Aminoglycosides - Streptomycin	32	25	9										1	3	11	1	1	1	7					2	128
Aminoglycosides - Gentamicin	2	25	0						6	11	7	1												0.25	32
Aminoglycosides - Kanamycin	16	25	1										20	4	1									4	128
Penicillins - Ampicillin	4	25	7								14	4					7							0.5	32
Cephalosporins - Cefotaxim	0.5	25	0				9	14	2															0.06	4
Sulfonamides	256	25	10											11	4					1		9		8	1024

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)																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	12																							
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	12	3											8	1			3						2	64
Amphenicols - Florfenicol	16	12	3										7	1	1			3						2	64
Tetracyclines - Tetracycline	8	12	6									6					3	3						1	64
Fluoroquinolones - Ciprofloxacin	0.06	12	1		3	8			1															0.008	8
Quinolones - Nalidixic acid	16	12	1										11					1						4	64
Trimethoprim	2	12	3							9							3							0.5	32
Aminoglycosides - Streptomycin	32	12	5											3	4		1	1	3					2	128
Aminoglycosides - Gentamicin	4	12	0						4	4	4													0.25	32
Aminoglycosides - Kanamycin	4	12	0										12											4	128
Penicillins - Ampicillin	4	12	7								4	1					7							0.5	32
Cephalosporins - Cefotaxim		12	0				10	2																0.06	4
Sulfonamides	256	12	7											4		1						7		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)																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	47																							
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	47	0										18	27	2								2	64
Amphenicols - Florfenicol	2	47	0										24	21	2								2	64
Tetracyclines - Tetracycline	8	47	2								5	30	10					2					1	64
Fluoroquinolones - Ciprofloxacin	0.06	47	2		30	10	5	1		1													0.008	8
Quinolones - Nalidixic acid	16	47	2										41	2	2			2					4	64
Trimethoprim																							0.5	32
Aminoglycosides - Streptomycin	32	47	1										2	14	22	8			1				2	128
Aminoglycosides - Gentamicin	2	47	0						21	23	3												0.25	32
Aminoglycosides - Kanamycin	16	47	0										45	2									4	128
Penicillins - Ampicillin	4	47	1							18	20	5	3				1						0.5	32
Cephalosporins - Cefotaxim	0.5	47	0				30	14	2	1													0.06	4
Sulfonamides	256	47	0											47									8	1024

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

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

Other serotypes	Cattle (bovine animals)																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	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	0										1	12	1									2	64
Amphenicols - Florfenicol	2	14	0										4	10										2	64
Tetracyclines - Tetracycline	8	14	3									9	2					3						1	64
Fluoroquinolones - Ciprofloxacin	0.06	14	1		9	3	1		1															0.008	8
Quinolones - Nalidixic acid	16	14	1										13					1						4	64
Trimethoprim	2	14	0							14														0.5	32
Aminoglycosides - Streptomycin	32	14	8											4	2			1	7					2	128
Aminoglycosides - Gentamicin	2	14	0						3	8	3													0.25	32
Aminoglycosides - Kanamycin	16	14	0										12	2										4	128
Penicillins - Ampicillin	4	14	7							1	6						7							0.5	32
Cephalosporins - Cefotaxim	0.5	14	0				5	8	1															0.06	4
Sulfonamides	256	14	7											6	1							7		8	1024

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																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	317																							
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	317	75										20	211	11	1	1	73						2	64
Amphenicols - Florfenicol	16	317	66										135	106	10	9	41	16						2	64
Tetracyclines - Tetracycline	8	317	138								1	173	4	1		26	42	70						1	64
Fluoroquinolones - Ciprofloxacin	4	317	19		67	223	8	4	14	1														0.008	8
Quinolones - Nalidixic acid	16	317	16										283	17	1		16							4	64
Trimethoprim	2	317	74							240	3						74							0.5	32
Aminoglycosides - Streptomycin	32	317	122										1	65	106	23	16	45	61					2	128
Aminoglycosides - Gentamicin	2	317	0						15	211	85	6												0.25	32
Aminoglycosides - Kanamycin	8	317	2										292	23	1				1					4	128
Penicillins - Ampicillin	32	317	155								113	47	2	1			154							0.5	32
Cephalosporins - Cefotaxim	0.5	317	1				190	104	18	4	1													0.06	4
Sulfonamides	256	317	178											112	26	1						178		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																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	368																							
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	368	2										29	331	6		1	1					2	64
Amphenicols - Florfenicol	16	368	1										226	139	2			1					2	64
Tetracyclines - Tetracycline	8	368	18								4	321	25			2		16					1	64
Fluoroquinolones - Ciprofloxacin	4	368	52		33	278	5	3	37	12													0.008	8
Quinolones - Nalidixic acid	16	368	50										298	18	2	1	2	47					4	64
Trimethoprim	2	368	2							364	2						2						0.5	32
Aminoglycosides - Streptomycin	32	368	9									40	276	40	3		1	3	5				2	128
Aminoglycosides - Gentamicin	2	368	1						75	247	43	2					1						0.25	32
Aminoglycosides - Kanamycin	8	368	1										361	6	1								4	128
Penicillins - Ampicillin	32	368	29								116	215	8				29						0.5	32
Cephalosporins - Cefotaxim	0.5	368	1				186	169	11	1				1									0.06	4
Sulfonamides	256	368	7											145	199	15	1	1				7	8	1024

Table Antimicrobial susceptibility testing of S. 4,5,12:i:- in Humans - quantitative data [Dilution method]

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

S. 4,5,12:i:-	Humans																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	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	5										4	66	7	1		4						2	64
Amphenicols - Florfenicol	16	82	1										32	43	6			1						2	64
Tetracyclines - Tetracycline	8	82	72									10					1	71						1	64
Fluoroquinolones - Ciprofloxacin	4	82	1		9	63	9				1													0.008	8
Quinolones - Nalidixic acid	16	82	0										68	11	3									4	64
Trimethoprim	2	82	8							73	1						8							0.5	32
Aminoglycosides - Streptomycin	32	82	66											4	11	1	1		65					2	128
Aminoglycosides - Gentamicin	2	82	3						8	45	23	3	1				2							0.25	32
Aminoglycosides - Kanamycin	8	82	3										71	8	1	1			1					4	128
Penicillins - Ampicillin	32	82	61								8	8	5				61							0.5	32
Cephalosporins - Cefotaxim	0.5	82	1				32	43	5	1				1										0.06	4
Sulfonamides	256	82	69											10	3							69		8	1024

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

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

S. Infantis	Humans																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	34																							
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	34	3											22	9	3								2	64
Amphenicols - Florfenicol	16	34	2										10	18	4	2								2	64
Tetracyclines - Tetracycline	8	34	7									22	4	1				7						1	64
Fluoroquinolones - Ciprofloxacin	4	34	8		2	23	1		2	3	3													0.008	8
Quinolones - Nalidixic acid	16	34	8										25	1				8						4	64
Trimethoprim	2	34	4							29	1						4							0.5	32
Aminoglycosides - Streptomycin	32	34	5										7	8	11	3	4	1						2	128
Aminoglycosides - Gentamicin	16	34	0						3	28	3													0.25	32
Aminoglycosides - Kanamycin	8	34	3										30	1					3					4	128
Penicillins - Ampicillin	32	34	1								16	12	5		1									0.5	32
Cephalosporins - Cefotaxim	0.5	34	1				7	19	7		1													0.06	4
Sulfonamides	256	34	7											25	2							7		8	1024

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																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	25																							
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	25	0										4	21									2	64
Amphenicols - Florfenicol	16	25	0										20	5									2	64
Tetracyclines - Tetracycline	8	25	1								2	22						1					1	64
Fluoroquinolones - Ciprofloxacin	4	25	0		7	18																	0.008	8
Quinolones - Nalidixic acid	16	25	0										25										4	64
Trimethoprim	2	25	0							24	1												0.5	32
Aminoglycosides - Streptomycin	32	25	1											12	11	1			1				2	128
Aminoglycosides - Gentamicin	2	25	0							17	8												0.25	32
Aminoglycosides - Kanamycin	8	25	0										25										4	128
Penicillins - Ampicillin	32	25	0							18	7												0.5	32
Cephalosporins - Cefotaxim	0.5	25	0				15	8	2														0.06	4
Sulfonamides	256	25	1											14	10						1		8	1024

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

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

S. Virchow	Humans																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	16																							
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	16	0											14	2								2	64
Amphenicols - Florfenicol	16	16	0										9	6	1								2	64
Tetracyclines - Tetracycline	8	16	6								1	7	2					6					1	64
Fluoroquinolones - Ciprofloxacin	4	16	11		1	4			8	2		1											0.008	8
Quinolones - Nalidixic acid	16	16	10										5	1				10					4	64
Trimethoprim	4	16	5							11							5						0.5	32
Aminoglycosides - Streptomycin	32	16	4												8	4	2	1	1				2	128
Aminoglycosides - Gentamicin	2	16	1							10	4	1					1						0.25	32
Aminoglycosides - Kanamycin	8	16	0										14	2									4	128
Penicillins - Ampicillin	32	16	2								13		1				2						0.5	32
Cephalosporins - Cefotaxim	0.5	16	0				11	3	2														0.06	4
Sulfonamides	256	16	5											8	3						1	4	8	1024

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																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	16																							
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	16	0										2	13	1									2	64
Amphenicols - Florfenicol	16	16	0										13	2	1									2	64
Tetracyclines - Tetracycline	8	16	12									3	1					12						1	64
Fluoroquinolones - Ciprofloxacin	4	16	15			1								7	8									0.008	8
Quinolones - Nalidixic acid	16	16	15										1					15						4	64
Trimethoprim	2	16	0							16														0.5	32
Aminoglycosides - Streptomycin	32	16	11												4	1	4	2	5					2	128
Aminoglycosides - Gentamicin	2	16	10							3	3				2	7	1							0.25	32
Aminoglycosides - Kanamycin	8	16	1										14	1					1					4	128
Penicillins - Ampicillin	32	16	7								4	4	1				7							0.5	32
Cephalosporins - Cefotaxim	0.5	16	0					13	3															0.06	4
Sulfonamides	256	16	11											5								11		8	1024

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

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

Other serotypes	Humans																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	430																							
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	430	17										47	327	39	4		13						2	64
Amphenicols - Florfenicol	16	430	9									1	198	206	16	4		5						2	64
Tetracyclines - Tetracycline	8	430	134								23	236	35	2	1	1	5	127						1	64
Fluoroquinolones - Ciprofloxacin	4	430	77		103	235	15	2	26	17	13	1	1	9	8									0.008	8
Quinolones - Nalidixic acid	16	430	67										331	20	12	1	1	65						4	64
Trimethoprim	2	430	38							385	6	1					38							0.5	32
Aminoglycosides - Streptomycin	32	430	120										28	88	153	41	18	15	87					2	128
Aminoglycosides - Gentamicin	16	430	20						35	272	92	11	2	1	4	8	5							0.25	32
Aminoglycosides - Kanamycin	8	430	18										388	24	2	1	1		14					4	128
Penicillins - Ampicillin	32	430	96							12	224	78	20	1	1	1	93							0.5	32
Cephalosporins - Cefotaxim	0.5	430	3				207	187	30	3	1			2										0.06	4
Sulfonamides	256	430	129											222	68	11					3	126		8	1024

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)																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	34																							
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	34	0										5	28	1								2	64
Amphenicols - Florfenicol	2	34	0										21	13									2	64
Tetracyclines - Tetracycline	8	34	0								1	31	2										1	64
Fluoroquinolones - Ciprofloxacin	0.06	34	2		3	29			2														0.008	8
Quinolones - Nalidixic acid	16	34	2										30	2				2					4	64
Trimethoprim	2	34	0							34													0.5	32
Aminoglycosides - Streptomycin	32	34	0									5	26	3									2	128
Aminoglycosides - Gentamicin	2	34	0						10	18	5	1											0.25	32
Aminoglycosides - Kanamycin	4	34	0										33	1									4	128
Penicillins - Ampicillin	4	34	2								8	21	3				2						0.5	32
Cephalosporins - Cefotaxim		34	0				15	19															0.06	4
Sulfonamides		34	0											12	17	5							8	1024

Table Antimicrobial susceptibility testing of S. Paratyphi B var. Java in Gallus gallus (fowl) - 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)																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	77																							
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	77	5										14	41	17	1		4						2	64
Amphenicols - Florfenicol	2	77	1									3	35	29	9	1								2	64
Tetracyclines - Tetracycline	8	77	16									39	21	1				16						1	64
Fluoroquinolones - Ciprofloxacin	0.06	77	44			27	6	4	26	5	7	2												0.008	8
Quinolones - Nalidixic acid	16	77	40										30	6	1			40						4	64
Trimethoprim	2	77	77														77							0.5	32
Aminoglycosides - Streptomycin	32	77	36												2	39	18	6	12					2	128
Aminoglycosides - Gentamicin	2	77	6						44	25	2			2		4								0.25	32
Aminoglycosides - Kanamycin	16	77	10										66	1					10					4	128
Penicillins - Ampicillin	4	77	48								8	15	6	1			47							0.5	32
Cephalosporins - Cefotaxim	0.5	77	17				5	35	15	5				17										0.06	4
Sulfonamides	256	77	50											14	10	3					2	48		8	1024

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

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

S. Infantis	Gallus gallus (fowl)																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	16																							
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	16	0											13	3									2	64
Amphenicols - Florfenicol	2	16	0										3	13										2	64
Tetracyclines - Tetracycline	8	16	1									13	2					1						1	64
Fluoroquinolones - Ciprofloxacin	0.06	16	2		3	11		1	1															0.008	8
Quinolones - Nalidixic acid	16	16	2										14					2						4	64
Trimethoprim	2	16	1							15							1							0.5	32
Aminoglycosides - Streptomycin		16	2											3	8	3	1	1						2	128
Aminoglycosides - Gentamicin	2	16	1						3	9	3				1									0.25	32
Aminoglycosides - Kanamycin	4	16	1										13	2	1									4	128
Penicillins - Ampicillin	4	16	1								7	8					1							0.5	32
Cephalosporins - Cefotaxim	0.5	16	0					16																0.06	4
Sulfonamides		16	2											12	2							2		8	1024

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

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

Other serotypes	Gallus gallus (fowl)																								
Isolates out of a monitoring program (yes/no)	no																								
Number of isolates available in the laboratory	175																								
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	175	6										24	114	31	1		5						2	64
Amphenicols - Florfenicol	2	175	1									4	60	93	17	1								2	64
Tetracyclines - Tetracycline	8	175	38								5	92	36	4		1	2	35						1	64
Fluoroquinolones - Ciprofloxacin	0.06	175	56		21	81	17	6	32	7	9	2												0.008	8
Quinolones - Nalidixic acid	16	175	52										104	7	12	1		51						4	64
Trimethoprim		175	85							84	4	2					85							0.5	32
Aminoglycosides - Streptomycin	32	175	50										7	25	34	59	25	9	16					2	128
Aminoglycosides - Gentamicin	2	175	7						53	88	25	2		2	1	4								0.25	32
Aminoglycosides - Kanamycin	16	175	21										147	7	2				19					4	128
Penicillins - Ampicillin	4	175	57							1	58	48	11	1			56							0.5	32
Cephalosporins - Cefotaxim	0.5	175	20				34	92	23	6				20										0.06	4
Sulfonamides		175	70											75	26	3	1				3	67		8	1024

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

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

Salmonella spp.	Meat from bovine animals - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	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	0											6	1								2	64
Amphenicols - Florfenicol	16	10	0										1	5	4								2	64
Tetracyclines - Tetracycline	8	7	1									5	1					1					1	64
Fluoroquinolones - Ciprofloxacin	0.06	7	0			6	1																0.008	4
Quinolones - Nalidixic acid	16	7	0										6		1								4	64
Trimethoprim	2	7	1							5	1						1						0.5	32
Aminoglycosides - Streptomycin	32	7	1										1	1	3	1			1				2	128
Aminoglycosides - Gentamicin	2	7	0						3	4													0.25	32
Aminoglycosides - Kanamycin	4	7	0										7										4	128
Penicillins - Ampicillin	4	7	1								2	4					1						0.5	32
Cephalosporins - Ceftazidim	2	7	0						5	2													0.25	16
Polymyxins - Colistin	8	7	0											7									8	16

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

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

Salmonella spp.	Meat from broilers (Gallus gallus) - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	26																							
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	26	1										2	21	2			1						2	64
Amphenicols - Florfenicol	16	26	0										7	18	1									2	64
Tetracyclines - Tetracycline	8	26	12								1	10	3					12						1	64
Fluoroquinolones - Ciprofloxacin	0.06	26	7		2	17			2	4	1													0.008	4
Quinolones - Nalidixic acid		26	7										19					7						4	64
Trimethoprim	2	26	5							21							5							0.5	32
Aminoglycosides - Streptomycin	32	26	4									1	3	7	5	6	2	2						2	128
Aminoglycosides - Gentamicin	2	26	2						13	10	1					1	1							0.25	32
Aminoglycosides - Kanamycin	8	26	6										17	3					6					4	128
Penicillins - Ampicillin	4	26	2								13	10	1				2							0.5	32
Cephalosporins - Cefotaxim	0.5	26	1				3	17	5					1										0.06	4
Cephalosporins - Ceftazidim	2	26	1						10	15					1									0.25	16
Polymyxins - Colistin	8	26	0											26										8	16

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

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

Salmonella spp.	Meat from turkey - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	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	16	4	0											3	1								2	64
Amphenicols - Florfenicol	16	4	0											4									2	64
Tetracyclines - Tetracycline	8	4	1									2	1					1					1	64
Fluoroquinolones - Ciprofloxacin	0.06	4	1			3			1														0.008	4
Quinolones - Nalidixic acid	16	4	1										3					1					4	64
Trimethoprim	2	4	0							4													0.5	32
Aminoglycosides - Streptomycin	32	4	1												3				1				2	128
Aminoglycosides - Gentamicin	2	4	0						2	2													0.25	32
Aminoglycosides - Kanamycin	4	4	0										3	1									4	128
Penicillins - Ampicillin	4	4	2								1	1					2						0.5	32
Cephalosporins - Cefotaxim	0.5	4	0				1	3															0.06	4
Cephalosporins - Ceftazidim	2	4	0						2	2													0.25	16
Polymyxins - Colistin	2	4	0											4									8	16

Table Antimicrobial susceptibility testing of S. Dublin in Cattle (bovine animals) - calves (under 1 year) - Monitoring - quantitative data [Dilution method]

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

S. Dublin	Cattle (bovine animals) - calves (under 1 year) - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	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										2	7									2	64
Amphenicols - Florfenicol	2	9	0										7	2									2	64
Tetracyclines - Tetracycline	8	9	3									6						3					1	64
Fluoroquinolones - Ciprofloxacin	0.06	9	0		3	6																	0.008	4
Quinolones - Nalidixic acid	16	9	0										8	1									4	64
Trimethoprim		9	0							7	2												0.5	32
Aminoglycosides - Streptomycin	16	9	1												8				1				2	128
Aminoglycosides - Gentamicin	2	9	0						6	3													0.25	32
Aminoglycosides - Kanamycin	4	9	0										9										4	128
Penicillins - Ampicillin	4	9	1								7	1					1						0.5	32
Cephalosporins - Cefotaxim	0.5	9	0				4	4	1														0.06	4
Cephalosporins - Ceftazidim	2	9	0						6	3													0.25	16
Polymyxins - Colistin	2	9	0											9									8	16

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

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

S. Typhimurium	Pigs - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	12																							
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	12	2										3	7				2						2	64
Amphenicols - Florfenicol	2	12	2										5	5			1	1						2	64
Tetracyclines - Tetracycline	8	12	11									1				1	7	3						1	64
Fluoroquinolones - Ciprofloxacin	0.06	12	0			12																		0.008	4
Quinolones - Nalidixic acid	16	12	0										12											4	64
Trimethoprim		12	0							11	1													0.5	32
Aminoglycosides - Streptomycin	32	12	4										1	5	2		1	1	2					2	128
Aminoglycosides - Gentamicin	2	12	0						9	3														0.25	32
Aminoglycosides - Kanamycin	4	12	0										12											4	128
Penicillins - Ampicillin	4	12	4								8						4							0.5	32
Cephalosporins - Cefotaxim	0.5	12	0				4	7	1															0.06	4
Cephalosporins - Ceftazidim	2	12	0						11	1														0.25	16
Polymyxins - Colistin	2	12	0										12											8	16

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

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

S. Bovismorbificans	Pigs - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	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											5									2	64
Amphenicols - Florfenicol	2	5	0										5										2	64
Tetracyclines - Tetracycline	8	5	0									5											1	64
Fluoroquinolones - Ciprofloxacin	0.06	5	0		1	4																	0.008	4
Quinolones - Nalidixic acid	16	5	0										5										4	64
Trimethoprim		5	0							5													0.5	32
Aminoglycosides - Streptomycin	32	5	0												5								2	128
Aminoglycosides - Gentamicin	2	5	0						1	4													0.25	32
Aminoglycosides - Kanamycin	8	5	0										5										4	128
Penicillins - Ampicillin		5	0								5												0.5	32
Cephalosporins - Cefotaxim	2	5	0				4	1															0.06	4
Cephalosporins - Ceftazidim	2	5	0						5														0.25	16
Polymyxins - Colistin	2	5	0											5									8	16

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

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

S. Brandenburg	Pigs - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	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	16	4	0											3	1								2	64
Amphenicols - Florfenicol	2	4	0										1	3									2	64
Tetracyclines - Tetracycline	8	4	3									1			3								1	64
Fluoroquinolones - Ciprofloxacin	0.06	4	0			4																	0.008	4
Quinolones - Nalidixic acid	16	4	0										4										4	64
Trimethoprim		4	2							2							2						0.5	32
Aminoglycosides - Streptomycin	32	4	0												4								2	128
Aminoglycosides - Gentamicin	2	4	0						2	2													0.25	32
Aminoglycosides - Kanamycin	4	4	0										4										4	128
Penicillins - Ampicillin	4	4	0								2	1	1										0.5	32
Cephalosporins - Cefotaxim	0.5	4	0				2	2															0.06	4
Cephalosporins - Ceftazidim	4	4	0						4														0.25	16
Polymyxins - Colistin	2	4	0											4									8	16

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

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

S. Infantis	Pigs - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	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	0											6									2	64
Amphenicols - Florfenicol	2	6	0											6									2	64
Tetracyclines - Tetracycline	8	6	0									6											1	64
Fluoroquinolones - Ciprofloxacin	0.06	6	0			6																	0.008	4
Quinolones - Nalidixic acid	16	6	0										6										4	64
Trimethoprim	2	6	0							6													0.5	32
Aminoglycosides - Streptomycin	16	6	0												4	2							2	128
Aminoglycosides - Gentamicin	2	6	0						3	2	1												0.25	32
Aminoglycosides - Kanamycin	4	6	0										6										4	128
Penicillins - Ampicillin	4	6	0								4	2											0.5	32
Cephalosporins - Cefotaxim	0.5	6	0					6															0.06	4
Cephalosporins - Ceftazidim	2	6	0							6													0.25	16
Polymyxins - Colistin	2	6	0											6									8	16

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

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

Other serotypes	Pigs - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	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	1											3	3	1								2	64
Amphenicols - Florfenicol	2	7	1										2	4		1								2	64
Tetracyclines - Tetracycline	8	7	2									5						2						1	64
Fluoroquinolones - Ciprofloxacin	0.06	7	1			6		1																0.008	4
Quinolones - Nalidixic acid	16	7	0										6	1										4	64
Trimethoprim		7	1							5	1						1							0.5	32
Aminoglycosides - Streptomycin	16	7	1											1	5				1					2	128
Aminoglycosides - Gentamicin	2	7	0						1	6														0.25	32
Aminoglycosides - Kanamycin	16	7	0										7											4	128
Penicillins - Ampicillin	4	7	1								4	2					1							0.5	32
Cephalosporins - Cefotaxim	0.5	7	0				1	5		1														0.06	4
Cephalosporins - Ceftazidim	2	7	0						2	4	1													0.25	16
Polymyxins - Colistin	2	7	0											7										8	16

Table Antimicrobial susceptibility testing of Other serotypes in Sheep - Monitoring - quantitative data [Dilution method]

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

Other serotypes	Sheep - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	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	0										3	4									2	64
Amphenicols - Florfenicol	16	7	0									3	3	1									2	64
Tetracyclines - Tetracycline	8	7	1									6						1					1	64
Fluoroquinolones - Ciprofloxacin	0.06	7	0		2	5																	0.008	4
Quinolones - Nalidixic acid	16	7	0										6	1									4	64
Trimethoprim		7	0							7													0.5	32
Aminoglycosides - Streptomycin	32	7	1												3	3			1				2	128
Aminoglycosides - Gentamicin	2	7	0						4	3													0.25	32
Aminoglycosides - Kanamycin	4	7	0										7										4	128
Penicillins - Ampicillin	4	7	1								4	2					1						0.5	32
Cephalosporins - Cefotaxim	0.5	7	0				3	4															0.06	4

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

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

Salmonella spp.	Meat from pig - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	11																							
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										2	7	1								2	64
Amphenicols - Florfenicol	16	11	0										4	6	1								2	64
Tetracyclines - Tetracycline	8	11	5									6			1		1	3					1	64
Fluoroquinolones - Ciprofloxacin	0.06	11	0		3	8																	0.008	4
Quinolones - Nalidixic acid	16	11	0										11										4	64
Trimethoprim	2	11	1							10							1						0.5	32
Aminoglycosides - Streptomycin		11	3											6		2			3				2	128
Aminoglycosides - Gentamicin	2	11	0						6	5													0.25	32
Aminoglycosides - Kanamycin	4	11	0										11										4	128
Penicillins - Ampicillin	4	11	4							1	4	1	1				4						0.5	32
Cephalosporins - Cefotaxim	0.5	11	0				7	4															0.06	4
Cephalosporins - Ceftazidim	2	11	0						7	4													0.25	16
Polymyxins - Colistin	8	11	0											11									8	16

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

Test Method Used
Broth dilution

Standard methods used for testing
NCCLS/CLSI

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

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

Test Method Used	Standard methods used for testing

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

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	
Sulfonamides	Sulfonamides		256	
Aminoglycosides	Streptomycin		32	
	Gentamicin		2	
Cephalosporins	Cefotaxim		0.5	
Penicillins	Ampicillin		4	

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

Test Method Used
Broth dilution

Standard methods used for testing
NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
	Florfenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.06	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulfonamides	Sulfonamide		256	
Aminoglycosides	Streptomycin		32	
	Gentamicin		2	
	Kanamycin		8	
Cephalosporins	3rd generation cephalosporins		0.5	
Penicillins	Ampicillin		4	

2.2 CAMPYLOBACTERIOSIS

2.2.1 General evaluation of the national situation

2.2.2 Campylobacter in foodstuffs

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	657	71					71
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at retail [2)]	VWA	Single	25g	333	23					23
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail [3)]	VWA	Single	25g	28	1					1
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at retail [4)]	VWA	Single	25g	7	1					1

Comments:

[1)] objective sampling
[2)] objective sampling
[3)] objective sampling
[4)] objective sampling

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	201	2					2
Meat from pig - fresh - at retail [2)]	VWA	Single	25g	308	1					1
Meat from sheep - fresh - at retail [3)]	VWA	Single	25g	33	0					
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	417	0					
Meat from bovine animals - meat preparation - intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	2	0					
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	1	0					
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	6	0					
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	280	0					
Meat from other animal species or not specified - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	5	0					
Meat from other animal species or not specified - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	9	0					
Meat from pig - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	127	1					1

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 - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	1	0					
Meat from pig - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	26	0					
Meat from sheep - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	36	0					
Meat from sheep - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	7	0					
Other food - at retail (cardamom, objective sampling)	VWA	Single	25g	94	0					
Other food - at retail (celery, objective sampling)	VWA	Single	25g	52	0					
Other food - at retail (coriander, objective sampling)	VWA	Single	25g	378	0					
Other food - at retail (cumminseed, objective sampling)	VWA	Single	25g	426	0					
Other food - at retail (curry, objective sampling)	VWA	Single	25g	412	1					1
Other food - at retail (dill, objective sampling)	VWA	Single	25g	37	0					
Other food - at retail (ginger, objective sampling)	VWA	Single	25g	268	0					
Other food - at retail (maw-seed, objective sampling)	VWA	Single	25g	71	0					
Other food - at retail (mint leaves, objective sampling)	VWA	Single	25g	120	0					
Other food - at retail (mixed spices, objective sampling)	VWA	Single	25g	124	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 (onion powder, objective sampling)	VWA	Single	25g	26	0					
Other food - at retail (other flavourings, objective sampling)	VWA	Single	25g	150	0					
Other food - at retail (parsley, objective sampling)	VWA	Single	25g	155	0					
Other food - at retail (sesame-seed, objective sampling)	VWA	Single	25g	279	0					
Other food - at retail (sweet basil, objective sampling)	VWA	Single	25g	52	0					
Other food - at retail (turmeric, objective sampling)	VWA	Single	25g	125	0					

Comments:

[1)] objective sampling
[2)] objective sampling
[3)] 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	245	32					32
Dogs [2)]	VMDC	Animal	454	71					71
Birds - zoo animal - at zoo - Clinical investigations [3)]	VMDC	Animal	128	9					9
Cats - in total - Clinical investigations	GD	Animal	1	0					
Cattle (bovine animals) - in total - Clinical investigations	GD	Animal	2688	29					29
Dogs - in total - Clinical investigations	GD	Animal	7	1					1
Ducks - in total - Clinical investigations	GD	Animal	35	0					
Gallus gallus (fowl) - broilers - at farm - Clinical investigations	GD	Flock	1592	19					19
Goats - in total - Clinical investigations	GD	Animal	303	7					7
Monkeys - at farm - Clinical investigations	GD	Animal	5	0					
Other animals - at zoo - Clinical investigations [4)]	VMDC	Animal	296	45					45
Reptiles - zoo animal - at zoo - Clinical investigations [5)]	VMDC	Animal	29	1					1
Sheep - in total - Clinical investigations	GD	Animal	510	10					10
Turkeys - in total - Clinical investigations	GD	Animal	30	0					

Comments:

Table Campylobacter in animals

[1] faeces
[2] faeces
[3] faeces
[4] faeces
[5] faeces

2.2.4 Antimicrobial resistance in Campylobacter isolates

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

Campylobacter	Campylobacter spp., unspecified		C. coli		C. jejuni	
Isolates out of a monitoring program (yes/no)			yes		yes	
Number of isolates available in the laboratory			16		61	
Antimicrobials:	N	n	N	n	N	n
Fluoroquinolones - Ciprofloxacin			16	10	61	26
Quinolones - Nalidixic acid			16	10	61	27
Aminoglycosides - Gentamicin			16	0	61	0
Macrolides - Erythromycin			16	1	61	1
Penicillins - Ampicillin			16	5	61	28
Tetracyclines - Tetracycline			16	13	61	27
Fully sensitive			16	1	61	16
Resistant to 1 antimicrobial			16	2	61	15
Resistant to 2 antimicrobials			16	2	61	22
Resistant to 3 antimicrobials			16	10	61	4
Resistant to 4 antimicrobials			16	1	61	3
Resistant to >4 antimicrobials			16	0	61	1

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

Campylobacter	Campylobacter spp., unspecified		C. coli		C. jejuni	
Isolates out of a monitoring program (yes/no)			yes		yes	
Number of isolates available in the laboratory			35		31	
Antimicrobials:	N	n	N	n	N	n
Fluoroquinolones - Ciprofloxacin			35	23	31	9
Quinolones - Nalidixic acid			35	23	31	9
Aminoglycosides - Gentamicin			35	1	31	0
Macrolides - Erythromycin			35	8	31	1
Penicillins - Ampicillin			35	13	31	8
Tetracyclines - Tetracycline			35	32	31	17
Fully sensitive			35	2	31	9
Resistant to 1 antimicrobial			35	4	31	11
Resistant to 2 antimicrobials			35	2	31	7
Resistant to 3 antimicrobials			35	13	31	4
Resistant to 4 antimicrobials			35	5	31	0
Resistant to >4 antimicrobials			35	9	31	0

Table Antimicrobial susceptibility testing of Campylobacter in Pigs

Campylobacter	Campylobacter spp., unspecified		C. coli		C. jejuni	
Isolates out of a monitoring program (yes/no)						
Number of isolates available in the laboratory			79		5	
Antimicrobials:	N	n	N	n	N	n
Fluoroquinolones - Ciprofloxacin			79	4	5	1
Quinolones - Nalidixic acid			79	4	5	1
Aminoglycosides - Gentamicin			79	0	5	0
Macrolides - Erythromycin			79	14	5	0
Penicillins - Ampicillin			79	19	5	3
Tetracyclines - Tetracycline			79	71	5	0
Fully sensitive			79	0	5	2
Resistant to 1 antimicrobial			79	7	5	2
Resistant to 2 antimicrobials			79	14	5	1
Resistant to 3 antimicrobials			79	35	5	0
Resistant to 4 antimicrobials			79	22	5	0
Resistant to >4 antimicrobials			79	1	5	0

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

Campylobacter	Campylobacter spp., unspecified		C. coli		C. jejuni	
Isolates out of a monitoring program (yes/no)	yes		yes		yes	
Number of isolates available in the laboratory	157		35		156	
Antimicrobials:	N	n	N	n	N	n
Fluoroquinolones - Ciprofloxacin	157	81	35	26	156	75
Quinolones - Nalidixic acid	157	83	35	27	156	77
Aminoglycosides - Gentamicin	157	1	35	0	156	1
Macrolides - Erythromycin	157	7	35	9	156	2
Penicillins - Ampicillin	157	68	35	11	156	71
Tetracyclines - Tetracycline	157	88	35	29	156	82
Fully sensitive	157	20	35	2	156	10
Resistant to 1 antimicrobial	157	24	35	5	156	28
Resistant to 2 antimicrobials	157	21	35	2	156	33
Resistant to 3 antimicrobials	157	35	35	12	156	30
Resistant to 4 antimicrobials	157	32	35	1	156	37
Resistant to >4 antimicrobials	157	25	35	13	156	18
Aminoglycosides - Neomycin	157	13	35	1	156	5
Aminoglycosides - Streptomycin	157	6	35	2	156	6
Amphenicols - Chloramphenicol	157	0	35	0	156	1
Macrolides - Clarithromycin	157	7	35	9	156	2
Macrolides - Tulathromycin	157	8	35	8	156	4
Sulfonamides - Sulfamethoxazol	157	72	35	9	156	107

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

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

C. jejuni	Cattle (bovine animals)																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	31																							
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	31	0									13	14	4		0	0	0	0	0	0	0	0	2	128
Tetracyclines - Tetracycline	2	31	17							10		4		1		1	2	13						0.5	64
Fluoroquinolones - Ciprofloxacin	1	31	9					15	6		1			3	5	1								0.125	16
Quinolones - Nalidixic acid	16	31	9									2	11	8	1			7	2					1	128
Aminoglycosides - Streptomycin	2	31	1								30						1							1	128
Aminoglycosides - Gentamicin	1	31	0						27	4														0.25	32
Aminoglycosides - Neomycin	1	31	1							30							1							0.5	64
Penicillins - Ampicillin		31	8						1			2	14	6	5		3							0.25	32
Sulfonamides	256	31	0											4	10	4	12	1							
Macrolides - Erythromycin	4	31	1							7	14	7	2					1						0.5	64

Table Antimicrobial susceptibility testing of C. jejuni in Pigs - quantitative data [Dilution method]

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

C. jejuni	Pigs																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	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									2	1	2									2	128
Tetracyclines - Tetracycline	2	5	0							2		3											0.5	64
Fluoroquinolones - Ciprofloxacin	1	5	1					1	3					1									0.125	16
Quinolones - Nalidixic acid	16	5	1										1	3				1					1	128
Aminoglycosides - Streptomycin	2	5	0								5												1	128
Aminoglycosides - Gentamicin	1	5	0						2	3													0.25	32
Aminoglycosides - Neomycin	1	5	0							3	2												0.5	64
Penicillins - Ampicillin	8	5	3										1	1	3								0.25	32
Sulfonamides	256	5	0											1		2	1	1					8	1024
Macrolides - Erythromycin	4	5	0							1	2	2											0.5	64

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

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

C. jejuni	Gallus gallus (fowl) - broilers																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	61																							
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	61	0									26	21	11	3								2	128
Tetracyclines - Tetracycline	2	61	27							24	1	9	4				13	10					0.5	64
Fluoroquinolones - Ciprofloxacin	1	61	26					23	11	1			1	15	5	5							0.125	16
Quinolones - Nalidixic acid	16	61	27									3	21	10		1	1	13	12				1	128
Aminoglycosides - Streptomycin	2	61	1								59	1			1								1	128
Aminoglycosides - Gentamicin	1	61	0						48	10	3												0.25	32
Aminoglycosides - Neomycin	1	61	1							55	5			1									0.5	64
Penicillins - Ampicillin		61	28										11	22	8	1	19						0.25	32
Sulfonamides	256	61	3											4	12	20	15	7			2	1	8	1024
Macrolides - Erythromycin	4	61	1							17	31	10	2					1					0.5	64

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

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

C. coli	Cattle (bovine animals)																							
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	16	35	1									1	2	23	8	1								2	128
Tetracyclines - Tetracycline	2	35	32							2		1	4					28						0.5	64
Fluoroquinolones - Ciprofloxacin	1	35	23					6	6					9	12	2								0.125	16
Quinolones - Nalidixic acid	32	35	23										2	9	1			9	14					1	128
Aminoglycosides - Streptomycin	4	35	20								13	2			3	10	1		6					1	128
Aminoglycosides - Gentamicin	2	35	1						5	26	3						1							0.25	32
Aminoglycosides - Neomycin	2	35	10							16	9					1	2	7						0.5	64
Penicillins - Ampicillin	16	35	13										1	4	17	9	4							0.25	32
Sulfonamides	256	35	8												7	12	7	1		1	5	2		8	1024
Macrolides - Erythromycin	16	35	8							1	3	15	5	3				8						0.5	64

Table Antimicrobial susceptibility testing of C. coli in Pigs - quantitative data [Dilution method]

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

C. coli	Pigs																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	79																							
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	79	0									3	31	35	10								2	128
Tetracyclines - Tetracycline	2	79	71							4	3	1	4	1		2	9	55					0.5	64
Fluoroquinolones - Ciprofloxacin	1	79	4					45	29	1					3	1							0.125	16
Quinolones - Nalidixic acid	32	79	4										15	49	6	5			4				1	128
Aminoglycosides - Streptomycin	4	79	68								11			1	24	29	3	1	10				1	128
Aminoglycosides - Gentamicin	2	79	0						17	51	11												0.25	32
Aminoglycosides - Neomycin	2	79	6							43	29	1	1	5									0.5	64
Penicillins - Ampicillin	16	79	19						1			4	10	21	24	6	13						0.25	32
Sulfonamides	256	79	51											10	9	7	2			19	18	14	8	1024
Macrolides - Erythromycin	16	79	14							7	15	20	17	6				14					0.5	64

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

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

C. coli	Gallus gallus (fowl) - broilers																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	16																							
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	16	0										7	6	3									2	128
Tetracyclines - Tetracycline	2	16	13							2		1	3					10						0.5	64
Fluoroquinolones - Ciprofloxacin	1	16	10					3	3				1	1	8									0.125	16
Quinolones - Nalidixic acid	32	16	10										3	3				7	3					1	128
Aminoglycosides - Streptomycin	4	16	4								10	2				1			3					1	128
Aminoglycosides - Gentamicin	2	16	0						9	7														0.25	32
Aminoglycosides - Neomycin	2	16	0							14	2													0.5	64
Penicillins - Ampicillin	16	16	5										1	10		4	1							0.25	32
Sulfonamides	256	16	7												3	3	3			2	4	1		8	1024
Macrolides - Erythromycin	16	16	1							2	4	6	3					1						0.5	64

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																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	156																							
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	156	0								102	27	19	7	1								2	128
Tetracyclines - Tetracycline	2	156	78						68	5	1	4		1	2	17	58						0.5	64
Fluoroquinolones - Ciprofloxacin	1	156	75				76	4	1			1	44	23	7								0.12	16
Quinolones - Nalidixic acid	16	156	76								19	52	4	4	1	1	33	42					1	128
Aminoglycosides - Streptomycin	2	156	5							149	1	1			2	3							1	128
Aminoglycosides - Gentamicin	1	156	0					154	1		1												0.25	32
Aminoglycosides - Neomycin	1	156	5						151				2		3								0.5	64
Penicillins - Ampicillin	4	156	62						1	1	8	38	37	9	11	51							0.25	32
Macrolides - Clarithromycin	8	156	1						68	71	13	2		1			1						0.5	64
Macrolides - Erythromycin	4	156	2						110	35	9				1		1						0.5	64
Macrolides - Tulathromycin	4	156	2						136	16			2		1	1							0.5	64
Sulfonamides - Sulfamethoxazol	32	156	69										2	10	37	38	36	19		14			8	1024

Table Antimicrobial susceptibility testing of Campylobacter spp., unspecified in Other food - Monitoring - quantitative data [Dilution method]

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

Campylobacter spp., unspecified	Other food - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	157																							
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	157	0								75	49	21	12									2	128
Tetracyclines - Tetracycline	2	157	87						51	10	8	1			2	19	66						0.5	64
Fluoroquinolones - Ciprofloxacin	1	157	79				64	6	5	1	2	3	37	30	9								0.12	16
Quinolones - Nalidixic acid	32	157	83								2	45	17	10		3	42	38					1	128
Aminoglycosides - Streptomycin	2	285	134							141	10			1	5	128							1	128
Aminoglycosides - Gentamicin		157	1					147	9				1										0.25	32
Aminoglycosides - Neomycin	1	157	13						139	5		2	1	3	1	6							0.5	64
Penicillins - Ampicillin	4	157	68							1	8	19	37	24	21	47							0.25	32
Macrolides - Clarithromycin	8	157	7						48	85	10	6	1		1		6						0.5	64
Macrolides - Erythromycin	16	157	7						96	42	7	5				1	6						0.5	64
Macrolides - Tulathromycin	4	157	8						147	2				1	2	4	1						0.5	64
Sulfonamides - Sulfamethoxazol	32	157	72										6	11	26	42	43	10	5	14			8	1024

Table Antimicrobial susceptibility testing of C. coli in Other food - Monitoring - quantitative data [Dilution method]

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

C. coli	Other food - 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	16	35	0								13	11	10	1										2	128
Tetracyclines - Tetracycline	2	35	29						3	3				1			28							0.5	64
Fluoroquinolones - Ciprofloxacin	1	35	26				7	1	1			5	7	9	5									0.12	16
Quinolones - Nalidixic acid	16	35	27									3	4		1	3	22	2						1	128
Aminoglycosides - Streptomycin	2	35	2							27	6				1	1								1	128
Aminoglycosides - Gentamicin	1	35	0					32	3															0.25	32
Aminoglycosides - Neomycin	1	35	1						33	1							1							0.5	64
Penicillins - Ampicillin	4	35	11					1		1	1	5	13	3	2	9								0.25	32
Macrolides - Clarithromycin	8	35	9						6	8	11	1			1		8							0.5	64
Macrolides - Erythromycin	4	35	9						7	10	6	3				1	8							0.5	64
Macrolides - Tulathromycin	4	35	8						24	2		1			1	4	3							0.5	64
Sulfonamides - Sulfamethoxazol	32	35	9										5	6	5	10			3	6				8	1024

Table Cut-off values used for antimicrobial susceptibility testing of Campylobacter in Animals

Test Method Used
Broth dilution

Standard methods used for testing
NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline		2	
Fluoroquinolones	Ciprofloxacin		1	
Quinolones	Nalidixic acid		16	
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
Macrolides	Erythromycin		4	
Penicillins	Ampicillin		8	
Sulfonamides	Sulfonamides		256	

Footnote:

breakpoints are for C. jejuni.
For C. coli :
erythromycin 16mg/l
streptomycin 4mg/l
gentamicin 2 mg/l

Table Cut-off values used for antimicrobial susceptibility testing of Campylobacter in Food

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

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

Table Cut-off values used for antimicrobial susceptibility testing of Campylobacter 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		1	
	Streptomycin		2	
Macrolides	Erythromycin		4	

2.3 LISTERIOSIS

2.3.1 General evaluation of the national situation

2.3.2 Listeria in foodstuffs

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	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
Crustaceans - unspecified - cooked - at retail	VWA	Single	25g	53	0	0	0	53	0	0
Meat from pig - meat products - cooked, ready-to-eat - at retail	VWA	Single	25g	286	2	5	0	281	2	0
Fishery products, unspecified - at retail (atlantic mackerel, objective sampling)	VWA	Single	25g	247	0	244	0	244	0	0
Fishery products, unspecified - at retail (eel, objective sampling)	VWA	Single	25g	181	61	173	47	178	5	9
Fishery products, unspecified - at retail (herring, objective sampling)	VWA	Single	25g	59	3	57	2	58	0	1
Fishery products, unspecified - at retail (objective sampling)	VWA	Single	25g	12	0	3	0	12	0	0
Fishery products, unspecified - at retail (other fish products, objective sampling)	VWA	Single	25g	12	0	2	0	10	0	0
Fishery products, unspecified - at retail (salmon, objective sampling)	VWA	Single	25g	386	155	364	126	378	29	8
Fishery products, unspecified - at retail (som catfish, objective sampling)	VWA	Single	25g	5	1	5	1	5	0	0

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	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
Fishery products, unspecified - at retail (trout, objective sampling)	VWA	Single	25g	126	14	123	13	122	1	0
Meat from bovine animals - fresh - at retail (objective sampling)	VWA	Single	25g	208	2	0	0	208	2	0
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	417	6	0	0	417	6	0
Meat from bovine animals - meat preparation - intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	253	3	5	1	253	2	1
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	36	1	3	1	36	0	0
Meat from bovine animals - meat products - raw and intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	3	0	0	0	3	0	0
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	283	12	0	0	283	11	1
Meat from pig - fresh - at retail (objective sampling)	VWA	Single	25g	314	2	0	0	314	2	0
Meat from pig - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	120	1	0	0	120	1	0
Meat from pig - meat preparation - intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	8	0	4	0	4	0	0
Meat from pig - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	28	0	0	0	28	0	0

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	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
Meat from sheep - fresh - at retail (objective sampling)	VWA	Single	25g	82	0	0	0	82	0	0
Meat from sheep - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	38	0	0	0	38	0	0
Meat from sheep - meat products - cooked, ready-to -eat - at retail (objective sampling)	VWA	Single	25g	3	0	0	0	3	0	0
Meat from sheep - minced meat - at retail (objective sampling)	VWA	Single	25g	7	0	0	0	7	0	0
Meat, mixed meat - at retail (fresh, objective sampling)	VWA	Single	25g	3	1	0	0	3	1	0
Meat, mixed meat - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	9	1	0	0	9	1	0
Meat, mixed meat - meat preparation - intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	11	0	0	0	11	0	0
Meat, mixed meat - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	313	1	0	0	313	1	0
Meat, mixed meat - meat products - raw and intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	2	0	0	0	2	0	0
Meat, mixed meat - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	10	0	0	0	10	0	0
Other food - at retail (lettuce, objective sampling)	VWA	Single	25g	20	0	1	0	20	0	0
Other food - at retail (pancakes, objective sampling)	VWA	Single	25g	25	0	0	0	25	0	0

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	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
Other food - at retail (salads, objective sampling)	VWA	Single	25g	534	0	0	0	534	0	0
Other food - at retail (sandwiches, objective sampling)	VWA	Single	25g	639	1	0	0	639	1	0
Other food - at retail (vegetable or fruit salad, objective sampling)	VWA	Single	25g	385	1	0	0	385	1	0

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	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		1	0	1	0	1	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail [2)]	VWA	Single		6	0	0	0	6	0	0
Cheeses made from goats' milk - hard - made from pasteurised milk - at retail [3)]	VWA	Single		1	0	1	0	1	0	0
Other food - at retail (ice-cream) [4)]	VWA	Single		4	0	0	0	4	0	0

Comments:

[1)] Selective Costomer complaints
[2)] selective costumer complaints
[3)] Selective Customer complaints
[4)] Selective Customer complaints

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
Sheep [1)]	VMDC	Animal	1	1		1
Cattle (bovine animals) - in total - Clinical investigations	GD	Animal	2727	71		71
Gallus gallus (fowl) - in total - Clinical investigations	GD	Flock	1502	0		
Goats - in total - Clinical investigations	GD	Animal	338	7		7
Pigs - in total - Clinical investigations	GD	Animal	3541	0		
Sheep - in total - Clinical investigations	GD	Animal	527	11		11
Solipeds, domestic - horses - in total - Clinical investigations [2)]	VMDC	Animal	1	1	1	
Turkeys - in total - Clinical investigations	GD	Animal	35	0		

Comments:

[1)] post mortem
[2)] eye, conjunctival swab

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	206	1	1		
Meat from bovine animals - minced meat - intended to be eaten raw - at retail [2)]	VWA	Single	25g	1288	0			
Meat from sheep - fresh - at retail [3)]	VWA	Single	25g	33	0			
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	427	0			
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	30	0			
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	37	0			
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	292	0			
Meat from other animal species or not specified - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	5	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 - meat preparation - intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	2	0			
Meat from other animal species or not specified - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	102	0			
Meat from other animal species or not specified - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	10	0			
Meat from pig - fresh - at retail (objective sampling)	VWA	Single	25g	309	0			
Meat from pig - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	121	0			
Meat from pig - meat preparation - intended to be eaten raw - at retail (objective sampling)	VWA	Single	25g	3	0			
Meat from pig - meat products - cooked, ready-to-eat - at retail (objective sampling)	VWA	Single	25g	268	0			
Meat from pig - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	28	0			
Meat from sheep - meat preparation - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	37	0			
Meat from sheep - meat products - cooked, ready-to -eat - at retail (objective sampling)	VWA	Single	25g	3	0			
Meat from sheep - minced meat - intended to be eaten cooked - at retail (objective sampling)	VWA	Single	25g	7	0			

Comments:

Table VT E. coli in food

[1)] objective sampling
[2)] objective sampling
[3)] objective sampling

Footnote:

The method for analyses used by VWA is an own method based on ISO

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) - at farm - animal sample - faeces - Surveillance	VWA	Herd	25g	175	28	28		
Cattle (bovine animals) - dairy cows - at farm - animal sample - faeces - Surveillance	VWA	Herd	25g	155	3	3		

2.4.4 Antimicrobial resistance in Escherichia coli, pathogenic isolates

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

Escherichia coli, pathogenic	E.coli, pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	86	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	86	10
Amphenicols - Florfenicol	86	4
Tetracyclines - Tetracycline	86	19
Fluoroquinolones - Ciprofloxacin	86	6
Quinolones - Nalidixic acid	86	6
Trimethoprim	86	9
Aminoglycosides - Streptomycin	86	17
Aminoglycosides - Gentamicin	86	4
Aminoglycosides - Kanamycin	86	10
Penicillins - Ampicillin	86	16
Cephalosporins - Cefotaxim	86	1
Cephalosporins - Ceftazidim	86	1
Fully sensitive	86	3
Polymyxins - Colistin	86	0
Resistant to 1 antimicrobial	86	63
Resistant to 2 antimicrobials	86	2
Resistant to 3 antimicrobials	86	1
Resistant to 4 antimicrobials	86	3

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

Escherichia coli, pathogenic	E.coli, pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	86	
Antimicrobials:	N	n
Resistant to >4 antimicrobials	86	14

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

Escherichia coli, pathogenic	E.coli, pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	13	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	13	3
Amphenicols - Florfenicol	13	0
Tetracyclines - Tetracycline	13	9
Fluoroquinolones - Ciprofloxacin	13	0
Quinolones - Nalidixic acid	13	0
Trimethoprim	13	6
Aminoglycosides - Streptomycin	13	7
Aminoglycosides - Gentamicin	13	0
Aminoglycosides - Kanamycin	13	2
Penicillins - Ampicillin	13	4
Cephalosporins - Cefotaxim	13	1
Cephalosporins - Ceftazidim	13	1
Fully sensitive	13	1
Polymyxins - Colistin	13	0
Resistant to 1 antimicrobial	13	3
Resistant to 2 antimicrobials	13	0
Resistant to 3 antimicrobials	13	4
Resistant to 4 antimicrobials	13	1
Resistant to >4 antimicrobials	13	4

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

Escherichia coli, pathogenic	E.coli, pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	328	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	328	73
Amphenicols - Florfenicol	328	8
Tetracyclines - Tetracycline	328	197
Fluoroquinolones - Ciprofloxacin	328	166
Quinolones - Nalidixic acid	328	160
Trimethoprim	328	174
Aminoglycosides - Streptomycin	328	182
Aminoglycosides - Gentamicin	328	34
Aminoglycosides - Kanamycin	328	64
Penicillins - Ampicillin	328	222
Cephalosporins - Cefotaxim	328	70
Cephalosporins - Ceftazidim	328	59
Fully sensitive	328	5
Polymyxins - Colistin	328	7
Resistant to 1 antimicrobial	328	44
Resistant to 2 antimicrobials	328	18
Resistant to 3 antimicrobials	328	31
Resistant to 4 antimicrobials	328	37
Resistant to >4 antimicrobials	328	193

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																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	86																							
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	86	10										5	65	6			10						2	64
Amphenicols - Florfenicol	16	86	4										5	70	7		1	3						2	64
Tetracyclines - Tetracycline	8	86	19								8	45	13	1			1	18						1	64
Fluoroquinolones - Ciprofloxacin	1	86	3	4	67	9			1	2				1	2									0.008	4
Quinolones - Nalidixic acid	16	86	6										80					6						4	64
Trimethoprim	4	86	9							56	20	1					9							0.5	32
Aminoglycosides - Streptomycin	16	86	17										25	41	3		1	2	14					2	128
Aminoglycosides - Gentamicin	4	86	4						6	59	17			1	2	1								0.25	32
Aminoglycosides - Kanamycin	8	86	10										74	2					10					4	128
Penicillins - Ampicillin	8	86	16								3	23	43	1			16							0.5	32
Cephalosporins - Cefotaxim	2	86	1				79	5	1					1										0.06	4
Cephalosporins - Ceftazidim	8	86	0						82	3		1												0.25	16
Polymyxins - Colistin	2	86	86											86										8	16

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

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

E.coli, pathogenic, unspecified	Meat from pig - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	13																							
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	13	3											9	1		1	2						2	64
Amphenicols - Florfenicol	16	13	0										3	10										2	64
Tetracyclines - Tetracycline	8	13	9								1	2	1				3	6						1	64
Fluoroquinolones - Ciprofloxacin	1	13	0	3	10																			0.008	4
Quinolones - Nalidixic acid	16	13	0										13											4	64
Trimethoprim	4	13	6							6	1						6							0.5	32
Aminoglycosides - Streptomycin	16	13	7											4	2	1	1	2	3					2	128
Aminoglycosides - Gentamicin	4	13	0						2	5	6													0.25	32
Aminoglycosides - Kanamycin	8	13	2										11						2					4	128
Penicillins - Ampicillin	8	13	4								1	6	2				4							0.5	32
Cephalosporins - Cefotaxim	2	13	1				12							1										0.06	4
Cephalosporins - Ceftazidim	8	13	1						12						1									0.25	16
Polymyxins - Colistin	2	13	13											13										8	16

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																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	328																								
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	328	73										53	172	30	12	15	46						2	64
Amphenicols - Florfenicol	16	328	8										74	199	47	1	2	5						2	64
Tetracyclines - Tetracycline	8	328	197								11	87	28	5	2		37	158						1	64
Fluoroquinolones - Ciprofloxacin	1	328	42	6	126	30	3	8	80	28	5	5	3	10	24									0.008	4
Quinolones - Nalidixic acid	16	328	160										163	1	4	2	12	146						4	64
Trimethoprim	4	328	171							117	26	11	3		1	1	169							0.5	32
Aminoglycosides - Streptomycin	16	328	182										22	95	29	18	28	34	102					2	128
Aminoglycosides - Gentamicin	4	328	33						26	165	96	7	1	2	10	10	11							0.25	32
Aminoglycosides - Kanamycin	8	328	64										237	27	4	2	2		56					4	128
Penicillins - Ampicillin	8	328	222								1	44	58	3			222							0.5	32
Cephalosporins - Cefotaxim	2	328	62				218	33	7		3	5	12	50										0.06	4
Cephalosporins - Ceftazidim	8	328	17						246	23	13	9	7	13	12	5								0.25	16
Polymyxins - Colistin	2	328	328											321	6	1								8	16

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	1	
	Enrofloxacin	EUCAST	1	
Quinolones	Nalidixic acid	EUCAST	16	
Trimethoprim	Trimethoprim		4	
Sulfonamides	Sulfonamide		128	
Aminoglycosides	Streptomycin	EUCAST	16	
	Gentamicin	EUCAST	4	
	Kanamycin	EUCAST	8	
Cephalosporins	Cefotaxim	EUCAST	2	
	Ceftazidim	EUCAST	8	
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	

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	M. avium complex
Goats [1)]	GD	Animal	302	0				
Pigs [2)]	GD	Animal	3541	0				
Sheep [3)]	GD	Animal	502	0				
Cats - pet animals - in total - Clinical investigations [4)]	VMDC	Animal	1	1				1
Other animals - at farm - Clinical investigations	GD	Animal	1776	0				
Other animals - in total - Clinical investigations (wild, pet and zoo animals)	GD	Animal	28	0				

Comments:

[1)] clinical investigation
[2)] clinical investgation
[3)] clinical investigation
[4)] swollen joint

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

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	55192	3967599	55192	100	0	0				2	0
Total : [1)]	55192	3967599	55192	100	0	0	N.A.	0	0	2	0

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	20	0				
Giraffes - at farm - Control and eradication programmes	GD	Animal	2	0				
Lamas - at farm - Control and eradication programmes	GD	Animal	12	0				
Pigs - at farm - Control and eradication programmes	GD	Animal	6672	0				

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

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 microbio logically	Number of animals positive microbio logically	Number of suspended herds
Nederland	51592	1490793	51592	100	0	0	1515	13608	0	8	0	0	0	0
Total : [1)]	51592	1490793	51592	100	0	0	1515	13608	0	8	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

Region	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 microbio logically	Number of animals positive microbio logically
																		Sero logically	BST		
Nederland	55192	3967599	55192	100	0	0	0	0	0	0	0	0	8585	0	0	8585	88	0	0	7	0
Total : [1)]	55192	3967599	55192	100	0	0	0	0	0	0	0	0	8585	0	0	8585	88	0	0	7	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) - in total - Clinical investigations	GD	Animal	2648	0						
Goats - in total - Clinical investigations	GD	Animal	302	0						
Pigs - in total - Clinical investigations	GD	Animal	3541	0						
Poultry, unspecified - in total - Clinical investigations	GD	Animal	1567	0						
Sheep - in total - Clinical investigations	GD	Animal	502	3			3			
Zoo animals, all - at zoo - Clinical investigations (mammals and birds) [1)]	VMDC	Animal	301	10	4	6				4

Comments:

[1)] post mortem and faeces

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	22	0		
Pigs	VWA	Animal	12186453	0		
Solipeds, domestic - horses	VWA	Animal	2193	0		
Wild boars - wild	VWA	Animal	2010	0		
Wild boars - wild - in total (serology)	RIVM	Animal	600	0		

Comments:

[1)] serology

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	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals) [1)]	RIVM	Animal	1	0			
Foxes	RIVM	Animal	41	0			
Cattle (bovine animals) - in total - Clinical investigations	GD	Animal	2648	0			

Comments:

[1)] 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
Sheep [1)]	RIVM	Animal	183	64	64
Cattle (bovine animals) - in total - Clinical investigations	GD	Animal	2648	0	
Goats - in total - Clinical investigations	GD	Animal	302	1	1
Sheep - in total - Clinical investigations	GD	Animal	502	10	10

Comments:

[1)] serology

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	Units tested	Total units positive for Lyssavirus (rabies)	Lyssavirus, unspecified	Classical rabies virus (genotype 1)	European Bat Lyssavirus - unspecified
Bats - wild	VWA	Animal	165	11			11
Cats	VWA	Animal	6	0			
Dogs	VWA	Animal	5	0			
Foxes - wild	VWA	Animal	2	0			
Other animals	VWA	Animal	1	0			
Other mustelides	VWA	Animal	1	0			

2.12 Q-FEVER

2.12.1 General evaluation of the national situation

A. Coxiella burnetii (Q-fever) general evaluation

History of the disease and/or infection in the country

In the Netherlands, Q-fever in animals had not been diagnosed prior to 2005. In that year it has been shown for the first time that Coxiella burnetii was the casual agent of an abortion storm in dairy goats. In 2006, 6 Q-fever related abortion storms were diagnosed in dairy goat herds and in 2007 another 7. In May 2007 the first Dutch outbreak of Q-fever in humans ever, comprising 198 patients, had been diagnosed in a rural community of the province of North Brabant. It became clear that North Brabant had the highest dairy goat density in the whole country. A causal relation between abortion in dairy goat herds, lambing season, goat density and human disease seemed obvious.

Early in 2008, voluntary hygiene measures meant to prevent spread of bacteria to the environment were implemented in the dairy goat and sheep sector. In June, Q-fver in dairy goat and sheep farms became notifiable on the basis of increased abortion (>5%)and hygiene measures were made mandatory. In autumn, some 45.000 dairy goats and sheep were vaccinated against Q-fever in the epicentre of the human -fever epidemic. However, at the end of 2008 1000 human patients, most of which contracted Q-fever in spring and lived in the province of North Brabant, had been notified.

In 2009, hygiene measures were tightened and measures were implemented in order to prevent spread of the disease to uninfected farms. Dairy goats and sheep, as well as smal ruminants on petting farms, were vaccinated again, but in a much larger area than the previous year, comprising almost the entire southern part of the Netherlands. From October on, PCR monitoring of bulk milk from dairy goat and sheep farms commenced and farms were declared infected on the basis of PCR positive bulk milk. In December, it was decided to cull all pregnant animals on farms that tested PCR positive in the bulk milk monitoring. The rationale behind this decision was to achieve a maximum reduction of shedding of Coxiella by lambing or aborting animals in the lambing season in 2010. A substantial proportion of the animals that had been vaccinated previously were already sired upon vaccination and it became clear that vaccination of pregnant animals does not reliably prevent abortion and shedding of Coxiella. Non pregnant animals on infected farms that were not culled may not be used for reproduction for the remainder of their lives. In spite of all measures taken in 2009 some 2300 Q-fever patients were notified.

From the end of December 2009 until the first of June 2010 87 dairy goat and 2 dairy sheep farms were declared infected and some 50.000 pregant animals were culled. As all reproducing animals on dairy goat or sheep farms that remained uninfected will be vaccinated until the end of JUne 2010, vaccination will have been performed effectively prior to the season of 2010, thus guaranteeing maximum effect of vaccination and making another culling round obsolete.

National evaluation of the recent situation, the trends and sources of infection

See previous paragraph also. The number of reported Q-fever patients has at begin of June 2010 not peaked as in previous years, making it likely that measures taken were effective and proving a strong relation between the occurence of Q-fever in dairy goats and sheep and humans. Other substantial sources of human infection have not been identified. It is, however, likely that many of human patients that are still being reported now contracted the infection due to contamination of the environment with Coxiella burnetii.

Relevance of the findings in animals, feedingstuffs and foodstuffs to human cases (as a source of infection)

There are no signs that routes of infection other then direct contact with infected animals or inhalation of contaminated aerosols contribute to human disease burden.

Suggestions to the Community for the actions to be taken

A harmonised monitoring of Coxiella burnetii in small ruminants is proposed. The amount of underdiagnosis of Q-fever in MS needs to be assessed.

2.12.2 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)]	VWA	Holding	1281	66	66

Comments:

[1)] bulkmilk at farm, monitoring

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	E.coli, non-pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	296	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	296	34
Amphenicols - Florfenicol	296	2
Cephalosporins - 3rd generation cephalosporins	296	11
Fluoroquinolones - Ciprofloxacin	296	21
Quinolones - Nalidixic acid	296	21
Trimethoprim	296	159
Sulfonamides - Sulfonamide	296	183
Aminoglycosides - Streptomycin	296	185
Aminoglycosides - Gentamicin	296	9
Aminoglycosides - Kanamycin	296	22
Penicillins - Ampicillin	296	133
Tetracyclines - Tetracycline	296	200
Fully sensitive	296	58
Resistant to 1 antimicrobial	296	38

Table Antimicrobial susceptibility testing of E. coli in Pigs

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	296	
Antimicrobials:	N	n
Resistant to 2 antimicrobials	296	41
Resistant to 3 antimicrobials	296	50
Resistant to 4 antimicrobials	296	76
Resistant to >4 antimicrobials	296	33

Table Antimicrobial susceptibility testing of E. coli in Cattle (bovine animals)

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	307	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	307	46
Amphenicols - Florfenicol	307	15
Cephalosporins - 3rd generation cephalosporins	307	5
Fluoroquinolones - Ciprofloxacin	307	39
Quinolones - Nalidixic acid	307	40
Trimethoprim	307	81
Sulfonamides - Sulfonamide	307	99
Aminoglycosides - Streptomycin	307	104
Aminoglycosides - Gentamicin	307	19
Aminoglycosides - Kanamycin	307	44
Penicillins - Ampicillin	307	87
Tetracyclines - Tetracycline	307	126
Fully sensitive	307	161
Resistant to 1 antimicrobial	307	32
Resistant to 2 antimicrobials	307	18
Resistant to 3 antimicrobials	307	17
Resistant to 4 antimicrobials	307	43
Resistant to >4 antimicrobials	307	36

Table Antimicrobial susceptibility testing of E. coli in Gallus gallus (fowl)

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	291	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	291	69
Amphenicols - Florfenicol	291	12
Cephalosporins - 3rd generation cephalosporins	291	52
Fluoroquinolones - Ciprofloxacin	291	167
Quinolones - Nalidixic acid	291	167
Trimethoprim	291	181
Sulfonamides - Sulfonamide	291	208
Aminoglycosides - Streptomycin	291	196
Aminoglycosides - Gentamicin	291	25
Aminoglycosides - Kanamycin	291	50
Penicillins - Ampicillin	291	213
Tetracyclines - Tetracycline	291	180
Fully sensitive	291	36
Resistant to 1 antimicrobial	291	17
Resistant to 2 antimicrobials	291	24
Resistant to 3 antimicrobials	291	31
Resistant to 4 antimicrobials	291	59
Resistant to >4 antimicrobials	291	124

Table Antimicrobial susceptibility testing of E. coli in Cattle (bovine animals) - calves (under 1 year) - veal calves - 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) - veal calves																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	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	38										8	90	35		2	36						2	64
Amphenicols - Florfenicol	16	171	12										7	110	42		1	11						2	64
Tetracyclines - Tetracycline	8	171	101								1	19	47	3			7	94						1	64
Fluoroquinolones - Ciprofloxacin	0.06	171	31		106	33	1		14	4	2	2	1		8									0.008	8
Quinolones - Nalidixic acid	16	171	32										137	2		1	4	27						4	64
Trimethoprim	2	171	64							106	1						64							0.5	32
Aminoglycosides - Streptomycin	16	171	81										16	57	17	7	10	12	52					2	128
Aminoglycosides - Gentamicin	2	171	11						1	72	73	14		1	3	1	6							0.25	32
Aminoglycosides - Kanamycin	8	171	32										120	19	4			1	27					4	128
Penicillins - Ampicillin	8	171	71								1	21	74	4			71							0.5	32
Cephalosporins - Cefotaxim	0.25	171	3				139	23	6					3										0.06	4
Sulfonamides	256	171	77											93	1							77		8	1024

Table Antimicrobial susceptibility testing of E. coli in Cattle (bovine animals) - unspecified - 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) - unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	136																							
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	136	8										4	100	24	2	3	3						2	64
Amphenicols - Florfenicol	16	136	3										4	107	22	1		2						2	64
Tetracyclines - Tetracycline	8	136	25								3	46	59	3	1		2	22						1	64
Fluoroquinolones - Ciprofloxacin	0.06	136	8		92	36		1	4		1				2									0.008	8
Quinolones - Nalidixic acid	16	136	8										126	1	1		1	7						4	64
Trimethoprim	2	136	17							116	3						17							0.5	32
Aminoglycosides - Streptomycin	16	136	23										28	70	15	3	4	3	13					2	128
Aminoglycosides - Gentamicin	2	136	8						4	73	42	9	2		3	1	2							0.25	32
Aminoglycosides - Kanamycin	8	136	12										108	16	5		1		6					4	128
Penicillins - Ampicillin	8	136	16								3	32	80	5			16							0.5	32
Cephalosporins - Cefotaxim	0.25	136	2				102	31	1					2										0.06	4
Sulfonamides	256	136	22											114								22		8	1024

Table Antimicrobial susceptibility testing of E. coli in Pigs - fattening pigs - unspecified - quantitative data [Dilution method]

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

E.coli, non-pathogenic, unspecified	Pigs - fattening pigs - unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	296																							
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	296	34									2	26	203	31	9	4	21						2	64
Amphenicols - Florfenicol	16	296	2										31	210	53			2						2	64
Tetracyclines - Tetracycline	8	296	200								8	39	44	5	3		20	177						1	64
Fluoroquinolones - Ciprofloxacin	0.06	296	21		216	57	2	4	12	4					1									0.008	8
Quinolones - Nalidixic acid	16	296	21										274		1		3	18						4	64
Trimethoprim	2	296	159							135	2						159							0.5	32
Aminoglycosides - Streptomycin	16	296	185										22	56	33	20	31	39	95					2	128
Aminoglycosides - Gentamicin	2	296	9						9	141	112	25	9											0.25	32
Aminoglycosides - Kanamycin	8	296	22										233	41	11	1			10					4	128
Penicillins - Ampicillin	8	296	133								8	40	107	8		1	132							0.5	32
Cephalosporins - Cefotaxim	0.25	296	11				254	30	1			1		10										0.06	4
Sulfonamides	256	296	183											113								183		8	1024

Table Antimicrobial susceptibility testing of E. coli in Gallus gallus (fowl) - broilers - before slaughter - 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 - before slaughter																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	291																							
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	291	69										21	161	40	6	14	49						2	64
Amphenicols - Florfenicol	16	291	12										17	201	61	10	2							2	64
Tetracyclines - Tetracycline	8	291	180								4	48	55	4	1	1	15	163						1	64
Fluoroquinolones - Ciprofloxacin	0.06	291	167		100	22	2	19	81	43	8		3	5	8									0.008	8
Quinolones - Nalidixic acid	16	291	167										122	1	1	2	22	143						4	64
Trimethoprim	2	291	181							109	1						181							0.5	32
Aminoglycosides - Streptomycin	16	291	196										17	55	23	20	23	28	125					2	128
Aminoglycosides - Gentamicin	2	291	25						3	127	108	28	4	2	7	8	4							0.25	32
Aminoglycosides - Kanamycin	8	291	50										184	57	15				35					4	128
Penicillins - Ampicillin	8	291	213								2	19	47	10	1		212							0.5	32
Cephalosporins - Cefotaxim	0.25	291	52				184	50	5		2	1	3	46										0.06	4
Sulfonamides	256	291	208											82				1				208		8	1024

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		16	
	Florfenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		1	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		4	
Sulfonamides	Sulfonamides		128	
Aminoglycosides	Streptomycin		16	
	Gentamicin		4	
	Kanamycin		8	
Cephalosporins	Cefotaxim		2	
	Ceftazidim		8	
Penicillins	Ampicillin		8	
Polymyxins	Colistin		2	

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

Test Method Used
Broth dilution

Standard methods used for testing
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	
Sulfonamides	Sulfonamides		128	
Aminoglycosides	Streptomycin		16	
	Gentamicin		4	
	Kanamycin		8	
Cephalosporins	Cefotaxim		2	
	Ceftazidim		8	
Penicillins	Ampicillin		8	
Polymyxins	Colistin		2	

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	
Sulfonamides	Sulfonamides		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 Pigs - fattening pigs - unspecified

Enterococcus, non-pathogenic	E. faecalis		E. faecium	
Isolates out of a monitoring program (yes/no)	yes		yes	
Number of isolates available in the laboratory	43		97	
Antimicrobials:	N	n	N	n
Amphenicols - Chloramphenicol	43	18	97	2
Amphenicols - Florfenicol	43	0	97	0
Tetracyclines - Tetracycline	43	40	97	88
Fluoroquinolones - Ciprofloxacin	43	1	97	6
Aminoglycosides - Streptomycin	43	22	97	33
Aminoglycosides - Gentamicin	43	1	97	1
Penicillins - Ampicillin	43	0	97	44
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	43	0	97	1
Ionophores - Salinomycin	43	2	97	23
Macrolides - Erythromycin	43	28	97	49
Oxazolidines - Linezolid	43	0	97	0

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Cattle (bovine animals) - calves (under 1 year) - veal calves

Enterococcus, non-pathogenic	E. faecalis		E. faecium	
Isolates out of a monitoring program (yes/no)	yes		yes	
Number of isolates available in the laboratory	22		43	
Antimicrobials:	N	n	N	n
Amphenicols - Chloramphenicol	22	5	43	1
Amphenicols - Florfenicol	22	0	43	1
Tetracyclines - Tetracycline	22	19	43	26
Fluoroquinolones - Ciprofloxacin	22	1	43	7
Aminoglycosides - Streptomycin	22	9	43	17
Aminoglycosides - Gentamicin	22	1	43	2
Penicillins - Ampicillin	22	0	43	13
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	22	0	43	0
Ionophores - Salinomycin	22	0	43	6
Macrolides - Erythromycin	22	9	43	21
Oxazolidines - Linezolid	22	0	43	1
Streptogramins - Quinupristin/Dalfopristin	22	0	43	29

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Cattle (bovine animals) - adult cattle over 2 years

Enterococcus, non-pathogenic	E. faecalis		E. faecium	
Isolates out of a monitoring program (yes/no)	yes		yes	
Number of isolates available in the laboratory	19		44	
Antimicrobials:	N	n	N	n
Amphenicols - Chloramphenicol	19	5	44	1
Amphenicols - Florfenicol	19	0	44	0
Tetracyclines - Tetracycline	19	16	44	11
Fluoroquinolones - Ciprofloxacin	19	0	44	7
Aminoglycosides - Streptomycin	19	6	44	5
Aminoglycosides - Gentamicin	19	1	44	0
Penicillins - Ampicillin	19	0	44	1
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	19	0	44	1
Ionophores - Salinomycin	19	1	44	1
Macrolides - Erythromycin	19	8	44	8
Oxazolidines - Linezolid	19	0	44	0
Streptogramins - Quinupristin/Dalfopristin	19	0	44	26

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Gallus gallus (fowl) - broilers - before slaughter

Enterococcus, non-pathogenic	E. faecalis		E. faecium	
Isolates out of a monitoring program (yes/no)	yes		yes	
Number of isolates available in the laboratory	110		114	
Antimicrobials:	N	n	N	n
Amphenicols - Chloramphenicol	110	7	114	1
Amphenicols - Florfenicol	110	0	114	0
Tetracyclines - Tetracycline	110	105	114	87
Fluoroquinolones - Ciprofloxacin	110	0	114	20
Aminoglycosides - Streptomycin	110	62	114	70
Aminoglycosides - Gentamicin	110	1	114	15
Penicillins - Ampicillin	110	3	114	46
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	110	0	114	1
Ionophores - Salinomycin	110	8	114	81
Macrolides - Erythromycin	110	90	114	91
Oxazolidines - Linezolid	110	0	114	0
Streptogramins - Quinupristin/Dalfopristin	110	0	114	93

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

Enterococcus, non-pathogenic	Enterococcus spp., unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	247	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	247	8
Amphenicols - Florfenicol	176	176
Tetracyclines - Tetracycline	247	175
Fluoroquinolones - Ciprofloxacin	247	12
Aminoglycosides - Streptomycin	247	105
Aminoglycosides - Gentamicin	247	75
Penicillins - Ampicillin	240	3
Fully sensitive	247	25
Glycopeptides (Cyclic peptides, Polypeptides) - Bacitracin	71	64
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	247	4
Ionophores - Salinomycin	247	31
Macrolides - Erythromycin	243	148
Orthosomycins - Avilamycin	67	1
Oxazolidines - Linezolid	247	0
Resistant to 1 antimicrobial	247	49
Resistant to 2 antimicrobials	247	38
Resistant to 3 antimicrobials	247	35
Resistant to 4 antimicrobials	247	65
Resistant to >4 antimicrobials	247	35
Streptogramins - Quinupristin/Dalfopristin	247	112

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Meat from bovine animals - Monitoring

Enterococcus, non-pathogenic	Enterococcus spp., unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	83	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	83	2
Tetracyclines - Tetracycline	83	18
Fluoroquinolones - Ciprofloxacin	83	0
Aminoglycosides - Streptomycin	83	7
Aminoglycosides - Gentamicin	83	1
Penicillins - Ampicillin	83	0
Fully sensitive	83	52
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	83	0
Ionophores - Salinomycin	83	1
Macrolides	83	5
Macrolides - Erythromycin	83	5
Oxazolidines - Linezolid	83	0
Resistant to 1 antimicrobial	83	22
Resistant to 2 antimicrobials	83	7
Resistant to 3 antimicrobials	83	1
Resistant to 4 antimicrobials	83	0
Resistant to >4 antimicrobials	83	1
Streptogramins - Quinupristin/Dalfopristin	83	11

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Meat from pig - Monitoring

Enterococcus, non-pathogenic	Enterococcus spp., unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	31	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	31	1
Tetracyclines - Tetracycline	31	8
Fluoroquinolones - Ciprofloxacin	31	0
Aminoglycosides - Streptomycin	31	2
Aminoglycosides - Gentamicin	31	0
Penicillins - Ampicillin	31	0
Fully sensitive	31	18
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	31	2
Ionophores - Salinomycin	31	0
Macrolides - Erythromycin	31	2
Oxazolidines - Linezolid	31	31
Resistant to 1 antimicrobial	31	7
Resistant to 2 antimicrobials	31	4
Resistant to 3 antimicrobials	31	1
Resistant to 4 antimicrobials	31	1
Resistant to >4 antimicrobials	31	0
Streptogramins - Quinupristin/Dalfopristin	31	6

Table Antimicrobial susceptibility testing of E. faecalis in Cattle (bovine animals) - calves (under 1 year) - veal calves - 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) - veal calves																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	22																							
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	22	5											16	1		1	4						1	128
Amphenicols - Florfenicol	8	22	0									3	19											1	64
Tetracyclines - Tetracycline	2	22	19							3						9		10						0.5	64
Fluoroquinolones - Ciprofloxacin	4	22	1							5	15	1				1								0.5	64
Aminoglycosides - Streptomycin	512	22	9															11	2		3	6		8	1024
Aminoglycosides - Gentamicin	32	22	1											2	18	1					1			4	512
Penicillins - Ampicillin	4	22	0								19	2	1											1	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	22	0							1	3	9	9											0.5	64
Ionophores - Salinomycin	4	22	0							5	16		1											0.5	64
Macrolides - Erythromycin	4	22	9								2	4	7						9					1	128
Oxazolidines - Linezolid	4	22	0								3	19												0.25	32
Streptogramins - Quinupristin/Dalfopristin	32	22	0									2		12	8									0.25	32

Table Antimicrobial susceptibility testing of E. faecalis in Cattle (bovine animals) - unspecified - quantitative data [Dilution method]

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

E. faecalis	Cattle (bovine animals) - unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	19																							
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	19	5											13	1		2	3						1	128
Amphenicols - Florfenicol	8	19	0										19											1	64
Tetracyclines - Tetracycline	2	19	16							1	2				1	4	6	5						0.5	64
Fluoroquinolones - Ciprofloxacin	4	19	0							4	15													0.5	64
Aminoglycosides - Streptomycin	512	19	6														2	9	2			6		8	1024
Aminoglycosides - Gentamicin	512	19	1										1	3	13	1					1			4	512
Penicillins - Ampicillin	4	19	0								17	2												1	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	19	0								9	4	6											0.5	64
Ionophores - Salinomycin	4	19	1							4	13		1	1										0.5	64
Macrolides - Erythromycin	4	19	8								2	5	4				1		7					1	128
Oxazolidines - Linezolid	4	19	0								3	16												0.25	32
Streptogramins - Quinupristin/Dalfopristin	32	19	0								1		1	10	6	1								0.25	32

Table Antimicrobial susceptibility testing of E. faecalis in Pigs - fattening pigs - unspecified - quantitative data [Dilution method]

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

E. faecalis	Pigs - fattening pigs - unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	43																							
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	43	18											22	3		5	13						1	128
Amphenicols - Florfenicol	8	43	0									2	41											1	64
Tetracyclines - Tetracycline	2	43	40							2	1				1	9	5	25						0.5	64
Fluoroquinolones - Ciprofloxacin	4	43	1							4	35	1	2			1								0.5	64
Aminoglycosides - Streptomycin	512	43	22														2	13	6			22		8	1024
Aminoglycosides - Gentamicin	512	43	1										1	10	30	1					1			4	512
Penicillins - Ampicillin	4	43	0								35	7	1											1	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	43	0								20	18	5											0.5	64
Ionophores - Salinomycin	4	43	2							6	31	2	2	2										0.5	64
Macrolides - Erythromycin	4	43	28								3	3	9	1					27					1	128
Oxazolidines - Linezolid	4	43	0								9	34												0.25	32
Streptogramins - Quinupristin/Dalfopristin	32	43	0											17	23	3								0.25	32

Table Antimicrobial susceptibility testing of E. faecalis in Gallus gallus (fowl) - broilers - before slaughter - quantitative data [Dilution method]

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

E. faecalis	Gallus gallus (fowl) - broilers - before slaughter																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	110																							
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	110	7										1	98	2	2	4	3						1	128
Amphenicols - Florfenicol	8	110	0									4	106											1	64
Tetracyclines - Tetracycline	2	110	105							3	2					34	33	38						0.5	64
Fluoroquinolones - Ciprofloxacin	4	110	0							5	96	6	3											0.5	64
Aminoglycosides - Streptomycin	512	110	62														2	37	8	1		62		8	1024
Aminoglycosides - Gentamicin	32	110	1											20	84	5		1						4	512
Penicillins - Ampicillin	4	110	3								95	12		2				1						1	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	110	0								48	49	13											0.5	32
Ionophores - Salinomycin	4	110	8							6	31	8	57	8										0.5	64
Macrolides - Erythromycin	4	110	90								7	7	6		2	6	3	1	78					1	128
Oxazolidines - Linezolid	4	110	0								26	83	1											0.25	32
Streptogramins - Quinupristin/Dalfopristin	32	110	0									1	1	38	65	5								0.25	32

Table Antimicrobial susceptibility testing of E. faecium in Cattle (bovine animals) - calves (under 1 year) - veal calves - 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) - veal calves																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	43																								
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	43	1										1	31	3	7	1							1	128
Amphenicols - Florfenicol	8	43	1										41	1			1							1	64
Tetracyclines - Tetracycline	2	43	26							17							2	24						0.5	64
Fluoroquinolones - Ciprofloxacin	4	43	7								10	7	19	6				1						0.5	64
Aminoglycosides - Streptomycin	128	43	17												1		20	5			1	16		8	1024
Aminoglycosides - Gentamicin	512	43	2										3	18	17	3					2			4	512
Penicillins - Ampicillin	4	43	13								11	16	3	8			2	3						1	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	43	0							16	20	4	3											0.5	64
Ionophores - Salinomycin	4	43	6								23	13	1	6										0.5	64
Macrolides - Erythromycin	4	43	21								12	6	4	2					19					1	128
Oxazolidines - Linezolid	4	43	1								1	29	12	1										0.25	32
Streptogramins - Quinupristin/Dalfopristin	1	43	29							5	9	6	22	1										0.25	32

Table Antimicrobial susceptibility testing of E. faecium in Cattle (bovine animals) - unspecified - quantitative data [Dilution method]

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

E. faecium	Cattle (bovine animals) - unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	44																							
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	44	1										2	40		1	1							1	128
Amphenicols - Florfenicol	8	44	0									1	43											1	64
Tetracyclines - Tetracycline	2	44	11							32	1						2	9						0.5	64
Fluoroquinolones - Ciprofloxacin	4	44	7								17	6	14	6	1									0.5	64
Aminoglycosides - Streptomycin	128	44	5													1	25	13				5		8	1024
Aminoglycosides - Gentamicin	32	44	0										2	21	18	3								4	512
Penicillins - Ampicillin	4	44	1								15	24	4	1										1	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	44	1							21	17	4	1	1										0.5	64
Ionophores - Salinomycin	4	44	1								16	26	1	1										0.5	64
Macrolides - Erythromycin	4	44	8								19	13	4	2					6					1	128
Oxazolidines - Linezolid	4	44	0								1	23	20											0.25	32
Streptogramins - Quinupristin/Dalfopristin	1	44	26							15	3	10	16											0.25	32

Table Antimicrobial susceptibility testing of E. faecium in Pigs - fattening pigs - unspecified - quantitative data [Dilution method]

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

E. faecium	Pigs - fattening pigs - unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	97																							
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	97	2											65	23	7	2							1	128
Amphenicols - Florfenicol	8	97	0									2	85	10										1	64
Tetracyclines - Tetracycline	2	97	88							8	1					2	34	52						0.5	64
Fluoroquinolones - Ciprofloxacin	4	97	6							16	30	25	20	5	1									0.5	64
Aminoglycosides - Streptomycin	128	97	33													1	47	16		2	2	29		8	1024
Aminoglycosides - Gentamicin	512	97	1										18	38	36	4					1			4	512
Penicillins - Ampicillin	4	97	44								8	14	31	43			1							1	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	97	1							70	17	6	3				1							0.5	64
Ionophores - Salinomycin	4	97	23								43	28	3	23										0.5	64
Macrolides - Erythromycin	4	97	49								2	29	17		1				48					1	128
Oxazolidines - Linezolid	4	97	0								1	63	33											0.25	32
Streptogramins - Quinupristin/Dalfopristin	1	97	92							1	4	20	59	12	1									0.25	32

Table Antimicrobial susceptibility testing of E. faecium in Gallus gallus (fowl) - broilers - before slaughter - quantitative data [Dilution method]

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

E. faecium	Gallus gallus (fowl) - broilers - before slaughter																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	114																								
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	114	1										2	62	27	22	1							1	128
Amphenicols - Florfenicol	8	114	0									1	105	8										1	64
Tetracyclines - Tetracycline	2	114	87							27					1	4	12	70						0.5	64
Fluoroquinolones - Ciprofloxacin	4	114	20							1	15	26	52	19	1									0.5	64
Aminoglycosides - Streptomycin	128	114	70														24	20	1		4	65		8	1024
Aminoglycosides - Gentamicin	32	114	15										6	35	48	10	4	7			4			4	512
Penicillins - Ampicillin	4	114	46								34	16	18	33			1	12						1	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	114	1							46	53	12	2					1						0.5	64
Ionophores - Salinomycin	4	114	81							1	15	8	9	81										0.5	64
Macrolides - Erythromycin	4	114	91								14	3	6	3		1	1		86					1	128
Oxazolidines - Linezolid	4	114	0								3	88	23											0.25	32
Streptogramins - Quinupristin/Dalfopristin	1	114	93							5	16	14	60	15	2	2								0.25	32

Table Antimicrobial susceptibility testing of Enterococcus 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

Enterococcus spp., unspecified	Meat from broilers (Gallus gallus) - Monitoring																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	247																								
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	247	8										5	182	51	1	3	5						1	128
Amphenicols - Florfenicol	8	176	0									4	167	5										1	64
Tetracyclines - Tetracycline	2	247	175							41	28	3			3	54	41	77						0.5	64
Fluoroquinolones - Ciprofloxacin	4	247	12					4	31	44	109	32	15	5		5	2							0.5	64
Aminoglycosides - Streptomycin	512	247	105													3	23	56	10	50	1	82	22	8	2048
Aminoglycosides - Gentamicin	32	247	75										8	33	125	6	1	70	1		3			4	1024
Penicillins - Ampicillin	4	240	3						2	3	184	42	6		1		1	1						0.25	128
Glycopeptides (Cyclic peptides, Polypeptides) - Bacitracin	32	71	17							1	1	1		4	29	18	6	11						2	256
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	247	4							18	90	64	71	4										0.5	64
Ionophores - Salinomycin	4	225	9					2	22	18	64	53	57	8	1									0.5	64
Macrolides - Erythromycin	4	243	147						18	4	56	12	6	3	5	4	33	1	101					1	128
Orthosomycins - Avilamycin	16	67	1						1	18	35	12			1									0.25	32
Oxazolidines - Linezolid	4	247	0						3	51	29	156	8											0.25	32
Streptogramins - Quinupristin/Dalfopristin	32	247	81						2	3	22	29	53	57	75	6								0.25	64

Footnote:

During the year 2 different antibiotic panels have been used for the determination of the MIC values. The total amount of strains tested are summed in this table.

Table Antimicrobial susceptibility testing of Enterococcus 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

Enterococcus spp., unspecified	Meat from bovine animals - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	83																							
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	83	2										4	74	3		2							1	128
Tetracyclines - Tetracycline	2	83	18							27	37	1			1	1	10	6						0.5	64
Fluoroquinolones - Ciprofloxacin	4	83	0							14	47	14	8											0.5	64
Aminoglycosides - Streptomycin	128	83	7													1	29	41	5			7		8	2048
Aminoglycosides - Gentamicin	32	83	1										6	28	41	7	1							4	1024
Penicillins - Ampicillin	4	83	0								58	24	1											0.25	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	83	0							27	30	13	13											0.5	64
Ionophores - Salinomycin	4	83	1							3	34	34	11	1										0.5	64
Macrolides - Erythromycin	4	83	5								44	21	13	3					2					1	128
Oxazolidines - Linezolid	4	83	0							1		63	19											0.25	32
Streptogramins - Quinupristin/Dalfopristin	32	83	11							4	11	21	11	25	11									0.25	64

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

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

Enterococcus spp., unspecified	Meat from pig - Monitoring																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	31																							
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	31	1										2	27	1			1						1	128
Tetracyclines - Tetracycline	2	31	8							5	16	2					3	5						0.5	64
Fluoroquinolones - Ciprofloxacin	4	31	0							5	18	7	1											0.5	64
Aminoglycosides - Streptomycin	512	31	2													4	7	14	4			2		8	2048
Aminoglycosides - Gentamicin		31	0										4	10	16	1								4	1024
Penicillins - Ampicillin	4	31	0								14	15	1	1										1	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	31	2							5	17	4	3	2										0.5	64
Ionophores - Salinomycin	4	31	0							2	9	19	1											0.5	64
Macrolides - Erythromycin	4	31	2								16	5	8						2					1	128
Oxazolidines - Linezolid	4	31	31											28	3									0.25	32
Streptogramins - Quinupristin/Dalfopristin	32	31	6							1	3	5	5	11	6									0.25	64

Table Cut-off values for antibiotic resistance of Enterococcus, 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 <=
Aminoglycosides	Streptomycin		512	
	Gentamicin		32	
Amphenicols	Chloramphenicol		32	
	Florfenicol		8	
Penicillins	Ampicillin		8	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
	Bacitracin		32	
Macrolides	Erythromycin		4	
Streptogramins	Quinupristin/Dalfopristin		8	
Tetracyclines	Tetracycline		4	
Oxazolidines	Linezolid		4	
Orthosomycins	Avilamycin		8	
Fluoroquinolones	Ciprofloxacin		4	
Ionophores	Salinomycin		4	

Table Cut-off values for antibiotic resistance of Enterococcus, non-pathogenic 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		512	
	Gentamicin		32	
Amphenicols	Chloramphenicol		32	
Penicillins	Ampicillin		8	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
	Bacitracin		32	
Macrolides	Erythromycin		4	
Streptogramins	Quinupristin/Dalfopristin		8	
Tetracyclines	Tetracycline		4	
Oxazolidines	Linezolid		4	
Orthosomycins	Avilamycin		8	
Fluoroquinolones	Ciprofloxacin		4	
Ionophores	Salinomycin		4	

Table Cut-off values for antibiotic resistance of Enterococcus, non-pathogenic in Feed

Test Method Used	Standard methods used for testing

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

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

	Total number of outbreaks	Outbreaks	Human cases	Hospitalized	Deaths	Number of verified outbreaks
Bacillus	14	0	unknown	unknown	unknown	14
Campylobacter	12	11	24	1	0	1
Clostridium	6	0	unknown	unknown	unknown	6
Escherichia coli, pathogenic	0	0	unknown	unknown	unknown	0
Foodborne viruses	6	3	17	unknown	unknown	3
Listeria	0	0	unknown	unknown	unknown	0
Other agents	0	0	unknown	unknown	unknown	0
Parasites	0	0	unknown	unknown	unknown	0
Salmonella	13	10	34	10	0	3
Staphylococcus	2	0	unknown	unknown	unknown	2
Unknown	194	190	660	unknown	unknown	4
Yersinia	0	0	unknown	unknown	unknown	0

Table Verified Foodborne Outbreaks: detailed data for Bacillus

Please use CTRL for multiple selection fields

B. cereus

	Value
Code	VWA_893721
Outbreaks	1
Human cases	3
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Other or mixed red meat and products thereof
More Foodstuff information	Nasi meat
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: inadequate hygiene by food handler

B. cereus

	Value
Code	VWA_893027
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Broiler meat (Gallus gallus) and products thereof
More Foodstuff information	
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: inadequate hygiene by food handler

B. cereus

	Value
Code	VWA_884907
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Pig meat and products thereof
More Foodstuff information	sausages
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: inadequate hygiene by food handler

B. cereus

	Value
Code	VWA_894569
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Herbs and spices
More Foodstuff information	Pesto
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	

B. cereus

	Value
Code	VWA_885125
Outbreaks	1
Human cases	3
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Cereal products including rice and seeds/pulses (nuts, almonds)
More Foodstuff information	Rice
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: inadequate hygiene by food handler

B. cereus

	Value
Code	VWA_894491
Outbreaks	1
Human cases	3
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Cereal products including rice and seeds/pulses (nuts, almonds)
More Foodstuff information	Rice
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: preparation of too large volumes of food

B. cereus

	Value
Code	VWA_891049
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Mixed or buffet meals
More Foodstuff information	Falafel
Type of evidence	Laboratory detection in human cases
Outbreak type	Unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Inadequate chilling
Other Agent (Mixed Outbreaks)	
Comment	

B. cereus

	Value
Code	VWA_880237
Outbreaks	1
Human cases	3
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Cereal products including rice and seeds/pulses (nuts, almonds)
More Foodstuff information	Rice
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

B. cereus

	Value
Code	VWA_892981
Outbreaks	1
Human cases	12
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Vegetables and juices and other products thereof
More Foodstuff information	Tomato soup
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

B. cereus

	Value
Code	VWA_884883
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Pig meat and products thereof
More Foodstuff information	shawarma
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: inadequate hygiene by food handler

B. cereus

	Value
Code	VWA_890945
Outbreaks	1
Human cases	3
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Crustaceans, shellfish, molluscs and products thereof
More Foodstuff information	shrimps
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: inadequate hygiene by food handler Other agent: Vibrio parahemolyticus

B. cereus

	Value
Code	VWA_894487
Outbreaks	1
Human cases	4
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Mixed or buffet meals
More Foodstuff information	Babi pangang
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Inadequate chilling
Other Agent (Mixed Outbreaks)	
Comment	

B. cereus

	Value
Code	VWA_894003
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Cereal products including rice and seeds/pulses (nuts, almonds)
More Foodstuff information	Rice
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

B. cereus

	Value
Code	VWA_886611
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Mixed or buffet meals
More Foodstuff information	Nasi / bami goreng
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: preparation of too large volumes of food

Table Verified Foodborne Outbreaks: detailed data for Campylobacter

Please use CTRL for multiple selection fields

C. jejuni

	Value
Code	GGD_826119
Outbreaks	1
Human cases	10
Hospitalized	1
Deaths	1
Foodstuff implicated	Bovine meat and products thereof
More Foodstuff information	Steak tartare
Type of evidence	Analytical epidemiological evidence;Laboratory detection in human cases
Outbreak type	General
Setting	Household
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unprocessed contaminated ingredient
Other Agent (Mixed Outbreaks)	
Comment	Setting: a party in a household with friends and family

Table Verified Foodborne Outbreaks: detailed data for Clostridium

Please use CTRL for multiple selection fields

C. perfringens

	Value
Code	VWA_887977
Outbreaks	1
Human cases	4
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Vegetables and juices and other products thereof
More Foodstuff information	Pea soup
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Inadequate heat treatment
Other Agent (Mixed Outbreaks)	
Comment	

C. perfringens

	Value
Code	VWA_885993
Outbreaks	1
Human cases	4
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Broiler meat (Gallus gallus) and products thereof
More Foodstuff information	Chicken curry
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unprocessed contaminated ingredient
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: chicken was undercooked

C. perfringens

	Value
Code	VWA_890245
Outbreaks	1
Human cases	4
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Sheep meat and products thereof
More Foodstuff information	Lamb
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: inadequate hygiene of food handler

C. perfringens

	Value
Code	VWA_893757
Outbreaks	1
Human cases	3
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Vegetables and juices and other products thereof
More Foodstuff information	Pizza sauce (tomato sauce)
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: inadequate hygiene of food handler

C. perfringens

	Value
Code	VWA_876575
Outbreaks	1
Human cases	4
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Other or mixed red meat and products thereof
More Foodstuff information	Different meats in a buffet
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	Bacillus; B. cereus
Comment	

C. perfringens

	Value
Code	VWA_893785
Outbreaks	1
Human cases	3
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Bovine meat and products thereof
More Foodstuff information	doner kebab
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: preparation of too large volumes of food

Table Verified Foodborne Outbreaks: detailed data for Foodborne viruses

Please use CTRL for multiple selection fields

Calicivirus - norovirus (Norwalk-like virus)

	Value
Code	dubbel_1
Outbreaks	1
Human cases	46
Hospitalized	1
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff information	Italian salad in a buffet
Type of evidence	Analytical epidemiological evidence;Laboratory detection in implicated food
Outbreak type	General
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Infected food handler
Other Agent (Mixed Outbreaks)	
Comment	

Calicivirus - norovirus (Norwalk-like virus)

	Value
Code	dubbel_7
Outbreaks	1
Human cases	15
Hospitalized	0
Deaths	0
Foodstuff implicated	Crustaceans, shellfish, molluscs and products thereof
More Foodstuff information	Oysters
Type of evidence	Analytical epidemiological evidence;Laboratory detection in implicated food
Outbreak type	General
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unprocessed contaminated ingredient
Other Agent (Mixed Outbreaks)	
Comment	

Calicivirus - norovirus (Norwalk-like virus)

	Value
Code	GGD_828773
Outbreaks	1
Human cases	50
Hospitalized	0
Deaths	0
Foodstuff implicated	unknown
More Foodstuff information	
Type of evidence	Analytical epidemiological evidence;Laboratory detection in human cases
Outbreak type	General
Setting	Residential institution (nursing home, prison, boarding school)
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Table Verified Foodborne Outbreaks: detailed data for Salmonella

Please use CTRL for multiple selection fields

Salmonella spp.

	Value
Code	VWA_884819
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Broiler meat (Gallus gallus) and products thereof
More Foodstuff information	
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: inadequate hygiene by food handler

S. Typhimurium

	Value
Code	GGD_903547
Outbreaks	1
Human cases	23
Hospitalized	8
Deaths	1
Foodstuff implicated	Bovine meat and products thereof
More Foodstuff information	Steak tartare or raw minced beef sausage
Type of evidence	Analytical epidemiological evidence;Laboratory detection in human cases
Outbreak type	General
Setting	Other setting
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unprocessed contaminated ingredient
Other Agent (Mixed Outbreaks)	
Comment	Setting: this was a nation-wide outbreak

S. Enteritidis

	Value
Code	dubbel_3
Outbreaks	1
Human cases	11
Hospitalized	0
Deaths	0
Foodstuff implicated	Bakery products
More Foodstuff information	Tiramisu
Type of evidence	Analytical epidemiological evidence;Laboratory detection in human cases
Outbreak type	General
Setting	Household
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unprocessed contaminated ingredient
Other Agent (Mixed Outbreaks)	
Comment	

Table Verified Foodborne Outbreaks: detailed data for Staphylococcus

Please use CTRL for multiple selection fields

S. aureus

	Value
Code	VWA_892859
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Broiler meat (Gallus gallus) and products thereof
More Foodstuff information	
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Take-away or fast-food outlet
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

S. aureus

	Value
Code	VWA_890825
Outbreaks	1
Human cases	2
Hospitalized	unknown
Deaths	unknown
Foodstuff implicated	Mixed or buffet meals
More Foodstuff information	pasta salad
Type of evidence	Laboratory detection in implicated food
Outbreak type	unknown
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Other contributory factor
Other Agent (Mixed Outbreaks)	
Comment	Contributory factor: inadequate storage

Table Verified Foodborne Outbreaks: detailed data for Unknown

Please use CTRL for multiple selection fields

Unknown

	Value
Code	dubbel_11
Outbreaks	1
Human cases	18
Hospitalized	0
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff information	Meat or fish in the buffet
Type of evidence	Analytical epidemiological evidence
Outbreak type	General
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Unknown

	Value
Code	dubbel_10
Outbreaks	1
Human cases	30
Hospitalized	0
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff information	Buffet
Type of evidence	Analytical epidemiological evidence
Outbreak type	General
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	

Unknown

	Value
Code	dubbel_8
Outbreaks	1
Human cases	12
Hospitalized	0
Deaths	0
Foodstuff implicated	Bakery products
More Foodstuff information	Cream cake
Type of evidence	Analytical epidemiological evidence
Outbreak type	General
Setting	Household
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	Setting: birthday party

Unknown

	Value
Code	dubbel_9
Outbreaks	1
Human cases	33
Hospitalized	0
Deaths	0
Foodstuff implicated	Pig meat and products thereof
More Foodstuff information	
Type of evidence	Analytical epidemiological evidence
Outbreak type	General
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	unknown
Origin of foodstuff	unknown
Contributory factors	Unknown
Other Agent (Mixed Outbreaks)	
Comment	