European Food Safety Authority

ZOONOSES MONITORING

PORTUGAL

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 2012

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Portugal

Reporting Year: 2012

Laboratory name	Description	Contribution
INIAV - Instituto Nacional de Investigação Agrária e Veterinária	National Institute of Agricultural and Veterinary Research	Data on zoonoses and zoonotic agents in food anda animals
DGAV Direcção Geral de Alimentação e Veterinária	National Veterinary Authority	Reporting Authority Co-ordination of report production
INSA Instituto Nacional de Saude Dr. Ricardo Jorge	Reference laboratory belonging to the Ministry of Health	Data on zoonoses and zoonotic agents in humans and foodborne outbreaks
ASAE Autoridade de Segurança Alimentar e Económica	National Authority for Food Safety	Data on zoonoses and zoonotic agents in food
IBCP Instituto Bacteriológico Câmara Pestana	Scientific Institute - National Reference Laboratory for Rabies	
DGS - Direcção Geral de Saude	National Authority for Human Health	Data on zoonoses and zoonotic agents in humans and foodborne outbreaks
R.A. MADEIRA Região Autónoma da Madeira	Regional Veterinary Services Madeira	Data on zoonoses and zoonotic agents in food and animals
R.A. Açores Região Autónoma dos Açores	Regional Veterinary Services Azores	Data on zoonoses and zoonotic agents in food and animals
Laboratorio de Viseu	Regional Veterinary Laboratory	Data on zoonoses and zoonotic agents in food and animals
FMV - Faculdade de Medicina Veterinaria	Veterinary School in Lisbon	Data on zoonoses and zoonotic agents in animals

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Laboratory name	Description	Contribution
UTAD - Universidade de Trás-os-Montes e Alto Douro	Veterinary School in Vila Real	Data on zoonoses and zoonotic agents in food
IPIMAR Instituto das Pescas da Investigação e do Mar	National Veterinary Laboratory	Data on zoonoses and zoonotic agents in food and animals

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 Portugal during the year 2012 .

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.

A. Information on susceptible animal population

Sources of information

DGAV - Direcção Geral de Alimentação e Veterinária

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)	meat production animals	47990				979836			
	dairy cows and heifers	24606				512125			
	calves (under 1 year)	41681				470133			
	- in total	58617		376510		1491961			
Deer	farmed - in total			35					
Ducks	- in total	15		2802640		768112			
Gallus gallus (fowl)	parent breeding flocks, unspecified - in total	122		1290581		4562228			
	laying hens	184		3137995		6516829			
	broilers [1)]	1780		176415378		33363986			
	- unspecified [2)]			6356					
Geese	- in total			29					
Goats	meat production animals					186727			
	animals under 1 year					30338			

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 over 1 year					270711			
	milk goats					144738			
	- in total	12918		138383		331465			
Pigs	breeding animals					195782			
	fattening pigs					1673100			
	breeding animals - unspecified - sows and gilts					193802			
	- in total	4819		4476619		1873215			
Sheep	meat production animals					1254152			
	animals under 1 year (lambs)					331469			
	animals over 1 year					1702730			
	milk ewes					384680			
	- in total	26564		867916		2034199			
Solipeds, domestic	horses - in total			3184					
Turkeys	- in total	138		3525674		2006691			

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*
Wild boars	farmed - in total			3					
Partridges	- unspecified			8680					
Quails	- unspecified	4		9029996		211200			
Ratites (ostrich, emu, nandu)	- unspecified	3		24		1086			

Comments:

[1)] Includes free ranged broilers

[2)] Guinea fowl

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

A. General evaluation

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

Salmonellosis in animals (other than Gallus gallus):
The animals are sampled on a voluntary basis. The data come from sick animals sent to laboratory for bacteriological analysis or to control herds.
There is a Control Programme for Gallus gallus (breeding flocks). There is also going a baseline study on the prevalence of salmonella in broilers (finished).
Control measures are been taken in positive flocks of laying hens.
There is also going on a baseline study (started on 2007), on the prevalence of salmonella in slaugherpigs and turkeys.

Additional information

Diagnostic techniques:
Foodstuffs/Feedingstuffs - Screening: VIDAS SLM (AFNOR validation). Confirmation: ISO 6579 (2002).

Serology: Rapid Plate Agglutination for S.pullorum/gallinarum.

Bacteriology: ISO 6579 (2002) and D Annex.
- Pre-enrichment in Buffered Peptone Water (for faeces, bedding, nests samples and fluffy)
- Selective enrichment in MSRV (modified semisolid Rappaport Vassiliadis) and Rappaport Vassiliadis with Soja broth.
- Plating on solid media XLD and SM2 Agar.
- Biochemical reactions by 32E or API 20E strips.

Typing of Salmonella: Serotyping by Kauffman/White technique (searching of O antigens by plate agglutination and H antigens by tube agglutination).
Serotyping of isolates is performed at LaboratÃ³rio Nacional de InvestigaÃ§Ã£o VeterinÃ¡ria (NRL).

Phagetyping for Salmonella Enteritidis and Salmonella Typhimurium has started on January 1999, see data on the tables (not in routine analyses).

Antimicrobial Susceptability testing of Salmonella: Resistance to antimicrobials is performed at LaboratÃ³rio Nacional de InvestigaÃ§Ã£o VeterinÃ¡ria (NRL for Salmonella)

Â·The resistance to antimicrobials is performed by disk diffusion Method in Mueller Hinton Plates.

Â·The antimicrobials tested are: AMP10, AMC30, CF30, CMX30, CTX30, SxT25, G10, K30, TE30, C30, S10, NA30, UB30, N30, D30, ENR5 .

Â·The zone diameters are evaluated, following NCCLS Vol.19 nÂº1, January 99.

2.1.2 Salmonellosis in humans

Table Salmonella in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.	Unknown status
Salmonella	76	0	0	0	0	0	76
S. Enteritidis	43	0	0	0	0	0	43
S. Typhimurium	33	0	0	0	0	0	33

Table Salmonella in humans - Age distribution

Age distribution	S. Enteritidis			S. Typhimurium			Salmonella spp.		
	All	M	F	All	M	F	All	M	F
<1 year	0	0	0	3	0	3	1	0	1
1 to 4 years	8	5	3	13	10	3	8	5	2
5 to 14 years	21	10	11	4	3	1	5	2	3
15 to 24 years	2	1	1	0	0	0	1	0	1
25 to 44 years	1	1	0	1	0	1	7	3	3
45 to 64 years	3	1	2	1	1	0	2	2	0
65 years and older	2	0	2	3	2	1	3	2	1
Age unknown	6	0	0	4	0	0	2	0	0
Total :	43	18	19	29	16	9	29	14	11

Table Salmonella in humans - Seasonal distribution

Seasonal Distribution / Months	S. Enteritidis	S. Typhimurium	Salmonella spp.
	Cases	Cases	Cases
January	1	3	1
February	2	1	1
March	1	1	2
April	1	3	0
May	1	3	1
June	4	0	2
July	4	1	4
August	5	2	4
September	6	2	2
October	6	7	8
November	8	1	2
December	4	5	2
not known	0	0	0
Total :	43	29	29

2.1.3 Salmonella in foodstuffs

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from broilers (Gallus gallus) - fresh - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	50	0		
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance	ASAE		Official sampling	food sample > meat	Domestic	Batch	25g	100	0		
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	20	0		
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	185	11	3	
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	20	0		
Meat from turkey - fresh - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	15	0		
Meat from turkey - fresh - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	25	0		
Meat from turkey - meat products - cooked, ready-to -eat - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	105	0		
Meat from other poultry species - meat preparation - intended to be eaten cooked - chilled - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	5	4		4

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from poultry, unspecified - meat preparation - intended to be eaten cooked - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	5	5		
Meat from turkey - meat preparation - intended to be eaten cooked - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	120	11	4	
Meat from turkey - minced meat - intended to be eaten cooked - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	30	1		1

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. 4,5,12:i:-	S. Agona	S. Blockley	S. Bredeney	S. Derby	S. Hadar	S. Newport	S. Rissen	S. Saintpaul
Meat from broilers (Gallus gallus) - fresh - at processing plant - Surveillance											
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance											
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant - Surveillance											
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at retail - Surveillance		1	1					2			4
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail - Surveillance											
Meat from turkey - fresh - at processing plant - Surveillance											

Table Salmonella in poultry meat and products thereof

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. 4,5,12:i:-	S. Agona	S. Blockley	S. Bredeney	S. Derby	S. Hadar	S. Newport	S. Rissen	S. Saintpaul
Meat from turkey - fresh - at retail - Surveillance											
Meat from turkey - meat products - cooked, ready-to -eat - at retail - Surveillance											
Meat from other poultry species - meat preparation - intended to be eaten cooked - chilled - at retail											
Meat from poultry, unspecified - meat preparation - intended to be eaten cooked - at retail				5							
Meat from turkey - meat preparation - intended to be eaten cooked - at retail		3			2	1				1	
Meat from turkey - minced meat - intended to be eaten cooked - at retail											

Footnote:

In the table, meat preparation from other poultry species refers to meat from coturnix coturnix

Table Salmonella in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	20	0		
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	310	0		
Dairy products (excluding cheeses) - milk powder and whey powder - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	2			
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	3	0		
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	6	0		
Cheeses made from goats' milk - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	7	0		
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	11	0		
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	1	0		
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	28	0		

Table Salmonella in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Cheeses, made from mixed milk from cows, sheep and/or goats - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	1	0		
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	4	0		
Cheeses, made from mixed milk from cows, sheep and/or goats - unspecified - made from raw or low heat-treated milk - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	115	0		

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk - at retail - Surveillance		
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at retail - Surveillance		
Dairy products (excluding cheeses) - milk powder and whey powder - at processing plant - Surveillance		
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant - Surveillance		

Table Salmonella in milk and dairy products

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance		
Cheeses made from goats' milk - fresh - made from pasteurised milk - at processing plant - Surveillance		
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant - Surveillance		
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance		
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance		
Cheeses, made from mixed milk from cows, sheep and/or goats - fresh - made from pasteurised milk - at processing plant - Surveillance		
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance		
Cheeses, made from mixed milk from cows, sheep and/or goats - unspecified - made from raw or low heat-treated milk - at retail		

Table Salmonella in milk and dairy products

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Eggs - table eggs - at packing centre - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic			30	0		
Fishery products, unspecified - cooked - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic			2	0		
Crustaceans - unspecified - cooked - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	105	0		
Molluscan shellfish - cooked - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	20	0		
Fruits - pre-cut - ready-to-eat - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	100	0		
Vegetables - pre-cut - ready-to-eat - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	5	0		
Crustaceans - unspecified - cooked - chilled - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic			7	0		
Crustaceans - unspecified - cooked - frozen - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic			2	0		
Fruits - pre-cut - ready-to-eat - at catering - Surveillance	INSA		HACCP and own checks	food sample	Domestic		25g	101	0		
Live bivalve molluscs - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	165	5		
Live bivalve molluscs - unspecified - at processing plant	ASAE		Official sampling	food sample	Domestic	Batch	25g	20	2		
Live bivalve molluscs - unspecified - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic			33	1		

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Other processed food products and prepared dishes - meat based dishes - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	60	0		
Other processed food products and prepared dishes - sandwiches - at catering	INSA		HACCP and own checks	food sample	Domestic	Single	25g	23	0		
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - at catering	INSA		HACCP and own checks	food sample	Domestic	Single	25g	1020	0		
Other processed food products and prepared dishes - vegetable based dishes - at catering	INSA		HACCP and own checks	food sample	Domestic	Single	25g	273	0		
Ready-to-eat salads - at catering	INSA		HACCP and own checks	food sample	Domestic	Single	25g	136	0		

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Not typeable	S. 4,5,12:i:-
Eggs - table eggs - at packing centre - Surveillance				
Fishery products, unspecified - cooked - at processing plant - Surveillance				
Crustaceans - unspecified - cooked - at retail - Surveillance				
Molluscan shellfish - cooked - at retail - Surveillance				
Fruits - pre-cut - ready-to-eat - at retail - Surveillance				

Table Salmonella in other food

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Not typeable	S. 4,5,12:i:-
Vegetables - pre-cut - ready-to-eat - at retail - Surveillance				
Crustaceans - unspecified - cooked - chilled - at processing plant - Surveillance				
Crustaceans - unspecified - cooked - frozen - at processing plant - Surveillance				
Fruits - pre-cut - ready-to-eat - at catering - Surveillance				
Live bivalve molluscs - at retail		3		2
Live bivalve molluscs - unspecified - at processing plant				2
Live bivalve molluscs - unspecified - at processing plant - Surveillance			1	
Other processed food products and prepared dishes - meat based dishes - at retail				
Other processed food products and prepared dishes - sandwiches - at catering				
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - at catering				
Other processed food products and prepared dishes - vegetable based dishes - at catering				
Ready-to-eat salads - at catering				

Table Salmonella in other food

Table Salmonella in red meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from pig - fresh - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	40	7		
Meat from pig - fresh - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Single	25g	2	0		
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	30	3		
Meat from pig - meat preparation - intended to be eaten cooked - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	10g	165	4		
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	30	3		1
Meat from pig - meat products - raw but intended to be eaten cooked - at retail - Surveillance	RAA - LRV	Objective sampling	Official sampling	food sample > meat	Domestic	Batch	25g	10	0		
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	60	2		
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	430	14		4
Meat from bovine animals - carcase - at slaughterhouse - Surveillance	RAA-LRV	Objective sampling	Official sampling	food sample > carcase swabs	Domestic	Single	25g	2	0		
Meat from bovine animals - fresh - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	30	0		
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant - Surveillance	RAA- LRV	Objective sampling	Official sampling	food sample > meat	Domestic	Batch	25g	15	0		

Table Salmonella in red meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail - Surveillance	RAA - LRV	Objective sampling	Official sampling	food sample > meat	Domestic	Batch	25g	80	0		
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	20	0		
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	10g	85	0		
Meat from bovine animals - carcase - at slaughterhouse - Surveillance	RAA-LRV	Objective sampling	Official and industry sampling	food sample > carcase swabs	Domestic	Single		450	9		
Meat from bovine animals - fresh - at processing plant - Surveillance	RAA - LRV	Objective sampling	Official sampling	food sample > meat	Domestic	Batch	25g	10	0		
Meat from bovine animals - meat preparation - at processing plant	ASAE		Official sampling	food sample	Domestic	Batch	10g	25	2		1
Meat from pig - carcase - at slaughterhouse - Surveillance	RAA-LRV	Objective sampling	Official sampling	food sample > carcase swabs	Domestic	Single		431	9		1
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	RAA - LRV	Objective sampling	Official sampling	food sample > meat	Domestic	Batch	25g	65	0		
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	ASAE		Official sampling	food sample	Domestic	Batch	10g	40	1		
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	RAA - LRV	Objective sampling	Official sampling	food sample > meat	Domestic	Batch	25g	15	0		
Meat, mixed meat - meat preparation - intended to be eaten cooked - at retail	ASAE		Official sampling	food sample		Batch	10g	30	1		

Table Salmonella in red meat and products thereof

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. 4,5:i:-	S. Budapest	S. Derby	S. London	S. Pensacola	S. Reading	S. Rissen	S. Wien
Meat from pig - fresh - at processing plant - Surveillance			2			1	1	1		2
Meat from pig - fresh - at retail - Surveillance										
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance			2		1					
Meat from pig - meat preparation - intended to be eaten cooked - at retail - Surveillance		1	2						1	
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance				1		1				
Meat from pig - meat products - raw but intended to be eaten cooked - at retail - Surveillance										
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance					1				1	
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance		5	5							
Meat from bovine animals - carcase - at slaughterhouse - Surveillance										
Meat from bovine animals - fresh - at processing plant - Surveillance										
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant - Surveillance										
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail - Surveillance										

Table Salmonella in red meat and products thereof

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. 4,5:i:-	S. Budapest	S. Derby	S. London	S. Pensacola	S. Reading	S. Rissen	S. Wien
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant - Surveillance										
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail - Surveillance										
Meat from bovine animals - carcase - at slaughterhouse - Surveillance					9					
Meat from bovine animals - fresh - at processing plant - Surveillance										
Meat from bovine animals - meat preparation - at processing plant		1								
Meat from pig - carcase - at slaughterhouse - Surveillance		1			7					
Meat from pig - meat products - cooked, ready-to-eat - at processing plant										
Meat from pig - meat products - cooked, ready-to-eat - at processing plant		1								
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance										
Meat, mixed meat - meat preparation - intended to be eaten cooked - at retail									1	

2.1.4 Salmonella in animals

A. Salmonella spp. in Gallus Gallus - breeding flocks

Monitoring system

Sampling strategy

Breeding flocks (separate elite, grand parent and parent flocks when necessary)

The sampling frame shall cover all adult breeding flocks of Gallus gallus comprising at least 250 birds.

Sampling is accomplished by the operator and by the official authority.

Sampling is done at the holding.

At the iniciative of the operator samples will be taken at day old, 4 weeks old birds, 2 weeks before laying phase and during the laying period, every two weeks.

At day-old sampling shall consist of internal linings of delivery boxes and dead chicks.

At 4 weeks old and at two weeks before the laying phase sampling shall consist of pooled faeces made up of separate samples of fresh faeces each weighing no less than 1 g taken at random from a number of sites in the building in which the birds are kept.

During the laying phase sampling will consist of 5 boot swabs representative of all parts of the house.

In cage breeding flocks, sampling consists of naturally mixed faeces from dropping belts, scrapers or deep pits 2 samples of at least 150 g will be collected to be tested individually.

At the initiative of the official services sampling is done at :

Within four weeks following moving to laying phase or laying unit (24 weeks);

During the production (44 weeks);

Towards the end of the laying phase not earlier than 8 weeks before the end of the production cycle.

Frequency of the sampling

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

Every flock is sampled.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Rearing period

At the age of 4 weeks and 2 weeks before moving to the laying phase.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Production period

Every 2 weeks.

Type of specimen taken

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

Other: Internal linings of delivery boxes and dead chicks.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Rearing period

Faeces.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Production period

Faeces (boot swabs).

Methods of sampling (description of sampling techniques)

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

The sample shall consist of a minimum of one composite sample of visibly soiled hatcher basket liners.

The FBO must sample all dead birds at arrival.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Rearing period

At 4 weeks old and 2 weeks before the laying phase the sampling will consist of faecal samples.

Pooled faeces made up of separate samples of fresh faeces each weighing no less than 1 g taken at random from a number of sites in the building in which the birds are kept.

Breeding flocks: Production period

During the laying phase 5 Pairs of boot swabs – walking around to be done in a way which will sample representatively all parts of the sector. .

In cage breeding flocks, sampling consists of naturally mixed faeces from dropping belts, scrapers or deep pits. 2 samples of at least 150 g will be collected to be tested individually.

Case definition

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

At least one positive sample to S. Enteritidis, S. Typhimurium, S. Typhimurium- Like, S. Hadar, S. Virchow and / or S. Infantis.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Rearing period

At least one positive sample to S. Enteritidis, S. Typhimurium, S. Typhimurium- Like, S. Hadar, S. Virchow and / or S. Infantis.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Production period

At least one positive sample to S. Enteritidis, S. Typhimurium, S. Typhimurium- Like, S. Hadar, S. Virchow and / or S. Infantis.

Diagnostic/analytical methods used

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Day-old chicks

Bacteriological method: ISO 6579:2002.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Rearing period

Bacteriological method: ISO 6579:2002.

Breeding flocks (separate elite, grand parent and parent flocks when necessary): Production period

Bacteriological method: ISO 6579:2002.

Vaccination policy

Breeding flocks (separate elite, grand parent and parent flocks when necessary)

Vaccination is voluntary.
Compulsive vaccination against Salmonella Enteritidis is done in the restocking, after the slaughter of a positive flock.

Control program/mechanisms

The control program/strategies in place

Breeding flocks (separate elite, grand parent and parent flocks when necessary)

The strategy is to reinforce surveillance, reinforce biosecurity measures, slaughter the positive flocks and restocking only when environmental samples are negative for Salmonella, with birds from flocks or herds that have undergone controls according to the legislation requirements, with negative results. All the restocking birds must be vaccinated against Salmonella Enteritidis.

The strategy includes also a close cooperation with the associations of producers to implement different means to raise awareness of the producers.

The Official Services have developed guidelines for the producer, as a tool in order to guide the implementation of the national programme.

Measures in case of the positive findings or single cases

Breeding flocks (separate elite, grand parent and parent flocks when necessary)

When there is a positive case in a flock = Salmonella sp detection

Notification of the operator;
Keep the flock in sanitary surveillance;
Forcing to keep the update records;
Evaluate the production records;
Forcing to incubate the eggs from the suspect flock, separately.

Whenever the results from serotyping are diferent from the serotypes relevant to the national programme , than:
Additional biosecurity measures;
Free practice – The official control measures are withdrawn.

When the result is serotype S. Enteritidis, S. Typhimurium, than the flock will be under official restriction:
Flock surveillance (under official control);
Slaughter of the positive flock;
Destruction of the incubated eggs;
Non incubated eggs must be destroyed or be treated.

After the destruction of the positive flock the holding and the environment must be cleaned and disinfected;

The operator must collect environmental samples;

The restocking of animals must take place from flocks or herds that have undergone controls (with negative results) according to the legislation requirements;

All the restocking birds must be vaccinated against Salmonella Enteritidis.

B. Salmonella spp. in Gallus Gallus - broiler flocks

Monitoring system

Sampling strategy

Broiler flocks

Sampling is accomplished by the food business operator and by the competent authority.
The sampling is done at the holding.
Sampling on the initiative of the food business operator shall take place within three weeks before the birds are moved to the slaughterhouse.
Sampling by the competent authority includes each year at least one flock of broilers on 10 % of the holdings with more than 5 000 birds. It's done on a risk basis and each time the competent authority considers it necessary.

Frequency of the sampling

Broiler flocks: Before slaughter at farm

3 weeks prior to slaughter.

Type of specimen taken

Broiler flocks: Before slaughter at farm

Faeces (boot swabs)

Methods of sampling (description of sampling techniques)

Broiler flocks: Before slaughter at farm

At least two pairs of boot swabs shall be taken. For free range flocks of broilers, samples shall only be collected in the area inside the house.
All boot swabs will be pooled into one sample. In flocks with less than 100 broilers, when the access to the houses is not possible, the boot swabs may be replaced by hand drag swabs and rubbed over surfaces contaminated with fresh faeces, or if not feasible, by other sampling techniques for faeces fit for the intended purpose.

It shall be ensured that all sections in a house are represented in the sampling in a proportionate way. Each pair should cover about 50 % of the area of the house.

On completion of sampling the boot swabs shall be carefully removed so as not to dislodge adherent material. Boot swabs may be inverted to retain material. They shall be placed in a bag or pot and labelled.

Case definition

Broiler flocks: Before slaughter at farm

A flock of broilers is considered positive where the presence of Salmonella Enteritidis (other than vaccine strains) and/or Salmonella Typhimurium or Salmonella typhimurium -Like is detected in the flock at any occasion.

Diagnostic/analytical methods used

Broiler flocks: Before slaughter at farm

Bacteriological method: ISO 6579:2002.

Control program/mechanisms

The control program/strategies in place

Broiler flocks

The strategy is to reinforce surveillance, reinforce biosecurity measures, slaughter the positive flocks and restocking only when environmental samples are negative for Salmonella, with birds from flocks or herds that have undergone controls according to the legislation requirements.The strategy includes also a close cooperation with the associations of producers to implement different means to raise awareness of the producers.
The Official Services have developed guidelines for the producer, as a tool in order to guide the implementation of the national programme.

Measures in case of the positive findings or single cases

Broiler flocks: Before slaughter at farm

When there is a positive case in a flock = Salmonella sp detection
Notification of the operator;
Flock under official control (restriction);
Forcing to keep update records.

Whenever the results from serotyping are diferent from the serotypes relevant to the national programme, than:
Additional biosecurity measures;
Free practice – The official control measures are withdrawn.

When the result is serotype S. Enteritidis and/or S. Typhimurium than the flock will continue under official restriction:
Flock surveillance (under official control)
After the slaugther of the positive flock the holding and the environment must be cleaned and disinfected;
The operator must collect environmental samples;
The restocking of animals must take place from flocks or herds that have
undergone controls (with negative results) according to the legislation requirements;

C. Salmonella spp. in Gallus Gallus - flocks of laying hens

Monitoring system

Sampling strategy

Laying hens flocks

The sampling frame shall cover all flocks of laying hens of Gallus gallus

Sampling is accomplished by the food business operator and by the competent authority.

The sampling is done at the holding.

At the initiative of the operator samples will be taken at day old, 2 weeks before moving to laying phase and during the laying period, every fifteen weeks. The first sampling at the laying period will take place at the age of 24 ± 2 weeks.

At the initiative of the official services sampling is done:
In one flock per year per holding comprising at least 1 000 birds;
At the age of 24 ± 2 weeks in laying flocks housed in buildings where Salmonella was detected in the preceding flock;
In any case of suspicion of Salmonella Enteritidis or Salmonella Typhimurium infection, as a result of the epidemiological investigation of food-borne outbreaks in accordance with Article 8 of Directive 2003/99/EC of the European Parliament and of the Council
In all other laying flocks on the holding in case Salmonella Enteritidis or Salmonella Typhimurium are detected in one laying flock on the holding;
In cases where the competent authority considers it appropriate

Sampling protocol
In cage flocks, 2 × 150 grams of naturally pooled faeces taken from all belts or scrapers in the house after running the manure removal system.
In step cage houses without scrapers or belts: 2 × 150 grams of mixed fresh faeces collected from 60 different places beneath the cages in the dropping pits.
In barn or free-range houses, two pairs of boot swabs or socks, without changing overboots between boot swabs.

In the case of sampling by the competent authority, it will be collected an additional sample of 150 grams naturally pooled faeces or an additional pair of boot swabs or socks.

Frequency of the sampling

Laying hens: Day-old chicks

Other: Internal linings of delivery boxes and dead chicks.

Laying hens: Rearing period

At the age of ± 18 weeks.

Laying hens: Production period

Every 15 weeks.

Type of specimen taken

Laying hens: Day-old chicks

Internal linings of delivery boxes.

Laying hens: Rearing period

Faeces.

Laying hens: Production period

Environmental sample: faeces.

Methods of sampling (description of sampling techniques)

Laying hens: Day-old chicks

The sample shall consist of a minimum of one composite sample of visibly soiled hatcher basket liners. FBO must also sample all dead birds at arrival.

Laying hens: Rearing period

* In cage flocks, 2 × 150 grams of naturally pooled faeces taken from all belts or scrapers in the house after running the manure removal system.

* In step cage houses without scrapers or belts: 2 × 150 grams of mixed fresh faeces collected from 60 different places beneath the cages in the dropping pits.

* In barn or free-range houses, two pairs of boot swabs or socks, without changing overboots between boot swabs.

Laying hens: Production period

* In cage flocks, 2 × 150 grams of naturally pooled faeces taken from all belts or scrapers in the house after running the manure removal system.

* In step cage houses without scrapers or belts: 2 × 150 grams of mixed fresh faeces collected from 60 different places beneath the cages in the dropping pits.

* In barn or free-range houses, two pairs of boot swabs or socks, without changing overboots between boot swabs.

In the case of sampling by the competent authority, it will be collected an additional sample of 150 grams naturally pooled faeces or an additional pair of boot swabs or socks.

Case definition

Laying hens: Day-old chicks

At least one positive sample to S. Enteritidis and/or S. Typhimurium (including S.T-Like).

Laying hens: Rearing period

At least one positive sample to S. Enteritidis and/or S. Typhimurium (including S.T-Like).

Laying hens: Production period

At least one positive sample to S. Enteritidis and/or S. Typhimurium(including S.T-Like).

Diagnostic/analytical methods used

Laying hens: Day-old chicks

Bacteriological method: ISO 6579:2002.

Laying hens: Rearing period

Bacteriological method: ISO 6579:2002.

Laying hens: Production period

Bacteriological method: ISO 6579:2002.

Vaccination policy

Laying hens flocks

Vaccination programmes against Salmonella Enteritidis are applied during the rearing phase.

Control program/mechanisms

The control program/strategies in place

Laying hens flocks

The strategy is to reinforce surveillance, reinforce biosecurity measures, slaughter the positive flocks and restocking only when environmental samples are negative for Salmonella, with birds from flocks or herds that have undergone controls according to the legislation requirements.

The eggs of the positive flock will be destructed or send to heat treated egg-products .

All birds must be vaccinated against Salmonella Enteritidis.

The strategy includes also a close cooperation with the associations of producers to implement different means to raise awareness of the producers.

The Official Services have developed guidelines for the producer, as a tool in order to guide the implementation of the national programme.

Measures in case of the positive findings or single cases

Laying hens flocks

When there is a positive case in a flock = Salmonella sp detection

Notification of the operator;
Keep the flock in sanitary surveillance;
Forcing to keep the update records;
Evaluate the production records.
Keep the eggs in the holding or send them to eggs products.

Whenever the results from serotyping are diferent from the serotypes relevant to the national programme , than:
Additional biosecurity measures
Free practice – The official control measures are withdrawn.

When the result is serotype S. Enteritidis and/or S. Typhimurium than the flock will be under official restriction:

Flock surveillance (under official control)
Eggs must be destroyed or be treated
After the destruction of the positive flock the holding and the environment must be cleaned and disinfected;
The operator must collect environmental samples;
The restocking of animals must take place from flocks or herds that have undergone controls according to

the legislation requirements;

All birds must be vaccinated against Salmonella Enteritidis.

D. Salmonella spp. in turkey - breeding flocks and meat production flocks

Monitoring system

Sampling strategy

Breeding flocks (separate elite, grand parent and parent flocks when necessary)

There are no breeding flocks of turkeys in Portugal.

Meat production flocks

Sampling is accomplished by the food business operator and by the competent authority.
The sampling is done at the holding.
Sampling on the initiative of the food business operator takes place within three weeks before the birds are moved to the slaughterhouse.

Sampling by the competent authority includes once a year, all flocks on 10 % of the holdings with at least 500 fattening turkeys and:
— all flocks on the holding when one flock tested positive for Salmonella Enteritidis or SalmonellaTyphimurium in samples taken by the food business operator, unless the meat of the turkeys in the flocks is destined for industrial heat treatment or another treatment to eliminate salmonella, and
— all flocks on the holding when one flock tested positive for Salmonella enteritidis or Salmonella typhimurium during the previous round in samples taken by the food business operator, and
— each time the competent authority considers it necessary.

Frequency of the sampling

Meat production flocks: Before slaughter at farm

3 weeks prior to slaughter

Type of specimen taken

Meat production flocks: Before slaughter at farm

Faeces

Methods of sampling (description of sampling techniques)

Meat production flocks: Before slaughter at farm

At least two pairs of boot swabs shall be taken. For free range flocks, samples will only be collected in the area inside the house.
All boot swabs must be pooled into one sample.
In flocks with less than 100 turkeys, where it is not possible to use boot swabs as access to the houses is not possible, they may be replaced by hand drag swabs, where the boot swabs or socks are worn over gloved hands and rubbed over surfaces contaminated with fresh faeces, or if not feasible, by other sampling techniques for faeces fit for the intended purpose.It shall be ensured that all sections in a house are represented in the sampling in a proportionate way. Each pair should cover about 50 % of the area of the house.

On completion of sampling the boot/sock swabs shall be carefully removed so as not to dislodge adherent material. Boot swabs may be inverted to retain material. They shall be placed in a bag or pot and labelled.

Case definition

A flock of turkeys is considered positive where the presence of Salmonella Enteritidis and/or Salmonella

Typhimurium including Salmonella Typhimurium -Like (other than vaccine strains) is detected in the flock at any occasion.

Monitoring system

Case definition

Meat production flocks: Before slaughter at farm

A flock of turkeys is considered positive where the presence of Salmonella enteritidis and/or Salmonella typhimurium including Salmonella Typhimurium -Like (other than vaccine strains) is detected in the flock at any occasion.

Diagnostic/analytical methods used

Meat production flocks: Before slaughter at farm

Bacteriological method: ISO 6579:2002.

Control program/mechanisms

The control program/strategies in place

Meat production flocks

The strategy is to reinforce surveillance, reinforce biosecurity measures, slaughter the positive flocks and restocking only when environmental samples are negative for Salmonella, with birds from flocks or herds that have undergone controls (with negative results) according to the legislation requirements.The strategy includes also a close cooperation with the associations of producers to implement different means to raise awareness of the producers.

The Official Services have developed guidelines for the producer, as a tool in order to guide the implementation of the national programme.

Measures in case of the positive findings or single cases

When there is a positive case in a flock = Salmonella sp detection
Notification of the operator;
Flock surveillance (under official control);
Forcing to keep update records;
Evaluate the production records;

Whenever the results from serotyping are diferent from the serotypes relevant to the national programme, than:
Additional biosecurity measures
Free practice – The official control measures are withdrawn.

When the result is serotype S. Enteritidis and/or S. Typhimurium than the flock will be under official restriction:
Flock surveillance (under official control)

After the slaugther of the positive flock the holding and the environment must be cleaned and disinfected;
The operator must collect environmental samples;
The restocking of animals must take place from flocks or herds that have undergone controls according to the legislation requirements;

Table Salmonella in breeding flocks of Gallus gallus

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2010)	506	DGAV	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	506	7	
Gallus gallus (fowl) - breeding flocks for egg production line - adult - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU) Nº200/2010.)	25	DGAV	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	25	4	

	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Altona	S. Newport
Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2010)							1	6
Gallus gallus (fowl) - breeding flocks for egg production line - adult - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU) Nº200/2010.)								4

Footnote:

In 24 adult breeding flocks was isolated S. Enteritidis vaccine strain

Table Salmonella in other animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-
Cattle (bovine animals) - calves (under 1 year) - at farm - Monitoring [1)]	RAA-LRV	Suspect sampling	Not applicable	animal sample > foetus/stillbirth	Domestic	Animal	13	1		1	
Goats - at farm - Monitoring [2)]	RAA-LRV	Suspect sampling	Not applicable	animal sample > foetus/stillbirth	Domestic	Animal	3	0			

	Salmonella spp., unspecified
Cattle (bovine animals) - calves (under 1 year) - at farm - Monitoring [1)]	
Goats - at farm - Monitoring [2)]	

Comments:

[1)] clinical suspect

[2)] clinical suspect

Table Salmonella in other poultry

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	378	DGAV	Census	Official and industry sampling	animal sample > faeces		yes	Flock	364	23	4
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	10949	DGAV	Census	Official sampling	environmental sample > boot swabs		yes	Flock	148	19	0
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	10949	DGAV	Census	Industry sampling	environmental sample > boot swabs		yes	Flock	10782	108	19
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	10949	DGAV	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	10929	127	19
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	0	DGAV									
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes	833	DGAV	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	833	8	1

	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars	S. 4,5,12:i:-	S. 9,46:-:-	S. Agona	S. Anatum	S. Bardo	S. Brandenburg	S. Bredeney
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes						1	3	2		2	
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	0				2						1
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes				3	3			1	3		

Table Salmonella in other poultry

	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars	S. 4,5,12:i:-	S. 9,46:-:-	S. Agona	S. Anatum	S. Bardo	S. Brandenburg	S. Bredeney
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	0			3	5			1	3		1
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes											
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes					2		2				

	S. Cerro	S. Derby	S. Duesseldorf	S. Give	S. Havana	S. Heidelberg	S. Indiana	S. Kentucky	S. Lexington	S. London	S. Mbandaka
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes					1	1			2		4
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes					12						1
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	2		2	1	56			2			4
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	2		2	1	68			2			5
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes											
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes		1					1			1	

Table Salmonella in other poultry

	S. Newport	S. Redba	S. Rissen	S. Senftenberg	S. Stanleyville	S. Taksony	S. Tennessee	S. Virchow
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	1			1		1	1	1
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	3							
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	1	1	2	2	1			5
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	4	1	2	2	1			5
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes								
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes								

Footnote:

In Laying hens 2 flocks were positive for 2 diferent kind of Salmonela

2.1.5 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Compound feedingstuffs for cattle - final product - at feed mill - Surveillance [1)]	RAA-LRV	Objective sampling	Official sampling	feed sample	Domestic	Batch	25g	5	0		
Compound feedingstuffs for pigs - final product - at feed mill - Surveillance	RAA-LRV	Objective sampling	Official sampling	feed sample	Domestic	Batch	25g	1			

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Compound feedingstuffs for cattle - final product - at feed mill - Surveillance [1)]		0
Compound feedingstuffs for pigs - final product - at feed mill - Surveillance		0

Comments:

[1)] ISO6579

Table Salmonella in feed material of animal origin

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of marine animal origin - fish meal - at feed mill - Surveillance	RAA - LRV	Objective sampling	Official sampling	feed sample	Domestic	Batch	25g	2	0		

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Feed material of marine animal origin - fish meal - at feed mill - Surveillance		

2.1.6 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
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory													
Number of isolates serotyped													
Number of isolates per serovar													
Other serovars													
S. 4,5,12:i:-													
S. 9,46:-:-													
S. Agona													
S. Altona													
S. Anatum													

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory													
Number of isolates serotyped													
Number of isolates per serovar													
S. Bardo													
S. Brandenburg													
S. Bredeney													
S. Cerro													
S. Derby													
S. Duesseldorf													
S. Enteritidis													
S. Give													
S. Havana													
S. Heidelberg													
S. Indiana													

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory													
Number of isolates serotyped													
Number of isolates per serovar													
S. Kentucky													
S. Lexington													
S. London													
S. Mbandaka													
S. Newport													
S. Redba													
S. Rissen													
S. Senftenberg													
S. Stanleyville													
S. Taksony													
S. Tennessee													

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory													
Number of isolates serotyped													
Number of isolates per serovar													
S. Virchow													

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - breeding flocks for egg production line - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2012)	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				8				4				127	
Number of isolates serotyped				8				4				127	
Number of isolates per serovar													
Other serovars												3	
S. 4,5,12:i:-												5	

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - breeding flocks for egg production line - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2012)	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				8				4				127	
Number of isolates serotyped				8				4				127	
Number of isolates per serovar													
S. 9,46:-:-													
S. Agona													
S. Altona				1									
S. Anatum												1	
S. Bardo												3	
S. Brandenburg													
S. Bredeney												1	
S. Cerro												2	

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - breeding flocks for egg production line - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2012)	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				8				4				127	
Number of isolates serotyped				8				4				127	
Number of isolates per serovar													
S. Derby													
S. Duesseldorf												2	
S. Enteritidis												19	
S. Give												1	
S. Havana												68	
S. Heidelberg													
S. Indiana													
S. Kentucky												2	

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - breeding flocks for egg production line - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2012)	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				8				4				127	
Number of isolates serotyped				8				4				127	
Number of isolates per serovar													
S. Lexington													
S. London													
S. Mbandaka												5	
S. Newport				7				4				4	
S. Redba												1	
S. Rissen												2	
S. Senftenberg												2	
S. Stanleyville												1	

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - breeding flocks for egg production line - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2012)	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				8				4				127	
Number of isolates serotyped				8				4				127	
Number of isolates per serovar													
S. Taksony													
S. Tennessee													
S. Virchow												5	

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2012)		Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU) nº517/2011)				Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EC)nº 584/2008.)			
Sources of isolates	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			39				9			
Number of isolates serotyped			39				9			
Number of isolates per serovar										
Other serovars										
S. 4,5,12:i:-							3			
S. 9,46:-:-			1							
S. Agona			4				2			
S. Altona										
S. Anatum			2							
S. Bardo										
S. Brandenburg			2							

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2012)		Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU) nº517/2011)				Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EC)nº 584/2008.)			
Sources of isolates	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			39				9			
Number of isolates serotyped			39				9			
Number of isolates per serovar										
S. Bredeney										
S. Cerro										
S. Derby							1			
S. Duesseldorf										
S. Enteritidis			9				1			
S. Give										
S. Havana			1							
S. Heidelberg			1							

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2012)		Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU) nº517/2011)				Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EC)nº 584/2008.)			
Sources of isolates	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			39				9			
Number of isolates serotyped			39				9			
Number of isolates per serovar										
S. Indiana							1			
S. Kentucky										
S. Lexington			2							
S. London							1			
S. Mbandaka			9							
S. Newport			2							
S. Redba										
S. Rissen										

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU)nº200/2012)		Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EU) nº517/2011)				Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes (Sampling in accordance with the Annex of the Commission Regulation (EC)nº 584/2008.)			
Sources of isolates	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			39				9			
Number of isolates serotyped			39				9			
Number of isolates per serovar										
S. Senftenberg			2							
S. Stanleyville										
S. Taksony			1							
S. Tennessee			1							
S. Virchow			2							

Footnote:

In 44 samples from adult breeding flocks was isolated S.Enteritidis vaccine strain

2.1.7 Antimicrobial resistance in Salmonella isolates

Table Antimicrobial susceptibility testing of Salmonella in All foodstuffs

Salmonella	Other serovars		S. Enteritidis		S. Typhimurium	
Isolates out of a monitoring program (yes/no)	yes		yes		yes	
Number of isolates available in the laboratory	89		19		37	
Antimicrobials:	N	n	N	n	N	n
Aminoglycosides - Gentamicin	89	1	19	0	37	4
Amphenicols - Chloramphenicol	89	8	19	1	37	13
Cephalosporins - Cefotaxime	89	1	19	1	37	0
Fluoroquinolones - Ciprofloxacin	89	1	19	0	37	0
Penicillins - Ampicillin	89	14	19	2	37	33
Tetracyclines - Tetracycline	89	25	19	2	37	36
Aminoglycosides - Amikacin	89	0	19	0	37	0
Aminoglycosides - Tobramycin	89	0	19	0	37	3
Carbapenems - Ertapenem	89	0	19	0	37	0
Carbapenems - Imipenem	89	0	19	0	37	0
Carbapenems - Meropenem	89	0	19	0	37	0
Cephalosporins - Cefazolin	89	2	19	0	37	0
Cephalosporins - Cefepime	89	0	19	0	37	0
Cephalosporins - Cefoxitin	89	1	19	0	37	0
Cephalosporins - Cefpodoxime	89	1	19	1	37	0
Cephalosporins - Ceftazidim	89	1	19	1	37	0
Cephalosporins - Cefuroxim	89	1	19	1	37	0

Table Antimicrobial susceptibility testing of Salmonella in All foodstuffs

Salmonella	Other serovars		S. Enteritidis		S. Typhimurium	
Isolates out of a monitoring program (yes/no)	yes		yes		yes	
Number of isolates available in the laboratory	89		19		37	
Antimicrobials:	N	n	N	n	N	n
Fluoroquinolones - Levofloxacin	89	1	19	0	37	0
Fluoroquinolones - Moxifloxacin	89	11	19	0	37	1
Fluoroquinolones - Norfloxacin	89	1	19	0	37	0
Glycylcyclines - Tigecycline	89	0	19	0	37	36
Nitroimidazoles and Nitrofurans - Nitrofurantoin	89	0	19	0	37	1
Penicillins - Amoxicillin / Clavulanic acid			19	0	37	0
Penicillins - Ampicillin / Sulbactum	89	7	19	1	37	16
Penicillins - Piperacillin	89	12	19	2	37	32
Polymyxins - Colistin	89	1	19	17	37	5
Trimethoprim + Sulfonamides - Trimethoprim + Sulfamethoxazole	89	5	18	1	37	6

Table Antimicrobial susceptibility testing of Other serovars in Compound feedingstuffs for poultry (non specified) - final product - non-pelleted/meal - at farm - Surveillance - Unspecified - HACCP and own checks - feed sample - quantitative data [Dilution method]

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

Other serovars	Compound feedingstuffs for poultry (non specified) - final product - non-pelleted/meal - at farm - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	14																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	14	0									4	10													
Aminoglycosides - Streptomycin	32	14	0												1	9	4									
Amphenicols - Chloramphenicol	16	14	0													2	11	1								
Cephalosporins - Cefotaxime	0.5	14	0							1	13															
Fluoroquinolones - Ciprofloxacin	0.06	14	0				11		3																	
Penicillins - Ampicillin	4	14	0										1	5	7	1										
Quinolones - Nalidixic acid	16	14	0													14										
Sulfonamides	256	14	0															1	3	9	1					
Tetracyclines - Tetracycline	8	11	0											1	6	4										
Trimethoprim	2	14	0									7	7													

Other serovars	Compound feedingstuffs for poultry (non specified) - final product - non-pelleted/meal - at farm - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	14	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32

Table Antimicrobial susceptibility testing of Other serovars in Compound feedingstuffs for poultry (non specified) - final product - non-pelleted/meal - at farm - Surveillance - Unspecified - HACCP and own checks - feed sample - quantitative data [Dilution method]

Other serovars	Compound feedingstuffs for poultry (non specified) - final product - non-pelleted/meal - at farm - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	14	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulfamethoxazole is used as sulfonamide.

Table Antimicrobial susceptibility testing of S. Enteritidis in All foodstuffs - at retail - Surveillance - Unspecified - Official and industry sampling - food sample - carcase swabs - quantitative data [Dilution method]

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

S. Enteritidis	All foodstuffs - at retail - Surveillance																								
Isolates out of a monitoring program (yes/no)	no																								
Number of isolates available in the laboratory	3																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	3	0										3												
Aminoglycosides - Streptomycin	16	3	0											3											
Amphenicols - Chloramphenicol	16	3	0														3								
Cephalosporins - Cefotaxime	0.5	3	0							1	2														
Fluoroquinolones - Ciprofloxacin	0.06	3	3								1	2													
Penicillins - Ampicillin	8	3	0													3									
Quinolones - Nalidixic acid	16	3	3																			1			2
Sulfonamides	256	3	0															1	1	1					
Tetracyclines - Tetracycline	8	3	0											1	2										
Trimethoprim	2	3	0									1	2												

S. Enteritidis	All foodstuffs - at retail - Surveillance	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256

Table Antimicrobial susceptibility testing of S. Enteritidis in All foodstuffs - at retail - Surveillance - Unspecified - Official and industry sampling - food sample - carcase swabs - quantitative data [Dilution method]

S. Enteritidis	All foodstuffs - at retail - Surveillance	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was used in sulfonamides

Table Antimicrobial susceptibility testing of S. Hadar in Meat from turkey - meat products - raw but intended to be eaten cooked - chilled - at retail - Surveillance - Unspecified - Official and industry sampling - food sample - meat - quantitative data [Dilution method]

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

S. Hadar	Meat from turkey - meat products - raw but intended to be eaten cooked - chilled - at retail - Surveillance																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	3																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	3	0										3												
Aminoglycosides - Streptomycin	16	3	2													1			1	1					
Amphenicols - Chloramphenicol	16	3	0													1	2								
Cephalosporins - Cefotaxime	0.5	3	0							1		2													
Fluoroquinolones - Ciprofloxacin	0.06	3	3								1		2												
Penicillins - Ampicillin	8	3	2												1						2				
Quinolones - Nalidixic acid	16	3	3																			1			2
Sulfonamides	256	3	0															2		1					
Tetracyclines - Tetracycline	8	3	3																		3				
Trimethoprim	2	3	0									2	1												

S. Hadar	Meat from turkey - meat products - raw but intended to be eaten cooked - chilled - at retail - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32

Table Antimicrobial susceptibility testing of S. Hadar in Meat from turkey - meat products - raw but intended to be eaten cooked - chilled - at retail - Surveillance - Unspecified - Official and industry sampling - food sample - meat - quantitative data [Dilution method]

S. Hadar	Meat from turkey - meat products - raw but intended to be eaten cooked - chilled - at retail - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was tested for sufonamides

Table Antimicrobial susceptibility testing of S. Typhimurium in Meat from turkey - fresh - chilled - at retail - Surveillance - Unspecified - Official and industry sampling - food sample - carcase swabs - quantitative data [Dilution method]

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

S. Typhimurium	Meat from turkey - fresh - chilled - at retail - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	10																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	10	0									1	9													
Aminoglycosides - Streptomycin	16	10	4													1	3	2			2		1		1	
Amphenicols - Chloramphenicol	16	10	2													6	2			1			1			
Cephalosporins - Cefotaxime	0.5	10	0							7	2	1														
Fluoroquinolones - Ciprofloxacin	0.06	10	1				5		4				1													
Penicillins - Ampicillin	8	10	5											1		4					5					
Quinolones - Nalidixic acid	16	10	1													7	2								1	
Sulfonamides	256	10	5																2	2	1					5
Tetracyclines - Tetracycline	8	10	7												3						7					
Trimethoprim	2	10	2									8								2						

S. Typhimurium	Meat from turkey - fresh - chilled - at retail - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	10	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512

Table Antimicrobial susceptibility testing of S. Typhimurium in Meat from turkey - fresh - chilled - at retail - Surveillance - Unspecified - Official and industry sampling - food sample - carcase swabs - quantitative data [Dilution method]

S. Typhimurium	Meat from turkey - fresh - chilled - at retail - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	10	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was used as a sulfonamide

Table Antimicrobial susceptibility testing of S. 4,5,12:i:- in Meat from turkey - meat products - raw but intended to be eaten cooked - chilled - at retail - Surveillance - Unspecified - Official and industry sampling - food sample - meat - quantitative data [Dilution method]

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

S. 4,5,12:i:-	Meat from turkey - meat products - raw but intended to be eaten cooked - chilled - at retail - Surveillance																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	10																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	10	0									2	8												
Aminoglycosides - Streptomycin	16	10	9														1		1	2	3	3				
Amphenicols - Chloramphenicol	16	10	3													2	5			1		2				
Cephalosporins - Cefotaxime	0.5	10	0							6	4															
Fluoroquinolones - Ciprofloxacin	0.06	10	0				3		7																	
Penicillins - Ampicillin	8	10	9											1							9					
Quinolones - Nalidixic acid	16	10	0													7	3									
Sulfonamides	256	10	9																	1						9
Tetracyclines - Tetracycline	8	10	9												1					1	8					
Trimethoprim	2	10	1									9								1						

S. 4,5,12:i:-	Meat from turkey - meat products - raw but intended to be eaten cooked - chilled - at retail - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	10	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32

Table Antimicrobial susceptibility testing of S. 4,5,12:i:- in Meat from turkey - meat products - raw but intended to be eaten cooked - chilled - at retail - Surveillance - Unspecified - Official and industry sampling - food sample - meat - quantitative data [Dilution method]

S. 4,5,12:i:-	Meat from turkey - meat products - raw but intended to be eaten cooked - chilled - at retail - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	10	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was used as sulphonamide

Table Antimicrobial susceptibility testing of Other serovars in Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail - Surveillance - Unspecified - Official and industry sampling - food sample - quantitative data [Dilution method]

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

Other serovars	Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	37																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	37	5									8	23	1				2	3							
Aminoglycosides - Streptomycin	16	37	12												3	12	8	2	5	2	4	1				
Amphenicols - Chloramphenicol	16	37	2													16	16	3			1		1			
Cephalosporins - Cefotaxime	0.5	37	0							6	26	4	1													
Fluoroquinolones - Ciprofloxacin	0.06	37	5			6	7		19		1		1	2	1											
Penicillins - Ampicillin	8	37	9										7	6	12	3					9					
Quinolones - Nalidixic acid	16	37	5												1	29	2		2			1			2	
Sulfonamides	256	37	16																6	11	4					16
Tetracyclines - Tetracycline	8	37	21											2	11	3				5	16					
Trimethoprim	2	37	6									28	3							6						

Table Antimicrobial susceptibility testing of Other serovars in Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail - Surveillance - Unspecified - Official and industry sampling - food sample - quantitative data [Dilution method]

Other serovars	Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	37	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was used as sulfonamide

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

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

Other serovars	Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes																									
Isolates out of a monitoring program (yes/no)	no																									
Number of isolates available in the laboratory	95																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	95	0									73	19	3												
Aminoglycosides - Streptomycin	16	95	3												60	24	4	4	1		2					
Amphenicols - Chloramphenicol	16	95	3													26	27	39	2	1						
Cephalosporins - Cefotaxime	0.5	95	3							16	37	38	1					3								
Fluoroquinolones - Ciprofloxacin	0.06	95	14			4	18		48	11		3	2	9												
Penicillins - Ampicillin	8																									
Quinolones - Nalidixic acid	16	95	13												1	42	38	1	9	1	3					
Sulfonamides	256	95	15															4	14	48	13	1				15
Tetracyclines - Tetracycline	8	95	6										2	9	29	49					6					
Trimethoprim	2	95	10									79	6							10						

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

Other serovars	Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	95	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulfamethoxazole was used as sulfonamide

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

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

S. Enteritidis	Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes																								
Isolates out of a monitoring program (yes/no)	no																								
Number of isolates available in the laboratory	19																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	19	0									19													
Aminoglycosides - Streptomycin	16	19	0												17		1	1							
Amphenicols - Chloramphenicol	16	19	1													17	1			1					
Cephalosporins - Cefotaxime	0.5	19	1							2	16							1							
Fluoroquinolones - Ciprofloxacin	0.06	19	19								6	13													
Penicillins - Ampicillin	8	19	2											11	6						2				
Quinolones - Nalidixic acid	16	19	19																			2	5		12	
Sulfonamides	256	19	1															1		14	3					1
Tetracyclines - Tetracycline	8	19	2											13	4						2				
Trimethoprim	2	19	1									17	1							1					

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

S. Enteritidis	Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	19	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was used as sufonamide

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

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

S. Enteritidis	Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	4																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	4	0									4													
Aminoglycosides - Streptomycin	16	4	0												4										
Amphenicols - Chloramphenicol	16	4	0													3	1								
Cephalosporins - Cefotaxime	0.5	4	0							1	3														
Fluoroquinolones - Ciprofloxacin	0.06	4	2				2				1	1													
Penicillins - Ampicillin	8	4	0											1	2	1									
Quinolones - Nalidixic acid	16	4	2													2							1		1
Sulfonamides	256	4	0														1	1		2					
Tetracyclines - Tetracycline	8	4	0											2	2										
Trimethoprim	2	4	0									4													

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

S. Enteritidis	Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	4	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was used as sulfonamide

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - quantitative data [Dilution method]

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

Other serovars	Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes																									
Isolates out of a monitoring program (yes/no)	no																									
Number of isolates available in the laboratory	16																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	16	0									6	10													
Aminoglycosides - Streptomycin	16																									
Amphenicols - Chloramphenicol	16	16	0													16										
Cephalosporins - Cefotaxime	0.5	16	0							7	9															
Fluoroquinolones - Ciprofloxacin	0.06	16	2				13		1		1	1														
Penicillins - Ampicillin	8	16	0											7	7	2										
Quinolones - Nalidixic acid	16	16	0													16										
Sulfonamides	256	16	0																12	2	1	1				
Tetracyclines - Tetracycline	8	16	0											11	5											
Trimethoprim	2	16	0									14	2													

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - quantitative data [Dilution method]

Other serovars	Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	16	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was used as sufonamide

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

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

S. Enteritidis	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes																								
Isolates out of a monitoring program (yes/no)	no																								
Number of isolates available in the laboratory	4																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	4	0									2	2												
Aminoglycosides - Streptomycin	16	4	0												4										
Amphenicols - Chloramphenicol	16	4	0													4									
Cephalosporins - Cefotaxime	0.5	4	0								4														
Fluoroquinolones - Ciprofloxacin	0.06	4	3							1	1	2													
Penicillins - Ampicillin	8	4	0											1	3										
Quinolones - Nalidixic acid	16	4	4																			2	2		
Sulfonamides	256	4	0																	4					
Tetracyclines - Tetracycline	8	4	0										1	1	2										
Trimethoprim	2	4	0									2	2												

S. Enteritidis	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	4	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

S. Enteritidis	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	4	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was used as sulfonamide

Table Antimicrobial susceptibility testing of Other serovars in Turkeys - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

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

Other serovars	Turkeys - at farm - Control and eradication programmes																								
Isolates out of a monitoring program (yes/no)	no																								
Number of isolates available in the laboratory	9																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	9	0									3	5	1											
Aminoglycosides - Streptomycin	16	9	3												2	3	1				1	2			
Amphenicols - Chloramphenicol	16	9	0													4	5								
Cephalosporins - Cefotaxime	0.5	9	0							3	6														
Fluoroquinolones - Ciprofloxacin	0.06	9	2				2		5		1	1													
Penicillins - Ampicillin	8	9	3										1	3	2						3				
Quinolones - Nalidixic acid	16	9	2													7						1			1	
Sulfonamides	256	9	3														1			4	1					3
Tetracyclines - Tetracycline	8	9	4											2	3			1			3					
Trimethoprim	2	9	0									7	2													

Other serovars	Turkeys - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	9	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512

Table Antimicrobial susceptibility testing of Other serovars in Turkeys - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

Other serovars	Turkeys - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	9	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was used as sulfonamide

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - quantitative data [Dilution method]

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

Other serovars	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes																									
Isolates out of a monitoring program (yes/no)	no																									
Number of isolates available in the laboratory	28																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	28	0									25	3													
Aminoglycosides - Streptomycin	16	28	0												2	16	10									
Amphenicols - Chloramphenicol	16	28	0													11	17									
Cephalosporins - Cefotaxime	0.5	28	0							15	13															
Fluoroquinolones - Ciprofloxacin	0.06	28	0				22		6																	
Penicillins - Ampicillin	8	28	0										2	11	15											
Quinolones - Nalidixic acid	16	28	0												3	23	2									
Sulfonamides	256	28	0														2	2	4	9	9	2				
Tetracyclines - Tetracycline	8	28	0										1	10	16	1										
Trimethoprim	2	28	0									25	3													

Other serovars	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	28	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512

Table Antimicrobial susceptibility testing of Other serovars in Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - quantitative data [Dilution method]

Other serovars	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	28	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was used as sulfonamide

Table Antimicrobial susceptibility testing of S. Virchow in Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - quantitative data [Dilution method]

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

S. Virchow	Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes																									
Isolates out of a monitoring program (yes/no)	no																									
Number of isolates available in the laboratory	5																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	5	0									2	3													
Aminoglycosides - Streptomycin	16	5	0													4	1									
Amphenicols - Chloramphenicol	16	5	0													2	3									
Cephalosporins - Cefotaxime	0.5	5	0							5																
Fluoroquinolones - Ciprofloxacin	0.06	5	0			1	3		1																	
Penicillins - Ampicillin	8	5	0										2	2	1											
Quinolones - Nalidixic acid	16	5	0													5										
Sulfonamides	256	5	0															1	2	1	1					
Tetracyclines - Tetracycline	8	5	0											2	3											
Trimethoprim	2	5	0									2	3													

S. Virchow	Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	5	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32

Table Antimicrobial susceptibility testing of S. Virchow in Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - quantitative data [Dilution method]

S. Virchow	Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	5	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.5	32

Footnote:

Sulphamethoxazole was used as sulfonamide

Table Antimicrobial susceptibility testing of S. 4,5,12:i:- in Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

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

S. 4,5,12:i:	Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes																									
Isolates out of a monitoring program (yes/no)	no																									
Number of isolates available in the laboratory	3																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	3	0									3														
Aminoglycosides - Streptomycin	16	3	3																		2	1				
Amphenicols - Chloramphenicol	16	3	1													2					1					
Cephalosporins - Cefotaxime	0.5	3	0							2	1															
Fluoroquinolones - Ciprofloxacin	0.06	3	1				1		1			1														
Penicillins - Ampicillin	8	3	3																		3					
Quinolones - Nalidixic acid	16	3	0													2		1								
Sulfonamides	256	3	3																							3
Tetracyclines - Tetracycline	8	3	3																		3					
Trimethoprim	2	3	0									3														

Table Antimicrobial susceptibility testing of S. 4,5,12:i:- in Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes - Unspecified - Official and industry sampling - environmental sample - boot swabs - quantitative data [Dilution method]

S. 4,5,12:i:-	Gallus gallus (fowl) - broilers - during rearing period - at farm - Control and eradication programmes	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulfamethoxazole was used as sulfonamide

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

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	2	
	Streptomycin	NON-EFSA	16	
Amphenicols	Chloramphenicol	EFSA	16	
Cephalosporins	Cefotaxime	EFSA	0.5	
Fluoroquinolones	Ciprofloxacin	EFSA	0.06	
Penicillins	Ampicillin	NON-EFSA	8	
Quinolones	Nalidixic acid	EFSA	16	
Sulfonamides	Sulfonamides	EFSA	256	
Tetracyclines	Tetracycline	EFSA	8	
Trimethoprim	Trimethoprim	EFSA	2	

Footnote:

EUCAST epidemiological cut-off values were used to interpret the results

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 <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		32	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.5	
Fluoroquinolones	Ciprofloxacin		0.06	
Penicillins	Ampicillin		4	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	2	
	Streptomycin	NON-EFSA	16	
Amphenicols	Chloramphenicol	EFSA	16	
Cephalosporins	Cefotaxime	EFSA	0.5	
Fluoroquinolones	Ciprofloxacin	EFSA	0.06	
Penicillins	Ampicillin	NON-EFSA	8	
Quinolones	Nalidixic acid	EFSA	16	
Sulfonamides	Sulfonamides	EFSA	256	
Tetracyclines	Tetracycline	EFSA	8	
Trimethoprim	Trimethoprim	EFSA	2	

Footnote:

Interpretation done according to EUCAST epidemiological cut-off values

2.2 CAMPYLOBACTERIOSIS

2.2.1 General evaluation of the national situation

A. Thermophilic Campylobacter general evaluation

Additional information

Diagnostic techniques:

Foodstuffs - Screening: VIDAS CAM. Confirmation: Internal method based on ISO 10272.
- Typing of isolates by Lior method.

Other than foodstuffs:
- Samples from sheathwashings, semen, intestinal scrapings and feces are plated in Campylobacter agar or Brucella agar supplemented with: SR 69, SR84, SR 85 (C. foetus), SR 117 (all from Oxoid) and selective media Campylosel (BiomÃ©rieux)and skirrow Campylobacter selective Agar (Merck).
- Biochemical identification by API system.

2.2.2 Campylobacteriosis in humans

A. Thermophilic Campylobacter in humans

Reporting system in place for the human cases

Sentinel surveillance, estimated coverage 20%.

Case definition

case is considered when meeting the clinical and laboratory criteria.

Diagnostic/analytical methods used

Culture and real - time PCR

Notification system in place

Not notifiable disease yet.

Relevance as zoonotic disease

In point studies is the main aetiological agent of acute gastroenteritis.

Table Campylobacter in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.	Unknown status
Campylobacter	328	328	328	328	0	0	0
C. coli	35	35	35	35	0	0	0
C. jejuni	293	293	293	293	0	0	0
C. upsaliensis	0	0	0	0	0	0	0

Table Campylobacter in humans - Age distribution

Age distribution	C. coli			C. jejuni			Campylobacter spp., unspecified		
	All	M	F	All	M	F	All	M	F
<1 year	16	9	7	77	41	36	1	1	0
1 to 4 years	11	4	7	129	73	56	6	3	3
5 to 14 years	2	2	0	52	33	19	5	3	2
15 to 24 years	1	1	0	6	4	2	0	0	0
25 to 44 years	2	1	1	5	1	4	0	0	0
45 to 64 years	2	1	1	15	11	4	0	0	0
65 years and older	1	1	0	7	5	2	2	0	2
Age unknown	0	0	0	1	1	0	0	0	0
Total :	35	19	16	292	169	123	14	7	7

Table Campylobacter in humans - Seasonal distribution

Seasonal Distribution / Months	C. coli	C. jejuni	C. upsaliensis	Campylobacter spp., unspecified
	Cases	Cases	Cases	Cases
January	1	28	0	2
February	5	19	0	1
March	3	23	0	1
April	4	22	0	1
May	2	43	0	2
June	5	35	0	0
July	2	23	0	1
August	6	27	0	0
September	2	23	0	0
October	3	17	0	1
November	2	17	0	1
December	0	15	0	3
not known	0	0	0	0
Total :	35	292	0	13

2.2.3 Campylobacter in foodstuffs

Table Campylobacter in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni
Meat from pig - fresh - at processing plant	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	40	9	6	
Meat from bovine animals - fresh - at processing plant	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	30	2		
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	20	0		
Meat from pig - meat preparation - intended to be eaten cooked	ASAE		Official sampling	food sample	Unknown	Single	25g	2	0		
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	30	0		
Meat from pig - mechanically separated meat (MSM)	ASAE		Official sampling	food sample > meat	Unknown	Single	25g	2	0		

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified	Campylobacter spp., unspecified
Meat from pig - fresh - at processing plant				3
Meat from bovine animals - fresh - at processing plant				2

Table Campylobacter in other food

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified	Campylobacter spp., unspecified
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant - Surveillance				
Meat from pig - meat preparation - intended to be eaten cooked				
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance				
Meat from pig - mechanically separated meat (MSM)				

Table Campylobacter in poultry meat

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni
Meat from broilers (Gallus gallus) - fresh - at processing plant	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	50	16	8	1
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	20	2		1
Meat from turkey - fresh - at processing plant	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	15	4		3
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked	ASAE		Official sampling	food sample	Unknown	Single	25g	14	0		
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked	ASAE		Official sampling	food sample	Unknown	Single	25g	2	0		
Meat from broilers (Gallus gallus) - mechanically separated meat (MSM)	ASAE		Official sampling	food sample	Unknown	Single	25g	7	2		
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked	ASAE		Official sampling	food sample	Unknown	Single	25g	5	0		
Meat from turkey - meat preparation - intended to be eaten cooked	ASAE		Official sampling	food sample	Unknown	Single	25g	6	0		
Meat from turkey - meat products - cooked, ready-to -eat	ASAE		Official sampling	food sample	Unknown	Single	25g	8	0		
Meat from turkey - mechanically separated meat (MSM)	ASAE		Official sampling	food sample	Unknown	Single	25g	1	0		
Meat from turkey - minced meat - intended to be eaten cooked	ASAE		Official sampling	food sample	Unknown	Single	25g	3	0		

Table Campylobacter in poultry meat

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified	Campylobacter spp., unspecified
Meat from broilers (Gallus gallus) - fresh - at processing plant				7
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant				1
Meat from turkey - fresh - at processing plant				1
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked				
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked				
Meat from broilers (Gallus gallus) - mechanically separated meat (MSM)			2	
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked				
Meat from turkey - meat preparation - intended to be eaten cooked				
Meat from turkey - meat products - cooked, ready-to -eat				
Meat from turkey - mechanically separated meat (MSM)				
Meat from turkey - minced meat - intended to be eaten cooked				

2.2.4 Campylobacter in animals

Table Campylobacter in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari
Cattle (bovine animals) - calves (under 1 year) - at farm - Monitoring [1)]	RAA-LRV	Suspect sampling	Not applicable	animal sample > foetus/stillbirth	Domestic	Animal	13	0			
Goats - at farm - Monitoring	RAA-LRV	Suspect sampling	Not applicable	animal sample > foetus/stillbirth	Domestic	Animal	3	0			

	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Cattle (bovine animals) - calves (under 1 year) - at farm - Monitoring [1)]		
Goats - at farm - Monitoring		

Comments:

[1)] clinical suspicion

2.2.5 Antimicrobial resistance in Campylobacter isolates

Table Antimicrobial susceptibility testing of Campylobacter in humans

Campylobacter	Campylobacter spp., unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	125	
Antimicrobials:	N	n
Aminoglycosides - Gentamicin	125	2
Fluoroquinolones - Ciprofloxacin	125	116
Macrolides - Erythromycin	125	31
Quinolones - Nalidixic acid	125	125
Tetracyclines - Tetracycline	125	95
Fully sensitive	0	0
Resistant to 1 antimicrobial	0	0
Resistant to 2 antimicrobials	0	0
Resistant to 3 antimicrobials	125	125
Resistant to 4 antimicrobials	125	56
Resistant to >4 antimicrobials	125	2

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

Test Method Used
Agar dilution

Standard methods used for testing
NCCLS/CLSI EUCAST

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
Fluoroquinolones	Ciprofloxacin		0.5	
Macrolides	Erythromycin		8	
Quinolones	Nalidixic acid		16	
Tetracyclines	Tetracycline		2	

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used
Agar dilution

Standard methods used for testing
NCCLS/CLSI EUCAST

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
Fluoroquinolones	Ciprofloxacin		0.5	
Macrolides	Erythromycin		8	
Quinolones	Nalidixic acid		16	
Tetracyclines	Tetracycline		2	

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used
Agar dilution

Standard methods used for testing
NCCLS/CLSI EUCAST

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
Fluoroquinolones	Ciprofloxacin		0.5	
Macrolides	Erythromycin		4	
Quinolones	Nalidixic acid		16	
Tetracyclines	Tetracycline		2	

2.3 LISTERIOSIS

2.3.1 General evaluation of the national situation

A. Listeriosis general evaluation

Additional information

* The searching of Listeria started on 1996 for raw milk and milk cheese (Portaria nÂº 533/93 from 21st of May has been updated by Portaria 56/96).

Diagnostic tecnhiques:

Foodstuffs/Feedingstuffs -Screening: VIDAS LMO2 (AFNOR validation). Detection:ISO 11290-1 (1996) and Amendment 1 (2004). Enumeration: ISO 11290-2 (1998) and Amendment 1 (2004).

Other than foodstuffs - Internal method - culture on:
- Palcam agar, Oxford agar and Blood agar.
- Biochemical reactions by API Coryne or API Listeria strips.

2.3.2 Listeriosis in humans

Table Listeria in humans - Age distribution

Age distribution	L. monocytogenes			Listeria spp., unspecified		
	All	M	F	All	M	F
<1 year	0	0	0	0	0	0
1 to 4 years	0	0	0	0	0	0
5 to 14 years	0	0	0	0	0	0
15 to 24 years	1	1	0	0	0	0
25 to 44 years	3	1	2	0	0	0
45 to 64 years	4	3	1	0	0	0
65 years and older	4	3	1	0	0	0
Age unknown	0	0	0	0	0	0
Total :	12	8	4	0	0	0

2.3.3 Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Milk, cows' - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	ASAE		Official sampling	food sample		Single	25ml	9	0	9	0
Milk, goats' - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	ASAE		Official sampling	food sample		Single	25ml	1	0	1	0
Milk, sheep's - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	ASAE		Official sampling	food sample		Single	25ml	4	0	4	0
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance [1)]	RAA-LRV	Objective sampling	Official sampling	food sample	Domestic	Batch	25g	30	6	30	6
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	ASAE		Official sampling	food sample		Batch	25g	30	0	30	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	ASAE		Official sampling	food sample		Batch	25g	25	0	0	0
Cheeses made from cows' milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance	INSA		HACCP and own checks	food sample		Single	25g	10	0	10	0
Cheeses made from cows' milk - hard - made from pasteurised milk - at processing plant - Surveillance	ASAE		Official sampling	food sample		Batch	25g	5	0	5	0

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	5	0	0	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	25	0	25	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	70	0	0	0
Cheeses made from goats' milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	15	2	15	2
Cheeses made from goats' milk - hard - made from pasteurised milk - at processing plant - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	5	0	5	0
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance	ASAE		Official sampling	food sample		Batch	25g	100	16	100	16
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	ASAE		Official sampling	feed sample		Batch	25g	15	0	15	0
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	ASAE		Official sampling	food sample		Batch	25g	225	0	0	0
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance	ASAE		Official sampling	food sample		Batch	25g	65	4	65	4

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Cheeses made from sheep's milk - hard - made from pasteurised milk - at processing plant - Surveillance	ASAE		Official sampling	food sample		Batch	25g	5	0	5	0
Dairy products (excluding cheeses) - butter - made from pasteurised milk - at processing plant - Surveillance	ASAE		Official sampling	food sample	Imported from outside EU	Batch	25g	20	0	0	0
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	3	0		
Cheeses made from cows' milk - fresh - made from pasteurised milk - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	5	0	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	6	0		
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance [2)]	RAA-LRV	Objective sampling	Official sampling	food sample	Domestic	Batch	25g	53	0	53	0
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant	INSA		HACCP and own checks	food sample		Single	25g	5	2	5	2
Cheeses made from goats' milk - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	7	0		
Cheeses made from goats' milk - fresh - made from pasteurised milk - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	25	0	0	0
Cheeses made from goats' milk - hard - made from raw or low heat-treated milk - at processing plant	INSA		HACCP and own checks	food sample		Single	25g	5	0	5	0

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant	INSA		HACCP and own checks	food sample		Single	25g	5	2	5	2
Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance	RAA-LRV	Objective sampling	Official sampling	food sample	Domestic	Batch	25g	10	0	10	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant	ASAE		Official sampling	food sample	Domestic	Batch	25g	10	0	10	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	11	2		
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	5	0	0	0
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk - at processing plant	INSA		HACCP and own checks	food sample		Single	25g	39	14	39	14
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	1	1		
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	28	2		
Cheeses, made from mixed milk from cows, sheep and/or goats - fresh - made from pasteurised milk - at processing plant	ASAE		Official sampling	food sample	Domestic	Batch	25g	20	0	20	0

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Cheeses, made from mixed milk from cows, sheep and/or goats - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	1	1		
Cheeses, made from mixed milk from cows, sheep and/or goats - fresh - made from pasteurised milk - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	10	0	0	0
Cheeses, made from mixed milk from cows, sheep and/or goats - hard - made from raw or low heat-treated milk - at processing plant	ASAE		Official sampling	food sample	Domestic	Batch	25g	10	0	10	0
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at processing plant	ASAE		Official sampling	food sample	Domestic	Batch	25g	30	0	30	0
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	4	0		
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	20	0	0	0
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from raw or low heat-treated milk - at processing plant	ASAE		Official sampling	food sample	Domestic	Batch	25g	35	0	35	0
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	100	0	0	0
Dairy products, unspecified - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	30	0	0	0

Table Listeria monocytogenes in milk and dairy products

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Milk, cows' - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	0	0	0
Milk, goats' - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	0	0	0
Milk, sheep's - raw milk for manufacture - intended for manufacture of raw or low heat-treated products - at processing plant - Surveillance	0	0	0
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance [1)]			
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	0	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	25	0	0
Cheeses made from cows' milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance			
Cheeses made from cows' milk - hard - made from pasteurised milk - at processing plant - Surveillance			
Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk - at retail - Surveillance	5	0	0

Table Listeria monocytogenes in milk and dairy products

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	0	0	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	70	0	0
Cheeses made from goats' milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance	0	0	0
Cheeses made from goats' milk - hard - made from pasteurised milk - at processing plant - Surveillance	0	0	0
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance	0	0	0
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	0	0	0
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	225	0	0
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance	0	0	0
Cheeses made from sheep's milk - hard - made from pasteurised milk - at processing plant - Surveillance	0	0	0

Table Listeria monocytogenes in milk and dairy products

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Dairy products (excluding cheeses) - butter - made from pasteurised milk - at processing plant - Surveillance	20	0	0
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant - Surveillance	3	0	
Cheeses made from cows' milk - fresh - made from pasteurised milk - at retail	5	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	6	0	
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance [2)]			
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant			
Cheeses made from goats' milk - fresh - made from pasteurised milk - at processing plant - Surveillance	7	0	
Cheeses made from goats' milk - fresh - made from pasteurised milk - at retail	25	0	0
Cheeses made from goats' milk - hard - made from raw or low heat-treated milk - at processing plant			
Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant			

Table Listeria monocytogenes in milk and dairy products

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance			
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant	0	0	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant - Surveillance	11	2	
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at retail	5	0	0
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk - at processing plant			
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance	1	1	
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance	28	2	
Cheeses, made from mixed milk from cows, sheep and/or goats - fresh - made from pasteurised milk - at processing plant	0	0	0
Cheeses, made from mixed milk from cows, sheep and/or goats - fresh - made from pasteurised milk - at processing plant - Surveillance	1	1	

Table Listeria monocytogenes in milk and dairy products

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses, made from mixed milk from cows, sheep and/or goats - fresh - made from pasteurised milk - at retail	10	0	0
Cheeses, made from mixed milk from cows, sheep and/or goats - hard - made from raw or low heat-treated milk - at processing plant	0	0	0
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at processing plant	0	0	0
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	4	0	
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at retail	20	0	0
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from raw or low heat-treated milk - at processing plant	0	0	0
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at retail	100	0	0
Dairy products, unspecified - at retail	30	0	0

Comments:

[1)] ISO11290

[2)] ISO11290

Table Listeria monocytogenes in milk and dairy products

Table Listeria monocytogenes in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	20	0	0	0
Meat from pig - fresh - at processing plant - Surveillance	RAA-LRV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	21	13	21	13
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance	ASAE	Suspect sampling	Official sampling	food sample	Domestic	Batch	25g	55	19	55	19
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	370	4	0	0
Meat from bovine animals - fresh - at processing plant - Surveillance	RAA-LRV	Objective sampling	Official sampling	food sample > meat	Domestic	Batch	25g	26	21	26	21
Molluscan shellfish - cooked - at retail - Surveillance	ASAE		Official sampling	food sample		Batch	25g	25	0	0	0
Infant formula - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	30	0	0	0
Other processed food products and prepared dishes - sandwiches - at retail - Surveillance	ASAE		Official sampling	food sample		Batch	25g	35	0	0	0
Fruits - pre-cut - ready-to-eat - at retail - Surveillance	ASAE		Official sampling	food sample	Domestic	Batch	25g	95	0	0	0
Crustaceans - unspecified - cooked - at retail	ASAE		Official sampling	food sample		Batch	25g	100	0	0	0
Crustaceans - unspecified - cooked - chilled - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic			7	0	7	0
Crustaceans - unspecified - cooked - frozen - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic			2	0	2	0

Table Listeria monocytogenes in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Fish - raw - frozen - at retail	ASAE		Official sampling	food sample		Batch	25g	25	0	0	0
Fishery products, unspecified - cooked - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic			2	0	2	0
Fruits - pre-cut - ready-to-eat - at catering	INSA		HACCP and own checks	food sample	Domestic	Single	25g	101	4	101	4
Infant formula - ready-to-eat - at hospital or care home	INSA		HACCP and own checks	food sample	Domestic	Single	25g	6	0	0	0
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	FMV	Convenience sampling	Not applicable	food sample		Batch	25g	10	2	10	2
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	ASAE	Suspect sampling	Official sampling	food sample	Domestic	Batch	25g	55	19	55	19
Meat from pig - meat products - cooked, ready-to-eat - at retail	FMV	Convenience sampling	Not applicable	food sample		Batch	25g	34	3	34	3
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance	RAA-LRV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	95	25	95	25
Meat from pig - meat products - unspecified, ready-to-eat - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	Single	25g	65	13	65	13
Meat from turkey - meat products - cooked, ready-to-eat - chilled - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	95	0	0	0
Other processed food products and prepared dishes - fish and seafood based dishes - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	25	0	0	0
Other processed food products and prepared dishes - meat based dishes - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	155	0	0	0
Other processed food products and prepared dishes - pasta based dishes - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	45	0	0	0

Table Listeria monocytogenes in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Other processed food products and prepared dishes - sandwiches - at catering	INSA		HACCP and own checks	food sample	Domestic	Single	25g	23	0	23	0
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - at catering	INSA		HACCP and own checks	food sample	Domestic	Single	25g	1020	8	1020	8
Other processed food products and prepared dishes - vegetable based dishes - at catering	INSA		HACCP and own checks	food sample	Domestic	Single	25g	273	6	273	6
Other processed food products and prepared dishes - vegetable based dishes - at retail	ASAE		Official sampling	food sample	Domestic	Batch	25g	110	0	0	0
Ready-to-eat salads - at catering	INSA		HACCP and own checks	food sample	Domestic	Single	25g	136	1	136	1

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail - Surveillance	20	0	0
Meat from pig - fresh - at processing plant - Surveillance			
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance	0	0	0
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance	370	3	1
Meat from bovine animals - fresh - at processing plant - Surveillance			

Table Listeria monocytogenes in other foods

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Molluscan shellfish - cooked - at retail - Surveillance	25	0	0
Infant formula - at retail - Surveillance	30	0	0
Other processed food products and prepared dishes - sandwiches - at retail - Surveillance	35	0	0
Fruits - pre-cut - ready-to-eat - at retail - Surveillance	95	0	0
Crustaceans - unspecified - cooked - at retail	100	0	0
Crustaceans - unspecified - cooked - chilled - at processing plant - Surveillance	7		
Crustaceans - unspecified - cooked - frozen - at processing plant - Surveillance	2		
Fish - raw - frozen - at retail	25	0	0
Fishery products, unspecified - cooked - at processing plant - Surveillance	2		
Fruits - pre-cut - ready-to-eat - at catering	101	4	0
Infant formula - ready-to-eat - at hospital or care home	6	0	0
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	2	2	0
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	0	0	0
Meat from pig - meat products - cooked, ready-to-eat - at retail	3	3	0

Table Listeria monocytogenes in other foods

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance			
Meat from pig - meat products - unspecified, ready-to-eat - at processing plant - Surveillance	65	13	0
Meat from turkey - meat products - cooked, ready-to-eat - chilled - at retail	95	0	0
Other processed food products and prepared dishes - fish and seafood based dishes - at retail	25	0	0
Other processed food products and prepared dishes - meat based dishes - at retail	155	0	0
Other processed food products and prepared dishes - pasta based dishes - at retail	45	0	0
Other processed food products and prepared dishes - sandwiches - at catering	23	0	0
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - at catering	1020	8	0
Other processed food products and prepared dishes - vegetable based dishes - at catering	273	6	0
Other processed food products and prepared dishes - vegetable based dishes - at retail	110	0	0
Ready-to-eat salads - at catering	136	1	0

2.4 E. COLI INFECTIONS

2.4.1 General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

Additional information

At LNIV the following procedures are performed in E. coli isolates of cattle, swine, sheep and goats (strains that are serotyped).
At poultry isolates, serotyping is not being done.

Diagnostic Techniques:
Internal method.
1 - Culture:

Platting in: Tryptose Blood Agar
MacConkey Agar
Minca Agar

To different E. coli colonies, the following biochemical reactions are done:
Simmons Citrate
MR-VP
Adonitol
Dulcitol
Inositol
Mannitol
Sorbitol
Glucose
Sucrose
Raffinose
Malonate
Urease

2 - Serology:
Serotyping by searching somatic (O) and capsular (K) antigens.

3 - Searching of enterotoxins:
- ST (by PCR)
- LT (by Biken test, CHO cells and PCR)

4 - Searching of citotoxins:
- in Vero and HeLa cells.

5 - Adesin detection:
- F5, F6, F41

6 - Antibiotic susceptibility testing

2.4.2 E. coli infections in humans

Table Escherichia coli, pathogenic in humans - Species/serotype distribution

Species/serotype Distribution Escherichia coli, pathogenic	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
HUS	0					
E.coli infect. (except HUS)	4					
- clinical cases	4					
- laboratory confirmed	4					

Table Escherichia coli, pathogenic in humans - Age distribution

Age distribution	Verotoxigenic E. coli (VTEC)			Verotoxigenic E. coli (VTEC) - VTEC O157:H7			Verotoxigenic E. coli (VTEC) - VTEC non-O157		
	All	M	F	All	M	F	All	F	M
1 to 4 years	1	1	0						
25 to 44 years	1	0	1						
45 to 64 years	1	0	1						
Age unknown	1	1							
Total :	4	2	2	0	0	0	0	0	0

2.4.3 Escherichia coli, pathogenic in foodstuffs

Table VT E. coli in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Analytical Method	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157
Meat from bovine animals - carcase - at processing plant	INSA	Convenience sampling	Not applicable	food sample	Domestic	PCR	Single	25g	2	1	0
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	ISO 16654:2001	Single	25g	20	0	
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant	INSA	Convenience sampling	Not applicable	food sample	Domestic	PCR	Single	25g	8	2	0
Meat from broilers (Gallus gallus) - carcase - at processing plant	INSA	Convenience sampling	Not applicable	food sample	Domestic	PCR	Single	25g	1	0	
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at processing plant	INSA	Convenience sampling	Not applicable	food sample	Domestic	PCR	Single	25g	1	0	
Meat from pig - carcase - at processing plant	INSA	Convenience sampling	Not applicable	food sample	Domestic	PCR	Single	25g	4	2	0
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample > meat	Domestic	ISO 16654:2001	Single	25g	30	5	5
Meat from pig - minced meat - intended to be eaten cooked - at processing plant	INSA	Convenience sampling	Not applicable	food sample	Domestic	PCR	Single	25g	9	2	0
Meat from turkey - carcase - at processing plant	INSA	Convenience sampling	Not applicable	food sample	Domestic	PCR	Single	25g	3	0	

Table VT E. coli in food

	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from bovine animals - carcase - at processing plant	1	
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant - Surveillance		
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant	2	
Meat from broilers (Gallus gallus) - carcase - at processing plant		
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at processing plant		
Meat from pig - carcase - at processing plant	2	
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance		
Meat from pig - minced meat - intended to be eaten cooked - at processing plant	2	
Meat from turkey - carcase - at processing plant		

2.5 TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1 General evaluation of the national situation

2.5.2 Tuberculosis, mycobacterial diseases in humans

A. Tuberculosis due to Mycobacterium bovis in humans

Reporting system in place for the human cases

Instituto Nacional de Saúde Dr. Ricardo Jorge

Table Mycobacterium in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
Mycobacterium	2480	0	0	0	0	0
M. bovis	0					
M. tuberculosis	2480					

Table Mycobacterium in humans - Age distribution

Age distribution	M. bovis		
	All	M	F
<1 year	0		
1 to 4 years	0		
5 to 14 years	0		
15 to 24 years	0		
25 to 44 years	0		
45 to 64 years	0		
65 years and older	0		
Age unknown	0		
Total :	0	0	0

2.5.3 Mycobacterium in animals

A. Mycobacterium bovis in bovine animals

Status as officially free of bovine tuberculosis during the reporting year

Free regions

At mainland, the Algarve region was recognized as Officially Free of Bovine Tuberculosis according to Comission Decision 2012/204/UE of 19th April.

Monitoring system

Sampling strategy

Tuberculosis testing is performed in all bovine, older than 6 weeks of age, using the intra-dermal comparative test.

The herds are classified and sampled according to Council Directive 64/432/EEC and National Dec. Lei nº 272/2000, November 8th.

Frequency of the sampling

The herds are classified and sampled according to Council Directive 64/432/EEC and National Dec. Lei nº 272/2000, November 8th.

Type of specimen taken

intra-dermal comparative test, blood (gama-IFN), organs

Diagnostic/analytical methods used

The National Reference Laboratory (NRL) is Instituto Nacional de Investigação Agrária e Veterinária, I. P (INIAV).

Diagnostic techniques:

- Internal method.

- direct smear

- solid media: stonebrink and Lowenstein-Jensen.

- liquid media: bactec.

The classification of Mycobacterium is based on: BM techniques.

INIAV is responsible for the Mycobacterium isolation on the tuberculin reactors animals and others,

following the procedures above mentioned.

Vaccination policy

Vaccination is forbidden.

Other preventive measures than vaccination in place

Pre-movement tests are mandatory for breeding animals.

Control program/mechanisms

The control program/strategies in place

An Eradication Plan for Bovine Tuberculosis is carried out and supervised by DGAV.

Measures in case of the positive findings or single cases

- Herd under official restrictions;

- Isolation of suspected or infected animals in the herd;

- Positive animals compulsory slaughtered, under official supervision, with sample collection for laboratory diagnosis;

- Animal movements are forbiden from and to the herd;

- Desinfection of all premises, equipment and materials;

- Testing of all remaining animals;

- Thermic treatment of the milk.

Notification system in place

Tuberculosis is a notifiable disease.

B. Mycobacterium bovis in farmed deer

Monitoring system

Sampling strategy

There is no national surveillance plan in place, but there is target surveillance in certain areas.

Sampling collection is done during hunting and all carcasses intended to human consumption undergo a post-mortem examination.

Vaccination policy

Vaccination is forbiden

Notification system in place

Tuberculosis is a notifiable disease in all species.

Table Bovine tuberculosis - data on herds - Community co-financed eradication programmes

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Continente	47186	32444	29618	105	78	4	3.81	91.29	.35	.26
Região Autónoma dos Açores	10207	7905	1952	8	8	0	0	24.69	.41	.41
Total : [1)]	57393	40349	31570	113	86	4	3.54	78.24	.36	.27
Total - 1	58503	44409	33982	267	193	10	3.75	76.52	.79	.57

Comments:

[1)] N.A.

Table Bovine tuberculosis - data on animals - Community co-financed eradication programmes

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Continente	1179511	1087291	1027921	881369	679	658	942	94.54	.07
Região Autónoma dos Açores	263060	188808	56360	55725	12	12	13	29.85	.02
Total : [1)]	1442571	1276099	1084281	937094	691	670	955	84.97	.06
Total - 1	1494698	1426884	1124997	977132	1853	1790	2567	78.84	.16

Comments:

[1)] N.A.

Table Bovine tuberculosis - data on status of herds at the end of the period - Community co-financed eradication programmes

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Continente	32444	1087291	0	0	20	3206	96	13679	76	5205	0	0	46994	1157421
Região Autónoma dos Açores	7905	188808	0	0	0	0	1	55	4	340	0	0	10202	262665
Total : [1)]	40349	1276099	0	0	20	3206	97	13734	80	5545	0	0	57196	1420086
Total - 1	50075	1383570	0	0	28	3623	240	30911	111	9612	0	0	58124	1450252

Comments:

[1)] N.A.

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

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

Region	Total number of existing bovine		Officially free herds		Infected herds		Routine tuberculin testing		Number of tuberculin tests carried out before the introduction into the herds (Annex A(I)(2)(c) third indent (1) of Directive 64/432/EEC)	Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological	Number of animals detected positive in bacteriological examination
	Herds	Animals	Number of herds	%	Number of herds	%	Interval between routine tuberculin tests	Number of animals tested			
Algarve	311	8201	311	100	0	0	every four years	2445	117	0	0
Total : [1)]	311	8201	311	100	0	0	N.A.	2445	117	0	0

Comments:

[1)] N.A.

2.6 BRUCELLOSIS

2.6.1 General evaluation of the national situation

A. Brucellosis general evaluation

Additional information

Foodstuffs
Brucella isolation:
- Samples are plated in 6 petri dishes of FarrelÂ´s medium (3 incubated in CO2 atmosphere (CO2) and the others are incubated at normal atmosphere (N));
- Incubation at 37 degrees Celsius (+-1 degree celsius) for 10 days;
- 1st reading of the plates on the 4/5th day of incubation;
- 2nd reading on the 10th day of incubation;
- Suspected colonies are streaked on 2 agar slopes (one for (CO2) and the other for (N)for typing.

Brucella typing:
- Biochemical tests (urease, catalase and oxidase);
- CO2 requirement;
- H2S production;
- Dye sensitivity (Thionin, Basic Fucsin and Safrinin O);
- Agglutination with acriflavine and monospecific A and M antisera;
- Lysis by phages;
- Differentiation of vaccine and field strains.

For each set of plating and typing, reference strains are used.

2.6.2 Brucellosis in humans

Table Brucella in humans - Age distribution

Age distribution	B. abortus			B. melitensis			Brucella spp., unspecified		
	All	M	F	All	M	F	All	M	F
<1 year	0	0	0	0	0	0	0	0	0
1 to 4 years	0	0	0	0	0	0	0	0	0
5 to 14 years	0	0	0	0	0	0	0	0	0
15 to 24 years	0	0	0	0	0	0	1	1	0
25 to 44 years	0	0	0	0	0	0	1	0	1
45 to 64 years	0	0	0	1	1	0	1	0	1
65 years and older	0	0	0	1	1	0	3	2	1
Age unknown	0	0	0	0	0	0	1	0	1
Total :	0	0	0	2	2	0	7	3	4

2.6.3 Brucella in animals

A. Brucella abortus in bovine animals

Status as officially free of bovine brucellosis during the reporting year

Free regions

In the Açores, there are 6 islands (Santa Maria, Faial, Graciosa, Pico, Flores and Corvo) that are Officially Free of Bovine Brucellosis , according to Comission Decisions 2002/588/CE of 11th July 2002 and 2009/600/CE of 5th August.
At mainland, the Algarve region was recognized as Officially Free of Bovine Brucellosis according to Comission Decision 2012/204/UE of 19th April.

Monitoring system

Sampling strategy

Serology is performed in cattle older than 12 months of age.

The herds are classified and sampled according to Council Directive 64/432/EEC and Decreto-Lei nº244/2000 (Sep. 27th).

Frequency of the sampling

The herds are sampled according to Council Directive 64/432/EEC and Decreto-Lei nº244/2000 (Sep. 27th) for cattle, sheep and goats.

Type of specimen taken

Blood, milk, organs,vaginal mucus, semen,aborted foetus, placenta.

Diagnostic/analytical methods used

The National Reference Laboratory (NRL) is Instituto Nacional de Investigação Agrária e Veterinária, I. P (INIAV).

Diagnostic techniques:

Serology:

- Rose Bengal Test (RBT);

- Complement Fixation Test (CFT);

If RBT is positive CFT is performed.

Bacteriology - Samples from:

- live animals (milk, vaginal mucus, semen, aborted foetus, placenta;

- dead animals (liver, spleen, lymph nodes, udder and uterus)

are plated in Farrel medium (Difco Tryptose Agar + SR209 Oxoid supplement + 5% horse serum).

- Biochemical reactions (urease, catalase and oxidase).

Typing of isolates:

- CO2 requirement;

- H2S production;

- Agglutination with monospecific antisera (anti-A, anti-M and anti-R or acriflavine test);

- Growth on dyes:

1/50.000 and 1/100.000 of basic fucsin

1/50.000 and 1/100.000 of thionin.

- Lysis by phages;

- Differentiation of vaccine and field strains.

Vaccination policy

Vaccination is forbidden but if an exceptional sanitary situation occurs, vaccination can be allowed with specific protocols between the National Veterinary Authority, the Regional Veterinary Authority and the owner(s) of the cattle.

Other preventive measures than vaccination in place

Pre-movement tests are mandatory for breeding animals.

Control program/mechanisms

The control program/strategies in place

An Eradication Plan for cattle is carried out and supervised by DGAV.

Measures in case of the positive findings or single cases

Suspected Herd:

- Herd under oficial surveillance;

- Epidemiological questionaire;

- Animal movements are forbiden from and to the herd;

- Isolation of suspected animals in the herd;

- Sample collection for laboratory diagnosis.

Positive Herd:

- Herd under official restrictions;

- Compulsory slaughter of all positive animals, under official supervision with sample collection for laboratory diagnosis;

- Animal movements are forbiden from and to the herd;

- Serological control of all remaining animals;

Infected Herd:

- All measures mencioned for positive herds;

- Desinfection of all premises, equipment and materials.

- Thermic treatment of the milk.

Notification system in place

Brucelosis is a notifiable disease.

B. Brucella melitensis in goats

Status as officially free of caprine brucellosis during the reporting year

Free regions

Região Autónoma dos Açores is officially free of ovine and caprine brucellosis, according to Comission Decision 2003/44/CE of the 17th January 2003.

Monitoring system

Sampling strategy

Serology is performed in sheep and goats older than 6 months of age.

The herds are classified and sampled according to Council Directive of 28 January 1991 on animal health conditions governing intra-Community trade in ovine and caprine animals (91/68/EEC) and Decreto-Lei nº244/2000 (Sep. 27th) for sheep and goats.

Frequency of the sampling

The herds are classified and sampled according to Council Directive of 28 January 1991 on animal health conditions governing intra-Community trade in ovine and caprine animals (91/68/EEC) and Decreto-Lei nº244/2000 (Sep. 27th) for sheep and goats

Type of specimen taken

Blood, milk, organs,vaginal mucus, semen,aborted foetus, placenta.

Diagnostic/analytical methods used

Diagnostic techniques:

Serology:
Sheep and goats
Rose Bengal Test (RBT);
Complement Fixation Test (CFT).

Bacteriology - Samples from:
- live animals (milk, vaginal mucus, semen, aborted foetus, placenta);
- dead animals (liver, spleen and lymph nodes)
are plated in Farrel medium (Difco Tryptose Agar + SR209 Oxoid supplement + 5% horse serum)

Biochemical reactions - urease, catalase and oxidase.

Typing of isolates:
- CO_2 requirement;
- H_2S production;
- Agglutination with monospecific antisera (anti-A, anti-M and anti-R);
- Growth on dyes:
  1/50.000 and 1/100.000 of basic fucsin
  1/50.000 and 1/100.000 of thionin.
- Lysis by phages;
- Differentiation of vaccine and field strains.

Vaccination policy

Vaccination of young animals with ReV1 is performed in some of the mainland regions: Norte, Centro, Alentejo and Algarve.

Other preventive measures than vaccination in place

Pre-movement tests are mandatory for breeding animals for the replacement in depopulated herds.

Control program/mechanisms

The control program/strategies in place

An Eradication Plan for sheep and goats, is carried out and supervised by DGAV.

Measures in case of the positive findings or single cases

Suspected Herd:

- Herd under oficial surveillance;

- Epidemiological questionaire;

- Animal movements are forbiden from and to the herd;

- Isolation of suspected animals in the herd;

- Sample collection for laboratory diagnosis.

Positive Herd:

- Herd under official restrictions;

- Compulsory slaughter of all positive animals, under official supervision with sample collection for laboratory diagnosis;

- Animal movements are forbiden from and to the herd;

- Serological control of all remaining animals;

Infected Herd:

- All measures mencioned for positive herds;

- Desinfection of all premises, equipment and materials.

- Thermic treatment of the milk.

Notification system in place

Brucelosis is a notifiable disease.

C. Brucella melitensis in sheep

Status as officially free of ovine brucellosis during the reporting year

Free regions

See Brucella melitensis in goats.

Monitoring system

Sampling strategy

See Brucella melitensis in goats.

Type of specimen taken

Blood, milk, organs,vaginal mucus, semen,aborted foetus, placenta.

Diagnostic/analytical methods used

See Brucella melitensis in goats.

Vaccination policy

See Brucella melitensis in goats.

Control program/mechanisms

The control program/strategies in place

See Brucella melitensis in goats.

Measures in case of the positive findings or single cases

See Brucella melitensis in goats.

Table Brucellosis in other animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis
Pigs [1)]	RAA-LRV	Suspect sampling	Official sampling	animal sample > blood	Intra EU trade	Animal	81	0			
Solipeds, domestic - horses - at border control - Surveillance [2)]	RAA-LRV	Objective sampling	Official sampling	animal sample > blood	Domestic	Animal	1	0			

	Brucella spp., unspecified
Pigs [1)]	
Solipeds, domestic - horses - at border control - Surveillance [2)]	

Comments:

[1)] Introduction of swines in the Azorean Island with insuficient sanitary information result in sampling of animals

[2)] production animals entering the Azorean Islands are always sampled

Table Bovine brucellosis - data on herds - Community co-financed eradication programmes

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Continente	47186	32112	31335	72	53	2	2.78	97.58	.23	.17
Região Autónoma dos Açores	7743	6003	3685	36	26	0	0	61.39	.98	.71
Total : [1)]	54929	38115	35020	108	79	2	1.85	91.88	.31	.23
Total - 1	55991	39808	38753	216	165	6	2.78	97.35	.56	.43

Comments:

[1)] N.A.

Table Ovine or Caprine brucellosis - data on herds - Community co-financed eradication programmes

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Continente	64330	64330	61695	746	410	27	3.62	95.9	1.21	.66
Total : [1)]	64330	64330	61695	746	410	27	3.62	95.9	1.21	.66
Total - 1	66051	66051	64059	867	389	36	4.15	96.98	1.35	.61

Comments:

[1)] N.A.

Table Bovine brucellosis - data on animals - Community co-financed eradication programmes

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Continente	1179511	973745	785605	724369	409	433	479	80.68	.05
Região Autónoma dos Açores	204472	131433	137767	99097	109	119	121	104.82	.08
Total : [1)]	1383983	1105178	923372	823466	518	552	600	83.55	.06
Total - 1	1436011	1110915	948702	909755	713	710	875	85.4	.08

Comments:

[1)] N.A.

Table Ovine or Caprine brucellosis - data on animals - Community co-financed eradication programmes

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Continente	2267714	2267714	2067494	1597311	5155	5331	7136	91.17	.25
Total : [1)]	2267714	2267714	2067494	1597311	5155	5331	7136	91.17	.25
Total - 1	2378815	2378815	2199034	1780478	8268	7510	11177	92.44	.38

Comments:

[1)] N.A.

Table Bovine brucellosis - data on status of herds at the end of the period - Community co-financed eradication programmes

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Continente	32112	973745	0	0	12	755	60	5218	139	5553	1981	34229	44994	1133756
Região Autónoma dos Açores	6003	131433	0	0	6	240	22	2307	29	1882	7686	200043	0	0
Total : [1)]	38115	1105178	0	0	18	995	82	7525	168	7435	9667	234272	44994	1133756
Total - 1	39808	1110915	0	0	23	1211	247	8633	215	11723	10327	38945	45179	1375499

Comments:

[1)] N.A.

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

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

Region	Total number of existing		Officially free herds		Infected herds		Surveillance			Investigations of suspect cases				
	Herds	Animals	Number of herds	%	Number of herds	%	Number of herds tested	Number of animals tested	Number of infected herds	Number of animals tested with serological blood tests	Number of animals positive serologically	Number of animals examined microbio logically	Number of animals positive microbio logically	Number of suspended herds
Região Autónoma dos Açores	953	11665	951	99.79	0	0	338	2806	0	2806	2	2	0	2
Total : [1)]	953	11665	951	99.79	0	0	338	2806	0	2806	2	2	0	2

Comments:

[1)] N.A.

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

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

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		
Algarve	311	8201	311	100	0	0	122	2236	0	0	0	0	0	0	0	0	0	0	0	0	0
Região Autónoma dos Açores	2464	58387	2464	100	0	0	1403	18229	0	288	480	0	2	0	0	0	0	0	0	0	0
Total : [1)]	2775	66588	2775	100	0	0	1525	20465	0	288	480	0	2	0	0	0	0	0	0	0	0

Comments:

[1)] N.A.

Table Ovine or Caprine brucellosis - data on status of herds at the end of the period - Community co-financed eradication programmes

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Continente	64327	2267714	0	0	145	20009	342	33985	2133	58962	6412	425041	55295	1729717
Total : [1)]	64327	2267714	0	0	145	20009	342	33985	2133	58962	6412	425041	55295	1729717
Total - 1	66051	2378815	0	0	220	28606	1432	70676	1325	34590	6358	417181	56716	1827762

Comments:

[1)] N.A.

2.7 YERSINIOSIS

2.7.1 General evaluation of the national situation

A. Yersinia enterocolitica general evaluation

Additional information

Diagnostic techniques:

Bacteriology: Internal method.
- Samples are plated on Yersinia CIN Agar, or Yersinia Selective Agar (Oxoid) supplemented with Yersinia Selective supplement (Oxoid).
- Biochemical reactions by API 20E strips or 32E.

2.7.2 Yersiniosis in humans

Table Yersinia in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
Yersinia	5	0	0	0	0	0
Y. enterocolitica	3	0	0	0	0	0
Y. enterocolitica - O:3	1	0	0	0	0	0
Y. enterocolitica - O:9	1	0	0	0	0	0

Table Yersinia in humans - Age distribution

Age distribution	Y. enterocolitica			Yersinia spp., unspecified		
	All	M	F	All	M	F
<1 year	0	0	0	0	0	0
1 to 4 years	1	1	0	0	0	0
5 to 14 years	2	1	1	0	0	0
15 to 24 years	0	0	0	0	0	0
25 to 44 years	0	0	0	0	0	0
45 to 64 years	0	0	0	0	0	0
65 years and older	0	0	0	0	0	0
Age unknown	0	0	0	0	0	0
Total :	3	2	1	0	0	0

Table Yersinia in humans - Seasonal distribution

Seasonal Distribution / Months	Y. enterocolitica	Yersinia spp., unspecified
	Cases	Cases
January	0	0
February	0	0
March	0	0
April	1	0
May	0	0
June	0	0
July	1	0
August	0	0
September	0	0
October	0	0
November	1	0
December	0	0
not known	0	0
Total :	3	0

2.8 TRICHINELLOSIS

2.8.1 General evaluation of the national situation

2.8.2 Trichinellosis in humans

Table Trichinella in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
Trichinella	0	0	0	0	0	0
Trichinella spp., unspecified	0	0	0	0	0	0

Table Trichinella in humans - Age distribution

Age distribution	Trichinella spp., unspecified		
	All	M	F
<1 year	0	0	0
1 to 4 years	0	0	0
5 to 14 years	0	0	0
15 to 24 years	0	0	0
25 to 44 years	0	0	0
45 to 64 years	0	0	0
65 years and older	0	0	0
Age unknown	0	0	0
Total :	0	0	0

2.8.3 Trichinella in animals

A. Trichinella in horses

Monitoring system

Frequency of the sampling

All slaughtered animals.

Type of specimen taken

Tongue, masseter and diaphragm.

Case definition

Detection of one larvae of Trichinella.

Diagnostic/analytical methods used

Mechanical digestion of pooled samples with magnetic stirrer (Comission Regulation (EC) N.º 2075/2005).

B. Trichinella in pigs

Monitoring system

Frequency of the sampling

General

All slaughtered animals.

Type of specimen taken

General

Pigs: diaphragm pillars
Wild boars: tongue, diaphragm pillars, masseter

Methods of sampling (description of sampling techniques)

General

As determined in Comission Regulation (EC) N.º 2075/2005 of 5 December.

Case definition

General

Detection of one larvae of Trichinella.

Diagnostic/analytical methods used

General

Mechanical digestion of pooled samples with magnetic stirrer (Comission Regulation (EC) N.º 2075/2005).

Notification system in place

Notifiable since 1953 by national law (Decreto-Lei n.º 39209, de 14 de Maio).

Results of the investigation including description of the positive cases and the verification of the Trichinella species

All results negative.

Fattening pigs raised under controlled housing conditions in integrated production system

All results negative.

Fattening pigs not raised under controlled housing conditions in integrated production system

All results negative.

Breeding sows and boars

All results negative.

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

Cases of trichinelosis are not reported since < 1960.

Additional information

Special training in Trichinella detection on slaughterhouses and game activities is given to the meat inspection team.

Table Trichinella in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Pigs - fattening pigs	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	2866080	0		
Pigs - fattening pigs - raised under controlled housing conditions - at slaughterhouse - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	478561	0		
Pigs - fattening pigs - not raised under controlled housing conditions - at slaughterhouse - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	13119	0		
Pigs - breeding animals	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	35982	0		
Pigs - breeding animals - raised under controlled housing conditions - sows and boars - at slaughterhouse - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	6293	0		
Pigs - breeding animals - not raised under controlled housing conditions - sows and boars - at slaughterhouse - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	171	0		
Solipeds, domestic - horses - at slaughterhouse - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	3178	0		
Pigs - at slaughterhouse - Surveillance	RAA	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	17020	0		
Pigs - breeding animals - at slaughterhouse - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Intra EU trade	Animal	13	0		
Pigs - breeding animals - not raised under controlled housing conditions - sows and boars - at slaughterhouse - Surveillance [1)]	RAA-LRV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	151	0		

Table Trichinella in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Pigs - breeding animals - raised under controlled housing conditions - sows and boars - at slaughterhouse - Surveillance [2)]	RAA-LRV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	238	0		
Pigs - breeding animals - raised under controlled housing conditions - sows and boars - at slaughterhouse - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Intra EU trade	Animal	422	0		
Pigs - breeding animals - raised under controlled housing conditions - sows and boars - at slaughterhouse - Surveillance	RAM	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	460	0		
Pigs - fattening pigs - at slaughterhouse - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Intra EU trade	Animal	48150	0		
Pigs - fattening pigs - not raised under controlled housing conditions - at slaughterhouse - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Intra EU trade	Animal	8958	0		
Pigs - fattening pigs - not raised under controlled housing conditions - at slaughterhouse - Surveillance	RAA-LRV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	4961	0		
Pigs - fattening pigs - raised under controlled housing conditions - at slaughterhouse - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Intra EU trade	Animal	10319	0		
Pigs - fattening pigs - raised under controlled housing conditions - at slaughterhouse - Surveillance	RAM	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	10319	0		
Pigs - fattening pigs - raised under controlled housing conditions - at slaughterhouse - Surveillance [3)]	RAA-LRV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	21613	0		
Wild boars - wild - at cutting plant - Surveillance	DGAV	Census	Official and industry sampling	animal sample > organ/tissue	Domestic	Animal	270	0		

Table Trichinella in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Wild boars - wild - from hunting - Surveillance	INIAV	Unspecified	Official sampling	animal sample > organ/tissue	Domestic	Animal	2	0		

Comments:

[1)] LRV - Veterinay Laboratory of the Azorean Autonomic Region

[2)] LRV- Veterinary Laboratory of the Autonomic Azorean Region

[3)] LRV - Veterinary Laboratory of the Autonomic Azorean Region

2.9 ECHINOCOCCOSIS

2.9.1 General evaluation of the national situation

A. Echinococcus spp. general evaluation

Additional information

Â§Diagnostic techniques:
Direct examination test.

Â§On 1996 a program supervised by DGV was implemented in Alentejo (DRAAAL) (approved by Decision 96/67/CE). On 1998, besides Alentejo the same program was extended to Beira Interior (DRA BI).
The program was extended, in 2000, to the Algarve (DRAALG).

This program consisted on:
-deworming of all dogs present at rabies vaccination , by injection, performed by Municipality Veterinarians.
-deworming tablets were given for a further deworming, in 2-3 weeks time.
-deworming of dogs not present at rabies vaccination, but belonging to farms where sheep and goats with hidatidosis lesions were observed (the information of lesions in farm animals comes through the abattoir).
-educational actions have been taken place, close to people (dog owners and farmers).

The program is still in place in the 3 referred regions.

2.9.2 Echinococcosis in humans

A. Echinococcus spp. in humans

Reporting system in place for the human cases

Sentinel surveillance, estimated coverage 50%.

Case definition

Case is considered when laboratory criteria is confirmed.

Diagnostic/analytical methods used

ELISA, Immunoblot and PCR.

Notification system in place

It is a notifiable disease.

Table Echinococcus in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
Echinococcus	29	0	29	0	0	0
E. granulosus	29		29			

Table Echinococcus in humans - Age distribution

Age distribution	E. granulosus			E. multilocularis			Echinococcus spp., unspecified		
	All	M	F	All	M	F	All	M	F
<1 year	0	0	0						
1 to 4 years	0	0	0						
5 to 14 years	0	0	0						
15 to 24 years	0	0	0						
25 to 44 years	5	4	1				2	2	0
45 to 64 years	13	7	6				2	0	2
65 years and older	11	2	9						
Age unknown	0	0	0						
Total :	29	13	16	0	0	0	4	2	2

2.10 TOXOPLASMOSIS

2.10.1 General evaluation of the national situation

A. Toxoplasmosis general evaluation

Additional information

Diagnostic techniques:

- Direct examination test.
- Serology - direct aglutination.
- PCR.

2.10.2 Toxoplasmosis in humans

A. Toxoplasmosis in humans

Reporting system in place for the human cases

Sentinel surveillance, estimated coverage 70%.

Case definition

Case is considered when laboratory criteria is confirmed.

Diagnostic/analytical methods used

ISAGA , real time PCR and mice inoculation.

Notification system in place

Only congenital toxoplasmosis is a notifiable disease.

Table Toxoplasma in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.
Toxoplasma	104	0
Toxoplasma spp., unspecified	104	
Congenital cases	4	

Table Toxoplasma in humans - Age distribution

Age distribution	Toxoplasma spp., unspecified		
	All	M	F
<1 year	4	2	2
15 to 24 years	19	3	16
25 to 44 years	75	5	70
45 to 64 years	7	7	0
65 years and older	3	3	0
Total :	108	20	88

2.11 RABIES

2.11.1 General evaluation of the national situation

A. Rabies general evaluation

History of the disease and/or infection in the country

Portugal is free from Rabies since 1961.

In August 1984, the national authorities detected a case of rabies in a 2 months old puppy that came from Maputo (Mozambique) and entered illegally in Portugal the10th August 1984. The animal was isolated and euthanized. The disease was confirmed by direct immunofluorescence the 31st August of 1984. The veterinary authorities maintained the implemented sanitary and prophylactic measures and since then, no further cases were detected and Portugal maintained its rabies free status.

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

Portugal is free from Rabies since 1961.

The vaccination of dogs is compulsory.

Rabies is a notifiable disease in animals and in humans.

Additional information

National law (Decreto-Lei nº 314/2003, December the 17th and Portaria nº 81/2002, January the 24th) allows the dog rabies vaccination to be declared compulsory each year.

Vaccination is performed by the Municipality Veterinarians and by the small animal practitioners in their private clinics.

Surveillance is based on the investigation of any clinical suspicion.
Any cat or dog that bites, a human or another animal, is considered under suspicion and therefore kept under veterinary surveillance in order to discard any case of rabies.

2.11.2 Lyssavirus (rabies) in animals

A. Rabies in dogs

Monitoring system

Case definition

Laboratorial confirmation (positive result at the direct immunofluorescence test).

Vaccination policy

By national law (Decreto-Lei nº 314/2003 of December the 17th and Portaria nº 81/2002 of January the 24th), the annual dog rabies vaccination for animals older than 3 months is compulsory.

Other preventive measures than vaccination in place

The other preventive measures are included in the National Control programme.

Control program/mechanisms

The control program/strategies in place

The control Program is defined in the national law (Decreto Lei nº 314/2003, December the 17th) and consists in Vaccination and Surveillance Measures for epidemiological survey with definition of specific rules for owners, for commercial purposes, for exhibits and for animal entrance in the country.

Measures in case of the positive findings or single cases

The measures are defined in the national and EU legislation.

Notification system in place

Rage is a national notifiable disease since 1953.

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

Portugal is free from Rabies since 1961.

Additional information

In Portugal the annual rabies vaccination is compulsory since 1925.

Table Rabies in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Rabies virus (RABV)	EBLV-1
Dogs - stray dogs		Suspect sampling	Official sampling			Animal		2	0		
Cats - stray cats		Suspect sampling	Official sampling			Animal					

	EBLV-2	Lyssavirus (unspecified virus)
Dogs - stray dogs		
Cats - stray cats		

2.12 STAPHYLOCOCCUS INFECTION

2.12.1 General evaluation of the national situation

2.12.2 Staphylococcus in foodstuffs

Table Staphylococcus in Food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcus	S. aureus, meticillin resistant (MRSA)	S. aureus, meticillin resistant (MRSA) - spa -type t011
Cheeses, made from mixed milk from cows, sheep and/or goats - unspecified - made from raw or low heat-treated milk - at processing plant	ASAE	Suspect sampling	Official sampling	food sample	Domestic	Batch	10g	10	8		
Dairy products (excluding cheeses) - dairy desserts - at processing plant	ASAE	Suspect sampling	Official sampling	food sample	Domestic	Single	10g	2	0		
Fruits - pre-cut - ready-to-eat - at retail	ASAE	Suspect sampling	Official sampling	food sample		Batch	10g	5	0		
Other processed food products and prepared dishes - fish and seafood based dishes - at processing plant	ASAE	Suspect sampling	Official sampling	food sample	Domestic	Batch	10g	1	0		
Other processed food products and prepared dishes - legumes based dishes - at processing plant	ASAE	Suspect sampling	Official sampling	food sample	Domestic	Single	10g	3	1		
Other processed food products and prepared dishes - meat based dishes - at processing plant	ASAE	Suspect sampling	Official sampling	food sample	Domestic	Single	10g	13	6		
Sauce and dressings - at processing plant	ASAE	Suspect sampling	Official sampling	food sample	Domestic	Single	10g	3	0		
Soups - ready-to-eat - at processing plant	ASAE	Suspect sampling	Official sampling	food sample	Domestic	Single	10g	2	0		

Table Staphylococcus in Food

	S. aureus, meticillin resistant (MRSA) - spa -type t108	S. aureus, meticillin resistant (MRSA) - spa -type t034	S. aureus, meticillin resistant (MRSA) - MRSA, unspecified	Staphylococcus spp., unspecified
Cheeses, made from mixed milk from cows, sheep and/or goats - unspecified - made from raw or low heat-treated milk - at processing plant				8
Dairy products (excluding cheeses) - dairy desserts - at processing plant				
Fruits - pre-cut - ready-to-eat - at retail				
Other processed food products and prepared dishes - fish and seafood based dishes - at processing plant				
Other processed food products and prepared dishes - legumes based dishes - at processing plant				1
Other processed food products and prepared dishes - meat based dishes - at processing plant				6
Sauce and dressings - at processing plant				
Soups - ready-to-eat - at processing plant				

2.13 Q-FEVER

2.13.1 General evaluation of the national situation

A. Coxiella general evaluation

History of the disease and/or infection in the country

*

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

*

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

*

Recent actions taken to control the zoonoses

*

Suggestions to the European Union for the actions to be taken

*

Additional information

*

2.14 WEST NILE VIRUS INFECTIONS

2.14.1 General evaluation of the national situation

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 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	4	
Antimicrobials:	N	n
Aminoglycosides - Streptomycin	4	3
Penicillins - Ampicillin	4	2
Tetracyclines - Tetracycline	4	0
Trimethoprim	4	0
Resistant to 3 antimicrobials	4	2
Resistant to 4 antimicrobials	4	2

Footnote:

the spaces not filled mean the antibiotics were not tested on the isolates.

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in All 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	143	
Antimicrobials:	N	n
Aminoglycosides - Gentamicin	143	21
Amphenicols - Chloramphenicol	143	25
Cephalosporins - Cefotaxime	143	24
Fluoroquinolones - Ciprofloxacin	143	65
Penicillins - Ampicillin	143	88
Tetracyclines - Tetracycline	143	98
Aminoglycosides - Amikacin	143	0
Aminoglycosides - Tobramycin	143	13
Carbapenems - Ertapenem	143	0
Carbapenems - Imipenem	143	0
Carbapenems - Meropenem	143	0
Cephalosporins - Cefazolin	143	32
Cephalosporins - Cefoxitin	143	12
Cephalosporins - Cefpodoxime	143	31
Cephalosporins - Ceftazidim	143	11
Fluoroquinolones - Moxifloxacin	143	76
Fluoroquinolones - Norfloxacin	143	65
Nitroimidazoles and Nitrofurans - Nitrofurantoin	143	8
Penicillins - Amoxicillin / Clavulanic acid	143	12

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in All 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	143	
Antimicrobials:	N	n
Polymyxins - Colistin	143	16
Trimethoprim + Sulfonamides - Trimethoprim + Sulfamethoxazole	143	51

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in All animals - farmed - veterinary clinics - Surveillance - Unspecified - Not applicable - animal sample - blood - quantitative data [Dilution method]

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

E.coli, non-pathogenic, unspecified	All animals - farmed - veterinary clinics - Surveillance																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	105																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	105	4									5	77	19			1	3								
Aminoglycosides - Streptomycin	16	105	25												30	38	6	6	3	6	9	6	1			
Amphenicols - Chloramphenicol	16	105	10												8	46	39	2	1	1	1	3	4			
Cephalosporins - Cefotaxime	0.25	105	9							79	12	5	2				3	4								
Fluoroquinolones - Ciprofloxacin	0.06	105	22			8	50		22	3		1	1	1			5	14								
Penicillins - Ampicillin	8	105	43										5		14	33	10	2	1	1	39					
Quinolones - Nalidixic acid	16	105	21												37	43	2	2		1					20	
Sulfonamides	64	105	45														8	20	24	8	4					41
Tetracyclines - Tetracycline	8	105	37										10	23	29	5	1		2	11	24					
Trimethoprim	2	105	39									21	38	3	4				1	38						

E.coli, non-pathogenic, unspecified	All animals - farmed - veterinary clinics - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	105	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	512

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in All animals - farmed - veterinary clinics - Surveillance - Unspecified - Not applicable - animal sample - blood - quantitative data [Dilution method]

E.coli, non-pathogenic, unspecified	All animals - farmed - veterinary clinics - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	105	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol	2	256
Cephalosporins - Cefotaxime	0.06	8
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	2	512
Sulfonamides	8	1024
Tetracyclines - Tetracycline	0.5	64
Trimethoprim	0.25	32

Footnote:

Sulphamethoxazole was tested as a sulphonamide

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

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	2	
	Streptomycin	EFSA	16	
Amphenicols	Chloramphenicol	EFSA	16	
Cephalosporins	Cefotaxime	EFSA	0.25	
Fluoroquinolones	Ciprofloxacin	NON-EFSA	0.06	
Penicillins	Ampicillin	EFSA	8	
Quinolones	Nalidixic acid	EFSA	16	
Sulfonamides	Sulfonamides	NON-EFSA	64	
Tetracyclines	Tetracycline	EFSA	8	
Trimethoprim	Trimethoprim	EFSA	2	

Footnote:

Interpretation of results was done according to EUCAST epidemiological cut-off values

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 <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		16	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.25	
Fluoroquinolones	Ciprofloxacin		0.03	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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

Test Method Used	Standard methods used for testing

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		16	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.25	
Fluoroquinolones	Ciprofloxacin		0.03	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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 E. faecium in All animals - zoo animals - in total - Surveillance - Unspecified - Not applicable - animal sample - organ/tissue - quantitative data [Dilution method]

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

E. faecium	All animals - zoo animals - in total - Surveillance																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	10																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	32	10	3													1	5	1					3			
Aminoglycosides - Streptomycin	128	10	5														1	3		1			1		4	
Amphenicols - Chloramphenicol	32	10	0													8	1		1							
Fluoroquinolones - Ciprofloxacin	4	10	3										1	3	2	1			3							
Penicillins - Ampicillin	4	10	4											1	5				1		3					
Tetracyclines - Tetracycline	4	10	6										3	1						1	5					

E. faecium	All animals - zoo animals - in total - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	10	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	2	256

Table Antimicrobial susceptibility testing of E. faecium in All animals - zoo animals - in total - Surveillance - Unspecified - Not applicable - animal sample - organ/tissue - quantitative data [Dilution method]

E. faecium	All animals - zoo animals - in total - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	10	
Antimicrobials:	lowest	highest
Aminoglycosides - Streptomycin	8	1024
Amphenicols - Chloramphenicol	2	256
Fluoroquinolones - Ciprofloxacin	0.06	16
Penicillins - Ampicillin	0.5	128
Tetracyclines - Tetracycline	0.5	128

Footnote:

Vancomycin:
<=0.5= 6 isolates
1= 3 isolates
2= 1 isolates

Table Antimicrobial susceptibility testing of E. faecalis in All animals - unspecified - Surveillance - Unspecified - Not applicable - animal sample - quantitative data [Dilution method]

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

E. faecalis	All animals - unspecified - Surveillance																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	29																								
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	32	29	2													1	5	18	3				2			
Aminoglycosides - Streptomycin	512	28	5																5	17	1				5	
Amphenicols - Chloramphenicol	32	29	1													8	19		1			1				
Fluoroquinolones - Ciprofloxacin	4	29	4										1	20	4			1	3							
Penicillins - Ampicillin	4	29	0										2	9	16	2										
Tetracyclines - Tetracycline	4	29	17										11	1						10	7					
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	29	0										2	22	5											
Macrolides - Erythromycin	4	29	13										7	5	4				2	11						

E. faecalis	All animals - unspecified - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	29	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	2	256
Aminoglycosides - Streptomycin	4	512
Amphenicols - Chloramphenicol	2	256
Fluoroquinolones - Ciprofloxacin	0.06	16
Penicillins - Ampicillin	0.5	128

Table Antimicrobial susceptibility testing of E. faecalis in All animals - unspecified - Surveillance - Unspecified - Not applicable - animal sample - quantitative data [Dilution method]

E. faecalis	All animals - unspecified - Surveillance	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	29	
Antimicrobials:	lowest	highest
Tetracyclines - Tetracycline	0.5	128
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin		
Macrolides - Erythromycin		

Footnote:

Vancomycin:
1 = 22 isolates
2 = 5 isolates
<=0.5 = 2 isolates

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

Test Method Used	Standard methods used for testing
Disc diffusion Agar dilution	EUCAST

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		128	8
	Streptomycin		1512	19
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	12
Oxazolidines	Linezolid		4	19
Penicillins	Ampicillin		8	8
Trimethoprim	Trimethoprim		1	21

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

Test Method Used	Standard methods used for testing
Disc diffusion Agar dilution	EUCAST

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		128	8
	Streptomycin		1512	19
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	12
Oxazolidines	Linezolid		4	19
Penicillins	Ampicillin		8	8
Trimethoprim	Trimethoprim		1	21

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

Test Method Used	Standard methods used for testing
Disc diffusion Agar dilution	EUCAST

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		128	8
	Streptomycin		1512	19
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	12
Oxazolidines	Linezolid		4	19
Penicillins	Ampicillin		8	8
Streptogramins	Quinupristin/Dalfopristin		4	20
Trimethoprim	Trimethoprim		1	21

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

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

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

Footnote:

Ciprofloxacine breakpoint > 4mg/L

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	32	
	Streptomycin	EFSA	128	
Amphenicols	Chloramphenicol	EFSA	32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin	EFSA	4	
Macrolides	Erythromycin	EFSA	4	
Oxazolidines	Linezolid	EFSA	4	
Penicillins	Ampicillin	EFSA	4	
Streptogramins	Quinupristin/Dalfopristin	EFSA	1	
Tetracyclines	Tetracycline	NON-EFSA	4	

Footnote:

Ciprofloxacine breakpoint R > 4mg/L

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 ENTEROBACTER SAKAZAKII

4.1.1 General evaluation of the national situation

4.1.2 Cronobacter in foodstuffs

Table Cronobacter in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Cronobacter	Cronobacter sakazakii	Cronobacter spp, unspecified
Infant formula - ready-to-eat - at hospital or care home	INSA		HACCP and own checks	food sample	Domestic	Single	10ml	6	0		

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

4.2.2 Histamine in foodstuffs

Table Histamine in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units in non-conformity	<= 100 mg/kg	>100 - <= 200 mg/kg
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Batch		15	0		

	>200 - <= 400 mg/kg	> 400 mg/kg
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated - at processing plant - Surveillance		

4.3 STAPHYLOCOCCAL ENTEROTOXINS

4.3.1 General evaluation of the national situation

4.3.2 Staphylococcal enterotoxins in foodstuffs

A. Staphylococcal enterotoxins in foodstuffs

Additional information

Analytical method:
Milk and dairy products - VIDAS SET2 (European screening method of CRL, Milk and Milk Products, version 3, 2006 May).
Other products - VIDAS SET2 (AOAC validation).

Table Staphylococcal enterotoxins in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	6	0
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	28	0
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	1	0
Dairy products (excluding cheeses) - milk powder and whey powder - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	2	0
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	3	1
Cheeses made from goats' milk - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	7	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	11	0
Cheeses, made from mixed milk from cows, sheep and/or goats - fresh - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	1	0

Table Staphylococcal enterotoxins in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	DGAV	Objective sampling	Official sampling	food sample	Domestic	Single	25g	4	0

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.

A. Foodborne outbreaks

System in place for identification, epidemological investigations and reporting of foodborne outbreaks

*

Description of the types of outbreaks covered by the reporting:

*

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

*

Relevance of the different causative agents, food categories and the agent/food category combinations

*

Relevance of the different type of places of food production and preparation in outbreaks

*

Evaluation of the severity and clinical picture of the human cases

*

Descriptions of single outbreaks of special interest

*

Control measures or other actions taken to improve the situation

*

Suggestions to the European Union for the actions to be taken

*

Additional information

*

Table Foodborne Outbreaks: summarised data

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Salmonella - S. Typhimurium	0	unknown	unknown	unknown	0	0
Salmonella - S. Enteritidis	0	unknown	unknown	unknown	0	0
Salmonella - Other serovars	0	unknown	unknown	unknown	0	0
Campylobacter	0	unknown	unknown	unknown	0	0
Listeria - Listeria monocytogenes	0	unknown	unknown	unknown	0	0
Listeria - Other Listeria	0	unknown	unknown	unknown	0	0
Yersinia	0	unknown	unknown	unknown	0	0
Escherichia coli, pathogenic - Verotoxigenic E. coli (VTEC)	0	unknown	unknown	unknown	0	0
Bacillus - B. cereus	0	unknown	unknown	unknown	0	0
Bacillus - Other Bacillus	0	unknown	unknown	unknown	0	0
Staphylococcal enterotoxins	0	unknown	unknown	unknown	2	2
Clostridium - Cl. botulinum	0	unknown	unknown	unknown	2	2
Clostridium - Cl. perfringens	0	unknown	unknown	unknown	2	2

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Clostridium - Other Clostridia	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Brucella	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Shigella	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Other Bacterial agents	0	unknown	unknown	unknown	1	1
Parasites - Trichinella	0	unknown	unknown	unknown	0	0
Parasites - Giardia	0	unknown	unknown	unknown	0	0
Parasites - Cryptosporidium	0	unknown	unknown	unknown	0	0
Parasites - Anisakis	0	unknown	unknown	unknown	0	0
Parasites - Other Parasites	0	unknown	unknown	unknown	0	0
Viruses - Norovirus	0	unknown	unknown	unknown	0	0
Viruses - Hepatitis viruses	0	unknown	unknown	unknown	0	0
Viruses - Other Viruses	0	unknown	unknown	unknown	0	0
Other agents - Histamine	0	unknown	unknown	unknown	0	0
Other agents - Marine biotoxins	0	unknown	unknown	unknown	0	0
Other agents - Other Agents	0	unknown	unknown	unknown	0	0

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Unknown agent	0	unknown	unknown	unknown	0	0

Table Foodborne Outbreaks: detailed data for Clostridium

Please use CTRL for multiple selection fields

C. botulinum

	Value
FBO Code	
Number of outbreaks	1
Number of human cases	1
Number of hospitalisations	1
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	Unknown
Nature of evidence	Analytical epidemiological evidence
Outbreak type	Household / domestic kitchen
Setting	Unknown
Place of origin of problem	Unknown
Origin of food vehicle	Unknown
Contributory factors	Unknown
Mixed Outbreaks (Other Agent)	
Additional information	Botulism neurotoxin B was detected in human faeces according to CDC Atlanta specific procedures

C. perfringens

	Value
FBO Code	
Number of outbreaks	1
Number of human cases	50
Number of hospitalisations	0
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	Mushrooms Sauce (Mushrooms UHT cream added with fresh and dehydrated mushrooms)
Nature of evidence	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	Household / domestic kitchen
Setting	Household / domestic kitchen
Place of origin of problem	Household / domestic kitchen
Origin of food vehicle	Domestic
Contributory factors	Storage time/temperature abuse
Mixed Outbreaks (Other Agent)	Isolated also a stx gene positive strain of E.coli
Additional information	Also 03-Inadequate heat treatment

C. botulinum

	Value
FBO Code	
Number of outbreaks	1
Number of human cases	1
Number of hospitalisations	1
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	Unknown
Nature of evidence	Analytical epidemiological evidence
Outbreak type	Household / domestic kitchen
Setting	Unknown
Place of origin of problem	Unknown
Origin of food vehicle	Unknown
Contributory factors	Unknown
Mixed Outbreaks (Other Agent)	
Additional information	Botulism neurotoxin B was detected in human faeces according to CDC Atlanta specific procedures

C. perfringens

	Value
FBO Code	
Number of outbreaks	1
Number of human cases	unknown
Number of hospitalisations	unknown
Number of deaths	0
Food vehicle	Buffet meals
More food vehicle information	Meat patty fried
Nature of evidence	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	General
Setting	School, kindergarten
Place of origin of problem	Unknown
Origin of food vehicle	Domestic
Contributory factors	Storage time/temperature abuse
Mixed Outbreaks (Other Agent)	
Additional information	Also 03-Inadequate heat treatment

Table Foodborne Outbreaks: detailed data for Other Bacterial agents

Please use CTRL for multiple selection fields

Other

	Value
FBO Code	
Number of outbreaks	1
Number of human cases	40
Number of hospitalisations	40
Number of deaths	0
Food vehicle	Mixed food
More food vehicle information	Cooked pasta and fish, mixed
Nature of evidence	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	General
Setting	Residential institution (nursing home, prison, boarding school)
Place of origin of problem	Residential institution (nursing home, prison, boarding school)
Origin of food vehicle	Domestic
Contributory factors	Cross-contamination
Mixed Outbreaks (Other Agent)	
Additional information	E.coli positive for LT genes

Table Foodborne Outbreaks: detailed data for Staphylococcal enterotoxins

Please use CTRL for multiple selection fields

Enterotoxin A

	Value
FBO Code	
Number of outbreaks	1
Number of human cases	6
Number of hospitalisations	0
Number of deaths	0
Food vehicle	Mixed food
More food vehicle information	Duck rice covered with toasted cheese
Nature of evidence	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	General
Setting	Take-away or fast-food outlet
Place of origin of problem	Take-away or fast-food outlet
Origin of food vehicle	Domestic
Contributory factors	Storage time/temperature abuse
Mixed Outbreaks (Other Agent)	Y. enterocolitica (virulence gene yst); Y. kristensenii (virulence gene yst); C. perfringens (>10E4/g); B. subtilis/amyloliquefaciens (>10E7/g)
Additional information	Also 05-Cross contamination

Enterotoxin A

	Value
FBO Code	
Number of outbreaks	1
Number of human cases	37
Number of hospitalisations	0
Number of deaths	0
Food vehicle	Mixed food
More food vehicle information	Chicken mixed meal (chicken, potatoes, eggs, parsley)
Nature of evidence	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	General
Setting	Hospital/medical care facility
Place of origin of problem	Hospital/medical care facility
Origin of food vehicle	Domestic
Contributory factors	Infected food handler
Mixed Outbreaks (Other Agent)	
Additional information	Also 02-Storage time/temperature abuse