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 2010

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Portugal

Reporting Year:

Laboratory name	Description	Contribution
LNIV Laboratório Nacional de Investigação Veterinária	National Veterinary Laboratory	Data on zoonoses and zoonotic agents in food anda animals
DGV Direcção Geral de 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
Laboratorio do Algarve	Regional Veterinary Laboratory	Data on zoonoses and zoonotic agents in food

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Laboratory name	Description	Contribution
FMV - Faculdade de Medicina Veterinaria	Veterinary School in Lisbon	Data on zoonoses and zoonotic agents in animals
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 2010 .

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

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

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

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

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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

DGV - Direcção Geral de 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)	- in total			420681		1580895		65104	
Deer	farmed - in total					1726		175	
	- unspecified [1)]					1269			
Ducks	- in total					3559523		23	2007
Gallus gallus (fowl)	breeding flocks for egg production line - in total	15							
	broilers	12643							
	laying hens	301							
	breeding flocks for meat production line - in total	231							
	- in total			139186746					
Pigs	- in total			5900415		2812000		7979	
Solipeds, domestic	horses - in total			763		47600			
Turkeys	breeding flocks, unspecified - in total	0							
	- in total	1220		3826440					

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					1167		32	
Ostriches	- unspecified			28					
Quails	- unspecified			9354751				35	2007
Rabbits	- unspecified			7296519				170	
Sheep and goats	- unspecified			1140660		2486328		69906	

Comments:

[1)] Breeding

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	154	0	0	0	0	0	0
S. Enteritidis	76						
S. Typhimurium	78						

2.1.3 Salmonella in foodstuffs

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. 4,5:i:-	S. Derby	S. Hadar
Meat from broilers (Gallus gallus) - fresh - at processing plant [1)]	DGV	Single	25g	108	3			2		1	
Meat from broilers (Gallus gallus) - fresh - at retail	RAA	Batch	25g	25	0						
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	75	2				1		1
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant	DGV	Single	25g	36	0						
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail	ASAE	Batch	25g	304	8		3	5			
Meat from turkey - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	48	0						
Meat from turkey - meat products - cooked, ready-to -eat - at processing plant	DGV	Single	25g	34	0						
Meat from broilers (Gallus gallus) - fresh - skinned - at processing plant	DGV	Single	25g	108	0						

Comments:

[1)] neck skin

Table Salmonella in poultry meat and products thereof

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Cheeses made from cows' milk - at retail	ASAE	Batch	25g	15	0			
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant	DGV	Single	25g	15	0			
Cheeses made from goats' milk - at retail	ASAE	Batch	25g	80	0			
Cheeses made from goats' milk - soft and semi-soft - at retail	RAA	Batch	25g	185	0			
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant	DGV	Single	25g	67	0			
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at retail	ASAE	Batch	25g	422	3			3
Dairy products (excluding cheeses) - ice-cream - at retail	RAA	Batch	25g	75	0			
Dairy products (excluding cheeses) - milk powder and whey powder - at retail	ASAE	Batch	25g	95	0			
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant	DGV	Single	25g	13	0			
Cheeses made from cows' milk - unspecified	RAA	Batch	25g	134	0			
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant	DGV	Single	25g	23	0			
Cheeses, made from mixed milk from cows, sheep and/or goats - unspecified - made from pasteurised milk	ASAE	Batch	25g	35	0			

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Dairy products (excluding cheeses) - dairy desserts - chilled	ASAE	Batch	25g	15	0			

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Rissen
Crustaceans - unspecified - cooked - at processing plant	DGV	Single	25g	19	0				
Egg products - at processing plant	DGV	Single	25g	4	0				
Eggs - table eggs - at packing centre	DGV	Single	25g	66	1				1
Fruits and vegetables - precut - ready-to-eat	ASAE	Batch	25g	165	0				
Live bivalve molluscs	ASAE	Batch	25g	55	0				
Bakery products - desserts - containing raw eggs - at catering - Clinical investigations	INSA	Single	25g	1	1	1			
Dairy products (excluding cheeses) - milk powder and whey powder - at processing plant	DGV	Single	25g	10	0				
Live bivalve molluscs - unspecified - depurated - at processing plant	DGV	Single	25g	80	0				
Other food - at catering - Surveillance - official controls [1)]	INSA	Single	25g	2315	0				
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - chilled	ASAE	Batch	25g	170	0				

Comments:

[1)] Ready-to-eat mixed meal

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. 4,5:i:-	S. Derby	S. Give
Meat from bovine animals - fresh - at processing plant	DGV	Single	25g	55	0						
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	55	2		1			1	
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail	RAA	Batch	25g	185	0						
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant [1)]	INSA	Single	25g	1	1				1		
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail	ASAE	Batch	10g	173	5			5			
Meat from pig - fresh - at processing plant	DGV	Single	25g	58	6			2	1		2
Meat from pig - fresh - at retail	RAA	Single	25g	4	0						
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	74	8			2	3	1	
Meat from pig - meat preparation - intended to be eaten cooked - at retail	RAA	Batch	25g	80	0						
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	DGV	Single	25g	122	7			2	2	1	
Meat from pig - meat products - cooked, ready-to-eat - at retail	ASAE	Batch	25g	470	11		2	9			
Meat from pig - meat products - raw but intended to be eaten cooked - at retail	ASAE	Batch	25g	603	48		2	46			

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. 4,5:i:-	S. Derby	S. Give
Meat from pig - minced meat - intended to be eaten cooked - at retail	ASAE	Batch	10g	238	15		2	13			
Meat, mixed meat - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	33	3	1		2			
Meat, mixed meat - meat products - cooked, ready-to-eat - at processing plant	DGV	Single	25g	36	0						
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos) - carcass - at slaughterhouse - animal sample - carcass swabs	RAM	Slaughter batch	25g	425	2			2			

	S. Hadar	S. Kedougou	S. Rissen
Meat from bovine animals - fresh - at processing plant			
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant			
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail			
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant [1)]			
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail			

Table Salmonella in red meat and products thereof

	S. Hadar	S. Kedougou	S. Rissen
Meat from pig - fresh - at processing plant			1
Meat from pig - fresh - at retail			
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant		1	1
Meat from pig - meat preparation - intended to be eaten cooked - at retail			
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	1		1
Meat from pig - meat products - cooked, ready-to-eat - at retail			
Meat from pig - meat products - raw but intended to be eaten cooked - at retail			
Meat from pig - minced meat - intended to be eaten cooked - at retail			
Meat, mixed meat - meat preparation - intended to be eaten cooked - at processing plant			
Meat, mixed meat - meat products - cooked, ready-to-eat - at processing plant			
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos) - carcass - at slaughterhouse - animal sample - carcass swabs			

Comments:

[1)] clinical investigations

Table Salmonella in red meat and products thereof

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.

At the initiative of the operator sampling is done at the holding.

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 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 boot swabs representative of all parts of the house; all separate pens will be included.

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.

The operator may also sample every two weeks at the hatchery. For each breeding flock the sample consists of one composite sample of a visibly soiled hatcher basket liners taken at random from five separate hatcher baskets to reach a total of at least 1 m2.

In cases where hatchers basket liners are not used 10 g broken eggshells shall be taken from 25 separate hatcher baskets, crushed, mixed and a 25 g sub sample taken)

Meconium of 250 birds

50 dead birds in the shell

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 (64 weeks)

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

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
He 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. All separate pens within a house will be included in sampling.
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. 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. 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. 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)

Compulsive vaccination against Salmonella Enteritidis is done in the restocking, after the destruction 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. 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

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 their eggs 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, S. Hadar, S. Virchow and/ or S.Infantis than the flock will be under official restriction:

Flock surveillance (under official control)
Compulsory sanitary slaughter
Non incubated eggs must be destroyed or be treated
Compensation for owners about all destroyed eggs and animals.
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.

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 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

Methods of sampling (description of sampling techniques)

Broiler flocks: Before slaughter at farm

At least two pairs of boot/sock swabs shall be taken. For free range flocks of broilers, samples shall only be collected in the area inside the house.
All boot/sock swabs must be pooled into one sample.
In flocks with less than 100 broilers, where it is not possible to use boot/sock 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

Broiler flocks: Before slaughter at farm

A flock of broilers is considered positive where the presence of Salmonella enteritidis and/or Salmonella typhimurium (other than vaccine strains) 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 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;

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 250 ml containing at least 100 gram of dust from prolific sources of dust throughout the house. If there is not sufficient dust, an additional sample of 150 grams naturally pooled faeces or an additional pair of boot swabs or socks will be taken.

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

Dead chicks

Laying hens: Rearing period

Faeces

Laying hens: Production period

Environmental sample: faeces and dust

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
He must 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 250 ml containing at least 100 gram of dust from prolific sources of dust throughout the house. If there is not sufficient dust, an additional sample of 150 grams naturally pooled faeces or an additional pair of boot swabs or socks will be taken.

Case definition

Laying hens: Day-old chicks

At least one positive sample to S. Enteritidis and/or S. Typhimurium

Laying hens: Rearing period

At least one positive sample to S. Enteritidis and/or S. Typhimurium

Laying hens: Production period

At least one positive sample to S. Enteritidis and/or S. Typhimurium

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 Salmonella typhimurium 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/sock swabs shall be taken. For free range flocks, samples will only be collected in the area inside the house.
All boot/sock swabs must be pooled into one sample.
In flocks with less than 100 turkeys, where it is not possible to use boot/sock 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 (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 (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 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

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult	15	DGV	Flock	15	0	0	0	0	0	0	0
Gallus gallus (fowl) - parent breeding flocks for broiler production line - unspecified	231	DGV	Flock	231	2	0	0	0	0	0	0

	Salmonella spp., unspecified	S. Derby	S. IIIb 61:k:1,5,(7)
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult			
Gallus gallus (fowl) - parent breeding flocks for broiler production line - unspecified	0	1	1

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Pigeons	LNIV	Animal	52	18		18	
Birds - wild	LNIV	Animal	30	0			
Canary - pet animals	LNIV	Animal	4	0			
Parrots - zoo animals	LNIV	Animal	8	1		1	
Pigeons - at farm - environmental sample - boot swabs	RAA	Animal	6	0			

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. 4,5:i:-	S. Agoueve	S. Hadar
Cattle (bovine animals)	LNIV	Animal	75	1		1					
Goats	LNIV	Animal	22	0							
Pigs	LNIV	Animal	53	5	1	1			2		
Sheep	LNIV	Animal	34	1							1
Solipeds, domestic	LNIV	Animal	20	0							
Cats - pet animals	LNIV	Animal	11	0							
Cattle (bovine animals) - at farm - animal sample - organ/tissue - Clinical investigations	RAA	Animal	19	0							
Deer - wild	LNIV	Animal	3	0							
Dogs - pet animals	LNIV	Animal	13	0							
Dolphin - zoo animals	LNIV	Animal	5	0							
Goats - at farm - animal sample - organ/tissue - Clinical investigations	RAA	Animal	1	0							
Monkeys - zoo animal	LNIV	Animal	2	0							
Rabbits - farmed	LNIV	Animal	15	0							
Rabbits - farmed - at farm - animal sample - organ/tissue - Clinical investigations	RAA	Animal	5	0							
Snakes - zoo animal	LNIV	Animal	5	2						1	
Turtles - zoo animals	LNIV	Animal	3	3							
Zoo animals, all	LNIV	Animal	35	0							

Table Salmonella in other animals

	S. Heidelberg	S. IIIb 47:k	S. IIIb 61:c:1,5,(7)	S. Lome	S. Rissen	S. Sandiego
Cattle (bovine animals)						
Goats						
Pigs					1	
Sheep						
Solipeds, domestic						
Cats - pet animals						
Cattle (bovine animals) - at farm - animal sample - organ/tissue - Clinical investigations						
Deer - wild						
Dogs - pet animals						
Dolphin - zoo animals						
Goats - at farm - animal sample - organ/tissue - Clinical investigations						
Monkeys - zoo animal						
Rabbits - farmed						
Rabbits - farmed - at farm - animal sample - organ/tissue - Clinical investigations						
Snakes - zoo animal	1					
Turtles - zoo animals		1	1			1
Zoo animals, all						

Table Salmonella in other animals

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars	S. 4,5:i:-
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	301	DGV	Flock	262	22	5	1			2	
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry	301	DGV	Flock	202	10	1	1			2	
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	301	DGV	Flock	146	10	2	0			0	
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - suspect sampling	301	DGV	Flock	4	3	3					
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling	12643	DGV	Flock	7981	142	34	1			1	4
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes - official and industry sampling	0	DGV	Flock	0							
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official and industry sampling	1220	DGV	Flock	25	0	0	0	0	0		
Ducks - unspecified [1)]		LNIV	Animal	7	2		1				
Gallus gallus (fowl) - broilers - unspecified [2)]		LNIV	Animal	18	0						
Turkeys - unspecified [3)]		LNIV	Animal	2	0						

Table Salmonella in other poultry

	S. Braenderup	S. Brandenburg	S. Derby	S. Havana	S. Heidelberg	S. II 42:b:e,n,x,z15	S. IIIb 61:-:1,5,7	S. Indiana	S. Kedougou	S. Kentucky	S. Kottbus
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	1			1		1				1	
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry										1	
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	1			1		1					
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - suspect sampling											
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling		2	3	42	2	1	1	1	1		1
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes - official and industry sampling											
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official and industry sampling											
Ducks - unspecified [1)]					1						
Gallus gallus (fowl) - broilers - unspecified [2)]											
Turkeys - unspecified [3)]											

Table Salmonella in other poultry

	S. Lexington	S. Mbandaka	S. Montevideo	S. Newport	S. Ohio	S. Rissen	S. Senftenberg	S. Tennessee	S. Virchow
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	3		2	1	1		1	1	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry	1		2	1			1		
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	2				1			1	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - suspect sampling									
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling		43		1		1	2	1	
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes - official and industry sampling									
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official and industry sampling									
Ducks - unspecified [1)]									
Gallus gallus (fowl) - broilers - unspecified [2)]									
Turkeys - unspecified [3)]									

Comments:

Table Salmonella in other poultry

Comments:

[1)] not relevant the number of existing flocks

[2)] not relevant the number of existing flock

[3)] not relevant the number of existing flock

2.1.5 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Lexington
Compound feedingstuffs for cattle - final product	LNIV	Batch	25g	38	0				
Compound feedingstuffs for pigs - final product	LNIV	Batch	25g	57	1				1
Compound feedingstuffs for poultry - laying hens - final product	LNIV	Batch	25g	8	0				
Compound feedingstuffs for poultry - broilers - final product	LNIV	Batch	25g	15	0				
Pet food - dog snacks (pig ears, chewing bones)	LNIV	Batch	25g	5	0				
Compound feedingstuffs for fish - final product	LNIV	Batch	25g	1	0				
Compound feedingstuffs for horses - final product	LNIV	Batch	25g	4	0				
Compound feedingstuffs for rabbits - final product	LNIV	Batch	25g	5	0				
Compound feedingstuffs for sheep - final product	LNIV	Batch	25g	11	0				
Compound feedingstuffs for turkeys - final product	LNIV	Batch	25g	8	0				

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	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of isolates per serovar													
Other serovars													
S. 4,5:i:-													
S. Braenderup													
S. Brandenburg													
S. Derby													
S. Enteritidis													

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	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of isolates per serovar													
S. Havana													
S. Heidelberg													
S. II 42:z:e,n,x,z15													
S. IIIb 61:-:1,5,7													
S. IIIb 61:k:1,5,(7)													
S. Indiana													
S. Kedougou													
S. Kentucky													
S. Kottbus													
S. Lexington													
S. Mbandaka													

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	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of isolates per serovar													
S. Montevideo													
S. Newport													
S. Ohio													
S. Rissen													
S. Senftenberg													
S. Tennessee													
S. Typhimurium													
S. Virchow													

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - at farm - environmental sample - boot swabs - Control and eradication programmes - official and industry sampling				Gallus gallus (fowl) - broilers - before slaughter - at farm - environmental sample - boot swabs - Control and eradication programmes				Gallus gallus (fowl) - laying hens - at farm - environmental sample - Control and eradication programmes	
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				2				142				34	
Number of isolates serotyped	0	0	0	2	0	0	0	142	0	0	0	34	0
Number of isolates per serovar													
Other serovars								1				3	
S. 4,5:i:-								4				0	
S. Braenderup												1	
S. Brandenburg								2				0	
S. Derby				1				3				0	
S. Enteritidis								34				14	
S. Havana								42				2	
S. Heidelberg								2				0	
S. II 42:z:e,n,x,z15								1				1	
S. IIIb 61:-:1,5,7								1				0	

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - at farm - environmental sample - boot swabs - Control and eradication programmes - official and industry sampling				Gallus gallus (fowl) - broilers - before slaughter - at farm - environmental sample - boot swabs - Control and eradication programmes				Gallus gallus (fowl) - laying hens - at farm - environmental sample - Control and eradication programmes	
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				2				142				34	
Number of isolates serotyped	0	0	0	2	0	0	0	142	0	0	0	34	0
Number of isolates per serovar													
S. IIIb 61:k:1,5,(7)				1								0	
S. Indiana								1				0	
S. Kedougou								1				0	
S. Kentucky												1	
S. Kottbus								1				0	
S. Lexington												3	
S. Mbandaka								43				0	
S. Montevideo												2	
S. Newport								1				1	
S. Ohio												1	

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - at farm - environmental sample - boot swabs - Control and eradication programmes - official and industry sampling				Gallus gallus (fowl) - broilers - before slaughter - at farm - environmental sample - boot swabs - Control and eradication programmes				Gallus gallus (fowl) - laying hens - at farm - environmental sample - Control and eradication programmes	
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				2				142				34	
Number of isolates serotyped	0	0	0	2	0	0	0	142	0	0	0	34	0
Number of isolates per serovar													
S. Rissen								1				0	
S. Senftenberg								2				1	
S. Tennessee								1				1	
S. Typhimurium								1				2	
S. Virchow												1	

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - at farm - environmental sample - Control and eradication programmes	
Sources of isolates	Clinical	Surveillance
Number of isolates in the laboratory		
Number of isolates serotyped	0	0
Number of isolates per serovar		
Other serovars		
S. 4,5:i:-		
S. Braenderup		
S. Brandenburg		
S. Derby		
S. Enteritidis		
S. Havana		
S. Heidelberg		
S. II 42:z:e,n,x,z15		
S. IIIb 61:-:1,5,7		

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - at farm - environmental sample - Control and eradication programmes	
Sources of isolates	Clinical	Surveillance
Number of isolates in the laboratory		
Number of isolates serotyped	0	0
Number of isolates per serovar		
S. IIIb 61:k:1,5,(7)		
S. Indiana		
S. Kedougou		
S. Kentucky		
S. Kottbus		
S. Lexington		
S. Mbandaka		
S. Montevideo		
S. Newport		
S. Ohio		

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - at farm - environmental sample - Control and eradication programmes	
Sources of isolates	Clinical	Surveillance
Number of isolates in the laboratory		
Number of isolates serotyped	0	0
Number of isolates per serovar		
S. Rissen		
S. Senftenberg		
S. Tennessee		
S. Typhimurium		
S. Virchow		

2.1.7 Antimicrobial resistance in Salmonella isolates

Table Antimicrobial susceptibility testing of S. Typhimurium in Meat from pig - fresh - quantitative data [Dilution method]

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

S. Typhimurium	Meat from pig - fresh																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	27																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	27	15										4	6	2		1	1	11	2				2	256
Amphenicols - Florfenicol	16	27	12										9	3	3	1	9	1	1					1	128
Tetracyclines - Tetracycline	8	27	24									3				9	2	13						0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	27	4		11	10	2	1	2	1														0.008	8
Quinolones - Nalidixic acid	16	27	2									2	17	5	1				2					2	256
Trimethoprim	2	27	4						22	1							4							0.25	32
Aminoglycosides - Streptomycin	16	27	18										4	2	3	2	7	5	4					2	256
Aminoglycosides - Gentamicin	2	27	2						5	18	2				2									0.25	32
Penicillins - Ampicillin	4	27	21								3	2	1					21						0.5	64
Cephalosporins - Cefotaxim	0.5	27	0				17	7	3															0.06	8
Sulphonamides - Sulfamethoxazol	256	27	22	2												3							22	8	1024

Footnote:

Chloramphenicol - 2 isolates with a concentration ≥ 512;
Florfenicol - 1 isolate with a concentration ≥ 256;
Tetracycline - 13 isolate with a concentration ≥ 128;
Nalidixic acid - 2 isolates with a concentration ≤ 2;
Trimethoprim - 1 isolate with a concentration ≤ 0.25 and 4 isolates with a concentration ≥ 64;
Gentamicin - 5 isolates with a concentration ≤ 0.25;
Cefotaxim - 17 isolates with a concentration ≤ 0.06;
Ampicilin - 21 isolates with a concentration ≥ 128.

Table Antimicrobial susceptibility testing of S. Derby in Meat from pig - fresh - quantitative data [Dilution method]

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

S. Derby	Meat from pig - fresh																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	9																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	9	0									1	2	6										2	256
Amphenicols - Florfenicol	16	9	0										2	7										1	128
Tetracyclines - Tetracycline	8	9	8								1							8						0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	9	0	1	5	3																		0.008	8
Quinolones - Nalidixic acid	16	8	0										8											2	256
Trimethoprim	2	9	0						9															0.25	32
Aminoglycosides - Streptomycin	16	9	4										2	2	1			4						2	256
Aminoglycosides - Gentamicin	2	9	0						3	6														0.25	32
Penicillins - Ampicillin	4	9	0								2	7												0.5	64
Cephalosporins - Cefotaxim	0.5	9	0				3	6																0.06	8
Sulphonamides - Sulfamethoxazol	256	9	4											1		4							4	8	1024

Footnote:

Chloramphenicol - 1 isolate with a concentration ≤ 2;
Tetracycline - 8 isolates with a concentration ≥ 128;
Trimethoprim - 1 isolate with a concentration ≤ 0.25;
Sulfamethoxazol - 1 isolate with a concentration ≤ 8:
Gentamicin - 3 isolates with a concentration ≤ 0.25;
Cefotaxim - 3 isolates with a concentration ≤ 0.06.

Table Antimicrobial susceptibility testing of S. Typhimurium in Meat from poultry, unspecified - fresh - quantitative data [Dilution method]

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

S. Typhimurium	Meat from poultry, unspecified - fresh																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	2																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	2	1											1			1							2	256
Amphenicols - Florfenicol	16	2	0											1	1									1	128
Tetracyclines - Tetracycline	8	2	1									1						1						0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																		0.008	8
Quinolones - Nalidixic acid	16	2	0										2											2	256
Trimethoprim	2	2	1						1								1							0.25	32
Aminoglycosides - Streptomycin	16	2	0										1		1									2	256
Aminoglycosides - Gentamicin	2	2	0						1	1														0.25	32
Penicillins - Ampicillin	4	2	1									1						1						0.5	64
Cephalosporins - Cefotaxim	0.5	2	0				1	1																0.06	8
Sulphonamides - Sulfamethoxazol	256	2	1														1					1			

Footnote:

Tetracycline - 1 isolate with a concentration ≥ 128;
Trimethoprim - 1 isolate with a concentration ≤ 0.25 and 1 isolate with a concentration ≥ 64;
Gentamicin - 1 isolate with a concentration ≤ 0.25;
Cefotaxim - 1 isolate with a concentration ≤ 0.06;
Ampicilin - 13 isolates with a concentration ≥ 128.

Table Antimicrobial susceptibility testing of S. Typhimurium in Meat from bovine animals - fresh - quantitative data [Dilution method]

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

S. Typhimurium	Meat from bovine animals - fresh																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	8																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	8	5										1	2				1	3	1				2	256
Amphenicols - Florfenicol	16	8	3										3	2		1	2							1	128
Tetracyclines - Tetracycline	8	8	8													3		5						0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	8	0	1	4	2	1																	0.008	8
Quinolones - Nalidixic acid	16	8	0										7	1										2	256
Trimethoprim	2	8	0						8															0.25	32
Aminoglycosides - Streptomycin	16	8	7												1		3	3		1				2	256
Aminoglycosides - Gentamicin	2	8	0						3	5														0.25	32
Penicillins - Ampicillin	4	8	8															8						0.5	64
Cephalosporins - Cefotaxim	0.5	8	0				5	3																0.06	8
Sulphonamides - Sulfamethoxazol	256	8	8																				8	8	1024

Footnote:

Chloranphenicol - 1 isolate with a concentration ≥ 512;
Tetracycline - 5 isolates with a concentration ≥ 128;
Trimethoprim - 8 isolates with a concentration ≤ 0.25;
Gentamicin -3 isolates with a concentration ≤ 0.25;
Cefotaxim - 5 isolates with a concentration ≤ 0.06;
Ampicilin - 8 isolates with a concentration ≥ 128.

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

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

S. Enteritidis	Gallus gallus (fowl) - broilers - unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	56																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	56	0										40	16									2	256
Amphenicols - Florfenicol	16	56	0									1	36	16	3								1	128
Tetracyclines - Tetracycline	8	56	20							1	13	19	3				1	19					0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	56	54	1			1	26	24	3	1												0.008	8
Quinolones - Nalidixic acid	16	56	55									1							11	44			2	256
Trimethoprim	2	56	17						20	19							17						0.25	32
Aminoglycosides - Streptomycin	16	56	0									37	3	16									2	256
Aminoglycosides - Gentamicin	2	56	0						29	26	1												0.25	32
Penicillins - Ampicillin	4	56	2							1	6	30	17	1				1					0.5	64
Cephalosporins - Cefotaxim	0.5	56	0				20	34	2														0.06	8
Sulphonamides - Sulfamethoxazol	256	56	19													16	20	1				19	8	1024

Footnote:

Tetracycline - 19 isolates with a concentration ≥ 128;
Nalidixic acid - 1 isolate with a concentration ≤ 2 and 25 isolates with a concentration ≥ 512;
Trimethoprim - 20 isolates with a concentration ≤ 0.025 and 17 isolates with a concentration ≥ 64;
Sulfamethoxazol - 19 isolates with a concentration ≥ 2048;
Streptomicin - 36 isolates with a concentration ≤ 2;
Gentamicin - 29 isolates with a concentration ≤ 0.25;
Cefotaxim -20 isolates with a concentration ≤ 0.06;
Ampicilin - 1 isolate with a concentration ≤ 0.5 and 1 isolate with a concentration ≥ 128.

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

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

S. Enteritidis	Gallus gallus (fowl) - laying hens																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	3																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	3	0										2	1									2	256
Amphenicols - Florfenicol	16	3	0										1	2									1	128
Tetracyclines - Tetracycline	8	3	0									2	1										05	64
Fluoroquinolones - Ciprofloxacin	0.06	3	2			1		1	1														0.008	8
Quinolones - Nalidixic acid	16	3	2										1						1	1			2	256
Trimethoprim	2	3	0						1	2													0.25	32
Aminoglycosides - Streptomycin	16	3	0									3											2	256
Aminoglycosides - Gentamicin	2	3	0						3														0.25	32
Penicillins - Ampicillin	4	3	0									2	1										0.5	64
Cephalosporins - Cefotaxim	0.5	3	0				2	1															0.06	8
Sulphonamides - Sulfamethoxazol	256	3	0													2	1						8	1024

Footnote:

Trimethoprim - 1 isolate with a concentration ≤ 0.25;
Streptomycin - 3 isolates with a concentration ≤ 2;
Streptomycin - 3 isolates with a concentration ≤ 0.25;
Cefotaxim - 2 isolate2 with a concentration ≤ 0.06.

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

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

S. Typhimurium	Gallus gallus (fowl) - broilers - unspecified																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	9																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	9	2									1	3	3			1	1						2	256
Amphenicols - Florfenicol	16	9	1									1	4	2	1				1					1	128
Tetracyclines - Tetracycline	8	9	4						1				4					4						0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	9	1	1	3	4			1															0.008	8
Quinolones - Nalidixic acid	16	9	1									2	4	2						1				2	256
Trimethoprim	2	9	0						9															0.25	32
Aminoglycosides - Streptomycin	16	9	4										2	3		1	1		1	1				2	256
Aminoglycosides - Gentamicin	2	9	0						1	7	1													0.25	32
Penicillins - Ampicillin	4	8	5							1		2		2				3						0.5	64
Cephalosporins - Cefotaxim	0.5	9	0				5	4																0.06	8
Sulphonamides - Sulfamethoxazol	256	9	4												1	3	1						4	8	1024

Footnote:

Chloramphenicol - 1 isolate with a concentration ≤ 2;
Florfenicol - 1 isolate with a concentration ≥ 256;
Tetracycline - 1 isolate with a concentration ≤ 0.25 and 4 isolates with a concentration ≥ 128;
Nalidixic acid - 2 isolates with a concentration ≤ 2 and 1 isolate with a concentration ≥ 512;
Trimethoprim - 9 isolates with a concentration ≤ 0.25;
Sulfamethoxazol - 4 isolates with a concentration ≥ 2048;
Gentamicin - 1 isolate with a concentration ≤ 0.25;
Cefolatim - 5 isolate with a concentration ≤ 0.06;
Ampicilin - 1 isolate with a concentration ≤ 0.5 and 3 isolates with a concentration ≥ 128.

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

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

S. Typhimurium	Gallus gallus (fowl) - laying hens																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0										1											2	256
Amphenicols - Florfenicol	16	1	0										1											1	128
Tetracyclines - Tetracycline	8	1	0									1												0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	1	1						1															0.008	8
Quinolones - Nalidixic acid	16	1	1																	1				2	256
Trimethoprim	2	1	0							1														0.25	32
Aminoglycosides - Streptomycin	16	1	0									1												2	256
Aminoglycosides - Gentamicin	2	1	0							1														0.25	32
Penicillins - Ampicillin	4	1	0										1											0.5	64
Cephalosporins - Cefotaxim	0.5	1	0					1																0.06	8
Sulphonamides - Sulfamethoxazol	256	1	0													1								8	1024

Footnote:

Streptomycine - 1 isolate with a concentration ≤ 2.

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

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

Other serovars	Gallus gallus (fowl) - laying hens																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	13																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	13	0										4	9									2	256
Amphenicols - Florfenicol	16	13	0										4	9									1	128
Tetracyclines - Tetracycline	8	13	2								4	5	2			1		1					0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	13	1		5	6	1		1														0.008	8
Quinolones - Nalidixic acid	16	13	1									4	8							1			2	256
Trimethoprim	2	13	0						10	2	1												0.25	32
Aminoglycosides - Streptomycin	16	13	0									8	2	1	2								2	256
Aminoglycosides - Gentamicin	2	13	0						7	6													0.25	32
Penicillins - Ampicillin	4	13	2							1	6	2	2	1				1					0.5	64
Cephalosporins - Cefotaxim	0.5	13	0				6	6	1														0.06	8
Sulphonamides - Sulfamethoxazol	256	13	0											1	2	6	4						8	1024

Footnote:

Tetracycline - 1isolate with a concentration ≥ 128;
Nalidixic acid - 4 isolates with a concentration ≤ 2;
Trimethoprim - 10 isolates with a concentration ≤ 0.25;
Sulfamethoxazol - 4 isolates with a concentration ≤ 8;
Streptomicin - 8 isolates with a concentration ≤ 2;
Gentamicin - 7 isolates with a concentration ≤ 0.25;
Cefotaxim - 6 isolates with a concentration ≤ 0.06;
Ampicilin - 1 isolate with a concentration ≤ 0.5 and 1 isolate with a concentration ≥ 128.

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

Test Method Used
Agar dilution

Standard methods used for testing
NCCLS/CLSI

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

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

Test Method Used	Standard methods used for testing

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

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

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

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

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

2.2 CAMPYLOBACTERIOSIS

2.2.1 General evaluation of the national situation

A. Thermophilic Campylobacter general evaluation

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

There is no official program for this zoonosis.

Additional information

There is no official program for this zoonosis.

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

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	10	7	3	47	34	13			
1 to 4 years	8	7	1	67	40	27			
5 to 14 years	7	5	2	26	11	15			
15 to 24 years	0	0	0	0	0	0			
25 to 44 years	3	2	1	3	2	1			
45 to 64 years	2	2	0	5	0	5			
65 years and older	2	1	1	7	5	2			
Age unknown	3	0	3	4	0	4			
Total :	35	24	11	159	92	67	0	0	0

2.2.3 Campylobacter in foodstuffs

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from bovine animals - fresh - at processing plant	DGV	Single	25g	55	0					
Meat from pig - fresh - at processing plant	DGV	Single	25g	58	1					1
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	55	0					
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	74	0					
Meat, mixed meat - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	33	0					

Table Campylobacter in poultry meat

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified	C. fetus
Meat from broilers (Gallus gallus) - fresh - at processing plant	DGV	Single	25g	108	21	2	2			17	
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	75	10	2	2			5	1
Meat from turkey - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	48	0						

2.2.4 Antimicrobial resistance in Campylobacter isolates

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

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

C. coli	Meat from broilers (Gallus gallus) - fresh																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	4																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Tetracyclines - Tetracycline	2	4	4												4									0.125	16
Fluoroquinolones - Ciprofloxacin	1	4	4										1	3										0.06	8
Quinolones - Nalidixic acid	32	4	4														2	1	1					2	256
Aminoglycosides - Streptomycin	4	4	0							2	2													0.5	32
Aminoglycosides - Gentamicin	2	4	0							3	1													0.12	16
Penicillins - Ampicillin	4	4	3							1							3							0.5	64
Macrolides - Erythromycin	16	4	3							1							3							0.5	64

Footnote:

Tetracycline - 4 isolates with a concentration ≥ 16;
Ciproflotaxin - 2 isolates with a concentration ≥ 8;
Erythromycin - 1 isolate with a concentration ≤ 0.5 and 2 isolates with a concentration ≥ 64;
Ampicilin - 2 isolates with a concentration ≥ 64.

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

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

C. jejuni	Meat from broilers (Gallus gallus) - fresh																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	4																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Tetracyclines - Tetracycline	2	4	4										1					1	2					0.12	16
Fluoroquinolones - Ciprofloxacin	1	4	3				1							3										0.06	8
Quinolones - Nalidixic acid	32	4	3										1					1	2					2	256
Aminoglycosides - Streptomycin	4	4	0							1	2	1												0.5	32
Aminoglycosides - Gentamicin	2	4	0							4														0.12	16
Penicillins - Ampicillin	4	4	0							3		1												0.5	64
Macrolides - Erythromycin	16	4	0							3		1												0.5	64

Footnote:

Ciproflotaxin - 1 isolate with a concentration ≤ 0.06 and 3 isolates with a concentration ≥ 8;
Streptomicin - 1 isolate with a concentration ≤ 0.5;
Erythromycin - 3 isolates with a concentration ≤ 0.5;
Ampicilin - 3 isolates with a concentration ≤ 0.5.

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 <=
Tetracyclines	Tetracycline		2	
Fluoroquinolones	Ciprofloxacin		1	
Aminoglycosides	Gentamicin		2	
	Streptomycin		4	
Macrolides	Erythromycin		16	

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used
Agar dilution

Standard methods used for testing
NCCLS/CLSI

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

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

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

Test Method Used	Standard methods used for testing

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

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

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

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

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
Age unknown	25	9	16			
Total :	25	9	16	0	0	0

Footnote:

we have some problems with this data if possible we sent you later

2.3.3 Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses made from cows' milk - hard - made from pasteurised milk - at retail	ASAE	Batch	25g	15	0	0		15	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant	DGV	Single	25g	15	0	15	0	15	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail	ASAE	Batch	25g	50	0	0		50	0	0
Cheeses made from goats' milk - hard - made from raw or low heat-treated milk - at retail	ASAE	Batch	25g	80	0	0		80	0	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at retail	ASAE	Batch	25g	31	8	0		31	0	8
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at retail	ASAE	Batch	25g	452	21	0		452	0	21
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant	DGV	Single	25g	67	5	67	5	67	2	3
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant	DGV	Single	25g	13	0	13	0	13	0	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant	DGV	Single	25g	23	3	23	3	23	1	2
Cheeses, made from mixed milk from cows, sheep and/or goats - unspecified - made from pasteurised milk	ASAE	Batch	25g	35	0	0		35	0	0

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Dairy products (excluding cheeses) - dairy desserts - chilled	ASAE	Batch	25g	85	0	0		85	0	0
Dairy products (excluding cheeses) - milk powder and whey powder	ASAE	Batch	25g	95	0	0		95	0	0

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Crustaceans - unspecified - cooked - at processing plant	DGV	Single	25g	19	2	19	2	19	2	0
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant	DGV	Single	25g	36	1	36	1	36	1	0
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	DGV	Single	25g	122	11	122	11	122	9	2
Meat from pig - meat products - cooked, ready-to-eat - at retail	ASAE	Batch	25g	1345	15	0	0	1345	0	15
Bakery products - cakes	ASAE	Batch	25g	335	0	0		335	0	0
Meat from turkey - meat products - cooked, ready-to-eat - at processing plant	DGV	Single	25g	34	4	34	4	34	4	0
Meat, mixed meat - meat products - cooked, ready-to-eat - at processing plant	DGV	Single	25g	18	1	18	1	18	1	0
Other food - at catering - Surveillance - official controls [1)]	INSA	Single	25g	2315	13	2315	13	2315	2	1
Other processed food products and prepared dishes - unspecified - ready-to-eat foods - chilled	ASAE	Batch	25g	567	3	0		567	0	3

Comments:

[1)] ready to eat mixed meal

2.3.4 Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals)	LNIV	Animal	12	2	2	
Cattle (bovine animals) - dairy cows	RAA	Animal	1	0		
Goats	LNIV	Animal	6	0		
Sheep	LNIV	Animal	6	0		
Cattle (bovine animals) - unspecified - at farm - animal sample - organ/tissue - Clinical investigations	RAA	Animal	18	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 Escherichia coli, pathogenic in foodstuffs

Table VT E. coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	55	0			
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	74	0			

2.4.3 Escherichia coli, pathogenic in animals

Table VT E. coli in animals

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Cats	LNIV	Animal		11	0			
Cattle (bovine animals)	LNIV	Animal		75	0			
Dogs	LNIV	Animal		13	0			
Goats - at farm	LNIV	Animal		22	0			
Pigs	LNIV	Animal		53	0			
Sheep - at farm	LNIV	Animal		34	0			
Solipeds, domestic	LNIV	Animal		20	0			

2.5 TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1 General evaluation of the national situation

2.5.2 Tuberculosis, mycobacterial diseases in humans

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		
Total :	0	0	0

2.5.3 Mycobacterium in animals

A. Mycobacterium bovis in bovine animals

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 Laboratório Nacional de Investigação Veterinária (LNIV).

Diagnostic techniques:

- Internal method.

- direct smear

- solid media: stonebrink and Lowenstein-Jensen.

- liquid media: bactec.

The classification of Mycobacterium is based on: BM techniques.

LNIV 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 DGV.

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 mouvements 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 Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified	M. avium complex	M. avium complex - M. avium subsp. avium	M. caprae	M. intracellulare
Badgers	LNIV	Animal	4	2			1		1		
Goats	LNIV	Animal	19	13	2					11	
Pigs	LNIV	Animal	18	5	3				2		
Sheep	LNIV	Animal	4	0							
Zoo animals, all	LNIV	Animal	4	0							
Birds - wild	LNIV	Animal	17	1					1		
Deer - wild	LNIV	Animal	72	59	56			3			
Foxes - wild	LNIV	Animal	31	5			1	3			1
Wild boars - wild	LNIV	Animal	87	70	59		3	5		1	2

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	51686	39247	34401	312	254	13	4.17	87.65	.91	.74
Região Autónoma dos Açores	10851	10828	1134	8	6	0	0	10.47	.71	.53
Total : [1)]	62537	50075	35535	320	260	13	4.06	70.96	.9	.73
Total - 1	66744	42698	38807	76	59	4	5.26	90.89	.2	.15

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	1256419	1129075	832408	832408	2702	2710	3883	73.72	.32
Região Autónoma dos Açores	264997	254495	33351	33351	65	65	75	13.1	.19
Total : [1)]	1521416	1383570	865759	865759	2767	2775	3958	62.57	.32
Total - 1	1534682	1239892	848900	848900	885	663	763	68.47	.1

Comments:

[1)] N.A.

Footnote:

The number of animals tested was higher than the initially planned number of animals to test under the program

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	51686	1256419	0	0	43	6429	208	20058	167	13652	0	0	51268	1216280
Região Autónoma dos Açores	10851	264997	0	0	1	257	1	36	0	0	0	0	10849	264704
Total : [1)]	62537	1521416	0	0	44	6686	209	20094	167	13652	0	0	62117	1480984
Total - 1	42698	1239892	0	0	23	2236	156	12564	86	3759	0	0	66479	1516123

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
Age unknown							14	10	4
Total :	0	0	0	0	0	0	14	10	4

2.6.3 Brucella in foodstuffs

Table Brucella in food

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis	Brucella spp., unspecified
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant	DGV	Single	13	0				
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant	DGV	Single	23	0				

2.6.4 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 4 islands (Graciosa, Pico, Flores and Corvo) that are Officially Bovine Brucellosis Free, according to Comission Decision 2002/588/CE of the 11 July 2002.

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

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 DGV.

Measures in case of the positive findings or single cases

Suspected Herd:
- Herd under oficial surveillance;
- Epidemiological questionaire;
- Animal mouvements 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 mouvements are forbiden from and to the herd;
- Serological control of all remaining animals;
- Thermic treatment of the milk.

Infected Herd:
- All mesures mencioned for positive herds;
- Desinfection of all premises, equipment and materials.

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 64/432/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 64/432/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 goats and sheeps with ReV1 is beeing done in some regions: In Entre-Douro e Minho, Beira Litoral, Beira Interior and Algarve only in young animals and in Trás-Os-Montes in adults and youngs.

Other preventive measures than vaccination in place

Pre-movement tests are mandatory for breeding animals and 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 DGV.

Measures in case of the positive findings or single cases

Suspected Herd:
- Herd under oficial surveillance;
- Epidemiological questionaire;
- Animal mouvements 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 mouvements are forbiden from and to the herd;
- Serological control of all remaining animals;
- Thermic treatment of the milk.

Infected Herd:
- All mesures mencioned for positive herds;
- Desinfection of all premises, equipment and materials.

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 unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis	Brucella spp., unspecified
Pigs	LNIV	Animal	7	0				
Deer - wild	LNIV	Animal	63	0				
Wild boars	LNIV	Animal	85	5			5	
Zoo animals, all	LNIV	Animal	5	0				

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	51686	38806	36961	179	115	11	6.15	95.25	.48	.31
Região Autónoma dos Açores	10851	5640	4952	56	28	1	1.79	87.8	1.13	.57
Total : [1)]	62537	44446	41913	235	143	12	5.11	94.3	.56	.34
Total - 1	66740	46016	49009	351	254	13	3.7	106.5	.72	.52

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	69005	69005	66345	841	374	17	2.02	96.15	1.27	.56
Total : [1)]	69005	69005	66345	841	374	17	2.02	96.15	1.27	.56
Total - 1	72249	72249	68252	919	348	31	3.37	94.47	1.35	.51

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	1256419	961318	803933	803933	973	931	1379	83.63	.12
Região Autónoma dos Açores	264997	135575	156516	108878	385	388	476	115.45	.25
Total : [1)]	1521416	1096893	960449	912811	1358	1319	1855	87.56	.14
Total - 1	1514555	1142509	1052572	1007265	1839	1918	2384	92.13	.17

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	2476829	2476829	2334989	1902443	7715	6836	8646	94.27	.33
Total : [1)]	2476829	2476829	2334989	1902443	7715	6836	8646	94.27	.33
Total - 1	2638268	2638268	2330683	1950610	7940	7505	10204	88.34	.34

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	38806	961318	0	0	31	2561	285	8418	166	4340	2698	39021	48506	1202079
Região Autónoma dos Açores	5640	135575	0	0	7	419	27	2728	34	1898	8149	200473	2634	59479
Total : [1)]	44446	1096893	0	0	38	2980	312	11146	200	6238	10847	239494	51140	1261558
Total - 1	46016	1142509	0	0	66	5301	1093	16501	234	7069	9570	185700	55777	1299984

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	901	9499	899	99.78	0	0	388	3123	2	1	1	1	0	0
Total : [1)]	901	9499	899	99.78	0	0	388	3123	2	1	1	1	0	0

Comments:

[1)] N.A.

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

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

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		
Região Autónoma dos Açores [1)]	2567	59479	2567	100	0	0	1630	22606	0	134	447	0	4	0	0	0	0	0	0	0	0
Total : [2)]	2567	59479	2567	100	0	0	1630	22606	0	134	447	0	4	0	0	0	0	0	0	0	0

Comments:

[1)] Ilhas de Santa Maria, Pico, Graciosa, Faial, Flores e Corvo

[2)] 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	69005	2476829	0	0	281	35840	1732	87469	965	37237	7000	431744	59027	1884539
Total : [1)]	69005	2476829	0	0	281	35840	1732	87469	965	37237	7000	431744	59027	1884539
Total - 1	72249	2638268	0	0	355	38604	3175	130341	617	39316	7346	432808	60756	1997199

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 - O:3	1					
Y. enterocolitica - O:9	4					

Table Yersinia in humans - Age distribution

Age distribution	Y. enterocolitica			Yersinia spp., unspecified		
	All	M	F	All	M	F
Age unknown	4	1	3			
Total :	4	1	3	0	0	0

2.7.3 Yersinia in foodstuffs

Table Yersinia in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp., unspecified	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - Y. enterocolitica, unspecified
Meat from bovine animals - minced meat [1)]	INSA	Single	25g	1	1	1					1
Meat from pig - fresh	DGV	Single	25g	58	0	0					
Meat from pig - minced meat [2)]	INSA	Single	25g	25	13	13			1		12
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant	DGV	Single	25g	74	0						

Comments:

[1)] at retail

[2)] at retail

Footnote:

Analytical method ISO 10273/2003.

2.7.4 Yersinia in animals

Table Yersinia in animals

	Source of information	Sampling unit	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp., unspecified	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - Y. enterocolitica, unspecified
Pigs	LNIV	Animal	10	1	1					1
Sheep	LNIV	Animal	1	1		1				
Birds - zoo animal	LNIV	Animal	23	0						
Zoo animals, all	LNIV	Animal	4	0						

Footnote:

Diagnostic method - Culture method.

2.8 TRICHINELLOSIS

2.8.1 General evaluation of the national situation

2.8.2 Trichinellosis in humans

Table Trichinella in humans - Age distribution

Age distribution	Trichinella spp., unspecified		
	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

2.8.3 Trichinella in animals

A. Trichinella in horses

Monitoring system

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.Âº 2075/2005).

B. Trichinella in pigs

Monitoring system

Sampling strategy

General

Priority given to wild boars, breeding animals and animals not raised under controlled housing conditions.

Type of specimen taken

General

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

Methods of sampling (description of sampling techniques)

General

As determined in Comission Regulation (EC) N.Âº 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.Âº 2075/2005).

Notification system in place

Notifiable since 1953 by national law (Decreto-Lei nÂº 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 unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Pigs	DGV	Animal	4623224	0		
Solipeds, domestic - horses	DGV	Animal	684	0		
Wild boars - wild	DGV	Animal	904	0		
Pigs - fattening pigs - unspecified	RAA	Animal	26653	0		
Pigs - fattening pigs - unspecified - at slaughterhouse	RAM	Animal	19167	0		
Wild boars	LNIV	Animal	634	0		

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

Table Echinococcus in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
Echinococcus	21	0	0	0	0	0
E. granulosus	21					

Table Echinococcus in humans - Age distribution

Age distribution	E. granulosus			E. multilocularis			Echinococcus spp., unspecified		
	All	M	F	All	M	F	All	M	F
25 to 44 years	10	7	3						
45 to 64 years	11	7	4						
Total :	21	14	7	0	0	0	0	0	0

2.9.3 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling unit	Region	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals)	LNIV	Animal		3	3	3		
Goats	LNIV	Animal		1	1	1		
Sheep	LNIV	Animal		26	13	13		

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

Table Toxoplasma in humans - Species/serotype distribution

Species/serotype Distribution	Cases	Cases Inc.
Toxoplasma	4	0
Congenital cases	4	

Table Toxoplasma in humans - Age distribution

Age distribution	Toxoplasma spp., unspecified		
	All	M	F
<1 year	4		
15 to 24 years	41	6	35
25 to 44 years	106	6	100
Total :	151	12	135

2.10.3 Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii
Cats	LNIV	Animal	172	78	78
Cattle (bovine animals)	LNIV	Animal	21	0	
Goats	LNIV	Animal	15	0	
Pigs	LNIV	Animal	1	0	
Sheep	LNIV	Animal	10	2	2
Birds - wild	LNIV	Animal	137	2	2

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 could maintain its free situation.

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.

Most of this vaccination is performed by the Municipality Veterinarians and the remaining by the small animal practitioners in their private clinics.

Since 1988, the National Veterinary Authority keeps collaboration with a National Laboratory: Instituto BacteriolÃ³gico CÃ¢mara Pestana, where foxes heads collected during the hunting period are analysed for Rabies and all the results have been found negative.

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 nÂº314/2003, December the 17th and Portaria nÂº 81/2002, 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 nÂº314/2003, 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.

2.12 STAPHYLOCOCCUS INFECTION

2.12.1 General evaluation of the national situation

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 Community for the actions to be taken

*

Additional information

*

2.13.2 Coxiella (Q-fever) in animals

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii
Goats	LNIV	Animal	2	1	1
Sheep	LNIV	Animal	1	0	
Zoo animals, all	LNIV	Animal	10	0	

Footnote:

Diagnostic method - PCR

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

Test Method Used	Standard methods used for testing

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

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Cephalosporins	Cefotaxim		0.25	
Penicillins	Ampicillin		8	

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

3.2 ENTEROCOCCUS, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

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

Test Method Used	Standard methods used for testing

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

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Oxazolidines	Linezolid		4	

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	Streptomycin		512	
	Gentamicin		32	
Amphenicols	Chloramphenicol		32	
Penicillins	Ampicillin		4	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Streptogramins	Quinupristin/Dalfopristin		32	
Tetracyclines	Tetracycline		2	
Oxazolidines	Linezolid		4	

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	Streptomycin		512	
	Gentamicin		32	
Amphenicols	Chloramphenicol		32	
Penicillins	Ampicillin		4	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Streptogramins	Quinupristin/Dalfopristin		32	
Tetracyclines	Tetracycline		2	
Oxazolidines	Linezolid		4	

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 ENTEROBACTER SAKAZAKII

4.1.1 General evaluation of the national situation

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

4.2.2 Histamine in foodstuffs

Table Histamine in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units in non-conformity	<= 100 mg/kg	>100 - <= 200 mg/kg	>200 - <= 400 mg/kg	> 400 mg/kg
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated	DGV	Single		55	0	55			
Fish - Fishery products which have undergone enzyme maturation treatment in brine	DGV	Single		21	0	21			

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 unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk	DGV	Single	25g	15	0
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk	DGV	Single	25g	67	2
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant	DGV	Single	25g	13	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant	DGV	Single	25g	23	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 community for the actions to be taken

*

Additional information

*

Table Foodborne Outbreaks: summarised data

	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	1	1
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 -	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	0	0
Clostridium - Cl. perfringens	0	unknown	unknown	unknown	1	1
Clostridium - Other Clostridia	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Brucella	0	unknown	unknown	unknown	0	0

	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Other Bacterial agents - Shigella	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Other Bacterial	0	unknown	unknown	unknown	0	0
Parasites - Trichinella	0	unknown	unknown	unknown	0	0
Parasites - Giardia	0	unknown	unknown	unknown	0	0
Parasites - Cryptosporidium	0	unknown	unknown	unknown	0	0
Parasites - Anisakis	0	unknown	unknown	unknown	0	0
Parasites - Other Parasites	0	unknown	unknown	unknown	0	0
Viruses - Norovirus	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
Unknown agent	0	unknown	unknown	unknown	0	0

Table Foodborne Outbreaks: detailed data for Clostridium

Please use CTRL for multiple selection fields

C. perfringens

	Value
FBO Code	
Number of outbreaks	1
Number of human cases	34
Number of hospitalisations	0
Number of deaths	0
Food vehicle	Mixed or buffet meals
More food vehicle information	Cooked, meat and vegetables
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	Canteen or workplace catering
Origin of food vehicle	Domestic market
Contributory factors	Inadequate heat treatment
Mixed Outbreaks (Other Agent)	
Additional information	Storage time/temperature abuse

Table Foodborne Outbreaks: detailed data for Salmonella

Please use CTRL for multiple selection fields

S. Enteritidis

	Value
FBO Code	
Number of outbreaks	1
Number of human cases	6
Number of hospitalisations	unknown
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	Egg based dessert
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	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Farm (primary production)
Origin of food vehicle	Domestic market
Contributory factors	Unprocessed contaminated ingredient
Mixed Outbreaks (Other Agent)	
Additional information	Salmonella detected in eggs from the same batch of those used in the making of the dessert implicated / Inadequate heat treatment

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	7
Number of hospitalisations	unknown
Number of deaths	0
Food vehicle	Mixed or buffet meals
More food vehicle information	Various cooked pig meat
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	Temporary mass catering (fairs, festivals)
Place of origin of problem	Mobile retailer, market/street vendor
Origin of food vehicle	Domestic market
Contributory factors	Cross-contamination
Mixed Outbreaks (Other Agent)	B. cereus
Additional information	Staph coag+ 8,7E+06 / B. cereus >6,0E+04 (Diarrhea-producing enterotoxin strain) / Storage time/temperature abuse

Enterotoxin, unspecified

	Value
FBO Code	
Number of outbreaks	1
Number of human cases	9
Number of hospitalisations	0
Number of deaths	0
Food vehicle	Mixed or buffet meals
More food vehicle information	Various cooked pig meat
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	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Canteen or workplace catering
Origin of food vehicle	Domestic market
Contributory factors	Cross-contamination
Mixed Outbreaks (Other Agent)	
Additional information	Storage time/temperature abuse