



PORTUGAL

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

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

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

IN 2006

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: **Portugal**Reporting Year: **2006**

Institutions and laboratories involved in reporting and monitoring:

Laboratory name	Description	Contribution
DGV Direcção Geral de Veterinária	National Veterinary Authority	Reporting Authority Co-ordination of report production
LNIV Laboratório Nacional de Investigação Veterinária	National Veterinary Laboratory	
ASAE Autoridade de Segurança Alimentar e Económica	National Authority for Food Safety	
INSA Instituto Nacional de Saúde Dr. Ricardo Jorge	Reference laboratory belonging to the Ministry of Health	Data on Zoonoses and zoonotic agents in humans and foodborne outbreaks
INIAP/ IPIMAR Instituto Nacional de Investigação Agrária e das Pescas	National Research Institute on Agriculture and Fisheries	
Faculdade de Medicina Veterinária - FMV	Veterinary School in Lisbon	
IBCP Instituto Bacteriológico Câmara Pestana	Scientific Institute	
LABORATORIO DE EVORA	Regional Veterinary Laboratory	
LABORATORIO DE VISEU	Regional Veterinary Laboratory	
DSVR NORTE	Regional Veterinary Services	
DSVR LISBOA E VALE DO TEJO	Regional Veterinary Services	
DRV MADEIRA	Veterinary Services of Região Autónoma da Madeira	

DRDA AÇORES	Veterinary Services of Região Autónoma dos Açores	
SEGALAB Laboratório de Sanidade Animal e Segurança Alimentar	Private Veterinary Laboratory	
LMV Laboratório de Medicina Veterinária	Private Veterinary Laboratory	
CONTROLVET	Private Veterinary Laboratory	

PREFACE

This report is submitted to the European Commission in accordance with Article 9 of Council Directive 2003/99/EC¹. 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 2006. 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.

¹ 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

INE - Instituto Nacional de Estatística

DGRF - Direcção Geral dos Recursos Florestais

Table Susceptible animal populations

* Only if different than current reporting year

Animal species	Category of animals	Number of herds or flocks		Number of holdings		Livestock numbers (live animals)		Number of slaughtered animals	
			Year*		Year*		Year*		Year*
Cattle (bovine animals)	calves (under 1 year)					474972		128593	
	in total			77502		1315634		449431	
Dogs	pet animals					1500000	2005		
Ducks	in total							3078000	
Gallus gallus (fowl)	broilers							154206000	
	in total							158528000	
Goats	in total							133367	
Mouflons	wild					650	2005		
	in total (farmed)			2		10			
Pigs	in total			7730		2812022		4207147	
Rabbits	farmed							5928000	
	wild - (Hares)			22		1059			
Sheep	wild			140		14386			
	in total							1097340	
Solipeds, domestic donkeys						34964	2005		
Turkeys	horses - in total					47603	2005		
	in total							3797000	
Wild boars	farmed - in total			28	107				
farmed	fallow deer			162		1334			
	red deer			36		534			
	roe deer			4		153			
wild	fallow deer					950	2005		
	red deer					4300	2005		
	roe deer					50	2005		
Quails	in total							8189000	
Sheep and goats	in total			70708		2868951			
Poultry, unspecified	in total (backyards)			236296		5893995			
	in total							5000	

2. INFORMATION ON SPECIFIC ZOOSES 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 slaughterpigs 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 Laboratório Nacional de Investigação Veterinária (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 Laboratório Nacional de Investigação Veterinária (NRL for Salmonella)

- The resistance to antimicrobials is performed by disk diffusion Method in Mueller Hinton Plates.
- The antimicrobials tested are: AMP10, AMC30, CF30, CMX30, CTX30, SxT25, G10, K30, TE30, C30, S10, NA30, UB30, N30, D30, ENR5 .
- The zone diameters are evaluated, following NCCLS Vol.19 n°1, January 99.

2.1.2. Salmonellosis in humans

Table Salmonella in humans - Species/ serotype distribution

Salmonella	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.	Unknown status
S. Braenderup	624	0	0	0	0	0	0
S. Brandenburg	3						
S. Enteritidis	2						
S. Enteritidis	423						
S. Essen	2						
S. Give	3						
S. Goldcoast	2						
S. Haifa	2						
S. Rissen	3						
S. Typhi	3						
S. Typhimurium	151						
S. 1,4,5,12:-:i	12						
Other serotypes	18						

Table Salmonella in humans - Age distribution

Age Distribution	S. Enteritidis			S. Typhimurium			Salmonella spp.		
	All	M	F	All	M	F	All	M	F
<1 year	8	5	3	21	10	11	34	17	17
1 to 4 years	115	54	61	53	31	22	181	91	90
5 to 14 years	122	63	59	21	12	9	149	76	73
15 to 24 years	35	13	22	1		1	38	13	25
25 to 44 years	55	26	29	10	6	4	72	36	36
45 to 64 years	33	14	19	20	15	5	59	33	26
65 years and older	32	16	16	16	8	8	57	29	28
Age unknown	23	7	12	9	4	1	34	13	13
Total :	423	198	221	151	86	61	624	308	308

Table Salmonella in humans - Seasonal distribution

Month	S. Enteritidis		S. Typhimurium		Salmonella spp.	
	Cases	Cases	Cases	Cases	Cases	Cases
January		17		7		24
February		2		5		10
March		15		8		26
April		20		6		27
May		27		18		48
June		58		13		74
July		63		19		86
August		50		16		71
September		49		13		72
October		30		15		54
November		22		14		38
December		24		3		28
not known		46		14		66
Total :		423		151		624

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 spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from broilers (Gallus gallus)	DRDA AÇORES	single	25g	21	1			1
fresh	ASAE	single	25g	2	0			
- at slaughterhouse - animal sample - Monitoring - official sampling - selective sampling	LAB. VISEU	single	25g	1	1	1		
("") (2)	LNIV	single	25g	40	0	0		
meat products								
cooked, ready-to-eat								
- Surveillance - official controls (other than control and eradication programmes)	DRV Madeira	single	25g	2	0			
Meat from turkey								
meat products								
raw but intended to be eaten	LNIV	single	25g	1	0			
cooked (1)	ASAE	single	25g	1	0			
Meat from duck								
Other products of animal origin								
- at slaughterhouse - Surveillance - HACCP or own checks by industry (Poultry blood)	LAB. VISEU	batch	25g	1	0			
Meat from poultry, unspecified	DRDA AÇORES	single	25g	1	1			1
carcass								
- Monitoring - sampling by industry	CONTROLVET	single		1536	165			165
Meat from pig								
fresh								
- Monitoring - sampling by industry	CONTROLVET	single		1122	62			62

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Meat from bovine animals								
fresh								
- Monitoring - sampling by industry	CONTROLVET	single		1142	0			
Eggs								
table eggs								
- Monitoring - sampling by industry	CONTROLVET	single		996	1			1
Fish								
- Monitoring - sampling by industry	CONTROLVET	single		599	1			1

(1) : Official Control

(2) : Official Control

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Milk, cows'								
raw	DRDA AÇORES	batch		89	0			
Milk, goats'								
raw milk for manufacture								
intended for manufacture of raw or low heat-treated products - Surveillance - HACCP or own checks by industry								
	LAB. VISEU	batch	25ml	5	0			
Milk, sheep's								
raw milk for manufacture								
intended for manufacture of raw or low heat-treated products - Surveillance - HACCP or own checks by industry								
	LAB. VISEU	batch	25ml	15	0			
Cheeses made from cows' milk	DRDA AÇORES	single		106	0			
soft and semi-soft	ASAE	batch	25g	100	0			
made from raw or low heat-treated milk - Surveillance - HACCP or own checks by industry								
	LAB. VISEU	batch	25g	7	0			
made from pasteurised milk (1) ("")(6)	LNIV	single	25g	2	0			
	LNIV	batch	25g	1	0			
- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	batch	25 g	68	0			
Cheeses made from goats' milk	DRDA AÇORES	single		8	0			
soft and semi-soft (2)	LNIV	single	25g	2	0			
made from raw or low heat-treated milk	ASAE	batch	25g	25	0			

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Cheeses made from sheep's milk							
soft and semi-soft (3)	LNIV	single	25g	1	0		
made from raw or low heat-treated milk	ASAE	batch	25g	170	1		1
made from pasteurised milk (4)	LNIV	single	25g	1	0		
- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	batch	25g	1	0		
("") (7)	LNIV	batch	25g	1	0		
hard							
made from pasteurised milk							
- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	batch	25 g	25	0		
Dairy products (excluding cheeses)							
ice-cream							
- Surveillance - HACCP or own checks by industry	DRV MADEIRA	single	25 g	6	0		
dairy products, not specified							
- Surveillance - HACCP or own checks by industry	LAB. VISEU	batch	25g	1	0		
Cheeses, made from mixed milk from cows, sheep and/ or goats	ASAE	batch	25g	5	0		
soft and semi-soft							
made from pasteurised milk (5)	LNIV	batch	25g	2	0		

- (1) : Private Control
 (2) : Private Control
 (3) : Private Control
 (4) : Private Control
 (5) : Official Control
 (6) : Official Control
 (7) : Official Control

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Rissen
Meat from pig									
fresh	ASAE	single	25g	2	2			1	1
- Surveillance - HACCP or own checks by industry	LAB. VISEU	single	25g	6	0				
(" ")	DRDA AÇORES	single	25g	1	0				
meat preparation									
intended to be eaten cooked	SEGALAB	single	25g	90	3		1	1	1
(" ")	DRDA AÇORES	single	25g	96	2			2	
meat products									
raw but intended to be eaten cooked (1)	LNIV	single	25g	4	0				
- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	single	25 g	10	0				
cooked, ready-to-eat	ASAE	batch	25g	249	5			5	
- Surveillance - HACCP or own checks by industry	LAB. VISEU	single	25g	2	0				
Meat from bovine animals									
fresh	ASAE	single	25g	2	0				
- Surveillance - HACCP or own checks by industry	LAB. VISEU	single	25g	4	0				
("") (2)	LNIV	single	25g	21	0				
("") (3)	LNIV	batch	25g	9	0				
meat preparation									
intended to be eaten raw									
- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	single	25 g	12	0				
meat products									
raw but intended to be eaten cooked	DRDA AÇORES	single	25g	14	3			3	
cooked, ready-to-eat			259						

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Other products of animal origin									
	ASAE	batch	25g	170	5		2	3	
- Monitoring - official sampling									

(1) : 2 Official Control; 2 Private Control

(2) : Private Control

(3) : Official Control

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Hadar	S. Lexington
Eggs										
table eggs										
- at packing centre - Surveillance - HACCP or own checks by industry	LAB. VISEU	batch	25g	20	0					
Egg products	ASAE	batch	25g	10	0					
Fishery products	DRDA AÇORES	single	25g	12	0					
Crustaceans										
unspecified										
cooked	ASAE	single	25g	1	0					
raw (1)	LNIV	batch	25g	2	0					
Molluscan shellfish										
cooked	ASAE	single	25g	10	0					
raw (2)	LNIV	batch	25g	10	1					1
- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	batch	25 g	5	0					
Live bivalve molluscs (3)	LNIV	batch	25g	5	0					
Fruits and vegetables										
precut										
ready-to-eat	ASAE	batch	25g	62	0					
Fish										
raw										
- Surveillance - HACCP or own checks by industry	LAB. VISEU	batch	25g	1	0					
- Surveillance - HACCP or own checks by industry (" ")	DRV MADEIRA	single	25 g	1	0					
- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	batch	25 g	40	0					

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Other processed food products and prepared dishes										
- Surveillance	ASAE	single	25g	24	0					
sandwiches										
- Clinical investigations	INSA	single	25g	1	1				1	
Confectionery products and pastes										
- Surveillance	ASAE	batch	25g	139	4	4				
Fishery products, unspecified (4)	LNIV	single	25g	1	0					

(1) : Official Control

(2) : Official Control

(3) : Official Control

(4) : Official Control

2.1.4. Salmonella in animals

Table Salmonella in breeding flocks of Gallus gallus

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Isaszeg	S. Kottbus	S. Infantis	S. Mbandaka	S. Anatum
Gallus gallus (fowl)												
parent breeding flocks for egg production line	LMV	batch	19	2	1	0	1					
during production period												
parent breeding flocks for meat production line	LMV	batch	47	5	4	0	1					
day-old chicks												
during rearing period	LMV	batch	4	2	0	0	2					
- Monitoring - sampling by industry	DRV MADEIRA		81	10	7		1	1	1			
breeding flocks, unspecified												
- Control or eradication programmes - co-financed by Community (Dec. 90/424/ EEC) - official sampling	DGV	flock	558	26	21					1	3	1

Table Salmonella in other poultry

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Isaszeg	S. Kottbus	S. Mbandaka	S. Havana	S. Thompson	S. 6,7:r:-	S. Heidelberg	S. Tennessee	S. Infantis	S. Anatum	S. Agona	S. Senftenberg
Gallus gallus (fowl)	laying hens																		
	during rearing period																		
	- Monitoring - sampling by industry	flock	1	0															
	broilers	animal	106	6	5					1									
	day-old chicks																		
	- Monitoring - sampling by industry	flock	19	2			2												
	- Monitoring - sampling by industry (" ")	DRV MADEIRA	63	5	5														
	during rearing period																		
	- Monitoring - sampling by industry	flock	2	0															
	- Monitoring - sampling by industry (" ")	DRV MADEIRA	18	5	2		1	1	1										
	sampling in the framework of the broiler baseline study																		

(DGV) (1)	380	168	146	1	7	3	2	1	1	4	1	12	9	1	1
unspecified during production period	flock	380	168	146	1										
breeding flocks, unspecified hatching eggs	animal	21	5	4	1										
- Monitoring - sampling by industry	animal	39	0												
day-old chicks															
- Monitoring - sampling by industry	single	358	31	24	0	7									
Ducks															
meat production flocks	animal	191	17	11	0	6									
- Monitoring - sampling by industry	animal	6	2	2											
Turkeys	batch	5	1	0	1	0									
meat production flocks	flock	1	1			1									
Gallus gallus (fowl) and turkeys															
- Monitoring - sampling by industry	animal	11	0												
- at farm - animal sample - faeces - Monitoring - sampling by industry	batch	1	1	0	0	1									
- at farm - environmental sample - Monitoring - sampling by industry															
	animal	68	5	5											
		467	18	10		8									
		139	0												

(1) : Notice that some holdings had several serovars isolated

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Brandenburg	S. Nakuru
Pigeons	LNIV	animal	46	17		17			
- Monitoring - sampling by industry	DRV MADEIRA		5	1		1			
Pheasants	LNIV	animal	1	0					
- Monitoring - sampling by industry	DRV MADEIRA		1	0					
Partridges	LNIV	animal	18	3				3	
- Monitoring - sampling by industry	LAB. VISEU	flock	8	1			1		
Ostriches									
- Monitoring - sampling by industry (Psittacidae)	DRV MADEIRA		14	2	1	1			
Parrots									
- Clinical investigations	LAB. VISEU	animal	1	0					
zoo animals	LNIV	animal	7	1	1				
Birds									
- Clinical investigations	LAB. VISEU	animal	1	0					
wild	LNIV	animal	60	10	3	6			1
Canary	LNIV	animal	2	0					
Swans	LNIV	animal	2	0					

Table Salmonella in other animals (Part A)

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Landwasser	S. Sheffield	S. Montevideo	S. Bovismorbificans	S. Sinstorf	S. Carrau	S. Tennessee	S. Rissen	S. Saintpaul	S. Duesseldorf	S. II 42:b:e,n,x,z15	S. 6,8:-:1,5	S. Reading
Cattle (bovine animals)	LNIV	animal	157	4		1					1	1						1		
calves (under 1 year)	DRDA	animal	5	5			5													
(^{'''})	ACORES																			
Sheep	LNIV	animal	29	0																
- Clinical investigations	LNIV	animal	64	2		1														
- Clinical investigations (^{''})	LAB. VISEU	animal	2	0																
- Clinical investigations (^{''})	DRV MADEIRA		2	0																
Goats	LNIV	animal	41	0																
- Clinical investigations	LAB. VISEU	animal	4	0																
Pigs																				
breeding animals																				
- Clinical investigations	LAB. VISEU	animal	3	0																
fattening pigs																				
- Clinical investigations	LAB. VISEU	animal	3	0																
unspecified	LNIV	animal	158	4		1									1				1	1

Solipeds, domestic
horses
Rabbits
- Clinical investigations (unspecified)
Dogs
- Clinical investigations
Cats
- Clinical investigations
Zoo animals, all
Deer
zoo animals

Table Salmonella in other animals (Part B)

	S. IIIa 44:z4,z32:-	S. IV 44:z4,z32:-	S. IIIb 60:-	S. IV 11:z4,z23:-	S. Newport	S. Oranienburg	S. Othmarschen	S. Offa	S. II 13,22:z:-
Cattle (bovine animals)									
calves (under 1 year)									
(^{'''})									
Sheep									
- Clinical investigations									
- Clinical investigations (^{'''})									
Goats									
- Clinical investigations									
Pigs									
breeding animals									
- Clinical investigations									
fattening pigs									
- Clinical investigations									
unspecified									
Solipeds, domestic									
horses									
Rabbits									
- Clinical investigations									
(unspecified)									
Dogs									

[illegible]

2.1.5. Salmonella in feedingstuffs

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Tennessee
Feed material of land animal origin									
meat meal (1)	LNIV	single	25g	2	0				
poultry offal meal (2)	LNIV	single	25g	7	0				
Feed material of marine animal origin									
fish meal (3)	LNIV	single	25g	5	2				2
fish silage (4)	LNIV	single	25g	6	0				

(1) : Official Control

(2) : Official Control

(3) : Private Control

(4) : Official Control

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified	S. Brandenburg
Compound feedingstuffs for cattle									
final product (1)	LNIV	single	25g	5	0				
Compound feedingstuffs for pigs									
final product (2)	LNIV	single	25g	10	0				
Compound feedingstuffs for poultry (non specified)									
final product (3)	LNIV	single	25g	21	1				1
Pet food									
dog snacks (pig ears, chewing bones) (4)	LNIV	batch	25g	19	0				
Compound feedingstuffs for sheep									
final product (5)	LNIV	single	25g	3	0				
Compound feedingstuffs for horses									
final product (6)	LNIV	single	25g	2	0				
Compound feedingstuffs for rabbits									
final product (7)	LNIV	single	25g	4	0				

- (1) : 3 Official Control; 2 Private Control
 (2) : 8 Official Control; 2 Private Control
 (3) : 15 Official Control; 6 Private Control
 (4) : Official Control
 (5) : Official Control
 (6) : Official Control
 (7) : Official Control

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

Serovars	Gallus gallus (fowl) - breeding flocks, unspecified - Control or eradication programmes - co-financed by Community (Dec. 90/424/EEC) (DGV)		Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Gallus gallus (fowl) - broilers - sampling in the framework of the broiler baseline study (DGV)	
	M	C	M	C	M	C	M	C	M	C	M	C
Sources of isolates (*)												
Number of isolates in the laboratory	N=	26									486	
Number of isolates serotyped	N=	26	0	0	0	0	0	0	0	0	486	0
Number of isolates per type												
S. Agona											1	
S. Anatum	1										29	
S. Enteritidis	21										390	

[illegible]

Footnote

(*)M : Monitoring, C : Clinical

Table Salmonella serovars in food

Serovars	Meat from broilers (Gallus gallus) (NSA)		Meat from pig (NSA)		Meat from rabbit (NSA)		Meat from other poultry species (INSA Turkey, Ducks)		Dairy products (excluding cheeses) (INSA)		Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Other poultry		Other products of animal origin	
	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C
	Sources of isolates (*)																			
Number of isolates in the laboratory	N=	14		2		1		3		2			2							
Number of isolates serotyped	N=	14	0	2	0	1	0	3	0	2	0	0	2	0	0	0	0	0	0	0
Number of isolates per type																				
S. Brandenburg			1																	
S. Enteritidis		10		1	1					1										
S. Hadar		1																		
S. Heidelberg		3																		
S. Rissen (1)													1							
S. Typhimurium								3		1										
S. enterica subsp. arizonae (2)													1							

(1) : SEGALAB
(2) : SEGALAB

Footnote

(*) M : Monitoring, C : Clinical

Table Salmonella Enteritidis phagetypes in food

Phagetype	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Other poultry		Other products of animal origin		Meat from pig (NSA)		Meat from rabbit (NSA)		Dairy products (excluding cheeses) (NSA)		Meat from broilers (Gallus gallus) (NSA)					
	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C				
	Sources of isolates (*)																					
	Number of isolates in the laboratory		N=																			
Number of isolates phagetyped		N=				0		0		0		0		0		1		10		0		
Number of isolates per type																						
Not typable																					1	
4b																					1	
1b													1		1						8	

Footnote

(*) M : Monitoring, C : Clinical

Table Salmonella Enteritidis phagetypes in humans

Phagetype		humans	
Sources of isolates (*)		M	C
Number of isolates in the laboratory	N=		423
Number of isolates phagetyped	N=	0	417
Number of isolates per type			
PT 14b			23
Not typable			23
PT 21c			2
PT 24 var.			2
Other			10
1			8
6a			9
6			5
4b			28
3			2
7			3
16			2
1b			296
PT 9a			2
PT 20a			2

Footnote

(*) M : Monitoring, C : Clinical

Table Salmonella Typhimurium phagetypes in food

Phagetype	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Other poultry		Other products of animal origin		Meat from turkey (INSA)		Meat from duck (INSA)		Dairy products (excluding cheeses) (INSA)	
	M	C	M	C	M	C	M	C	M	C	M	C	M	C	M	C
	Sources of isolates (*)															
Number of isolates in the laboratory	N=												1		1	
Number of isolates phagetyped	N=		0	0	0	0	0	0	0	0	2	0	1	0	1	0
Number of isolates per type																
Not typable (1)																
2																
1																

(1) : Not Typed

Footnote

(*) M : Monitoring, C : Clinical

Table Salmonella Typhimurium phagetypes in humans

Phagetype		humans	
		M	C
Sources of isolates (*)			
Number of isolates in the laboratory	N=		151
Number of isolates phagetyped	N=	0	0

Footnote

(*) M : Monitoring, C : Clinical

2.1.7. Antimicrobial resistance in Salmonella isolates

Antimicrobial resistance is the ability of certain microorganisms to survive or grow in the presence of a given concentration of antimicrobial agent that usually would kill or inhibit the microorganism species in question. Antimicrobial resistant Salmonella strains may be transferred from animals or foodstuffs to humans.

Table Antimicrobial susceptibility testing of S. Enteritidis in animals

n = Number of resistant isolates												
S. Enteritidis												
	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys		Psittacidae (DRV MADEIRA)		Gallus gallus (fowl) (DRV MADEIRA)	
Isolates out of a monitoring programme									no		no	
Number of isolates available in the laboratory									1		7	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n
Tetracyclines												
Tetracyclin									1	1	7	4
Amphenicols												
Chloramphenicol									1	0	7	1
Cephalosporins												
3rd generation cephalosporins									1	0	7	4
Fluoroquinolones												
Ciprofloxacin									1	0	7	3
Quinolones												
Nalidixic acid									1	0	7	5
Aminoglycosides												
Streptomycin									1	1	7	4
Gentamicin									1	0	7	3
Neomycin									1	0	7	5
Kanamycin									1	1	7	5
Penicillins												
Ampicillin									1	0	7	2
Trimethoprim + sulfonamides												
Trimethoprim + Sulfonamide									1	0	7	4

Table Antimicrobial susceptibility testing of S.Typhimurium in animals

n = Number of resistant isolates										
	S. Typhimurium									
	Cattle (bovine animals)	Pigs		Gallus gallus (fowl)		Turkeys		Other animals (DRV MADEIRA Pigeon Psitacidae)		
Isolates out of a monitoring programme										no
Number of isolates available in the laboratory										2
Antimicrobials:	N	n	N	n	N	n	N	n	N	n
Tetracyclines										
Tetracyclin									2	2
Amphenicols										
Chloramphenicol									2	0
Cephalosporins										
3rd generation cephalosporins									2	1
Fluoroquinolones										
Ciprofloxacin									2	1
Quinolones										
Nalidixic acid									2	1
Aminoglycosides										
Streptomycin									2	1
Gentamicin									2	1
Neomycin									2	1
Kanamycin									2	1
Penicillins										
Ampicillin									2	1
Trimethoprim + sulfonamides										
Trimethoprim + Sulfonamide									2	2

Table Antimicrobial susceptibility testing of Salmonella in animals

n = Number of resistant isolates														
	Salmonella spp.													
	Cattle (bovine animals)	Pigs	Gallus gallus (fowl)	Turkeys	Other animals (DRV MADEIRA Canine Parrots Pigeons)	Cattle (bovine animals) (FMV)	Gallus gallus (fowl) (DRV MADEIRA)							
Isolates out of a monitoring programme	no				no		no							
Number of isolates available in the laboratory	2				4		10							
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Tetracyclines														
Tetracyclin	2	2							4	3			10	4
Amphenicols														
Chloramphenicol									4	4			10	1
Cephalosporins														
3rd generation cephalosporins	2	2							4	4			10	3
Cefalexin	2	2												
Fluoroquinolones														
Ciprofloxacin									4	1			10	3
Enrofloxacin	2	2												
Quinolones														
Nalidixic acid	2	2							4	1			10	8
Aminoglycosides														
Streptomycin	2	2							4	2			10	4
Gentamicin	2	1							4	1			10	3
Neomycin									4	1			10	5
Kanamycin									4	1			10	5
Penicillins														
Ampicillin	2	1							4	1			10	2
Trimethoprim + sulfonamides														
Trimethoprim + Sulfonamide	2	2							4	4			10	4
Resistant to 3 antimicrobials	2	1												
Resistant to 4 antimicrobials	2	1												

Table Breakpoints for antibiotic resistance testing in Animals

Test Method Used

Disc diffusion

Agar dilution

Broth dilution

E-test

Standards used for testing

NCCLS

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content microg	Breakpoint Zone diameter (mm)		
		Susceptible ≤	Intermediate	Resistant >	lowest	highest		Susceptible ≥	Intermediate	Resistant ≤
Amphenicols										
Chloramphenicol	NCCLS						30	18	13.17	12
Florfenicol										
Tetracyclines										
Tetracyclin	NCCLS						30	15	13.14	12
Fluoroquinolones										
Ciprofloxacin	SFM						5	21	16.20	15
Enrofloxacin										
Quinolones										
Nalidixic acid	SFM						30	19	14.18	13
Trimethoprim										
Sulfonamides										
Sulfonamide										
Aminoglycosides										
Streptomycin							10	15	11.14	11
Gentamicin	NCCLS						10	15	13.14	12
Neomycin							30	15	13.14	12
Kanamycin	NCCLS						30	18	14.17	13
Trimethoprim + sulfonamides										
Trimethoprim + Sulfonamide	NCCLS						25	16	11.15	10
Cephalosporins										
Cefalexin	SFM						30	18	12.17	11
Cefotaxim	SFM						30	20	15.20	14
3rd generation cephalosporins										
Penicillins										
Ampicillin	SFM						10	17	14.16	13

Footnote

RA MADEIRA

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 (Biomérieux) and skirrow Campylobacter selective Agar (Merck).

- Biochemical identification by API system.

2.2.2. Campylobacteriosis in humans

2.2.3. Campylobacter in foodstuffs

Table Campylobacter in poultry meat

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for thermophilic Campylobacter spp.	C. coli	C. lari	C. jejuni	C. upsaliensis	thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus)										
fresh (1)	LNIV	single	25g	4	4			4		
- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	single	25g	2	1			1		
(" ")	DRDA AÇORES	single		21	2					2
Meat from poultry, unspecified	DRDA AÇORES	single	650g	10	2					2

(1) : Private Control

2.2.4. Campylobacter in animals

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for thermophilic Campylobacter spp.	C. jejuni	C. coli	C. lari	C. upsaliensis	thermophilic Campylobacter spp., unspecified
Cattle (bovine animals)									
dairy cows	LNIV	animal	4	0					
Goats	LNIV	animal	2	2		1	1		

2.2.5. Antimicrobial resistance in *Campylobacter* isolates

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 nº 533/ 93 from 21st of May has been updated by Portaria 56/ 96).

Diagnostic techniques:

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.		
	All	M	F	All	M	F
<1 year						
1 to 4 years						
5 to 14 years						
15 to 24 years	5		5			
25 to 44 years	30		30			
45 to 64 years	2	1	1			
65 years and older	5	3	2			
Age unknown	4	3	1			
Total :	46	7	39	0	0	0

2.3.3. *Listeria* in foodstuffsTable *Listeria monocytogenes* in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for <i>L.monocytogenes</i>	<i>Listeria monocytogenes</i> presence in x g	> detection limit but ≤ 100 cfu/ g	<i>L. monocytogenes</i> > 100 cfu/ g
Milk, cows'	DRDA AÇORES	batch		89	0			
Milk, sheep's								
raw milk for manufacture	LNIV	single	1ml	1	0			
intended for manufacture of raw or low heat-treated products (1)	LAB. VISEU	batch	1g	13	1			
- Surveillance - HACCP or own checks by industry	LNIV	single		1			1	
("") (9)								
Milk, goats'								
raw milk for manufacture								
intended for manufacture of raw or low heat-treated products	LAB. VISEU	batch	1g	5	0			
- Surveillance - HACCP or own checks by industry								
Cheeses made from cows' milk								
soft and semi-soft	ASAE	batch	25g	353	0			
made from pasteurised milk (2)	LNIV	single	25g	6	0			
- Surveillance - HACCP or own checks by industry	DRV MADEIRA	single	25 g	2	0			
- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	batch	25 g	70	5			
("") (7)	LNIV	batch	25g	1	0			
("") (10)	LNIV	single		6			6	
("") (11)	LNIV	batch		1			1	
hard	v	single	25g	96	0			
made from pasteurised milk								

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- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	batch	25g	10	0			
Cheeses made from goats' milk								
soft and semi-soft	DRDA AÇORES	single	25g	8	0			
made from raw or low heat-treated milk (") (5)	ASAE	batch	25g	20	0			
("") (12)	LNIV	single	25g	2	0			
made from pasteurised milk	LNIV	single		1			1	
	ASAE	batch	25g	37	1			
Cheeses made from sheep's milk								
soft and semi-soft								
made from raw or low heat-treated milk	ASAE	batch	25g	350	3			
- Surveillance - HACCP or own checks by industry	LAB. VISEU	batch	25g	5	0			
(") (6)	LNIV	single	25g	5	0			
("") (8)	LNIV	batch	25g	1	0			
("") (13)	LNIV	single		5			5	
made from pasteurised milk (3)	LNIV	batch	25g	1	0			
hard								
made from pasteurised milk								
- Surveillance - official controls (other than control and eradication programmes)	DRV MADEIRA	batch	25g	17	0			
Dairy products (excluding cheeses)								
cream	ASAE	batch	25g	26	0			
dairy products, not specified								
- Surveillance - HACCP or own checks by industry	LAB. VISEU	batch	25g	1	0			
- Surveillance	ASAE	batch	25g	75	0			
Cheeses, made from mixed milk from cows, sheep and/ or goats	ASAE	batch	25g	35	0			
soft and semi-soft								
made from pasteurised milk (4)	LNIV	batch	25g	2	0			

- (1) : Private Control
 (2) : Private Control
 (3) : Official Control
 (4) : Official Control
 (5) : Private Control
 (6) : Private Control
 (7) : Official Control
 (8) : Official Control
 (9) : Private Control
 (10) : Private Control

(11) : Private Control

(12) : Private Control

(13) : Private Control

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L.monocytogenes	Listeria monocytogenes presence in x g	> detection limit but ≤ 100 cfu/ g	L. monocytogenes > 100 cfu/ g
Meat from broilers (Gallus gallus)								
fresh	ASAE	single	25g	2	1	2		
- Surveillance - HACCP or own checks by industry - sampling by industry	DRV MADEIRA	single	25g	2	1			
meat products								
cooked, ready-to-eat	ASAE	batch	25g	11	1			
- Clinical investigations - suspect sampling	INSA	single	25g	3	3	3	3	
Meat from pig								
fresh	ASAE	single	25g	2	1	0		
meat products								
cooked, ready-to-eat	ASAE	batch	25g	390	16	5		
- Clinical investigations - suspect sampling	INSA	single	25g	1	1	1		1
- Surveillance - HACCP or own checks by industry	DRV MADEIRA	single	25g	10	0			
Meat from bovine animals								
fresh (1)	LNIV	batch		1	1		1	
- Surveillance - HACCP or own checks by industry	DRV MADEIRA	single	25g	4	4			
meat products								
cooked, ready-to-eat	DRDA AÇORES	single	25g	14	2			
- Clinical investigations - suspect sampling	INSA	single	25g	5	5	5	4	1
unspecified, ready-to-eat								
- Surveillance - HACCP or own checks by industry	DRV MADEIRA	single	25g	9	6			
Crustaceans								
unspecified								
cooked	ASAE	single	25g	1	0			
Other processed food products and prepared dishes								

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unspecified							
ready-to-eat foods							
- Surveillance - HACCP or own checks by industry (Catering)	DRV MADEIRA	single	25g	1	0		
- Surveillance	ASAE	single	25g	24	0		
Fishery products, unspecified	DRDA AÇORES		25g	12	0		
ready-to-eat							
- Clinical investigations - suspect sampling	INSA	single	25g	3	3	3	3
Ready-to-eat salads							
- Surveillance	ASAE	batch	25g	75	0		
- Clinical investigations - suspect sampling	INSA	single	25g	3	3	3	3
Other products of animal origin							
- Surveillance	ASAE	batch	25g	160	5		
Dairy products (excluding cheeses)							
dairy desserts							
chilled							
- Clinical investigations - suspect sampling	INSA	single	25g	2	2	2	2
Eggs							
table eggs							
- Clinical investigations - suspect sampling	INSA	single	25g	1	1	1	1

(1) : Official Control

2.3.4. Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria spp.	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals)	LNIV	animal	4	0		
Sheep						
- Clinical investigations	LAB. VISEU	animal	2	0		
- Clinical investigations - suspect sampling	LNIV	animal	3	0		
- Clinical investigations (" ")	DRV MADEIRA	animal	5	0		
Goats						
- Clinical investigations	LAB. VISEU	animal	4	0		
- Clinical investigations - suspect sampling	LNIV	animal	7	1		1
- Clinical investigations (" ")	DRV MADEIRA	animal	2	0		
Pigs						
- Clinical investigations	LAB. VISEU	animal	6	0		
- Clinical investigations (" ")	FMV	animal	1	1		1
Monkeys						
zoo animal	LNIV	animal	5	1	1	
Zoo animals, all	LNIV	animal	5	1	1	
Dogs						
- Clinical investigations	FMV	animal	1	1		1

2.4. E. COLI INFECTIONS

2.4.1. General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

Additional information

At LNIV the following procedures are performed in E. coli isolates of cattle, swine, sheep and goats (strains that are serotyped).

At poultry isolates, serotyping is not being done.

Diagnostic Techniques:

Internal method.

1 - Culture:

Platting in: Tryptose Blood Agar

MacConkey Agar

Minca Agar

To different E. coli colonies, the following biochemical reactions are done:

Simmons Citrate

MR-VP

Adonitol

Dulcitol

Inositol

Mannitol

Sorbitol

Glucose

Sucrose

Raffinose

Malonate

Urease

2 - Serology:

Serotyping by searching somatic (O) and capsular (K) antigens.

3 - Searching of enterotoxins:

- ST (by PCR)

- LT (by Biken test, CHO cells and PCR)

4 - Searching of citotoxins:

- in Vero and HeLa cells.

5 - Adesin detection:

- F5, F6, F41

6 - Antibiotic susceptibility testing

2.4.2. E. Coli Infections in humans

Table Escherichia coli, pathogenic in humans - Age distribution

Escherichia coli, pathogenic	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
HUS						
- clinical cases						
- lab. confirmed cases						
- caused by O157 (VT+)						
- caused by other VTEC						
E.coli infect. (except HUS)						
- clinical cases						
- laboratory confirmed	16					
- caused by O157 (VT+)	0					
- caused by other VTEC	16					

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

Age Distribution	Verotoxigenic E. coli (VTEC)			VTEC O157:H7			VTEC non-O157		
	All	M	F	All	M	F	All	M	F
<1 year							1	1	
1 to 4 years							3	1	2
5 to 14 years							2	2	
15 to 24 years							2	2	
25 to 44 years							1		1
45 to 64 years							1		1
65 years and older							3		3
Age unknown							3	1	2
Total :	0	0	0	0	0	0	16	7	9

2.4.3. Escherichia coli, pathogenic in foodstuffs**2.4.4. Escherichia coli, pathogenic in animals****Table VT E. coli in animals**

	Source of information	Sampling unit	Units tested	Total units positive for Escherichia coli, pathogenic	E.coli, pathogenic, unspecified	Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified	Verotoxigenic E. coli (VTEC) - VTEC O138:K81	Verotoxigenic E. coli (VTEC) - VTEC O139:K82	Verotoxigenic E. coli (VTEC) - VTEC O141
Cattle (bovine animals)	LNIV	animal	157	1		1					1
Sheep	LNIV	animal	64	0							
- Clinical investigations	DRV MADEIRA	animal	3	3	3						
Goats	LNIV	animal	41	1		1			1		
- Clinical investigations	DRV MADEIRA	animal	2	2	2						
Pigs	LNIV	animal	158	6		6			5	1	
Solipeds, domestic											
horses	LNIV	animal	28	0							
Poultry, unspecified	LNIV	animal	38	0							
- Monitoring - sampling by industry	DRV MADEIRA		13	13	13						
Dogs	LNIV	animal	38	0							
- Clinical investigations	DRV MADEIRA	animal	14	14	14						
Cats	LNIV	animal	12	0							
- Clinical investigations	DRV MADEIRA	animal	2	2	2						
Pigeons	LNIV	animal	45	0							
Pheasants	LNIV	animal	1	0							
Partridges	LNIV	animal	11	0							
Parrots											
zoo animals	LNIV	animal	5	0							
Canary	LNIV	animal	2	0							
Swans	LNIV	animal	2	0							
Birds											
wild	LNIV	animal	45	0							

Portugal 2006 Report on trends and sources of zoonoses

Rabbits	LNIV	animal	20	0							
- Clinical investigations	DRV MADEIRA	animal	2	2	2						
Deer											
zoo animals	LNIV	animal	3	0							
Zoo animals, all	LNIV	animal	227	0							
Psittacidae											
- Clinical investigations	DRV MADEIRA	animal	2	2	2						

2.5. TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1. General evaluation of the national situation

2.5.2. Tuberculosis, Mycobacterial Diseases in humans

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

Other: intra-dermal comparative test, blood (gamma-IFN), organs

Diagnostic/ analytical methods used

§ The National Reference Laboratory (NRL) is Laboratório Nacional de Investigação Veterinária (LNIV) which is also responsible for production and distribution of tuberculin.

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 movements are forbidden from and to the herd;
- Disinfection of all premises, equipment and materials;
- Testing of all remaining animals;
- Thermic treatment of the milk.

Table Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium spp.	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified	M. avium complex	M. fortuitum
Sheep	LNIV	animal	7	0					
Pigs	LNIV	animal	245	95			5	89	1
(" ")	LAB. EVORA	animal	40	0					
Zoo animals, all	LNIV	animal	6	0					
Rabbits	LNIV	animal	1	1	1				
Ducks	LNIV	animal	1	1			1		
Deer	LNIV	animal	26	21	15		1	5	
(" ")	LAB. EVORA	animal	3	0					
Wild boars	LNIV	animal	14	13	11			2	
Birds	LNIV	animal	2	0					

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

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	62200	58679	56295	104	65	6	5.769	95.937	0.185	0.115
Região Autónoma dos Açores	12437	3111	1340	0	0	0	0	43.073	0	0
Total	74637	61790	57635	104	65	6	5.769	93.276	0.18	0.113
Total - I	83193	69506	62532	136	103	5	3.676	89.966	0.217	0.165

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

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	1038379	936693	976893	773708	425	512	1384	104.292	0.044
Região Autónoma dos Açores	270366	64788	31625	31625	0	0	0	48.813	0
Total	1308745	1001481	1008518	805333	425	512	1384	100.703	0.042
Total - 1	1350570	1036016	1001389	839702	647	478	691	96.658	0.065

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

Region	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							
	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
CONTINENTE	58679	936693	0	0	20	3178	291	11822	124	3989	61765	1019390		
Região Autónoma dos Açores	3111	64788	0	0	0	0	0	0	0	0	12437	270366		
Total	61790	1001481	0	0	20	3178	291	11822	124	3989	0	0	74202	1289756
Total - I	69506	1036016	0	0	25	3633	340	8748	124	4959	82704	1333230		

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 Farrel'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.		
	All	M	F	All	M	F	All	M	F
<1 year									
1 to 4 years							2	1	1
5 to 14 years							3	1	2
15 to 24 years							1		1
25 to 44 years							14	9	5
45 to 64 years							8	7	1
65 years and older							6	5	1
Age unknown							2	1	1
Total :	0	0	0	0	0	0	36	24	12

2.6.3. Brucella in foodstuffs

Table Brucella in food

	Source of information	Sampling unit	Units tested	Total units positive for Brucella spp.	B. melitensis	B. abortus	B. suis	Brucella spp., unspecified
Milk, goats'								
raw milk for manufacture								
intended for manufacture of pasteurised/ UHT products (1)	LNIV	single	1	0				
Milk, sheep's								
raw milk for manufacture								
intended for manufacture of raw or low heat-treated products (2)	LNIV	single	9	0				
Cheeses made from cows' milk								
soft and semi-soft (3)	LNIV	single	2	0				
made from raw or low heat-treated milk (4)	LNIV	single	10	0				
Cheeses made from goats' milk								
soft and semi-soft (5)	LNIV	single	1	0				
Cheeses made from sheep's milk								
soft and semi-soft (6)	LNIV	single	8	0				
Cheeses, made from mixed milk from cows, sheep and/ or goats								
soft and semi-soft (7)	LNIV	single	13	0				

(1) : Private Control

(2) : Private Control

(3) : Private Control

(4) : Private Control

(5) : Private Control

(6) : Official Control

(7) : Official Control

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 Commission 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

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

Diagnostic/ analytical methods used

The National Reference Laboratory is Laboratório Nacional de Investigação Veterinária (LNIV), which is responsible for production and distribution of the antigens and control sera used for serological testing, and supervision of the Regional Laboratories.

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 (lung, 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 official surveillance;
- Epidemiological questionnaire;
- Animal movements are forbidden from and to the herd;
- Isolation of suspected animals in the herd;
- Sample collection for laboratory diagnosis.

Positive Herd:

- Herd under official restrictions;
- Compulsory slaughter of all positive animals, under official supervision with sample collection for laboratory diagnosis;
- Animal movements are forbidden from and to the herd;
- Serological control of all remaining animals;
- Thermic treatment of the milk.

Infected Herd:

- All measures mentioned for positive herds;
- Desinfection of all premises, equipment and materials.

B. Brucella melitensis in sheep

Monitoring system

Sampling strategy

See *Brucella melitensis* in goats.

Type of specimen taken

Other: 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.

C. *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 Commission 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

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

Diagnostic/ analytical methods used

The National Reference Laboratory is Laboratório Nacional de Investigação Veterinária (LNIV), which is responsible for production and distribution of the antigens and control sera used for serological testing, and supervision of the Regional Laboratories.

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 (lung, 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:

- CO₂ requirement;

- H₂S 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 official surveillance;

- Epidemiological questionnaire;

- Animal movements are forbidden from and to the herd;

- Isolation of suspected animals in the herd;

- Sample collection for laboratory diagnosis.

Positive Herd:

- Herd under official restrictions;

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

- Animal movements are forbidden 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.

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella spp.	B. melitensis	B. abortus	B. suis	Brucella spp., unspecified
Pigs	LNIV	animal	1	0				
Solipeds, domestic								
horses	DRDA AÇORES	animal	46	0				
Deer	LAB. EVORA	animal	3	0				
farmed	LNIV	animal	153	0				
Wild boars								
farmed	LNIV	animal	1	0				
Zoo animals, all	LNIV	animal	1	0				

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

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	62200	54833	52635	266	155	19	7.143	95.991	0.505	0.294
Região Autónoma dos Açores	12437	7528	11309	373	91	0	0	150.226	3.298	0.805
Total	74637	62361	63944	639	246	19	2.973	102.538	0.999	0.385
Total - I	83193	68801	67580	535	186	14	2.617	98.225	0.792	0.275

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

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	1038379	813097	802541	802541	1575	1690	2476	98.702	0.196
Região Autónoma dos Açores	270366	152794	187998	187998	1395	1395	1810	123.04	0.742
Total	1308745	965891	990539	990539	2970	3085	4286	102.552	0.3
Total - 1	1350570	999529	997573	997005	3834	3577	5359	99.804	0.384

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

Region	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							
	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
CONTINENTE	54833	813097	0	0	79	7249	843	22709	298	10884	4059	39823	56921	957714
Região Autónoma dos Açores	7528	152794	0	0	121	241	252	3399	0	0	9261	211583	2803	55143
Total	62361	965891	0	0	200	7490	1095	26108	298	10884	13320	251406	59724	1012857
Total - I	68801	999529	0	0	206	11875	1085	18738	338	8085	10343	144797	71221	1167075

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

Region	Total number of existing bovine		Officially free herds		Infected herds		Surveillance				Investigations of suspect cases																						
							Serological tests				Examination of bulk milk samples				Information about abortions				Epidemiological investigation														
																			Number of animals tested		Number of infected herds tested		Number of bovine herds tested		Number of animals or pools tested		Number of infected herds		Number of isolations of Brucella infection		Number of notified abortions whatever cause		Number of abortions due to Brucella abortus
Região Autónoma da Madeira	2865	6889	0	0	0	0	13	147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2865	6889	0	0	0	0	13	147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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

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	66957	66957	65793	1505	504	27	1.794	98.262	2.287	0.766
Região Autónoma dos Açores	3539	384	1207	2	2	0	0	314.323	0.166	0.166
Total	70496	67341	67000	1507	506	27	1.792	99.494	2.249	0.755
Total - I	69557	66132	66171	2019	768	32	1.585	100.059	3.051	1.161

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

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	2850767	2792789	2724512	2128107	11452	9702	13229	97.555	0.42
Região Autónoma dos Açores	13622	1353	7058	7058	5	5	5	521.656	0.071
Total	2864389	2794142	2731570	2135165	11457	9707	13234	97.761	0.419
Total - 1	2833702	2147804	2807538	2147804	15967	14161	20575	130.717	0.569

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

Region	Total number of existing ovine / caprine		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 microscopically	Number of animals positive microscopically	Number of suspected herds	
Região Autónoma da Madeira	212	4562	0	0	0	0	10	1151	0	1151	0	0	0	0	
	212	4562	0	0	0	0	10	1151	0	1151	0	0	0	0	

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Region	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		Herds		Animals					
Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	
CONTINENTE	66957	2792789	0	0	766	90304	5836	278824	1194	79798	5920	263315	53241	2138526		
Região Autónoma dos Açores	384	1353	0	0	0	0	0	0	0	0	0	0	0	3539	13622	
Total	67341	2794142	0	0	766	90304	5836	278824	1194	79798	5920	263315	56780	2152148		
Total - 1	66132	2833702	0	0	931	108904	4989	198119	1609	82830	6710	320101	55318	2123748		

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**

Yersinia	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
Y. enterocolitica	10	0	0	0	0	0
Y. enterocolitica - O:3	8					
Y. enterocolitica - O:9	2					

Table Yersinia in humans - Age distribution

Age Distribution	Y. enterocolitica			Yersinia spp.		
	All	M	F	All	M	F
<1 year						
1 to 4 years						
5 to 14 years	1		1			
15 to 24 years	1		1			
25 to 44 years	4	1	3			
45 to 64 years	4	1	3			
65 years and older						
Age unknown						
Total :	10	2	8	0	0	0

Table Yersinia in humans - Seasonal distribution

Month	Y. enterocolitica		Yersinia spp.	
	Cases		Cases	
January				
February				
March		2		
April		1		
May				
June		2		
July		1		
August				
September		1		
October		2		
November				
December		1		
not known				
Total :		10		0

2.7.3. Yersinia in foodstuffs**2.7.4. Yersinia in animals****Table Yersinia in animals**

	Source of information	Sampling unit	Units tested	Total units positive for Yersinia spp.	Y. enterocolitica	Yersinia spp., unspecified	Y. pseudotuberculosis	Y. enterocolitica - O:9	Y. enterocolitica - O:3	Y. enterocolitica - unspecified
Cattle (bovine animals)										
- Clinical investigations	FMV	animal	2	2		2				
Parrots										
zoo animals	LNIV	animal	2	0						
Zoo animals, all	LNIV	animal	8	6			6			
Birds										
- Clinical investigations	FMV	animal	1	1		1				

2.8. TRICHINELLOSIS

2.8.1. General evaluation of the national situation

2.8.2. Trichinellosis in humans

2.8.3. Trichinella in animals

A. 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 Commission Regulation (EC) N.º 2075/ 2005 of 5 December.

Case definition

General

Detection of one larvae of Trichinella.

Diagnostic/ analytical methods used

General

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

Notification system in place

Notifiable since 1953 by national law (Decreto-Lei nº 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.

B. *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.º 2075/ 2005).

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total units positive for Trichinella spp.	T. spiralis	Trichinella spp., unspecified
Pigs	LNIV	animal	3	0		
fattening pigs						
not raised under controlled housing conditions in integrated production system	DRDA AÇORES	animal	2997	0		
- Surveillance - surveillance survey	FMV	animal	124	0		
- at slaughterhouse - animal sample - Surveillance - official controls (other than control and eradication programmes) - official sampling	DGV	animal	12059	0		
Wild boars						
wild						
- Surveillance - surveillance survey	FMV	animal	10	0		
farmed	LNIV	animal	1273	0		
- at slaughterhouse - animal sample - Surveillance - official controls (other than control and eradication programmes) - official sampling	DGV	animal	193	0		
Zoo animals, all	LNIV	animal	2	0		
Wild animals						
- Surveillance - surveillance survey	FMV	animal	6	0		

2.9. ECHINOCOCCOSIS

2.9.1. General evaluation of the national situation

A. Echinococcus spp. general evaluation

Additional information

§ Diagnostic techniques:

Direct examination test.

§ 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**

Echinococcus	Cases	Cases Inc.	Autochthon cases	Autochthon Inc.	Imported cases	Imported Inc.
E. granulosus	36	0	0	0	0	0
E. multilocularis	36					
Echinococcus spp.						

Table Echinococcus in humans - Age distribution

Age Distribution	E. granulosus			E. multilocularis			Echinococcus spp.		
	All	M	F	All	M	F	All	M	F
<1 year									
1 to 4 years									
5 to 14 years									
15 to 24 years									
25 to 44 years	3		3						
45 to 64 years	8	4	4						
65 years and older	5	2	3						
Age unknown	20	9	11						
Total :	36	15	21	0	0	0	0	0	0

2.9.3. Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling unit	Units tested	Total units positive for Echinococcus spp.	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals)	LNIV	animal	21	4	4		
- at slaughterhouse - Surveillance - official controls (other than control and eradication programmes) (1)	DSVR NORTE	animal	177743	95		0	95
Sheep	LNIV	animal	1	0			
Pigs	LNIV	animal	11	0			
- at slaughterhouse - Surveillance - official controls (other than control and eradication programmes) (Visual examination)	DSVR LISBOA E VALE DO TEJO	animal	2105445	8			8
Dogs	LNIV	animal	1	0			

(1) : Visual examination

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 agglutination.
- PCR.

2.10.2. Toxoplasmosis in humans

Table Toxoplasma in humans - Species/ serotype distribution

Toxoplasma	Cases	Cases Inc.
Toxoplasma spp.	30	0
Congenital cases	30	
	16	

Table Toxoplasma in humans - Age distribution

Age Distribution	Toxoplasma spp.			F
	All	M		
<1 year	16			
1 to 4 years				
5 to 14 years				
15 to 24 years	5			5
25 to 44 years	6			6
45 to 64 years	1			1
65 years and older				
Age unknown	2			2
Total :	30	0		14

2.10.3. Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma gondii
Cattle (bovine animals)	LNIV	animal	28	4
Sheep	LNIV	animal	41	8
Goats	LNIV	animal	32	12
Dogs	LNIV	animal	2	0
Cats	LNIV	animal	6	2
Zoo animals, all	LNIV	animal	1	1

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 the 10th August 1984. The animal was isolated and euthanized. The disease was confirmed by direct immunofluorescence the 31st August of 1984. The veterinary authorities implemented sanitary and prophylactic measures and since then, no further cases were detected and Portugal could maintain its free situation.

Additional information

By national law (Decreto-Lei nº314/ 2003, December the 17th and Portaria nº 81/ 2002, January the 24th), the annual dog rabies vaccination is compulsory.

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 Bacteriológico Câmara 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 nº314/ 2003, December the 17th and Portaria nº 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 nº314/ 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.

Additional information

In Portugal the annual rabies vaccination is compulsory since 1925.

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	unspecified Lyssavirus	European Bat Lyssavirus - unspecified	classical rabies virus (genotype 1)
Dogs							
stray dogs							
- Surveillance - official controls (other than control and eradication programmes) - official sampling - suspect sampling	DRV MADEIRA	animal	7	0			
- Clinical investigations	DRV MADEIRA	animal	8	0			
- Clinical investigations (" ")	DGV	animal	1	0			
Cats							
stray cats							
- Clinical investigations	DRV MADEIRA	animal	1	0			
Foxes							
wild							
- from hunting - Surveillance - official controls (other than control and eradication programmes) - official sampling	DGV	animal	41	0			
Other carnivores							
wild							
- from hunting - Surveillance - official controls (other than control and eradication programmes) - official sampling	DGV	animal	1	0			

2.12. LEPTOSPIROSIS**2.12.1. General evaluation of the national situation****2.12.2. Leptospira in animals****Table Leptospira in animal**

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Leptospira	Leptospira spp., unspecified	L. interrogans serovar Icterohaemorrhagiae	L. interrogans serovar Saxkoebing
Cattle (bovine animals)	DRDA AÇORES	animal	0.020ml	424	124	24	8	92
Pigs								
- at AI station - Surveillance	DRDA	animal	0.020ml	9	3	3		
Dogs								
- in total - Clinical investigations	DRDA AÇORES	animal	0.020ml	4	2		2	

Footnote

SEROLOGICAL DIAGNOSTIC - MAT

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 burnetii
Cattle (bovine animals)	LNIV	animal	170	0
Sheep	LNIV	animal	55	1
Goats	LNIV	animal	7	4

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 isolates

Table Antimicrobial susceptibility testing of E. coli in animals

n = Number of resistant isolates													
E. coli													
	Cattle (bovine animals)	Pigs	Gallus gallus (fowl)	Turkeys	Other animals (DRV MADEIRA Feline, Canine, Rabbits, Parrots)	Cattle (bovine animals) (DRV MADEIRA)	Gallus gallus (fowl) (DRV MADEIRA)	Cattle (bovine animals) (FMV)	All animals - unspecified (FMV)	Pigs (FMV)			
Isolates out of a monitoring programme	no				no	no	no	yes	yes	yes			
Number of isolates available in the laboratory	16				20	5	13	19	19	11			
Antimicrobials:													
Tetracyclines													
Tetracyclin					20	12	5	4	13	11	7	4	8
Amphenicols													
Chloramphenicol					20	6	5	2	13	1		9	2
Cephalosporins													
3rd generation cephalosporins					20	7	5	2	13	4			
Cefalexin											11	7	7
Cefotaxim											7	1	9
Fluoroquinolones													
Ciprofloxacin					20	4	5	5	13	4			
Enrofloxacin											7	1	8
Quinolones													
Nalidixic acid					20	5	5	5	13	5	7	0	13
Aminoglycosides													
Streptomycin					20	10	5	3	13	4	11	11	9
Gentamicin					20	4	5	5	13	3	11	3	9
Neomycin					20	4	5	5	13	4			
Kanamycin					20	5	5	1	13	3			

[illegible]

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Number of resistant isolates (n) and number of isolates with the concentration µl/ ml) or zone (mm) of inhibition equal to E. coli																																			
All animals (FMV)																																			
Isolates out of a monitoring programme	no																																		
	49																																		
Number of isolates available in the laboratory																																			
Antimicrobials:			N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35	
Tetracyclines																																			
Tetracyclin			25	18	18																1	2	1		2		1								
Amphenicols																																			
Chloramphenicol			13	1	1												2		1		2	4	1		1		1								
Florfenicol			0																																
Cephalosporins																																			
3rd generation cephalosporins			0	0																															
Cefalexin			30	11	5	1				1	1	2	1	6	8	1	1	1	2																
Cefotaxim			26	1	1														1	1					1	2	1	1	1	5	2	2	1	4	3
Fluoroquinolones																																			
Ciprofloxacin			0																																
Enrofloxacin			25	1	1												1		1	2	2			1	3	1	2	3	2	1	2	1	1		1
Quinolones																																			
Nalidixic acid			25	4	4												2	2	1	1	4	2	3	2	1	2	1								
Sulfonamides																																			
Sulfonamide			0																																
Trimethoprim			0																																
Aminoglycosides																																			
Streptomycin			25	15	10	1		3		1		2	2	4	2																				
Gentamicin			26	3	2						1	1	2	1	2	4	3	4	3	1	2														
Neomycin			3	3					1	2																									
Kanamycin			0																																
Penicillins																																			
Ampicillin			0	0																															
Trimethoprim + sulfonamides																																			



Table Antimicrobial susceptibility testing of E. coli in food

n = Number of resistant isolates														
	E. coli													
	Meat from pig	Meat from bovine animals		Meat from broilers (Gallus gallus)		Meat from other poultry species		Meat from broilers (Gallus gallus) (DRV MADEIRA)		Meat from bovine animals (DRV MADEIRA)		Cheeses, made from unspecified milk or other animal milk (DRV MADEIRA)		
Isolates out of a monitoring programme									yes		yes			yes
Number of isolates available in the laboratory									1		6			33
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Tetracyclines														
Tetracyclin									1	0	6	0	33	1
Amphenicols														
Chloramphenicol									1	0	6	0	33	0
Cephalosporins														
3rd generation cephalosporins									1	0	6	0	32	1
Cefalexin									1	0	6	0	32	1
Fluoroquinolones														
Ciprofloxacin									1	0	6	0	32	0
Quinolones														
Nalidixic acid									1	0	5	5	32	14
Aminoglycosides														
Streptomycin									1	0	6	1	33	10
Gentamicin									1	0	6	6	33	14
Neomycin									1	0	6	6	32	15
Kanamycin									1	0	6	6	33	15
Penicillins														
Ampicillin									1	0	6	3	33	8

Table Antimicrobial susceptibility testing of E. coli in Other products of animal origin (DRV MADEIRA (Cheese and Meat)) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration µl/ ml) or zone (mm) of inhibition equal to																																				
E. coli																																				
Other products of animal origin (DRV MADEIRA (Cheese and Meat))																																				
Isolates out of a monitoring programme	no																																			
	40																																			
Number of isolates available in the laboratory																																				
Antimicrobials:	N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35				
Tetracyclines																																				
Tetracyclin	36										1	6	9	6	5	4	4			1																
Amphenicols																																				
Chloramphenicol	40												2	3	2	6	7	8	1	6		4					1									
Florfenicol	0																																			
Cephalosporins																																				
3rd generation cephalosporins	38										1	1	1	2	3	4	5	1	1	2	2		2	3	2	2	3	1	1				1			
Cefalexin	20				1				2	2	2	3	3	4	1		1		1																	
Fluoroquinolones																																				
Ciprofloxacin	39												6	3	1	1	2	3	2	2	2	2		3	2	1	5		1			1	2			
Enrofloxacin	0																																			
Quinolones																																				
Nalidixic acid	35						1	7	9	2	1	1				1	3	1	3	1		2		2		1										
Sulfonamides																																				
Sulfonamide	0																																			
Trimethoprim																																				
Aminoglycosides																																				
Streptomycin	24				4	1	5	1	3	6	1	3																								
Gentamicin	40						2	3	15	1	1	4	3	6	4			1																		
Neomycin	39					1	4	11	5	1	4	6	5	2																						
Kanamycin	39						5	10	4	2	1	5	7	3			2																			
Penicillins																																				
Ampicillin	0																																			

Table Breakpoints used for antimicrobial susceptibility testing in Animals

Test Method Used

Disc diffusion

Agar dilution

Broth dilution

E-test

Standards used for testing

Escherichia coli, non-pathogenic	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content microg	Breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest		Susceptible >=	Intermediate	Resistant <=
Amphenicols										
Chloramphenicol							30	18	13.17	12
Florfenicol										
Tetracyclines										
Tetracyclin							30	19	15.18	14
Fluoroquinolones										
Ciprofloxacin										
Enrofloxacin							5	23	17.22	16
Quinolones										
Nalidixic acid							30	19	14.18	13
Trimethoprim										
Sulfonamides										
Sulfonamide										
Aminoglycosides										
Streptomycin							10	15	12.14	11
Gentamicin							30	15	13.14	12
Neomycin							5	17	13.16	12
Kanamycin										
Trimethoprim + sulfonamides										
Trimethoprim + Sulfonamide							25	16	11.15	10
Cephalosporins										
Cefalexin							30	18	15.17	14
3rd generation cephalosporins							30	23	15.22	14
Penicillins										
Ampicillin							10	17	14.16	13

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1. HISTAMINE**4.1.1. General evaluation of the national situation****4.1.2. 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 matured									
(Horse mackerel)	INIAP/ IPIMAR	batch	300g	1	0	1	0	0	0
(Mackerel)	INIAP/ IPIMAR	batch	4kg	7	0	7	0	0	0
(Sardine)	INIAP/ IPIMAR	batch	11kg	15	0	15	0	0	0
(Tuna)	INIAP/ IPIMAR	batch	15kg	17	0	17	0	0	0
Fishery products which have undergone enzyme maturation treatment in brine									
(Anchovies)	INIAP/ IPIMAR	batch	3.5kg	7	5	2	0	5	0
Fishery products, unspecified									
(Hake)	INIAP/ IPIMAR	batch	15kg	3	0	3	0	0	0
(Ling)	INIAP/ IPIMAR	batch	500g	1	0	1	0	0	0
(Swordfish)	INIAP/ IPIMAR	batch	500g	1	0	1	0	0	0
(Blue shark)	INIAP/ IPIMAR	batch	500g	1	0	1	0	0	0
(Crustacea)	INIAP/ IPIMAR	batch	5kg	8	0	8	0	0	0
(Mixture of frozen fish and shelfish))	INIAP/ IPIMAR	batch	25kg	5	0	5	0	0	0
Molluscan shellfish	INIAP/ IPIMAR	batch	30kg	11	0	11	0	0	0

4.2. ENTEROBACTER SAKAZAKII

4.2.1. General evaluation of the national situation

4.2.2. Enterobacter sakazakii in foodstuffs

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	LNIV	single	25g	23	0
Cheeses made from goats' milk					
soft and semi-soft made from pasteurised milk	LNIV	single	25g	6	0
Cheeses made from sheep's milk					
soft and semi-soft made from pasteurised milk	LNIV	single	25g	1	0
Cheeses, made from mixed milk from cows, sheep and/ or goats					
soft and semi-soft made from pasteurised milk	LNIV	single	25g	16	0

Footnote

LNIV - Private Control

5. FOODBORNE OUTBREAKS

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, epidemiological 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 in humans

Causative agent	General outbreak	Household outbreak	Total Number of persons			Food implicated		Confirmed as a source		Type of evidence for implication of the food	Place where food was consumed	Contributing factors
			ill (in total)	died	in hospital	Food (sub)category		Suspected as a source	Confirmed as a source			
1	2	3	4	5	6	7	7			8	9	10
Bacillus - B. cereus		1	6	0	5	cooked codfish cakes			yes	laboratory confirmed	household	deficiencies in food preparation and refrigeration
Bacillus - B. cereus	1		15	0	15	cooked shellfish cakes			yes	laboratory confirmed	party	deficiencies in food preparation and refrigeration
Clostridium - C. botulinum (3)		1	2	0	2	raw cured ham			yes	laboratory confirmed	household	deficiencies in food preparation and refrigeration
Clostridium - C. botulinum (2)	1		7	0	7	raw cured ham			yes	laboratory confirmed	household	deficiencies in food preparation
Clostridium - C. perfringens	1			0		cooked codfish meal			yes	laboratory confirmed	hotel	deficiencies in reheating
Clostridium - C. perfringens (4)	1			0		cooked meat meal (cow, pork, chicken, sausage and vegetables)			yes	laboratory confirmed	hospital	deficiencies in reheating
Clostridium - C. perfringens	1		27	0	0	cooked meat meal (cow, chicken and vegetables)			yes	laboratory confirmed	solidarity institution (elder and kindergarden)	deficiencies in reheating
Escherichia coli, pathogenic (1)	1		25	0	25	sandwiches with cooked meat			yes	laboratory confirmed	school picnic	deficiencies in food handling and refrigeration
Escherichia coli, pathogenic - Enterotoxigenic E. coli (ETEC) (5)	1		10			vegetables salad			yes	laboratory confirmed	institutional canteen	deficiencies in food handling
Salmonella - S. Enteritidis - 1b		1	15	0	15?	desert (tiramisu)			yes	laboratory confirmed	household	
Staphylococcus - S. aureus (6)	1		30			caramel cream			yes	laboratory confirmed	institutional canteen	deficiencies in food handling
Staphylococcus - S. aureus (7)	1		39			fish salad			yes	laboratory confirmed	institutional canteen	deficiencies in food handling
Yersinia - Y. enterocolitica	1		1	0		cooked meat meal with raw vegetables			yes	laboratory confirmed	school canteen	deficiencies in food preparation

(1) : E coli EAEC + S aureus (enterotoxin A)

- (2) : C botulinum type B
- (3) : C. botulinum type B
- (4) : also isolated B.cereus
- (5) : ETEC ST/ LT toxins
- (6) : also isolated B. cereus
- (7) : S aureus (enterotoxin)