



PORTUGAL

The Report referred to in Article 5 of Directive 92/117/EEC

TRENDS AND SOURCES OF ZOO NOSES AND ZOO NOTIC AGENTS IN HUMANS, FOODSTUFFS, ANIMALS AND FEEDINGSTUFFS

including information on foodborne outbreaks and
antimicrobial resistance in zoonotic agents

IN 2004

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: **Portugal**

Reporting Year: **2004**

Institutions and laboratories involved in monitoring:

Laboratory name	Description	Contribution
Instituto Nacional Dr. Ricardo Jorge (INSA)	Laboratory belonging to Ministry of Health	Human Health information
DRAALG - Direcção regional de Agricultura do Algarve	Regional Veterinary Services in Algarve	
DGFCQA - Direcção Geral da Fiscalização e Controlo da Qualidade Alimentar		
DRAAL - Direcção Regional de Agricultura do Alentejo	Regional Veterinary Services in Alentejo	
DRABL - Direcção Regional de Agricultura da Beira Litoral	Regional Veterinary Services in Beira Litoral	
DRATM - Direcção Regional de Agricultura de Trás os Montes	Regional Veterinary Services in Trás os Montes	
DRA Madeira - Direcção Regional de Pecuária da Madeira	Regional Veterinary Services for the Autonomous Region of Madeira	

Portugal 2004 Report on trends and sources of zoonoses

Faculdade de edicina Veterinária da Universidade Técnica de Lisboa	Veterinary School in Lisbon	
Laboratório TOMAZ	Private Laboratory	
SGS Laboratory	Private Laboratory	
DGV - Direcção Geral de Veterinária	National Veterinary Authority	Reporting Authority
LNIV - Laboratório Nacional de Investigação Veterinária	National Veterinary Laboratory - belongs to Ministry of Agriculture	

PREFACE

This report is submitted to the European Commission in accordance with Article 5 of Council Directive 92/117/EEC¹. 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 2004. 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 Council Directive 92/117/ECC of 17 December 1992 concerning measures for protection against specified zoonoses and specified zoonotic agents in animals and products of animal origin in order to prevent outbreaks of foodborne infections and intoxications, OJ L 62, 15.3.1993, p. 38

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1. ANIMAL POPULATIONS

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

Table 14.1 Susceptible animal populations: number of herds and holdings rearing animals

* Only if different than current reporting year

Animal species	Category of animals	Number of herds or flocks		Number of holdings	
			Year*		Year*
Cattle (bovine animals) in total (1)				90292	2004
Farmed deer	in total			173	2004
Sheep and goats	in total (2)			70977	2004

(1): The total includes 12 437 holdings from the Autonomous Region of the Azores

(2): The total includes 3809 holdings in the Autonomous region of the Azores.

Footnote

Source: Direcção Geral de Veterinária (DGV) and Direcção Geral dos Recursos Florestais

Table 14.2 Susceptible animal populations: number of animals

* Only if different than current reporting year

Animal species	Category of animals	Livestock numbers (live animals)		Number of slaughtered animals	
			Year*		Year*
Cattle (bovine animals)	in total (1)	1389911	2004		
Ducks	in total	4000000	2004		
Gallus gallus	broilers	205000000	2004		
	laying hens	154000	2004		
Turkeys	in total	4582000	2004		
Quails	in total	7800000	2004		
Sheep and goats	in total (2)	2856520	2004		
Farmed deer	in total	1499	2004		

(1): The total includes 270366 animals from the Autonomous Region of the Azores

(2): The total includes 13622 animals from the Autonomous region of the Azores

Footnote

Direcção Geral de Veterinária (DGV)

2. INFORMATION ON SPECIFIC ZONOSSES AND ZONOTIC 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 Surveillance Programme for *Gallus gallus* that has been implemented only in one region of Portugal (Beira Litoral); There is also going a baseline study on the prevalence of salmonella in laying hens.

Additional information

Diagnostic techniques:

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

Bacteriology:

· Pre-enrichment in

Ø Buffered Peptone Water (for faeces, bedding, nests samples and fluffy)

· Selective enrichment in:

Ø Rappaport Vassiliadis with Soja broth / Mueller-Kauffman

· Plating on solid media:

Ø XLD and SMID2 Agar

· Biochemical reactions by API 20E strips

Feedingstuff / Foodstuff: ISO 6579: 2002 (E) method

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).

Phage typing for *Salmonella* Enteritidis and *Salmonella* Typhimurium has started on January 1999, see data on the tables.

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 3.4.1.A Salmonellosis in man - species/serotype distribution

	Cases	Cases Inc	Autochtone cases	Autochtone Inc	Imported cases	Imported Inc	unknown status
Salmonella	691	0	0	0	0	0	0
S. Enteritidis	555						
S. Typhimurium	90						
other serovars	46						

Footnote

Source: Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)

Table 3.4.1.B Salmonellosis in man - age distribution

Age Distribution	S. Enteritidis			S. Typhimurium			Salmonella spp.		
	All	M	F	All	M	F	All	M	F
<1 year	21	13	8	10	9	1	41	23	18
1 to 4 years	151	79	72	38	15	23	202	100	102
5 to 14 years	163	84	79	20	13	7	188	100	88
15 to 24 years	26	14	12				27	15	12
25 to 44 years	77	43	34	10	5	5	91	49	42
45 to 64 years	40	19	21	4	3	1	45	22	23
65 years and older	24	12	12	6	4	2	34	17	17
Age unknown	53	15	17	2	1	1	63	18	20
Total :	555	279	255	90	50	40	691	344	322

Footnote

Source: Instituto nacional de Saúde Dr. Ricardo Jorge (INSA)

Table 3.4.2 Salmonellosis in man - seasonal distribution

Month	S. Enteritidis		S. Typhimurium		Salmonella spp.	
	Cases	Cases	Cases	Cases	Cases	Cases
January	45		2		50	
February	20		4		26	
March	20		6		32	
April	19		4		27	
May	56		7		69	
June	51		10		64	
July	55		11		69	
August	78		17		99	
September	71		9		87	
October	49		9		61	
November	61		6		70	
December	30		5		37	
not known						
Total :	555		90		691	

Footnote

Source: Instituto Nacional de saúde Dr. Ricardo Jorge (INSA)

2.1.3. Salmonella in foodstuffs

Table 3.3.1 Salmonella sp. in meat and meat products

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	S. Enteritidis	S. Typhimurium	Salmonella spp.	S. Derby
Bovine meat										
fresh										
- at processing plant	OC		sample	25	3	0				
- at retail	OC/PC		sample	25g	61	0				
minced meat										
- at processing plant	OC		sample	25g	2	0				
- at retail	OC		sample	10g	9	0				
meat products										
non-ready-to-eat										
- at processing plant	PC		sample	25g	2	0				
- at retail	PC		sample	25g	4	0				
ready-to-eat										
- at processing plant	PC		sample	25g	7	0				
- at retail	OC		sample	25g	1	0				
Pig meat										
fresh										
- at slaughter	PC		sample	25g	256	39			1	
- at retail	PC/OC		sample	25g	21	1				
minced meat										
- at retail (2)	OC/PC		sample	10g	13	0				
meat products										
ready-to-eat										
- at processing plant	PC		sample	25g	47	0				
- at retail	PC		sample	25g	54	2		1		1
Broiler meat										
fresh										
- at slaughter	OC		sample	25g	9	2	2			
- at retail	PC		sample	25g	8	1				
meat products										
ready-to-eat										
- at retail	PC		sample	25g	5	0				
Turkey meat										
minced meat										
- at retail	PC/OC		sample	25	4	0				

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Other meat										
fresh										
- at retail (1)	OC		sample	25g	6	0				

(1) : OC - Official Control (Border Control)

(2) : OC - Official Control (Meat Inspection Services)

Footnote

OC - Official Control

PC - Private Control

SOURCE: Faculdade de Medicina Veterinária in Lisbon (FMV- Veterinary Medicine School in lisbon); Laboratório Nacional de Investigação Veterinária(LNIV); Laboratório Tomaz,Lda.; Direcção Regional de Pecuária da Região Autónoma da Madeira; Direcção Regional de Agricultura da Beira Litoral (DRABL)and Direcção Geral de Fiscalização e Controlo da Qualidade Alimentar (DGFCQA)

Table 3.3.2 Salmonella sp. in other food

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	S. Enteritidis	S. Typhimurium
cow milk								
raw (1)	OC/AC		Sample/Lot	25ml/1ml	19	0		
Dairy products								
ready-to-eat (2)	OC/PC		sample	1g/25g	574	10		
Table eggs								
- at packing centre (3)	PC		lot	25g	11	0		
Egg products (4)	pc		sample	25g	28	0		
Fishery products								
fish (5)	OC/PC		sample	25g	109	0		
prepared fish meals (6)	Outbreak	1)	X	25g	1	1	5	
Cereals and bakery products (7)	VP		sample	25g	47	0		
Catering (8)	OC/PC		sample	25g	16	0		
Cheeses	PC		sample/lot	25ml/1ml	19	0		
soft and semi soft	PC		lot	1g	3	0		

- (1) : OC - Official Control
AC - private control
(2) : VP- Voluntary Practice
(3) : VP - Voluntar Practice
(4) : V- Voluntary
(5) : OC - Oficial Control (includes Border Control and Oficial Fiscalization)
PC - Private Control
(6) : 1) - ISO 6579/ELFA Method
X - The epidemiological unit was not given
Salmonella Enteritidis 1b;
Salmonella Enteritidis 32;
Salmonella Enteritidis 7.
(7) : VP-Voluntary Practice
(8) : OC- Oficial Control
PC- Private Control

Footnote

Source: Direcção Regional de Pecuária da madeira; INSA; LNIV; Laboratório Tomaz - Leiria

2.1.4. Salmonella in animals

Table 3.2.1 Salmonella sp. in Poultry breeding flocks (Gallus gallus)

	Source of information	Remarks	Epidemiological unit	Flocks tested	Flocks positive	S. Enteritidis	S. Typhimurium	S. Give	S. Tennessee	Salmonella spp.
Gallus gallus										
parent breeding flocks for egg production line										
- during production period (2)	OC		flock	6	1	1				
- during rearing period (6)	OC		flock	0	0					
parent breeding flocks for meat production line										
day-old chicks (3)	OC		Flock	24	0					
- during rearing period (4)	OC/PC		Holding	11	3	3				
- during production period (5)	OC		Flock	69	25	43		2	2	1

(1) : PC - Private Control

(2) : OC - Official Control

6 Flocks tested: 167 samples taken from meconium; 162 from eggs and 5 from feces at the laying period (with 54 positive)

(3) : OC - Official Control

There analysed 39 samples from the transportation boxes and chicks that died before arrival.

(4) : OC - Official Control

PC - Private Control

(5) : OC - Official Control

167 meconium samples were taken; 162 non hatched eggs and 5 samples from chicken feces during the laying period (from this 54 were positive).

(6) : OC - Official Control

Footnote

Source: Direcção Regional de Pecuária da Região Autónoma da Madeira and Direcção regional de Agricultura da Beira Litoral

Table 3.2.2 Salmonella sp. in other commercial poultry

	Source of information	Remarks	Epidemiological unit	Flocks tested	Flocks positive	Salmonella spp.	S. Enteritidis	S. Typhimurium	S. Lexington	S. Tennessee
Gallus gallus										
laying hens										
day-old chicks (1)	PC		holding	2	1		1			
- during production period (2)	OC/PC		flock/holding	9	2	1	5		1	1
broilers										
day-old chicks	PC		flock/holding	26	2		2			
- during rearing period	PC		holding	6	0					
unspecified	PC		flock/animal	28	5	1	3			
unspecified										
unspecified	D		Animal	46	1		1			
Ducks										
unspecified	D		Animal/flock	5	2			2		
Geese										
unspecified	D		Animal	1	0					
Turkeys										
unspecified	D/PC		Animal	31	0					

(1) : PC - Private Control

(2) : OC - Official Control

PC - Private Control

For each flock tested there were analysed 5 samples from feces and 2 from dust (a total of 35 samples).

Footnote

PC - Private Control

D - Diagnosis

Source: Laboratório Nacional de Investigação Veterinária (LNIV); Direcção Regional de Pecuária da Região Autónoma da Madeira and Direcção Regional de Agricultura do Ribatejo e Oeste

Table 3.2.3 Salmonella sp. in non-commercial poultry and birds

	Source of information	Remarks	Epidemiological unit	Flocks tested	Flocks positive	S. Derby	S. Enteritidis	S. Typhimurium
Pigeons (1)	D/PC		Flock/Animal	70	6			6
Pheasants	D		Animal	1	0			
Partridges	D		Animal	13	1	1		
Ostriches	D		Animal	5	0			
canary	D		Animal	3	0			
Toucan	D		Animal	3	0			
Swans	D		Animal	1	0			
Parrots	D		Animal	3	1		1	

(1) : D - Diagnostic
PC - Private Control

Footnote

D - Diagnosis

Source: Laboratório Nacional de Investigação Veterinária (LNIV); Direcção Regional de Pecuária da Região Autónoma da Madeira and Direcção regional de Agricultura da Beira Litoral.

Table 3.2.4 Salmonella sp. in animals (non poultry)

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	S. Ferruch	S. group B	S. London	Salmonella spp.	S. Enteritidis	S. Typhimurium
Cattle (bovine animals)	D		Holding/Animal	269	3		1				2
Sheep	D		Holding/Animal	131	3	1					
Goats	D		Animal	54	0						
Pigs											
fattening pigs (1)	FMV/PC	RP	Animal	257	39				39		
unspecified	D/PC		Animal	265	11		2	1			8
Solipeds	D		Animal	15	0						
Pet animals											
cats	D		Animal	14	0						
dogs	D		Animal	47	0						
Rabbits	D		Animal	14	0						
Zoo animals	D		Animal	86	2					2	
Shellfish (2)	PC		Animal	20	4						
Other animals	PC		Animal	1	0						

(1) : FMV - Faculdade de Medicina Veterinária in Lisbon (Veterinary Medicine in Lisbon)
 RP - Research Project
 (2) : PC - Private Control

Footnote

D - Diagnosis

PC - Private Control

Source: Faculdade de Medicina Veterinária (FMV - Veterinary School in Lisbon); Laboratório Nacional de Investigação Veterinária (LNIV); Laboratório Tomás, Lda. and Direcção Regional de Agricultura da Beira Litoral.

2.1.5. Salmonella in feedstuffs

Table 3.1.1 Salmonella sp. in feed material of animal origin

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	S. Enteritidis	S. Typhimurium	S. Schwarzengrund
Feed material of land animal origin									
Dairy products (1)	PC		sample	25g/1ml	52	0			
Meat meal (2)	OC		sample	25g	15	1	0	0	1
Animal fat (3)	OC		sample	25g	7	0			
Feed material of marine animal origin									
Fish meal (4)	PC		sample	25g	4	0			
other fish products (5)	PC		sample	25g	3	0			

- (1) : PC - Private Control
 (2) : OC - Official Control (Meat Inspection Services)
 (3) : OC - Official Control (Meat Inspection Services)
 (4) : PC - Private Control
 (5) : PC - Private Control

Footnote

Source: Laboratório Nacional de Investigação Veterinária (LNIV) and Direcção regional de Agricultura do Algarve (DRAALG)

Table 3.1.2 Salmonella sp. in feed of vegetable origin

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	S. Enteritidis	S. Typhimurium
Feed material of oil seed or fruit origin								
Soya (bean) derived (1)	PC		sample	25g	1	0		
other feed material								
Other seeds and fruits (2)	PC		sample	2g	2	0		

(1) : PC - Private Control
 (2) : PC - Private Control

Footnote

Source: Laboratório Nacional de Investigação Veterinária (LNIV) and Direcção regional de Agricultura do Alentejo (DRAAL)

Table 3.1.3 Salmonella sp. in compound feedingstuff

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	S. Enteritidis	S. Typhimurium
Compound feedingstuffs for cattle								
Final product (1)	PC		sample	25g	1	0		
Compound feedingstuffs for pigs								
Final product (2)	PC		sample	25g	5	0		
Compound feedingstuffs for poultry (non specified)								
Final product (3)	PC		sample	25g	3	0		

(1) : PC - Private Control

(2) : PC - Private Control

(3) : PC - Private Control

Footnote

Source: Laboratório Nacional de Investigação Veterinária (LNIV)

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.

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 3.2.5.2 Antimicrobial susceptibility testing of S. Enteritidis in animals

	S. Enteritidis							
	Cattle (bovine animals)		Pigs		Gallus gallus		Turkeys	
Isolates out of a monitoring program								
Number of isolates available in the laboratory					5			
Antimicrobials:	N	%R	N	%R	N	%R	N	%R
Tetracycline					4	0%		
Amphenicols								
Chloramphenicol					5	0%		
Cephalosporin								
Cefotaxim					5	0%		
Fluoroquinolones								
Ciprofloxacin					5	0%		
Quinolones								
Nalidixic acid					5	80%		
Aminoglycosides								
Streptomycin					4	0%		
Gentamicin					4	0%		
Neomycin					3	0%		
Kanamycin					5	0%		
Trimethoprim + sulfonamides					3	0%		
Penicillins								
Amoxicillin					5	0%		
Number of multiresistant isolates								
fully sensitives					4			
resistant to 1 antimicrobial					1			

Footnote

Direcção Regional de Pecuária da Região Autónoma da Madeira

Table 3.2.5.1 Antimicrobial susceptibility testing of Salmonella spp. in animals

Salmonella spp.								
	Cattle (bovine animals)		Pigs		Gallus gallus		Turkeys	
Isolates out of a monitoring program								
Number of isolates available in the laboratory					7			
Antimicrobials:	N	%R	N	%R	N	%R	N	%R
Amphenicols								
Chloramphenicol					1	0%		
Cephalosporin								
Cefotaxim					1	0%		
Fluoroquinolones								
Ciprofloxacin					1	0%		
Quinolones								
Nalidixic acid					1	0%		
Aminoglycosides								
Streptomycin					1	0%		
Gentamicin					1	0%		
Kanamycin					1	0%		
Trimethoprim + sulfonamides					1	100%		
Penicillins								
Amoxicillin					1	0%		

Footnote

Source: Direcção Regional de Pecuária Da Região Autónoma da Madeira

Table 3.2.6 Breakpoints for antibiotic resistance of Salmonella in Animals

Test Method Used

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS
CASFM

Subject to quality control

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 <=
Tetracycline	NCCLS						30	19	16,5	14
Amphenicols										
Chloramphenicol	NCCLS						30	18	15	12
Florfenicol										
Fluoroquinolones										
Ciprofloxacin	SFM						5	22	20	18
Enrofloxacin										
Quinolones										
Nalidixic acid	SFM						30	20	17	14
Trimethoprim										
Sulfonamides										
Sulfonamide										
Aminoglycosides										
Streptomycin										
Gentamicin	NCCLS						10	15	13,5	12
Neomycin										
Kanamycin	NCCLS						30	18	15,5	13
Trimethoprim + sulfonamides	NCCLS						25	16	13	10
Cephalosporin										
Cefalexin	SFM						30	18	14,5	11
Cefotaxim	SFM						30	21	17,5	14
3rd generation cephalosporins										
Penicillins										
Ampicillin	SFM						25	21	17	13

Footnote

Source: Direcção Regional de Pecuária da Região Autónoma da Madeira

Table 3.2.6 Breakpoints for antibiotic resistance of Salmonella in Feedingstuff

Test Method Used

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS
CASFM

Subject to quality control

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 <=
Tetracycline	NCCLS						30	19	16,5	14
Amphenicols										
Chloramphenicol	NCCLS						30	18	15	12
Florfenicol										
Fluoroquinolones										
Ciprofloxacin	SFM						5	22	20	18
Enrofloxacin										
Quinolones										
Nalidixic acid	SFM						30	20	17	14
Trimethoprim										
Sulfonamides										
Sulfonamide										
Aminoglycosides										
Streptomycin										
Gentamicin	NCCLS						10	15	13,5	12
Neomycin										
Kanamycin	NCCLS						30	18	15,5	13
Trimethoprim + sulfonamides	NCCLS						25	16	13	10
Cephalosporin										
Cefalexin	SFM						30	18	14,5	11
Cefotaxim	SFM						30	21	17,5	14
3rd generation cephalosporins										
Penicillins										
Ampicillin	SFM						25	21	17	13

Footnote

SOURCE: Direcção Regional de Pecuária da Região Autónoma da 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:

- Internal method based on ISO 10272
- Typing of isolates by Lior method

Other than foodstuffs:

- samples from sheathwashings, semen and intestinal scrapings are plated in Campylobacter agar or Brucella agar supplemented with: SR 69, SR84, SR 85 (*C. foetus*) and SR 117 (all from Oxoid).
- Biochemical identification.

2.2.2. Campylobacteriosis in humans

2.2.3. Campylobacter in foodstuffs

Table 6.2 Thermophilic Campylobacter spp. in food

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	C. coli	C. lari	C. upsaliensis	C. jejuni	Campylobacter spp.
Bovine meat										
fresh										
- at retail (1)	OC		Sample	25	5	1				
Pig meat										
fresh										
- at retail (2)	OC		Sample	25	14		2			1
Poultry meat										
fresh										
- at processing plant	OC		sample	25	33	0	0	0	0	0
- at retail (4)	OC		Sample	25	47				4	
Dairy products										
ready-to-eat (5)	OC		sample	25	78	0	0	0	0	0
Fishery products										
fish (6)	OC		sample	25	1	0	0	0	0	0

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

Footnote

Source: Laboratório Nacionalde Investigação Veterinária (LNIV); Direcção Regional de Pecuária da região Autónoma da Madeira and Direcção Geral de Fiscalização e Controlo da Qualidade Alimentar (DGFCQA)

2.2.4. Campylobacter in animals

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 - ISO 11290 method

Other than foodstuffs - culture on:

- Palcam agar,
- *Listeria* Selective agar, and
- Blood agar

Biochemical reactions by API Coryne or API *Listeria* strips.

2.3.2. Listeriosis in humans

Table 7.2.A Listeriosis in man - species/serotype distribution

	Cases	Cases Inc
Listeria	38	0
Listeria spp. congenital cases deaths	38	

Footnote

Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)

Table 7.2.B Listeriosis in man - 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	11		11			11
25 to 44 years	23		23			23
45 to 64 years	1		1			1
65 years and older	1		1			1
Age unknown	2		2			2
Total :	38	0	38	38	0	38

Footnote

Source: Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)

The following amendments were made :

Date of modification	Zoonose	Line	Column	Old value	New value
2005-09-28	L. monocytogenes	45 to 64 years	All		1
	L. monocytogenes	45 to 64 years	F		1
	L. monocytogenes	65 years and older	All		1
	L. monocytogenes	65 years and older	F		1
2005-09-28	L. monocytogenes	Age unknown	All	1	2
	L. monocytogenes	Age unknown	F	1	2
	Listeria spp.	Age unknown	All	1	2
	Listeria spp.	Age unknown	F	1	2

2.3.3. Listeria in foodstuffs

Table 7.1 Listeria monocytogenes in food

	Source of information	Remarks	Epidemiological unit	Sample weight	Definition used	Units tested	<100 cfu/g	>100 cfu/g	L. monocytogenes
Bovine meat									
meat products									
ready-to-eat									
- at processing plant (1)	PC		sample	25g		6			1
- at retail (2)	PC/OC		sample	25g		35			17
Pig meat									
meat products									
ready-to-eat									
- at processing plant	OC		sample	25g		25	23	2	
- at processing plant - environmental sample (3)	PC		sample	25g		29			8
- at retail (4)	PC/OC		sample	25g		89	50		17
Poultry meat									
meat products									
ready to eat									
- at processing plant (5)	PC/OC		sample	25g		18			4
- at retail (6)	OC		sample	25g		5			2
Other meat									
meat products									
ready-to-eat									
- at retail (7)	OC		sample	25g		3			
Cheeses									
- at processing plant (8)	OC/PC		sample	25g		339			33
- at retail (9)	PC		sample	25g		160			20
Dairy products									
other products									
ready-to-eat									
- at processing plant	PC		sample	25g		8			0
- at retail	PC		sample	25g		130			0
ready-to-eat									
- at processing plant - environmental sample	OC		sample			64			0
cow milk									
raw									

Portugal 2004 Report on trends and sources of zoonoses

for direct human consumption (10)	OC/PC	sample	25/1		33			2
Fishery products								
other								
- at retail (11)	PC	sample	25		5			0
Catering (12)	PC	sample	25g		4			
Fruits								
Fruit Puree (13)	PC	sample	35g		2			0

- (1) : PC - Private Control
 (2) : PC/OC - Private Control/Official Control
 (3) : PC - Private Control
 (4) : PC - Private Control
 OC - Official Control (Meat Inspection Services, Border Control Services and other Official Services)
 (5) : PC - Private Control
 OC - Official Control
 (6) : OC - Official Control (Border Control)
 (7) : OC - Official Control
 (8) : OC - Official Control
 PC - Private Control
 (9) : PC - Private Control
 (10) : PC/OC - Private Control/Official Control
 (11) : PC - Private Control
 (12) : PC - Private Control
 (13) : PC - Private Control

Footnote

Source: Laboratório Nacional de Investigação Veterinária (LNIV), Direcção Regional de Pecuária da Região Autónoma da Madeira, Laboratório TOMÁZ; Direcção Regional de Agricultura do Algarve (DRAALG); Direcção Regional de Agricultura da beira Litoral (DRABL) and Direcção Geral de Fiscalização e Controlo da Qualidade Alimentar (DGFCQA)

2.4. VEROCYTOTOXIC ESCHERICHIA COLI

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:

1 - Culture:

Plating 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 inoculation in newborn mice)

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

4 - Searching of citotoxins:

- in Vero and HeLa cells.

5 - Adesin detection:

- F5, F6, F41

6 - Antibiotic susceptibility testing

2.4.2. Verocytotoxic Escherichia coli in humans

Table 11.3.A Verocytotoxic Escherichia coli infections in man - species/serotype distribution

Pathogenic Escherichia coli	Cases	Cases Inc	Autochtone cases	Autochtone Inc	Imported cases	Imported Inc
HUS						
- clinical cases						
- lab. confirmed cases						
- caused by O157 (VT+)	1					
- caused by other VTEC	1					
E.coli infect. (except HUS)						
- laboratory confirmed						
- caused by O157 (VT+)	3					
- caused by other VTEC	22					

Footnote

Source: Instituto Nacional de Saúde dr. Ricardo Jorge (INSA)

Table 11.3.B Verocytotoxic Escherichia coli infections in man - age distribution

Age Distribution	Verotoxigenic E. coli (VTEC)			VTEC O 157:H7			VTEC non-O 157		
	All	M	F	All	M	F	All	M	F
<1 year							5	5	0
1 to 4 years	1	1		2		1	6	3	2
5 to 14 years	1	1		1		1	4	2	2
15 to 24 years							2	1	1
25 to 44 years							4	2	2
45 to 64 years									
65 years and older							1		1
Age unknown									
Total :	2	2	0	3	2	1	22	13	8

Footnote

Source: Instituto nacional de Saúde Dr Ricardo Jorge (INSA)

2.4.3. Pathogenic Escherichia coli in foodstuffs

Table 11.2 Verocytotoxic Escherichia coli in food

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	VTEC O 157	VTEC O 157:H7
Bovine meat								
fresh								
- at processing plant (1)	PC		sample	20g	15	7		
- at retail (2)	OC		sample	20g	4	0		
Pig meat								
fresh								
- at processing plant (3)	PC		sample	20g	25	4		
- at retail (4)	OC		sample	25/20g	74	4		
Poultry meat								
fresh								
- at slaughter (5)	OC		sample	20g	6	2		
- at processing plant	OC		sample	20g	5	1		
- at retail	OC		sample	20g	7	0		
cow milk								
raw	PC		sample	1ml	25	0		
Dairy products (6)	OC		sample	20/10g	49	1		
Fishery products	PC		sample	20g	13	0		
Fruits								
Fruit Puree	PC		sample	10g	2	0		
Bakery products								
cakes (7)	PC		ample	20/10g	16	0		

- (1) : PC - Private Control
 (2) : OC - Official Control
 (3) : PC - Private Control
 (4) : PC - Private Control
 (5) : OC - Official Control
 (6) : OC - Official Control
 (7) : PC - Private Control
 15 units tested with sample weight of 20g;
 1 unit tested with sample weight of 10g

Footnote

Source:
 Direcção Regional de Agricultura do Algarve (DRAALG);
 Laboratório TOMAZ, Análises Clínicas,Lda.and Direcção Geral de Fiscalização e Controlo da Qualidade Alimentar.

2.4.4. Pathogenic Escherichia coli in animals

Table 11.1 Verocytotoxic Escherichia coli in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	VTEC O 157	VTEC O 157:H7
Cattle (bovine animals)							
unspecified	D		Animal	241	0		
Sheep	D		Animal	108	0		
Goats	D		Animal	50	2		
Pigs (1)	D/PC		Hoding/animal	397	22		
Solipeds	D		Animal	14	0		
Poultry	D		Animal	205	0		
Pet animals							
dogs	D		Animal	45	0		
cats	D		Animal	13	0		
Rabbits	D		Animal	12	0		

(1) : D - Diagnosis
PC - Private Control

Footnote

Source: Laboratório Nacional de Investigação Veterinária (LNIV) and Direcção Regional de pecuária da Região Autónoma da Madeira

2.5. TUBERCULOSIS

2.5.1. General evaluation of the national situation

2.5.2. Tuberculosis 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

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 tuberculins.

Diagnostic techniques:

- direct smear
- guinea-pigs inoculation
- culture in Lowenstein-Jensen and Lowenstein-Jensen TCH.

The classification of Mycobacterium is based on:

- selective culture media used
- smears performed
- lesions on the inoculated guinea-pigs
- biochemical tests

LNIV is responsible for the Mycobacterium isolation on the tuberculin reactors animals and others, following the procedures above mentioned.

Vaccination policy

Vaccination is forbidden.

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

Positive animals are compulsory slaughtered, under official supervision.

Table 1.1.3 Tuberculosis in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	Mycobacterium spp.	M. bovis	M. tuberculosis	M. avium complex	M. xenopi
Goats	D		A	36	9		9			
Pigs	D		A	143	44	1			18	1
Zoo animals	D		A/2)	9	3	3				
Sheep (1)	D	1)	A	17	0					
Wildlife										
wild boars (2)	D	RP	A	5	0					
Deer (3)	D	RP	A	40	17		17			

(1) : 1) Crocodiles

2) Private Zoo

3) Mycobacterium spp

(2) : RP - Under a special Research Project (AGRO 125)

(3) : RP - Under a special Research Project (AGRO 125)

Footnote

D- Diagnosis

A- Animal

Source: Faculdade de Medicina Veterinária de Lisboa (FMV);

Direcção Regional de Agricultura do Alentejo (DRAAL);

Laboratório Nacional de Investigação Veterinária (LNIV)

DGV - Direcção Geral de Veterinária

1.1.1 Bovine tuberculosis - Região Autónoma dos AÇORES

MANDATORY	CATTLE		
Number of herds under official control:	12437	Number of animals under official control:	270366
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	12437	0	0
New cases notified during the year (b):		0	0
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	899	0	0
Routine tuberculin test (c) - data concerning animals:	17070	0	0
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):	0	0	0
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):		0	0
Follow-up investigation of suspected cases: trace, contacts (f):		0	0
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):(1)			
Other routine investigations: tests at AI stations (h):(2)			
	All animals	Positives	Contacts
Animals destroyed (i):	0	0	0
Animals slaughtered (j):	0	0	0
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovis isolated	
Bacteriological examination (m):			

(1) : no data available

(2) : No data available

Footnote

For the disease Tuberculosis in bovine there are 3 status of herds: Officially Free, Suspended and Non Free. The infected herds are the ones where there was bacteriological isolation.

Source: DGV

1.1.1 Bovine tuberculosis

MANDATORY	CATTLE		
Number of herds under official control:	90292	Number of animals under official control:	1389911
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	85836	238	82
New cases notified during the year (b):		54	41
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	67468	9668	178
Routine tuberculin test (c) - data concerning animals:	861228	37409	856
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):	1409	1409	176
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):(1)			
Follow-up investigation of suspected cases: trace, contacts (f):(2)			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):(3)			
Other routine investigations: tests at AI stations (h):(4)			
	All animals	Positives	Contacts
Animals destroyed (i):(5)	1409	176	
Animals slaughtered (j):(6)	1409	176	
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovisisolated	
Bacteriological examination (m):			

- (1) : Actions taken but no data available
- (2) : Actions taken but no data available
- (3) : No data available
- (4) : No data available
- (5) : There is no data available on the contacts
- (6) : There is no data available on the contacts

Footnote

For the disease Tuberculosis in bovine, there are 3 status of herds: Officially free, Suspended and Non Free. The infected herds are the ones where there was bacteriological isolation.

Source: DGV

1.1.1 Bovine tuberculosis - CONTINENTE

MANDATORY	CATTLE		
Number of herds under official control:	77855	Number of animals under official control:	1119545
	OTF bovine herds	OTF bovine herds with status suspended	Bovine herds infected with tuberculosis
Status of herds at year end (a):	73399	238	82
New cases notified during the year (b):		54	41
	Units tested	Units suspected	Units positive
Routine tuberculin test (c) - data concerning herds:	66569	9668	178
Routine tuberculin test (c) - data concerning animals:	844158	37409	856
	Animals slaughtered	Animals suspected	Animals positive
Routine post-mortem examination (d):	1409	1409	176
		Herds suspected	Herds confirmed
Follow up of suspected cases in post-mortem examination (e):(1)			
Follow-up investigation of suspected cases: trace, contacts (f):(2)			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (g):(3)			
Other routine investigations: tests at AI stations (h):(4)			
	All animals	Positives	Contacts
Animals destroyed (i):(5)	1409	176	
Animals slaughtered (j):(6)	1409	176	
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	M. bovisisolated	
Bacteriological examination (m):			

(1) : Actions taken but no data available

(2) : Actions taken but no data available

(3) : No data available

(4) : No data available

(5) : No data available on the contacts

(6) : No data available on the contacts

Footnote

For the disease Tuberculosis in bovine there are 3 status of herds: Officially Free, Suspended and Non Free. The infected herds are the ones where there was bacteriological isolation.

Source: DGV

2.6. BRUCELLOSIS

2.6.1. General evaluation of the national situation

2.6.2. Brucellosis in humans

Table 2.3.A Brucellosis in man - species/serotype distribution

	Cases	Cases Inc	Autochtone cases	Autochtone Inc	Imported cases	Imported Inc
Brucella	38	0	0	0	0	0
B. abortus						
B. melitensis	38					
B. suis						
occupational cases	1					

Footnote

Source: INSA

Table 2.3.B Brucellosis in man - 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							1	1		
5 to 14 years							6	4		2
15 to 24 years							5	3		2
25 to 44 years							11	4		7
45 to 64 years							13	6		7
65 years and older							2	1		1
Age unknown							1	1		
Total :	0	0	0	0	0	0	39	20		19

Footnote

Source: INSA

2.6.3. Brucella in foodstuffs

Table 2.2 Brucella sp. in food

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	B. melitensis	B. abortus	B. suis
cow milk								
raw (1)	PC		S	10	0			
Cheeses								
soft and semi soft (2)	PC		S	5	0			

(1) : PC - Private Control

(2) : PC - Private Control

Footnote

Source: Laboratório Nacional de Investigação Veterinária

2.6.4. Brucella in animals

A. Brucella abortus in Bovine Animals

Status as officially free of bovine brucellosis during the reporting year

Free regions

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

Monitoring system

Sampling strategy

Serology is performed in cattle older than 12 months of age.
The herds are classified and sampled according to Council Directive 64/432/EEC and Decreto-Lei n°244/2000 (Sep. 27th).

Frequency of the sampling

The herds are sampled according to Council Directive 64/432/EEC and Decreto-Lei n°244/2000 (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:

Ø Rose Bengal Test (RBT)

Complement Fixation Test (CFT)

If RBT is positive Þ CFT

Bacteriology:

Samples from:

- live animals (milk, vaginal mucus, semen)

- dead animals (aborted foetus, placenta, lung, liver, spleen and lymph nodes)

are plated in Farrel medium (Difco Tryptose Agar + SR83 Oxoid supplement + 10% horse serum)

Typing of isolates:

- agglutination with monospecific antisera (anti-A, anti-M and anti-R)

- growth on tryptose agar with :

1/50.000 and 1/100.000 of basic fucsin

1/50.000 and 1/100.000 of thionin.

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.

Control program/mechanisms

The control program/strategies in place

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

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 Goat

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 n°244/2000 (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)

- dead animals (aborted foetus, placenta, lung, liver, spleen and lymph nodes)

are plated in Farrel medium (Difco Tryptose Agar + SR83 Oxoid supplement + 10% horse serum)

Typing of isolates:

- agglutination with monospecific antisera (anti-A, anti-M and anti-R)

- growth on tryptose agar with :

1/50.000 and 1/100.000 of basic fucsin

1/50.000 and 1/100.000 of thionin.

Phagotyping has been done in the past, but not nowadays

Vaccination policy

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

Control program/mechanisms

The control program/strategies in place

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

Table 2.1.3 Brucellosis in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Units positive	B. melitensis	B. abortus	B. suis
Pigs	D		A	66	0			
Farmed deer	D		A	125	0			
Zoo animals	D		A	3	0			

Footnote

D - Diagnosis

A - Animal

Source: Laboratório Nacional de Investigação Veterinária

2.1.1 Bovine brucellosis - CONTINENTE

MANDATORY	CATTLE		
Number of herds under official control:	77855	Number of animals under official control:	1119545
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	65536	366	335
New cases notified during the year (b):(9)		120	105
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):(3)			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	62353	8985	418
Routine testing (d2) - number of animals tested:			
Routine testing (d3) - number of animals tested individually:(1)	802671	60710	2433
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):(2)			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):(4)			
Other routine investigations: tests at AI stations (g):(5)			
	All animals	Positives	Contacts
Animals destroyed (h):(6)	3086	291	
Animals slaughtered (i):(7)	3086	291	
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):(8)	797	291	

(1) : The units positive refer to positive sorology

(2) : No data available

(3) : No data available

(4) : No data available

(5) : No data available

(6) : No data available on the contacts

(7) : No data available on the contacts

(8) : 275 Brucella abortus

16 Brucella melitensis

(9) : We know we have, in 2004, 2252 Officially Free (OF) herds less than we had in the same period (2003); nevertheless we do not have available the data regarding how many of the total of OF herds, in 2004, are new.

Footnote

For the disease Brucellosis in bovine, there are 4 status of herds: Officially Free, free, Suspended and Non Free. The infected herds are the ones where there was bacteriological isolation

2.1.1 Bovine brucellosis

MANDATORY	CATTLE		
Number of herds under official control:	90292	Number of animals under official control:	1389911
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	71502	367	617
New cases notified during the year (b):(7)		120	150
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):(3)			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	71594	9954	701
Routine testing (d2) - number of animals tested:			
Routine testing (d3) - number of animals tested individually:(1)	998501	67997	4846
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):(2)			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):(4)			
Other routine investigations: tests at AI stations (g):(5)			
	All animals	Positives	Contacts
Animals destroyed (h):	6153	291	
Animals slaughtered (i):	6153	291	
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):(6)	798	291	

(1) : The positive units are the ones with positive serology

(2) : No data available

(3) : No data available

(4) : No data available

(5) : No data available

(6) : 275 Brucella abortus and 16 Brucella melitensis

(7) : We have in 2004, less 3035 herds Officially Brucellosis Free (OBF) than the total of OBF we had in 2003, nevertheless we do not have the data to say how many of the total OBF herds (74537) in 2004. are new

Footnote

For the disease Brucellosis in bovine there are 4 status of herds: Officially Free, Free, Suspended and Non Free. The infected herds are the ones where there was bacteriological isolation

2.1.1 Bovine brucellosis - Região Autónoma dos Açores

MANDATORY	CATTLE		
Number of herds under official control:	12437	Number of animals under official control:	270366
	OBF bovine herds	OBF bovine herds with status suspended	Bovine herds infected with brucellosis
Status of herds at year end (a):	5966	1	282
New cases notified during the year (b):(8)			45
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):(3)			
	Units tested	Units suspected	Units positive
Routine testing (d1) - data concerning herds:	9241	969	283
Routine testing (d2) - number of animals tested:			
Routine testing (d3) - number of animals tested individually:(1)	195830	7287	2413
		Herds suspected	Herds confirmed
Follow-up investigation of suspected cases: trace, contacts (e):(2)			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):(4)			
Other routine investigations: tests at AI stations (g):(5)			
	All animals	Positives	Contacts
Animals destroyed (h):(6)	3067	0	
Animals slaughtered (i):(7)	3067	0	
VOLUNTARY	CATTLE		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (k):			
	Herds tested	Herds suspected	Herds positive
Other investigations: farms at risk (l):			
	Samples tested	Brucella isolated	
Bacteriological examination (m):	1	0	

(1) : The positive units refer to positive isolation

(2) : No data available

(3) : No data available

(4) : No data available

(5) : No data available

(6) : No data available on the contacts

(7) : No data available on the contacts

(8) : In 2004 we have less 783 herds Officially Free (OBF), nevertheless we do not have data that allows us to say from the total of OBF in 2004 (5966)how many are new.

Footnote

For the disease brucellosis in bovine, there are 4 status of herds: Officially Free, Free, Suspended and Non Free. The infected herds are the ones where there was bacteriological isolation

2.1.2 Ovine and caprine brucellosis

MANDATORY	SHEEP AND GOATS		
	Number of holdings under official control:	70977	Number of animals under official control:
	OBF ovine and caprine holdings	OBF ovine and caprine holdings with status suspended	OBF ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	55346	1183	1034
New cases notified during the year (b):	7826	656	190
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):(1)			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	65907	5236	1767
Routine testing (d) - data concerning animals:	2155728	234944	15925
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):(5)			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):(2)			
	All animals	Positives	Contacts
Animals destroyed (g):(3)	18895	105	
Animals slaughtered (h):(4)	18895	105	
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):	886	105	

(1) : No data available

(2) : No data available

(3) : No data available on the contacts

(4) : No data available on the contacts

(5) : No data available

Footnote

For the disease brucellosis in ovine and caprine there are 4 status of herds: Officially Free, Free, Suspended and Non Free. The infected herds are the ones where there was bacteriological isolation.

Source: DGV

2.1.2 Ovine and caprine brucellosis - CONTINENTE

MANDATORY	SHEEP AND GOATS		
Number of holdings under official control:	67168	Number of animals under official control:	2842898
	OBF ovine and caprine holdings	OBF ovine and caprine holdings with status suspended	OBF ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	51538	1183	1034
New cases notified during the year (b):	7825	656	190
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):(2)			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	65266	5236	1766
Routine testing (d) - data concerning animals:(1)	2152204	234944	15924
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):(6)			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):(3)			
	All animals	Positives	Contacts
Animals destroyed (g):(4)	18895	105	
Animals slaughtered (h):(5)	18895	105	
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):	886	105	

(1) : The positive units are the ones where there was positive sorology

(2) : No data available

(3) : No data available

(4) : No data available on the contacts

(5) : No data available on the contacts

(6) : No data available

Footnote

For the disease Brucellosis in ovine and caprine there are 4 status of herds: Officially Free, Free, Suspended and Non Free. The infected herds are the ones where there was bacteriological isolation.

Source DGV

2.1.2 Ovine and caprine brucellosis - Região Autónoma dos AÇORES

MANDATORY	SHEEP AND GOATS		
	Number of holdings under official control:	3809	Number of animals under official control:
	OBF ovine and caprine holdings	OBF ovine and caprine holdings with status suspended	OBF ovine and caprine holdings infected with brucellosis
Status of herds at year end (a):	3808	0	0
New cases notified during the year (b):	1	0	0
	Animals tested	Animals suspected	Animals positive
Notification of clinical cases, including abortions (c):(2)			
	Units tested	Units suspected	Units positive
Routine testing (d) - data concerning holdings:	641	0	1
Routine testing (d) - data concerning animals:(1)	3524	0	1
		Holdings suspected	Holdings confirmed
Follow-up investigation of suspected cases: trace, contacts (e):(4)			
	Animals tested	Animals suspected	Animals positive
Other routine investigations: exports (f):(3)			
	All animals	Positives	Contacts
Animals destroyed (g):	0	0	0
Animals slaughtered (h):	0	0	0
VOLUNTARY	SHEEP AND GOATS		
	Animals tested	Animals suspected	Animals positive
Other investigations: imports (i):			
	Holdings tested	Holdings suspected	Holdings positive
Other investigations: farms at risk (j):			
	Samples tested	Brucella isolated	
Bacteriological examination (k):	0	0	

(1) : The positive units are the ones with positive sorology.

(2) : No data available

(3) : No data available

(4) : No data available

Footnote

For the disease Brucellosis in ovine and caprine there are 4 status of herds: Officially Free, Free, Suspended and Non Free. The infected herds are the ones where there was bacteriological isolation.

Source: DGV

2.7. YERSINIOSIS

2.7.1. General evaluation of the national situation

A. *Yersinia enterocolitica* general evaluation

Additional information

Diagnostic techniques:

Bacteriology: samples are plated on:

Yersinia CIN Agar, or

Yersinia Selective Agar (Oxoid) supplemented with

Yersinia Selective supplement (Oxoid).

Biochemical reactions by API 20E strips.

2.7.2. Yersiniosis in humans

Table 8.3.A Yersiniosis in man - species/serotype distribution

Yersinia	Cases	Cases Inc	Autochthone cases	Autochthone Inc	Imported cases	Imported Inc
Y. enterocolitica	6	0	0	0	0	0
Y. enterocolitica O:3	3					
Y. enterocolitica O:9	3					

Footnote

Source: Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)

Table 8.3.B Yersiniosis in man - 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		1	1	
15 to 24 years	2	1	1	2	1	1
25 to 44 years						
45 to 64 years						
65 years and older						
Age unknown						
Total :	3	2	1	3	2	1

Footnote

Source: Instituto Nacional de Saúde Dr. ricardo Jorge (INSA)

Table 8.3.C Yersiniosis in man - seasonal distribution

Month	Y. enterocolitica		Cases
	Cases	Yersinia spp.	
January			
February			
March			
April			
May	1	1	
June	1	1	
July	1	1	
August			
September			
October			
November			
December			
not known			
Total :	3	3	

Footnote

Source: Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)

2.7.3. Yersinia in foodstuffs

Table 8.2 Yersinia enterocolitica in food

	Source of information	Remarks	Epidemiological unit	Sample weight	Units tested	Units positive	Y. enterocolitica	Y. enterocolitica O:3	Y. enterocolitica O:9
Other meat									
fresh									
- at retail (1)	outbreak	1)		25g	1	1		1	

(1) : 1) Enrichment medium: Tris Buffered Peptone Water (9°C/3weeks)
 Selective agar: Cefslodin-irgasan-novobiocin(CIN)Agar

Footnote

Source: Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)

2.7.4. Yersinia in animals

Table 8.1 Yersinia enterocolitica in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Y. enterocolitica	Y. enterocolitica O:3	Y. enterocolitica O:9
Cattle (bovine animals)	Diagnosis			267	1		
Sheep	Diagnosis			127			
Goats	Diagnosis			54			
Pigs	Diagnosis			264			
Solipeds	Diagnosis			14			
Poultry	Diagnosis			205			
Pet animals							
dogs	Diagnosis			45			
cats	Diagnosis			13			
Rabbits	Diagnosis			12			
Zoo animals	Diagnosis			86			

Footnote

All the tables in the report have accepted A - animal or S sample or F-Flock but this one is asking for a digit. Our information is the epidemiological unit is Animal.

Source: Direcção Regional de Agricultura do Alentejo(DRAAL) and Laboratório Nacional de Investigação Veterinária (LNIV)

2.8. TRICHINELLOSIS

2.8.1. General evaluation of the national situation

A. Trichinellosis General evaluation

Additional information

The searching of this zoonosis is performed during meat inspection, at abattoir.

Diagnostic techniques:

§ Direct methods to demonstrate the parasite:

- Direct examination
- Artificial digestion

§ Typing of *Trichinella* sp:

The only specie found in our country was *Trichinella spiralis*.

2.8.2. Trichinellosis in humans

2.8.3. Trichinella in animals

Table 4.1 Trichinella in animals

	Source of information	Remarks	Epidemiological unit	Animals tested	Animals positive
Pigs (1)	MIS		A	6162	0
Wildlife					
wild boars (2)	FMV	Research Project	A	213	0
foxes (3)	FMV	Research Project	A	208	10
other (4)	FMV	research Project	A	13	4

(1) : MIS - Meat Inspection Service

(2) : FMV - Faculdade de Medicina Veterinária (Veterinary School in Lisbon)

Hunting Associations and Field Vets

(3) : FMV - Faculdade de Medicina Veterinária in Lisbon - Veterinary School in Lisbon)

Hunting Associations and Field Vets

(4) : FMV - Faculdade de Medicina Veterinária in Lisbon (Veterinary School in Lisbon)

Hunting Associations and Field Vets

Footnote

Source: Laboratório Nacional de Investigação Veterinária (LNIV) and Direcção Regional de Pecuária da Região Autónoma da Madeira

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 9.2.A Echinococcosis in man - species/serotype distribution

Echinococcus	Cases	Cases Inc	Autochtone cases	Autochtone Inc	Imported cases	Imported Inc
E. granulosus	57	0	0	0	0	0
E. multilocularis	57					
Echinococcus spp.						

Footnote

Source: Instituto nacional de Saúde Dr. Ricardo Jorge (INSA)

Table 9.2.B Echinococcosis in man - 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	1		1						
15 to 24 years	4		3						
25 to 44 years	7	2	5						
45 to 64 years	9	5	3						
65 years and older	12	4	8						
Age unknown	24	4	6						
Total :	57	15	26	0	0	0	0	0	0

Footnote

Source: Instituto Nacional de Saúde Dr. ricardo Jorge (INSA)

2.9.3. Echinococcus in animals

Table 9.1 Echinococcus sp. in animals

	Source of information	Remarks	Epidemiological unit	Units tested	Echinococcus spp.	E. multilocularis	E. granulosus
Sheep (1)	FMV/ OC			2700	2		2
Pigs (2)	OC			1483			44

(1) : Epidemiological Unit : Unknown
 FMV - Faculdade de Medicina Veterinária in Lisbon
 OC - Official Control (Meat Inspection Services)
 (2) : OC - Official Control (Meat Inspection Services)

Footnote

Source: Faculdade de medicina Veterinária in Lisbon (FMV) and Direcção regional de Agricultura de Trás os Montes (DRATM)

The following amendments were made :

Date of modification	Species	Column	Old value	New value
2005-10-04	Sheep	Units tested	5	2700
	Pigs	Units tested	38	1483
	Sheep	E. granulosus	2	2
	Pigs	E. granulosus	38	44

2.10. TOXOPLASMOSIS

2.10.1. General evaluation of the national situation

A. Toxoplasmosis general evaluation

Additional information

Diagnostic techniques:

- Direct examination test.
- Sorology, direct agglutination

2.10.2. Toxoplasmosis in humans

Table 10.2.A Toxoplasmosis in man - species/serotype distribution

		Cases	Cases Inc
Toxoplasma		46	0
Toxoplasma spp.		46	
congenital cases		12	

Footnote

Source: Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)

Table 10.2.B Toxoplasmosis in man - age distribution

Age Distribution	Toxoplasma spp.		
	All	M	F
<1 year	12		1
1 to 4 years			
5 to 14 years			
15 to 24 years	9		5
25 to 44 years	24		16
45 to 64 years			
65 years and older			
Age unknown	1		1
Total :	46	4	22

Footnote

Source: Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)

2.10.3. Toxoplasma in animals

2.11. RABIES

2.11.1. General evaluation of the national situation

A. Rabies General evaluation

Additional information

By law (Decreto Lei n°314/2003, December the 17th and Portaria n° 81/2002, January the 24th), is compulsory the annual dog rabies vaccination.

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

2.11.2. Lyssavirus (rabies) in animals

Table 5.1 Rabies in animals

	Source of information	Remarks	Animals tested	Animals positive
Wildlife				
foxes	DGV		40	0

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1. E. COLI INDICATORS

3.1.1. General evaluation of the national situation

3.1.2. Antimicrobial resistance in *Escherichia coli* isolates

Table 13.1 Antimicrobial susceptibility testing of E.coli in animals

	E.coli									
	Cattle (bovine animals)		Pigs		Gallus gallus		Turkeys		Pet animals - dogs or cats	
Isolates out of a monitoring program										
Number of isolates available in the laboratory	43		10		32				33	
Antimicrobials:	N	%R	N	%R	N	%R	N	%R	N	%R
Tetracycline	1	100%	10	90%	6	83,3%			10	90%
Amphenicols										
Chloramphenicol	1	0%			6	100%			10	40%
Cephalosporin										
Cefalexin	1	0%			6	0%			10	0%
Cefotaxim	1	0%	10	10%	6	0%			10	0%
Fluoroquinolones										
Ciprofloxacin	1	0%			6	50%			10	50%
Enrofloxacin			10	10%						
Quinolones										
Nalidixic acid			10	10%	23	83%			10	50%
Trimethoprim			10	90%						
Aminoglycosides										
Streptomycin			10	100%	6	33,3%			10	40%
Gentamicin			10	10%	6	16,7%			10	10%
Neomycin					6	33,3%			10	0%
Kanamycin					6	16,7%			10	10%
Trimethoprim + sulfonamides					6	66,7%			10	40%
Penicillins										
Amoxicillin	1	100%			6	100%			10	60%
Ampicillin			10	100%						
Number of multiresistant isolates										
fully sensitives			0						1	10%
resistant to 1 antimicrobial			0						1	10%
resistant to 2 antimicrobials			1						2	20%
resistant to 3 antimicrobials			0						1	10%
resistant to 4 antimicrobials			7		2	33,3%			0	0%
resistant to >4 antimicrobials			2		4	66,7%			5	50%

Footnote

Source: Direcção Regional de Pecuária da Região Autónoma da Madeira and Faculdade de Medicina Veterinária de Lisboa (FMV - Veterinary Medicine School)

Table 13.7 Breakpoints used for antibiotic resistance testing of E.coli in Animals
Test Method Used

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS
CASFM

Subject to quality control

Escherichia coli	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 <=
Tetracycline(1)	NCCLS						30	19	16,5	14
Amphenicols										
Chloramphenicol(2)	NCCLS						30	18	15	12
Florfenicol										
Fluoroquinolones										
Ciprofloxacin(3)	NCCLS						5	21	18	15
Enrofloxacin(4)	NCCLS						5	23	19,5	16
Quinolones										
Nalidixic acid	NCCLS						30	19	16	13
Trimethoprim										
Sulfonamides										
Sulfonamide	NCCLS						25	16	13	10
Aminoglycosides										
Streptomycin	NCCLS						10	15	13	11
Gentamicin	NCCLS						10	15	13,5	12
Neomycin	NCCLS						30	17	14,5	12
Kanamycin	NCCLS						30	18	15,5	13
Trimethoprim + sulfonamides										
Cephalosporin										
Cefalexin	SFM						30	18	14,5	11
Cefotaxim(5)	NCCLS						30	23	17,5	14
3rd generation cephalosporins(6)	SFM						30	21	17,5	14
Penicillins										
Amoxicillin(7)	SFM						25	21	17	13
Ampicillin(8)	NCCLS						10	17	15	13

- (1) : The breakpoint zone diameter(mm) intermediate is 15-18;
 (2) : The breakpoint zone diameter (mm) intermediate is 13-17
 (3) : The intermediate zone diameter (mm) for the breakpoint is 16-20.
 (4) : The intermediate zone diameter for the breakpoint is 17-22.
 (5) : The intermediate diameter (mm) for the breakpoint is 15-22.
 (6) : Cefotaxime (Standard for breakpoint - SFM)
 (7) : the intermediate diameter(mm) for the breakpoint is 14-20.
 (8) : The intermediate zone diameter (mm) for the breakpoint is 14-16

Footnote

Source:

Direcção Regional de de Pecuária da Região Autónoma da Madeira and

4. 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.

Table 12. Foodborne outbreaks in humans

Causative agent	General outbreak	Family outbreak	Total Number in persons			Source	Confirmed		Type of evidence	Location of exposure	Contributing factors
			ill	died	in hospital		8	9			
1	2	3	4	5	6	7			8	9	10
Scrombrotoxin	1		8	0	1	Tuna fish	yes	confirmed in raw fish	Canteen(bank)	Inadequate refrigeration	
Clostridium - C. peffringens		1	3	0	0	Vegetable potage	yes	confirmed in leftovers	household	inadequate refrigeration/ deficiencies in re-heat	
Staphylococcus - S. aureus	1			0		Pastry cakes	yes	confirmed in leftovers	Pastries	deficiencies in food handling	
Escherichia coli - E.coli(1)	1		4	0	0	Mixd meat /eggs meal	yes	confirmed in leftovers	Canteen	Deficiencies in food preparation	
Clostridium - C. botulinum(2)		1	6	0	2	Raw cured ham	yes	confirmed in leftovers	household	deficiencies in food preparation	
Clostridium - C. botulinum(3)		1	2	0	0	Unknown	yes	confirmed in blood	household		
Clostridium - C. botulinum		1		0		Alheira (pre-cooked sausage)	yes	confirmed in pre cooked sausage	household	Deficient heat	
Salmonella - S. Enteritidis - 7		1		0		Unknown	yes	confirmed in blood	household		
Salmonella - S. Enteritidis - 1b	1		40	0	40	cooked fish meal	yes	confirmed in leftovers	household	Deficiencies in food preparation	
Salmonella - S. Enteritidis - 4b(4)	1		31	0	5	Cooked shrimps	yes	confirmed in leftovers	Restaurant	Deficiencies in food handling	
Salmonella - S. Enteritidis - 1b		1		0		Chilled dessert and Bride cake	yes	confirmed in leftovers	Restaurant	Deficiencies in food handling	
Salmonella - S. Enteritidis - 1b		1	2	0		cake prepared at home	yes	confirmed in leftovers	household	Deficiencies in food preparation	
Salmonella - S. Enteritidis - 1b	1			0		Fish products	yes	confirmed in raw products	household	Deficiencies in food preparation	
Salmonella - S. Enteritidis - 1b		1		0		Desert (chocolate mousse)	yes	confirmed in leftovers	Restaurant	Deficiencies in food preparation	
Salmonella - S. Enteritidis - 1b		1	8	0	3	Ice cream	yes	confirmed in leftovers	Restaurant	Deficiencies in food preparation	
Salmonella - S. Enteritidis - 1b	1		16	0	2	Pastry cakes	yes	confirmed in leftovers	Elder household	Deficiencies in food preparation	
Yersinia - Y. enterocolitica - Y. enterocolitica O:3		1	3	0	0	Raw hamburger	yes	confirmed in raw hamburger	household	contaminated raw product	

Staphylococcus - S. aureus - S. aureus enterotoxins(5)	1		20	0	Pastry cakes	yes	confirmed in leftovers	Pastries	Deficiencies in food handling
Staphylococcus - S. aureus - S. aureus enterotoxins(6)	1			0	Ice cream	yes	Confirmed in leftovers and Foodhandler	Restaurant	deficiencies in food handling
Salmonella - S. Enteritidis - 1b(7)		1	38	0	Pastry; Potato puree; Prepared fish meal; ready to eat meat	yes	confirmed in leftovers	household	deficiencies in food preparation

(1) : E. coli (ST EAST and ST EAST VT)

(2) : Type B

(3) : Type B

(4) : The causative agent is S. enteritidis and S. aureus.

(5) : Enterotoxin A

(6) : Enterotoxin A

(7) : Two causative agents were found: S. Enteritidis 1b and E. coli(VT eae and VT EAST)

Footnote

Source: Instituto Nacional de Saúde Dr. Ricardo Jorge (INSA)