ZOONOSES MONITORING

SPAIN

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

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

including information on foodborne outbreaks and antimicrobial resistance in zoonotic agents

IN 2005

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: **Spain**

Reporting Year: **2005**

Institutions and laboratories involved in reporting and monitoring:

Laboratory name	Description	Contribution
Subdirección General de Sanidad Animal	Dirección General de Ganadería Ministerio de Agricultura, Pesca y Alimentación	Reporting Officer
Subdirección General de Coordinación de Alertas y Programacion de Control Oficial	Agencia Española de Seguridad Alimentaria	National Reporter
Centro Nacional de Epidemiologia	Instituto de Salud Carlos III Ministerio de Sanidad y Consumo	National Reporter
Subdirección General de Ordenación de Explotaciones y Buenas Prácticas Ganaderas	Dirección General de Ganadería M.A.P.A.	National Reporter
Subdirección General de Alimentación Animal y Zootecnia	Dirección General de Ganadería M.A.P.A.	National Reporter
Departamento de Sanidad Animal	Facultad de Veterinaria de la Universidad Complutense de Madrid	National Reporter
Servicios de Sanidad Animal	Consejerías de Agricultura y Ganadería de las Comunidades Autónomas	National Reporter

PREFACE

This report is submitted to the European Commission in accordance with Article 9 of Council Directive 2003/99/EC[1]. 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 Spain during the year 2005. The information covers the occurrence of these diseases and agents in humans, animals, foodstuffs and in some cases also in feedingstuffs. In addition the report includes data on antimicrobial resistance in some zoonotic agents and commensal bacteria as well as information on epidemiological investigations of foodborne outbreaks. Complementary data on susceptible animal populations in the country is also given.

The information given covers both zoonoses that are important for the public health in the whole European Community as well as zoonoses, which are relevant on the basis of the national epidemiological situation.

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

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

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

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[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:

REGA (National Register for Livestock Holdings) was the source for the total number of holdings in all species. The figures in this report were taken at May/1/2006.
The figures in table 14.2 (Susceptible animal populations: number of animals) were collected as follows:
--Bovine animals from SIMOGAN (spanish register for identification and movement of bovines).
--Rest of species from the 2004 Livestock Statistics Report (Secretaría General Técnica/Ministerio de Agricultura, Pesca y Alimentación).
Data of slaughtered animals were also collected from the 2004 Livestock Statistics Report.

Dates the figures relate to and the content of the figures:

Number of animals:
--Bovine: Jan/1/2006
--Rest of species: December/31/2004
Slaughtered animals:
--Total number of slaughtered animals at December/31/2004

Definitions used for different types of animals, herds, flocks and holdings as well as the types covered by the information:

'holding' in REGA means 'Whatever place where farming animals are'. They are clasified in breeding and production holdings and special holdings (such as markets, slaugtherhouses, quarantine centers, ...)
The specific definitions adopted by REGA for diferent types of holdings are those fixed in EU or Spanish Regulations.

Table Susceptible animal populations

* Only if different than current reporting year

Animal species	Category of animals	Number of herds or flocks	Year*	Number of holdings	Year*	Livestock numbers (live animals)	Year*	Number of slaughtered animals	Year*
Cattle (bovine animals)	mixed herds			17172	2006				
	dairy cows and heifers			38106	2006				
	meat production animals			105803	2006				
	calves (under 1 year)			36776	2006				
	in total			220466	2006	6311477	2006	2683951	2004
Deer	farmed - in total			98	2006		2004		
Ducks	parent breeding flocks			11	2006		2004		
	mixed flocks/holdings				2006		2004		
	grandparent breeding flocks			5	2006		2004		
	meat production flocks			666	2006		2004		
	breeding flocks, unspecified - in total			54	2006		2004		
	elite breeding flocks				2006		2004		
	in total			929	2006		2004		
Gallus gallus (fowl)	mixed flocks/holdings				2006		2004		
	breeding flocks, unspecified - in total			895	2006		2004		
	elite breeding flocks, unspecified - in total				2006		2004		
	grandparent breeding flocks, unspecified - in total			163	2006		2004		
	parent breeding flocks, unspecified - in total			482	2006		2004		
	breeding flocks for egg production line - in total			466	2006		2004		
	breeding flocks for meat production line - in total			429	2006		2004		
	laying hens (1)			5478	2006	49740000	2004		
	elite breeding flocks for egg production line				2006				
	elite breeding flocks for meat production line				2006				
	grandparent breeding flocks for egg production line			100	2006				
	grandparent breeding flocks for meat production line			63	2006				
	parent breeding flocks for egg production line			163	2006				
	parent breeding flocks for meat production line (2)			319	2006				
	broilers			9859	2006	49607000	2004	563292000	2004
	in total			16919	2006				
Geese	breeding flocks, unspecified - in total			29	2006				
	mixed flocks/holdings				2006				
	parent breeding flocks			8	2006				
	meat production flocks			224	2006				
	elite breeding flocks				2006				
	grandparent breeding flocks			4	2006				
	in total			394	2006				
Goats	meat production animals			55795	2006	574039	2004		
	mixed herds			11974	2006		2004		
	animals under 1 year				2006	749379	2004		
	animals over 1 year (3)				2006	91325	2004		
	milk goats			9999	2006	1418478	2004		
	in total			79779	2006	2833222	2004	1603743	2004
Pigs	mixed herds			28769	2006		2004		
	breeding animals (4)			23901	2006	2684961	2004		

	fattening pigs (5)			40220	2006	9949697	2004		
	in total			98304	2006	24894956	2004	37834642	2004
Rabbits	farmed (6)			5913	2006			62317000	2004
Sheep	mixed herds			15886	2006		2004		
	milk ewes			10067	2006	2649753	2004		
	animals under 1 year (lambs)			2924	2006	3796296	2004		
	animals over 1 year (7)				2006	526048	2004		
	meat production animals			105450	2006	13115452	2004		
	in total			137636	2006	22735551	2004	20214117	2004
Solipeds, domestic	horses - in total			55301	2006			23982	2004
Turkeys	grandparent breeding flocks			2	2006				
	mixed flocks/holdings				2006				
	elite breeding flocks				2006				
	parent breeding flocks			15	2006				
	breeding flocks, unspecified - in total			64	2006				
	meat production flocks (8)			937	2006	303000	2004		
	in total			1180	2006			3431000	2004
Wild boars	farmed - in total			101	2006				

(1): livestock numbers collected from Monthly Statistics Bulletin (Secretería General Técnica-Ministerio de Agricultura,Pesca y Alimentación)
(2): Livestock number collected from Monthly Statistics Bulletin (Secretaría General Técnica-Ministerio de Agricultura, Pesca y Alimentación)
(3): only bucks
(4): for holdings,includes: grandparent breeding herds, parent breeding herds, and breeding herds; for livestock numbers, includes: breeding male and female.
(5): pigs of more than 50 Kg
(6): rabbits and hares
(7): rams
(8): Livestock number collected from Monthly Statistics Bulletin (Secretaría General Técnica-Ministerio de Agricultura, Pesca y Alimentación)

2. INFORMATION ON SPECIFIC ZOONOSES AND ZOONOTIC AGENTS

Zoonoses are diseases or infections, which are naturally transmissible directly or indirectly between animals and humans. Foodstuffs serve often as vehicles of zoonotic infections. Zoonotic agents cover viruses, bacteria, fungi, parasites or other biological entities that are likely to cause zoonoses.

2.1. SALMONELLOSIS

2.1.1. General evaluation of the national situation

A. General evaluation

History of the disease and/or infection in the country

Salmonellosis is the main zoonoses in European Union, also in Spain. Salmonella is the agent more frequently implied in foodborne outbreak in Spain.
In poultry, after the introducion in 60´s of the american production method, the especific pathology of avian salmonellosis was caused by S. pullorum and S. gallinarum. In the middle of 80´s come up a new infection in breeding flocks for meat production caused by S. enteritidis, and following it, also in laying hens and in feed S. enteritidis was isolated.

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

Nowadays the sources of infection are widespread along the food chain: feed, food(eggs and ovoproducts, meat),animals and humans can be a source of infection.
At animal level, data in breeding flocks 2005 shown a prevalence of zoonotic salmonellas(enteritidis and typhimurium) of 8,39%(6,6% in 2004) in all age groups of all production lines (but 0% in egg production line). The prevalence of top 5 was 11,01%.
Data indicate that prevalence remains constant and high in Spain, and outbreaks appears mainly in summer, with the highest incidence in July, August.
At human level salmonellosis is a notifiable disease according to Royal Decree 2210/1995, laying down Epidemiological Surveillance National Network
According to Royal Decree 328/2003, laying down the Poultry Health Plan, all veterinarians have to notify to the Competent Authority cases of zoonoses and zoonotic agents.

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

It is very dificult to establish the relevance of data in the different steps of the food chain as sources of infection, because epidemiology of salmonellosis is very complex.
Nevertheless, human cases are mainly linked to eggs and egg derived food consumption.

Recent actions taken to control the zoonoses

Ministery of Fisheries, Food and Agriculture and Ministry of Health and Consumer Affairs of Spain are carrying out a Control Programme of Salmonella in eggs and ovoproducts along the overall food chain, starting with monitoring systems at holdings(National Surveillance Programme).
A baseline study on the prevalence of Salmonella in laying flocks of Gallus gallus is being validated at the moment.

2.1.2. Salmonellosis in humans

A. Salmonellosis in humans

Reporting system in place for the human cases

In December of 1995 the National Network of Epidemiological Surveillance was created by law. This law and its development produced changes in the surveillance system. During 1997 the protocols of statutory notification of diseases were approved and implemented in Spain. In Spain the Autonomous Regions have wide powers with respect to epidemiological surveillance and national decisions are usually taken by consensus..
All practising doctors are obliged to notify, both those in the public health service and in private practice, and both those practising outside and within hospitals. On occasions the appearance of cases and outbreaks is detected by other means (from the mass media, from citizens complants, etc.) and in these cases the information is checked and if confirmed it is incorporated into the system at the corresponding level.
Microbiological Information System
The Microbiological Information System has been based since 1989 on voluntary weekly reporting by clinical microbiology laboratories (principally hospital laboratories). Currently, in order to improve the notification, this procedure is becoming compulsory for a designated group of representative laboratories. The information in these reports is based on individual cases and includes the following variables: agent, time, place, age, sex, etc.
Enter-net
Spain participates in Enter-net, an European network for the surveillance of human gastrointestinal infections. Enternet has monitored salmonellosis since 1994 and Vero cytotoxin producing Escherichia coli O157 since 1999. Each country participates with a microbiologist of the national reference laboratory (source of the data) and the epidemiologist responsible for national surveillance.
Outbreak reporting
In Spain outbreaks are the main source of information for the foodborne diseases

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Notification system in place

Royal Decree 2210/1995, December 25, by Epidemiological Surveillance National Net is created

2.1.3. Salmonella in foodstuffs

A. Salmonella spp. in eggs and egg products

Monitoring system

Sampling strategy

The activities are made pursuant to Regulation (EC) nº 178/2002. (i.e. rapid alert system, traceability of food, feed, food-producing animals and all substances incorporated into foodstuffs must be established at all stages of production, processing and distribution. To this end, business operators are required to apply appropriate systems and procedures….

Frequency of the sampling

Eggs at egg packing centres (foodstuff based approach)

Sampling distributed evenly throughout the year

Eggs at retail

Sampling distributed evenly throughout the year

Raw material for egg products (at production plant)

Sampling distributed evenly throughout the year

Egg products (at production plant and at retail)

Sampling distributed evenly throughout the year

Diagnostic/analytical methods used

Eggs at egg packing centres (foodstuff based approach)

Bacteriological method: ISO 6579:2002

Eggs at retail

Bacteriological method: ISO 6579:2002

Raw material for egg products (at production plant)

Bacteriological method: ISO 6579:2002

Egg products (at production plant and at retail)

Bacteriological method: ISO 6579:2002

B. Salmonella spp. in broiler meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

The activities are made pursuant to Regulation (EC) nº 178/2002. (i.e. rapid alert system, traceability of food, feed, food-producing animals and all substances incorporated into foodstuffs must be established at all stages of production, processing and distribution. To this end, business operators are required to apply appropriate systems and procedures….

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Diagnostic/analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

C. Salmonella spp. in pig meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

The activities are made pursuant to Regulation (EC) nº 178/2002. (i.e. rapid alert system, traceability of food, feed, food-producing animals and all substances incorporated into foodstuffs must be established at all stages of production, processing and distribution. To this end, business operators are required to apply appropriate systems and procedures….

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Diagnostic/analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

D. Salmonella spp. in bovine meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

The activities are made pursuant to Regulation (EC) nº 178/2002. (i.e. rapid alert system, traceability of food, feed, food-producing animals and all substances incorporated into foodstuffs must be established at all stages of production, processing and distribution. To this end, business operators are required to apply appropriate systems and procedures….

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

Metodo

Diagnostic/analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Hadar	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from poultry, unspecified									
fresh									
- at slaughterhouse	ABCDE	M	25g	203	28		3		25
- at packing centre	AB	M	25g	146	8		3		5
- at retail	AB	M	25g	400	15		2		13
meat products									
- at processing plant	ABE	M	25g	93	2				2
- at retail	BCE	M	25g	214	6	5			1

Footnote

Source of information: FOOD SAFETY AGENCIES OF AUTONOMOUS COMMUNITIES A: Compulsory monitoring programmes B: Voluntary monitoring programmes.C: Surveys.D: Other procedure of sampling.E: Laboratory resports.F: National Reference Laboratory.
Epidemiological unit: L= Batch. M=Sample

Table Salmonella spp. in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Milk, cows'								
raw								
intended for direct human consumption	ABDE	M	25g	1058	1			1
Dairy products (excluding cheeses)								
ice-cream	ABDE	M	25g	586	2			2
dairy products, not specified								
ready-to-eat (1)	ABCDE	ML	25g	2071	10			10

(1) : 230 units tested belong to a batch. Zero of them are positives.

Footnote

Source of information: Food Safety Agencies of Autonomous Communities A: Compulsory monitoring programmes.B: Voluntary monitoring programmes.C: Surveys.D: Other procedure of sampling.E: Laboratory resports.F: National Reference Laboratory.Epidemiological unit: L= Batch. M=Sample

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Thompson	S. Tilburg	S. Rissen	S. Bredeney	S. Choleraesuis	S. Agona	S. Anatum	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from pig															
fresh															
- at slaughterhouse	AB	M	25g	263	13	1		2			2			8	
- at processing plant	ABE	M	25g	26	0										
- at retail	ABDE	M	25g	174	0										
meat products															
- at processing plant	ABDE	M	25g	773	10			1	1	1			1	1	5
- at retail	ABCDE	M	25g	545	14								1		13
Meat from bovine animals															
fresh															
- at slaughterhouse	ABDEF	M	25g	64	4									4	
- at processing plant	AB	M	25g	47	0										
- at retail	AB	M	25g	137	4								4		
meat products															
- at processing plant	ABCF	M	25g	57	0										

- at retail	B	M	25g	81	0										
Meat from other animal species or not specified															
fresh															
- at slaughterhouse	ABE	M	25g	159	23		11						1		11
- at processing plant	ABDE	M	25g	28	0										
- at retail	AB	M	25g	74	0										
meat products															
- at processing plant	ABDE	M	25g	399	6										6
- at retail	ACDE	M	25g	391	3										3
Meat, mixed meat															
minced meat (1)	ABDE	ML	25g	1.575	76							1	3		72

(1) : 19 units tested belong to a batch . 2 of them are positives for Salmonella spp unspecified

Footnote

Source of information: Food Safety Agencies of Autonomous Communities A: Compulsory monitoring programmes.B: Voluntary monitoring programmes.C: Surveys.D: Other procedure of sampling.E: Laboratory resports.F: National Reference Laboratory.Epidemiological unit: L= Batch. M=Sample

Table Salmonella spp. in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Hadar	S. Infantis	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Mbandaka	S. Livingstone
Eggs												
table eggs	ABCDE	ML	25g	3089	54		8	12	2	23	2	7
- at packing centre (1)	ABDE	M	25g	378	1					1		
raw material (liquid egg) for egg products	ABE	M	25g	143	2					2		
Egg products	ABE	M	25g	388	0							
Fishery products	AB	ML	25g	420	8					8		
Live bivalve molluscs (2)												
Fruits and vegetables	ABDE	M	25g	140	0							
precut												
Fish	ABCDE	M	25g	461	2					2		
raw	ABCDE	ML	25g	8092	70	1		4	2	63		
Other processed food products and prepared dishes (3)												
Bakery products	ABCDE	M	25g	1331	11					11		
desserts												

Other food	ABCDE	M	25g	1237	18					18		

(1) : 76 units tested belong to a batch. 26 of them are positives of Salmonella (11 enteritidis; 2 typhimurium; 7 livingstone; 4 Infantis; 2Mbandaka).
(2) : 270 units tested belong to a batch. 5 of them are positives of salmonella spp unspecified
(3) : 93 units tested belong to a batch. Zero of them are positives of salmonellas.

Footnote

Source of information: Food Safety Agencies of Autonomous Communities A: Compulsory monitoring programmes.B: Voluntary monitoring programmes.C: Surveys.D: Other procedure of sampling.E: Laboratory resports.F: National Reference Laboratory.Epidemiological unit: L= Batch. M=Sample

2.1.4. Salmonella in animals

A. Salmonella spp. in Gallus gallus - breeding flocks for egg production and flocks of laying hens

Monitoring system

Sampling strategy

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

Sampling strategy is defined in Annex III of Directive 92/117/EEC, covering all breeding flocks of the country into a national programe for monitoring and control of salmonella in breeding flocks.Test have been carried out by competent authorities of Autonomous Comunities.Samples are taken at flocks.

Laying hens flocks

Sampling strategy has been carried out following the criteria of the working document SANCO/34/2004 about the Baseline Study on the prevalence of Salmonella in laying flocks of Gallus gallus in the UE.

Frequency of the sampling

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

Every hatch is sampled all of them

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

Every flock is sampled

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

Every 2 weeks

Laying hens: Before slaughter at farm

maximun 9 weeks before depopulation weeks prior to slaughter

Type of specimen taken

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

Other: Internal linings of the deliveboxesry , dead chicks

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

necessary): Rearing period

Faeces

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

Other: Faeces, Dead chicks, Meconium

Laying hens: Before slaughter at farm

Other: mixed faeces, dusty material beneath cages

Methods of sampling (description of sampling techniques)

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

swabs of internal linings of the delivery boxes (10 samples by hatch)
dead chicks

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

use of socks at environmental
samples of 1 gr. at least

Breeding flocks: Production period

use of socks at environmental
samples of faeces of 1 gr. at least
swabs of meconium

Laying hens: Production period

5 samples of naturally mixed faeces from dropping belts, scrapers or deep pits. Each of the 5 samples collected at the farm should be approximately 200-300 gr.
2 samples of dusty material beneath cages

Case definition

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

If positive in control, to confirm the disease official samples must be taken:liver, ovaries and intestine of each bird of a set of five animals by premise of the flock.

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

idem

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

necessary): Production period

idem

Laying hens: Production period

A flock is considered positive for the purpose of this study if the presence of Salmonella spp. is detected in at least one of the samples. However, all serotypes shall be reported separately, including untypable serotypes.

Diagnostic/analytical methods used

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

Bacteriological method: ISO 6579:2002 MSRV

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

Bacteriological method: ISO 6579:2002 MSRV

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

Bacteriological method: ISO 6579:2002 MSRV

Laying hens: Before slaughter at farm

Other: ISO 6579:2002 MSRV

Vaccination policy

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

voluntary

Laying hens flocks

compulsory in rearing period against species of Salmonella with impact in puplic health, at farms without a fully implemented programme of surveillance and monitoring of Salmonella ,or at farms with this programme but without negative results to S. enteritidis and S. typhimurium during at least, six mounths.

Other preventive measures than vaccination in place

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

biosecurity measures

Laying hens flocks

-biosecurity measures
-compulsory notification
-compulsory surveillance and control programmes
-compliance of Good Practice Code

Control program/mechanisms

The control program/strategies in place

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

National control and monitoring programme according to Annex III of Directive 92/117/EEC

Laying hens flocks

Control and Surveillace measures of Salmonella, as regards of setting up a National Programme, following Orden PRE/1377/2005

Recent actions taken to control the zoonoses

Compulsory health programme for control of Salmonella in all breeding flocks, following criteria of Annex V of Royal Decree 328/2003, laying down the Health Poultry Plan.Official samples must be taken each 8 weeks.
Surveillance and Control programmes in holdings of laying hens, including vaccination, biosecurity measures and compliance of Good Practises Code

Measures in case of the positive findings or single cases

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

According to Annex III of Directive 92/117/EEC and Annex V of Royal Decree 328/2003:
movemment of live birds forbbiden
destruction or treatement of eggs
sacrifice

Laying hens flocks

idem

Notification system in place

Since 1952, at least (Epizootic Diseases Law)
At the moment by Animal Health Law 8/2003 and Royal Decree 328/2003

Results of the investigation

Sampled flocks: 147 breeding flocks
Positive flocks: 5

Prevalence Salmonella spp.: 3,49% (2,60% IN 2004)
- Salmonella enteritidis: 0%
- Salmonella typhymurium: 0%
- Salmonella hadar, infantis, virchow : 2,09%

Baseline study in laying hens is not fully validated by the Commission´s working group yet. Results in laying hens will be given when the study has been completely finished

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

The prevalence of Salmonella ssp. is very low
The prevalence of top 5 Sallmonella is 2,09%
Control and monitoring programmes should be differentiated of the ones for breeding flocks for meat production
Breeding flocks for egg production can be considered as a very low source of infection for humans

B. Salmonella spp. in Gallus gallus - breeding flocks for meat production and broiler flocks

Monitoring system

Sampling strategy

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

Sampling strategy is defined in Annex III of Directive 92/117/EEC, covering all breeding flocks of the country into a national programe for monitoring and control of salmonella in breeding flocks.Test have been carried out by competent authorities of Autonomous Comunities.Samples are taken at flocks.

Frequency of the sampling

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

Every hatch is sampled all of them

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

Every flock is sampled

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

Every 2 weeks

Type of specimen taken

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

necessary): Day-old chicks

Other: Internal linings of the deliveboxesry , dead chicks

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

Faeces

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

Other: Faeces, Dead chicks, Meconium

Methods of sampling (description of sampling techniques)

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

swabs of internal linings of the delivery boxes(10 samples by hatch)
dead chicks

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

use of socks at environmental
samples of 1 gr. at least

Breeding flocks: Production period

use of socks at environmental
samples of 1 gr. at least
swabs of meconium

Case definition

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

If positive in control, to confirm the disease official samples must be taken:liver,ovaries and intestine of each bird of a set of five animals by premise of the flock.

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

idem

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

idem

Diagnostic/analytical methods used

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

Bacteriological method: ISO 6579:2002 MSRV

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

Bacteriological method: ISO 6579:2002 MSRV

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

Bacteriological method: ISO 6579:2002 MSRV

Vaccination policy

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

voluntary

Control program/mechanisms

The control program/strategies in place

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

National control and monitoring programme according to Annex III of Directive 92/117/EEC

Recent actions taken to control the zoonoses

Compulsory health programme for control of Salmonella in all breeding flocks, following criteria of Annex V of Royal Decree 328/2003, laying down the Health Poultry Plan
Official samples must be taken each 8 weeks

Measures in case of the positive findings or single cases

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

According to Annex III of Directive 92/117/EEC and Annex V of Royal Decree 328/2003:
movemment of live birds forbbiden
destruction or treatement of no incubated eggs
sacrifice

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

necessary): Rearing period

idem

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

idem

Notification system in place

Since 1952, al least(Epizootic Diseases Law).At the moment dy Animal Health Law 8/2003 and Royal decree 328/2003

Results of the investigation

Sampled flocks: 859
Positive flocks: 103
Prevalence Salmonella spp.: 11,7%
- prevalence top 5: 10,9%

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

The prevalence of Salmonella ssp. is high
Control and monitoring programmes should be differentiated of the ones for breeding flocks for egg production ,in which prevalence is very slow

Table Salmonella in breeding flocks of Gallus gallus

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Hadar	S. Infantis	S. Virchow
Gallus gallus (fowl)										
parent breeding flocks for egg production line										
day-old chicks	A	flock	23	2	0	0	2	0	0	0
during rearing period	A	flock	22	0	0	0	0	0	0	0
during production period	A	flock	3	0	0	0	0	3	0	0
parent breeding flocks for meat production line										
day-old chicks	A	flock	137	5	5	0	0	0	0	0
during rearing period	A	flock	158	11	1	2	3	5	0	0
during production period	A	flock	528	87	54	12	6	13	1	1

Footnote

A: Subdireccion General de Sanidad Animal. M.A.P.A.

Table Salmonella in other poultry

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Gallus gallus (fowl)							
laying hens (1)	*****						
during production period	BASELINE STUDY	HOLDING	485	355	224	26	105

(1) : Baseline study in laying hens is not fully validated by the Commission´s working group yet. Results in laying hens will be given when the study has been completely finished

Footnote

*** Baseline study in laying hens is not fully validated by the Commission's working group yet. Results in laying hens will be given when the study has been completely finished

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Goats	A	herd	4	4			4
Mouflons							
wild	A	ANIMAL	1	0			
Mountain goats							
wild	A	ANIMAL	1	0			

Footnote

A: Animal Health Services of Autonomous Communities

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	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of land animal origin								
meat meal	A	BATCH	500 gr	30	10			10
animal fat	A	BATCH	500 gr	6	0			
Feed material of marine animal origin								
fish meal	A	BATCH	500 gr	29	0			
fish oil	A	BATCH	500 gr	1	0			

Footnote

A:Animal Health Services of Autonomous Communities: EXTREMADURA; LA RIOJA ;CANTABRIA

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified
Feed material of cereal grain origin								
barley derived	A	BATCH	500GR	4	0			
wheat derived	A	BATCH	500GR	8	0			
maize derived	A	BATCH	500GR	8	0			
	A	BATCH	500GR	2	0			
Feed material of oil seed or fruit origin								
rape seed derived	A	BATCH	500GR	1	0			
palm kernel derived	A	BATCH	500GR	1	0			
soya (bean) derived	A	BATCH	500GR	2	0			
cotton seed derived	A	BATCH	500GR	3	0			
Other feed material								
tubers, roots and similar products	A	BATCH	500GR	8	0			

Footnote

A:Animal Health Services of Autonomous Communities: EXTREMADURA; LA RIOJA; CANTABRIA

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified
Compound feedingstuffs for cattle								
process control	A	single	500 GR	3	0			
final product	A	single	500GR	82	2			2
Compound feedingstuffs for pigs								
process control	A	single	500GR	5	0			
final product	A	single	500GR	46	0			
Compound feedingstuffs for poultry (non specified)								
final product	A	single	500GR	4	0			
Compound feedingstuffs for poultry - laying hens								
process control	A	single	500GR	2	0			
final product	A	single	500GR	2	0			
Compund feedingstuffs for poultry - broilers								
final product	A	single	500GR	1	0			
Compound feedingstuffs for horses	A	single	500GR	5	0			
Compound feedingstuffs for sheep	A	single	500gr	3	0			

Footnote

A: Animal Health Services of Autonomous Communities: EXTREMADURA;LA RIOJA;C.VALENCIANA; CANTABRIA

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.

A. Antimicrobial resistance in Salmonella in pigs

Sampling strategy used in monitoring

Frequency of the sampling

There is a specific monitoring programme for antimicrobial surveillance running from 1999 at national level in Spain

Type of specimen taken

Faeces from healthy animals

Methods of sampling (description of sampling techniques)

Two faecal samples from two different animals from each of the farms arriving at the slaughterhouse on the sampling day

Procedures for the selection of isolates for antimicrobial testing

One isolate per serotype and per farm

Methods used for collecting data

Laboratory antimicrobial susceptibility test centralised approach

Laboratory methodology used for identification of the microbial isolates

Commercial multisubstrate identification test, antisalmonella sera, PCR, and serotyping

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Those mentioned in tables plus apramycin, cephalotin, amikacin, amixicillin plus clavulanic acid, aztreonam, cefoxitin and imipenem

Breakpoints used in testing

NCCLS breakpoints when available.

B. Antimicrobial resistance in Salmonella in poultry

Sampling strategy used in monitoring

Frequency of the sampling

National antimicrobial resistance surveillance programme running from 2003 at national level

Type of specimen taken

Full intestinal content of healthy animals

Methods of sampling (description of sampling techniques)

Full intestinal content from three different animals belonging to the same farm arriving at the slaughterhouse during the sampling day

Procedures for the selection of isolates for antimicrobial testing

One isolate per serovar per farm

Methods used for collecting data

Those mentioned in the pig monitoring

Laboratory methodology used for identification of the microbial isolates

The mentioned in the pig monitoring

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Those mentioned in the pig monitorig

Breakpoints used in testing

NCCLS when available

Table Antimicrobial susceptibility testing of S.Typhimurium in animals

n = Number of resistant isolates

	S. Typhimurium							
	Cattle (bovine animals)		**Pigs**		**Gallus gallus (fowl)**		**Turkeys**	
Isolates out of a monitoring programme			no					
Number of isolates available in the laboratory			40					
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Tetracyclines			40	36				
Doxycyclin			40	33				
Amphenicols								
Chloramphenicol			40	10				
Florfenicol			40	2				
Cephalosporins								
Cefotaxim			40	2				
Cefoxitin			40	0				
Ceftazidim			40	0				
Fluoroquinolones								
Ciprofloxacin			40	0				
Quinolones								
Nalidixic acid			40	3				
Trimethoprim			40	6				
Sulfonamides								
Sulfonamide			40	26				
Aminoglycosides								
Streptomycin			40	18				
Gentamicin			40	3				
Neomycin			40	0				
Amikacin			40	0				
Apramycin			40	3				
Carbapenems								
Imipenem			40	0				
Monobactams								
Aztreonam			40	0				
Penicillins								
Amoxicillin			40	26				
Amoxicillin/Clavulanic acid			40	3				

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - quantitative data [Dilution method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Typhimurium
	Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	40

Antimicrobials:	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Tetracyclines																						
Tetracyclin	40	36						2	1		1		3	1	8	21	3				0.5	256
Amphenicols																						
Chloramphenicol	40	10								9	21				1	6	3				2	256
Florfenicol	40	2								34	3	1	2								2	64
Fluoroquinolones																						
Ciprofloxacin	40	0		37	2	1															0.06	32
Quinolones																						
Nalidixic acid	40	3							10	25	2				2	1					0.5	128
Aminoglycosides																						
Gentamicin	40	3				4	27	6				1	1	1							0.25	64
Neomycin	40	0					12	19	4	3	2										0.25	64
Apramycin	40	3							8	28	1			3							1	32
Cephalosporins																						
Cefotaxim	40	2		12	19	5	2		2												0.03	4
Penicillins																						
Amoxicillin	40	26						9	4		1						26				1	256

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - 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

	S. Typhimurium
	Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	40

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																																
Doxycyclin	40	33	27	4			1		1		1	2		2		1	1															
Trimethoprim	40	6	6																		1	2	1	7	16	5	2					
Sulfonamides																																
Sulfonamide	40	26	26												1	2	4	4	1	1	1											
Aminoglycosides																																
Streptomycin	40	18	13		1	2		2	1	4	7	9	1																			
Amikacin	40	0														3	9	15	13													
Carbapenems																																
Imipenem	40	0																							2	7	12	14	4	1		
Cephalosporins																																
Cefoxitin	40	0																1	1		3	5	20	7	2	1						
Ceftazidim	40	0																							6	9	22	2	1			
Monobactams																																
Aztreonam(1)	35	0																										3	2	8	8	11
Penicillins																																
Amoxicillin/Clavulanic acid	40	3							2	1	3	1	1	1	5	2	1	7	2		1	3	2	4	3		1					

(1) : >35 mm = 3 strains

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of Salmonella spp. in Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - 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

	Salmonella spp.
	Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	132

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																																
Doxycyclin	132	88	42	21	10	11	3		1		7	7	16	10	1	2	1															
Cephalosporins																																
Cefoxitin	132	0																1	5	21	24	32	29	13	6	1						
Ceftazidim	132	0																						5	27	38	52	9	1			
Trimethoprim	132	25	25																		1	2	11	18	57	9	9					
Sulfonamides																																
Sulfonamide	132	51	51										2	2	4	9	13	14	12	6	8	4	4	1	2							
Aminoglycosides																																
Streptomycin	132	33	23		2	2	1	5	8	17	23	42	8	1																		
Amikacin	132	0													3	12	24	48	39	4	2											
Carbapenems																																
Imipenem	132	0																							7	23	39	40	19	4		
Monobactams																																
Aztreonam(1)	117	0																									1	9	13	27	29	27
Penicillins																																
Amoxicillin/Clavulanic acid	132	4							2	2	4	1	1	4	10	6	2	9	7	3	3	11	14	14	34	3	2					

(1) : >35 mm = 11 strains

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of Salmonella spp. in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - quantitative data [Dilution method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	Salmonella spp. Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	18

Antimicrobials:	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Tetracyclines																						
Tetracyclin	18	0						4	14												0.5	256
Amphenicols																						
Chloramphenicol	18	0								5	13										2	256
Florfenicol	18	0							1	17											2	64
Cephalosporins																						
Cefotaxim	18	1		3	13	1					1										0.03	4
Fluoroquinolones																						
Ciprofloxacin	18	0		7	2	9															0.06	32
Quinolones																						
Nalidixic acid	18	11								6	1			1	1	9					0.5	128
Aminoglycosides																						
Gentamicin	18	0				1	15	2													0.25	64
Neomycin	18	0					3	14	1												0.25	64
Apramycin	18	0							3	14	1										1	32
Penicillins																						
Amoxicillin	18	1						9	7		1						1				1	256

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of Salmonella in animals

n = Number of resistant isolates

	Salmonella spp.							
	Cattle (bovine animals)		**Pigs**		**Gallus gallus (fowl)**		**Turkeys**	
Isolates out of a monitoring programme			no		no			
Number of isolates available in the laboratory			132		18			
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Tetracyclines			132	95	18	0		
Doxycyclin			132	88	18	0		
Tetracyclin			132	95	18	0		
Amphenicols								
Chloramphenicol			132	21	18	0		
Florfenicol			132	2	18	0		
Cephalosporins								
Cefotaxim			132	2	18	1		
Cefoxitin			132	0	18	1		
Ceftazidim			132	0	18	0		
Fluoroquinolones								
Ciprofloxacin			132	0	18	0		
Quinolones								
Nalidixic acid			132	8	18	11		
Trimethoprim			132	25	18	1		
Sulfonamides								
Sulfonamide			132	51	18	1		
Aminoglycosides								
Streptomycin			132	33	18	0		
Gentamicin			132	10	18	0		
Neomycin			132	1	18	0		
Amikacin			132	0	18	0		
Apramycin			132	8	18	0		
Carbapenems								
Imipenem			132	0	18	0		
Monobactams								
Aztreonam			117	8	18	0		
Penicillins								
Amoxicillin			132	62	18	1		
Amoxicillin/Clavulanic acid			132	4	18	0		

Table Antimicrobial susceptibility testing of Salmonella spp. in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - 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

	Salmonella spp. Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	18

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																																
Doxycyclin	18	0												7	6		5															
Cephalosporins																																
Cefoxitin	18	0																			2	5	6	5								
Ceftazidim	18	0																							1	3	5	9				
Trimethoprim	18	1	1																					3	8	5		1				
Sulfonamides																																
Sulfonamide	18	1	1															2	2	2	4		1	4	2							
Aminoglycosides																																
Streptomycin	18	0							1	3	5	3			5	1																
Amikacin	18	0																6	8	4												
Carbapenems																																
Imipenem	18	0																								1	5	8	1	3		
Monobactams																																
Aztreonam(1)	18	0																				1								3	4	3
Penicillins																																
Amoxicillin/Clavulanic acid	18	0																	1					7	8	2						

(1) : >35 mm = 7 strains

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of Salmonella spp. in Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - quantitative data [Dilution method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	Salmonella spp. Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	132

Antimicrobials:	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Tetracyclines																						
Tetracyclin	132	95																				
Amphenicols																						
Chloramphenicol	132	21								40	65	6	1	3	3	8	6				2	256
Florfenicol	132	2							3	100	24	3	2								2	64
Cephalosporins																						
Cefotaxim	132	2		36	63	27	4		2												0.03	4
Fluoroquinolones																						
Ciprofloxacin	132	0		122	5	2	3														0.06	32
Quinolones																						
Nalidixic acid	132	8						1	35	77	11				3	5					0.5	128
Aminoglycosides																						
Gentamicin	132	10				14	78														0.25	64
Neomycin	132	1				1	29	58	32	9	2				1						0.25	64
Apramycin	132	8							24	94	6			8							1	32
Penicillins																						
Amoxicillin	132	62						45	21	1	1	1	1		1	4	56				1	256

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of Salmonella spp. in food

n = Number of resistant isolates

	Salmonella spp.							
	Meat from broilers (Gallus gallus)		**Meat from other poultry species**		**Meat from pig**		**Meat from bovine animals**	
Isolates out of a monitoring programme					yes			
Number of isolates available in the laboratory					22			
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Amphenicols								
Chloramphenicol					22	12		
Cephalosporins								
Cefazolin					22	1		
Cefotaxim					22	0		
Fluoroquinolones								
Ciprofloxacin					22	0		
Quinolones								
Nalidixic acid					22	0		
Aminoglycosides								
Streptomycin					22	17		
Gentamicin					22	3		
Kanamycin					22	0		
Trimethoprim + sulfonamides					22	9		
Penicillins								
Ampicillin					22	7		
Fully sensitive					22	0		
Resistant to 1 antimicrobial					22	3		
Resistant to 2 antimicrobials					22	1		
Resistant to 3 antimicrobials					22	2		
Resistant to 4 antimicrobials					22	10		
Resistant to >4 antimicrobials					22	4		

Table Breakpoints for antibiotic resistance testing of Salmonella 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	breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Tetracyclines										
Tetracyclin				8	0.5	256				
Doxycyclin							30			12
Amphenicols										
Chloramphenicol				16	2	256				
Florfenicol				16	2	64				
Fluoroquinolones										
Ciprofloxacin				2	0.06	32				
Quinolones										
Nalidixic acid				16	0.5	128				
Trimethoprim							30			10
Sulfonamides										
Sulfonamide							300			12
Aminoglycosides										
Streptomycin							10			11
Gentamicin				8	0.25	64				
Neomycin				8	0.25	64				
Amikacin							30			14
Apramycin				16	1	32				
Macrolides										
Erythromycin										
Carbapenems										
Imipenem							30			13
Cephalosporins										
Cefotaxim				0.5	0.06	4				
Cefoxitin							30			14
Ceftazidim							30			14
Monobactams										
Aztreonam							30			15
Penicillins										
Amoxicillin				16	1	256				
Amoxicillin/Clavulanic acid							30			13
Ampicillin										

Table Breakpoints for antibiotic resistance testing of Salmonella in Food

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	breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Tetracyclines										
Tetracyclin										
Doxycyclin										
Amphenicols										
Chloramphenicol	M100-S14	8		32			30	18	13	12
Florfenicol										
Fluoroquinolones										
Ciprofloxacin	M100-S14	1		4			5	21	16	15
Enrofloxacin										
Quinolones										
Nalidixic acid	M100-S14	8		32			30	19	14	13
Trimethoprim										
Sulfonamides										
Sulfonamide										
Aminoglycosides										
Streptomycin	M100-S14						10	15	12	11
Gentamicin	M100-S14	4		8			10	15	13	12
Neomycin										
Kanamycin	M100-S14	6		25			30	18	14	13
Apramycin										
Trimethoprim + sulfonamides	M100-S14	40		160			25	16	11	10
Cephalosporins										
Cefazolin	M100-S14	8		32			30	18	15	14
Cefotaxim	M100-S14	8		64			30	23	15	14
Ceftazidim										
3rd generation cephalosporins										
Penicillins										
Amoxicillin										
Amoxicillin/Clavulanic acid										
Ampicillin	M100-S14	8		32			10	17	14	13

2.2. CAMPYLOBACTERIOSIS

2.2.1. General evaluation of the national situation

A. Thermophilic Campylobacter General evaluation

History of the disease and/or infection in the country

Campylobacter spp. is at the moment one of the more frequent causes of gastroenteritis in humans.Poultry are the main reservoir, and infection happens usually by consume of poultry meat.
Until the end of 60´s importance of Campylobacter spp. was not valued.Notification of the disease is also infravaluated in surveillance systems.Epidemiologyc investigations associated cases to poultry meat consume and a deficient handle of food.
The number of cases in Spain is at the moment supported in the isolates maken by different labotatories and notificated to Information Microbiologyc System (SIM).

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

Poultry meat is the main source of infection.In broiler flocks, 2004 study of prevalence showed levels of 90% of infection.Another food implicated are red meat, raw milk, non pasteurized cheese, and water.

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

More studies need to de developed.

Recent actions taken to control the zoonoses

Surveillance of the zoonoses according to Directive 2003/99/EEC.

2.2.2. Campylobacteriosis in humans

A. Thermophilic Campylobacter in humans

Reporting system in place for the human cases

In December of 1995 the National Network of Epidemiological Surveillance was created by law. This law and its development produced changes in the surveillance system. During 1997 the protocols of statutory notification of diseases were approved and implemented in Spain. In Spain the Autonomous Regions have wide powers with respect to epidemiological surveillance and national decisions are usually taken by consensus..

- Microbiological Information System

The Microbiological Information System has been based since 1989 on voluntary weekly reporting by clinical microbiology laboratories (principally hospital laboratories). Currently, in order to improve the notification, this procedure is becoming compulsory for a designated group of representative laboratories. The information in these reports is based on individual cases and includes the following variables: agent, time, place, age, sex, etc.

- Enter-net

Spain participates in Enter-net, an European network for the surveillance of human gastrointestinal infections. Enternet has monitored salmonellosis since 1994 and Vero cytotoxin producing Escherichia coli O157 since 1999. Each country participates with a microbiologist of the national reference laboratory (source of the data) and the epidemiologist responsible for national surveillance.

- Outbreak reporting

In Spain outbreaks are the main source of information for the foodborne diseases

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Notification system in place

Microbiological Information System
Outbreak reporting System

History of the disease and/or infection in the country

Campylobacter is the second most common cause of bacterial foodborne disease notified to public health authorities in Spain Despite this, outbreaks of Campylobacter illness are rare in Spain. From 2001 to 2004 an average of 4 Campylobacter outbreaks were reported each year to the Outbreak Surveillance System.

Relevance as zoonotic disease

Campylobacter may be transmitted by food, particularly poultry, unpasteurised milk and contaminated water.

2.2.3. Campylobacter in foodstuffs

A. Thermophilic Campylobacter in Broiler meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

The activities are made according to Regulation (EC) nº 178/2002. (i.e. rapid alert system, traceability of food, feed, food-producing animals and all substances incorporated into foodstuffs) must be established at all stages of production, processing and distribution. To this end, business operators are required to apply appropriate systems and procedures….

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Type of specimen taken

At slaughterhouse and cutting plant

Other: fresh meat and skin

At meat processing plant

Other: fresh meat and skin

At retail

Other: fresh meat and skin

Diagnostic/analytical methods used

At slaughterhouse and cutting plant

Other: bacteriological method: ISO 10272:2006

At meat processing plant

Other: Bacteriological method:ISO10272:2006

At retail

Other: Bacteriological methos: ISO 10272:2006

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 poultry, unspecified										
fresh										
- at slaughterhouse	AB	M	25g	164	92	13		15		64
- at processing plant	B	M	25g	54	28	13		8		7
- at retail	AB	M	25g	267	33	5		23		5
meat products										
- at processing plant	B	M	25g	13	0					
- at retail	B	M	25g	137	0					

Footnote

Source of information: Food Safety Agencies of Autonomous Communities A: Compulsory monitoring programmes.B: Voluntary monitoring programmes.C: Surveys.D: Other procedure of sampling.E: Laboratory resports.F: National Reference Laboratory.Epidemiological unit: L= Batch. M=Sample

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for thermophilic Campylobacter spp.	C. jejuni	C. coli	C. upsaliensis	C. lari	thermophilic Campylobacter spp., unspecified
Meat from pig										
fresh										
- at slaughterhouse	AB	M	25g	46	0					
- at processing plant		M	25g	16	0					
- at retail	B	M	25g	107	0					
meat products										
- at processing plant	AB	M	25g	50	0					
- at retail	BD	M	25g	139	0					
Meat from bovine animals										
fresh										
- at slaughterhouse		M	25g	20	0					
- at retail	AB	M	25g	54	0					
meat products										
- at processing plant	BD	M	25g	14	0					
- at retail	B	M	25g	47	0					
Meat from other animal species or not specified										
fresh										
- at slaughterhouse	A	M	25g	16	0					
- at processing plant	A	M	25g	55	8					8
- at retail	AB	M	25g	96	7					7
meat products										
- at processing plant	B	M	25g	13	0					
- at retail	BD	M	25g	140	0					
Milk, cows'										

raw										
intended for direct human consumption	A	M	25g	893	0					
Dairy products (excluding cheeses)										
dairy products, not specified										
ready-to-eat	ABD	M	25g	208	0					
Eggs		M	25g	1	0					
Fishery products, unspecified	A	M	25g	17	0					
Other processed food products and prepared dishes	BD	M	25g	239	1		1			
Other food	A	M	25g	56	0					
Meat, mixed meat										
minced meat	AB	M	25g	112	10	1	4			5

Footnote

Source of information: Food Safety Agencies of Autonomous Communities A: Compulsory monitoring programmes.B: Voluntary monitoring programmes.C: Surveys.D: Other procedure of sampling.E: Laboratory resports.F: National Reference Laboratory.Epidemiological unit: L= Batch. M=Sample

2.2.4. Campylobacter in animals

A. Thermophilic Campylobacter in Gallus gallus

Monitoring system

Sampling strategy

Sampling stategy is random, not stratified by regions and taken by Algete LNR at farm to perform a prevalence study.
At slaughter samples have been taken by competent authorities of Authonomous Comunity of Cataluña.

Frequency of the sampling

Rearing period

Sampling distributed evenly throughout the year

Before slaughter at farm

Sampling distributed evenly throughout the year

At slaughter

Sampling distributed evenly throughout the year

Type of specimen taken

Rearing period

Faeces

Before slaughter at farm

Faeces

At slaughter

Faeces

Methods of sampling (description of sampling techniques)

Rearing period

cloacae swabs
60 samples by flock

Before slaughter at farm

cloacae swabs
10 samples by flock

At slaughter

cloacae swabs

Case definition

Rearing period

isolate by bacteriological method

Before slaughter at farm

isolate by bacteriological method

At slaughter

idem

Diagnostic/analytical methods used

Rearing period

Bacteriological method: ISO 6579:2002

Before slaughter at farm

Bacteriological method: ISO 6579:2002

At slaughter

Bacteriological method: ISO 6579:2002

Vaccination policy

don´t exist

Control program/mechanisms

The control program/strategies in place

don´t exist

2.2.5. Antimicrobial resistance in Campylobacter isolates

Table Antimicrobial susceptibility testing of C. coli in Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - 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

	C. coli Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	143

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**
Sulfonamides																																
Sulfonamide	135	96	93				3			2	2	1	2	1	2	1	5		4		2	1	2	3	3		2		3	1	2	
Aminoglycosides																																
Streptomycin	142	128	127				1							1	1	4	2	1	2		1											
Kanamycin	142	51	48						1		2	3	11	13	13	15	12	9	6	5	3						1					
Macrolides																																
Tylosine(1)	142	98				95	2		1	2							1	2		4	3	2	4	5	7	6	2	2	2	2		
Polymyxins																																
Colistin	142	16						3	3	7	3	8	6		3	5	16	7	9	23		14	13	4	1	1						

(1) : Rosco tablets (minimum diameter 9 mm)

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of C. coli in Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - quantitative data [Dilution method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	C. coli
	Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	143

Antimicrobials:	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Tetracyclines	141	141					1				1	8	9	30	63	29					0.5	256
Amphenicols																						
Chloramphenicol	141	0							92	46	3										2	256
Florfenicol	141	0						1	140												2	64
Fluoroquinolones																						
Ciprofloxacin	140	123		3	5	6	3			7	28	61	22	5							0.06	32
Quinolones																						
Nalidixic acid	139	121								5	7	3	3	30	81	10					0.5	128
Aminoglycosides																						
Gentamicin	141	20						17	87	16	1			2	18						0.25	64
Neomycin	141	51							2	21	66	6	3	1	42						0.25	64
Apramycin	141	33								6	63	39	3	30							1	32
Macrolides																						
Erythromycin	141	98					6	18	15	2	2		1	97							0.25	32
Penicillins																						
Amoxicillin	141	83						24	11	2	9	11		7	24	36	17				1	256

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of C. coli in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - 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

	C. coli Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	16

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
Sulfonamides																																
Sulfonamide	16	12	12											1		1					2											
Aminoglycosides																																
Streptomycin	16	9	9											1	1	1	1	2	1													
Kanamycin	16	3	3													5	5	1	1	1												
Macrolides																																
Tylosine(1)	16	3				3											1		1			3	2	2	2	1				1		
Polymyxins																																
Colistin	16	1							1					3	1		3	1	2	2	3											

(1) : Rosco tablets, minimum diameter 9 mm

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of C. coli in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - quantitative data [Dilution method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	C. coli
	Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	16

Antimicrobials:	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Tetracyclines	16	13					1	1			1			2	8	2	1				0.5	256
Amphenicols																						
Chloramphenicol	16	0							7	9											2	256
Florfenicol	16	0							16												2	64
Fluoroquinolones																						
Ciprofloxacin	16	15					1				4	9	2								0.06	32
Quinolones																						
Nalidixic acid	16	15										1		2	12	1					0.5	128
Aminoglycosides																						
Gentamicin	16	2						5	8	1		1									0.25	64
Neomycin	16	3								6	7	1			2						0.25	64
Apramycin	16	2								3	11			2							1	32
Macrolides																						
Erythromycin	15	3					4	8						3							0.25	32
Penicillins																						
Amoxicillin	15	5						2	2	3	1	2	1	1	1	1	1				1	256

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of C. coli - qualitative data

n = Number of resistant isolates

	C. coli			
	Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling		**Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling**	
Isolates out of a monitoring programme	no		no	
Number of isolates available in the laboratory	143		16	
Antimicrobials:	**N**	**n**	**N**	**n**
Tetracyclines	141	139	16	13
Amphenicols				
Chloramphenicol	141	0	16	0
Florfenicol	141	0	16	0
Fluoroquinolones				
Ciprofloxacin	140	123	16	15
Quinolones				
Nalidixic acid	139	121	16	15
Trimethoprim			16	16
Sulfonamides				
Sulfonamide	135	96	16	12
Aminoglycosides				
Streptomycin	142	128	16	9
Gentamicin	141	20	16	2
Neomycin	141	51	16	3
Kanamycin	142	51	16	3
Apramycin	141	33	16	2
Macrolides				
Erythromycin	141	98	15	3
Tylosine	142	98	16	3
Penicillins				
Amoxicillin	141	83	15	5
Polymyxins				
Colistin	142	16	16	1

Table Antimicrobial susceptibility testing of C. jejuni in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - 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

	C. jejuni Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	16

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**
Sulfonamides																																
Sulfonamide	16	8	8												2		1					2	1	1	1							
Aminoglycosides																																
Streptomycin	16	1	1													1	2			5	2	2	2		1							
Kanamycin	16	1	1											1		1	1	1	5	1	1	3				1						
Macrolides																																
Tylosine(1)	15	12				1							1				1				1	1		1	1	4	2		1		1	
Polymyxins																																
Colistin	16	1								1				2				4	5	2	1		1									

(1) : Rosco tablets, minimum diameter= 9 mm

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of C. jejuni in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - quantitative data [Dilution method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	C. jejuni Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	16

Antimicrobials:	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Tetracyclines	16	7					2	3		1	3		1	1	1	3	1				0.5	256
Amphenicols																						
Chloramphenicol	16	0							12	4											2	256
Florfenicol	16	0							16												2	64
Fluoroquinolones																						
Ciprofloxacin	16	15		1						1	5	3	5	1							0.06	32
Quinolones																						
Nalidixic acid	15	14										1			4	10					0.5	128
Aminoglycosides																						
Gentamicin	16	1					6	9				1									0.25	64
Neomycin	16	1							3	12				1							0.25	64
Apramycin	16	1							6	8	1			1							1	32
Macrolides																						
Erythromycin	16	1				10	2	3						1							0.25	32
Penicillins																						
Amoxicillin	16	7						2			2	5				3	4				1	256

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of C. jejuni - qualitative data

n = Number of resistant isolates

	C. jejuni	
	Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling	
Isolates out of a monitoring programme	no	
Number of isolates available in the laboratory	16	
Antimicrobials:	**N**	**n**
Tetracyclines	16	7
Amphenicols		
Chloramphenicol	16	0
Florfenicol	16	0
Fluoroquinolones		
Ciprofloxacin	16	15
Quinolones		
Nalidixic acid	15	14
Trimethoprim	16	16
Sulfonamides		
Sulfonamide	16	8
Aminoglycosides		
Streptomycin	16	1
Gentamicin	16	1
Neomycin	16	1
Kanamycin	16	1
Apramycin	16	1
Macrolides		
Erythromycin	16	1
Tylosine	15	1
Penicillins		
Amoxicillin	16	7
Polymyxins		
Colistin	16	1

Table Antimicrobial susceptibility testing of Campylobacter in animals

n = Number of resistant isolates

	Campylobacter spp., unspecified					
	Cattle (bovine animals)		**Pigs**		**Gallus gallus (fowl)**	
Isolates out of a monitoring programme					no	
Number of isolates available in the laboratory					32	
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**
Tetracyclines					32	20
Amphenicols						
Chloramphenicol					32	0
Florfenicol					32	0
Fluoroquinolones						
Ciprofloxacin					32	30
Quinolones						
Nalidixic acid					31	29
Sulfonamides						
Sulfonamide					32	20
Aminoglycosides						
Streptomycin					32	10
Gentamicin					32	3
Neomycin					32	4
Kanamycin					32	4
Apramycin					32	3
Macrolides						
Erythromycin					31	4
Tylosine					31	4
Penicillins						
Amoxicillin					31	12
Polymyxins						
Colistin					32	2

Table Breakpoints used for antimicrobial susceptibility testing of Campylobacter in Animals

Test Method Used

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

Campylobacter	Standard for breakpoint	Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		disk content	breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Tetracyclines				8	0.5	256				
Amphenicols										
Chloramphenicol				16	2	256				
Florfenicol				16	2	64				
Fluoroquinolones										
Ciprofloxacin				2	0.06	32				
Quinolones										
Nalidixic acid				16	0.5	128				
Sulfonamides										
Sulfonamide							300			12
Aminoglycosides										
Streptomycin							10			12
Gentamicin				8	0.25	64				
Neomycin				8	0.25	64				
Kanamycin							30			14
Apramycin				16	1	32				
Macrolides										
Erythromycin				32	0.25	32				
Tylosine							150			12
Penicillins										
Amoxicillin				16	1	256				
Ampicillin										
Polymyxins										
Colistin							50			14

Footnote

Tylosine by Rosco tablets

2.3. LISTERIOSIS

2.3.1. General evaluation of the national situation

A. Listeriosis general evaluation

History of the disease and/or infection in the country

Listeria monocytogenes has been recognised as a human pathogen for more than 50 years. It causes invasive illness mainly in certain well defined high-risk groups, including immunocompromised persons, pregnant women and neonates. However listeriosis can occur in otherwise healthy individuals, particularly in the setting of an outbreak. The public health importance of listeriosis is not always recognised particularly because listeriosis is a relatively rare disease compared to other common food-borne illnesses such as salmonellosis. Also listeriosis is a disease that affects the cattle, mainly ewes in Spain.

Recent actions taken to control the zoonoses

The activities are made according to Regulation (EC) nº 178/2002. (i.e. rapid alert system, traceability of food, feed, food-producing animals and all substances incorporated into foodstuffs). must be established at all stages of production, processing and distribution. To this end, business operators are required to apply appropriate systems and procedures….
Sampling is distributed evenly throughout the year.

Additional information

Diagnostic methods used in food : Bacteriological method: ISO 11290-2_:2004.

2.3.2. Listeriosis in humans

A. Listeriosis in humans

Reporting system in place for the human cases

Microbiological Information System
The Microbiological Information System has been based since 1989 on voluntary weekly reporting by clinical microbiology laboratories (principally hospital laboratories). Currently, in order to improve the notification, this procedure is becoming compulsory for a designated group of representative laboratories. The information in these reports is based on individual cases and includes the following variables: agent, time, place, age, sex, etc.
Outbreak reporting
In Spain outbreaks are the main source of information for the foodborne diseases

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Notification system in place

Microbiological Information System
Outbreak reporting System

History of the disease and/or infection in the country

Listeria monocytogenes has been recognised in Spain as a human pathogen for more than 50 years. It causes invasive illness mainly in certain well defined high-risk groups, including immunocompromised persons, pregnant women and neonates. However listeriosis can occur in otherwise healthy individuals, particularly in the setting of an outbreak. In 1992 was a large outbreak with 24 patients.

Results of the investigation

In the last year have been reporting 64 cases of listeriosis.
In 2005, 64 cases of listeriosis were diagnosed, all L. monocytogenes. Data on the age distribution, sex, species involved are shown in Tables.
The number of laboratory confirmed cases of listeriosis has been increasing in the past year. In 2004 the number of reports was 2x higher than in the year before and after this period.
Listeriosis is most often found in young children 0-1 years old, especially babies and in elder people. Among young adult women up to 44 years of age 4x more cases were reported as for males of the same age but the numbers involved are low.100% of the reported Listeria spp. cases concerned Listeria monocytogenes.

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

The number of laboratory confirmed cases of listeriosis has been increasing in the past year. In 2004 the number of reports was 2x higher than in the year before and after this period.
Listeriosis is most often found in young children 0-1 years old, especially babies and in elder people. Among young adult women up to 44 years of age 3x more cases were reported as for males of the same age but the numbers involved are low.
All of the reported Listeria spp. cases concerned Listeria monocytogenes.

Relevance as zoonotic disease

The public health importance of listeriosis is not always recognised particularly because listeriosis is a relatively rare disease compared to other common food-borne illnesses such as salmonellosis. .

2.3.3. Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Definition used	Units tested	=<100 cfu/g	>100 cfu/g	Total units positive for L.monocytogenes	Listeria monocytogenes presence in x g	L. monocytogenes - L. monocytogenes serovar 1/2c	L. monocytogenes - L. monocytogenes serovar 4b
Dairy products (excluding cheeses)											
dairy products, not specified											
ready-to-eat	A	M	25g		1888	1		30	29	1	7
ice-cream	A	M	25g		570			3	3		

Footnote

Source of information: Food Safety Agencies of Autonomous Communities A: Compulsory monitoring programmes.B: Voluntary monitoring programmes.C: Surveys.D: Other procedure of sampling.E: Laboratory resports.F: National Reference Laboratory.Epidemiological unit: L= Batch. M=Sample

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Definition used	Units tested	=<100 cfu/g	>100 cfu/g	Total units positive for L.monocytogenes	Listeria monocytogenes presence in x g	L. monocytogenes - L. monocytogenes serovar 1/2a	L. monocytogenes - L. monocytogenes serovar 1/2b	L. monocytogenes - L. monocytogenes serovar 4b	L. monocytogenes - L. monocytogenes serovar 1/2c
Meat from pig													
fresh **meat products**		M	25g		17		3	3					
cooked, ready-to-eat		M	25g		557		5	26	21	4	1	5	
Meat from bovine animals													
fresh **meat products**		M	25g		21		1	1					
cooked, ready-to-eat		M	25g		76			4	4				
Meat from poultry, unspecified													
fresh		M	25g		173		4	10	6				

meat products													
unspecified, ready-to-eat		M	25g		63			2	2				
Meat from other animal species or not specified													
fresh		M	25g		1			0					
meat products		M	25g		334			6	6				
Meat, mixed meat													
minced meat	A	M	25g		434	46	15	68	7				
Egg products					3			0					
Fishery products, unspecified	A	M	25g		412	2	5	7					
ready-to-eat salads	A	M	25g		90			2	2				
Other processed food products and prepared dishes	A	M	25g		8149		11	50	39				
Other food		M	25g		342			1	1				

Footnote

Source of information: Food Safety Agencies of Autonomous Communities A: Compulsory monitoring programmes.B: Voluntary monitoring programmes.C: Surveys.D: Other procedure of sampling.E: Laboratory resports.F: National Reference Laboratory.Epidemiological unit: L= Batch. M=Sample

2.3.4. Listeria in animals

2.4. E. COLI INFECTIONS

2.4.1. General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

History of the disease and/or infection in the country

Verotoxigenic Escherichia coli have emerged as foodborne pathogens which can cause severe and potencially fatal illness.Rumiants,specially cattle and sheep, have been implicated as the principal reservoir of VTEC.Transmission happened through consumption of undercooked meat, unpasteurized dairy products, vegetables or water contaminated by rumiant faeces.
Studies about VTEC in Spain has been developed by Reference Laboratory of E. coli of Veterinary University of Lugo, that belongs to Colinetwork O157 inside Comission Research FAIR6-CT98-409, as a Tematic Network of Cooperative Research of Health and Consume Ministry of Spain.
Between 1980 and 1995,90% of cattle farms tested in region of Galicia were positive to VTEC, with 26% of animals coloniozed by VTEC no-O157 and 0,9% colonized by ECVT O157:H7. In 1999, 20% of farms and 10% of animals were colonized by ECVT O157:H7.In 1998, 15% of calves tested of others regions of Spain were carrier of ECVT O157:H7.
In sheeps,36% of lambs of region of Extremadura tested in 1997 were carrier of ECVT, but only 0,4% were colonized by strain O157:H7.Similar results has been obtained in studies carried out between 2000 and 2001.

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

In cattle, percentage of animals colonized by strain O157:H7 has been higher in last studies.Raw beef products are the main source of infection.
Small rumiants may also represent a source of transmision of VTEC to humans.

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

The higher percentage of animals colonized by strain O157:H7 in last years agree with growing of human incidence, but outbreaks of the disease are very infrecuent at the moment.

Recent actions taken to control the zoonoses

Surveillance of the disease according to Directive 2003/99/EEC.
Compulsory and voluntary monitoring programmes in raw meat of diferent species of animals, minced meat and meat products, other animal origin products, vegetables and others products.

Additional information

Diagnostic methods used in food : Bacteriological method: ISO 16654:2001.

2.4.2. E. Coli Infections in humans

A. Verotoxigenic Escherichia coli infections in humans

Reporting system in place for the human cases

Microbiological Information System
Enter-net
Outbreak reporting

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Notification system in place

Microbiological Information System
The Microbiological Information System has been based since 1989 on voluntary weekly reporting by clinical microbiology laboratories (principally hospital laboratories). Currently, in order to improve the notification, this procedure is becoming compulsory for a designated group of representative laboratories. The information in these reports is based on individual cases and includes the following variables: agent, time, place, age, sex, etc.
Enter-net
Spain participates in Enter-net, an European network for the surveillance of human gastrointestinal infections. Enternet has monitored salmonellosis since 1994 and Vero cytotoxin producing Escherichia coli O157 since 1999. Each country participates with a microbiologist of the national reference laboratory (source of the data) and the epidemiologist responsible for national surveillance.
Outbreak reporting
In Spain outbreaks are the main source of information for the foodborne diseases.

2.4.3. Escherichia coli, pathogenic in foodstuffs

Table VT E.coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Escherichia coli, pathogenic	E. coli spp., unspecified	Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC O157:H7	Verotoxigenic E. coli (VTEC) - VTEC spp., unspecified
Meat from pig										
fresh										
- at slaughterhouse	ABE	M	25g	105	1					1
- at processing plant	A	M	25g	118	1			1		
- at retail	ABE	M	25g	128	0					
meat products										
- at processing plant	B	M	25g	62	0					
- at retail	B	M	25g	181	0					
Meat from bovine animals										
fresh										
- at slaughterhouse	ABD	M	25g	76	4				1	3
- at processing plant	AB	M	25g	84	1			1		
- at retail	ABCD	M	25g	102	3			1	1	1
meat products										
- at processing plant	BDE	M	25g	74	0					
- at retail	ABDE	M	25g	159	0					
Meat from sheep										
fresh										
- at slaughterhouse	A	M	25g	84	0					
- at processing plant	AB	M	25g	31	0					
- at retail	A	M	25g	32	0					
Milk, cows'										
raw										

intended for direct human consumption	A	M	25g	540	0					
pasteurised milk	ABE	M	25g	10	0					
Vegetables	AB	M	25g	50	0					
Dairy products (excluding cheeses)										
dairy products, not specified	ABDE	M	25g	368	9					9
Fishery products, unspecified	AB	M	25g	304	18					18
Eggs	B	M	25g	53	0					
Other processed food products and prepared dishes										
unspecified	ABCDE	M	25g	1333	6					6
Other food	ABE	M	25g	226	6					6
Meat from poultry, unspecified										
fresh										
- at slaughterhouse	AD	M	25g	67	2				1	1
- at processing plant		M	25g	95	0					
- at retail	AB	M	25g	97	0					
meat products										
- at processing plant	B	M	25g	8	0					
- at retail	B	M	25g	211	0					
Meat, mixed meat										
meat products	ABE	M	25g	892	3					3
Meat from other animal species or not specified										
meat products										
- at processing plant	BDE	M	25g	35	0					
- at retail	BE	M	25g	68	0					
Meat from goat										
fresh										
- at slaughterhouse	A	M	25g	21	0					
- at retail		M	25g	30	0					

Footnote

Source of information: Food Safety Agencies of Autonomous Communities A: Compulsory monitoring programmes.B: Voluntary monitoring programmes.C: Surveys.D: Other procedure of sampling.E: Laboratory resports.F: National Reference Laboratory.Epidemiological unit: L= Batch. M=Sample

2.4.4. Escherichia coli, pathogenic in animals

A. Verotoxigenic Escherichia coli in cattle (bovine animals)

Monitoring system

Sampling strategy

Sampling strategy in studies has been random and developed at two levels:
- at farm in region of Galicia
- at abbatoir over feedlot calves comming from other regions of Spain
Studies has been carried out by Reference Laboratory

Frequency of the sampling

Animals at farm

Other: Different studies since 1980

Animals at slaughter (herd based approach)

Other: Diferent studies in several years

Type of specimen taken

Animals at farm

Faeces

Animals at slaughter (herd based approach)

Faeces

Methods of sampling (description of sampling techniques)

Animals at farm

swabs

Animals at slaughter (herd based approach)

swabs

Case definition

Animals at farm

isolation of VTEC and PCR/IMS

Animals at slaughter (herd based approach)

isolation of VTEC and PCR/IMS

Diagnostic/analytical methods used

Animals at farm

Other: PCR, Inmunomagnetic separation(IMS)

Animals at slaughter (herd based approach)

Other: PCR, IMS

Vaccination policy

In Spain doesn´t exist a vaccination policy.
At farms, vaccines can be used by private veterinarians to control neonatal septicemia in calves.

Control program/mechanisms

The control program/strategies in place

Don´t exist

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

Described in General Evaluation

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

Described in General Evaluation

2.5. TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1. General evaluation of the national situation

A. Tuberculosis General evaluation

History of the disease and/or infection in the country

Sanitary importance of bovin tuberculosis has been based in the spread of the disease to humans. Human infection has been linked historically to raw milk consumption. At human´s level the surveillance of the disease is included in National Net of Epidemiological Surveillance, according with Royal Decree 2210/1995, december 25, by Epidemiological Surveillance National Net is created.
In Spain, control of milk was carried out at council town´s level since 1908, but monitoring and eradication programmes in cattle didn´t start systematically until begining of 90´s, focused mainly in dairy cows. At the moment the programme is being applied to cattle over six weeks of age,and to goats living close to cattle, according to Directive 64/432/EEC.
Control of milk is carried out by Autonomous Communities according to Directive 92/46/EEC, and control of fresh meat production according to Directive 64/433/EEC

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

Spanish programmes for eradication of bovin tuberculosis in last years show the continous decrease of the disease prevalence in cattle. In 2005 herd prevalence was 1.52%(2.14% in 2003, 1.80% in 2004), with the 97.34% of herds oficially free(95.77% in 2003, 96,56% in 2004). Animal prevalence in 2005 was 0.31%(0.47% in 2003, 0.40% in 2004).Raw milk only can be consumed if produced in herds OTF.

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

Only a few human cases had been identify as tuberculosis by Mycobacterium bovis in the last years. The risk of transmission from the animals to the man is very low.

Recent actions taken to control the zoonoses

Spanish Programme for eradication of bovin tuberculosis 2005
Milk control according to Directive 92/46/EEC
Control of the production of fresh meat according to Directive 64/433/EEC

Additional information

M. caprae has been isolated in 2005 from cattle, goats, wild boards, one fox.

2.5.2. Tuberculosis, Mycobacterial Diseases in humans

A. Tuberculosis due to Mycobacterium bovis in humans

Reporting system in place for the human cases

Royal Decree 2210/1995, december 25, by Epidemiological Surveillance National Net is created The Microbiological Information System has been based since 1989 on voluntary weekly reporting by clinical microbiology laboratories (principally hospital laboratories). Currently, in order to improve the notification, this procedure is becoming compulsory for a designated group of representative laboratories. The information in these reports is based on individual cases and includes the following variables: agent, time, place, age, sex, etc

Case definition

Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Notification system in place

Microbiological Information System

History of the disease and/or infection in the country

Only a few cases of infection by M bovis was reported in the last years

Results of the investigation

Four human cases of M.bovis infection have been reported during 2005 in Spain, of which 3 were >=65 years old. The one remaining cases were a 15-44 year old man

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

The risk of obtaining tuberculosis from animal sources is lower than human to human transmision due to the VIH+/AIDS epidemic

Relevance as zoonotic disease

The risk of obtaining tuberculosis from animal sources is negligible

2.5.3. Mycobacterium in animals

A. Mycobacterium bovis in Bovine Animals

Monitoring system

Sampling strategy

Sampling strategy is defined in Spanish Programme for eradication of bovine tuberculosis, covering cattle according Directive 64/432/EEC(animals over six week of age)and goats living close to cattle.Test are maken by competent authorities of Autonomous Comunities.At slaughterhouse samples are taken in suspicius animals and in animals with suspicius injures.

Frequency of the sampling

Once a year at least
Premovement test in movements to common pastures and thashumance

Type of specimen taken

Other: skin test, blood, organs/tissues

Methods of sampling (description of sampling techniques)

In herds intradermal skin test is used in animals over 6 weeks of age and gamma interferon as supplementary test.
At slaughterhouses organs/tissues are taken from suspicius animals (mainly from herds with OTF status suspended)and from injures found in routine post-mortem examination of animals slaughtered according to Directive 64/433/EEC.
Total number of samples taken in 2005 by the different diagnostic methods was 5.210.987.

Case definition

IDT:positives and inconclusive results. In OTF herds also M. bovis isolation.
Gamma-interferon: positive results
Organs/tissues:compatible lesions, isolation or positive PCR

Diagnostic/analytical methods used

IDT test, agent isolation, PCR and gamma-interferon following criteria laying down by Annex B of Directive 64/432/EEC

Vaccination policy

Forbiden

Other preventive measures than vaccination in place

Premovemment test
Cleaning and disinfecting of positive holdings

Control of common grazing areas
Investigation of wild live in some regions
Epidemiological investigations in breakdowns

Control program/mechanisms

The control program/strategies in place

Spain has a Programme for Eradication and Monitoring according to Decision 2004/450/EEC and Decision 90/424/EEC
Legal basis of the programe measures is Directive 64/432/EEC

Recent actions taken to control the zoonoses

More frequent testing and pre-movement test
Compulsory slaughtering of all animals in herds with high incidence or repeating positive results
Severe interpretation of tuberculin test
Research into other test methodologies
Reinforce over herd registers at farm level
Epidemiological studies

Suggestions to the Community for the actions to be taken

Research into other test methodologies and improve the existing ones.

Measures in case of the positive findings or single cases

Confirm by isolation of M. bovis
If confirm, lost of OTF status by holding
Epidemiological studies

Notification system in place

Since 1952, at least (Epizootic Diseases Law)
At the moment by Animal Health Law 8/2003

Results of the investigation

Herd prevalence: 1,52%
Animal prevalence: 0,31%
Herd incidence: 0,99%
Herd status: 97,34% OTF

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

Data obtained by applying of Spanish Tuberculosis Eradication and Monitoring Programme show a moderate decrease of the disease in the country,following the trends of last years.
Herd prevalence: 2,24%(2002); 2,14%(2003);1,80% (2004); 1,52 in 2005
Animal prevalence: 0,52%(2002); 0,47%(2003); 0,40%(2004); 0,31% (2005)
Disease is close to eradication in dairy herds. Herd and animal prevalence is below 0,80%% and

0,14% respectively.In conclusion, milk consumption can´t be considered as a current source of infection in Spain,even more if it is assumed that cow milk is thermally treated.
In fattening herds, herd and animal prevalence is 1,76%% and 0,39% respectively. Explanation of this higher prevalence can be found in special managemment of this kind of herds: common grazing, ranching systems, fighting bulls, trashumance... Wildlife and goats can also be a source of infection in these holdings.

Additional information

Increase of the number of isolations of Mycobacterium caprae.

Table Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified	M. caprae
Goats	A	animal	365331	1706	1706			
- at slaughterhouse - Control or eradication programmes (samples of positive reactors to skin test)	C	sample	227	149	1		10	138
Pigs								
- at slaughterhouse	D	animals	36725366	1268			1268	
Wild boars								
wild	B	animal	9924	673	67		600	6
- at game handling establishment	D	animal	128608	351			351	
Deer								
wild								
- Surveillance	B	animal	274	41	41			
fallow deer								
- Surveillance	B	animal	47	46	46			
roe deer								
- Surveillance	B	animal	2	0				
red deer								
- at game handling establishment - Surveillance	B	animal	543	20	20			
Cantabrian chamois								
- Surveillance	B	animal	52	1	1			
Foxes	B	animal	27	6	5			1
Cattle (bovine animals)								
- at slaughterhouse	D	Animals	2814926	11180			11180	
- at slaughterhouse - Control or eradication programmes (samples taken of positive reactors in skin test)	C	sample	1153	439	427		7	5
Sheep and goats								

- at slaughterhouse	D	Animals	16417345	183			183	

Footnote

A: Animal Health Services of Autonous Communities(Programas de Control-skin test) CASTILLA-LA MANCHA: el total de rebanos caprinos muestreados es de 21 con 474 animales.CATALUNYA: 1222 cabras analizadas relacionadas con rebanos bovinos y de estas 254 postitivas. 173 animales silvestres analizados y de estos 12 positivos. CANTABRIA: muestreadas 32 cabras (4 explotac), sin positividad
B:Animal Health Services of Autonous Communities (Survillance programmes of wildlife); C: confirmacion mediante aislamiento de reactores positivos (muestras), Base Nacional de Cepas de M. bovis, Laboratorio Visavet de la Facultad de Veterinaria U.C.M.;D:Human Health and Food Safety Services (results of routine post-mortem examination at slaughterhouse)

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
La Rioja	421	306	306	4	3	0	0	100	1.307	0.98
Castilla-La Mancha	3881	2181	2181	153	62	2	1.307	100	7.015	2.843
Cataluña	6137	4780	4715	80	58	6	7.5	98.64	1.697	1.23
Baleares	723	536	464	3	3	0	0	86.57	0.65	0.65
Canarias	1502	1502	1502	15	9	1	7	100	1	0.6
Valencia	715	513	510	11	3	2	18.18	99.42	2.16	0.59
Cantabria	9762	9744	9744	113	88	49	43.36	100	1.16	0.9
Asturias	23183	22823	22823	42	32	7	16.67	100	0.18	0.14
País Vasco	13358	9155	5774	37	9	4	10.811	63.069	0.641	0.156
Murcia	408	224	224	10	10	0	0	100	4.464	4.464
Navarra	1886	1886	1884	7	7	7	100	99.894	0.372	0.372
Madrid	1655	1553	1553	40	22	0	0	100	2.576	1.417
Andalucía	9295	8015	7494	399	271	3	0.752	93.5	5.324	3.616
Aragón	3682	1092	1092	17	16	0	0	100	1.557	1.465
Galicia	54957	53019	53019	167	145	48	28.743	100	0.315	0.273
Castilla y León	22003	18980	18980	640	457	27	4.219	100	3.372	2.408
Extremadura	12738	10615	10615	430	217	9	2.093	100	4.051	2.044
Total	166306	146924	142880	2168	1412	165	7.611	97.248	1.517	0.988
Total - 1	171190	154610	151723	2735	1683	131	4	98	1.8	1.11

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 new 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
La Rioja	41010	24687	24687	24687	46	46	46	100	0.19
Castilla-La Mancha	3073675	211141	211141	211141	1568	2784	3129	100	0.74
Cataluña	757529	366991	364442	364442	795	795	944	99.305	0.22
Baleares	37184	37002	30343	30343	5	5	5	82.004	0.02
Canarias	19467	19467	19467	19467	80	80	464	100	0.41
Valencia	66880	54836	54376	54376	258	258	258	99.161	0.47
Asturias	396494	383535	383535	383535	202	202	643	100	0.05
Cantabria	302254	301580	301580	301580	1035	1035	3002	100	0.34
Andalucía	638374	553294	537777	537777	3759	3759	3849	97.196	0.7
Aragón	284122	65672	65672	65672	62	62	62	100	0.09
País Vasco	225397	149174	104124	104124	79	40	67	69.8	0.08
Navarra	98985	98985	88170	88170	211	211	211	89.074	0.24
Murcia	67168	25282	25282	25282	50	50	50	100	0.24
Madrid	102414	97184	97184	97184	210	210	210	100	0.22
Galicia	955929	796723	796723	796723	709	709	2196	100	0.09
Castilla y León	1266355	1066569	1066569	1066569	3423	3380	4164	100	0.32
Extremadura	716655	519637	519637	519637	2089	1909	2210	100	0.4
Total	9049892	4771759	4690709	4690709	14581	15535	21510	98.301	0.311
Total - 1	6328241	4719713	4676571	4676571	18684	17802	21219	99.09	0.4

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
La Rioja	306	24687	0	0	1	416	3	749	1	112	0	0	301	23410
Castilla-La Mancha	2181	211141	0	0	105	19870	130	13590	7	752	0	0	1939	176929
Cataluña	4780	514519	27	1314	50	5224	52	1916	35	1481	0	0	4616	504584
Baleares	541	37184	5	182	0	0	89	1456	3	261	0	0	444	35285
Canarias	1502	19467	0	0	3	882	1	300	11	455	0	0	1487	17830
Valencia	513	54866	3	460	9	661	49	3890	3	70	0	0	449	49785
Cantabria	9744	301580	0	0	34	2664	1	121	0	0	0	0	9709	298795
Asturias	22823	383535	0	0	16	677	173	1403	56	1743	0	0	22578	379712
País Vasco	9155	149174	0	0	1	181	1	280	27	39	0	0	9126	148674
Navarra	1886	98985	0	0	1	209	2	1111	0	0	0	0	1883	97665
Aragón	1092	65672	0	0	1	800	6	300	7	1060	0	0	1078	63512
Madrid	1553	97184	43	2461	28	1845	6	350	34	1845	0	0	1442	90638
Andalucía	8015	553294	220	6717	248	28285	726	43348	0	0	0	0	6821	474944
Murcia	224	25264	0	0	0	0	11	346	6	620	0	0	207	24316
Galicia	53019	796723	0	0	29	1179	124	3508	14	366	0	0	52852	791670
Castilla y León	18980	1066569	0	0	38	6026	282	27445	0	0	0	0	18660	1033098
Extremadura	10615	519637	0	0	137	23312	1012	78419	32	919	0	0	9434	416987
Total	146929	4919481	298	11134	701	92231	2668	178532	236	9723	0	0	143026	4627834
Total - 1	153813	4785238	57	1177	851	112507	4183	297896	219	16710	0	0	148503	4356948

2.6. BRUCELLOSIS

2.6.1. General evaluation of the national situation

A. Brucellosis General evaluation

History of the disease and/or infection in the country

Sanitary importance of brucellosis has been based in the spread of the disease to humans.At the moment brucellosis is still the main direct transmission zoonoses in the world, and in Spain as well, mainly linked to Brucella melitensis.The source of infection for human more frequent have been contacts with goats and sheeps, but raw milk products cosumption have have had historical importance as well.Nowadays brucellosis is considered as a proffesional disease.
In Spain, milk control was carried out at council town´s level since 1908. At the moment is carried out by Autonomous Comunities according to Directive 92/46/EEC, and control of fresh meat production according to Directive 64/433/EEC.
Monitoring and Eradication Programmes in cattle, goats and sheeps didn´t start systematically until beginig of 90´s.Before, human cases had the higest incidence in last thirty years, with arround 8500 cases in middle 80´s.The sistematic application of national programmes has resulted in a continous decrease of the disease in humans, with 328 cases in 2005.At the moment the Programmes are being applied according to Directive 64/432/EEC and Directive 91/68/EEC.
At human level disease brucellosis is a mandatory notifiable disease since 1943. It is included in National Network of Epidemiology Surveillance, (Royal Decree 2210/1995, december 25, by Epidemiological Surveillance National Net is created.

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

Spanish Programmes for eradication and monitoring of Brucellosis in cattle, goats and sheeps show the continous decreasing, in generall, of the disease prevalence in domestic animals,although this prevalence remains still high. In 2005 herd prevalence was 1.25%(1.45% in 2003; 1.54% in 2004)in cattle and 4.43%(5.58% in 2003; 5.12% in 2004) in goats and sheeps.Animal prevalence was 0.37%(0.45% in 2003; 0,59% in 2004)in cattle and 0.45%(0.87% in 2003; 0,62% in 2004) in goats and sheeps.
Raw milk only can be consumed if produced in herds free or officially free.

Recent actions taken to control the zoonoses

Spanish Programme for eradication of brucellosis in cattle 2005
Spanish Programme for eradication of brucellosis in goats and sheeps 2005
Milk control in accordance to Directive 92/46/EEC
Control of the production of fresh meat accoording to Directive 64/433/EEC

2.6.2. Brucellosis in humans

A. Brucellosis in humans

Reporting system in place for the human cases

Notifiable Disease Surveillance System (NDSS)
In December of 1995 the National Network of Epidemiological Surveillance was created by law. This law and its development produced changes in the surveillance system.
During 1997 the protocols of statutory notification of diseases were approved and implemented in Spain. In Spain the Autonomous Regions have wide powers with respect to epidemiological surveillance and national decisions are usually taken by consensus.
All practising doctors are obliged to notify, both those in the public health service and in private practice, and both those practising outside and within hospitals. On occasions the appearance of cases and outbreaks is detected by other means (from the mass media, from citizens complants, etc.) and in these cases the information is checked and if confirmed it is incorporated into the system at the corresponding level.
The notification may be carried out using a variety of systems: mail, fax, telephone, e-mail, etc. Presently all the regions (and in many cases levels below) transmit the data by e-mail. A network is being developed for the National Epidemiological Surveillance Network which will permit the flow of data from the local level.
In Spain the main source of information of these diseases is the notification of outbreaks. This notification has been compulsory by law for all doctors since 1982. It includes disease outbreaks of any origin, not only those related to food

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Notification system in place

Royal Decree 2210/1995, december 25, by Epidemiological Surveillance National Net is created.
Notifiable Disease Surveillance System (NDSS)

History of the disease and/or infection in the country

As the single zoonotic disease accountable for the greatest number of cases in Spain, brucellosis has been a statutorily notifiable disease since 1943.
The disease is distributed throughout all of Spain's regions, albeit in varying degrees, there being disease-free regions (Canary Islands), regions with low incidence rates (Mediterranean and Cantabrian seaboards) and regions where incidence can be considered high or very high (central and southern mainland Spain). This pattern is linked to a tradition of sheep- and goat-ranching in these areas.

The disease constitutes a problem, not only from a public health but also from a socio-economic stance. Herein lies the sensitivity surrounding its surveillance, demonstrated by the different Administrations and reflected from the highest echelons in the form of specific legislation designed to control the disease and comply with international commitments

Results of the investigation

From 1943 onwards, the disease time series describes 3 well-differentiated multi-annual waves: the first being from 1943 to 1959, with a maximum incidence rate in 1949 (19,83x100,000 population); the second, a seven-year cycle terminating in 1977, marked by a maximum peak in 1973 with an incidence rate of 20,32x100,000 population; and the last and third cyclical wave, registering a maximum peak in 1984 with a rate of 22.69 per 100,000 population

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

In the last years, we observed a period marked by sustained historical minimum values with 328 cases (2005 rate, 0,83 per 100,000 population).
Epidemic outbreaks of brucellosis aetiology were reported in the last years The predominant transmission mechanism was direct contact with animals followed by foodftuffs. The foodstuff most frequently associated with the outbreaks was cottage-style cheese.

Relevance as zoonotic disease

High

2.6.3. Brucella in foodstuffs

2.6.4. Brucella in animals

A. Brucella abortus in Bovine Animals

Monitoring system

Sampling strategy

Sampling strategy is defined in Spanish Programme for eradication of bovine brucellosis, covering cattle acording to Directive 64/432/EEC(animals over one year of age). Test are carried out by competent authorities of Autonomous Comunities.At slaughterhouse samples are taken in suspicius animals, mainly in positive animals coming from free or officially free (suspended estatus) to confirm the disease.

Frequency of the sampling

Twice at year at least
Premovement test

Type of specimen taken

Other: blood, milk, organs/tissues,swabs

Methods of sampling (description of sampling techniques)

In herds, in animals over one year of age Rose Bengal as screening test or Milk Ring Test or ELISA in milk; and Complement Fixation test or ELISA as confirmation test.As complementary test has been used competition ELISA too.
At slaughterhouses swabs, organs and tissues are taken in suspicius animals,mainly from herds with free or oficially free status suspended to isolate Brucella and confirm the infection.
Total number of samples taken in 2005 was 6.488.171

Case definition

Positive result to Rose Bengal confirmed by positive result to Complement Fixation or ELISA.In free or officially free herds Brucella abortus also isolation.
Positive result in Milk Ring Test or Elisa confirmed by serological methods

Diagnostic/analytical methods used

Rose Bengal,agent isolation, blood ELISA, milk ELISA, Milk Ring Test and Complement Fixation test following criteria laying down by Annex B of Directive 64/432/EEC

Vaccination policy

Forbiden in general, but in areas with high incidence vaccination can be authorised with vaccine B-19 or others authorised vaccines(RB-51)according to Directive 64/432/EEC.

Other preventive measures than vaccination in place

Premovemment test
Cleaning and disinfecting of positive holdings
Control of common grazing areas
Investigation of wild live in some regions
Epidemiological investigations in breakdowns

Control program/mechanisms

The control program/strategies in place

Spain has a Progamme for Eradication and Monitoring according to Decision 2004/450/EEC and Decision 90/424/EEC
Legal basis of the programme measures is Directive 64/432/EEC

Recent actions taken to control the zoonoses

More frecuent testing and pre-movement test
Compulsory slaughtering of all animals in herds with high incidence or repeating positive results
Research into other test methodologies
Reinforce over herd registers at farm level
Epidemiological studies

Suggestions to the Community for the actions to be taken

Research into other test methodologies and improve existing ones

Measures in case of the positive findings or single cases

Confirm by complement fixation, and if herd free or officially free,status suspended and if isolation of Brucella abortus, lost of status by holding

Notification system in place

Since 1952, at least(Epizootic Diseases Law)
At the moment by Animal Health Law 8/2003

Results of the investigation

Herd prevalence: 1,25%
Animal prevalence: 0,37%
Herd incidence: 0,6%
Herd status: 96,26% OFB

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

Data obtained in applying of Spanish Bovine Brucellosis Eradication and Monitoring Programe in show a moderate increase of the disease in the country in 2005, not following the trends of previous years and 2005 in herds.
Herd prevalence: 2,30%(2002);1,45%(2003);1,54(2004); 1,25%(2005)

Animal prevalence: 0,39%(2002);0,45%(2003);0,59%(2004); 0,37% (2005)
Disease is close to eradication in dairy herds.Herd prevalence is below 1%(0,41%).In conclusion, milk consumption can´t be considered as a current source of infection in Spain, even more if it is assumed that almost all the cow milk is thermally treated.
In fattening herds, herd prevalence is 1,56%.Explanation of this higher prevalence can be found in special managemment of this type of herds:common grazing, ranching systems,fighting bulls,trashumance...Wildlife can also be a source of infection in these holdings.

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

Brucellosis in humans is linked in Spain mainly to B. mellitensis.

B. Brucella melitensis in Sheep

Status as officially free of ovine brucellosis during the reporting year

Free regions

Canarias by Decision 2001/292/EC

Monitoring system

Sampling strategy

Sampling strategy is defined in Spanish Programme for eradication and monitoring of brucellosis in sheeps and goats, according to Directive 91/68/EEC:
- animals over 6 mounths of age if not vaccined
- animals over 18 mounths of age if vaccined

Test are carried out by competent authorities of Autonomous Comunities. At slaughterhouse samples are taken in suspicius animals, mainly in positive animals coming from free or oficially free(suspended status)to confirm de disease.

Frequency of the sampling

Once a year at least in herd free or officially free
Twice a year at least in non cualificated herds

Type of specimen taken

Other: blood, milk, organs/tissues

Methods of sampling (description of sampling techniques)

In herds, in animals over 6 or 18 mounths of age Rose Bengal as screening test and Complement Fixation as confirmation test. As complementary test has been used competion ELISA too.
At slaugterhouses or in holdings swabs,milk, organs or tissues are taken in suspicius animals, mainly from herds with free or officially free status suspended to isolare Brucella and confirm the infection.
Total number of samples taken in 2005 was 20.054.505.

Case definition

Positive result to Rose Bengal confirmed by positive result to Complement Fixation.
In free or officially free herds Brucella melitensis isolation too.

Diagnostic/analytical methods used

Rose Bengal, agent isolation, Complement Fixation test following criteria laying down by Annex C of Directive 91/68/EEC

Vaccination policy

Animals between 3 and 6 months of age (not in officially free herds or free herds that are on the way to obtain oficially free status)
In high incidence areas adults can be vaccined exceptionally to control the spread of the disease to other herds or humans.

Other preventive measures than vaccination in place

Premovement test in trashumance in certain areas
Cleaning and desinfecting of positive holdings
Control of common grazing areas
Epidemiological investigations in breakdowns

Control program/mechanisms

The control program/strategies in place

Spain has a Programme for Eradication and Monitiring according to Decision 2004/450/EEC and Decision 90/424/EEC
Legal basis of the programme measures is Directive 91/68/EEC

Recent actions taken to control the zoonoses

More frecuent testing in non cualificated herds
Compulsory slaughtering of all animals in herds with high incidence or repeating positive results
Research in other test methodologies
Reinforce over herd register at farm level
Epidemiological studies

Suggestions to the Community for the actions to be taken

Research into other test methologies ant into other vaccines

Measures in case of the positive findings or single cases

Confirm by complement fixation, and if herd free or officially free, status suspended and if isolation of Brucella melitensis, lost of status by holding

Notification system in place

Since 1952, at least(Epizootic Diseases Law)
At the moment by Animal Helth Law 8/2003

Results of the investigation

Herd prevalence: 4,43%
Animal prevalence: 0,45%
Herd incidence: 1,69%
Herd status: 50,02%OF; 38,69% free

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

Data obtained in applying of Spanish Programme for Eradication and Monitoring of Brucellosis in Sheeps and Goats show a moderade but continous decrease of the disease in the country, following the trends of previous years:
Herd prevalence:7,18%(2002);5,58%(2003);5,12%(2004);4,43%(2005)
Animal prevalence:0,98%(2002);0,87%(2003);0,61%(2004);0,45%(2005)
Explanation of this still high prevalence can be found in special managemment of this type of animals: ranching systems, common grazing, trashumance...Wildlife can also be a source of infection in these holdings

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

The human cases have been identified mainly as Brucella melitensis, mainly caused by direct contant between humans and infected herds, as a professional disease (farmers, veterinary surgeons...).

C. Brucella melitensis in Goat

Status as officially free of caprine brucellosis during the reporting year

Free regions

Canarias by Decision 2001/292/EC

Monitoring system

Sampling strategy

see brucella melitensis in sheeps

Frequency of the sampling

see brucella melitensis in sheeps

Methods of sampling (description of sampling techniques)

see brucella melitensis in sheeps

Case definition

see brucella melitensis in sheeps

Diagnostic/analytical methods used

see brucella melitensis in sheeps

Vaccination policy

see brucella melitensis in sheeps

Other preventive measures than vaccination in place

see brucella melitensis in sheeps

Control program/mechanisms

The control program/strategies in place

see brucella melitensis in sheeps

Recent actions taken to control the zoonoses

see brucella melitensis in sheeps

Suggestions to the Community for the actions to be taken

see brucella melitensis in sheeps

Measures in case of the positive findings or single cases

see brucella melitensis in sheeps

Notification system in place

see brucella melitensis in sheeps

Results of the investigation

see brucella melitensis in sheeps

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

see brucella melitensis in sheeps

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

see brucella melitensis in sheeps

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. melitensis	B. abortus	B. suis	Brucella spp., unspecified
Pigs	A	animal	51363	0				
- at slaughterhouse	C	Animals	36725366	0				
Deer	B	animal	1432	11				11
wild								
red deer	B	animal	163	0				
fallow deer	B	animal	92	0				
roe deer	B	animal	117	6				6
Wild boars	B	animal	1070	42				42
Cantabrian chamois	B	animal	21	1				1
Barbary sheep	B	animal	25	0				
Cattle (bovine animals)								
- at slaughterhouse	C	Animals	2814926	14547				14547
Sheep and goats								
- at slaughterhouse	C	Animals	16417345	22400				22400

Footnote

A:Animal Health Services CATALUNYA: 51363 cerdos AT FARM analizados en granjas de sanidad comprobada
B: Animal health Services of Autonomous Communities (surveillance programmes): Catalunya 612 animales salvajes analizados; Asturias , Cantabria, Castilla y Leon; C: Food Safety Agencies of Autonomous Communities: Routine post mortem examination.

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
La Rioja	421	306	306	0	0	0	0	100	0	0
Castilla-La Mancha	3881	2179	2179	59	27	13	22.034	100	2.708	1.239
Cataluña	6137	4780	3746	34	26	5	14.706	78.368	0.908	0.694
Baleares	723	536	464	0	0	0	0	86.567	0	0
Canarias	1502	1333	1333	0	0	0	0	100	0	0
Cantabria	9762	9744	9744	150	105	129	86	100	1.539	1.078
Asturias	23183	22183	22183	43	36	18	41.86	100	0.194	0.162
Valencia	715	508	505	5	5	1	20	99.409	0.99	0.99
País Vasco	13358	8916	5661	14	2	1	7.143	63.493	0.247	0.035
Navarra	1866	1886	1843	0	0	0	0	97.72	0	0
Aragón	3682	1092	1092	7	5	0	0	100	0.641	0.458
Madrid	1655	1553	1553	21	14	3	14.286	100	1.352	0.901
Andalucía	9295	8015	7482	143	91	4	2.797	93.35	1.911	1.216
Murcia	408	224	224	0	0	0	0	100	0	0
Galicia	54957	52842	52842	46	33	15	32.609	100	0.087	0.062
Castilla y León	22003	18980	18980	636	257	114	17.925	100	3.351	1.354
Extremadura	12738	10686	10686	616	250	16	2.597	100	5.765	2.34
Total	166286	145763	140823	1774	851	319	17.982	96.611	1.26	0.604
Total - 1	171230	154248	151409	2330	1449	332	13	98.16	1.54	0.96

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 new 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
La Rioja	41010	23011	23011	23011	0	0	0	100	0
Castilla-La Mancha	373675	182493	182493	179063	450	1325	1939	100	0.25
Cataluña	757529	212550	210236	210236	335	335	506	98.911	0.16
Baleares	25196	25014	20934	15480	0	0	0	83.689	0
Canarias	19467	15342	15342	15342	0	0	0	100	0
Asturias	396494	315603	315603	315603	246	246	1044	100	0.08
Cantabria	302254	257861	257861	257861	322	322	6195	100	0.12
Valencia	66880	52086	51446	51446	11	11	14	98.771	0.02
País Vasco	225397	149045	90711	55073	32	20	41	60.861	0.04
Navarra	98985	85945	85433	85466	0	0	0	99.404	0
Aragón	284122	60121	60121	60121	63	63	63	100	0.1
Madrid	102414	90650	90650	90650	160	160	290	100	0.18
Andalucía	638374	553294	532936	532936	1576	1576	1964	96.321	0.3
Castilla y León	1266355	771317	771317	771317	7823	7714	15699	100	1.01
Galicia	955929	721528	721528	721528	238	238	741	100	0.03
Extremadura	716655	498417	498417	498417	3267	3059	3575	100	0.66
Murcia	67168	12129	12129	12129	0	0	0	100	0
Total	6337904	4026406	3940168	3895679	14523	15069	32071	97.858	0.369
Total - 1	6330740	4074334	4020115	4019578	23872	22337	35727	98.67	0.59

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
La Rioja	306	23011	0	0	0	0	0	0	0	0	0	0	306	23011
Castilla-La Mancha	2179	182493	1	3	45	6419	55	6607	10	2483	21	2323	2047	164658
Cataluña	4780	514519	27	1314	11	2352	40	951	30	1000	0	0	4672	508902
Baleares	541	25196	5	182	0	0	42	326	5	48	0	0	489	24640
Canarias	1333	15342	0	0	0	0	0	0	0	0	0	0	1333	15342
Asturias	22823	315603	0	0	17	674	145	1247	15	488	0	0	22646	313194
Cantabria	9744	257861	0	0	13	1055	9	629	0	0	2	170	9720	256007
Valencia	508	52086	3	640	1	80	51	2169	0	0	0	0	453	49197
Galicia	52842	721528	0	0	6	270	53	1028	6	150	0	0	52777	720080
País Vasco	8916	149045	0	0	0	0	0	0	12	12	0	0	8904	149033
Navarra	1886	98985	0	0	0	0	0	0	0	0	1	622	1885	98363
Aragón	1092	60121	0	0	1	800	4	540	0	0	592	28605	495	30176
Madrid	1553	92234	43	2461	17	1195	1	148	18	1343	0	0	1474	87087
Castilla y León	18981	1066569	0	0	140	16641	309	25807	39	4994	643	35558	17849	983569
Extremadura	10688	568066	0	0	180	14376	855	41053	251	8573	993	42832	8409	461232
Andalucía	8015	553294	221	6494	85	9712	454	22686	0	0	0	0	7255	514402
Murcia	224	12129	0	0	0	0	7	226	0	0	0	0	217	11903
Total	146411	4708082	300	11094	516	53574	2025	103417	386	19091	2252	110110	140931	4410796
Total - 1	153640	4495659	57	1005	979	102406	3591	176607	291	22416	3848	131451	144874	4061774

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
La Rioja	542	475	473	12	3	0	0	99.579	2.537	0.634
Castilla-La Mancha	8853	8270	8270	504	312	12	2.381	100	6.094	3.773
Cataluña	3878	3686	3606	507	143	8	1.578	97.83	14.06	3.966
Baleares	3907	3907	3890	0	0	0	0	99.565	0	0
Canarias	4178	4178	860	0	0	0	0	20.584	0	0
Asturias	5925	5925	5925	0	0	0	0	100	0	0
Cantabria	3435	3435	3435	19	18	0	0	100	0.553	0.524
Valencia	1940	1553	1553	235	50	5	2.128	100	15.132	3.22
Galicia	26524	26524	26524	10	8	1	10	100	0.038	0.03
País Vasco	7607	7135	5156	4	0	0	0	72.263	0.078	0
Navarra	2621	2621	2244	2	2	2	100	85.616	0.089	0.089
Aragón	5435	5435	5435	227	83	0	0	100	4.177	1.527
Madrid	863	811	811	38	19	4	10.526	100	4.686	2.343
Castilla y León	13532	12978	12978	483	276	19	3.934	100	3.722	2.127
Extremadura	18505	17632	17632	560	158	18	3.214	100	3.176	0.896
Andalucía	21496	21273	18955	2608	885	17	0.652	89.104	13.759	4.669
Murcia	3039	2822	2822	133	84	0	0	100	4.713	2.977
Total	132280	128660	120569	5342	2041	86	1.61	93.711	4.431	1.693
Total - 1	133299	127150	120422	6172	640	132	2.14	94.71	5.12	1.95

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 new 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
La Rioja	163390	157839	157798	157798	891	845	845	99.974	0.56
Castilla-La Mancha	3100971	3072624	2924317	2924317	9191	15021	16247	95.173	0.31
Cataluña	801443	614065	608125	608125	8220	8016	9007	99.033	1.35
Baleares	284065	284065	282265	282265	0	0	0	99.366	0
Canarias	362174	362174	25003	25003	0	0	0	6.904	0
Cantabria	103425	103425	103425	103425	29	29	29	100	0.03
Asturias	93219	93219	93219	93219	0	0	0	100	0
Valencia	591270	427432	427432	427432	7015	6650	6986	100	1.64
Galicia	321359	321359	321359	321359	231	231	701	100	0.07
País Vasco	334896	200710	88282	76246	6	0	0	43.985	0.01
Navarra	677952	677952	662950	253325	4	4	25	97.787	0.001
Aragón	2390070	1721347	1721347	1721347	4470	4236	4236	100	0.26
Madrid	130979	119479	119479	119479	2214	2214	4479	100	1.85
Castilla y León	4453100	3736718	3736718	3736718	7749	6660	14699	100	0.21
Extremadura	4776782	3906961	3906961	1779130	8496	6201	13850	100	0.22
Andalucía	4053408	4007804	3451243	3451243	35710	33095	33446	86.113	1.03
Murcia	700000	594002	594002	594002	1494	1379	1379	100	0.25
Total	23338503	20401175	19223925	16674433	85720	84581	105929	94.229	0.446
Total - 1	22264700	18441523	17814384	15698034	110299	106893	138003	96.6	0.62

Table Ovine or Caprine 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
La Rioja	475	157839	0	0	9	5275	28	13424	2	41	0	0	436	139099
Castilla-La Mancha	8270	3072660	6	226	292	126609	438	137273	46	20615	3941	1121722	3547	1666215
Cataluña	3689	638367	33	14289	286	125600	392	88945	12	2962	2419	341862	547	64709
Baleares	3907	284065	0	0	0	0	151	4261	17	1800	0	0	3739	278004
Canarias	4178	362174	0	0	0	0	0	0	0	0	0	0	4178	362174
Cantabria	3435	103425	0	0	5	630	8	397	0	0	0	0	3422	102398
Asturias	5925	88633	0	0	0	0	422	2579	0	0	0	0	5503	86054
Valencia	1553	427432	0	0	54	31081	438	92709	6	1222	993	291802	62	10618
Galicia	26524	321359	0	0	0	0	6	940	0	0	0	0	26518	320419
País Vasco	6077	251561	0	0	0	0	4	310	9	346	6	934	6062	250281
Navarra	2621	677952	0	0	1	432	90	10420	33	8232	585	398512	1912	260356
Aragón	5435	1721347	0	0	108	86933	127	95700	42	33150	5158	1505564	0	0
Madrid	811	119479	30	1759	30	4393	3	763	33	9772	662	96570	53	6222
Castilla y León	12978	3736718	0	0	31	30160	465	127583	98	37534	7180	1943847	5174	1597594
Extremadura	17632	3906961	0	0	384	178397	2363	290296	320	57051	14396	3349978	169	31239
Andalucía	21273	4007804	509	26035	1777	685261	4130	604460	813	209428	11559	2234540	2485	248080
Murcia	2822	594002	0	0	48	30400	267	66553	18	6348	2473	483860	16	4841
Total	127605	20471778	578	42309	3025	1305171	9332	1536613	1449	388501	49372	11769191	63823	5428303
Total - 1	128667	20333813	572	37433	4220	2143360	10630	1917770	1068	301871	50409	12176941	61768	3756438

2.7. YERSINIOSIS

2.7.1. General evaluation of the national situation

A. Yersinia enterocolitica general evaluation

History of the disease and/or infection in the country

Microbiolgical Surveillance System was the Spanish surveillance system for epidemiological surveillance of yersinia infection. It is based on the number of incident cases sent by hospital laboratories to Microbiological Information System (National Centre of Epìdemiology

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

Animals are the main source of Yersinia. Fecal wastes from animals (particularly pigs) may contaminate water, milk and foods and become a source of infection for people or other animals.

Recent actions taken to control the zoonoses

The activities are made according to Regulation (EC) nº 178/2002. (i.e. rapid alert system, traceability of food, feed, food-producing animals and all substances incorporated into foodstuffs). must be established at all stages of production, processing and distribution. To this end, business operators are required to apply appropriate systems and procedures….

2.7.2. Yersiniosis in humans

A. Yersinosis in humans

Reporting system in place for the human cases

In December of 1995 the National Network of Epidemiological Surveillance was created by law. This law and its development produced changes in the surveillance system.
In Spain the Autonomous Regions have wide powers with respect to epidemiological surveillance and national decisions are usually taken by consensus.
- Microbiological Information System
The Microbiological Information System has been based since 1989 on voluntary weekly reporting by clinical microbiology laboratories (principally hospital laboratories). Currently, in order to improve the notification, this procedure is becoming compulsory for a designated group of representative laboratories. The information in these reports is based on individual cases and includes the following variables: agent, time, place, age, sex, etc.
- Outbreak reporting System
In Spain outbreaks are the main source of information for the foodborne diseases.

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Notification system in place

Microbiological Information System
Outbreak Reporting System

History of the disease and/or infection in the country

Yersinia is the third most common cause of bacterial gastrointestinal infection in Spain, following Campylobacter and Salmonella.

Results of the investigation

The number of cases of Y. enterocolitica reported has increased steadily since it was made notifiable in 1989, 290 cases in 1996 to 350 in 2004.
In 2005, 299 cases were notified.

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

Infants and young adults are particularly likely to be infected. 52% are in the groups less of five years.

Information about place of infection is not given in the notifications.

Relevance as zoonotic disease

Enteric yersiniosisi can be transmitted between animals and humans. It is usually transmitted to humans via consumption of food contaminated with animal feces.
Yersiniosis have a high relevance as zoonotic disease.

2.7.3. Yersinia in foodstuffs

Table Yersinia spp. in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Yersinia	Y. enterocolitica	Yersinia spp., unspecified	Y. enterocolitica - Y. enterocolitica O:3	Y. enterocolitica - Y. enterocolitica O:9
Meat from pig									
fresh									
- at slaughterhouse	A	M	25g	64	0				
- at processing plant		M	25g	67	0				
- at retail	A	M	25g	37	0				
meat products									
- at processing plant		M	25g	41	0				
- at retail		M	25g	116	0				
Meat from bovine animals									
fresh									
- at slaughterhouse	A	M	25g	25	0				
- at retail	A	M	25g	46	2	2			
meat products									
- at processing plant		M	25g	7	0				
- at retail		M	25g	31	0				
Milk, cows'									
raw									
intended for direct human consumption		M	25g	318	0				
Meat from poultry, unspecified									
fresh									
- at slaughterhouse	A	M	25g	39	8	8			
- at retail	A	M	25g	172	13	13			
meat products									
- at processing plant		M	25g	7	0				
- at retail		M	25g	116	0				
Meat from other animal species or not specified									

fresh									
- at slaughterhouse		M	25g	7					
- at processing plant		M	25g	21					
- at retail		M	25g	7					
meat products									
- at processing plant		M	25g	7					
- at retail		M	25g	116					
Meat, mixed meat									
minced meat	A	M	25g	4					
Fishery products, unspecified		M	25g	1					
Dairy products (excluding cheeses)									
dairy products, not specified									
ready-to-eat	C	M	25g	4					
Other processed food products and prepared dishes	C	M	25g	127					

Footnote

Source of information: Food Safety Agencies of Autonomous Communities A: Compulsory monitoring programmes.B: Voluntary monitoring programmes.C: Surveys.D: Other procedure of sampling.E: Laboratory resports.F: National Reference Laboratory.Epidemiological unit: L= Batch. M=Sample

2.7.4. Yersinia in animals

2.8. TRICHINELLOSIS

2.8.1. General evaluation of the national situation

A. Trichinellosis General evaluation

History of the disease and/or infection in the country

Trichinellosis is a notifiable zoonosis, which causes two to three outbreaks per year in Spain. In 1995, the National Network of Epidemiological Surveillance (NNES) developed a standard protocol to detect every single case of trichinellosis, and notify the health authorities as quickly as possible when an outbreak occurs

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

Sources of infection are mainly associated to the consume of meat and raw meat products of wild boars killer in hunting or pigs slaughtered at home and which carcases has not been examinated post-mortem.
In 2005 was comunicate 9 cases, seven of the them was imported and they are associated to the consumption of meat or meat products of pig elaborated outside Spain.

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

Most cases are caused by Trichinella spiralis. Trichinella britovi has previously been associated with outbreaks due to the consumption of boar meat, and meat from other wild animals but in the last years T britovi was associated with pork meat and transmitted through the consumption of meat from a domestic pig.

Recent actions taken to control the zoonoses

The activities against this zoonoses are the Official Control:
Fresh meat according to Directive 64/433/CE. Examination of killer in hunting according to Directive 92/45/CE and Directive 77/96/CE and examination at slaughter at home for self-consuming according to Regional Health Services regulations..

2.8.2. Trichinellosis in humans

A. Trichinellosis in humans

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Relevance as zoonotic disease

high

History of the disease and/or infection in the country

Trichinellosis is a notifiable zoonosis, which causes two to three outbreaks per year in Spain. Most outbreaks are caused by Trichinella spiralis. Trichinella britovi has been associated with outbreaks due to the consumption of pig meat, boar meat, and meat from other wild animals.

Results of the investigation

Nine cases of trichinellosis has been reporting, seven of them there was taken imported meat products.
One outbreak of trichinellosis was reporting in 2005. Four people was ilness. This otubreak was caused by consumption of meat products

Description of the positive cases detected during the reporting year

One outbreak of trichinellosis was reporting in 2005. Four people was illness and one of them was hospitalized.
The majority of human trichinellosis is linked to the consumption of undercooked or raw meat products

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

In the last years most Spanish outbreaks were due to consumption of pork or wild boar meat. Outbreaks from wild boar meat are increasingly frequent in certain regions of Spain and could be explained by ecological modifications in rural areas

Reporting system in place for the human cases

- Outbreak reporting
In Spain outbreaks are the main source of information for the foodborne diseases.
The notification of outbreaks is mandatory and standardised.
The results of the statistical and epidemiological analysis are disseminated in annual reports. In addition they are published in epidemiological bulletins (national, regional and other). The

weekly national epidemiological bulletin can be found at: http://cne.isciii.es/bes/bes.htm.
Outbreak investigations as well as necessary control measures are carried out by the health authorities of the autonomous regions.

Notification system in place

Uotbreak Reporting System Notifiable Disease Surveillance System (NDSS)
In Spain the main source of information of trichinellosis is the notification of outbreaks. This notification has been compulsory by law for all doctors since 1982. It includes disease outbreaks of any origin, not only those related to foodOutbreak reporting
In Spain outbreaks are the main source of information for trichinellosis.
The notification of outbreaks is mandatory and standardised. All the outbreaks must be reported immediately at the regional level. At the national level it is obligatory to report immediately only those outbreaks which, by law, are defined as being "supra-communitary" (considered to be of national interest) in order to facilitate their rapid control, where as the rest of the outbreaks are reported quarterly.
The results of the statistical and epidemiological analysis are disseminated in annual reports. In addition they are published in epidemiological bulletins (national, regional and other). The weekly national epidemiological bulletin.
Outbreak investigations as well as necessary control measures are carried out by the health authorities of the autonomous regions.
Training courses and guidelines on outbreak investigation addressed to doctors dealing with these problems have been set up in all regions.

2.8.3. Trichinella in animals

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total animals positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Pigs	a,b	Animals	36922660	24		24
Solipeds, domestic	a	Animals	33442	0		
Wild boars						
wild						
- at game handling establishment	a	Animals	128608	206		206

Footnote

Source of information: Human Health Services of Autonomous Communities a) Results of routine post-mortem examination. b)Results of routine postmortem examination at slaughter at home for self-consuming. 197.294 animals tested; 24 positives for Trichinella.

2.9. ECHINOCOCCOSIS

2.9.1. General evaluation of the national situation

A. Echinococcus spp general evaluation

History of the disease and/or infection in the country

Hydatidosis is an endemic disease in Spain, mainly in regions with extensive systems of animal production.
Human hydatidosis has been an Mandatory Notifiable disease since 1982, year in which were comunicated around 2000 cases.Royal Decree 2210/1995, laying down the National Epidemiologyc Surveillance Network, classify hydatidosis as an endemic disease at regional frame.
In 80´s many regions started to set up a control programme based in control of animal hydatidosis and in general people´s health education and focused in professionals related with animals and at school level. Similar control programmes have been developed in others Authonomous Comunities.
The implementation of these control programmes got good results in the decrease of the incidence of the disease.
Routine post-mortem examination at slaughterhouse have being carried out.

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

Control programmes in endemic regions got good results in the dicrease of the disease at human level.Main source of infection in Spain is cycle between sheep,dog and humans.

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

Higher incidence values of human cases are situated in regions with the highest census of sheeps and goats.

Recent actions taken to control the zoonoses

Surveillance according to Directive 2003/99/EEC.
Control programmes in endemic regions.
Inclusion in National Epidemiologyc Surveillance Network according to Royal Decree 2210/1996.
The activities against this zoonoses are the Official Control in fresh meat according to Directive 64/433/CE.

2.9.2. Echinococcosis in humans

A. Echinococcus spp in humans

Reporting system in place for the human cases

Notifiable Disease Surveillance System (NDSS)
In December of 1995 the National Network of Epidemiological Surveillance was created by law. This law and its development produced changes in the surveillance system.
During 1997 the protocols of statutory notification of diseases were approved and implemented in Spain. In Spain the Autonomous Regions have wide powers with respect to epidemiological surveillance and national decisions are usually taken by consensus.
All practising doctors are obliged to notify, both those in the public health service and in private practice, and both those practising outside and within hospitals. On occasions the appearance of cases and outbreaks is detected by other means (from the mass media, from citizens complants, etc.) and in these cases the information is checked and if confirmed it is incorporated into the system at the corresponding level.

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Notification system in place

In 1982, Notifiable Disease Surveillance System list was enhanced, and it was introduced the hydatidosis numerical notification. The health system collected the information from the medical consultations where the diagnosis was performed, the notification of suspect cases and incidents.

History of the disease and/or infection in the country

In Spain, E. granulosus is endemic in various regions, the trend curve showed a significant decrease from 1986 to 2005.
The geographical distribution remains heterogeneous, with more cases in the peninsular plateau regions. The analysis of the demographic variables shows that, although the disease affects all age groups, the older age groups are the most affected. There are not significant sex differences.

Results of the investigation

To The NDSS has been reported 146 cases of hidatidosis in the yerar 2005. The rates was 0,37 per 100.000 inhabitans.

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

There is a notable decrease in human echinococcosis cases from 167 in 2003 to 146 cases in

2005 (rate 0,37 per 100.000). This decrease is most likely a result of a continued control programme, particularly in endemic regions with extensive animal production

Relevance as zoonotic disease

Hidatidosis is the first parasitic disease in Spain

2.9.3. Echinococcus in animals

Table Echinococcus spp. 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)	a	Animals	2814926	19824			19824
Pigs	a	Animals	36922660	10585			10585
Solipeds, domestic	a	Animals	33442	12			12
Sheep and goats	a	Animals	16417345	94494			94494
Wild boars	a	Animals	128608	47			47

Footnote

a) Animal Health Services of Autonomous CommunitiesResults of routine post-mortem examination.

2.10. TOXOPLASMOSIS

2.10.1. General evaluation of the national situation

A. Toxoplasmosis general evaluation

History of the disease and/or infection in the country

Toxoplasmosis in production animals has been associated classically to the production of miscarriage.The main source of infection is linked to the contamination of feed by cat faeces, although the use of dung in pasture natural fertilitation has to be considered as an important source of infection for adults.
For humans, there are two main sorces of infection: contact with cats and comsumtion of vegetables, water or animal products, mainly sheep and pig meat.
In 60´s and 70´s studies in some regions of Spain detected prevaleces between 12-45% in sheep; between 11- 42% in pig;and between 14-36%in cattle.
More recent studies seem prevalences between 30-57% in sheep;between 41-62% in pig;and between 25-43% in cattle.
In cats, the incidence founded by private clinics are close to 30%.

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

In 2003, data comunicated by Autonomous Comunities about toxoplasmosis in production animals showed incidence in sheep of 35,4%;19% in cattle and 18% in goats.
Main sources of infection for humans are cats and comsumption of meat insufficientment cooked.

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

More studies need to be developed.

Recent actions taken to control the zoonoses

Surveillance according to Directive 2003/99/EC
Primary prevention of the disease with recommendations to prevent infection during pregnance in humans

2.10.2. Toxoplasmosis in humans

A. Toxoplasmosis in humans

Reporting system in place for the human cases

Royal Decree 2210/1995, december 25, by Epidemiological Surveillance National Net is created.
Microbiological Information System

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Notification system in place

Microbiological Information System
The Microbiological Information System has been based since 1989 on voluntary weekly reporting by clinical microbiology laboratories (principally hospital laboratories). Currently, in order to improve the notification, this procedure is becoming compulsory for a designated group of representative laboratories. The information in these reports is based on individual cases and includes the following variables: agent, time, place, age, sex, etc

2.10.3. Toxoplasma in animals

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

Paralytic and furious forms of rabies are described in the second book of the Hunting Agreement in the time of King Alfonso XI(1312-1350).The Royal Assembly of Health publication of 23 November 1786 adopted measures to avoid transmission of rabies controlling movement of dogs and cats.Royal Order of 1863 describes "measures of preservation that one has to follow in each case where the bite has been from a supposed rabid animal" and also set down the measures against rabies in animals, which were to be adopted by Local Authorities.At the beginning of the 20th century the Law of 18 December 1914 and Regulation of 4 June 1915 are approved to prevent the transmission of human rabies.During the 1940s the first statistics on animal rabies appeared(513 dog cases in 1944 and 24 human cases).On 12 May 1947 the Ministry of Agriculture issued a General Order establishing the measures to be taken against rabies and a second Order of 1948 established the norms for animal vaccination and control.During the 1950s the first mass dog vaccination campaigns took place.The Epizootics Law of 20 December 1952 established the general regulations of the anti-rabies programme.
Urban rabies has been the main epidemiologycal form in the history of the disease in Spain, with dogs as reservoir of the infection.
Spain is free of land rabies since 1966, with exception of Ceuta and Melilla, that have a regular notification of cases of rabies by their situation in North Africa, where rabies is endemic.
In penínsular territory an imported focus was reported in 1975 in the province of Málaga by introduction of dogs coming from North Africa. This focus ended in 1977 with 122 animals infected(dogs and cats, and 2 foxes) and one case of human rabies.
Since 1979 only have beed notificated cases of rabies in peninsular territory by EBLV1 in bats(Eptesicus serotinus) of the south and east.

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

Since 1978 Spainsh mainland and islands remains free of rage in terrestrial mammals. Only a few cases of EBL1 has been reported in bats. Also Ceuta, Spanish city in North Africa, remains free since 1999. In Melilla, Spanish city in North Africa had a few cases in the last years.
In 2005 only one case in Melilla has been reported,in a dog.
These data shows that the main source and risk for the apparition of cases of rabies in Spain is the importation of animals with the infection from Morocco and other countries of North Africa.

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

Since 1975 no human cases has been reported in peninsular territory and island.

Recent actions taken to control the zoonoses

Compulsory surveillance of the disease according to article 4 of Directive 2003/99/EEC,came into force by Royal Decree 1940/2004.

Compulsory vaccinatión of dogs in 10 autonomous comunities and Ceuta y Melilla. Voluntary in the rest.
Studies including active surveillance of LB-1 in bats.
Information to the citizens about no manipulation of bats.

2.11.2. Rabies in humans

A. Rabies in humans

Reporting system in place for the human cases

Notifiable Disease Surveillance System (NDSS)
Royal Decree 2210/1995, december 25, by Epidemiological Surveillance National Net is created
Royal Decree 1940/2004, september 27, about zoonoses disease and zoonoses agents surveillance

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Notification system in place

Notifiable Disease Surveillance System (NDSS)
In December of 1995 the National Network of Epidemiological Surveillance was created by law. This law and its development produced changes in the surveillance system.
During 1997 the protocols of statutory notification of diseases were approved and implemented in Spain. In Spain the Autonomous Regions have wide powers with respect to epidemiological surveillance and national decisions are usually taken by consensus.
All practising doctors are obliged to notify, both those in the public health service and in private practice, and both those practising outside and within hospitals. On occasions the appearance of cases and outbreaks is detected by other means (from the mass media, from citizens complants, etc.) and in these cases the information is checked and if confirmed it is incorporated into the system at the corresponding level.
This notification has been compulsory by law for all doctors since 1901.

History of the disease and/or infection in the country

Spain remained free of human cases from 1975

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

Spain is free of rabies.
In 1987 bat rabies was reported. The description of the illness amongst bats lead to an immediate reaction by the health authorities, who had already brought together a group of experts in 1987 to work out recommendations and establish lines of research.
The Ministry of Health and Consume Affairs backed the study about the distribution of EBL1 in the bat population, as well as studies of aetiology and the distribution of bat populations in different regions of Spain. They established serum prevalence towards EBL1 in different species such as Myotis myotis, Miniopterus schreibersii, Tadarida teniotis and Rhinolophus

ferrumequinum, and several origins
The studies carried out in the Instituto de Salud Carlos III of the Ministry of Health, in collaboration with the Biological station in Doñana, allow the perfecting of highly sensitive diagnostic techniques, such polymerase chain reaction (PCR), to understand the distribution, natural history and pathogenesis of the disease in insectivorous bats.

Relevance as zoonotic disease

High

2.11.3. Lyssavirus (rabies) in animals

A. Rabies in dogs

Monitoring system

Sampling strategy

Sampling strategy is targeted at 3 levels:
1. apparently healthy dogs that injure a person and die into the quarantine(kept under observation) period of 14 days or if the animal is suspected to be rabid(euthanasia).Samples are taken by competent authority
2.dogs and cats imported from third countries not included in part C of Annex II of Council Regulation(EC) 998/2003)need negative results to enter into Spain.If theses animals belong to spanish citizens coming from these third countries samples are taken when arrival to Spain.
3.dogs and cats that are going to travel to United Kingdom, Ireland, Sweeden, Norwey and Malta.Samples are taken by private clinics and analisys performed by National Reference Laboratory

Frequency of the sampling

indeterminated

Type of specimen taken

Other: Brain, Blood

Methods of sampling (description of sampling techniques)

Brain of dead or sacrified animals have to be sent to National Reference Laboratory following a protocol of sending.The sample has to be taken with sterility, be submerged in salinum serum and glicerine in 50% solution and envoided refrigerated quickly.
Blood are taken by private clinics and serum(0,5 ml minimun) have to be sent following a protocol, by a quick transport service refrigerated or frozen.4948 samples have been taken in 2004.

Case definition

According to Decision No. 2119/98/EC of the European Parliament and of the Council, Commission Decision 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

Other: FAT, ELISA

Vaccination policy

Compulsory vaccination of dogs in 10 regions, Ceuta and Melilla.
Voluntary vaccination of dogs in 5 regions.

Other preventive measures than vaccination in place

Control of animals coming from third countries not included in part C of Annex II of Council Regulation(EC) 998/2003
Identication and registration of dogs.
Pick up of stray dogs by council town authorities.

Control program/mechanisms

The control program/strategies in place

Different regional prevention programmes.
Control of imports and exports according to Council Regulation(EC) 998/2003.

Recent actions taken to control the zoonoses

Imports of third countries not included in part C of Annex II of Council Regulation(EC) 998/2003)

Measures in case of the positive findings or single cases

Mandatory Notifiable disease Royal Decree 2210/1995, december 25, by Epidemiological Surveillance National Net is created.
Oficcial Notification of the disease
Epidemiologic survey
Cases in Spain (Ceuta and Melilla) are imported from third countries

Notification system in place

Since 1952, at least, by Epizootic Law.
At the moment by Animal Health Law 8/2003.

Results of the investigation

One dog positive in Melilla (Spanish city in North Africa).

Investigations of the human contacts with positive cases

All the people bitten by an suspected animal are investigated and complete treatment (vaccine and Ig against rage is offered to them.

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

The trend of infection in dogs is decreasing by controls of imported dogs, mainly coming from North Africa, that is the principal source of infection in Spain.

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

High

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	unspecified Lyssavirus
Dogs	NDSS	animal	all suspected animals	1	

Footnote

Dog from Melilla, Spain city north of Africa
NDSS Notifiable Disease Surveillance System

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1. ESCHERICHIA COLI, NON-PATHOGENIC

3.1.1. General evaluation of the national situation

A. E. coli general evaluation

History of the disease and/or infection in the country

E. coli cause many infections in humans, with intestinal and extra-intestinal forms. In production animals E. coli diseases are very frequent, mainly in newborns or animals few days old of cattle, pork and sheep.Problems are often too in farms of poultry and rabbits.
Several cases and outbreaks of diarrhea for Enteropatogenic E. coli have been detected since 60´s, but these focus have reduced importantly in last decades.Serotypes in rabbits or rumiants are different than human ones.In Spain, the main serotype in rabbits is O103:H2.
E. coli Enterotoxicogenic are more frecuent associated with focus of gastroenteritis in humans, by consume of water and animal products.But predominant human serotypes in Spain(O25:H-;O153:H45;O169:H41) are different than the ones that causes diarrhea in animals. In piglets predominat serotypes are O138:K81:H14;O141:K85ab:H-;O149:K91:H10;O157:H-.

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

In production animals diseases by E. coli are very frequent. Although E. coli strains that cause infections in humans and animals can share many virulence factors, they often show different serotypes.Therefore, E.coli strains patogenic for animals are infrequent to produce infections in humans, but it is proved that animals can be a reservoir of Enteropathogenic E. coli for humans. Enviroment and water can also be a source of infecction.

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

It is very difficult to establish the relevance of findings as sources of infection, because E. coli is a very ubiquitous agent and strains patogenic for animals are infrequent to produce infections in humans.

3.1.2. Antimicrobial resistance in Escherichia coli, non-pathogenic isolates

Table Antimicrobial susceptibility testing of E. coli in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - 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 Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	74

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																																
Doxycyclin	74	43	10	1	10	6	7	4	5	3			1	1	9	3	3	4														
Trimethoprim	74	28	28					1													2	6	6	14	8	2	5	2				
Sulfonamides																																
Sulfonamide	74	40	40														1		1	5	6	7	5	5	1	1	2					
Aminoglycosides																																
Streptomycin	74	38	20	2	6	4	3	3	2	4	5	13	10	1	1																	
Amikacin	74	0														4	7	31	23	7	1	1										
Carbapenems																																
Imipenem(1)	74	0																							1	3	16	27	15	7	2	1
Cephalosporins																																
Cefoxitin	74	2					1			1					1		1		1	5	10	14	18	9	8	4	1					
Ceftazidim	74	2									2		3			2		1		1		2	2	4	3	3	13	17	11	5	4	1
Monobactams																																
Aztreonam(2)	74	2								1	1		2				1	1		3	4	3				1				10	14	12
Penicillins																																
Amoxicillin/Clavulanic acid	74	4			1		1	1	1				1	4	9	7	4	9	10	6	6	5	5	2			2					

(1) : > 35 mm = 2 strains
(2) : >35 mm = 21 strains

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of E. coli in animals

n = Number of resistant isolates

	E. coli							
	Cattle (bovine animals)		**Pigs**		**Gallus gallus (fowl)**		**Turkeys**	
Isolates out of a monitoring programme			no		no			
Number of isolates available in the laboratory			192		74			
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Tetracyclines			192	173	74	50		
Doxycyclin			192	166	74	43		
Amphenicols								
Chloramphenicol			192	60	74	14		
Florfenicol			192	4	74	0		
Cephalosporins								
Cefotaxim			192	1	74	17		
Cefoxitin			192	0	74	2		
Ceftazidim			191	0	74	2		
Fluoroquinolones								
Ciprofloxacin			192	8	74	39		
Quinolones								
Nalidixic acid			192	32	74	66		
Trimethoprim			192	131	74	28		
Sulfonamides								
Sulfonamide			192	129	74	40		
Aminoglycosides								
Streptomycin			192	122	74	38		
Gentamicin			192	9	74	8		
Neomycin			192	18	74	12		
Amikacin			192	0	74	0		
Apramycin			192	3	74	1		
Carbapenems								
Imipenem			192	0	74	0		
Monobactams								
Aztreonam			150	0	74	2		
Penicillins								
Amoxicillin			192	117	74	47		
Amoxicillin/Clavulanic acid			192	1	74	4		

Table Antimicrobial susceptibility testing of E. coli in Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - quantitative data [Dilution method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	E. coli Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	192

Antimicrobials:	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Tetracyclines	192	173					1	11	7			2	9	45	86	31					0.5	128
Amphenicols																						
Chloramphenicol	192	60							1	95	26	10	28	11	7	12	2				1	256
Florfenicol	192	4							6	135	45	2	2	1	1						2	64
Fluoroquinolones																						
Ciprofloxacin	192	8		162	2	10	8	2		1	4	3									0.06	32
Quinolones																						
Nalidixic acid	192	32						7	91	60	2		2	2	12	16					0.5	128
Aminoglycosides																						
Gentamicin	192	9				1	57	114	10		1		3	3	3						0.25	64
Neomycin	192	18					2	85	72	13	2	3	9	6							0.25	64
Apramycin	192	3							9	108	70	2		3							2	32
Cephalosporins																						
Cefotaxim	192	1	62	100	27	1	1				1										0.03	4
Penicillins																						
Amoxicillin	192	117						4	16	41	14		2		1	3	111				1	256

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of E. coli in Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - 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 Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	192

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																																
Doxycyclin	192	166	45	17	21	23	25	22	13	4		1	2		8	6		1	3	1												
Trimethoprim	192	131	131																	4	7	15	11	10	10	1	2	1				
Sulfonamides																																
Sulfonamide	192	129	129															2	1	10	16	13	11	8		1	1					
Aminoglycosides																																
Streptomycin	192	122	51	15	29	10	11	6	9	20	23	13	2	2	1																	
Amikacin	192	0													3	16	62	76	28	4	2	1										
Carbapenems																																
Imipenem(1)	192	0																							6	16	46	62	35	13	7	3
Cephalosporins																																
Cefoxitin	192	0												1	1		1		3	8	30	60	54	28	3	2	1					
Ceftazidim(2)	191	0																1				1			7	13	51	59	35	18	4	1
Monobactams																																
Aztreonam(3)	150	0															1							1				2	8	28	26	31
Penicillins																																
Amoxicillin/Clavulanic acid	192	1						1					5	3	24	21	28	28	21	25	19	11	4	1				1				

(1) : >35 mm = 4 strains
(2) : >35 mm = 1 strain
(3) : >35mm = 53 strains

Footnote

All figures are number of strains (not percentages)

Table Antimicrobial susceptibility testing of E. coli in Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling - quantitative data [Dilution method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	E. coli Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - selective sampling
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	74

Antimicrobials:	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Tetracyclines	74	50					8	12	1		3	2	9	28	9	2					0.5	256
Amphenicols																						
Chloramphenicol	74	14								51	8	1	4	1	5	4					2	256
Florfenicol	74	0							2	58	14										2	64
Fluoroquinolones																						
Ciprofloxacin	74	39		9	2	9	11	3	1	7	13	18	1								0.06	32
Quinolones																						
Nalidixic acid	74	66						2	5	1			4	7	8	47					0.5	128
Aminoglycosides																						
Gentamicin	74	8					6	47	9	2	2	3	1	4							0.25	64
Neomycin	74	12						4	42	12	4	1	1	6	4						0.25	64
Apramycin	74	1							8	54	11			1							1	32
Cephalosporins																						
Cefotaxim	74	17	2	25	26	3	1	1	2	2	12										0,06	4
Penicillins																						
Amoxicillin	74	47						1	16	9	1			3	2	1	41				1	256

Footnote

All figures are number of strains (not percentages)

Table Breakpoints used for antimicrobial susceptibility testing of E. coli in Animals

Test Method Used

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS

Escherichia coli, non-pathogenic	Standard for breakpoint	Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		disk content	breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=

Footnote

All breakpoints information is that mentioned for Salmonella enterica from animals

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.

A. Foodborne outbreaks

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

Royal Decree 2210/1995, december 25, by Epidemiological Surveillance National Net is created.
Notifiable Disease Surveillance System (NDSS)
In December of 1995 the National Network of Epidemiological Surveillance was created by law.
During 1997 the protocols of statutory notification of diseases were approved and implemented in Spain. In Spain the Autonomous Regions have wide powers with respect to epidemiological surveillance and national decisions are usually taken by consensus.
All practising doctors are obliged to notify, both those in the public health service and in private practice, and both those practising outside and within hospitals. On occasions the appearance of cases and outbreaks is detected by other means (from the mass media, from citizens complants, etc.) and in these cases the information is checked and if confirmed it is incorporated into the system at the corresponding level.
The notification may be carried out using a variety of systems: mail, fax, telephone, e-mail, etc. Presently all the regions (and in many cases levels below) transmit the data by e-mail. A network is being developed for the National Epidemiological Surveillance Network which will permit the flow of data from the local level.
The notification of outbreaks is mandatory and standardised. All the outbreaks must be reported immediately at the regional level. At the national level it is obligatory to report immediately only those outbreaks which, by law, are defined as being "supra-communitary" (considered to be of national interest) in order to facilitate their rapid control, where as the rest of the outbreaks are reported quarterly. Some regions have set up early warning systems in order to support doctors in reporting and investigating outbreaks. A similar national system is entering into operation.
In 1997 a uniform outbreak reporting format (variables and codification) was developed in all of Spain in accordance with the one recommended by the WHO Programme. The report includes relevant information such as agent, food involved, place of consumption and contributing factors.
The results of the statistical and epidemiological analysis are disseminated in annual reports. In addition they are published in epidemiological bulletins (national, regional and other). The weekly national epidemiological bulletin can be found at: http://cne.isciii.es/bes/bes.htm.
In Spain the investigation of outbreaks of any diseases in humans is regulated within the National Epidemiological Surveillance Network.
The responsibility and coordination falls on the epidemiologist charged with the investigation of each outbreak. In foodborne outbreaks this is also the case, but in close coordination with those

who have to investigat

Description of the types of outbreaks covered by the reporting:

The Spanish System covers all type of outbreaks, family, general and international outbreak

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

During 2005, a total of 460 foodborne outbreaks were recorded. 237 General (51,52%)and 223 family outbreak (48,48%).
S. Enteritidis caused 45,86 % of the outbreaks. S typhimurium. We had a large outbreak by S hadar with 2759 patients
Outbreak investigations primarily indicated egg products and meat, poultry as the major foodborne sources of infection

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

Salmonella is the agent more frequently implied in foodborne outbreak, emphasizing S. Enteritidis.
Salmonella high
Brucella medium
Campylobacter high
The food implied in its majority was eggs and eggs products
Eggs
Meat
Milk

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

The place of consumption of the implied food was, mainly, the familiar home, being the time of the year with more foodborne outbreaks the summer and contributor factor more frequent the inadequate temperature.

Evaluation of the severity and clinical picture of the human cases

A total of 7682 people were reported ill and at least 23 persons were hospitalised.

Descriptions of single outbreaks of special interest

During summer of 2005, there was a large outbreak of salmonella hadar infection affecting at 2312 people. As of 8 August 2005, 2312 cases of salmonella gastroenteritis have been reported to the Centro Nacional de Epidemiología (National Centre for Epidemiology, CNE) in Spain. The reported cases have been epidemiologically and microbiologically linked to a single brand of pre-cooked, vacuum-packed roast chicken (brand A) which was commercially distributed throughout Spain.
Microbiological and environmental investigations: The National Reference Laboratory for Salmonella and Shigella (LNRSSE) has received more of 1000 salmonella isolates

from patients and 92 from chicken samples. Results of the strains studied so far (1373 human, 92 chicken and food) confirm the identification of Salmonella enterica, subspecies enterica, serotype Hadar, and phage type 2 has been identified. The pulsed field gel electrophoresis (PFGE) profiles of human and chicken samples are indistinguishable.
Salmonella hadar outbreak has been the largest outbreak of salmonella infection in recent Spanish history. The outbreak is attributable to the mass commercial sale of contaminated brand A chicken. Control measures were effective in preventing new infections from appearing, as demonstrated by the rapid decline in cases after the date of recall of brand A chicken

Control measures or other actions taken to improve the situation

Outbreak investigations as well as necessary control measures are carried out by the health authorities of the autonomous regions.

Table 12. Foodborne outbreaks in humans

Causative agent	General outbreak	Family outbreak	Total Number in persons			Source			Type of evidence	Location of exposure	Contributing factors
			ill	died	in hospital		Suspected	Confirmed			
1	2	3	4	5	6	7			8	9	10
Trichinella		1	3	0		1b		1	1b		
Brucella	1	1	15	0		2c	1	1	1b		
Campylobacter	1	3	10	0	0	1a,1b	4		1c		
Listeria	2		12			1b		2	1b,1c		
Salmonella - S. Enteritidis	119	92	2408	1		114a,14b, 36d	108	103	1a, 93b, 9c		
Escherichia coli, pathogenic - Enterotoxigenic E. coli (ETEC)		1	20	0	2		1				
Salmonella - S. Species	98	119	1884	4		132 a, 16b, 1c, 29d	136	81	2a, 71b, 8c		
Salmonella - S. Typhimurium	5		113	1		1b,1c,1d,	4	1	1b		
Salmonella - Other serotypes	8	3	3010	1		4a,4b, 1c	6	5	3b, 2c		
Escherichia coli, pathogenic - E. coli spp., unspecified	3	3	207	0	21	1b,1c	1	5	1c		

Footnote

Column 7a: eggs
Column 7b: meat include poultry
Column 7c: Chess
Column 7d: Other
Column 8a: only lab
Column 8b: only epidemiological
Column 8c: both
Other salmonella: There was an outbreak of salmonella hadar with 2759 cases (1 death). The source was chicken and it was confirmed by lab and epidemiological evidence