European Food Safety Authority

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, antimicrobial resistance in zoonotic agents and some pathogenic microbiological agents.

IN 2010

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Spain

Reporting Year:

Laboratory name	Description	Contribution
Subdireccion General de Sanidad de la Producción Primaria	Ministerio de Medio Ambiente y Medio Rural y Marino	Reporting Officer
Subdireccion General de Coordinacion de Alertas y Programacion de Control Oficial	Agencia Española de Seguridad Alimentaria y Nutricion	National Reporter
Centro Nacional de Epidemiologia	Instituto de Salud Carlos III.Ministerio de Ciencia y Tecnología.	National Reporter
Subdireccion General de Explotaciones y Sistemas de Trazabilidad de los Recursos Agrícolas y Ganaderos	Ministerio de Medio Ambiente y Medio Rural y Marino	National Reporter
Subdireccion General de Consevación de Recursos y Alimentación Animal	Ministerio de Medio Ambiente y Medio Rural y Marino	National Reporter
Centro de Vigilancia Sanitaria Veterinaria	Universidad Complutense de Madrid	National Reporter
Servicios de Sanidad Animal	Consejerias de Agricultura y Ganaderia de las Comunidades Autonomas	National Reporter

PREFACE

This report is submitted to the European Commission in accordance with Article 9 of Council Directive 2003/99/ EC*. The information has also been forwarded to the European Food Safety Authority (EFSA).

The report contains information on trends and sources of zoonoses and zoonotic agents in Spain during the year 2010 .

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

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

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

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

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* Directive 2003/ 99/ EC of the European Parliament and of the Council of 12 December 2003 on the monitoring of zoonoses and zoonotic agents, amending Decision 90/ 424/ EEC and repealing Council Directive 92/ 117/ EEC, OJ L 325, 17.11.2003, p. 31

List of Contents

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 and animals in all species. The figures in this report were taken at December/31/2010.

Dates the figures relate to and the content of the figures

Number of holdings and animals: 31/12/2010

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, ...). It have been taken into account only breeding and production holdings.

The specific definitions adopted by REGA for diferent types of holdings are those fixed in EU or Spanish Regulations.
Bovine animals
Calves for slaughter: Bovine animals less than 1 year old for slaughter as calves.
Calves: Domestic animals of the bovine species, of not more than 300 kg live weight and not yet having permanent teeth.
Heifers: Female bovines more than 1 year old that have not yet calved.

Heifers for breeding purposes: Heifers raised for breeding and intended to replace dairy cows.
Cows: Female bovines that have calved
Dairy cows: Cows kept exclusively or principally for the production of milk for human consumption and/or dairy produce.
Meat production animals: bovine animals, other than calves, kept exclusively for the production of meat and including cows, heifers and bulls

Sheep: Domestic animals of the species Ovis.
Ewes and ewe lambs put to the ram: Females of the ovine species which have already lambed at least once as well as those which have been put to the ram for the first time.
Milk ewes: Ewes which are kept exclusively or principally to produce milk for human consumption and/or for processing into dairy products. This includes cast milk sheep (whether fattened or not between their last lactation and slaughtering).
Other ewes: Ewes other than milk ewes; to be included in meat production animals
Lambs: Male or female sheep under 12 months old

Goats: domestic animals of the species Capra.

Pigs: Domestic animals of the species Sus.

Table Susceptible animal populations

* Only if different than current reporting year

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Cattle (bovine animals)	meat production animals					2070902		92136	
	mixed herds					542321		9246	
	dairy cows and heifers					862210		25791	
	calves (under 1 year)					2025571		25103	
	- in total					5833546		165685	
Deer	farmed - in total					10393		198	
Ducks	grandparent breeding flocks					71		2	
	parent breeding flocks					525		2	
	meat production flocks					379185		101	
	breeding flocks, unspecified - in total					596			
	elite breeding flocks					0		0	
	- in total					471248		457	
Gallus gallus (fowl)	elite breeding flocks, unspecified - in total					0		0	

Table Susceptible animal populations

Animal species	Category of animals	Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
		Data	Year*	Data	Year*	Data	Year*	Data	Year*
Gallus gallus (fowl)	parent breeding flocks, unspecified - in total					6123014		412	
	breeding flocks, unspecified - in total					17317964		631	
	grandparent breeding flocks for egg production line					118438		18	
	parent breeding flocks for egg production line					676474		71	
	breeding flocks for egg production line - in total					17312406		364	
	broilers					185790438		5234	
	grandparent breeding flocks, unspecified - in total					16145908		41	
	elite breeding flocks for meat production line					0		0	
	laying hens					44096454		1309	
	breeding flocks for meat production line - in total					5558		267	
	parent breeding flocks for meat production line					5446540		341	
	grandparent breeding flocks for meat production line					16027470		23	
	elite breeding flocks for egg production line					0		0	
	- in total					280449081		7518	

Table Susceptible animal populations

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Geese	grandparent breeding flocks							2	
	meat production flocks					3735		28	
	elite breeding flocks					0		0	
	parent breeding flocks					93		5	
	- in total					9017		260	
Goats	mixed herds					505371		8350	
	meat production animals					1429426		50229	
	animals over 1 year					2193124		69509	
	milk goats					924055		8937	
	animals under 1 year					605626		744	
	- in total					2798851		70253	
Pigs	breeding animals					17251124		28200	
	fattening pigs					15750808		51985	
	mixed herds							37800	

Table Susceptible animal populations

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Pigs	breeding animals - unspecified - sows and gilts					0		0	
	- in total					33682252		118325	
Reindeers	farmed - in total					0		0	
Sheep	animals over 1 year					14940557		111887	
	mixed herds					1286282		10362	
	milk ewes					2756320		10515	
	meat production animals					14149107		87972	
	animals under 1 year (lambs)					3434907		1979	
	- in total					18375464		113866	
Solipeds, domestic	horses - in total					669070		159007	
Turkeys	parent breeding flocks					3025		9	
	grandparent breeding flocks					4030		4	
	breeding flocks, unspecified - in total					234044		13	
	elite breeding flocks					0		0	

Table Susceptible animal populations

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Turkeys	meat production flocks					5037141		582	
	- in total					7281042		653	
Wild boars	farmed - in total					3086		243	

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 second main zoonoses (in number of human cases) in European Union, also in Spain. Salmonella is the agent more frequently involved in foodborne outbreaks in Spain.
In poultry, after the introducion in the 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 the 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, animals, food(eggs and ovoproducts, meat)and humans can be a source of infection.
At animal level, data in breeding flocks 2010 show a decreased incidence of Salmonella spp (from 5,23% in 2009 to 3,75% in 2010)and of top 5 serovars (from 2,59% in 2009 to 0,72% in 2010). Spain have reached the community target in 2010.
In layin hens, flock incidence increased from 29,18% in 2009 to 30,61% in 2010(Salmonella spp.) but decreased from 7,21% (S. Enteritidis+ S. Typhimurium) in 2009 to 5,92% in 2010 (adult flocks). In broiler flocks, the flock prevalence decreased from 6,70% (Salmonella spp.) and 1,61% (S. Enteritidis+ S. Typhimurium)in 2009 to 3,58% and 0,41% respectively in 2010 (results of FBO´s and official controls).

Data indicate that prevalence is deceasing in poultry in Spain, with the implementation of control programmes.

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, and Order PRE/1377/2005, 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 difficult to establish the relevance of the 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 Environment and Rural and Marine Affairs and Ministry of Health and Social Policy of Spain are carrying out a Control Programme of Salmonella in poultry, eggs and ovoproducts along the overall food chain, starting with monitoring systems at holdings(National Surveillance Programme).

Additional information

Spanish legislation on Salmonella in foodstuff:
Royal Decree 1254/1991 of August 2, laying down rules to preparation and conservation of mayonnaise prepared in the own stablishment and for immediat consumption foods with eggs as ingredient.
Royal Decree 3454/2000 of december 29, laying down hygiene rules to elaboration, distribution and commercialisation of ready-to-eat food
Royal Decree 202/2000 laying down rules for food handlers.
Royal Decree 640/2006, of May 26, 2006, laying down specific implementation conditions of the Communities rules concernig hygiene subjets, as well as foodstuff's production and commercialisation.

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 complaints, 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

Notification system in place

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

History of the disease and/or infection in the country

Salmonellosis is the second main zoonoses (in number of human cases) in Spain.
Salmonella is the agent more frequently involved in foodborne
outbreaks in Spain.
In 2010 have recorded 4421 human cases

Results of the investigation

S. enteritidis is the most present salmonella, following S. typhimurium

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

The number of human cases reported to the Microbiological Surveillance System shows a stable trend in recent years.
In 2010 has been reported 4421 human cases

Relevance as zoonotic disease

High

2.1.3 Salmonella in foodstuffs

A. 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

B. 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

C. 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

D. 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

Control program/mechanisms

Recent actions taken to control the zoonoses

In 2003 a workshop was organised for "Salmonella in eggs and egg products" coordinated by the Spanish Food Safety and Nutrition Agency. The result was the approval between all the competent authorities in this area of the "Programme on Salmonella spp in eggs and egg products".

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Anatum	S. Bredeney	S. Hadar
Meat from broilers (Gallus gallus) - fresh - at slaughterhouse	F	Single	25 g	171	9	4	2			1	1
Meat from broilers (Gallus gallus) - fresh - at processing plant	F	Single	25 g	63	5	3	1				
Meat from broilers (Gallus gallus) - fresh - at retail	F	Single	25 g	108	3			3			
Meat from other poultry species - fresh	F	Single	25 g	61	12		1	11			
Meat from other poultry species - fresh - at retail - Clinical investigations [1)]	L	Single	25 g	12	12	8	1				1
Meat from poultry, unspecified - meat products - at retail	F	Single	25 g	116	4	1		3			

	S. Kentucky	S. Thompson
Meat from broilers (Gallus gallus) - fresh - at slaughterhouse		1
Meat from broilers (Gallus gallus) - fresh - at processing plant	1	
Meat from broilers (Gallus gallus) - fresh - at retail		
Meat from other poultry species - fresh		

Table Salmonella in poultry meat and products thereof

	S. Kentucky	S. Thompson
Meat from other poultry species - fresh - at retail - Clinical investigations [1)]		2
Meat from poultry, unspecified - meat products - at retail		

Comments:

[1)] Strain

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES
L: NATIONAL REFERENCE LABORATORY

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Dairy products (excluding cheeses) - ice-cream - at processing plant	F	Single	25 g	455	0			
Milk, cows' - pasteurised milk - at retail	F	Single	25 g	52	0			
Milk, cows' - raw	F	Single	25 g	14	0			
Cheeses made from cows' milk - soft and semi-soft	F	Single	25 g	409	10			10
Cheeses made from cows' milk - unspecified	F	Single	25 g	463	1			1
Dairy products (excluding cheeses) - dairy products, not specified - ready-to-eat	F	Single	25 g	211	1			1

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Anatum	S. Infantis	S. Ohio
Egg products - at retail	F	Single	25 g	152	5	5					
Eggs - table eggs - at packing centre	F	Single	25 g	1534	9	2	1	6			
Eggs - table eggs - at retail	F	Single	25 g	452	24	6	5	6	2	3	1
Fishery products, unspecified - at processing plant	F	Single	25 g	288	0						
Infant formula - dried - intended for infants below 6 months	F	Single	25 g	116	0						
Molluscan shellfish - raw - at processing plant	F	Single	25 g	961	7			7			
Bakery products	F	Single	25 g	1262	3	2		1			
Fish - raw	F	Single	25 g	267	0						
Other processed food products and prepared dishes	F	Single	25 g	9357	32	14	3	14			
Ready-to-eat salads	F	Single	25 g	752	0						

	S. Rissen	S. Virchow
Egg products - at retail		
Eggs - table eggs - at packing centre		
Eggs - table eggs - at retail	1	

Table Salmonella in other food

	S. Rissen	S. Virchow
Fishery products, unspecified - at processing plant		
Infant formula - dried - intended for infants below 6 months		
Molluscan shellfish - raw - at processing plant		
Bakery products		
Fish - raw		
Other processed food products and prepared dishes		1
Ready-to-eat salads		

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMUS COMMUNITIES.

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Anatum	S. Bovismorbificans	S. Bredeney
Meat from bovine animals - fresh - at slaughterhouse	F	Single	25 g	104	4			4			
Meat from bovine animals - fresh - at processing plant	F	Single	25 g	20	0						
Meat from bovine animals - fresh - at retail	F	Single	25 g	88	2				1		
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant	F	Single	25 g	28	0						
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail	F	Single	25 g	118	3		1	2			
Meat from pig - fresh - at slaughterhouse [1)]	F	Single	25 g	179	13		5	8			
Meat from pig - fresh - at processing plant	F	Single	25 g	48	5		1	4			
Meat from pig - fresh - at retail	F	Single	25 g	111	10		2	1	1		
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant	F	Single	25 g	574	9			9			
Meat from pig - meat products - raw but intended to be eaten cooked - at retail	F	Single	25 g	514	19		9	10			
Meat, mixed meat - meat preparation	F	Single	25 g	1221	46	4	12	28			
Meat, mixed meat - meat products	F	Single	25 g	165	0						
Meat, mixed meat - minced meat	F	Single	25 g	763	21			21			

Table Salmonella in red meat and products thereof

	S. Derby	S. Goldcoast	S. Hadar	S. Kentucky	S. Montevideo	S. Muenchen	S. Rissen	S. Thompson
Meat from bovine animals - fresh - at slaughterhouse								
Meat from bovine animals - fresh - at processing plant								
Meat from bovine animals - fresh - at retail					1			
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant								
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail								
Meat from pig - fresh - at slaughterhouse [1)]							1	
Meat from pig - fresh - at processing plant								
Meat from pig - fresh - at retail	2			2		1	1	
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant								
Meat from pig - meat products - raw but intended to be eaten cooked - at retail								
Meat, mixed meat - meat preparation	1						1	
Meat, mixed meat - meat products								
Meat, mixed meat - minced meat								

Comments:

[1)] More than one serotype isolated from one same sample.

Table Salmonella in red meat and products thereof

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES.
The following amendments were made:

Date of Modification	Row name	Column name	Old value	New value
2012-01-13	Meat from bovine animals - fresh - at retail	Units tested	89	88
	Meat from pig - fresh - at retail	Units tested	117	111

2.1.4 Salmonella in animals

A. Salmonella spp. in Gallus Gallus - breeding flocks

Monitoring system

Sampling strategy

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

Following point 2 of the Annex of Commisison Regulation (EU) 200/2010 of 10 March, implementing Regulation (EC) 2160/2003 as regards a Community target for the reduction of the prevalence of certain Salmonella serotypes in breeding flocks of Gallus gallus. This sampling strategy is implemented by the Spanish National Surveillance and Control Programme on Salmonella in Breeding Flocks of Gallus gallus, approved for co-financing by Commision Decision 2009/883/EC.

Frequency of the sampling

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

Every flock is sampled

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

birds of 4 weeks of age and 2 weeks prior movement.

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

Other: FBO controls: every 2 weeks. Additionally to the FBO controls, during production period an official control sampling is performed, with the following frecuency: 1. within 4 weeks following moving to the laying phase or laying unit 2. towards the end of the laying phase and not earlier than 8 weeks before the end of the production cycle 3. during the production period at time distant enough from the sampling referred in points 1. and 2.

Type of specimen taken

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

Other: internal linings of delivery boxes and dead chicks

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

Faeces

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

Faeces

Methods of sampling (description of sampling techniques)

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

Following point 2 of the Annex of Commisison Regulation (EU) 200/2010 of 10 March, implementing Regulation (EC) 2160/2003 as regards a Community target for the reduction of the prevalence of certain Salmonella serotypes in breeding flocks of Gallus gallus.

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

Following point 2 of the Annex of Commisison Regulation (EU) 200/2010 of 10 March, implementing Regulation (EC) 2160/2003 as regards a Community target for the reduction of the prevalence of certain Salmonella serotypes in breeding flocks of Gallus gallus.

Breeding flocks: Production period

Following point 2 of the Annex of Commisison Regulation (EU) 200/2010 of 10 March, implementing Regulation (EC) 2160/2003 as regards a Community target for the reduction of the prevalence of certain Salmonella serotypes in breeding flocks of Gallus gallus.

Case definition

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

If positive in FBO control and to confirm the disease, official samples must be taken. The flock is confirmed as infected if Salmonella is isolated and serotyping performed at NRL is positive to one of the five serotypes included in the programme.

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

If positive in FBO control and to confirm the disease, official samples must be taken. The flock is confirmed as infected if Salmonella is isolated and serotyping performed at NRL is positive to one of the five serotypes included in the programme.

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

If positive in FBO control and to confirm the disease, official samples must be taken. The flock is confirmed as infected if Salmonella is isolated and serotyping performed at NRL is positive to one of the five serotypes included in the programme.

Diagnostic/analytical methods used

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

Bacteriological method: ISO 6579:2002

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

Bacteriological method: ISO 6579:2002

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

Bacteriological method: ISO 6579:2002

Vaccination policy

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

Voluntary/Compulsory in rearing flocks of the meat production line if one of the relevant Samonella serovars was detected in the preceeding flock

Other preventive measures than vaccination in place

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

Biosecurity measures.
Compliance with Good Practice Code.

Control program/mechanisms

The control program/strategies in place

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

Spanish National Control and Monitoring Programme on Salmonella in Breeding Flocks of Gallus gallus 2010, approved for co-financing by Commission Decision 2009/883/EC.

Recent actions taken to control the zoonoses

Compulsory National Control and Monitoring Programme on Salmonella in Breeding Flocks of Gallus gallus 2010.

Measures in case of the positive findings or single cases

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

According to the compulsory National Control and Monitoring Programme on Salmonella in Breeding Flocks of Gallus gallus 2010, including:
movement of live birds forbbiden
destruction or treatment of eggs
sacrifice-depopulation of the flock
epidemiological investigations
control of biosecurity measures
control of the effectiveness of cleaning and disinfection

Notification system in place

Since 1952, at least (Epizootic Diseases Law). At the moment by Animal Health Law 8/2006, Royal Decree 328/2003 and Royal Decree 1940/2004.

Results of the investigation

Sampled flocks (adults): 1385
Positive flocks: 52 Salmonella spp.; 10 top 5
Incidence:
- Salmonella spp: 3,75%
- Top 5: 0,72%

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

The incidence on Salmonella spp. has decreased from 2009 (5,23%) to 2010 (3,75%). The incidence on top 5 have decreased from 2009 (2,59%) to 2010 (0,72%) and then, Spain has reached the Community reduction target for 2010.

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

Breeding flocks for egg production can be considered a very low source of infection for humans, with only 1 positive flock to Salmonella spp. and belonging to top 5.

B. Salmonella spp. in Gallus Gallus - broiler flocks

Monitoring system

Sampling strategy

Broiler flocks

Following point 1 of the Annex of Commission Regulation (EC) 646/2007 implementing Regulation (EC) 2160/2003 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in broilers and repealing Regulation (EC) 1091/2005.

Frequency of the sampling

Broiler flocks: Before slaughter at farm

3 weeks prior to slaughter (FBO control). Official control sampling is performed in at least one flock on 10% of the holdings with more than 5000 birds.

Type of specimen taken

Broiler flocks: Before slaughter at farm

Faeces

Methods of sampling (description of sampling techniques)

Broiler flocks: Before slaughter at farm

Following point 2 of the Annex of Commission Regulation (EC) 646/2007 implementing Regulation (EC) 2160/2003 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in broilers and repealing Regulation (EC) 1091/2005.

Case definition

Broiler flocks: Before slaughter at farm

A flock is considerd positive if the presence of S. Enteritidis or S Typhimurium is confirmed in at least one of the official samples. However, all serotypes shall be reported separately, includind untypable serotypes.

Diagnostic/analytical methods used

Broiler flocks: Before slaughter at farm

Bacteriological method: ISO 6579:2002

Vaccination policy

Broiler flocks

Does not exist.

Other preventive measures than vaccination in place

Broiler flocks

Biosecurity measures
Compliance with Good Practice Code

Control program/mechanisms

The control program/strategies in place

Broiler flocks

National Control and Monitoring Plan on Salmonella in broiler flocks 2010, approved for co-financing by Commission Decision 2009/883/CE

Recent actions taken to control the zoonoses

National Control and Monitoring Plan on Salmonella in broiler flocks 2010, including biosecurity measures and compliance with Good Practice Code following Regulations 2160/2003, 1177/2006 and 646/2007.

Measures in case of the positive findings or single cases

Broiler flocks: Before slaughter at farm

Verification of the compliance of biosecurity measures
Cleaning, disinfection and treatment against rodents and insects
Verification of the efficacy of cleaning and disinfection
Epidemiological investigation

Notification system in place

Since 1952, at least (Epizootic Diseases Law). At the moment by Animal Health Law 8/2003, Royal Decree 328/2003 and Royal Decree 1940/2004.

Results of the investigation

Sampled flocks: 18.334
Positive flocks: 656 Salmonella spp.
76 S. enteritidis+typhimurium
Prevalence:
Salmonella spp.: 3,58%
Enteritidis+Typhimurium: 0,41%

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

The decresing trend continues in 2010 and Spain has already reached the community target.

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

Monitoring system

Sampling strategy

Laying hens flocks

Following point 2 of the Annex of Commission Regulation (EC) 1168/2006 implementing Regulation (EC) 2160/2003 as regards a Community target for the reduction of the prevalence of certain salmonella serotypes in laying hens of Gallus gallus and amending Regulation (EC) 1003/2005. This sampling strategy is implemented by the Spanish National Control and Monitoring Programme on Salmonella in Laying Hens 2010, approved by Commision Decision 2007/848/CE and for co-financing by Decision 2009/883/EC.

Frequency of the sampling

Laying hens: Day-old chicks

Every flock is sampled

Laying hens: Rearing period

2 weeks prior to moving (FBO control).

Laying hens: Production period

Every 15 weeks (FBO control). Official control is done in one flock per year per holding comprising at least 1000 birds at the end of the production cycle; at the age of 24 +- 2 weeks in flocks housed in buildings where Salmonella was detected in the preceding flock; and in any case of suspicion of Salmonella in the holding.

Type of specimen taken

Laying hens: Production period

Other: faecal material and dust samples

Methods of sampling (description of sampling techniques)

Laying hens: Day-old chicks

Following part B of Annex II of Council Regulation 2160/2003

Laying hens: Rearing period

Following part B of Annex II of Council Regulation 2160/2003

Laying hens: Production period

Following point 2 of the Annex of Commission Regulation (EC) 1168/2006 implementing Regulation (EC) 2160/2003 as regards a Community target for the reduction of the prevalence of certain salmonella serotypes in laying hens of Gallus gallus and amending Regulation (EC) 1003/2005. This sampling strategy is implemented by the Spanish National Control and Monitoring Programme on Salmonella in Laying Hens 2010.

Case definition

Laying hens: Day-old chicks

If positive in FBO control and to confirm the disease, official samples must be taken. The flock is confirmed as infected if Salmonella is isolated and serotyping performed at NRL is positive to one of the serotypes included in the programme (S. enteritidis and S. typhimurium). However, all serotypes shall be reported separately, including untypable serotypes.

Laying hens: Rearing period

If positive in FBO control and to confirm the disease, official samples must be taken. The flock is confirmed as infected if Salmonella is isolated and serotyping performed at NRL is positive to one of the serotypes included in the programme (S. enteritidis and S. typhimurium). However, all serotypes shall be reported separately, including untypable serotypes.

Diagnostic/analytical methods used

Laying hens: Day-old chicks

Bacteriological method: ISO 6579:2002

Laying hens: Rearing period

Bacteriological method: ISO 6579:2002

Laying hens: Production period

Bacteriological method: ISO 6579:2002

Vaccination policy

Laying hens flocks

Compulsory in rearing period against Salmonella species with impact in public health (at least S. Enteritidis should be included). It can be voluntary in a holding if preventive and biocecurity measures have been taken on the holding and absence of Salmonella Enteritidis and Typhimurium was demostrated during 12 months preceding the arrival of the animals.

Other preventive measures than vaccination in place

Laying hens flocks

Biosecurity measures
Compulsory notification
Compulsory monitoring and control programmes
Compliance with Good Practice Code

Control program/mechanisms

The control program/strategies in place

Laying hens flocks

National Control and Monitoring Programme on Salmonella in Laying Hens 2010, approved by Commision Decision 2007/848/CE and for co-financing by Decision 2009/883/EC.

Recent actions taken to control the zoonoses

National Control and Monitoring Programme on Salmonella in Laying Hens 2010, including vaccination, biosecurity measures and compliance with good practices code following criteria of Regulations 2160/2003,1168/2006 and 1177/2006.

Measures in case of the positive findings or single cases

Laying hens flocks

According to National Control and Monitoring Programme on Salmonella in Laying Hens 2010,including movement restrictions of live birds (forbidden),destruction or treatment of eggs, sacrifice-depopulation of the flock,epidemiological investigations, control of the biosecurity measures and of the efficiency of the cleaning and disinfection.

Notification system in place

Since 1952 at least (Epizootic Diseases Law). At the moment by Animal Health Law 8/2003, Royal Decree 328/2003 and Royal Decree 1940/2004.

Results of the investigation

Number of flocks (adults)tested: 1503
Number of positive flocks:

- Salmonella spp.: 460
- Enteritidis+Typhimurium: 89

Incidence:

- Salmonella spp: 30,61%
- Enteritidis+Typhimurium: 5,92%

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

The incidence of both Salmonella Enteritidis+Typhimurium has decreased in 2010, taking into account that results of FBO´S and official controls are considered. Spain has reached the community target for 2010.

D. Salmonella spp. in bovine animals

Monitoring system

Sampling strategy

Samples have been taken ramdomly (day of sampling each month) in 12 slaughterhouses (distribution of the number of samples according to the capacity of sacrifice of each slaughterhouse) placed in different regions of Spain and representative of the total volume of sacrifice of the country

Frequency of the sampling

Animals at slaughter (herd based approach)

from May to November

Type of specimen taken

Animals at slaughter (herd based approach)

Faeces

Methods of sampling (description of sampling techniques)

Animals at slaughter (herd based approach)

Two faecal samples at colon level have been taken in all the slaughter batches in the day of sampling, with a maximun of 30 batches by slaughterhouse and day of sampling . Each batch belonged to different holdings.
Sampling has been performed in 12 slaughterhouses placed in the provinces of Barcelona(3), Valencia, Huesca, Lerida, Caceres,Madrid, Lugo, Pontevedra, Segovia and Ciudad Real. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain (around 50%).

A total of 516 samples have been taken, belonging to 258 slaughter batches and 258 different holdings.

Faeces were taken from the colon, refrigerated immediatly and sent to the laboratory and analyzed within 24 hours.

Case definition

Animals at slaughter (herd based approach)

A slaughter batch is positive if Salmonella spp. has been isolated from at least one of the two samples of each slaughter batch.

Diagnostic/analytical methods used

Animals at slaughter (herd based approach)

Bacteriological method: ISO 6579:2002

Results of the investigation

Number of slaughter batches analyzed: 200
Positive : 30
slaughter batch prevalence: 15% (95%CI: 10,4;20,7%)

E. Salmonella spp. in pigs

Monitoring system

Sampling strategy

Fattening herds

Samples have been taken ramdomly (day of each month) in 14 slaughterhouses (distribution of the number of samples according to the capacity of sacrifice of each slaughterhouse)placed in different regions of Spain and representative of the total volume of sacrifice of the country(around 50%)

Frequency of the sampling

Fattening herds at slaughterhouse (herd based approach)

between May and November

Type of specimen taken

Fattening herds at slaughterhouse (herd based approach)

Other: ileocaecal lymph nodes

Methods of sampling (description of sampling techniques)

Fattening herds at slaughterhouse (herd based approach)

One sample of ileocaecal lymph nodes have been taken from one animal of all the slaughter batches in the day of sampling, with a maximun of 30 batches by slaughterhouse and day of sampling . Each batch belonged to different herds.
Sampling has been performed in 14 slaughterhouses placed in the provinces of Cuenca, Barcelona(3),Ciudad Real, Murcia, Pontevedra, Burgos, Málaga, Gerona, Cuenca, León, Madrid, Huesca and Lérida. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain.
A total of 217 samples of lymph nodes have been taken, belonging to 217 slaughter batches and 217 different holdings.
Samples were refrigerated immediatly and sent to the laboratory and analyzed within 24 hours.

Case definition

Fattening herds at slaughterhouse (herd based approach)

A slaughter batch is considered positive for the purpose of this survey if Salmonella spp. has been isolated from the sample of lymph nodes or faeces.

Diagnostic/analytical methods used

Fattening herds at slaughterhouse (herd based approach)

Bacteriological method: ISO 6579:2002

Results of the investigation

Fattening pigs at slaughterhouses:
Tested slaughter batches: 217
Positive: 78
Slaughter batch prevalence: 35,9% Salmonella spp. (95% CI: 29,6; 42,7)

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

Monitoring system

Sampling strategy

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

Following points 1 and 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Meat production flocks

Following points 1 and 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Frequency of the sampling

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

Following point 1 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

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

Other: Following points 1 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Meat production flocks: Before slaughter at farm

Other: Following point 1 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Type of specimen taken

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

Other: Following points 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

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

Other: Following point 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Meat production flocks: Before slaughter at farm

Other: Following points 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Methods of sampling (description of sampling techniques)

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

Following points 1 and 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

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

Following points 1 and 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Meat production flocks: Before slaughter at farm

Following points 1 and 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Case definition

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

A flock is considerd positive if the presence of S. Enteritidis or S Typhimurium is confirmed in at least one of the official samples. However, all serotypes shall be reported separately, including untypable serotypes.

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

A flock is considerd positive if the presence of S. Enteritidis or S Typhimurium is confirmed in at least one of the official samples. However, all serotypes shall be reported separately, including untypable serotypes.

Meat production flocks: Before slaughter at farm

A flock is considerd positive if the presence of S. Enteritidis or S Typhimurium is confirmed in at least one of the official 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

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

Bacteriological method: ISO 6579:2002

Meat production flocks: Before slaughter at farm

Bacteriological method: ISO 6579:2002

Vaccination policy

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

Voluntary

Meat production flocks

Does not exists.

Other preventive measures than vaccination in place

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

Biosecurity measures.
Compliance with Good Practice Code

Meat production flocks

Biosecurity measures.
Compliance with Good Practice Code

Control program/mechanisms

The control program/strategies in place

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

Spanish National Control and Monitoring Programme on Salmonella in Breeding Flocks of Turkeys, approved for co-financing by Commission Decision 2009/883/EC.

Meat production flocks

Spanish National Control and Monitoring Programme on Salmonella in Meat Production Flocks of Turkeys, approved for co-financing by Commission Decision 2009/883/EC

Recent actions taken to control the zoonoses

Compulsory National Control and Monitoring Programme on Salmonella in Breeding Flocks and Meat Production Flocks of Turkeys 2010, following criteria of Regulation (EC) 584/2008.

Measures in case of the positive findings or single cases

According to Compulsory National Control and Monitoring Programme on Salmonella in Breeding Flocks and Meat Production Flocks of Turkeys 2010, following criteria of Regulation (EC) 584/2008.

Notification system in place

Since 1952, at least (Epizootic Diseases Law). At the moment by Animal Health Law 8/2006, Royal Decree 328/2003 and Royal Decree 1940/2004.

Results of the investigation

Breeding turkeys:
number of adult flocks tested : 17
positive (Enteritidis+ Typhimurium): 1
flock prevalence: 5,88%

Fattening turkeys:
number of flocks tested: 1316
positive (Enteritidis+ Typhimurium): 22
flock prevalence: 1,67%

Table Salmonella in breeding flocks of Gallus gallus

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult	89	M.A.R.M.	Flock	89	2	1					
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult	1296	M.A.R.M.	Flock	1296	50	5	3			1	

	Salmonella spp., unspecified
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult	1
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult	41

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Partridges	A	Animal	22	2			2
Pheasants	A	Animal	1	0			
Pigeons	A	Animal	1	0			

Footnote:

A: Animal Health Services of Autonomous Communities

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Anatum
Cattle (bovine animals) - calves (under 1 year) [1)]	M.A.R.M.	Slaughter batch	200	30	0	6		15	9
Goats	A	Animal	13	0					
Pigs - fattening pigs [2)]	M.A.R.M.	Slaughter batch	217	78	2	20	0	56	0
Solipeds, domestic	A	Animal	75	0					

Comments:

[1)] National survey

[2)] National survey

Footnote:

A: Animal Health Services of Autonomous Communities

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	1737	M.A.R.M.	Flock	1503	460	81	8		371
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry	1737	M.A.R.M.	Flock	1375	216	16	1		199
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	1737	M.A.R.M.	Flock	836	290	73	7		210
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling	25470	M.A.R.M.	Flock	18344	656	73	3		580
Turkeys - breeding flocks, unspecified - during rearing period - at farm - Control and eradication programmes - official and industry sampling	29	MA.R.M.	Flock	29	4		2		2
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes - official and industry sampling	17	M.A.R.M.	Flock	17	9		1		8
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official and industry sampling	1635	M.A.R.M.	Flock	1316	261		22		239

2.1.5 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Compound feedingstuffs for cattle - final product	A	Single	25 grs	56	0			
Compound feedingstuffs for pigs - final product	A	Single	25 grs	28	1			1
Compound feedingstuffs for poultry (non specified) - final product	A	Single	25 grs	20	0			
Compound feedingstuffs for poultry - laying hens - final product	A	Single	25 grs	62	1			1
Compound feedingstuffs for poultry - breeders - process control	A	Single	25 grs	8	0			
Compound feedingstuffs for poultry - broilers - final product	A	Single	25 grs	14	0			

Footnote:

A: Animal Health Services of Autonomous Communities: Catalunya, La Rioja, Madrid, Asturias,Cantabria.
At laboratory, a sample of 25 grs. has been analyzed.

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 - feather meal	A	Single	25 grs	3	0			
Feed material of land animal origin - meat and bone meal	A	Single	25 grs	1	0			
Feed material of land animal origin - meat meal	A	Single	25 grs	14	3	2		1
Feed material of land animal origin - poultry offal meal	A	Single	25 grs	1	0			
Feed material of marine animal origin - fish meal	A	Single	25 grs	69	2	2		

Footnote:

A: Animal Health Services of Autonomous Communities: Catalunya, La Rioja, Madrid, Cantabria.

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of cereal grain origin - barley derived	A	Single	25 grs	50	2			2
Feed material of cereal grain origin - maize	A	Single	25 grs	48	1		1	
Feed material of cereal grain origin - maize - derived	A	Single	25 grs	10	0			
Feed material of cereal grain origin - wheat derived	A	Single	25 grs	24	0			
Feed material of oil seed or fruit origin - cotton seed derived	A	Single	25 grs	14	1			1
Feed material of oil seed or fruit origin - rape seed derived	A	Single	500 grs	3	1			1
Feed material of oil seed or fruit origin - soya (bean) derived	A	Single	25 grs	25	2			2
Feed material of oil seed or fruit origin - sunflower seed derived	A	Single	25 grs	1	0			
Other feed material - legume seeds and similar products	A	Single	25 grs	1	0			
Other feed material - other plants	A	Single	25 grs	3	0			
Other feed material - tubers, roots and similar products	A	Single	25 grs	2	0			

Footnote:

A: Animal Health Services of Autonomous Communities: Catalunya, La Rioja, Madrid, Asturias, Cantabria.

Table Salmonella in other feed matter

2.1.6 Salmonella serovars and phagetype distribution

The methods of collecting, isolating and testing of the Salmonella isolates are described in the chapters above respectively for each animal species, foodstuffs and humans. The serotype and phagetype distributions can be used to investigate the sources of the Salmonella infections in humans. Findings of same serovars and phagetypes in human cases and in foodstuffs or animals may indicate that the food category or animal species in question serves as a source of human infections. However as information is not available from all potential sources of infections, conclusions have to be drawn with caution.

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory		30				78			472				39
Number of isolates serotyped	0	30	0	0	0	78	0	0	472	0	0	0	39
Number of isolates per serovar													
S. 4,12:d:-						2							
S. 4,5:i:-		1				16							
S. 6,7:-:1,5									7				
S. Agona									15				
S. Albany									1				
S. Altona									1				

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory		30				78			472				39
Number of isolates serotyped	0	30	0	0	0	78	0	0	472	0	0	0	39
Number of isolates per serovar													
S. Anatum		9				1			4				1
S. Bardo		1				1							
S. Bovismorbificans									1				1
S. Braenderup									2				
S. Brandenburg						4							
S. Bredeney		1							6				1
S. Cerro									7				
S. Corvallis									29				
S. Cubana									1				
S. Dabou									2				
S. Derby						9			1				8

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory		30				78			472				39
Number of isolates serotyped	0	30	0	0	0	78	0	0	472	0	0	0	39
Number of isolates per serovar													
S. Duval													1
S. Enteritidis						2			134				
S. Farsta						1							
S. Gaminara									1				
S. Give									1				
S. Goldcoast									1				
S. Grumpensis									1				
S. Hadar									8				12
S. Havana									3				
S. Indiana									5				
S. Infantis						1			47				

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory		30				78			472				39
Number of isolates serotyped	0	30	0	0	0	78	0	0	472	0	0	0	39
Number of isolates per serovar													
S. Kedougou									2				
S. Kentucky									8				1
S. Kottbus									1				1
S. Livingstone									8				
S. Llandoff									1				
S. London						1			4				3
S. Mbandaka		6							16				
S. Meleagridis		1				2			3				
S. Mikawasima						2			16				
S. Montevideo		1							4				
S. Muenchen									1				

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory		30				78			472				39
Number of isolates serotyped	0	30	0	0	0	78	0	0	472	0	0	0	39
Number of isolates per serovar													
S. Ndolo									1				
S. Newport									4				1
S. Oakey									1				
S. Offa		2											
S. Ohio									45				
S. Oranienburg									1				
S. Poona									1				
S. Rissen		2				11			5				
S. Schwarzengrund									4				
S. Senftenberg									9				
S. Thompson									2				

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory		30				78			472				39
Number of isolates serotyped	0	30	0	0	0	78	0	0	472	0	0	0	39
Number of isolates per serovar													
S. Toulon									2				
S. Typhimurium		6				20			13				7
S. Virchow									24				
S. Wien						5							
S. Worthington									1				
S. Yovokome									1				
Salmonella spp., unspecified									16				2

Table Salmonella serovars in animals

Serovar	Other poultry		
Sources of isolates	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			
Number of isolates serotyped	0	0	0
Number of isolates per serovar			
S. 4,12:d:-			
S. 4,5:i:-			
S. 6,7:-:1,5			
S. Agona			
S. Albany			
S. Altona			
S. Anatum			
S. Bardo			
S. Bovismorbificans			
S. Braenderup			
S. Brandenburg			

Table Salmonella serovars in animals

Serovar	Other poultry		
Sources of isolates	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			
Number of isolates serotyped	0	0	0
Number of isolates per serovar			
S. Bredeney			
S. Cerro			
S. Corvallis			
S. Cubana			
S. Dabou			
S. Derby			
S. Duval			
S. Enteritidis			
S. Farsta			
S. Gaminara			
S. Give			

Table Salmonella serovars in animals

Serovar	Other poultry		
Sources of isolates	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			
Number of isolates serotyped	0	0	0
Number of isolates per serovar			
S. Goldcoast			
S. Grumpensis			
S. Hadar			
S. Havana			
S. Indiana			
S. Infantis			
S. Kedougou			
S. Kentucky			
S. Kottbus			
S. Livingstone			
S. Llandoff			

Table Salmonella serovars in animals

Serovar	Other poultry		
Sources of isolates	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			
Number of isolates serotyped	0	0	0
Number of isolates per serovar			
S. London			
S. Mbandaka			
S. Meleagridis			
S. Mikawasima			
S. Montevideo			
S. Muenchen			
S. Ndolo			
S. Newport			
S. Oakey			
S. Offa			
S. Ohio			

Table Salmonella serovars in animals

Serovar	Other poultry		
Sources of isolates	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			
Number of isolates serotyped	0	0	0
Number of isolates per serovar			
S. Oranienburg			
S. Poona			
S. Rissen			
S. Schwarzengrund			
S. Senftenberg			
S. Thompson			
S. Toulon			
S. Typhimurium			
S. Virchow			
S. Wien			
S. Worthington			

Table Salmonella serovars in animals

Serovar	Other poultry		
Sources of isolates	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory			
Number of isolates serotyped	0	0	0
Number of isolates per serovar			
S. Yovokome			
Salmonella spp., unspecified			

2.1.7 Antimicrobial resistance in Salmonella isolates

A. Antimicrobial resistance in Salmonella in cattle

Sampling strategy used in monitoring

Frequency of the sampling

see text form on Salmonella spp. in bovine animals

Type of specimen taken

see text form on Salmonella spp. in bovine animals

Methods of sampling (description of sampling techniques)

see text form on Salmonella spp. in bovine animals

Procedures for the selection of isolates for antimicrobial testing

all isolates tested for antimicrobial resistance

Methods used for collecting data

national survey 2010

Laboratory methodology used for identification of the microbial isolates

see text form on Salmonella spp. in bovine animals

Laboratory used for detection for resistance

Antimicrobials included in monitoring

see table on antimicrobial resistance Salmonella in cattle

Cut-off values used in testing

see table of breakpoints

Results of the investigation

Number of isolates tested: 30

B. Antimicrobial resistance in Salmonella in pigs

Sampling strategy used in monitoring

Frequency of the sampling

There has been a specific monitoring programme for antimicrobial surveillance running from 1999 at national level in Spain. These national surveys are performed in fattening pigs at slaughterhouse. For more information on the frequency of sampling, please, see text forms on Salmonella in pigs.

Methods of sampling (description of sampling techniques)

See text forms on Salmonella in pigs.

Procedures for the selection of isolates for antimicrobial testing

All isolates tested for antimicrobial resistance (38)

Methods used for collecting data

Following point 2 of the Annex of Commision Decision 2007/407/CE, on a harmonized monitoring scheme of antimicrobial resistance in Salmonella in fowl (Gallus gallus) and pigs.

Laboratory methodology used for identification of the microbial isolates

See text forms on Salmonella in pigs.

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Following point 2 of the Annex of Commision Decision 2007/407/CE, on a harmonized monitoring scheme of antimicrobial resistance in Salmonella in fowl (Gallus gallus) and pigs.
See tables on antimicrobial resistance.

Cut-off values used in testing

Following point 2 of the Annex of Commision Decision 2007/407/CE, on a harmonized monitoring scheme of antimicrobial resistance in Salmonella in fowl (Gallus gallus) and pigs.
See table on breakpoints.

Results of the investigation

Fattening pigs:
Number of isolates tested: 38

C. Antimicrobial resistance in Salmonella in poultry

Sampling strategy used in monitoring

Frequency of the sampling

National antimicrobial resistance surveillance programme has been running from 2003 at national level. In 2010, a national control programme has been applied in laying hens, broilers and turkeys. Then, sampling strategies and frequency of sampling has been performed following Commission Regulation (EC) No 1168/2006 of 31 July 2006 implementing Regulation (EC) No 2160/2003 as regards a Community target for the reduction of the prevalence of certain salmonella serotypes in laying hens of Gallus gallus and amending Regulation (EC) No 1003/2005; Commission Regulation (EC) No 646/2007 of 12 June 2007 implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards a Community target for the reduction of the prevalence of Salmonella enteritidis and Salmonella typhimurium in broilers and repealing Regulation (EC) No 1091/2005; and following points 1 and 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Type of specimen taken

Laying hens: following point 2.2. of the Annex of Commission Regulation (EC) No 1168/2006 of 31 July 2006 implementing Regulation (EC) No 2160/2003 as regards a Community target for the reduction of the prevalence of certain salmonella serotypes in laying hens of Gallus gallus and amending Regulation (EC) No 1003/2005.

Broilers: point 2 of the Annex of Commission Regulation (EC) No 646/2007 of 12 June 2007 implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards a Community target for the reduction of the prevalence of Salmonella enteritidis and Salmonella typhimurium in broilers and repealing Regulation (EC) No 1091/2005

Turkeys: following points 1 and 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Methods of sampling (description of sampling techniques)

Laying hens: following point 2.2. of the Annex of Commission Regulation (EC) No 1168/2006 of 31 July 2006 implementing Regulation (EC) No 2160/2003 as regards a Community target for the reduction of the prevalence of certain salmonella serotypes in laying hens of Gallus gallus and amending Regulation (EC) No 1003/2005.

Broilers: point 2 of the Annex of Commission Regulation (EC) No 646/2007 of 12 June 2007 implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards a Community target for the reduction of the prevalence of Salmonella enteritidis and Salmonella typhimurium in broilers and repealing Regulation (EC) No 1091/2005.

Turkeys: following points 1 and 2 of the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Procedures for the selection of isolates for antimicrobial testing

Following ponit 2 of the Annex of Commision Decision 2007/407/CE, on a harmonized monitoring scheme of antimicrobial resistance in Salmonella in fowl (Gallus gallus) and pigs.

Methods used for collecting data

Following article 2 of Commision Decision 2007/407/CE, on a harmonized monitoring scheme of antimicrobial resistance in Salmonella in fowl (Gallus gallus) and pigs.

Laboratory methodology used for identification of the microbial isolates

Laying hens: following point 3 of the Annex of Commission Regulation (EC) No 1168/2006 of 31 July 2006 implementing Regulation (EC) No 2160/2003 as regards a Community target for the reduction of the prevalence of certain salmonella serotypes in laying hens of Gallus gallus and amending Regulation (EC) No 1003/2005.

Broilers: point 3 of the Annex of Commission Regulation (EC) No 646/2007 of 12 June 2007 implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards a Community target for the reduction of the prevalence of Salmonella enteritidis and Salmonella typhimurium in broilers and repealing Regulation (EC) No 1091/2005

Turkeys: following the Annex of Commission Regulation (EC) 584/2008 as regards a Community target for the reduction of the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkeys.

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Following point 4 of the Annex of Commision Decision 2007/407/CE, on a harmonized monitoring scheme of antimicrobial resistance in Salmonella in fowl (Gallus gallus) and pigs.

Cut-off values used in testing

Following point 4 of the Annex of Commision Decision 2007/407/CE, on a harmonized monitoring scheme of antimicrobial resistance in Salmonella in fowl (Gallus gallus) and pigs.

Preventive measures in place

Article 2 of Commission Regulation (EC) No 1177/2006 of 1 August 2006 implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards requirements for the use of specific control methods in the framework of the national programmes for the control of salmonella in poultry.

Control program/mechanisms

The control program/strategies in place

Spanish control programmes on Salmonella in breeding flocks of Gallus gallus, laying hens, broilers and turkeys 2010.

Recent actions taken to control the zoonoses

Spanish control programmes of Salmonella in breeding flocks of Gallus gallus, laying hens, broilers and turkeys 2010.

Measures in case of the positive findings or single cases

Spanish control programmes of Salmonella in breeding flocks of Gallus gallus, laying hens, broilers and turkeys 2010.

Notification system in place

Spanish control programmes of Salmonella in breeding flocks of Gallus gallus, laying hens, broilers and turkeys 2010.

Results of the investigation

Laying hens:
Number of isolates tested: 175 by dilution method and 40 by difussion method

Broilers:
Number of isolates tested: 74

Turkeys:
Number of isolates tested: 18 by dilution method and 20 by difussion method

Table Antimicrobial susceptibility testing of Salmonella in Cattle (bovine animals)

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serovars	
Isolates out of a monitoring program (yes/no)			yes				yes	
Number of isolates available in the laboratory			7				23	
Antimicrobials:	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol			7	0			23	1
Amphenicols - Florfenicol			7	0			23	0
Fluoroquinolones - Ciprofloxacin			7	0			23	0
Quinolones - Nalidixic acid			7	0			23	0
Trimethoprim			7	0			23	5
Sulphonamides - Sulfonamide			7	1			23	10
Aminoglycosides - Streptomycin							23	4
Aminoglycosides - Gentamicin			7	0			23	0
Aminoglycosides - Kanamycin			7	0			23	0
Penicillins - Ampicillin			7	1			23	0
Tetracyclines - Tetracycline			7	1			23	11
Fully sensitive			6	6			11	11
Resistant to 1 antimicrobial							2	2
Resistant to 2 antimicrobials							1	1
Resistant to 3 antimicrobials							9	9
Resistant to 4 antimicrobials			1	1				

Table Antimicrobial susceptibility testing of Salmonella in Pigs

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serovars	
Isolates out of a monitoring program (yes/no)			yes				yes	
Number of isolates available in the laboratory			17				21	
Antimicrobials:	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol			17	4			21	0
Amphenicols - Florfenicol			17	3			21	0
Fluoroquinolones - Ciprofloxacin			17	2			21	5
Quinolones - Nalidixic acid			17	2			21	5
Trimethoprim			17	2			21	6
Sulphonamides - Sulfonamide							21	7
Aminoglycosides - Streptomycin			17	11			21	2
Aminoglycosides - Gentamicin			17	1			21	0
Aminoglycosides - Kanamycin			17	0			21	0
Penicillins - Ampicillin			17	14			21	1
Tetracyclines - Tetracycline			17	14			21	11
Fully sensitive			2	2			5	5
Resistant to 1 antimicrobial							9	9
Resistant to 2 antimicrobials			1	1				
Resistant to 3 antimicrobials			3	3			5	5
Resistant to 4 antimicrobials			7	7			2	2
Resistant to >4 antimicrobials			4	4				

Table Antimicrobial susceptibility testing of Salmonella in Pigs

Table Antimicrobial susceptibility testing of Salmonella in meat from pig

Salmonella	Salmonella spp.	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	14	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	14	3
Fluoroquinolones - Ciprofloxacin	14	0
Quinolones - Nalidixic acid	14	0
Trimethoprim	14	1
Sulphonamides - Sulfonamide	14	6
Aminoglycosides - Streptomycin	14	7
Aminoglycosides - Gentamicin	14	0
Aminoglycosides - Kanamycin	14	0
Trimethoprim + Sulphonamides	14	1
Penicillins - Ampicillin	14	5
Tetracyclines - Tetracycline	14	9
Fully sensitive	14	5
Resistant to 1 antimicrobial	14	2
Resistant to 2 antimicrobials	14	1
Resistant to 3 antimicrobials	14	1
Resistant to 4 antimicrobials	14	0
Resistant to >4 antimicrobials	14	5
Aminoglycosides - Amikacin	14	0
Aminoglycosides - Tobramycin	14	0

Table Antimicrobial susceptibility testing of Salmonella in meat from pig

Salmonella	Salmonella spp.	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	14	
Antimicrobials:	N	n
Carbapenems - Imipenem	14	0
Carbapenems - Meropenem	13	0
Cephalosporins - Cefazolin	14	0
Cephalosporins - Cefepime	14	0
Cephalosporins - Cefotaxim	14	0
Cephalosporins - Cefoxitin	14	0
Fluoroquinolones - Levofloxacin	13	0
Penicillins - Amoxicillin / Clavulanic acid	14	2
Penicillins - Ampicillin / Sulbactum	13	3
Penicillins - Piperacillin	14	5

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl)

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serovars	
Isolates out of a monitoring program (yes/no)	yes		yes				yes	
Number of isolates available in the laboratory	129		14				146	
Antimicrobials:	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol	129	1	14	3			146	2
Amphenicols - Florfenicol	129	1	14	3			146	0
Fluoroquinolones - Ciprofloxacin	129	53	14	0			146	45
Fluoroquinolones - Enrofloxacin	40	2						
Quinolones - Nalidixic acid	107	47					146	35
Trimethoprim	129	12	14	0			146	6
Sulphonamides - Sulfonamide	129	16	14	3			146	13
Aminoglycosides - Streptomycin	129	0	14	3			145	13
Aminoglycosides - Gentamicin	129	0	14	0			146	6
Aminoglycosides - Kanamycin	89	0	14	0			142	5
Penicillins - Ampicillin	129	5	14	3			146	15
Tetracyclines - Tetracycline	129	20	14	3			146	15
Fully sensitive	21	21	10	10			91	91
Resistant to 1 antimicrobial	5	5	1	1			23	23
Resistant to 2 antimicrobials	29	29					10	10
Resistant to 3 antimicrobials	33	33					22	22
Resistant to 4 antimicrobials							8	8
Resistant to >4 antimicrobials	1	1	3	3			10	10

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl)

Table Antimicrobial susceptibility testing of Salmonella in meat from broilers (Gallus gallus)

Salmonella	Salmonella spp.	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	12	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	12	0
Fluoroquinolones - Ciprofloxacin	12	0
Quinolones - Nalidixic acid	12	10
Trimethoprim	12	0
Sulphonamides - Sulfonamide	12	0
Aminoglycosides - Streptomycin	12	1
Aminoglycosides - Gentamicin	12	0
Aminoglycosides - Kanamycin	12	0
Trimethoprim + Sulphonamides	12	0
Penicillins - Ampicillin	12	1
Tetracyclines - Tetracycline	12	1
Fully sensitive	12	0
Resistant to 1 antimicrobial	12	9
Resistant to 2 antimicrobials	12	0
Resistant to 3 antimicrobials	12	0
Resistant to 4 antimicrobials	12	0
Resistant to >4 antimicrobials	12	1
Aminoglycosides - Amikacin	12	0
Aminoglycosides - Tobramycin	12	0

Table Antimicrobial susceptibility testing of Salmonella in meat from broilers (Gallus gallus)

Salmonella	Salmonella spp.	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	12	
Antimicrobials:	N	n
Carbapenems - Imipenem	12	0
Carbapenems - Meropenem	4	0
Cephalosporins - Cefazolin	12	0
Cephalosporins - Cefepime	12	0
Cephalosporins - Cefotaxim	12	0
Cephalosporins - Cefoxitin	12	0
Fluoroquinolones - Levofloxacin	4	0
Penicillins - Amoxicillin / Clavulanic acid	12	0
Penicillins - Ampicillin / Sulbactum	4	0
Penicillins - Piperacillin	12	1

Table Antimicrobial susceptibility testing of Salmonella in Turkeys

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.	
Isolates out of a monitoring program (yes/no)					yes	
Number of isolates available in the laboratory					18	
Antimicrobials:	N	n	N	n	N	n
Amphenicols - Chloramphenicol					18	7
Amphenicols - Florfenicol					18	6
Fluoroquinolones - Ciprofloxacin					18	15
Quinolones - Nalidixic acid					18	10
Trimethoprim					18	5
Sulphonamides - Sulfonamide					18	11
Aminoglycosides - Streptomycin					18	9
Aminoglycosides - Gentamicin					18	0
Aminoglycosides - Kanamycin					18	6
Penicillins - Ampicillin					18	14
Tetracyclines - Tetracycline					18	14
Fully sensitive					3	3
Resistant to 3 antimicrobials					1	1
Resistant to 4 antimicrobials					2	2
Resistant to >4 antimicrobials					12	12

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - laying hens

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serovars	
Isolates out of a monitoring program (yes/no)								
Number of isolates available in the laboratory								
Antimicrobials:	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol	67	0	14	3			94	2
Amphenicols - Florfenicol	67	0	14	3			94	0
Fluoroquinolones - Ciprofloxacin	67	30	14	0			94	16
Quinolones - Nalidixic acid	67	29					94	9
Trimethoprim	67	12	14	0			94	3
Sulphonamides - Sulfonamide	67	12	14	3			94	4
Aminoglycosides - Streptomycin	67	0	14	3			93	3
Aminoglycosides - Gentamicin	67	0	14	0			94	0
Aminoglycosides - Kanamycin	67	0	14	0			94	2
Penicillins - Ampicillin	67	2	14	3			94	7
Tetracyclines - Tetracycline	67	14	14	3			94	8
Fully sensitive	21	21	10	10			73	73
Resistant to 1 antimicrobial	5	5	1	1			6	6
Resistant to 2 antimicrobials	29	29					8	8
Resistant to 3 antimicrobials	12	12					2	2
Resistant to 4 antimicrobials							2	2
Resistant to >4 antimicrobials			3	3			3	3

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - laying hens

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - broilers

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serovars	
Isolates out of a monitoring program (yes/no)	yes						yes	
Number of isolates available in the laboratory	22						52	
Antimicrobials:	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol	22	1					52	0
Amphenicols - Florfenicol	22	1					52	0
Fluoroquinolones - Ciprofloxacin	22	22					52	29
Quinolones - Nalidixic acid							52	26
Trimethoprim	22	0					52	3
Sulphonamides - Sulfonamide	22	0					52	9
Aminoglycosides - Streptomycin	22	0					52	10
Aminoglycosides - Gentamicin	22	0					52	6
Aminoglycosides - Kanamycin	22	0					48	3
Penicillins - Ampicillin	22	1					52	8
Tetracyclines - Tetracycline	22	0					52	7
Fully sensitive							18	18
Resistant to 1 antimicrobial							17	17
Resistant to 2 antimicrobials							2	2
Resistant to 3 antimicrobials	21	21					20	20
Resistant to 4 antimicrobials							6	6
Resistant to >4 antimicrobials	1	1					7	7

Table Antimicrobial susceptibility testing of Salmonella in Gallus gallus (fowl) - broilers

Table Antimicrobial susceptibility testing of Salmonella in Meat from sheep - fresh

Salmonella	Salmonella spp.	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	1	0
Tetracyclines - Tetracycline	1	0
Trimethoprim	1	0
Sulphonamides - Sulfonamide	1	0
Aminoglycosides - Streptomycin	1	0
Aminoglycosides - Gentamicin	1	0
Aminoglycosides - Kanamycin	1	0
Trimethoprim + Sulphonamides	1	0
Penicillins - Ampicillin	1	0
Cephalosporins - Cefotaxim	1	0
Aminoglycosides - Amikacin	1	0
Aminoglycosides - Tobramycin	1	0
Carbapenems - Imipenem	1	0
Cephalosporins - Cefazolin	1	0
Cephalosporins - Cefepime	1	0
Cephalosporins - Cefoxitin	1	0
Fully sensitive	1	1
Penicillins - Amoxicillin / Clavulanic acid	1	0
Penicillins - Ampicillin / Sulbactum	0	0

Table Antimicrobial susceptibility testing of Salmonella in Meat from sheep - fresh

Salmonella	Salmonella spp.	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	1	
Antimicrobials:	N	n
Penicillins - Piperacillin	1	0

Table Antimicrobial susceptibility testing of Salmonella in Eggs - table eggs

Salmonella	S. Enteritidis	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	5	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	5	0
Tetracyclines - Tetracycline	5	2
Fluoroquinolones - Ciprofloxacin	5	0
Quinolones - Nalidixic acid	5	2
Trimethoprim	5	2
Sulphonamides - Sulfonamide	5	3
Aminoglycosides - Streptomycin	5	0
Aminoglycosides - Gentamicin	5	0
Aminoglycosides - Neomycin	5	0
Aminoglycosides - Kanamycin	5	0
Trimethoprim + Sulphonamides	5	2
Cephalosporins - 3rd generation cephalosporins	5	0
Penicillins - Ampicillin	5	0
Cephalosporins - Cefotaxim	5	0
Sulphonamides	5	3
Fully sensitive	5	1
Resistant to 1 antimicrobial	5	1
Resistant to 2 antimicrobials	5	1
Resistant to 3 antimicrobials	5	0

Table Antimicrobial susceptibility testing of Salmonella in Eggs - table eggs

Salmonella	S. Enteritidis	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	5	
Antimicrobials:	N	n
Resistant to 4 antimicrobials	5	2
Resistant to >4 antimicrobials	5	0

Footnote:

Salmonella enteritidis 9,12:g,m:-

Table Antimicrobial susceptibility testing of Salmonella in Other processed food products and prepared dishes

Salmonella	S. Enteritidis	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	5	
Antimicrobials:	N	n
Amphenicols - Chloramphenicol	5	0
Tetracyclines - Tetracycline	5	0
Fluoroquinolones - Ciprofloxacin	5	0
Quinolones - Nalidixic acid	5	2
Trimethoprim	5	0
Sulphonamides - Sulfonamide	5	0
Aminoglycosides - Streptomycin	5	0
Aminoglycosides - Gentamicin	5	0
Aminoglycosides - Kanamycin	5	0
Trimethoprim + Sulphonamides	5	0
Cephalosporins - 3rd generation cephalosporins	5	0
Penicillins - Ampicillin	5	0
Cephalosporins - Cefotaxim	5	0
Sulphonamides	5	0
Fully sensitive	5	3
Resistant to 1 antimicrobial	5	2
Resistant to 2 antimicrobials	5	0
Resistant to 3 antimicrobials	5	0
Resistant to 4 antimicrobials	5	0

Table Antimicrobial susceptibility testing of Salmonella in Other processed food products and prepared dishes

Salmonella	S. Enteritidis	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	5	
Antimicrobials:	N	n
Resistant to >4 antimicrobials	5	0

Footnote:

5 samples: 2 russian salad, 1 rice with milk, 1 mixed paella, 1 vegetables purée.

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

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Derby	Meat from pig																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	1																									
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	1	0																					1		
Tetracyclines - Tetracycline	11	1	1	1																						
Fluoroquinolones - Ciprofloxacin	15	1	0																							
Quinolones - Nalidixic acid	13	1	0																1							
Trimethoprim	10	1	0																						1	
Sulphonamides - Sulfonamide	12	1	1	1																						
Aminoglycosides - Streptomycin	11	1	1	1																						
Aminoglycosides - Gentamicin	12	1	0																		1					
Aminoglycosides - Kanamycin	13	1	0																1							
Trimethoprim + Sulphonamides	10	1	0																1							
Penicillins - Ampicillin	13	1	0																			1				
Sulphonamides	12	1	1	1																						
Carbapenems - Imipenem	13	1	0																							
Cephalosporins - Cefazolin	14	1	0																					1		
Cephalosporins - Cefepime	14	1	0																							
Penicillins - Amoxicillin / Clavulanic acid	13	1	0																						1	
Penicillins - Piperacillin	17	1	0																							1

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

S. Derby	Meat from pig						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	1						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							1
Quinolones - Nalidixic acid							
Trimethoprim							
Sulphonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Aminoglycosides - Kanamycin							
Trimethoprim + Sulphonamides							
Penicillins - Ampicillin							
Sulphonamides							
Carbapenems - Imipenem			1				
Cephalosporins - Cefazolin							
Cephalosporins - Cefepime						1	
Penicillins - Amoxicillin / Clavulanic acid							
Penicillins - Piperacillin							

Footnote:

Salmonella Derby 4,12:f,g:-

Table Antimicrobial susceptibility testing of S. Enteritidis in All foodstuffs - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Enteritidis	All foodstuffs																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	18																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	18	0																				2	1	7	2
Tetracyclines - Tetracycline	11	18	2	2												1		1	2	4	3	3		1		
Quinolones - Nalidixic acid	13	18	11	11														1	2	4						
Trimethoprim	10	18	2	2												1						1		1	3	7
Sulphonamides - Sulfonamide	12	18	3	3												1		3		1	2	4	2		1	1
Aminoglycosides - Streptomycin	11	18	0									2			3	6	3	3	1							
Aminoglycosides - Gentamicin	12	18	0																		1	3	4	6	2	1
Aminoglycosides - Kanamycin	13	18	0																	1	5	5	5	2		
Trimethoprim + Sulphonamides	10	18	2	2												1						1		3	5	4
Penicillins - Ampicillin	13	18	0												1		1				4	4	3	2	1	1
Penicillins - Amoxicillin / Clavulanic acid	13	18	0																				1	3	3	4
Penicillins - Piperacillin	17	18	0																					1		3

S. Enteritidis	All foodstuffs						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	18						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol	5						1

Table Antimicrobial susceptibility testing of S. Enteritidis in All foodstuffs - quantitative data [Diffusion method]

S. Enteritidis	All foodstuffs						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	18						
Antimicrobials:	29	30	31	32	33	34	>=35
Tetracyclines - Tetracycline	1						
Quinolones - Nalidixic acid							
Trimethoprim	1	1				1	
Sulphonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin	1						
Aminoglycosides - Kanamycin							
Trimethoprim + Sulphonamides		1		1			
Penicillins - Ampicillin						1	
Penicillins - Amoxicillin / Clavulanic acid	5	1			1		
Penicillins - Piperacillin	7	5	1				1

Footnote:

Salmonella Enteritidis 9,12:g,m:-
18 isolates: 2 russian salad, 1 egg content, 4 egg shell, 1 rice with milk, 1 mixed paella, 1 vegetables and broiler purée, 3 broiler breast, 5 poultry meat

Table Antimicrobial susceptibility testing of S. Hadar in Meat from poultry, unspecified - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Hadar	Meat from poultry, unspecified																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	1																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	1	0																			1				
Tetracyclines - Tetracycline	11	1	1	1																						
Fluoroquinolones - Ciprofloxacin	15	1	0																				1			
Quinolones - Nalidixic acid	13	1	1	1																						
Trimethoprim	10	1	0																					1		
Sulphonamides - Sulfonamide	12	1	0																			1				
Aminoglycosides - Streptomycin	11	1	1	1																						
Aminoglycosides - Gentamicin	12	1	0																			1				
Aminoglycosides - Kanamycin	13	1	0																		1					
Trimethoprim + Sulphonamides	10	1	0																							1
Cephalosporins - 3rd generation cephalosporins		1	0																							
Penicillins - Ampicillin	13	1	1	1																						
Penicillins - Amoxicillin / Clavulanic acid	13	1	0									1														
Penicillins - Piperacillin	17	1	1	1																						

Table Antimicrobial susceptibility testing of S. Hadar in Meat from poultry, unspecified - quantitative data [Diffusion method]

S. Hadar	Meat from poultry, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	1						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							
Quinolones - Nalidixic acid							
Trimethoprim							
Sulphonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Aminoglycosides - Kanamycin							
Trimethoprim + Sulphonamides							
Cephalosporins - 3rd generation cephalosporins				1			
Penicillins - Ampicillin							
Penicillins - Amoxicillin / Clavulanic acid							
Penicillins - Piperacillin							

Footnote:

Salmonella Hadar 6,8:z10:e,n,x

Table Antimicrobial susceptibility testing of S. Muenchen in Meat from pig - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Muenchen	Meat from pig																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	1																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	1	1	1																						
Tetracyclines - Tetracycline	11	1	1	1																						
Quinolones - Nalidixic acid	13	1	1	1																						
Trimethoprim	10	1	1	1																						
Sulphonamides - Sulfonamide	12	1	1	1																						
Aminoglycosides - Streptomycin	11	1	1	1																						
Aminoglycosides - Gentamicin	12	1	0																			1				
Aminoglycosides - Kanamycin	13	1	0																		1					
Trimethoprim + Sulphonamides	10	1	1	1																						
Penicillins - Ampicillin	13	1	1	1																						
Cephalosporins - Cefotaxim	22	1	0																							
Penicillins - Piperacillin	17	1	1						1																	

S. Muenchen	Meat from pig						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	1						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							

Table Antimicrobial susceptibility testing of S. Muenchen in Meat from pig - quantitative data [Diffusion method]

S. Muenchen	Meat from pig						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	1						
Antimicrobials:	29	30	31	32	33	34	>=35
Tetracyclines - Tetracycline							
Quinolones - Nalidixic acid							
Trimethoprim							
Sulphonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Aminoglycosides - Kanamycin							
Trimethoprim + Sulphonamides							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim							1
Penicillins - Piperacillin							

Footnote:

Salmonella Muenchen 6,8:d:1,2

Table Antimicrobial susceptibility testing of S. Rissen in Meat from pig - meat products - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Rissen	Meat from pig - meat products																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	3																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	3	0																	1		1	1			
Tetracyclines - Tetracycline	11	3	3	3																						
Fluoroquinolones - Ciprofloxacin	15	3	0																							
Quinolones - Nalidixic acid	13	3	0															2		1						
Trimethoprim	10	3	0																					1	1	
Sulphonamides - Sulfonamide	12	3	0																2	1						
Aminoglycosides - Streptomycin	11	3	1						1				2													
Aminoglycosides - Gentamicin	12	3	0																		2	1				
Aminoglycosides - Kanamycin	13	3	0																2		1					
Trimethoprim + Sulphonamides	10	3	0																					2		1
Penicillins - Ampicillin	13	3	0																	1		1	1			
Cephalosporins - Cefotaxim	22	3	0																							
Carbapenems - Imipenem	13	3	0																							
Penicillins - Amoxicillin / Clavulanic acid	13	3	0																						1	
Penicillins - Piperacillin	17	3	0																						1	

Table Antimicrobial susceptibility testing of S. Rissen in Meat from pig - meat products - quantitative data [Diffusion method]

S. Rissen	Meat from pig - meat products						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	3						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin						1	2
Quinolones - Nalidixic acid							
Trimethoprim	1						
Sulphonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Aminoglycosides - Kanamycin							
Trimethoprim + Sulphonamides							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim			1			1	1
Carbapenems - Imipenem		1		1		1	
Penicillins - Amoxicillin / Clavulanic acid	1	1					
Penicillins - Piperacillin	1	1					

Footnote:

Salmonella Rissen 6,7:f,g:-

Table Antimicrobial susceptibility testing of S. Thompson in Meat from poultry, unspecified - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Thompson	Meat from poultry, unspecified																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	2																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	2	0												1			1								
Tetracyclines - Tetracycline	11	2	0													2										
Fluoroquinolones - Ciprofloxacin	15	2	0																						2	
Quinolones - Nalidixic acid	13	2	2	2																						
Trimethoprim	10	2	0																1	1						
Sulphonamides - Sulfonamide	12	2	0												1					1						
Aminoglycosides - Streptomycin	11	2	0									2														
Aminoglycosides - Gentamicin	12	2	0																					1	1	
Aminoglycosides - Kanamycin	13	2	0																				2			
Trimethoprim + Sulphonamides	10	2	0																					2		
Penicillins - Ampicillin	13	2	0																1			1				
Cephalosporins - Cefotaxim	22	2	0																							
Sulphonamides		2	0												1					1						

Table Antimicrobial susceptibility testing of S. Thompson in Meat from poultry, unspecified - quantitative data [Diffusion method]

S. Thompson	Meat from poultry, unspecified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	2						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							
Quinolones - Nalidixic acid							
Trimethoprim							
Sulphonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Aminoglycosides - Kanamycin							
Trimethoprim + Sulphonamides							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim				1			1
Sulphonamides							

Footnote:

Salmonella Thompson 6,7:k:1,5

Table Antimicrobial susceptibility testing of S. Typhimurium - 4 in Meat from other animal species or not specified - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

4	Meat from other animal species or not specified																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	3																									
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	3	2	2																						
Tetracyclines - Tetracycline	11	3	2	2																1						
Fluoroquinolones - Ciprofloxacin	15	3	0																							
Quinolones - Nalidixic acid	13	3	0																		2	1				
Trimethoprim	10	3	0																						1	
Sulphonamides - Sulfonamide	12	3	2	2																	1					
Aminoglycosides - Streptomycin	11	3	2	2								1														
Aminoglycosides - Gentamicin	12	3	0																		1	1	1			
Aminoglycosides - Kanamycin	13	3	0																		3					
Trimethoprim + Sulphonamides	10	3	0																				2		1	
Penicillins - Ampicillin	13	3	2	2																						
Cephalosporins - Cefotaxim	22	3	0																							
Sulphonamides		3	0	2																	1					
Penicillins - Amoxicillin / Clavulanic acid	13	3	2	2																						1
Penicillins - Piperacillin	17	3	2	2																						

Table Antimicrobial susceptibility testing of S. Typhimurium - 4 in Meat from other animal species or not specified - quantitative data [Diffusion method]

4	Meat from other animal species or not specified						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	3						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol	1						
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							3
Quinolones - Nalidixic acid							
Trimethoprim	2						
Sulphonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Aminoglycosides - Kanamycin							
Trimethoprim + Sulphonamides							
Penicillins - Ampicillin	1						
Cephalosporins - Cefotaxim							3
Sulphonamides							
Penicillins - Amoxicillin / Clavulanic acid							
Penicillins - Piperacillin	1						

Footnote:

Salmonella Typhimurium 4,12:i:1,2
Fresh sausage (2) and meat from poultry (1)

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

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Typhimurium	Meat from pig																									
Isolates out of a monitoring program (yes/no)	yes																									
Number of isolates available in the laboratory	2																									
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	2	0																							
Tetracyclines - Tetracycline	11	2	2	2																						
Fluoroquinolones - Ciprofloxacin	15	2	0																							
Quinolones - Nalidixic acid	13	2	0																1		1					
Trimethoprim	10	2	0																							
Sulphonamides - Sulfonamide	12	2	2	2																						
Aminoglycosides - Streptomycin	11	2	2	2																						
Aminoglycosides - Gentamicin	12	2	0																1	1						
Aminoglycosides - Kanamycin	13	2	0																1	1						
Trimethoprim + Sulphonamides	10	2	0																					1	1	
Penicillins - Ampicillin	13	2	2	2																						
Cephalosporins - Cefotaxim	22	2	0																							
Sulphonamides		2	0	2																						
Penicillins - Piperacillin	17	2	2										1	1												

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

S. Typhimurium	Meat from pig						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	2						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol	2						
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							2
Quinolones - Nalidixic acid							
Trimethoprim		1	1				
Sulphonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Aminoglycosides - Kanamycin							
Trimethoprim + Sulphonamides							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim							2
Sulphonamides							
Penicillins - Piperacillin							

Footnote:

Salmonella Typhimurium 4,5,12:i:1,2

Table Antimicrobial susceptibility testing of S. Typhimurium in Turkeys - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - quantitative data [Diffusion method]

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Typhimurium	Turkeys - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	20																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	20	20	20																						
Amphenicols - Florfenicol	16	20	20	20																						
Tetracyclines - Tetracycline	11	20	19	19																	1					
Fluoroquinolones - Ciprofloxacin	15	20	0																4	11	3		2			
Fluoroquinolones - Enrofloxacin	18	20	5	1											1	3	2	7	2	1	2	1				
Trimethoprim	10	20	0															3	3	4	4	3	1			2
Sulphonamides - Sulfonamide	12	20	20	20																						
Aminoglycosides - Streptomycin	11	20	20	20																						
Aminoglycosides - Gentamicin	12	20	0													2	6	12								
Penicillins - Ampicillin	13	20	20	20																						
Cephalosporins - Cefotaxim	22	20	9																	9	2	5	1			

S. Typhimurium	Turkeys - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	20						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Amphenicols - Florfenicol							

Table Antimicrobial susceptibility testing of S. Typhimurium in Turkeys - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - quantitative data [Diffusion method]

S. Typhimurium	Turkeys - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	20						
Antimicrobials:	29	30	31	32	33	34	>=35
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							
Fluoroquinolones - Enrofloxacin							
Trimethoprim							
Sulphonamides - Sulfonamide							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim	2	1					

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

Zone diameter (mm), number of isolates with a zone of inhibition equal to

S. Enteritidis	Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	40																								
Antimicrobials:	Cut-off value	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
Amphenicols - Chloramphenicol	12	40	0											1	3	4	1	9	1	8	6	7				
Amphenicols - Florfenicol	16	40	0												4	3	5	4	6	9	5	3	1		0	
Tetracyclines - Tetracycline	11	40	6	6											1	1	3	5	3	4	5	5	5	1		
Fluoroquinolones - Ciprofloxacin	15	40	1										1				1		2	2	6	8	8	1	2	1
Fluoroquinolones - Enrofloxacin	18	40	2											1		1	1	1	1	12	5	6		2		7
Quinolones - Nalidixic acid	13	40	18	18											5	5	3		1	1	7					
Trimethoprim	10	40	0															1	4	4	2	2	1	3	6	5
Sulphonamides - Sulfonamide	12	40	4	4										5	2	2		2		4	4	4	6	4		1
Aminoglycosides - Streptomycin	11	40	0								2	1	6	3	2	5	8	9	2	2						
Aminoglycosides - Gentamicin	12	40	0											1		3	10	15	3	6		1	1			
Penicillins - Ampicillin	13	40	2	2											2	7	3	2	1	4	6	7	2	1		1
Cephalosporins - Cefotaxim		40	0															1		6	3	4	1		2	

S. Enteritidis	Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	40						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							

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

S. Enteritidis	Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling						
Isolates out of a monitoring program (yes/no)	yes						
Number of isolates available in the laboratory	40						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Florfenicol							
Tetracyclines - Tetracycline		1					
Fluoroquinolones - Ciprofloxacin	3	4				1	
Fluoroquinolones - Enrofloxacin		3					
Quinolones - Nalidixic acid							
Trimethoprim	7	4		1			
Sulphonamides - Sulfonamide	1			1			
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Penicillins - Ampicillin		1		1			
Cephalosporins - Cefotaxim	2	9	1	7	1	3	

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Survey - national survey - quantitative data [Dilution method]

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

S. Typhimurium	Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Survey - national survey																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	17																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	17	4										1	12				4							
Amphenicols - Florfenicol	16	17	3										10	4		3									
Tetracyclines - Tetracycline	8	17	14									3				3		11							
Fluoroquinolones - Ciprofloxacin	0.06	17	2		8	7			1	1															
Quinolones - Nalidixic acid	16	17	2										13	1	1			2							
Trimethoprim	2	17	2							13	1	1					2								
Sulphonamides - Sulfonamide	256																								
Aminoglycosides - Streptomycin	32	17	11											1	3	2	4		7						
Aminoglycosides - Gentamicin	2	17	1						8	6	2					1									
Aminoglycosides - Kanamycin	16	17	0										15	2											
Penicillins - Ampicillin	4	17	14								2	1					14								
Cephalosporins - Cefotaxim	0.5	17	0				13	3	1																
Sulphonamides	256	17	14												2				1			14			
Cephalosporins - Ceftazidim	2																								
Fully sensitive		2	2	2																					
Resistant to 1 antimicrobial				0																					
Resistant to 2 antimicrobials		1	1	1																					
Resistant to 3 antimicrobials		3	3	3																					

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Survey - national survey - quantitative data [Dilution method]

S. Typhimurium	Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Survey - national survey																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	17																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Resistant to 4 antimicrobials		7	7	7																				
Resistant to >4 antimicrobials		4	4	4																				

Table Antimicrobial susceptibility testing of Other serovars in Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Survey - national survey - quantitative data [Dilution method]

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

Other serovars	Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Survey - national survey																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	21																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	21	0											20	1										
Amphenicols - Florfenicol	16	21	0										10	11											
Tetracyclines - Tetracycline	8	21	11									9		1	1	1		9							
Fluoroquinolones - Ciprofloxacin	0.06	21	5		9	7		1	4																
Quinolones - Nalidixic acid	16	21	5										16					5							
Trimethoprim	2	21	6							15							6								
Sulphonamides - Sulfonamide	256	21	7													2	7	4	1	1	2	4			
Aminoglycosides - Streptomycin	32	21	2										2	8	6	3		1	1						
Aminoglycosides - Gentamicin	2	21	0						5	9	5	2													
Aminoglycosides - Kanamycin	8	21	0										20	1											
Penicillins - Ampicillin	4	21	1								18	2					1								
Cephalosporins - Cefotaxim	0.5	21	0				5	16																	
Cephalosporins - Ceftazidim	2	21	0						7	14															
Fully sensitive		5	5	5																					
Resistant to 1 antimicrobial		9	9	9																					
Resistant to 2 antimicrobials				0																					
Resistant to 3 antimicrobials		5	5	5																					
Resistant to 4 antimicrobials		2	2	2																					

Table Antimicrobial susceptibility testing of Other serovars in Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Survey - national survey - quantitative data [Dilution method]

Other serovars	Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Survey - national survey																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	21																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Resistant to >4 antimicrobials				0																				

Footnote:

Including two serovar Derby strains

Table Antimicrobial susceptibility testing of S. Typhimurium in Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey - quantitative data [Dilution method]

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

S. Typhimurium	Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	7																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	7	0										3	4											
Amphenicols - Florfenicol	16	7	0										7												
Tetracyclines - Tetracycline	8	7	1								3	3						1							
Fluoroquinolones - Ciprofloxacin	0.06	7	0		5	2																			
Quinolones - Nalidixic acid	16	7	0										7												
Trimethoprim	2	7	0							7															
Sulphonamides - Sulfonamide	256	7	1											1		3	2					1			
Aminoglycosides - Gentamicin	2	7	0						2	4	1														
Aminoglycosides - Kanamycin	8	7	0										7												
Penicillins - Ampicillin	4	7	1								6						1								
Cephalosporins - Cefotaxim	0.5	7	0				4	3																	
Cephalosporins - Ceftazidim	2	7	0						7																
Fully sensitive		6	6	6																					
Resistant to 4 antimicrobials		1	1	1																					

Table Antimicrobial susceptibility testing of Other serovars in Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey - quantitative data [Dilution method]

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

Other serovars	Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	23																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	23	1										4	18			1								
Amphenicols - Florfenicol	16	23	0										15	7	1										
Tetracyclines - Tetracycline	8	23	11								5	7					5	6							
Fluoroquinolones - Ciprofloxacin	0.06	23	0		20	3																			
Quinolones - Nalidixic acid	16	23	0										23												
Trimethoprim	2	23	5							18							5								
Sulphonamides - Sulfonamide	256	23	10												1	8	4					10			
Aminoglycosides - Streptomycin	32	23	4											6	8	5			4						
Aminoglycosides - Gentamicin	2	23	0						3	16	4														
Aminoglycosides - Kanamycin	8	23	0										22	1											
Penicillins - Ampicillin	4	23	0								23														
Cephalosporins - Cefotaxim	0.5	23	0				9	14																	
Cephalosporins - Ceftazidim	2	23	0						13	10															
Fully sensitive		11	11	11																					
Resistant to 1 antimicrobial		2	2	2																					
Resistant to 2 antimicrobials		1	1	1																					
Resistant to 3 antimicrobials		9	9	9																					
Resistant to 4 antimicrobials				0																					

Table Antimicrobial susceptibility testing of Other serovars in Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey - quantitative data [Dilution method]

Other serovars	Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	23																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Resistant to >4 antimicrobials				0																					

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

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

S. Enteritidis	Gallus gallus (fowl) - broilers - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	22																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	22	1									1	6	13	1			1							
Amphenicols - Florfenicol	16	22	1									1	19		1		1								
Tetracyclines - Tetracycline	8	22	0								4	18													
Fluoroquinolones - Ciprofloxacin	0.06	22	22					1	19	2															
Trimethoprim	2	22	0							20	1	1													
Sulphonamides - Sulfonamide	256	22	0													5	14	3							
Aminoglycosides - Streptomycin	32	22	0									6	13	2		1									
Aminoglycosides - Gentamicin	2	22	0						18	3	1														
Aminoglycosides - Kanamycin	8	22	0										22												
Penicillins - Ampicillin	4	22	1								14	5	2				1								
Cephalosporins - Cefotaxim	0.5	22	0				7	14		1															
Cephalosporins - Ceftazidim	2	21	0						20	1															
Fully sensitive				0																					
Resistant to 1 antimicrobial				0																					
Resistant to 2 antimicrobials				0																					
Resistant to 3 antimicrobials		21	21	21																					
Resistant to 4 antimicrobials				0																					
Resistant to >4 antimicrobials		1	1	1																					

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

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

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

Other serovars	Gallus gallus (fowl) - broilers - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	52																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	52	0									1	7	34	10										
Amphenicols - Florfenicol	16	52	0										33	10	9										
Tetracyclines - Tetracycline	8	52	7							1	4	38	1	1	2	5									
Fluoroquinolones - Ciprofloxacin	0.06	52	29		12	11			13	8	6			1	1										
Quinolones - Nalidixic acid	16	52	26										23	2	1	1		25							
Trimethoprim	2	52	3							41	7	1					3								
Sulphonamides - Sulfonamide	256	52	9												1	20	18	3	1			9			
Aminoglycosides - Streptomycin	32	52	10										8	16	14	4	4	3	3						
Aminoglycosides - Gentamicin	2	52	6						20	20	5	1			1	1	4								
Aminoglycosides - Kanamycin	8	48	3										44	1	1	2									
Penicillins - Ampicillin	4	52	8								32	7	5				8								
Cephalosporins - Cefotaxim	0.5	52	0				15	23	10	4															
Cephalosporins - Ceftazidim	2	52	0						26	25	1														
Fully sensitive		18	18	18																					
Number of multiresistant S. Typhimurium		3	3	3																					
Resistant to 1 antimicrobial		17	17	17																					
Resistant to 2 antimicrobials		2	2	2																					
Resistant to 3 antimicrobials		20	20	20																					

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

Other serovars	Gallus gallus (fowl) - broilers - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	52																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Resistant to 4 antimicrobials		6	6	6																					
Resistant to >4 antimicrobials		7	7	7																					

Footnote:

Including four Typhimurium serovar isolates

Table Antimicrobial susceptibility testing of Salmonella spp. in Turkeys - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - quantitative data [Dilution method]

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

Salmonella spp.	Turkeys - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	18																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	18	7										2	8	1		1	6							
Amphenicols - Florfenicol	16	18	6										9	2	1		6								
Tetracyclines - Tetracycline	8	18	14								2	2				2	4	8							
Fluoroquinolones - Ciprofloxacin	0.06	18	15		2	1			13	2															
Quinolones - Nalidixic acid	16	18	10										3		5			10							
Trimethoprim	2	18	5							13							5								
Sulphonamides - Sulfonamide	256	18	11													7						11			
Aminoglycosides - Streptomycin	32	18	9										3	3	2	1	6	3							
Aminoglycosides - Gentamicin	2	18	0						5	10	3														
Aminoglycosides - Kanamycin	8	18	6										11	1					6						
Penicillins - Ampicillin	4	18	14								2	2					14								
Cephalosporins - Cefotaxim	0.5	18	0				3	11	3	1															
Cephalosporins - Ceftazidim	2	18	0						9	9															
Fully sensitive		3	3	3																					
Number of multiresistant S. Typhimurium		6	6	6																					
Resistant to 1 antimicrobial				0																					
Resistant to 2 antimicrobials				0																					
Resistant to 3 antimicrobials		1	1	1																					

Table Antimicrobial susceptibility testing of Salmonella spp. in Turkeys - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - quantitative data [Dilution method]

Salmonella spp.	Turkeys - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	18																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Resistant to 4 antimicrobials		2	2	2																					
Resistant to >4 antimicrobials		12	12	12																					

Footnote:

Including six serovar Typhimurium isolates

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

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

S. Enteritidis	Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	67																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	67	0									1	12	52	2										
Amphenicols - Florfenicol	16	67	0									2	58	7											
Tetracyclines - Tetracycline	8	67	14								14	36	3					14							
Fluoroquinolones - Ciprofloxacin	0.06	67	30		23	13	1	7	20	3															
Quinolones - Nalidixic acid	16	67	29										32	6				29							
Trimethoprim	2	67	12							47	8						12								
Sulphonamides - Sulfonamide	256	67	12													10	35	8	2			12			
Aminoglycosides - Streptomycin	32	67	0									5	40	17	5										
Aminoglycosides - Gentamicin	2	67	0						50	14	3														
Aminoglycosides - Kanamycin	8	67	0										66	1											
Penicillins - Ampicillin	4	67	2							1	43	20	1				2								
Cephalosporins - Cefotaxim	0.5	67	0				27	36	4																
Cephalosporins - Ceftazidim	2	67	0						57	9	1														
Fully sensitive		21	21	21																					
Resistant to 1 antimicrobial		5	5	5																					
Resistant to 2 antimicrobials		29	29	29																					
Resistant to 3 antimicrobials		12	12	12																					
Resistant to 4 antimicrobials				0																					

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

S. Enteritidis	Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	67																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Resistant to >4 antimicrobials				0																				

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - laying hens - at farm - environmental sample - Control and eradication programmes - official sampling - quantitative data [Dilution method]

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

S. Typhimurium	Gallus gallus (fowl) - laying hens - at farm - environmental sample - Control and eradication programmes - official sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	14																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	14	3										1	9	1			3							
Amphenicols - Florfenicol	16	14	3										9	2		1	2								
Tetracyclines - Tetracycline	8	14	3								2	7	2			1	1	1							
Fluoroquinolones - Ciprofloxacin	0.06	14	0		6	6	2																		
Trimethoprim	2	14	0							13	1														
Sulphonamides - Sulfonamide	256	14	3													1	6	2	2			3			
Aminoglycosides - Streptomycin	32	14	3											6	5		1	2							
Aminoglycosides - Gentamicin	2	14	0						6	8															
Aminoglycosides - Kanamycin	8	14	0										13	1											
Penicillins - Ampicillin	4	14	3								8	2	1				3								
Cephalosporins - Cefotaxim	0.5	14	0				4	9	1																
Cephalosporins - Ceftazidim	2	14	0						12	2															
Fully sensitive		10	10	10																					
Resistant to 1 antimicrobial		1	1	1																					
Resistant to 2 antimicrobials				0																					
Resistant to 3 antimicrobials				0																					
Resistant to 4 antimicrobials				0																					
Resistant to >4 antimicrobials		3	3	3																					

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - laying hens - at farm - environmental sample - Control and eradication programmes - official sampling - quantitative data [Dilution method]

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

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

Other serovars	Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	94																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	94	2									1	9	80	2			2							
Amphenicols - Florfenicol	16	94	0									1	67	24	2										
Tetracyclines - Tetracycline	8	94	8								11	71	2	2			2	6							
Fluoroquinolones - Ciprofloxacin	0.06	94	16		46	32		1	12	3															
Quinolones - Nalidixic acid	16	94	9										75	6	4	1	1	7							
Trimethoprim	2	94	3							85	6						3								
Sulphonamides - Sulfonamide	256	94	4													22	46	22				4			
Aminoglycosides - Streptomycin	32	93	3									2	23	42	17	6	2	1							
Aminoglycosides - Gentamicin	2	94	0						44	38	12														
Aminoglycosides - Kanamycin	8	94	2									1	88	3					2						
Penicillins - Ampicillin	4	94	7							2	77	8					7								
Cephalosporins - Cefotaxim	0.5	94	0				39	47	7	1															
Cephalosporins - Ceftazidim	2	94	0						58	35		1													
Fully sensitive		73	73	73																					
Resistant to 1 antimicrobial		6	6	6																					
Resistant to 2 antimicrobials		8	8	8																					
Resistant to 3 antimicrobials		2	2	2																					
Resistant to 4 antimicrobials		2	2	2																					

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

Other serovars	Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	94																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Resistant to >4 antimicrobials		3	3	3																				

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

Test Method Used	Standard methods used for testing
Disc diffusion Broth dilution	NCCLS/CLSI EFSA

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	12
	Florfenicol		16	16
Tetracyclines	Tetracycline		8	11
Fluoroquinolones	Ciprofloxacin		0.06	15
	Enrofloxacin			18
Quinolones	Nalidixic acid		16	13
Trimethoprim	Trimethoprim		2	10
Sulphonamides	Sulfonamide		256	12
	Sulphonamides		256	
Aminoglycosides	Streptomycin		32	11
	Gentamicin		2	12
	Neomycin			19
	Kanamycin		8	13

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Trimethoprim + Sulphonamides	Trimethoprim + Sulphonamides			15
Cephalosporins	3rd generation cephalosporins			22
	Cefotaxim		0.5	
	Ceftazidim		2	
Penicillins	Ampicillin		4	13

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing
Disc diffusion	NCCLS/CLSI M100-S20

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol	M100-S20		12
	Florfenicol	M100-S20		
Tetracyclines	Tetracycline	M100-S20		11
Fluoroquinolones	Ciprofloxacin	M100-S20		15
	Enrofloxacin	M100-S20		
	Levofloxacin	M100-S20		13
Quinolones	Nalidixic acid	M100-S20		13
Trimethoprim	Trimethoprim	M100-S20		10
Sulphonamides	Sulfonamide	M100-S20		12
	Sulphonamides	M100-S20		
Aminoglycosides	Streptomycin	M100-S20		11
	Gentamicin	M100-S20		12
	Neomycin	M100-S20		

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Kanamycin	M100-S20		13
	Amikacin	M100-S20		14
	Tobramycin	M100-S20		12
Trimethoprim + Sulphonamides	Trimethoprim + Sulphonamides	M100-S20		10
Cephalosporins	3rd generation cephalosporins	M100-S20		
	Cefotaxim	M100-S20		22
	Cefazolin	M100-S20		14
	Cefepime	M100-S20		14
	Cefoxitin	M100-S20		14
Penicillins	Ampicillin	M100-S20		13
	Amoxicillin / Clavulanic acid	M100-S20		13
	Ampicillin / Sulbactum	M100-S20		11
	Piperacillin	M100-S20		17
Carbapenems	Imipenem	M100-S20		13
	Meropenem	M100-S20		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 most frequent causes of gastroenteritis in humans. In 2010, 6340 human cases have been rgistred.Poultry are the main reservoir, and infection happens usually by consume of poultry meat.
Until the end of the 60's importance of Campylobacter spp. was not valued.

Notification of the disease is also infravaluated in surveillance systems. Epidemiology investigations associated cases to poultry meat consume and a deficient handle of food.
The number of human cases in Spain is at the moment supported in the notifications made to Microbiology Information System (SIM).

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

Poultry meat is the main source 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. In 2010, surveys have been performed in broilers, cattle and pigs (national surveys).

Recent actions taken to control the zoonoses

Monitoring of the zoonoses according to Council 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.

Results of the investigation

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

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

In recent years Campylobacter has been the most frequently reported zoonotic agent.

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

fresh meat and skin

At meat processing plant

fresh meat and skin

At retail

fresh meat and skin

Diagnostic/analytical methods used

At slaughterhouse and cutting plant

bacteriological method: ISO 10272:2006

At meat processing plant

Bacteriological method:ISO10272:2006

At retail

Bacteriological method: ISO 10272:2006

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from bovine animals - fresh - at retail	F	Single	25 g	32	0					
Meat from pig - fresh - at slaughterhouse	F	Single	25 g	55	25	15	3			7
Meat from pig - fresh - at processing plant	F	Single	25 g	9	0					
Meat from pig - fresh - at retail	F	Single	25 g	95	1		1			
Cheeses, made from unspecified milk or other animal milk	F	Single	25 g	83	0					
Eggs	F	Single	25 g	14	0					
Fishery products, unspecified	F	Single	25 g	2	0					
Meat from other animal species or not specified - fresh [1)]	F	Single	25 g	33	1					1
Meat from other animal species or not specified - meat preparation	F	Single	25 g	214	6	4	1			1
Meat from other animal species or not specified - minced meat	F	Single	25 g	55	2	1	1			
Meat from pig - meat products	F	Single	25 g	21	0					
Other processed food products and prepared dishes	F	Single	25 g	72	1					1

Comments:

[1)] At retail

Table Campylobacter in other food

Table Campylobacter in poultry meat

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus) - fresh - at slaughterhouse	F	Single	25 g	139	62	16	18			28
Meat from broilers (Gallus gallus) - fresh - at processing plant	F	Single	25 g	178	133	26	93			14
Meat from broilers (Gallus gallus) - fresh - at retail	F	Single	25 g	126	32	12	20			0
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at processing plant	F	Single	25 g	7	0					
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail	F	Single	25 g	50	8					8
Meat from other poultry species - fresh - at processing plant	F	Single	25 g	6	2					2
Meat from other poultry species - fresh - at retail [1)]	F	Single	25 g	46	11	6	4			2
Meat from other poultry species - fresh - at slaughterhouse	F	Single	25 g	21	3					3

Comments:

[1)] More than one specie is isolated from the same sample.

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

The following amendments were made:

Date of Modification	Row name	Column name	Old value	New value
2012-01-13	Meat from broilers (Gallus gallus) - fresh - at retail	C. jejuni	142	20
	Meat from broilers (Gallus gallus) - fresh - at retail	C. coli	71	12
	Meat from broilers (Gallus gallus) - fresh - at retail	Thermophilic Campylobacter spp., unspecified	1	0
	Meat from broilers (Gallus gallus) - fresh - at retail	Units tested	317	126
	Meat from broilers (Gallus gallus) - fresh - at retail	Total units positive for Campylobacter	214	32

2.2.4 Campylobacter in animals

A. Thermophilic Campylobacter in Gallus gallus

Monitoring system

Sampling strategy

Samples have been taken ramdomly (day of sampling each month) in 13 slaughterhouses (distribution of the samples according to capacity of sacrifice of each slaughterhouse) placed in different regions of Spain and representative of the total volume of sacrifice of the country.

Frequency of the sampling

At slaughter

between May and November

Type of specimen taken

At slaughter

caecum (faeces)

Methods of sampling (description of sampling techniques)

At slaughter

10 caecum samples have been taken from 10 animals of all the slaughter batches in the day of sampling, with a maximun of 30 batches by day of sampling. Each batch belonged to different flocks.
Sampling has been performed in 13 slaughterhouses placed in the provinces of Barcelona, Madrid(2), Orense, Tarragona, Murcia, Valladolid, Navarra, Malaga, Segovia, Zaragoza, Valencia and Lérida. These slaughterhouses have a high volume of activity, representing an important part of all the broilers sacrified in Spain.
A total of 2020 samples have been taken, belonging to 202 slaughter batches and 202 different holdings.
Samples were refrigerated immediatly and sent to the laboratory and analyzed within 24 hours.

Case definition

At slaughter

A slaughter batch is considered positive for the purpose of this survey if Campylobacter spp. has been isolated from at least one of the 10 samples of the slaughter batch.

Diagnostic/analytical methods used

At slaughter

Other:isolation in agar mCCDA(Oxoid) and agar Campyfood (CFA, bioMerieux) and identification by PCR (Mateo et all,2005)

Vaccination policy

doesn't exist

Other preventive measures than vaccination in place

biosecurity measures, implementation of good higyene practices

Control program/mechanisms

The control program/strategies in place

doesn't exist

Results of the investigation

Number of slaughter batches tested: 202
Number of slaughter batches positive: 166
Slaughter batch prevalence: 82,2% Campylobacter spp. (95% CI: 76,2; 87,2%)

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

More studies need to be performed

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

More studies need to be performed

B. thermophilic Campylobacter spp., unspecified in animal - Pigs - fattening pigs

Monitoring system

Sampling strategy

Samples have been taken ramdomly (day of sampling each month) in 14 slaughterhouses (distribution of the samples according to the capacity of sacrifice of each slaughterhouse)placed in different regions of Spain and representative of the total volume of sacrifice of the country.

Frequency of the sampling

2 faecal samples by slaughter batch with 10 animals or more, with a maximun of 30 slaughter batches by slaughterhouse and day of sampling.Sampling has been performed in 14 slaughterhouses placed in the provinces of Cuenca, Barcelona(3),Ciudad Real, Murcia, Pontevedra, Burgos, Málaga, Gerona, Huesca, Leon, Madrid and Lérida. These slaughterhouses have a high volume of activity, representing an important part of all the fattening pigs sacrified in Spain.
A total of 428 samples have been taken, belonging to 214 slaughter batches and 214 different holdings.
Samples were refrigerated immediatly and sent to the laboratory and analyzed within 24 hours.

Type of specimen taken

Faeces

Methods of sampling (description of sampling techniques)

2 faecal material samples by slaughter batch and by holding

Case definition

a slaughter batch is considered as positive if isolation by bacteriological method and PCR identification

Diagnostic/analytical methods used

isolation in agar mCCDA(Oxoid) and agar Campyfood(bioMerieux) and identification by PCR (Mateo et all,2005)

Vaccination policy

Doesn't exist

Results of the investigation

Number of slaughter batches tested: 214
Number of slaughter batches positive: 130
Slaughter batch prevalence: 60,7% Campylobacter jejuni+coli.

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

More studies need to be developed

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

More studies need to be developed

C. thermophilic Campylobacter spp., unspecified in animal - Cattle (bovine animals)

Monitoring system

Sampling strategy

Samples have been taken ramdomly (day of sampling each month)in 12 slaughterhouses (distribution of the samples according to the capacity of sacrifice of each slaughterhouse) placed in different regions of Spain and representative of the total volume of sacrifice of the country.

Frequency of the sampling

Two faecal samples have been taken in all the slaughter batches in the day of sampling, with a maximun of 30 batches by slaughterhouse and day of sampling . Each batch belonged to different holdings. Sampling has been performed in 12 slaughterhouses placed in the provinces of Barcelona(3), Valencia, Huesca, Lerida, Caceres,Madrid, Lugo, Pontevedra, Segovia and Ciudad Real. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain. Sampling from May to November.

Type of specimen taken

Faeces

Methods of sampling (description of sampling techniques)

Faeces were taken from the colon, refrigerated inmediatly and sent to the laboratory and analyzed before 24 hours.

Case definition

One slaughter batch was considered as positive if isolation of Campylobacter spp. by culture and identification by PCR

Diagnostic/analytical methods used

Isolation in agar mCCDA(Oxoid) and agar Campyfood (bioMerieux) and identification by PCR (Mateo el all,2005).

Results of the investigation

Number of slaughter batches analyzed: 200
Number of slaughter batches positive: 134
Slaughter batch prevalence: 67%

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Cattle (bovine animals) - calves (under 1 year) [1)]	M.A.R.M.	Slaughter batch	200	134	15	119			
Gallus gallus (fowl) - broilers - at slaughterhouse [2)]	M.A.R.M.	Slaughter batch	202	166	97	67			2
Pigs [3)]	M.A.R.M.	Slaughter batch	217	130	121	9			

Comments:

[1)] National survey

[2)] National survey

[3)] National survey

2.2.5 Antimicrobial resistance in Campylobacter isolates

A. Antimicrobial resistance in Campylobacter jejuni and coli in cattle

Sampling strategy used in monitoring

Frequency of the sampling

see text form on thermophilic Campylobacter spp. in cattle

Type of specimen taken

see text form on thermophilic Campylobacter spp. in cattle

Methods of sampling (description of sampling techniques)

see text form on thermophilic Campylobacter spp. in cattle

Procedures for the selection of isolates for antimicrobial testing

All isolates of the national survey 2010

Methods used for collecting data

National survey 2010.

Laboratory methodology used for identification of the microbial isolates

see text form on thermophilic Campylobacter spp. in cattle

Laboratory used for detection for resistance

Antimicrobials included in monitoring

see table

Cut-off values used in testing

see table

Results of the investigation

Number of isolates tested:
C. coli: 12
C. jejuni:88

B. Antimicrobial resistance in Campylobacter jejuni and coli in pigs

Sampling strategy used in monitoring

Frequency of the sampling

see text form on thermophilic Campylobacter in pigs

Type of specimen taken

see text form on thermophilic Campylobacter in pigs

Methods of sampling (description of sampling techniques)

see text form on thermophilic Campylobacter in pigs

Procedures for the selection of isolates for antimicrobial testing

All the isolates of the national survey 2010

Methods used for collecting data

National survey 2010

Laboratory methodology used for identification of the microbial isolates

see text form on thermophilic Campylobacter in pigs

Laboratory used for detection for resistance

Antimicrobials included in monitoring

see tables of results

Cut-off values used in testing

see table of breakpoints

Results of the investigation

Number of isolates tested: 106 C. coli and 9 C. jejuni.

C. Antimicrobial resistance in Campylobacter jejuni and coli in poultry

Sampling strategy used in monitoring

Frequency of the sampling

see text form on thermophilic Campylobacter in Gallus gallus

Type of specimen taken

see text form on thermophilic Campylobacter in Gallus gallus

Methods of sampling (description of sampling techniques)

see text form on thermophilic Campylobacter in Gallus gallus

Procedures for the selection of isolates for antimicrobial testing

All isolates of the National survey 2010

Methods used for collecting data

National survey 2010

Laboratory methodology used for identification of the microbial isolates

see text form on thermophilic Campylobacter in Gallus gallus

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Following Commision Decision 2007/516/EC.

Cut-off values used in testing

Following Commision Decision 2007/516/EC.

Results of the investigation

Number of isolates tested:
C. jejuni: 98
C. coli: 76

Table Antimicrobial susceptibility testing of Campylobacter in Cattle (bovine animals)

Campylobacter	Campylobacter spp., unspecified		C. coli		C. jejuni	
Isolates out of a monitoring program (yes/no)						
Number of isolates available in the laboratory			12		88	
Antimicrobials:	N	n	N	n	N	n
Fluoroquinolones - Ciprofloxacin			12	11	88	52
Quinolones - Nalidixic acid			12	12	88	88
Aminoglycosides - Gentamicin			12	2	88	11
Macrolides - Erythromycin			12	0	88	0
Tetracyclines - Tetracycline			12	12	88	63
Amphenicols - Chloramphenicol			12	12	88	88

Table Antimicrobial susceptibility testing of Campylobacter in Pigs

Campylobacter	Campylobacter spp., unspecified		C. coli	
Isolates out of a monitoring program (yes/no)			yes	
Number of isolates available in the laboratory			106	
Antimicrobials:	N	n	N	n
Fluoroquinolones - Ciprofloxacin			106	101
Quinolones - Nalidixic acid			106	106
Aminoglycosides - Gentamicin			106	59
Macrolides - Erythromycin			105	70
Tetracyclines - Tetracycline			106	104
Amphenicols - Chloramphenicol			106	106

Table Antimicrobial susceptibility testing of Campylobacter in Gallus gallus (fowl)

Campylobacter	Campylobacter spp., unspecified		C. coli		C. jejuni	
Isolates out of a monitoring program (yes/no)			yes		yes	
Number of isolates available in the laboratory			76		48	
Antimicrobials:	N	n	N	n	N	n
Fluoroquinolones - Ciprofloxacin			76	76	48	44
Quinolones - Nalidixic acid					48	48
Aminoglycosides - Gentamicin			76	19	48	2
Macrolides - Erythromycin			76	26	47	3
Tetracyclines - Tetracycline			76	72	48	41
Amphenicols - Chloramphenicol			75	0	48	48

Table Antimicrobial susceptibility testing of Campylobacter in Meat from broilers (Gallus gallus)

Campylobacter	Campylobacter spp., unspecified		C. coli		C. jejuni	
Isolates out of a monitoring program (yes/no)			yes		yes	
Number of isolates available in the laboratory			59		122	
Antimicrobials:	N	n	N	n	N	n
Fluoroquinolones - Ciprofloxacin			59	31	122	79
Quinolones - Nalidixic acid			59	54	122	98
Macrolides - Erythromycin			59	9	122	10
Fully sensitive			59	0	122	22
Resistant to 1 antimicrobial			59	6	122	21
Resistant to 2 antimicrobials			59	22	122	70
Resistant to 3 antimicrobials			59	22	122	9
Resistant to 4 antimicrobials			59	9	122	0
Cephalosporins - Cephalothin			59	57	122	122

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

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

C. coli	Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Survey - national survey																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	76																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	75	0									31	37	7										
Tetracyclines - Tetracycline	2	76	72						3	1						72								
Fluoroquinolones - Ciprofloxacin	1	76	76										1	4			13	58						
Aminoglycosides - Streptomycin	4	75	49								4	12	10	10		39								
Aminoglycosides - Gentamicin	2	76	19							1	19	37	9	1		9								
Macrolides - Erythromycin	16	76	26							17	22	9	2			2	24							

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

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

C. jejuni	Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Survey - national survey																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	48																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	48	1									32	13	2		1									
Tetracyclines - Tetracycline	2	48	41						5	1	1			1	4	36									
Fluoroquinolones - Ciprofloxacin	1	48	44				2	2						44											
Quinolones - Nalidixic acid	16	48	44										2	2			3	41							
Aminoglycosides - Streptomycin	2	48	8								32	8	2	1		5									
Aminoglycosides - Gentamicin	1	48	2						1	11	34	2													
Macrolides - Erythromycin	4	47	3							41	2	1					3								

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

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

C. coli	Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Survey - national survey																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	106																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	106	1									74	27	4		1								
Tetracyclines - Tetracycline	2	106	104						2				1		2	101								
Fluoroquinolones - Ciprofloxacin	1	106	101					2	3					101										
Quinolones - Nalidixic acid	16	106	101											5			14	87						
Aminoglycosides - Streptomycin	4	106	102									1	3	9		93								
Aminoglycosides - Gentamicin	2	106	59								2	45	44	1		14								
Macrolides - Erythromycin	16	105	70							9	14	10	2				70							

Table Antimicrobial susceptibility testing of C. coli in Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey - quantitative data [Dilution method]

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

C. coli	Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	12																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	12	0									1	10	1										
Tetracyclines - Tetracycline	2	12	12													12								
Fluoroquinolones - Ciprofloxacin	1	12	11					1						11										
Quinolones - Nalidixic acid	16	12	11											1			3	8						
Aminoglycosides - Streptomycin	4	12	11									1		1		10								
Aminoglycosides - Gentamicin	2	12	2								2	8				2								
Macrolides - Erythromycin	16	12	0								10	1	1											

Table Antimicrobial susceptibility testing of C. jejuni in Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey - quantitative data [Dilution method]

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

C. jejuni	Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	88																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	88	0									86	2												
Tetracyclines - Tetracycline	2	88	63						24		1			2	4	57									
Fluoroquinolones - Ciprofloxacin	1	88	52				3	26	7				2	50											
Quinolones - Nalidixic acid	16	88	52										7	24	5		4	48							
Aminoglycosides - Streptomycin	2	87	30								41	16	27	1		2									
Aminoglycosides - Gentamicin	1	88	11							6	71	11													
Macrolides - Erythromycin	4	88	0							85	3														

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

Test Method Used
Disc diffusion

Standard methods used for testing
NCCLS/CLSI M45-A2

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Fluoroquinolones	Ciprofloxacin	M45-A2		6
Quinolones	Nalidixic acid	M02-A10		6
Macrolides	Erythromycin	M45-A2		6
Cephalosporins	Cephalothin	M02-A10		6

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

Test Method Used
Broth dilution

Standard methods used for testing
EFSA

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used
Broth dilution

Standard methods used for testing
EFSA

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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 clinically affects cattle, but mainly ewes in Spain.

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

Listeria is a serious food safety issue, particularly
for pregnant women, the elderly, and those who are
immunocompromised in Spain. In year 2010 have been reported 129 human cases.

Recent actions taken to control the zoonoses

The activities are made according to Regulation (EC) 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. 129 cases was reporting in 2010

Results of the investigation

Listeriosis is most often found in young children 0-1 years old, especially babies and elder people. Reported Listeria spp. cases concerned Listeria monocytogenes.

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

In 2010, 129 cases of listeriosis has been comunicate to Microbiological Information System versus 118 in 2009.

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 or campylobacteriosis.

2.3.3 Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - at retail - Survey - EU baseline survey	L	Single	200 g	34	1	34	1	34	0	0
Cheeses, made from mixed milk from cows, sheep and/or goats - unspecified	F	Single	25 g	1185	27	785	12	400	14	1
Dairy products (excluding cheeses) - dairy products, not specified	F	Single	25 g	313	6	206	1	107	4	1
Dairy products (excluding cheeses) - ice-cream	F	Single	25 g	465	9	313	2	152	7	0

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES
L: NATIONAL REFERENCE LABORATORY

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Meat from bovine animals - fresh	F	Single	25 g	6	0	6	0			
Meat from bovine animals - meat products - cooked, ready-to-eat - at processing plant		---								
Meat from broilers (Gallus gallus) - fresh	F	Single	25 g	21	0	12	0	9	0	0
Meat from pig - fresh	F	Single	25 g	39	2	29	2	10	0	0
Egg products	F	Single	25 g	123	2	12	1	111	0	1
Fishery products, unspecified - ready-to-eat	F	Single	25 g	666	64	406	37	260	18	9
Fishery products, unspecified - smoked - at retail - Survey	L	Single	200 g	42	3	42	3	42	0	3
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat	F	Single	25 g	61	0	57	0	4	0	0
Meat from other animal species or not specified - meat preparation	F	Single	25 g	146	42	128	37	18	2	3
Meat from other animal species or not specified - meat products - cooked, ready-to-eat - at retail - Survey - EU baseline survey	L	Single	200 g	36	1	36	1	36	0	1
Meat from other animal species or not specified - minced meat	F	Single	25 g	114	37	92	32	22	1	4
Meat from other poultry species - meat products	F	Single	25 g	41	0	17	0	24	0	0
Meat from pig - meat products - unspecified, ready-to-eat	F	Single	25 g	942	97	487	47	455	7	43
Other processed food products and prepared dishes - unspecified - non-ready-to-eat foods	F	Single	25 g	2854	36	2241	36	613	0	0

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Other processed food products and prepared dishes - unspecified - ready-to-eat foods	F	Single	25 g	5306	19	1707	12	3599	6	1
Vegetables - pre-cut - ready-to-eat	F	Single	25 g	761	8	245	0	516	5	3
Vegetables - products	F	Single	25 g	153	19	85	0	68	16	3

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

L: NATIONAL REFERENCE LABORATORY

2.3.4 Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals)	A	Animal	783	17		17
Sheep [1)]	A	Animal	15	2		2
Rodents - wild - in total	A	Animal	40	3		3

Comments:

[1)] clinical investigation suspectes cases

Footnote:

A: Animal Health Services of Autonomous Communities

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.

In 2007-2010 national surveys have been performed in cattle for meat production at slaughterhouse under a herd based approach.

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

In cattle, the percentage of animals colonized by strain O157:H7 has been similar in last surveys.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 high percentage of animals colonized by strain O157:H7 in last years agree with growing of human incidence, but outbreaks of the disease are lower at the moment.

Recent actions taken to control the zoonoses

Surveillance of the disease according to Directive 2003/99/EEC. National surveys 2007-2010 in cattle for meat production.
Compulsory and voluntary monitoring programmes in raw meat of different 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.
- Method ELISA
- PCR-Bax

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
Outbreak reporting

Case definition

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

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.

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 Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from bovine animals - fresh - at slaughterhouse	F	Single	25 g	33	0			
Meat from bovine animals - fresh - at processing plant	F	Single	25 g	17	0			
Meat from bovine animals - fresh - at retail	F	Single	25 g	92	5	1		4
Meat from broilers (Gallus gallus) - fresh	F	Single	25 g	74	8	1		7
Meat from pig - fresh	F	Single	25 g	20	0			
Meat from sheep - fresh - at slaughterhouse	F	Single	25 g	1	0			
Meat from sheep - fresh - at processing plant	F	Single	25 g	0	0			
Meat from sheep - fresh - at retail	F	Single	25 g	12	1	1		
Milk, cows' - raw	F	Single	25 g	4	0			
Vegetables	F	Single	25 g	62	4			4
Dairy products (excluding cheeses)	F	Single	25 g	74	4			4
Eggs	F	Single	25 g	6	0			
Fishery products, unspecified	F	Single	25 g	597	25			25
Meat from bovine animals - meat products	F	Single	25 g	23	0			
Meat from goat - fresh	F	Single	25 g	12	0			

Table VT E. coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from pig - meat products	F	Single	25 g	160	1			1
Meat from poultry, unspecified - meat products	F	Single	25 g	14	1	1		
Milk, cows' - pasteurised milk	F	Single	25 g	13	0			
Other processed food products and prepared dishes	F	Single	25 g	1780	14	2		12

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

2.4.4 Escherichia coli, pathogenic in animals

A. Verotoxigenic Escherichia coli in cattle (bovine animals)

Monitoring system

Sampling strategy

Samples have been taken ramdomly (day of sampling each month) in 12 slaughterhouses (distribution of the samples according to the capacity of sacrifice of each slaughterhouse) placed in different regions of Spain and representative of the total volume of sacrifice of the country

Frequency of the sampling

Animals at slaughter (herd based approach)

from May to November

Type of specimen taken

Animals at slaughter (herd based approach)

Other: hair

Methods of sampling (description of sampling techniques)

Animals at slaughter (herd based approach)

One hair sample has been taken from one animal in all the slaughter batches in the day of sampling, with a maximun of 30 batches by slaughterhouse and day of sampling). Each batch belonged to different holdings.
Sampling has been performed in 12 slaughterhouses placed in the provinces of Barcelona(3), Valencia, Huesca, Lerida, Caceres,Madrid, Lugo, Pontevedra, Segovia and Ciudad Real. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain.
Hair was taken following EFSA technical specifications.

Case definition

Animals at slaughter (herd based approach)

isolation of VTEC (ISO 16.654:2001) and identification by PCR (Johnson,2001;Desmarcheiler,1998)

Diagnostic/analytical methods used

Animals at slaughter (herd based approach)

Other: detection of VTEC by Bacteriological method ISO 16654:2001 and identification by PCR (Johnson,2001;Desmarcheiler,1998), only for VTEC

Vaccination policy

In Spain a vaccination policy does not exist.
At farm, vaccines can be used by private veterinarians to control neonatal septicemia in calves.

Control program/mechanisms

The control program/strategies in place

Does not exist

Recent actions taken to control the zoonoses

National survey in cattle at slaughterhouse

Results of the investigation

Number os slaughter batches tested: 53
Number of slaughter batches positive: 10
Slaughter batch (herd) prevalence: 18,9% (95% CI:9,4;32,0%)

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

Table VT E. coli in animals

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Cattle (bovine animals) - calves (under 1 year) [1)]	M.A.R.M.	Slaughter batch	EFSA PROTOCOL	53	10	10		

Comments:

[1)] National survey

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 bovine tuberculosis has been based in the spread of the disease to humans. Human infection has been linked historically to raw milk consumption. At human 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 and control of fresh meat production is carried out by Autonomous Communities according to European legislation in force (hygiene package).

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

Spanish programmes for eradication on bovine tuberculosis in last years show the low level of decrease of the disease prevalence in cattle. In 2010 herd prevalence was 1.51%(2.14% in 2003, 1.80% in 2004, 1,54% in 2005, 1.76% in 2006 and 1.68% in 2007, 1.59% in 2008, 1,65% in 2009), with 96.49% of herds qualified as officially free(95.77% in 2003, 96,56% in 2004, 97.34% in 2005, 96.94% in 2006, 97,20% in 2007, 97,21% in 2008, 96,53% in 2009). Animal prevalence in 2010 was 0.36%(0.47% in 2003, 0.40% in 2004, 0.31% in 2005, 0.42% in 2006, 0,49% in 2007, 0.48% in 2008 and 0.41% in 2009).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 few human cases had been identified as tuberculosis by Mycobacterium bovis in the last years. The risk of transmission from animals to humans is very low.

Recent actions taken to control the zoonoses

Spanish Programme on Eradication of Bovine Tuberculosis 2010.
Milk control and fresh meat control production are developed according to european legislation in force (Hygiene Package).

Additional information

M. caprae has been isolated in 2005-2010 from cattle, goats, wild boards,foxes, wild ruminants.

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 were reported in the last years

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 on Eradication on Bovine Tuberculosis 2010, covering cattle according Directive 64/432/EEC(animals over six weeks of age)and goats living close to cattle. Testing is performed under supervision of competent authorities of Autonomous Comunities.At slaughterhouses samples are taken in suspicius animals and in animals with suspicius injures.Strategic use on gamma-interferon assay has been implemented since 2008 and consequently, an increase in the sensivity at animal level (intra-herd) has been applied. A total of 181.021 gamma-interferon tests have been performed in 2010.

Additionally, severe interpretation of skin test(SIT)has been applied in high prevelence areas, with 2 skin tests in OTF herds and at least 3 skin tests in non-OTF herds during 2010. These measures have increased the sensitivity at herd level as well.

More than 110.000 pre-movement tests have been performed in 2010.

Frequency of the sampling

Once a year at least, more frequent testing in not officially free herds (at least 3 tests)and in OTF herds in high prevalence areas (2 at least).

Pre-movement test in movements except if animals go to a closed fattening unit that exclusively send animals to a slaughterhouse.

Type of specimen taken

skin test, blood, organs/tissues

Methods of sampling (description of sampling techniques)

Intradermal skin test (SIT) is used in animals over 6 weeks of age. In infected herds, gamma interferon assay is used in parallel as supplementary test in animals over six months of age. In low prevalence areas, SICCT can be used if specificity problems are detected.

At slaughterhouses organs/tissues are taken from suspicius reactors animals (mainly from herds with OTF status suspended)and from injures found in routine post-mortem examination of animals slaughtered, according to the European legislation in force (Hygiene Package).

Case definition

skin test: positive and inconclusive results. In OTF herds also M. bovis isolation.

Gamma-interferon: positive results, cut-off value 0,05.

Organs/tissues:compatible lesions,auramine+, isolation or positive PCR

Diagnostic/analytical methods used

SIT, SICCT, agent isolation, PCR and gamma-interferon assay following criteria laying down by Annex B of Directive 64/432/EEC.

compatible lesions,auramine+, isolation or positive PCR, spoligotyping,VTNR

Vaccination policy

Forbidden

Other preventive measures than vaccination in place

Premovement test; Cleaning and disinfecting of positive holdings; Control of common grazing areas; Investigation of wildlife in some regions; Epidemiological investigations in breakdowns; inspections and official control of the field veterinarians.

Control program/mechanisms

The control program/strategies in place

Spain has an Eradication Programme approved for co-financing according to Decision 2009/883/CE
Legal basis of the programme measures is Council Directive 64/432/EEC,but with increased measures like:

- more frequent tests in high prevalence areas
- strategic use of gamma-interferon assay
- pre-movement test
- severe interpretation of SIT

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
Surveillance of wildlife
Inspections in restricted herds
Inspections of field veterinarians

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

Confirmation by isolation/PCR of M. bovis. If confirmed, withdrawal of OTF status by holding.
Epidemiological studies, spoligotyping of the strain and inclusion in the National Database micoDB.es.

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: 1,51%
Animal prevalence: 0,36%
Herd incidence: 0,85%
Status of herds: 96,49% 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 at herd level and at animal level in the country in 2010.Trend analysis show a decreasing trend between 2006 and 2010 (Mantel test for trend: $p< 0,05$).The annual rate of decrease is 2,94% (95% C.I. for relative change = -5.43 to -0.38%).
In dairy herds, the disease is close to eradication, with a herd prevalence of 0,49%.In conclusion, milk consumption can not be considered as a current source of infection in Spain,even more if it is assumed that cow milk is thermally treated.
In herds for meat production, herd prevalence is 1,79%. 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.
The increase in the diagnostic sensitivity in 2008-2010 has important influence in the herd prevalence and incidence, that are higher than other programmes that use less sensitivity diagnostic strategies. Then, comparations between programmes with different diagnostic strategies have to be carefully explained and interpreted.

Table Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified
Badgers [1)]	A	Animal	69	3	3		
Goats	A	Animal	117401	1403	1403		
Cantabrian chamois - wild - from hunting - Surveillance [2)]	A	Animal	50	0			
Deer - wild - fallow deer - from hunting - Surveillance [3)]	A	Animal	480	41	41		
Deer - wild - red deer - from hunting - Surveillance [4)]	A	Animal	1938	84	84		
Deer - wild - roe deer - from hunting - Surveillance [5)]	A	Animal	601	0			
Foxes - wild - from hunting [6)]	A	Animal	31	0			
Mouflons - wild - from hunting [7)]	A	Animal	7	1	1		
Wild boars - wild - from hunting - Surveillance [8)]	A	Animal	3629	436	436		

Comments:

[1)] MICROBIOLOGY

[2)] MICROBIOLOGY

[3)] MICROBIOLOGY

[4)] MICROBIOLOGY

[5)] MICROBIOLOGY

Table Tuberculosis in other animals

Comments:

[6)] MICROBIOLOGY

[7)] MICROBIOLOGY

[8)] MICROBIOLOGY

Footnote:

A: Animal Health Services of Autonomous Communities

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

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Andalucía	7525	6879	6381	545	324	58	10.64	92.76	8.54	5.08
Aragón	3086	2132	2044	25	12	0	0	95.87	1.22	.59
Asturias	19467	18806	18806	34	21	13	38.24	100	.18	.11
Canarias	1105	1105	1105	0	0	0	N.A.	100	0	0
Cantabria	7909	7876	7876	62	41	7	11.29	100	.79	.52
Castilla y León	14811	14364	14364	377	262	20	5.31	100	2.62	1.82
Castilla-La Mancha	3164	2083	2083	148	29	4	2.7	100	7.11	1.39
Cataluña	5362	4118	4056	24	18	5	20.83	98.49	.59	.44
Extremadura	10318	9635	9617	292	122	10	3.42	99.81	3.04	1.27
Galicia	46998	46665	39313	110	70	16	14.55	84.25	.28	.18
Illes Balears	598	598	598	1	1	0	0	100	.17	.17
La Rioja	311	263	263	3	3	0	0	100	1.14	1.14
Madrid	1469	1376	1376	75	44	11	14.67	100	5.45	3.2

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

Murcia	362	315	315	5	5	0	0	100	1.59	1.59
Navarra	1750	1642	1642	11	10	0	0	100	.67	.61
País Vasco	6786	6786	6013	22	17	4	18.18	88.61	.37	.28
Valencia / València	602	602	547	21	11	0	0	90.86	3.84	2.01
Total : [1)]	131623	125245	116399	1755	990	148	8.43	92.94	1.51	.85
Total - 1	139996	126854	119664	1970	1231	155	7.87	94.33	1.65	1.03

Comments:

[1)] N.A.

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

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Andalucía	547816	536892	516552	516552	7509	7488	9508	96.21	1.45
Aragón	298825	208039	206215	206215	352	352	352	99.12	.17
Asturias	379129	368190	368190	368190	223	223	884	100	.06
Canarias	17620	17620	17620	17620	0	0	7	100	0
Cantabria	284221	283420	283420	283420	775	758	893	100	.27
Castilla y León	1107206	1107206	1107206	1107206	2345	2124	6211	100	.21
Castilla-La Mancha	406880	240913	240913	240913	2389	2389	2709	100	.99
Cataluña	520364	390188	388006	292125	251	241	310	99.44	.06
Extremadura	1012767	789925	691009	691009	2401	2381	2822	87.48	.35
Galicia	956310	766982	766982	766982	489	489	841	100	.06
Illes Balears	33334	31566	31566	25035	1	1	3	100	0
La Rioja	36274	25781	25781	25781	112	107	107	100	.43
Madrid	91222	81183	81183	81183	589	589	873	100	.73

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

Murcia	64505	55959	55959	55959	5	5	5	100	.01
Navarra	109255	95900	95843	95843	60	82	81	99.94	.06
País Vasco	145461	122340	116091	116091	51	57	103	94.89	.04
Valencia / València	52041	52041	50683	43243	521	331	331	97.39	1.03
Total : [1)]	6063230	5174145	5043219	4933367	18073	17617	26040	97.47	.36
Total - 1	6152042	5271826	4946025	4946272	20054	19882	28937	93.82	.41

Comments:

[1)] N.A.

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

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Andalucía	6866	506890	103	3879	238	29034	440	33589	19	2226	0	0	6066	438162
Aragón	3086	298825	1014	96141	6	1401	0	0	11	1208	0	0	2055	200075
Asturias	18806	368190	0	0	11	668	221	1239	16	1115	0	0	18558	365168
Canarias	1105	17620	0	0	0	0	0	0	0	0	0	0	1105	17620
Cantabria	7876	283420	32	326	11	679	9	694	0	0	0	0	7824	281721
Castilla y León	14349	1061263	29	2671	390	55133	459	55821	1	185	0	0	13470	947453
Castilla-La Mancha	2083	240913	0	0	125	25301	71	8457	8	831	0	0	1879	206324
Cataluña	4119	405117	2	35	20	2242	9	500	110	13583	0	0	3978	388757
Extremadura	9327	989482	0	0	74	20247	374	46551	35	5003	0	0	8844	917681
Galicia	45027	946525	49	178	2	32	248	4031	55	2336	0	0	44673	939948
Illes Balears	594	33221	0	0	0	0	4	80	0	0	0	0	590	33141
La Rioja	263	25781	0	0	1	138	0	0	0	0	0	0	262	25643
Madrid	1376	81183	0	0	37	2818	3	1617	0	0	0	0	1336	76748

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

Murcia	305	46760	0	0	0	0	9	256	7	4890	0	0	289	41614
Navarra	1642	95900	0	0	4	242	0	0	64	6109	0	0	1574	89549
País Vasco	6789	145461	0	0	0	0	0	0	16	260	0	0	6773	145201
Valencia / València	602	52041	8	57	3	55	15	571	12	661	0	0	564	50697
Total : [1)]	124215	5598592	1237	103287	922	137990	1862	153406	354	38407	0	0	119840	5165502
Total - 1	129550	5522833	1337	72823	940	146804	1614	165091	603	64289	0	0	125056	5073816

Comments:

[1)] N.A.

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 more frecuent source of infection for human beins have been contacts with goats and sheeps, but raw milk products consumption 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 milk control and control of fresh meat production is carried out by Autonomous Communities according to the european legislation in force (Hygiene Package).
Monitoring and Eradication Programmes in cattle, goats and sheep 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.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 trend, in general, of the disease prevalence in domestic animals. In 2010 herd prevalence was 0.20%(1.45% in 2003; 1.54% in 2004; 1.25% in 2005;0,84% in 2006; 0,57% in 2007; 0,40% in 2008; 0.32% in 2009) in cattle and 0.89% (5.58% in 2003; 5.12% in 2004; 4.43% in 2005; 3.20% in 2006: 2,79% in 2007; 2,11% in 2008; 1.64% in 2009) in goats and sheep.Animal prevalence was 0.05% (0.45% in 2003; 0,59% in 2004; 0.37% in 2005;0.22% in 2006; 0,13% in 2007; 0,09% in 2008;0.07% in 2009) in cattle and 0.07% (0.87% in 2003; 0,62% in 2004; 0.45% in 2005; 0,34% in 2006; 0,25% in 2007; 0,15% in 2008; 0.11% im 2009) in goats and sheep.
Raw milk only can be consumed if produced in herds free or officially free.

Recent actions taken to control the zoonoses

Spanish Programme on eradication of bovine brucellosis 2010.
Spanish Programme on eradication of brucellosis in goats and sheep 2010.
Milk control and control of the production of fresh meat in accordance to european legislation in force (Hygiene Package).
Furthermore, the Spanish Royal Decree 640/2006, of May 26, 2006, laying down specific implementation conditions of the Community rules concernig hygiene subjets, as well as foodstuff's production and commercialisation, establishes specific conditions regarding to milk and dairy milk.

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.
2010 is the lowest year in human cases (111), rate 0,24 per 100,000 population.

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

In 2010, we observed a period marked by sustained historical minimum values.
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

Table Brucella in food

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis	Brucella spp., unspecified
Dairy products (excluding cheeses)	F	Single	43	0				

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES.

2.6.4 Brucella in animals

A. Brucella abortus in bovine animals

Status as officially free of bovine brucellosis during the reporting year

Free regions

The 2 provinces of the Canary Islands since june 2009.

Monitoring system

Sampling strategy

Sampling strategy is defined in Spanish Programme for Eradication of Bovine Brucellosis, covering cattle according to Directive 64/432/EEC(animals over 12 months of age). Test are carried out by competent authorities of Autonomous Communities.At slaughterhouses samples are taken in suspicius animals, mainly in positive animals coming from free or officially free herds (suspended estatus) to confirm the disease.

Frequency of the sampling

Twice a year at least. Only regions with low herd prevalence can apply a reduction of the frequency following Annex A.II.2 of Council Directive 64/432/CEE.
Pre-movement test.

Type of specimen taken

serum, blood, milk, organs/tissues,swabs

Methods of sampling (description of sampling techniques)

In animals over one year of age Rose Bengal as screening test or i-ELISA in milk; and Complement Fixation test or i-ELISA in serum as confirmatory test.As complementary test competition ELISA has been used as well.
At slaughterhouses swabs, organs and tissues are taken in suspicius animals,mainly from herds with free or officially free status suspended, to isolate Brucella and confirm the infection.

Case definition

Positive result to Rose Bengal test confirmed by positive result to Complement Fixation test or ELISA. In high prevalence areas, positive result to any official test. In free or officially free herds Brucella abortus isolation as well.
Positive result of i-Elisa in milk confirmed by serological methods.

Diagnostic/analytical methods used

Rose Bengal test ,agent isolation,serum i-ELISA, milk i-ELISA, c-ELISA and Complement Fixation test, following criteria laying down by Annex B of Directive 64/432/EEC

Vaccination policy

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

Other preventive measures than vaccination in place

Pre-movement test
Cleaning and disinfecting of positive holdings
Control of common grazing areas
Investigation of possible wildlife reservoirs in some regions

Epidemiological investigations in breakdowns
Inspections and official control of field veterinarians
Inspections of restricted herds.

Control program/mechanisms

The control program/strategies in place

Spain has an Eradication and Monitoring Programme approved for co-financing according to Decision 2009/883/EC.
Legal basis of the programme measures is Directive 64/432/EEC and Royal Decree 2611/1996, at last ammended. Increased measures have been implemented:

pre-movement test
stamping out in low prevalence areas
vaccination in high prevalence areas
more frequent testing
inspections and official controls of field veterinarians
inspections of restricted herds

Recent actions taken to control the zoonoses

More frecuent testing and pre-movement test
Compulsory slaughter of all animals in herds with high incidence or repeating positive results, and in low prevalence areas if infection is confirmed
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

Confirmation of the infection by complement fixation test and culture, and if herd is free or officially free,status is suspended and if isolation of Brucella abortus is confirmed, lost of status by holding and, if the herd is placed in a low plevalence area, depopulation.

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: 0,20%
Animal prevalence: 0,05%
Herd incidence: 0,13%
Herd status: 94,52% OBF; 2,85% BF

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

Data obtained by the implementation of Spanish Eradication and Monitoring Programme on Bovine Brucellosis show a moderate increase of the disease in the country in 2004, following by an important decrease in 2005, 2006 and mainly in 2007, 2008, 2009 and 2010.
Herd prevalence: 2,30%(2002);1,45%(2003);1,54(2004); 1,25%(2005); 0,84%(2006); 0,57 (2007); 0,40(2008); 0,32%(2009); 0,20%(2010).
Animal prevalence: 0,39%(2002);0,45%(2003);0,59%(2004); 0,37% (2005); 0,22(2006); 0,13(2007); 0,09(2008); 0,07(2009); 0.05%(2010).

Disease is close to eradication in dairy herds.Herd prevalence is below 1%(0,04%).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 herds for meat production, herd prevalence is below 1% as well (0,24%).

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. melitensis.

B. Brucella melitensis in goats

Status as officially free of caprine brucellosis during the reporting year

Free regions

Canary Islands by Decision 2001/292/EC

Balearic Islands by Decision 2010/695/EU

Monitoring system

Sampling strategy

see brucella melitensis in sheep

Frequency of the sampling

see brucella melitensis in sheep

Methods of sampling (description of sampling techniques)

see brucella melitensis in sheep

Case definition

see brucella melitensis in sheep

Diagnostic/analytical methods used

see brucella melitensis in sheep

Vaccination policy

see brucella melitensis in sheep

Other preventive measures than vaccination in place

see brucella melitensis in sheep

Control program/mechanisms

The control program/strategies in place

see brucella melitensis in sheep

Recent actions taken to control the zoonoses

see brucella melitensis in sheep

Suggestions to the Community for the actions to be taken

see brucella melitensis in sheep

Measures in case of the positive findings or single cases

see brucella melitensis in sheep

Notification system in place

see brucella melitensis in sheep

Results of the investigation

see brucella melitensis in sheep

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

see brucella melitensis in sheep

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

see brucella melitensis in sheep

C. Brucella melitensis in sheep

Status as officially free of ovine brucellosis during the reporting year

Free regions

Canary Islands by Decision 2001/292/EC
Balearic Islands by Decision 2010/695/EU

Monitoring system

Sampling strategy

Sampling strategy is defined in Spanish Programme on eradication and monitoring of brucellosis in sheep and goats, according to Directive 91/68/EEC:
- animals over 6 months of age if not vaccined
- animals over 18 months of age if vaccined
Tests are carried out by competent authorities of Autonomous Communities. At slaughterhouse samples are taken in suspicius animals, mainly in positive animals coming from free or oficially free herds(suspended status)to confirm de disease.

Frequency of the sampling

Once a year at least in herds free or officially free.
Twice a year at least in non qualified herds.

Type of specimen taken

serum, blood, milk, organs/tissues

Methods of sampling (description of sampling techniques)

At herd level, in animals over 6 or 18 months of age Rose Bengal as screening test and Complement Fixation as confirmatory test.
At slaugterhouses or at holdings, swabs, milk, organs or tissues are taken in suspicious animals, mainly from herds with free or officially free status suspended, to isolate Brucella and confirm the infection.

Case definition

Positive result to Rose Bengal confirmed by positive result to Complement Fixation.In infecterd herds, positive results to any official test.
In free or officially free herds Brucella melitensis isolation as well.

Diagnostic/analytical methods used

Rose Bengal test, 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 gain oficially free status in low prevalence areas)
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

Pre-movement test in trashumance in certain areas
Cleaning and desinfecting of positive holdings
Control of common grazing areas
Epidemiological investigations in breakdowns
Inspections and official control of the field veterinarians

Control program/mechanisms

The control program/strategies in place

Spain has an Eradication Programme approved for co-financing according to Decision 2009/883/EC
Legal basis of the programme measures are Directive 91/68/EEC and Royal Decree 1941/2004.

Recent actions taken to control the zoonoses

More frequent testing in non qualified herds
Compulsory slaughter 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 and into other vaccines. Authoritation of new tests (ELISA,FPA)

Measures in case of the positive findings or single cases

Confirmation by complement fixation test, and if herd free or officially free, status is suspended and if isolation of Brucella melitensis, lost of status by holding and depopulation if herd is placed in low prevalence area

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: 0.89%
Animal prevalence: 0,07%
Herd incidence: 0,52%
Herd status: 60,12% OMF; 33,64% free

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

Data obtained by implementation of Spanish Programme for Eradication and Monitoring of Brucellosis in Sheep and Goats show continous decreasing trend 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);3,20%(2006); 2,79%(2007); 2,11%(2008);1,64%(2009); 0,89% (2010).
Animal prevalence:0,98%(2002);0,87%(2003);0,61%(2004);0,45%(2005);0,34%(2006);0,25%(2007); 0,15%(2008); 0,11%(2009); 0,07% (2010).
Explanation of the still high prevalence in some regions can be found in special managemment of this type of animals: ranching systems, common grazing, trashumance... Relative high influence have the limitations of the diagnostic tests used in sheep and goats.

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, caused by direct contact between humans and infected herds, as a professional disease (farmers, veterinary surgeons...).

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis	Brucella spp., unspecified
Cantabrian chamois - wild - from hunting [1)]	A	Animal	150	0				
Deer - wild - fallow deer - from hunting [2)]	A	Animal	412	0				
Deer - wild - red deer - from hunting [3)]	A	Animal	1641	3				3
Deer - wild - roe deer - from hunting [4)]	A	Animal	550	0				
Dromedaries - farmed - at farm - Monitoring [5)]	A	Animal	403	0				
Wild boars - wild - from hunting [6)]	A	Animal	2089	17	7		10	

Comments:

[1)] MICROBIOLOGY

[2)] MICROBIOLOGY

[3)] MICROBIOLOGY

[4)] MICROBIOLOGY

[5)] MICROBIOLOGY

[6)] MICROBIOLOGY

Footnote:

A: ANIMAL HEALTH SERVICES OF AUTONOMOUS COMMUNITIES

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

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Andalucía	7506	7437	6217	7	3	2	28.57	83.6	.11	.05
Aragón	3086	2120	1665	0	0	0	N.A.	78.54	0	0
Asturias	19467	19467	19467	0	0	0	N.A.	100	0	0
Canarias	1105	1105	415	0	0	0	N.A.	37.56	0	0
Cantabria	7909	7876	7876	43	36	2	4.65	100	.55	.46
Castilla y León	14811	14362	14362	109	66	12	11.01	100	.76	.46
Castilla-La Mancha	3164	2039	2039	5	2	3	60	100	.25	.1
Cataluña	5362	4118	4066	4	3	1	25	98.74	.1	.07
Extremadura	10318	9635	9635	50	26	5	10	100	.52	.27
Galicia	46998	46698	39377	1	1	1	100	84.32	0	0
Illes Balears	598	598	598	0	0	0	N.A.	100	0	0
La Rioja	311	311	310	0	0	0	N.A.	99.68	0	0
Madrid	1469	1376	1376	9	9	2	22.22	100	.65	.65

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

Murcia	362	326	326	0	0	0	N.A.	100	0	0
Navarra	1750	1642	1642	0	0	0	N.A.	100	0	0
País Vasco	6786	6786	5798	0	0	0	N.A.	85.44	0	0
Valencia / València	601	601	494	1	1	0	0	82.2	.2	.2
Total : [1)]	131603	126497	115663	229	147	28	12.23	91.44	.2	.13
Total - 1	140298	126840	118869	379	253	42	11.08	93.72	.32	.21

Comments:

[1)] N.A.

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

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Andalucía	18093	17797	15639	499	319	6	1.2	87.87	3.19	2.04
Aragón	4406	4406	4406	5	4	2	40	100	.11	.09
Asturias	7042	7042	7042	0	0	0	N.A.	100	0	0
Canarias	4130	4130	1247	0	0	0	N.A.	30.19	0	0
Cantabria	4287	4285	4285	4	2	0	0	100	.09	.05
Castilla y León	10456	10327	10327	10	8	2	20	100	.1	.08
Castilla-La Mancha	6779	6390	6390	161	102	4	2.48	100	2.52	1.6
Cataluña	3586	3446	3398	57	35	1	1.75	98.61	1.68	1.03
Extremadura	16198	14881	14881	58	23	5	8.62	100	.39	.15
Galicia	24485	24485	23062	0	0	0	N.A.	94.19	0	0
Illes Balears	4380	4380	1841	0	0	0	N.A.	42.03	0	0
La Rioja	454	421	420	2	2	0	0	99.76	.48	.48
Madrid	699	675	675	9	8	2	22.22	100	1.33	1.19

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

Murcia	2352	2194	2194	76	34	0	0	100	3.46	1.55
Navarra	2316	2298	2172	0	0	0	N.A.	94.52	0	0
País Vasco	8192	8192	6823	0	0	0	N.A.	83.29	0	0
Valencia / València	1567	1508	1379	61	12	0	0	91.45	4.42	.87
Total : [1)]	119422	116857	106181	942	549	22	2.34	90.86	.89	.52
Total - 1	122703	119777	110140	1801	1187	73	4.05	91.95	1.64	1.08

Comments:

[1)] N.A.

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

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Andalucía	539997	534044	376274	376274	36	45	220	70.46	.01
Aragón	298825	82715	82660	82660	0	0	9	99.93	0
Asturias	379129	288532	288532	288532	0	0	76	100	0
Canarias	17620	17620	9976	9976	0	0	0	56.62	0
Cantabria	284221	238751	238751	238751	65	65	379	100	.03
Castilla y León	1107206	1049043	828307	828307	932	926	2932	78.96	.11
Castilla-La Mancha	406880	158991	158991	158991	44	44	486	100	.03
Cataluña	520364	195062	193290	189570	17	17	40	99.09	.01
Extremadura	1200685	545426	535092	535092	631	629	748	98.11	.12
Galicia	956310	681630	681630	681630	1	1	30	100	0
Illes Balears	33436	19560	19560	4074	0	0	0	100	0
La Rioja	36274	21972	21965	21965	0	0	0	99.97	0
Madrid	90637	78076	78076	78076	33	33	58	100	.04

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

Murcia	64505	12641	12641	12641	0	0	0	100	0
Navarra	109255	69870	69870	69870	0	5	5	100	0
País Vasco	145461	107760	98274	92865	0	0	0	91.2	0
Valencia / València	52041	52041	41266	30785	2	2	2	79.3	0
Total : [1)]	6242846	4153734	3735155	3700059	1761	1767	4985	89.92	.05
Total - 1	6257244	4819418	4336564	4166090	3114	3300	8901	89.98	.07

Comments:

[1)] N.A.

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

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Andalucía	3258622	2922705	2754289	2370785	4954	4924	4711	94.24	.18
Aragón	1704033	1393493	1393493	1393493	14	14	1478	100	0
Asturias	103570	103570	103570	103570	0	0	2	100	0
Canarias	368065	187949	187949	43467	0	0	0	100	0
Cantabria	85343	85343	85343	85343	16	16	39	100	.02
Castilla y León	3302915	3302915	3302915	1164253	125	125	709	100	0
Castilla-La Mancha	3144041	2590765	2590765	2590765	2348	2348	6074	100	.09
Cataluña	629800	482000	479425	479425	840	803	1512	99.47	.18
Extremadura	4614596	3328923	1250145	1250145	810	749	3202	37.55	.06
Galicia	302605	265637	265637	265637	0	0	66	100	0
Illes Balears	362927	91249	91249	48060	0	0	0	100	0
La Rioja	125652	116237	116158	116158	2	2	2	99.93	0
Madrid	95647	86484	86480	86480	115	115	269	100	.13

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

Murcia	755371	493728	493728	493728	1106	990	990	100	.22
Navarra	599321	591830	587331	192794	0	16	16	99.24	0
País Vasco	315507	206140	167807	167807	0	0	0	81.4	0
Valencia / València	459829	450866	424108	318763	263	202	347	94.07	.06
Total : [1)]	20227844	16699834	14380392	11170673	10593	10304	19417	86.11	.07
Total - 1	21317236	17875330	15021497	13881781	16234	15974	42407	84.03	.11

Comments:

[1)] N.A.

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

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Andalucía	7436	533331	682	29727	18	1366	130	5642	1	7	0	0	6605	496589
Aragón	3086	298825	1014	96350	0	0	0	0	1	55	308	24259	1763	178161
Asturias	19467	379129	0	0	0	0	157	622	1	100	0	0	19309	378407
Canarias	1105	17620	0	0	0	0	0	0	0	0	0	0	1105	17620
Cantabria	7876	238751	34	362	18	1763	5	259	13	585	1	99	7805	235683
Castilla y León	14365	1062617	28	2432	59	8348	249	24472	1	185	2213	189253	11815	837927
Castilla-La Mancha	2039	158991	0	0	3	251	16	565	1	252	0	0	2019	157923
Cataluña	4119	404995	2	35	3	214	10	194	149	12357	0	0	3955	392195
Extremadura	9327	1145562	0	0	18	3861	126	13212	47	9327	1061	122812	8075	996350
Galicia	45027	946525	49	178	0	0	364	3492	11	1344	0	0	44603	941511
Illes Balears	594	33248	0	0	0	0	0	0	1	9	0	0	593	33239
La Rioja	311	21972	0	0	0	0	0	0	1	7	0	0	310	21965
Madrid	1376	78076	0	0	2	106	0	0	0	0	0	0	1374	77970

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

Murcia	314	48671	0	0	0	0	3	58	0	0	0	0	311	48613
Navarra	1747	106836	0	0	0	0	0	0	64	4563	0	0	1683	102273
País Vasco	6786	145461	0	0	0	0	0	0	0	0	0	0	6786	145461
Valencia / València	601	52041	9	59	0	0	8	36	0	0	2	54	582	51892
Total : [1)]	125576	5672651	1818	129143	121	15909	1068	48552	291	28791	3585	336477	118693	5113779
Total - 1	128776	5516670	1216	70200	229	24410	896	53434	535	56901	3826	340712	122074	4971003

Comments:

[1)] N.A.

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

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Andalucía	17876	3231796	868	52230	218	97495	1683	230120	51	19873	11943	2389485	3113	442593
Aragón	4406	1704033	0	0	2	1287	0	0	0	0	4404	1702746	0	0
Asturias	7042	103570	0	0	0	0	431	1605	0	0	0	0	6611	101965
Canarias	4130	368065	0	0	0	0	0	0	0	0	0	0	4130	368065
Cantabria	4285	85343	0	0	3	332	0	0	0	0	0	0	4282	85011
Castilla y León	11015	3506586	39	2748	6	2385	295	37725	9	2674	44	17448	10622	3443606
Castilla-La Mancha	6390	2590765	0	0	58	94552	114	95814	74	43114	2704	977529	3440	1379756
Cataluña	3442	537285	33	678	20	14278	130	10407	39	10438	2689	431865	531	69619
Extremadura	14640	4396448	0	0	18	13370	893	85415	59	5018	13553	4197145	117	95500
Galicia	23628	265030	62	489	0	0	1629	10104	17	294	0	0	21920	254143
Illes Balears	4380	362927	0	0	0	0	0	0	0	0	0	0	4380	362927
La Rioja	421	116237	0	0	0	0	0	0	1	79	0	0	420	116158
Madrid	675	86484	0	0	2	1376	2	1037	0	0	609	74883	62	9188

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

Murcia	2194	476810	0	0	56	38654	212	57124	33	12002	1794	328144	99	40886
Navarra	2298	591830	2	621	0	0	49	615	92	3921	468	347241	1687	239432
País Vasco	8192	315507	0	0	0	0	0	0	2	63	0	0	8190	315444
Valencia / València	1508	450866	7	1574	3	2273	47	6253	11	2874	988	330540	452	107352
Total : [1)]	116522	19189582	1011	58340	386	266002	5485	536219	388	100350	39196	10797026	70056	7431645
Total - 1	118826	20165024	1012	135887	628	379407	4241	659992	614	182384	40523	11448627	71808	7358727

Comments:

[1)] N.A.

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 in humans. It is based on the number of incident cases sent by hospital laboratories to Microbiological Information System (National Centre of Epidemiology).

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

Survey on the Incidence of Yersinia enterocolitica Infection in humans in Spain showing that in 2010 325 cases of enteric infections by Y enterocolitica was comunicatte.

At animal level, a national survey 2010 in pigs detected Y. enterocolítica in 38,9% of the slaughter batches tested. All the strains belong to biotype 4 serotype O:3.

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). Controls must be established at all stages of production, processing and distribution. To this end, business operators are required to apply appropriate systems and procedures.

At animal level, national surveys have been performed in pigs at slaugtherhouse in 2007-2010.

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

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

Results of the investigation

The number of cases of Y. enterocolitica reported
has increased steadily since it was made notifiable in 1989.
In 2010 325 cases has been reported versus 247 in 2009.

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

Infants and young adults are particularly likely to be infected. More than 50% are in the groups less of five years.
It is usually transmitted to humans via consumption of food contaminated with animal feces.

Relevance as zoonotic disease

Enteric yersiniosis can be transmitted between animals and humans.
Yersiniosis have a high relevance as zoonotic disease.

2.7.3 Yersinia in foodstuffs

Table Yersinia in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp., unspecified	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - Y. enterocolitica, unspecified
Meat from bovine animals - fresh	F	Single	25 g	5	2	2					2
Meat from bovine animals - meat products	F	Single	25 g	31	0	0					
Meat from pig - fresh	F	Single	0	0	0	0	0	0			0
Meat from pig - meat products	F	Single	25 g	2	2	2					2
Meat from broilers (Gallus gallus) - fresh	F	Single	25 g	15	7	7					7
Meat from other animal species or not specified - fresh	F	Single	25 g	24	6	6					6
Meat from other poultry species - fresh	F	Single	25 g	15	4	4					4
Meat from pig - fresh - at processing plant	F	Single	25 g	5	0						
Meat from pig - fresh - at retail	F	Single	25 g	78	13	11		2			11
Meat from pig - fresh - at slaughterhouse	F	Single	25 g	86	1	1					1
Meat, mixed meat - meat preparation	F	Single	25 g	129	30	30					30
Meat, mixed meat - minced meat	F	Single	25 g	18	0						

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTOMOUS COMMUNITIES
The diagnostic method used for most of the investigations reported is ISO 10273:2003.

The following amendments were made:

Date of Modification	Row name	Column name	Old value	New value
2012-01-13	Meat from pig - fresh	Sample weight	25 g	0
	Meat from pig - fresh	Units tested	169	0
	Meat from pig - fresh	Y. enterocolitica	12	0
	Meat from pig - fresh	Y. pseudotuberculosis		0
	Meat from pig - fresh	Yersinia spp., unspecified	2	0
	Meat from pig - fresh	Y. enterocolitica - Y. enterocolitica, unspecified	12	0
	Meat from pig - fresh	Total units positive for Yersinia	14	0
	Meat from pig - fresh - at retail	Sample weight		25 g
	Meat from pig - fresh - at retail	Units tested		78
	Meat from pig - fresh - at retail	Y. enterocolitica		11
	Meat from pig - fresh - at retail	Sampling unit		Single
	Meat from pig - fresh - at retail	Source of information		F
	Meat from pig - fresh - at retail	Total units positive for Yersinia		13
	Meat from pig - fresh - at retail	Yersinia spp., unspecified		2
	Meat from pig - fresh - at retail	Y. enterocolitica - Y. enterocolitica, unspecified		11

Date of Modification	Row name	Column name	Old value	New value
2012-01-13	Meat from pig - fresh - at processing plant	Sample weight		25 g
	Meat from pig - fresh - at processing plant	Source of information		F
	Meat from pig - fresh - at processing plant	Units tested		5
	Meat from pig - fresh - at processing plant	Sampling unit		Single
	Meat from pig - fresh - at processing plant	Total units positive for Yersinia		0
	Meat from pig - fresh - at slaughterhouse	Y. enterocolitica - Y. enterocolitica, unspecified		1
	Meat from pig - fresh - at slaughterhouse	Units tested		86
	Meat from pig - fresh - at slaughterhouse	Total units positive for Yersinia		1
	Meat from pig - fresh - at slaughterhouse	Y. enterocolitica		1
	Meat from pig - fresh - at slaughterhouse	Sampling unit		Single
	Meat from pig - fresh - at slaughterhouse	Sample weight		25 g
	Meat from pig - fresh - at slaughterhouse	Source of information		F

2.7.4 Yersinia in animals

A. Yersinia enterocolitica in pigs

Monitoring system

Sampling strategy

Animals at slaughter (herd based approach)

Sampling has been performed ramdomly (day of sampling each month)in 14 slaughterhouses (according to the capacity of sacrifice of each slaughterhouse) placed in the provinces of Cuenca, Barcelona(3),Ciudad Real, Murcia, Pontevedra, Burgos, Leon, Madrid, Málaga, Gerona, Huesca and Lérida. These slaughterhouses have a high volume of activity, representing an important part of all the fattening pigs sacrified in Spain.

Frequency of the sampling

Animals at slaughter (herd based approach)

between May and November

Type of specimen taken

Animals at slaughter (herd based approach)

Organs:tonsils

Methods of sampling (description of sampling techniques)

Animals at slaughter (herd based approach)

The tonsils of one animal by slaughter batch with 10 animals or more have been taken, with a maximun of 30 slaughter batches by slaughterhouse and day and month of sampling.Samples were refrigerated immediatly and sent to the laboratory and analyzed within 24 hours.

Case definition

Animals at slaughter (herd based approach)

a slaughter batch is considered as positive if isolation of Yersinia by bacteriological method

Diagnostic/analytical methods used

Animals at slaughter (herd based approach)

Bacteriological method: ISO 10273:2003

Results of the investigation

Number of slaughter batches analyzed: 213
Number of slaughter batches positive: 83
Slaughter batch prevalence: 38,9% (CI 95%: 32,4-45,9)

Table Yersinia in animals

	Source of information	Sampling unit	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp., unspecified	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - Y. enterocolitica, unspecified
Pigs [1)]	M.A.R.M.	Slaughter batch	213	83	83			83		

Comments:

[1)] National survey

Footnote:

ALL ISOLATES BELONG TO BIOTYPE 4

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 killed in hunting or pigs slaughtered at home and which carcasses has not been examinated post-mortem.

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:
Examination of fresh meat and killed in hunting according to European legislation in force:
Commission Regulation (EC) Number 2075/2005 of December 5, 2005 laying down specific rules on official controls for trichinella in meat and Commission Regulation (EC) Number 1665/2006 amending Comission Regulation (EC) Number 2075/2005)

Domestic killing for self consumption and wild game meat to be sold at retail is regulated by the Spanish Royal Decree 640/2006, of May 26, 2006, laying down specific implementation conditions of the Communities rules concerning hygiene subjets, as well as foodstuff's production and commercialisation.

According to article seven of the Commission Regulation (EC) Number 2075/2005 of December 5, 2005, laying down specific rules on official controls for Trichinella in meat, Spain has prepared a contingency plan outlining all action to be taken when samples referred to in articles 2 and 16 test are positive to Trichinella. This plan includes details covering:

(a)traceability of infested carcass(s);
(b)measures for dealing with infested carcass(s) and parts thereof;
(c)investigation of the source of investigation and any spreading among wildlife;
(d)any measures to be taken at retail or consumer level;
(e)measures to be taken where the infested carcass(s) cannot be identified at the slaughterhouse;
(f)determination of the Triquinella species involved.

In Spain the Triquinella examination is compulsory for meat from trichinella susceptible species, including domestic killing for self-consumption.

2.8.2 Trichinellosis in humans

A. Trichinellosis in humans

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://www.isciii.es/jsps/centros/epidemiologia/boletinesSemanal.jsp
Outbreak investigations as well as necessary control measures are carried out by the health authorities of the autonomous regions.

Case definition

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

Notification system in place

Outbreak 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 food outbreak 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.

History of the disease and/or infection in the country

Trichinellosis is a notifiable zoonosis, which causes several 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.

Description of the positive cases detected during the reporting year

The majority of human trichinellosis is linked to the consumption of undercooked or raw pig or wild boar 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 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

Relevance as zoonotic disease

high

2.8.3 Trichinella in animals

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified	T. britovi
Foxes [1)]	F	Animal	1	0			
Pigs [2)]	f	Animal	53485	0			
Solipeds, domestic - horses	F	Animal	33069	0			
Wild boars - wild	F, L	Animal	78571	160	30	119	11
Deer [3)]	F	Animal	18	0			
Pigs - at slaughterhouse [4)]	F,L	Animal	41224864	2		2	

Comments:

[1)] At game handling establishment

[2)] Domestic production

[3)] At game handling establishment

[4)] positive animals not raised under controlled housing conditions

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES (RESULTS OF RUTINE POSTMORTEM EXAMINATION AT SLAUGHTERHOUSE).
f: domestic killing for self-consumption.
L: NATIONAL REFERENCE LABORATORY.

The following amendments were made:

Date of Modification	Row name	Column name	Old value	New value
2012-06-11	Pigs - at slaughterhouse	Comment	positive animals not raised under cotrolled housind conditions	positive animals not raised under controlled housing conditions
	Pigs - at slaughterhouse	Total units positive for Trichinella	25	2
	Pigs - at slaughterhouse	Comment	About 2.5 million of the total units tested are animal not raised under controlled housing conditions.	positive animals not raised under cotrolled housind conditions
	Pigs - at slaughterhouse	Trichinella spp., unspecified	25	2

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

Hidatid disease is considered an endemic disease in Spain, associated mainly with extensive or semi-extensive sheep-raising regions in the central part of the country.
Hydatidosis is an endemic disease in Spain, mainly in regions with extensive systems of animal production.

Human hydatidosis has been a 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 other Authonomous Communities.

The implementation of these control programmes got good results in the decrease of the incidence of the disease.
Routine post-mortem examination at slaughterhouse has being carried out according to european legislation in force (Hygiene Package).

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.
The epidemiological surveillance of human CE was initiated in the 1950s by the provincial health government authorities, through an active search of cases with individualized information. In 1982 CE was included in the Spanish list of compulsory notifiable diseases (CND), being recorded at national level until 1996.

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 sheep 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 european Legislation in force (Hygiene package).

2.9.2 Echinococcosis in humans

A. Echinococcus spp. in humans

Reporting system in place for the human cases

Human incidence were gathered from national epidemiological
surveillance information systems, 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 2010.

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.

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

There is a notable decrease in human echinococcosis. This decrease is most likely a result of a continued control programme, particularly in endemic regions with extensive animal production

Relevance as zoonotic disease

Cystic echinococcosis caused by the cestode Echinococcus granulosus is an endemic disease in Spain. Although specific control programmes initiated in
the 1980s have led to marked reductions in CE infection rates in Spain, the disease still remains an important human and animal health problem in many
regions of the country.

2.9.3 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling unit	Region	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals) [1)]	F	Animal		2228478	9827			9827
Pigs [2)]	F	Animal		41224861	5336			5336
Solipeds, domestic [3)]	F	Animal		33069	31			31
Deer - wild - at game handling establishment	F	Animal		100127	314			314
Mouflons - wild	F	Animal		1634	0			
Pigs - fattening pigs - not raised under controlled housing conditions - at slaughterhouse - animal sample (DOMESTIC PRODUCTION)	f	Animal		26017	193			193
Sheep and goats - at slaughterhouse	F	Animal		12580427	71866			71866
Wild boars - at game handling establishment	F	Animal		39545	154			154

Comments:

[1)] at slaughterhouse

[2)] at slaughterhouse

[3)] Horses

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES
f: domestic killing for self-consumption

Table Echinococcus in animals

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 sources of infection: contact with cats and comsumption of vegetables, water or animal products, mainly sheep and pig meat.
In 60's and 70's studies in some regions of Spain detected prevalences 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

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 about incidence of congenital toxoplasmosis.

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

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

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii
Cattle (bovine animals)	A	Animal	11	0	

Footnote:

A: Animal Health Services of Autonomous Communities

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 peninsular territory an imported outbreak was reported in 1975 in the province of Malaga by introduction of dogs coming from North Africa. This outbreak 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 and Eptesicus isabellinus).

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

Since 1978 Spanish mainland and islands remains free of rage in terrestrial mammals. Only a few cases of EBL1 have been reported in bats.

These data show 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 islands.

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 vaccination of dogs in 12 autonomous comunities, Ceuta and Melilla. Voluntary in the rest.

Studies including active surveillance of LB-1 in bats.

Information to the citizens about no manipulation of bats.

An Action Plan has been approved, and includes risk evaluation, surveillance, mechanisms to control and a response protocol with four alert levels.

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 No 2002/253/EC and Commission Decision No 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)

On December 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 Doñaana, 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 4 levels:
1. Apparently healthy terrestrial mammals 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) No 998/2003 need negative results to enter into Spain according to Council Regulation (EC) No 998/2003
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
4. Studies including active surveillance of LB-1 in bats

Frequency of the sampling

Indeterminated

Type of specimen taken

Brain, Blood, Saliva

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.

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

Fluorescent Antibody Test (FAT), Polymerase Chain Reaction followed by DNA sequencing genomic areas, ELISA

Vaccination policy

Compulsory vaccination of dogs in 12 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) No 998/2003
Identification and registration of dogs.
Pick up of stray dogs by council town authorities.

Control program/mechanisms

The control program/strategies in place

Several regional prevention programmes.
Control of imports and exports according to Council Regulation(EC) No 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) No 998/2003)
An Action Plan has been approved in 2010, and includes risk evaluation, surveillance, mechanisms to control and a response protocol with four alert levels.

Measures in case of the positive findings or single cases

Mandatory Notifiable disease Royal Decree 2210/1995, December 25th, by Epidemiological Surveillance National Net is created.

Oficcial Notification of the disease

Epidemiologic survey

Cases in Spain (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

Not cases.

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.

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	Region	Units tested	Total units positive for Lyssavirus (rabies)	Lyssavirus, unspecified	Classical rabies virus (genotype 1)	European Bat Lyssavirus - unspecified
Bats - wild [1)]	(MSPSI) Ministry of Health, Social Policy and Equality	Animal		38	2			2
Cats	(MSPSI) Ministry of Health, Social Policy and Equality	Animal		16	0			
Dogs [2)]	(MSPSI) Ministry of Health, Social Policy and Equality	Animal		38	2		2	
Foxes - wild	(MSPSI) Ministry of Health, Social Policy and Equality	Animal		25	0			
Raccoons - wild	(MSPSI) Ministry of Health, Social Policy and Equality	Animal		1	0			
Wolves - wild	(MSPSI) Ministry of Health, Social Policy and Equality	Animal		1	0			

Comments:

Table Rabies in animals

Comments:

[1)] The first positive bat was from Seville (E. Isabellinus), and was analysed at the Spanish National Reference Laboratory (EBL1). The second positive bat was from Huesca (E. Serotinus), and was analysed al the the National Reference Laboratory of Belgium (EBL1).

[2)] 2 dogs positive from Melilla (spanish city of North Africa). Spain (mainland and islands) is free of rabies

Footnote:

We have also sampled and analysed 11 rats, 6 ferrets, 2 mice, 2 squirrels, 1 hamster, 1 hedgehoge, 5 others. All of them negative.

2.12 STAPHYLOCOCCUS INFECTION

2.12.1 General evaluation of the national situation

2.12.2 Staphylococcus in animals

A. Staphylococcus in Animals

Monitoring system

Sampling strategy

Sampling has been performed ramdomly (day of sampling each month)in 14 slaughterhouses (according to the capacity of sacrifice of each slaughterhouse) placed in the provinces of Cuenca, Barcelona(3),Ciudad Real, Murcia, Pontevedra, Burgos, Leon, Madrid, Málaga, Gerona, Huesca and Lérida. These slaughterhouses have a high volume of activity, representing an important part of all the fattening pigs sacrified in Spain.

Frequency of the sampling

between May and November

Type of specimen taken

Other: nasal swabs

Methods of sampling (description of sampling techniques)

A nasal swab of one animal by slaughter batch with 10 animals or more have been taken, with a maximun of 30 slaughter batches by slaughterhouse and day and month of sampling.Samples were refrigerated immediatly and sent to the laboratory and analyzed within 12 days.

Case definition

slaughter batch/animal from which MRSA has been isolated

Diagnostic/analytical methods used

isolation of Staphylococus aureus on cromogenic media (Barid Parker, bioMerieux).
Detection of MRSA by resistance testing and by use of selective media
Identification by PCR foolowing EUR-LAB protocol.

Results of the investigation

Number of slaughter batch (pigs) tested : 276
Positive to MRSA: 159
Prevalence: 57,61%

Table Staphylococcus in Animals

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcus	Total units positive for S. aureus, methicillin resistant (MRSA)	S. aureus, methicillin resistant (MRSA) - spa -type t011	S. aureus, methicillin resistant (MRSA) - spa -type t108	S. aureus, methicillin resistant (MRSA) - spa -type t034	S. aureus, methicillin resistant (MRSA) - MRSA, unspecified
Pigs [1)]	M.A.R.M	Slaughter batch		276		159	121	17	3	18

Comments:

[1)] fattening pigs

2.13 Q-FEVER

2.13.1 General evaluation of the national situation

A. Coxiella burnetii (Q-fever) general evaluation

History of the disease and/or infection in the country

Q fever is a zoonosis with widely extended in the world. In Spain the first cases were documented in 1949.

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

Q fever cases and outbreak in Spain are reported to Epidemiological Notifiable Disease Surveillance System (outbreak) (NDDS) and Microbiological Information System (SIM)

2.13.2 Q-fever in humans

A. C. burnetii 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.

Case definition

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

Q fever is a zoonosis with widely extended in the world. In Spain the first cases were documented in 1949.

The most common animal reservoirs are livestock and the main form of infection is by inhalation of contaminated aerosols.

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

Most of cases and outbreaks are related to care of sheep , other form of an occupational nature such as abattoirs were presents.

In 2010, 169 cases of Q fever has been comunicate to the Microbiological Information System

Relevance as zoonotic disease

high

2.13.3 Coxiella (Q-fever) in animals

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii
Cattle (bovine animals) [1)]	NRL	Animal	190	22	22
Goats [2)]	NRL	Animal	50	31	31
Goats - at farm - animal sample - faeces - Clinical investigations [3)]	NRL	Animal	10	10	10

Comments:

[1)] suspected cases

[2)] suspectec cases

[3)] confirmed cases

Footnote:

SUSPECTED CASES:ELISA (SEROLOGIC RESULTS)
CONFIRMED CASES: POSITIVE PCR ON FAECES, MILK AND/OR VAGINAL SWABS OF GOATS PREVIOUSLY POSITIVE TO ELISA(ALL DATA ON GOATS BELONG TO THE SAME HERD)

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1 ESCHERICHIA COLI, NON-PATHOGENIC

3.1.1 General evaluation of the national situation

A. Escherichia 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 diarrohea 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.

Environment 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

A. Antimicrobial resistance of E.coli in animal

Sampling strategy used in monitoring

Frequency of the sampling

Methods of sampling (description of sampling techniques)

Laboratory used for detection for resistance

Antimicrobials included in monitoring

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

Test Method Used	Standard methods used for testing
Broth dilution	EFSA

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

3.2 ENTEROCOCCUS, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

A. Antimicrobial resistance of E. faecium in animal

Sampling strategy used in monitoring

Frequency of the sampling

Methods of sampling (description of sampling techniques)

Results of the investigation

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

Test Method Used	Standard methods used for testing
Broth dilution	EFSA

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing
Broth dilution	EFSA

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 ENTEROBACTER SAKAZAKII

4.1.1 General evaluation of the national situation

4.1.2 Enterobacter sakazakii in foodstuffs

Table Enterobacter sakazakii in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Enterobacter sakazakii	E. sakazakii
Foodstuffs intended for special nutritional uses - dried dietary foods for special medical purposes intended for infants below 6 months	F	Single	25 g	24	0	0
Infant formula - dried	F	Single	25 g	116	6	6

Footnote:

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

4.2.2 Histamine in foodstuffs

Table Histamine in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units in non-conformity	<= 100 mg/kg	>100 - <= 200 mg/kg	>200 - <= 400 mg/kg	> 400 mg/kg
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated	F	Single		353	7	346	1	0	6
Fish - Fishery products which have undergone enzyme maturation treatment in brine	F	Single		218	1	217	0	0	1

Footnote:

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4.3 STAPHYLOCOCCAL ENTEROTOXINS

4.3.1 General evaluation of the national situation

4.3.2 Staphylococcal enterotoxins in foodstuffs

Table Staphylococcal enterotoxins in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Cheeses made from cows' milk - hard - made from pasteurised milk	F	Single	25 g	12	0
Cheeses made from cows' milk - hard - made from raw or low heat-treated milk	F	Single	25 g	12	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk	F	Single	25 g	84	0
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk	F	Single	25 g	43	0
Cheeses made from goats' milk - hard - made from pasteurised milk	F	Single	25 g	2	0
Cheeses made from goats' milk - hard - made from raw or low heat-treated milk	F	Single	25 g	2	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk	F	Single	25 g	6	0
Cheeses made from goats' milk - soft and semi-soft - made from raw or low heat-treated milk	F	Single	25 g	42	2

Table Staphylococcal enterotoxins in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Cheeses made from sheep's milk - hard - made from pasteurised milk	F	Single	25 g	16	0
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk	F	Single	25 g	16	0
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk	F	Single	25 g	0	0
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk	F	Single	25 g	152	2
Dairy products (excluding cheeses) - milk powder and whey powder	F	Single	25 g	2	0

Footnote:

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5. FOODBORNE

Foodborne outbreaks are incidences of two or more human cases of the same disease or infection where the cases are linked or are probably linked to the same food source. Situation, in which the observed human cases exceed the expected number of cases and where a same food source is suspected, is also indicative of a foodborne outbreak.

A. Foodborne outbreaks

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

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://www.isciii.es/jsps/centros/epidemiologia/boletinesSemanal.jsp
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 investigate.

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:

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.

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.

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 Foodborne Outbreaks: summarised data

	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Salmonella - S. Typhimurium	0	unknown	unknown	unknown	0	0
Salmonella - S. Enteritidis	0	unknown	unknown	unknown	0	0
Salmonella - Other serovars	0	unknown	unknown	unknown	0	0
Campylobacter	0	unknown	unknown	unknown	0	0
Listeria - Listeria monocytogenes	0	unknown	unknown	unknown	0	0
Listeria - Other Listeria	0	unknown	unknown	unknown	0	0
Yersinia	0	unknown	unknown	unknown	0	0
Escherichia coli, pathogenic -	0	unknown	unknown	unknown	0	0
Bacillus - B. cereus	0	unknown	unknown	unknown	0	0
Bacillus - Other Bacillus	0	unknown	unknown	unknown	0	0
Staphylococcal enterotoxins	0	unknown	unknown	unknown	0	0
Clostridium - Cl. botulinum	0	unknown	unknown	unknown	0	0
Clostridium - Cl. perfringens	0	unknown	unknown	unknown	0	0
Clostridium - Other Clostridia	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Brucella	0	unknown	unknown	unknown	0	0

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