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 2011

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Spain

Reporting Year: 2011

Laboratory name	Description	Contribution
Subdireccion General de Sanidad e Higiene Animal y Trazabilidad	Ministerio de Agricultura, Alimentación y Medio Ambiente	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 Economia y Competitividad.	National Reporter
Subdireccion General de Medios de Produccion Ganaderos	Ministerio de Agricultura, Alimentacion y Medio Ambiente	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 2011 .

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

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

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

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

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

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1. ANIMAL POPULATIONS

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

A. Information on susceptible animal population

Sources of information

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/31/2011.

Dates the figures relate to and the content of the figures

Number of holdings and animals: 31/12/2011

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					2029434		89531	
	dairy cows and heifers					863640		24952	
	calves (under 1 year)					2131666		24157	
	mixed herds					35035		8387	
	- in total					5903240		147027	
Deer	farmed - in total							92	
Ducks	meat production flocks					306528		102	
	parent breeding flocks					79		4	
	grandparent breeding flocks					78		2	
	breeding flocks, unspecified - in total					306837		117	
	laying ducks					152		9	
Gallus gallus (fowl)	breeding flocks for egg production line - in total					18343636		335	
	breeding flocks for meat production line - in total					5533532		198	

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*
Gallus gallus (fowl)	breeding flocks, unspecified - in total					23877168		533	
	parent breeding flocks for egg production line					19388688		63	
	parent breeding flocks for meat production line					12237708		343	
	parent breeding flocks, unspecified - in total					31626396		406	
	grandparent breeding flocks for egg production line					113589		14	
	grandparent breeding flocks for meat production line					15170740		22	
	grandparent breeding flocks, unspecified - in total					15284329		36	
	laying hens					38430126		1080	
	broilers					220642171		4999	
	- in total					329860190		7054	
Geese	meat production flocks					4253		33	
	parent breeding flocks					62		3	
	grandparent breeding flocks					21		1	
	breeding flocks, unspecified - in total					5362		42	

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	laying geese					1026		5	
Goats	meat production animals					657116		50116	
	animals under 1 year					549540		654	
	animals over 1 year					2089332		65327	
	milk goats					895243		7734	
	mixed herds							7477	
	- in total					4191231		65981	
Pigs	breeding animals					5231017		5268	
	fattening pigs					17044516		51806	
	breeding animals - unspecified - sows and gilts					2227596		322	
	mixed herds					5529360		19507	
	- in total					30032489		86296	
Sheep	meat production animals					9486757		87928	
	animals under 1 year (lambs)					3429485		1855	

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*
Sheep	animals over 1 year					14007471		105272	
	milk ewes					2412569		8246	
	mixed herds							9098	
	- in total					29336282		107127	
Solipeds, domestic	horses - in total					693484		160171	
Turkeys	meat production flocks					5593766		603	
	parent breeding flocks					190525		36	
	breeding flocks, unspecified - in total					5785299		646	
	laying hens					1008		7	
Wild boars	farmed - in total							151	

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 2011 show a decreased incidence of Salmonella spp (from 3.75% in 2010 to 2.68% in 2011)and of top 5 serovars (from 0,72% in 2010 to 0.32% in 2011). Spain have reached the community target in 2011.
In layin hens, flock incidence decreased from 30,61% in 2010 to 13.56% in 2011(Salmonella spp.) and SE/ST decreased from 5,92% in 2010 to 2.8% in 2011(adult flocks). In broiler flocks, the flock prevalence decreased from 3.58% (Salmonella spp.) and 0.41% (S. Enteritidis+ S. Typhimurium) in 2010 to 2.19% and 0,14% respectively in 2011 (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

Ministry of Agriculture, Food and Environment and Ministry of Health, Social Policy and Equality 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 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 2011 have recorded 3779 human cases

Results of the investigation

In 2011 S. typhimurium is the most present salmonella, following S. enteritidis

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 although this year has been shown a slight decrease.
In 2011 has been reported 3779 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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from broilers (Gallus gallus) - carcase - at slaughterhouse - Surveillance	F		Official sampling	food sample > carcass swabs		Single	25 g	347	60	4	0
Meat from broilers (Gallus gallus) - fresh - at processing plant - Surveillance	F		Official sampling	food sample > meat		Single	25 g	66	2	1	0
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance	F		Official sampling	food sample > meat		Single	25 g	118	2	0	0
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant - Surveillance	F		Official sampling	food sample > meat		Single	25 g	39	0		
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail - Surveillance	F		Official sampling	food sample > meat		Single	25 g	95	1		
Meat from broilers (Gallus gallus) - fresh - at retail (Strains)	L					Single		20	19	10	
Meat from other poultry species - carcase - at slaughterhouse	F		Official sampling	food sample > meat		Single	25 g	49	15		
Meat from other poultry species - fresh - at cutting plant	F		Official sampling	food sample > meat		Single	25 g	3	0		
Meat from other poultry species - fresh - at retail	F		Official sampling	food sample > meat		Single	25 g	1	0		
Meat from other poultry species - meat products - at processing plant	F		Official sampling	food sample > meat		Single	25 g	17	0		
Meat from other poultry species - meat products - at retail	F		Official sampling	food sample > meat		Single	25 g	26	0		

Table Salmonella in poultry meat and products thereof

	Salmonella spp., unspecified	S. Agona	S. Livingstone	S. London	S. Schwarzengrund	S. Virchow
Meat from broilers (Gallus gallus) - carcase - at slaughterhouse - Surveillance	55		1			1
Meat from broilers (Gallus gallus) - fresh - at processing plant - Surveillance	0	1				
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance	2					
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant - Surveillance						
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail - Surveillance	1					
Meat from broilers (Gallus gallus) - fresh - at retail (Strains)		3		2	1	3
Meat from other poultry species - carcase - at slaughterhouse	15					
Meat from other poultry species - fresh - at cutting plant						
Meat from other poultry species - fresh - at retail						
Meat from other poultry species - meat products - at processing plant						
Meat from other poultry species - meat products - at retail						

Footnote:

Source of information:

Table Salmonella in poultry meat and products thereof

F:Public Health Services of the Autonomous Communities L:National Reference Laboratory.

Table Salmonella in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Cheeses, made from unspecified milk or other animal milk - soft and semi-soft	F		Official sampling	food sample		Single	25 g	601	17		
Cheeses, made from unspecified milk or other animal milk - unspecified	F		Official sampling	food sample		Single	25 g	268	1		
Dairy products (excluding cheeses) (Ready to eat)	F		Official sampling	food sample > milk		Single	25 g	67	0		
Dairy products (excluding cheeses) - ice-cream	F		Official sampling	food sample		Single	25 g	527	0		
Milk from other animal species or unspecified - raw milk (Strains)	L					Single		2	0		
Milk, cows' - UHT milk	F		Official sampling	food sample > milk		Single	25 g	40	0		
Milk, cows' - raw milk	F		Official sampling	food sample > milk		Single	25 g	14	0		

	Salmonella spp., unspecified
Cheeses, made from unspecified milk or other animal milk - soft and semi-soft	17
Cheeses, made from unspecified milk or other animal milk - unspecified	1
Dairy products (excluding cheeses) (Ready to eat)	
Dairy products (excluding cheeses) - ice-cream	

Table Salmonella in milk and dairy products

	Salmonella spp., unspecified
Milk from other animal species or unspecified - raw milk (Strains)	
Milk, cows' - UHT milk	
Milk, cows' - raw milk	

Footnote:

Source of information:
F: Public Health Services of the Autonomous Communities
L: National Reference Laboratory

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Eggs - table eggs - at packing centre - Surveillance	F		Official sampling	food sample		Single	25 g	560	1	0	0
Eggs - table eggs - at retail - Surveillance	F		Official sampling	food sample		Single	25 g	911	16	8	1
Bakery products - desserts	F		Official sampling	food sample		Single	25 g	1190	2	1	0
Egg products	F		Official sampling	food sample		Single	25 g	101	0		
Eggs - table eggs (Strains)	L					Single	25 g	4	4	3	
Fish - raw	F		Official sampling	food sample		Single	25 g	130	1	0	0
Fishery products, unspecified	F		Official sampling	food sample		Single	25 g	337	0		
Infant formula	F		Official sampling	food sample		Single	25 g	189	0		
Live bivalve molluscs	F		Official sampling	food sample		Single	25 g	647	9	1	0
Other food (A total of 380 samples, including different categories of food like: spices, almond toffee, horchata (cold drink made from tiger nuts), roasted chicken, germinated seeds, juices, nougat candy, marzipan, honey or breakfast cereals. One sample of horchata is the only positive sample.)	F		Official sampling	food sample		Single	25 g	380	1	1	0
Other processed food products and prepared dishes - unspecified - non-ready-to-eat foods	F		Official sampling	food sample		Single	25 g	350	2	1	0
Other processed food products and prepared dishes - unspecified - ready-to-eat foods	F		Official sampling	food sample		Single	25 g	7119	17	6	1

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Other processed food products and prepared dishes - unspecified - ready-to-eat foods (Strains)	L					Single		1	1	0	1
Ready-to-eat salads	F		Official sampling	food sample		Single	25 g	1197	2	0	0
Vegetables	F		Official sampling	food sample		Single	25 g	202	0		

	Salmonella spp., unspecified	S. Derby	S. Infantis
Eggs - table eggs - at packing centre - Surveillance	1		
Eggs - table eggs - at retail - Surveillance	3		4
Bakery products - desserts	1		
Egg products			
Eggs - table eggs (Strains)		1	
Fish - raw	1		
Fishery products, unspecified			
Infant formula			
Live bivalve molluscs	8		

Table Salmonella in other food

	Salmonella spp., unspecified	S. Derby	S. Infantis
Other food (A total of 380 samples, including different categories of food like: spices, almond toffee, horchata (cold drink made from tiger nuts), roasted chicken, germinated seeds, juices, nougat candy, marzipan, honey or breakfast cereals. One sample of horchata is the only positive sample.)			
Other processed food products and prepared dishes - unspecified - non-ready-to-eat foods	1		
Other processed food products and prepared dishes - unspecified - ready-to-eat foods	10		
Other processed food products and prepared dishes - unspecified - ready-to-eat foods (Strains)			
Ready-to-eat salads	2		
Vegetables			

Footnote:

Source of information:
F:Public Health Services of the Autonomous Communities
L:National Reference Laboratory

Table Salmonella in red meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from pig - carcase - at slaughterhouse - Surveillance	F		Official sampling	food sample > meat		Single	25 g	268	20	2	2
Meat from pig - fresh - at processing plant - Surveillance	F		Official sampling	food sample > meat		Single	25 g	10	0		
Meat from pig - fresh - at retail - Surveillance	F		Official sampling	food sample > meat		Single	25 g	116	6	0	1
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	F		Official sampling	food sample > meat		Single	25 g	501	20	1	2
Meat from pig - meat products - raw but intended to be eaten cooked - at retail - Surveillance	F		Official sampling	food sample > meat		Single	25 g	338	5	1	1
Meat from bovine animals - carcase - at slaughterhouse - Surveillance	F			food sample > meat		Single	25 g	112	9		
Meat from bovine animals - fresh - at processing plant - Surveillance	F		Official sampling	food sample > meat		Single	25 g	17	0		
Meat from bovine animals - fresh - at retail - Surveillance	F		Official sampling	food sample > meat		Single	25 g	114	1	0	0
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	F		Official sampling	food sample > meat		Single	25 g	57	8		2
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail - Surveillance	F		Official sampling	food sample > meat		Single	25 g	50	0		
Meat from bovine animals - fresh (Strains) [1)]	L					Single		2	1		1
Meat from other animal species or not specified - fresh - at cutting plant	F		Official sampling	food sample > meat		Single	25 g	105	0		

Table Salmonella in red meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from other animal species or not specified - fresh - at retail	F		Official sampling	food sample > meat		Single	25 g	5	0		
Meat from other animal species or not specified - fresh - at slaughterhouse	F		Official sampling	food sample > meat		Single	25 g	10	0		
Meat from other animal species or not specified - meat preparation	F		Official sampling	food sample > meat		Single	25 g	1373	50	9	7
Meat from other animal species or not specified - meat products	F		Official sampling	food sample > meat		Single	25 g	88	0		
Meat from other animal species or not specified - meat products - at processing plant (Swabs)	L					Single		190	6	0	1
Meat from other animal species or not specified - minced meat	F		Official sampling	food sample > meat		Single	25 g	229	13	2	0
Meat from pig - fresh - at retail (Strains)	L					Single		3	3		2
Meat from pig - meat products - at cutting plant (Swabs)	L					Single		74	2		

	Salmonella spp., unspecified	S. 4,5,12:i:-	S. Bredeney	S. Derby	S. Heidelberg	S. Muenchen	S. Rissen	S. Virchow
Meat from pig - carcase - at slaughterhouse - Surveillance	18						2	
Meat from pig - fresh - at processing plant - Surveillance								
Meat from pig - fresh - at retail - Surveillance	5							

Table Salmonella in red meat and products thereof

	Salmonella spp., unspecified	S. 4,5,12:i:-	S. Bredeney	S. Derby	S. Heidelberg	S. Muenchen	S. Rissen	S. Virchow
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	16		1				2	
Meat from pig - meat products - raw but intended to be eaten cooked - at retail - Surveillance	3							
Meat from bovine animals - carcase - at slaughterhouse - Surveillance	9							
Meat from bovine animals - fresh - at processing plant - Surveillance								
Meat from bovine animals - fresh - at retail - Surveillance	1							
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	6							
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail - Surveillance								
Meat from bovine animals - fresh (Strains) [1)]								
Meat from other animal species or not specified - fresh - at cutting plant								
Meat from other animal species or not specified - fresh - at retail								
Meat from other animal species or not specified - fresh - at slaughterhouse								
Meat from other animal species or not specified - meat preparation	36			3				

Table Salmonella in red meat and products thereof

	Salmonella spp., unspecified	S. 4,5,12:i:-	S. Bredeney	S. Derby	S. Heidelberg	S. Muenchen	S. Rissen	S. Virchow
Meat from other animal species or not specified - meat products								
Meat from other animal species or not specified - meat products - at processing plant (Swabs)	1	1	1	1		1		
Meat from other animal species or not specified - minced meat	11							
Meat from pig - fresh - at retail (Strains)							1	
Meat from pig - meat products - at cutting plant (Swabs)					1			1

Comments:

[1)] at retail

Footnote:

Source of information:
F: Public Health Services of the Autonomous Communities
L: National Reference Laboratory

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 2010/712/UE.

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

A breeding flock shall be considered positive when the presence of the relevant Salmonella serotypes (other than vaccine strains) has been detected in one or more samples taken in the flock, even if the relevant Salmonella serotypes is only detected in the dust sample, or when the confirmatory sampling as part of official controls in accordance with point 2.2.2.2(b) does not confirm the detection of relevant Salmonella serotypes but antimicrobials or bacterial growth inhibitors have been detected in the flock. This rule shall not apply in exceptional cases described in point 2.2.2.2(c) where the initial Salmonella positive result from sampling at the initiative of the food business operator has not been confirmed by the sampling as part of official controls.

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

A breeding flock shall be considered positive when the presence of the relevant Salmonella serotypes (other than vaccine strains) has been detected in one or more samples taken in the flock, even if the relevant Salmonella serotypes is only detected in the dust sample, or when the confirmatory sampling as part of official controls in accordance with point 2.2.2.2(b) does not confirm the detection of relevant Salmonella serotypes but antimicrobials or bacterial growth inhibitors have been detected in the flock. This rule shall not apply in exceptional cases described in point 2.2.2.2(c) where the initial Salmonella positive result from sampling at the initiative of the food business operator has not been confirmed by the sampling as part of official controls.

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

A breeding flock shall be considered positive when the presence of the relevant Salmonella serotypes (other than vaccine strains) has been detected in one or more samples taken in the flock, even if the relevant Salmonella serotypes is only detected in the dust sample, or when the confirmatory sampling as part of official controls in accordance with point 2.2.2.2(b) does not confirm the detection of relevant Salmonella serotypes but antimicrobials or bacterial growth inhibitors have been detected in the flock. This rule shall not apply in exceptional cases described in point 2.2.2.2(c) where the initial Salmonella positive result from sampling at the initiative of the food business operator has not been confirmed by the sampling as part of official controls.

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 2010/712/UE.

Recent actions taken to control the zoonoses

Compulsory National Control and Monitoring Programme on Salmonella in Breeding Flocks of Gallus gallus 2011.

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 2011, 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): 2123
Positive flocks: 57 Salmonella spp.; 7 top 5
Incidence:
- Salmonella spp: 2,68%
- Top 5: 0,32%

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

The incidence on Salmonella spp. has decreased from 2010 (3,75%) to 2011 (2.68%) . The incidence on top 5 have decreased from 2010 (0,72%) to 2011 (0.32%) and then, Spain has reached the Community reduction target for 2011.

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 no positive flock to Salmonella

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 of broilers shall be considered positive for the purpose of verifying the achievement of the Community target, where the presence of Salmonella enteritidis and/or Salmonella typhimurium (other than vaccine strains) was detected in the flock at any occasion.

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 2011, approved for co-financing by Commission Decision 2010/712/UE

Recent actions taken to control the zoonoses

National Control and Monitoring Plan on Salmonella in broiler flocks 2011, 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: 23.464
Positive flocks: 514 Salmonella spp.
33 S. enteritidis+typhimurium
Prevalence:
Salmonella spp.: 2,19%
Enteritidis+Typhimurium: 0,14%

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

The decreasing trend continues in 2011 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 2011, 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 to laying unit (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: fecal material and dust samples if the hygiene and bio-security are deficient or the competent authority considers appropriate

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 2011.

Case definition

Laying hens: Rearing period

A rearing flock shall be considered positive for the purpose of ascertaining the achievement of the Union target where:
the presence of the relevant Salmonella serotypes (other than vaccine strains) has been detected in one or more samples taken in the flock, even if the relevant Salmonella serotype is only detected in the dust sample or dust swab; or

antimicrobials or bacterial growth inhibitors have been detected in the flock.
This rule shall not apply in exceptional cases described in Annex II D point 4 of Regulation (EC) No 2160/2003, where the initial Salmonella positive result has not been confirmed by that respective sampling protocol.

Laying hens: Production period

A laying flock shall be considered positive for the purpose of ascertaining the achievement of the Union target where:
the presence of the relevant Salmonella serotypes (other than vaccine strains) has been detected in one or more samples taken in the flock, even if the relevant Salmonella serotype is only detected in the dust sample or dust swab; or
antimicrobials or bacterial growth inhibitors have been detected in the flock.
This rule shall not apply in exceptional cases described in Annex II D point 4 of Regulation (EC) No 2160/2003, where the initial Salmonella positive result has not been confirmed by that respective sampling protocol.

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 2011, approved by Commision Decision 2010/712/UE.

Recent actions taken to control the zoonoses

National Control and Monitoring Programme on Salmonella in Laying Hens 2011, including vaccination, biosecurity measures and compliance with good practices code following criteria of Regulations 2160/2003,517/2011 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 2011,including movement restrictions of live birds (forbidden),destruction or treatment of eggs, sacrifice-depopulation of the flock,epidemiological investigations, control of the bio-security 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: 2500
Number of positive flocks:
- Salmonella spp.: 339
- Enteritidis+Typhimurium: 70

Incidence:
- Salmonella spp: 13,56%
- Enteritidis+Typhimurium: 2,8%

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

The incidence of both Salmonella Enteritidis+Typhimurium has decreased in 2011, taking into account that results of FBO´S and official controls are considered. Spain has reached the community target for 2011.

D. Salmonella spp. in bovine animals

Monitoring system

Sampling strategy

Samples have been taken ramdomly (day of sampling each month) in 15 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

Animals at slaughter (herd based approach)

from May to December

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 15 slaughterhouses placed in the provinces of Barcelona(3), Valencia, Huesca, Lerida, Caceres,Madrid, Lugo, Pontevedra(2), Segovia, Salamanca, Avila 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 478 samples have been taken, belonging to 239 slaughter batches and 239 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 of young bovines (1-2 years old).

Diagnostic/analytical methods used

Animals at slaughter (herd based approach)

Bacteriological method: ISO 6579:2002/Amd 1:2007

Results of the investigation

Number of slaughter batches analyzed: 239
Positive : 13
slaughter batch prevalence: 5,4% (95%CI: 2,9;9,1%)

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

Decrease from 15% in 2010 to 5,4% in 2011.

E. Salmonella spp. in pigs

Monitoring system

Sampling strategy

Fattening herds

Samples have been taken ramdomly (day of each month) in 15 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 December

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 15 slaughterhouses placed in the provinces of Cuenca, Barcelona(3),Ciudad Real, Murcia, Pontevedra, Burgos, Málaga, Gerona, León, Madrid, Huesca, Valencia and Lérida. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain.
A total of 231 samples of lymph nodes have been taken, belonging to 231 slaughter batches and 231 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.

Diagnostic/analytical methods used

Fattening herds at slaughterhouse (herd based approach)

Bacteriological method: ISO 6579:2002/Amd 1:2007

Results of the investigation

Fattening pigs at slaughterhouses:
Tested slaughter batches: 231
Positive: 82
Slaughter batch prevalence: 35,6% Salmonella spp. (95% CI: 29,3; 42,0)

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

The prevalence is the same than in 2010.

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): Rearing period

Other: ____

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 of turkeys shall be considered positive for the purpose of verifying the achievement of the Community target, where the presence of Salmonella enteritidis and/or Salmonella typhimurium (other than vaccine strains) was detected in the flock at any occasion.

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

A flock of turkeys shall be considered positive for the purpose of verifying the achievement of the Community target, where the presence of Salmonella enteritidis and/or Salmonella typhimurium (other than vaccine strains) was detected in the flock at any occasion.
Positive flocks of turkeys shall be counted only once per round, irrespective of the number of sampling and testing operations and only be reported in the year of the first positive sampling.

Meat production flocks: Day-old chicks

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 2010/712/UE.

Meat production flocks

Spanish National Control and Monitoring Programme on Salmonella in Meat Production Flocks of Turkeys, approved for co-financing by Commission Decision 2010/712/UE

Recent actions taken to control the zoonoses

Compulsory National Control and Monitoring Programme on Salmonella in Breeding Flocks and Meat Production Flocks of Turkeys 2011, 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 2011, 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 : 44
positive (Enteritidis+ Typhimurium): 0
positive Salmonella spp.:0
flock prevalence: 0%

Fattening turkeys:
number of flocks tested: 1604
positive (Enteritidis+ Typhimurium): 18
flock prevalence: 1,12%
positive Salmonella spp.: 243
flock prevalence: 15,14%

Table Salmonella in breeding flocks of Gallus gallus

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes	2123	MAGRAMA	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	2123	57	3
Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes	2032	MAGRAMA	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	2032	57	3
Gallus gallus (fowl) - breeding flocks for egg production line - adult - at farm - Control and eradication programmes	91	MAGRAMA	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	91	0	0
Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	2123	MAGRAMA	Census	Industry sampling	environmental sample > boot swabs		yes	Flock	1043	38	1
Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	2123	MAGRAMA	Census	Official sampling	environmental sample > boot swabs		yes	Flock	1410	29	2

	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes	4	2	1	0	0	50
Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes	4	2	1	0	0	47

Table Salmonella in breeding flocks of Gallus gallus

	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Gallus gallus (fowl) - breeding flocks for egg production line - adult - at farm - Control and eradication programmes	0	0	0	0	0	0
Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	1	0	0	0	0	36
Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	4	2	1	0	0	20

Footnote:

MAGRAMA: Ministry of Agriculture, Food and Environment
Breeders: the total number of positive flocks is 57, the number of positive flocks for the target serovars is 7, and the number of positive flocks for other serovars is 50. we have 10 target serovars, but only 7 positive flocks for the target serovars because there are flocks where more than 1 target serovar has been isolated.

Table Salmonella in other birds

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Pigeons - at farm - Monitoring	A	Unspecified	Official sampling	animal sample > faeces		Flock	1	0			
Quails - at farm - Monitoring	A	Unspecified	Official sampling	animal sample > faeces		Flock	2	0			
Pheasants - Monitoring	A	Unspecified	Official sampling	animal sample > faeces		Flock	2	0			
Partridges - farmed - at farm - Monitoring	A	Unspecified	Official sampling	animal sample > faeces		Flock	8	6		6	
Ostriches - farmed - at farm - Monitoring	A	Unspecified	Official sampling	animal sample > faeces		Flock	1	0			

Footnote:

A: Animal Health Services of Autonomous Communities.

Table Salmonella in other animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-
Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - Monitoring - active	M.A.G.R.A.M.A	Objective sampling	Not applicable	animal sample > faeces		Slaughter batch	239	13	0	1	0
Pigs - fattening pigs - unspecified - at slaughterhouse - Monitoring - active	M.A.G.R.A.M.A	Objective sampling	Not applicable	animal sample > lymph nodes		Slaughter batch	231	82	1	18	0

	Salmonella spp., unspecified	S. 4,5:i:-	S. Anatum	S. Choleraesuis	S. Derby	S. Infantis	S. Mbandaka	S. Rissen
Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - Monitoring - active	0	1	7	1	0	0	2	1
Pigs - fattening pigs - unspecified - at slaughterhouse - Monitoring - active	20	14	1	1	13	1	0	13

Footnote:

M.A.G.R.A.M.A: Ministry of Agriculture, Food and Environment.

Table Salmonella in other poultry

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	2500	MAGRAMA	Census	Official and industry sampling	animal sample > faeces		yes	Flock	2500	339	63
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	23464	MAGRAMA	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	23464	514	15
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	44	MAGRAMA	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	44	0	0
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes	1604	MAGRAMA	Census	Official and industry sampling	environmental sample > boot swabs		yes	Flock	1604	243	0
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	23464	MAGRAMA	Census	Official sampling	environmental sample > boot swabs		yes	Flock	713	38	6
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	23464	MAGRAMA	Census	Industry sampling	environmental sample > boot swabs		yes	Flock	23124	478	9
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	2500	MAGRAMA	Census	Official sampling	animal sample > faeces		yes	Flock	734	155	63
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	2500	MAGRAMA	Census	Industry sampling	animal sample > faeces		yes	Flock	1993	213	9
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	44	MAGRAMA	Census	Official sampling	environmental sample > boot swabs		yes	Flock	32	0	0
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	44	MAGRAMA	Census	Industry sampling	environmental sample > boot swabs		yes	Flock	17	0	0
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes	1604	MAGRAMA	Census	Industry sampling	environmental sample > boot swabs		yes	Flock	1534	202	0

Table Salmonella in other poultry

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes	1604	MAGRAMA	Census	Official sampling	environmental sample > boot swabs		yes	Flock	118	45	0

	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Hadar	S. Infantis	S. Virchow
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	7	0	232	0	30	7
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	21	2	445	11	8	17
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	0	0	0	0	0	0
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes	18	0	219	6	0	0
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	4	0	17	2	1	8
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	17	0	424	11	7	10
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	7	0	62	0	22	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	0	0	191	0	11	2
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	0	0	0	0	0	0

Table Salmonella in other poultry

	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Hadar	S. Infantis	S. Virchow
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	0	0	0	0	0	0
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes	6	0	195	1	0	0
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes	13	0	27	5	0	0

Footnote:

MAGRAMA: Ministry of Agriculture, Food and Environment
Broilers: the total number of positive flocks is 514, the number of positive flocks for the target serovars is 33, and the number of positive flocks for other serovars is 481. we have 38 target serovars, but only 33 positive flocks for the target serovars because there are flocks where more than 1 target serovar has been isolated.

2.1.5 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Compound feedingstuffs for cattle - process control - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	23	1		
Compound feedingstuffs for pigs - final product - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	26	0		
Compound feedingstuffs for poultry (non specified) - final product - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	58	0		
Compound feedingstuffs for poultry - laying hens - final product - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	5	0		
Compound feedingstuffs for poultry - broilers - final product - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	6	0		
Compound feedingstuffs for horses - final product - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	2	0		
Compound feedingstuffs for sheep - final product - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	1	0		

	Salmonella spp., unspecified
Compound feedingstuffs for cattle - process control - at feed mill - Surveillance	1

Table Salmonella in compound feedingstuffs

	Salmonella spp., unspecified
Compound feedingstuffs for pigs - final product - at feed mill - Surveillance	
Compound feedingstuffs for poultry (non specified) - final product - at feed mill - Surveillance	
Compound feedingstuffs for poultry - laying hens - final product - at feed mill - Surveillance	
Compound feedingstuffs for poultry - broilers - final product - at feed mill - Surveillance	
Compound feedingstuffs for horses - final product - at feed mill - Surveillance	
Compound feedingstuffs for sheep - final product - at feed mill - Surveillance	

Footnote:

A: Animal Health Services od Autonomous Communities.

Table Salmonella in feed material of animal origin

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of land animal origin - dairy products - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	1	0		
Feed material of land animal origin - meat meal - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	12	0		
Feed material of land animal origin - meat and bone meal - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	1	0		
Feed material of land animal origin - animal fat - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	5	0		
Feed material of marine animal origin - fish meal - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	3	0		

	Salmonella spp., unspecified
Feed material of land animal origin - dairy products - at feed mill - Surveillance	
Feed material of land animal origin - meat meal - at feed mill - Surveillance	
Feed material of land animal origin - meat and bone meal - at feed mill - Surveillance	
Feed material of land animal origin - animal fat - at feed mill - Surveillance	
Feed material of marine animal origin - fish meal - at feed mill - Surveillance	

Table Salmonella in feed material of animal origin

Footnote:

A: Animal Health Services of Autonomous Communities.

Table Salmonella in other feed matter

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of cereal grain origin - barley derived - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	24	0		
Feed material of cereal grain origin - wheat derived - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	14	0		
Feed material of cereal grain origin - other cereal grain derived - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	5	0		
Feed material of cereal grain origin - maize derived - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	29	0		
Feed material of oil seed or fruit origin - rape seed derived - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	7	1		
Feed material of oil seed or fruit origin - soya (bean) derived - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	17	0		
Feed material of oil seed or fruit origin - cotton seed derived - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	10	1		
Feed material of oil seed or fruit origin - sunflower seed derived - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	3	0		
Other feed material - legume seeds and similar products - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	1	0		
Other feed material - other seeds and fruits - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	2	0		
Other feed material - forages and roughages - at feed mill - Surveillance	A	Objective sampling	Official sampling	feed sample		Batch	25 gr	4	0		

Table Salmonella in other feed matter

	Salmonella spp., unspecified
Feed material of cereal grain origin - barley derived - at feed mill - Surveillance	
Feed material of cereal grain origin - wheat derived - at feed mill - Surveillance	
Feed material of cereal grain origin - other cereal grain derived - at feed mill - Surveillance	
Feed material of cereal grain origin - maize derived - at feed mill - Surveillance	
Feed material of oil seed or fruit origin - rape seed derived - at feed mill - Surveillance	1
Feed material of oil seed or fruit origin - soya (bean) derived - at feed mill - Surveillance	
Feed material of oil seed or fruit origin - cotton seed derived - at feed mill - Surveillance	1
Feed material of oil seed or fruit origin - sunflower seed derived - at feed mill - Surveillance	
Other feed material - legume seeds and similar products - at feed mill - Surveillance	
Other feed material - other seeds and fruits - at feed mill - Surveillance	
Other feed material - forages and roughages - at feed mill - Surveillance	

Footnote:

A: Animal Health Services of Autonomous Communities.

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		13				82							243
Number of isolates serotyped	0	13	0	0	0	82	0	0	0	0	0	0	243
Number of isolates per serovar													
Other serovars													
S. 1,4,[5],12:i:-													
S. 4,12:b:-													
S. 4,5:i:-		1				14							
S. 47:z4z23:-						1							
S. 6,7:-:1,5													

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		13				82							243
Number of isolates serotyped	0	13	0	0	0	82	0	0	0	0	0	0	243
Number of isolates per serovar													
S. Adelaide													
S. Aflao													
S. Agona													2
S. Altona													
S. Anatum		7				1							
S. Banana													
S. Bardo						1							
S. Bareilly													
S. Bovismorbificans						3							
S. Brandenburg						1							
S. Bredeney													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		13				82							243
Number of isolates serotyped	0	13	0	0	0	82	0	0	0	0	0	0	243
Number of isolates per serovar													
S. Cerro													
S. Choleraesuis		1				1							
S. Corvallis													
S. Cubana													
S. Dabou													
S. Derby						13							11
S. Enteritidis						1							
S. Goettingen						1							
S. Hadar						1							6
S. Havana													
S. Hessarek						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		13				82							243
Number of isolates serotyped	0	13	0	0	0	82	0	0	0	0	0	0	243
Number of isolates per serovar													
S. Hindmarsh													
S. Indiana													1
S. Infantis						2							
S. Kapemba						1							
S. Kedougou													
S. Kentucky													6
S. Kottbus													1
S. Lamberhurst						1							
S. Lexington													1
S. Lisboa													
S. Livingstone													

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		13				82							243
Number of isolates serotyped	0	13	0	0	0	82	0	0	0	0	0	0	243
Number of isolates per serovar													
S. London						1							1
S. Mbandaka		2											
S. Meleagridis													
S. Mikawasima						1							
S. Montevideo						4							
S. Muenchen													2
S. Muenster													
S. Newport						1							
S. Ohio													
S. Orion													
S. Panama													

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		13				82							243
Number of isolates serotyped	0	13	0	0	0	82	0	0	0	0	0	0	243
Number of isolates per serovar													
S. Paratyphi C						1							
S. Poona													
S. Putten													
S. Rissen		1				13							
S. Schwarzengrund													
S. Senftenberg													1
S. Tennessee													1
S. Thompson													
S. Tilburg													
S. Toulon													
S. Typhimurium		1				18							19

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		13				82							243
Number of isolates serotyped	0	13	0	0	0	82	0	0	0	0	0	0	243
Number of isolates per serovar													
S. Veneziana													
S. Virchow													
S. Worthington													
S. Yovokome													
Salmonella spp., unspecified													190

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				67				514				379	
Number of isolates serotyped	0	0	0	67	0	0	0	514	0	0	0	379	0
Number of isolates per serovar													
Other serovars								5				2	

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				67				514				379	
Number of isolates serotyped	0	0	0	67	0	0	0	514	0	0	0	379	0
Number of isolates per serovar													
S. 1,4,[5],12:i:-								2					
S. 4,12:b:-								1					
S. 4,5:i:-													
S. 47:z4z23:-													
S. 6,7:-:1,5				1				1					
S. Adelaide												1	
S. Aflao												1	
S. Agona				4				14				5	
S. Altona												5	
S. Anatum				1				1					

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				67				514				379	
Number of isolates serotyped	0	0	0	67	0	0	0	514	0	0	0	379	0
Number of isolates per serovar													
S. Banana												1	
S. Bardo								1					
S. Bareilly												1	
S. Bovismorbificans													
S. Brandenburg													
S. Bredeney												6	
S. Cerro								1				4	
S. Choleraesuis													
S. Corvallis												14	
S. Cubana				1									

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				67				514				379	
Number of isolates serotyped	0	0	0	67	0	0	0	514	0	0	0	379	0
Number of isolates per serovar													
S. Dabou												4	
S. Derby								1					
S. Enteritidis				3				15				72	
S. Goettingen													
S. Hadar				4				11					
S. Havana												1	
S. Hessarek													
S. Hindmarsh												1	
S. Indiana													
S. Infantis				2				8				30	

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				67				514				379	
Number of isolates serotyped	0	0	0	67	0	0	0	514	0	0	0	379	0
Number of isolates per serovar													
S. Kapemba													
S. Kedougou				3									
S. Kentucky				12				32				5	
S. Kottbus													
S. Lamberhurst													
S. Lexington													
S. Lisboa												1	
S. Livingstone												5	
S. London				2								3	
S. Mbandaka				1								7	

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				67				514				379	
Number of isolates serotyped	0	0	0	67	0	0	0	514	0	0	0	379	0
Number of isolates per serovar													
S. Meleagridis				1								2	
S. Mikawasima				6				7				7	
S. Montevideo								2				1	
S. Muenchen								1					
S. Muenster								1					
S. Newport				1				1				3	
S. Ohio								1				11	
S. Orion								2					
S. Panama												2	
S. Paratyphi C													

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				67				514				379	
Number of isolates serotyped	0	0	0	67	0	0	0	514	0	0	0	379	0
Number of isolates per serovar													
S. Poona								1					
S. Putten								1					
S. Rissen				1				9				4	
S. Schwarzengrund								1					
S. Senftenberg				1				4				3	
S. Tennessee													
S. Thompson								1					
S. Tilburg								1					
S. Toulon								3					
S. Typhimurium				1				21				7	

Table Salmonella serovars in animals

Serovar	Other poultry			Gallus gallus (fowl) - breeding flocks, unspecified - adult - at farm - Control and eradication programmes				Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Number of isolates in the laboratory				67				514				379	
Number of isolates serotyped	0	0	0	67	0	0	0	514	0	0	0	379	0
Number of isolates per serovar													
S. Veneziana												1	
S. Virchow								17				7	
S. Worthington				2								1	
S. Yovokome												1	
Salmonella spp., unspecified				20				347				160	

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Clinical	Surveillance
Number of isolates in the laboratory		
Number of isolates serotyped	0	0
Number of isolates per serovar		
Other serovars		
S. 1,4,[5],12:i:-		
S. 4,12:b:-		
S. 4,5:i:-		
S. 47:z4z23:-		
S. 6,7:-:1,5		
S. Adelaide		
S. Aflao		
S. Agona		
S. Altona		

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Clinical	Surveillance
Number of isolates in the laboratory		
Number of isolates serotyped	0	0
Number of isolates per serovar		
S. Anatum		
S. Banana		
S. Bardo		
S. Bareilly		
S. Bovismorbificans		
S. Brandenburg		
S. Bredeney		
S. Cerro		
S. Choleraesuis		
S. Corvallis		

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Clinical	Surveillance
Number of isolates in the laboratory		
Number of isolates serotyped	0	0
Number of isolates per serovar		
S. Cubana		
S. Dabou		
S. Derby		
S. Enteritidis		
S. Goettingen		
S. Hadar		
S. Havana		
S. Hessarek		
S. Hindmarsh		
S. Indiana		

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Clinical	Surveillance
Number of isolates in the laboratory		
Number of isolates serotyped	0	0
Number of isolates per serovar		
S. Infantis		
S. Kapemba		
S. Kedougou		
S. Kentucky		
S. Kottbus		
S. Lamberhurst		
S. Lexington		
S. Lisboa		
S. Livingstone		
S. London		

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Clinical	Surveillance
Number of isolates in the laboratory		
Number of isolates serotyped	0	0
Number of isolates per serovar		
S. Mbandaka		
S. Meleagridis		
S. Mikawasima		
S. Montevideo		
S. Muenchen		
S. Muenster		
S. Newport		
S. Ohio		
S. Orion		
S. Panama		

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Clinical	Surveillance
Number of isolates in the laboratory		
Number of isolates serotyped	0	0
Number of isolates per serovar		
S. Paratyphi C		
S. Poona		
S. Putten		
S. Rissen		
S. Schwarzengrund		
S. Senftenberg		
S. Tennessee		
S. Thompson		
S. Tilburg		
S. Toulon		

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	
Sources of isolates	Clinical	Surveillance
Number of isolates in the laboratory		
Number of isolates serotyped	0	0
Number of isolates per serovar		
S. Typhimurium		
S. Veneziana		
S. Virchow		
S. Worthington		
S. Yovokome		
Salmonella spp., unspecified		

Footnote:

Other poultry: fattening turkeys

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

Active monitoring programme 2011

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: 13

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 active monitoring programme 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 (82)

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: 82

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 2011, a national control programme has been applied in breeders, laying hens, broilers and turkeys. Then, sampling strategies and frequency of sampling has been performed following Commission Regulation (EC) No 1517/2011 of 25 May 2011 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 ; 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; 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 and Commission Regulation (EC) No 200/2010 of 10 March 2010 implementing Regulation (EC) No 2160/2003 as regards a Community target for the reduction of the prevalence of certain salmonella serotypes in breeding hens of Gallus gallus.

Type of specimen taken

Laying hens: following point 2.2. of the Annex of Commission Regulation (EC) No 517/2011
Breeding hens: following point 2.2. of the Annex of Commission Regulation (EC) No 200/2010
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 517/2011.
Breeding hens: following point 2.2. of the Annex of Commission Regulation (EC) No 200/2010.
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 517/2011
Breeding hens: ollowing point 3 of the Annex of Commission Regulation (EC) No 200/2010
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 2011.

Recent actions taken to control the zoonoses

Spanish control programmes of Salmonella in breeding flocks of Gallus gallus, laying hens, broilers and turkeys 2011.

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 2011.

Notification system in place

Spanish control programmes of Salmonella in breeding flocks of Gallus gallus, laying hens, broilers and turkeys 2011.

Results of the investigation

Laying hens: 171 isolates tested
Breeding hens: 10 isolates tested
Broilers: 39 isolates tested
Fattening Turkeys: 154 isolates tested
Breeding Turkeys: 0 isolates tested

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

Test Method Used	Standard methods used for testing

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

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 <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		32	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.5	
Fluoroquinolones	Ciprofloxacin		0.06	
Penicillins	Ampicillin		4	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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

Test Method Used	Standard methods used for testing
Disc diffusion Agar dilution	NCCLS/CLSI M02-A10 M100-S21

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	2	12
	Kanamycin		8	13
	Streptomycin	EFSA	32	11
	Amikacin			14
	Tobramycin			12
Amphenicols	Chloramphenicol	EFSA	16	12
	Florfenicol		16	
Cephalosporins	3rd generation cephalosporins		2	
	Cefotaxime	EFSA	0.5	22
	Cefazolin			19
	Cefepime			14
	Cefoxitin			14
	Cefuroxim			14

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Fluoroquinolones	Ciprofloxacin	EFSA	0.06	15
	Levofloxacin			13
Penicillins	Ampicillin	EFSA	4	13
	Amoxicillin / Clavulanic acid			13
	Ampicillin / Sulbactum			11
	Piperacillin			17
Quinolones	Nalidixic acid	EFSA	16	13
Sulfonamides	Sulfonamides	EFSA	256	12
Tetracyclines	Tetracycline	EFSA	8	11
Trimethoprim	Trimethoprim	EFSA	2	10
Trimethoprim + Sulfonamides	Trimethoprim + Sulfonamides		256	10
Carbapenems	Imipenem			19
	Meropenem			19

Footnote:

-Dilution cut-off values from the Public Health Services of the Autonomus Communities.
-Difussion cut-off values from the National Reference Laboratory.

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 2011, active monitoring programmes 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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni
Meat from pig - fresh - at slaughterhouse	F		Official sampling	food sample > meat		Single	25 g	50	3	0	0
Meat from pig - fresh - at retail	F		Official sampling	food sample > meat		Single	25 g	47	3	0	2
Meat from bovine animals - fresh - at slaughterhouse	F		Official sampling	food sample > meat		Single	25 g	26	10	2	8
Meat from bovine animals - fresh - at processing plant	F		Official sampling	food sample > meat		Single	25 g	8	0		
Meat from bovine animals - fresh - at retail	F		Official sampling	food sample > meat		Single	25 g	2	0		
Meat from other animal species or not specified - meat preparation [1)]	F		Official sampling	food sample > meat		Single	25 g	100	15	2	7
Meat from other animal species or not specified - minced meat	F		Official sampling	food sample > meat		Single	25 g	56	4	1	3
Meat from pig - meat products - at processing plant	F		Official sampling	food sample > meat		Single	25 g	2	0		
Meat from pig - meat products - at retail	F		Official sampling	food sample > meat		Single	25 g	6	0		
Other processed food products and prepared dishes	F		Official sampling	food sample		Single	25 g	117	0		
Water	F		Official sampling	food sample		Single	25 ml	1	0		

Table Campylobacter in other food

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from pig - fresh - at slaughterhouse	0	0	3
Meat from pig - fresh - at retail	0	0	1
Meat from bovine animals - fresh - at slaughterhouse	0	0	
Meat from bovine animals - fresh - at processing plant			
Meat from bovine animals - fresh - at retail			
Meat from other animal species or not specified - meat preparation [1)]	0	0	7
Meat from other animal species or not specified - minced meat	0	0	0
Meat from pig - meat products - at processing plant			
Meat from pig - meat products - at retail			
Other processed food products and prepared dishes			
Water			

Comments:

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

Footnote:

Source of information:
F: Public Health Services of the Autonomous Communities

Table Campylobacter in other food

Table Campylobacter in poultry meat

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni
Meat from broilers (Gallus gallus) - carcase - at slaughterhouse [1)]	F		Official sampling	food sample > meat		Single		138	76	42	18
Meat from broilers (Gallus gallus) - fresh - at processing plant [2)]	F		Official sampling	food sample > meat		Single		69	26	6	15
Meat from broilers (Gallus gallus) - fresh - at retail [3)]	F		Official sampling	food sample > meat		Single		79	24	7	16
Meat from broilers (Gallus gallus) - fresh - at retail (Strains)	L					Single		181	173	38	135
Meat from other poultry species - fresh - at cutting plant	F		Official sampling	food sample > meat		Single	25 g	3	1	0	1
Meat from other poultry species - fresh - at retail [4)]	F		Official sampling	food sample > meat		Single	25 g	19	6	0	2
Meat from other poultry species - fresh - at slaughterhouse	F		Official sampling	food sample > meat		Single	25 g	43	13	8	3

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus) - carcase - at slaughterhouse [1)]	0	0	19
Meat from broilers (Gallus gallus) - fresh - at processing plant [2)]	0	0	11
Meat from broilers (Gallus gallus) - fresh - at retail [3)]	1	0	6

Table Campylobacter in poultry meat

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus) - fresh - at retail (Strains)			
Meat from other poultry species - fresh - at cutting plant			
Meat from other poultry species - fresh - at retail [4)]			6
Meat from other poultry species - fresh - at slaughterhouse	1	0	1

Comments:

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

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

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

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

Footnote:

Source of information:
- F: Public Health Services of the Autonomous Communities
- L: National Reference Laboratory

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 15 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 December

Type of specimen taken

At slaughter

Faeces

Methods of sampling (description of sampling techniques)

At slaughter

10 cloacal swabs 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 15 slaughterhouses placed in the provinces of Alava, Alicante, Avila, Barcelona, Castellon, Jaén, Madrid(2), Navarra, Orense, Pontevedra,Tarragona , Toledo and Lérida(2). These slaughterhouses have a high volume of activity, representing an important part of all the broilers sacrified in Spain.
A total of 2370 samples have been taken, belonging to 237 slaughter batches and 237 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 multiplex.

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: 237
Number of slaughter batches positive: 162
Slaughter batch prevalence: 68,35% Campylobacter spp.

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

More studies need to be performed. Same results than in 2010 (65,3%)

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

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.Each batch belonged to different herds.
Sampling has been performed in 15 slaughterhouses placed in the provinces of Cuenca, Barcelona(3),Ciudad Real, Murcia, Pontevedra, Burgos, Málaga, Gerona, León, Madrid, Huesca, Valencia and Lérida. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain.
A total of 514 samples of lymph nodes have been taken, belonging to 257 slaughter batches and 257 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 multiplex

Vaccination policy

Doesn't exist

Results of the investigation

Number of slaughter batches tested: 256
Number of slaughter batches positive: 167
Slaughter batch prevalence: 65,2% Campylobacter spp.

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 15 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 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 15 slaughterhouses placed in the provinces of Barcelona(3), Valencia, Huesca, Lerida, Caceres,Madrid, Lugo, Pontevedra(2), Segovia, Salamanca, Avila 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 478 samples have been taken, belonging to 239 slaughter batches and 239 different holdings.

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

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 multiplex.

Results of the investigation

Number of slaughter batches analyzed: 239
Number of slaughter batches positive: 141
Slaughter batch prevalence: 59,2% (CI: 52,7;65,6%)

Table Campylobacter in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari
Pigs - fattening pigs - at slaughterhouse - Monitoring	M.A.G.R.A.M.A.	Objective sampling	Not applicable	animal sample > faeces		Slaughter batch	257	167	132		
Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring	M.A.G.R.A.M.A.	Objective sampling	Not applicable	animal sample > cloacal swab		Slaughter batch	237	162	92	70	0
Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - Monitoring - active	M.A.G.R.A.M.A.	Objective sampling	Not applicable	animal sample > faeces		Slaughter batch	239	142	18	123	

	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Pigs - fattening pigs - at slaughterhouse - Monitoring		35
Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring	0	
Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - Monitoring - active		1

Footnote:

M.A.G.R.A.M.A.: Ministry of Agriculture, Food and Environment.

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 active monitoring programme 2011 (141). At the date to send this report, only 90/141 isolates was already tested for antimicrobial susceptibility.

Methods used for collecting data

Active monitoring programme 2011.

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 (31/05/2012):
C. coli: 14
C. jejuni:76

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 active monitoring programme 2011

Methods used for collecting data

Active monitoring programme 2011

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 (31/05/2012): 81 C. coli.

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 active monitoring programme 2011.

Methods used for collecting data

Active monitoring programme 2011.

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 (31/05/2010)
C. jejuni: 55
C. coli: 81

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

Test Method Used	Standard methods used for testing
Disc diffusion	NCCLS/CLSI M02-A10, M45-A2

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
Cephalosporins	Cefotaxime			6
Fluoroquinolones	Ciprofloxacin		1	6
Macrolides	Erythromycin		10	6
Quinolones	Nalidixic acid		24	6
Tetracyclines	Tetracycline		2	
Amphenicols	Chloramphenicol		16	

Footnote:

Sources of information: National Reference Laboratory and Public Health Services of the Autonomous Communities.

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

Test Method Used	Standard methods used for testing

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

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

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

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

Test Method Used	Standard methods used for testing

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

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

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

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 2011 have been reported 91 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 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. 91 cases was reporting in 2011

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 2011, 91 cases of listeriosis has been comunicate to Microbiological Information System versus 129 in 2010.

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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - at retail - Survey - EU baseline survey (EU baseline Listeria survey. Samples from 2011.)	L	Selective sampling		food sample		Single	200 g	172	0	172	0
Cheeses, made from unspecified milk or other animal milk	F		Official sampling	food sample		Single	25 g	1220	6	852	2
Cheeses, made from unspecified milk or other animal milk - unspecified (Strains)	L			food sample		Single		2	2	2	2
Dairy products (excluding cheeses) - dairy products, not specified	F		Official sampling	food sample		Single	25 g	299	7	254	0
Dairy products (excluding cheeses) - ice-cream	F		Official sampling	food sample		Single	25 g	646	10	380	0

	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 (EU baseline Listeria survey. Samples from 2011.)			
Cheeses, made from unspecified milk or other animal milk	368	2	2

Table Listeria monocytogenes in milk and dairy products

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses, made from unspecified milk or other animal milk - unspecified (Strains)	0	0	0
Dairy products (excluding cheeses) - dairy products, not specified	45	7	0
Dairy products (excluding cheeses) - ice-cream	266	10	0

Footnote:

Source of information:
- F: Public Health Services of the Autonomous Communities
- L: National Reference Laboratory

The information about the Sampling Stage is not available.

Table Listeria monocytogenes in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Egg products	F		Official sampling	food sample		Single	25 g	118	0	42	0
Fish - at retail - Survey - EU baseline survey (Smoked and gravad fish. (EU Listeria Baseline Survey) Samples from 2011)	L	Selective sampling		food sample		Single	200 g	320	20	320	20
Fishery products, unspecified	F		Official sampling	food sample > meat		Single	25 g	845	52	460	9
Fishery products, unspecified - ready-to-eat (Strains)	L					Single		7	7	7	7
Meat from bovine animals - fresh	F		Official sampling	food sample > meat		Single	25 g	4	0	4	0
Meat from bovine animals - meat products - unspecified, ready-to-eat	F		Official sampling	food sample > meat		Single	25 g	31	0	31	0
Meat from broilers (Gallus gallus) - fresh	F		Official sampling	food sample > meat		Single	25 g	12	1	9	1
Meat from broilers (Gallus gallus) - meat products	F		Official sampling	food sample > meat		Single	25 g	47	1	16	0
Meat from other animal species or not specified - meat preparation	F		Official sampling	food sample > meat		Single	25 g	156	27	48	3
Meat from other animal species or not specified - meat products (Raw meat products: bovine+pig, horse+pig Wild boar sausages Pates)	F		Official sampling	food sample > meat		Single	25 g	119	1	71	0
Meat from other animal species or not specified - meat products - at retail - Survey - EU baseline survey (Cooked meat products, sausages and pates. (EU Listeria Baseline Survey) Samples from 2011.)	L	Selective sampling		food sample		Single	200 g	165	12	165	12

Table Listeria monocytogenes in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Meat from other animal species or not specified - minced meat	F		Official sampling	food sample > meat		Single	25 g	37	15	25	5
Meat from other poultry species - meat products	F		Official sampling	food sample > meat		Single	25 g	47	2	18	1
Meat from pig - fresh	F		Official sampling	food sample > meat		Single	25 g	3	0	3	0
Meat from pig - meat products - unspecified, ready-to-eat	F		Official sampling	food sample > meat		Single	25 g	1075	83	672	59
Meat from pig - meat products - unspecified, ready-to-eat (Strains)	L					Single		84	1	84	1
Other food (A total of 1584 samples of different food categories including: baby food, horchata (cold drink made from tiger nuts), bakery products, breakfast cereals, juices, nougat candy, marzipan, smoked fish or honey.)	F		Official sampling	food sample		Single	25 g	1584	59	872	3
Other processed food products and prepared dishes - unspecified - non-ready-to-eat foods	F		Official sampling	food sample		Single	25 g	264	1	157	0
Other processed food products and prepared dishes - unspecified - ready-to-eat foods	F		Official sampling	food sample		Single	25 g	6042	78	2598	42
Other processed food products and prepared dishes - unspecified - ready-to-eat foods (Strains)	L					Single		8	8	8	8
Vegetables	F		Official sampling	food sample		Single	25 g	300	6	117	2
Vegetables - pre-cut - ready-to-eat (Salads)	F		Official sampling	food sample		Single	25 g	1198	30	537	22
Vegetables - pre-cut - ready-to-eat (Strains)	L							20	20	20	20

Table Listeria monocytogenes in other foods

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Egg products	76	0	0
Fish - at retail - Survey - EU baseline survey (Smoked and gravad fish. (EU Listeria Baseline Survey) Samples from 2011)			
Fishery products, unspecified	385	21	22
Fishery products, unspecified - ready-to-eat (Strains)	0	0	0
Meat from bovine animals - fresh	0	0	0
Meat from bovine animals - meat products - unspecified, ready-to-eat	0	0	0
Meat from broilers (Gallus gallus) - fresh	3	0	0
Meat from broilers (Gallus gallus) - meat products	31	1	0
Meat from other animal species or not specified - meat preparation	108	21	3
Meat from other animal species or not specified - meat products (Raw meat products: bovine+pig, horse+pig Wild boar sausages Pates)	48	0	1
Meat from other animal species or not specified - meat products - at retail - Survey - EU baseline survey (Cooked meat products, sausages and pates. (EU Listeria Baseline Survey) Samples from 2011.)			

Table Listeria monocytogenes in other foods

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Meat from other animal species or not specified - minced meat	12	10	0
Meat from other poultry species - meat products	29	1	0
Meat from pig - fresh	0	0	0
Meat from pig - meat products - unspecified, ready-to-eat	403	15	9
Meat from pig - meat products - unspecified, ready-to-eat (Strains)	0	0	0
Other food (A total of 1584 samples of different food categories including: baby food, horchata (cold drink made from tiger nuts), bakery products, breakfast cereals, juices, nougat candy, marzipan, smoked fish or honey.)	712	51	5
Other processed food products and prepared dishes - unspecified - non-ready-to-eat foods	107	0	1
Other processed food products and prepared dishes - unspecified - ready-to-eat foods	3444	33	3
Other processed food products and prepared dishes - unspecified - ready-to-eat foods (Strains)	0	0	0
Vegetables	183	4	0
Vegetables - pre-cut - ready-to-eat (Salads)	661	7	1
Vegetables - pre-cut - ready-to-eat (Strains)	0	0	0

Table Listeria monocytogenes in other foods

Footnote:

Source of information:
-F: Public Health Services of the Autonomous Communities
-L: National Reference Laboratory

The information about the Sampling Stage is not available.

2.3.4 Listeria in animals

Table Listeria in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals) - dairy cows - at farm - Monitoring	A	Suspect sampling	Official sampling	animal sample > foetus/stillbirth		Animal	97	3	1	2
Sheep - at farm - Monitoring	A	Suspect sampling	Official sampling	animal sample > blood		Animal	5	0		
Goats - at farm - Monitoring	A	Suspect sampling	Official sampling	animal sample > foetus/stillbirth		Animal	2	0		
Rodents - wild - in total - Surveillance [1)]	A	Convenience sampling	Official sampling	animal sample > blood		Animal	343	1		1

Comments:

[1)] Microtus arvalis, Apodemus silvaticus

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 2007-2011 national active monitoring programmes have been performed in young cattle 1-2 years old 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 monitoring programmes.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 monitoring programmes 2007-2011 in young cattle 1-2 years old.
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 16.654:2001.
- 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 strategy	Sampler	Sample type	Sample Origin	Analytical Method	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157
Meat from pig - fresh - at retail - Surveillance	F		Official sampling	food sample > meat			Single	25 g	8	0	
Meat from bovine animals - carcase - at slaughterhouse - Surveillance	F		Official sampling	food sample > meat			Single	25 g	9	1	1
Meat from bovine animals - fresh - at processing plant - Surveillance	F		Official sampling	food sample > meat			Single	25 g	0		
Meat from bovine animals - fresh - at retail - Surveillance	F		Official sampling	food sample > meat			Single	25 g	45	0	
Meat from sheep - fresh - at retail - Surveillance	F		Official sampling	food sample > meat			Single	25 g	2	0	
Dairy products, unspecified	F		Official sampling	food sample			Single	25 g	1	0	
Meat from bovine animals - meat products - at processing plant	F		Official sampling	food sample > meat			Single	25 g	1	0	
Meat from goat - fresh (Strains. At retail.)	L						Single		1	1	1
Meat from other animal species or not specified (Minced meat and meat preparations)	F		Official sampling	food sample > meat			Single	25 g	292	3	3
Meat from pig - meat products - at processing plant	F		Official sampling	food sample > meat			Single	25 g	17	0	
Meat from pig - meat products - at retail	F		Official sampling	food sample > meat			Single	25 g	29	9	9
Meat from poultry, unspecified - fresh - at retail	F		Official sampling	food sample > meat			Single	25 g	34	1	1

Table VT E. coli in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Analytical Method	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157
Meat from poultry, unspecified - meat products - at processing plant	F		Official sampling	food sample > meat			Single	25 g	2	0	
Milk from other animal species or unspecified - UHT milk	F		Official sampling	food sample > milk			Single	25 g	1	0	
Other processed food products and prepared dishes	F		Official sampling	food sample			Single	25 g	10	0	
Vegetables	F		Official sampling	food sample			Single	25 g	24	4	4

	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from pig - fresh - at retail - Surveillance		
Meat from bovine animals - carcase - at slaughterhouse - Surveillance	0	0
Meat from bovine animals - fresh - at processing plant - Surveillance		
Meat from bovine animals - fresh - at retail - Surveillance		
Meat from sheep - fresh - at retail - Surveillance		
Dairy products, unspecified		
Meat from bovine animals - meat products - at processing plant		
Meat from goat - fresh (Strains. At retail.)	0	0

Table VT E. coli in food

	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from other animal species or not specified (Minced meat and meat preparations)	0	0
Meat from pig - meat products - at processing plant		
Meat from pig - meat products - at retail		
Meat from poultry, unspecified - fresh - at retail	0	0
Meat from poultry, unspecified - meat products - at processing plant		
Milk from other animal species or unspecified - UHT milk		
Other processed food products and prepared dishes		
Vegetables	0	0

Footnote:

Source of information:
F: Public Health Services of the Autonomous Communities
L: National Reference Laboratory

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 15 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

Animals at slaughter (herd based approach)

from May to December

Type of specimen taken

Animals at slaughter (herd based approach)

Other: hide swabs for E. coli O157:H7; faeces for VTEC

Methods of sampling (description of sampling techniques)

Animals at slaughter (herd based approach)

One hide swab sample has been taken from one animal and two faeces samples from two animals 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 15 slaughterhouses placed in the provinces of Barcelona(3), Valencia, Huesca, Lerida, Caceres,Madrid, Lugo, Pontevedra(2), Segovia, Salamanca, Avila 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 198 hair samples and 408 faeces samples have been taken, belonging to 204 slaughter batches and 204 different holdings.

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); PCR for detection of VT1 and VT2

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

Results of the investigation

E. coli O157:H7 (hide swabs)
Number os slaughter batches tested: 198
Number of slaughter batches positive: 22
Slaughter batch (herd) prevalence: 11,1%
Verotoxicigenic E. coli (faeces)
Number os slaughter batches tested: 204
Number of slaughter batches positive: 43
Slaughter batch (herd) prevalence: 21,1%

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 strategy	Sampler	Sample type	Sample Origin	Analytical Method	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157
Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - Monitoring - EFSA specifications [1)]	M.A.G.R.A.M.A.	Objective sampling	Not applicable	animal sample > hide		ISO 16654:2001	Slaughter batch		198	22	22
Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - Monitoring - active [2)]	M.A.G.R.A.M.A.	Objective sampling	Not applicable	animal sample > faeces		PCR	Slaughter batch		204	43	

	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - Monitoring - EFSA specifications [1)]		
Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - Monitoring - active [2)]		43

Comments:

[1)] 12 vtx2; 10 vtx1 and vtx2

[2)] 16 vtx1; 21 vtx2; 7 vtx1 and vtx2

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 2011 herd prevalence was 1,33%(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; 1,51% in 2010), with 96.40% 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; 96,49% in 2010; 0,36% in 2010). Animal prevalence in 2011 was 0.28%(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; 0,36% in 2010). 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 2011.
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 2005-2011 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 2011, 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 152.149 gamma-interferon tests have been performed in 2011.

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 2011. These measures have increased the sensitivity at herd level as well.

More than 209.000 pre-movement tests have been performed in 2011.

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 2010/712/UE. 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: 1,33%
Animal prevalence: 0,28%
Herd incidence: 0,84%
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 2011.Trend analysis show a decreasing trend between 2006 and 2011 (Mantel test for trend: $p< 0,05$).The annual rate of decrease is -4,45% (95% C.I. for relative change = 6,48 to -2%).

In dairy herds, the disease is close to eradication, with a herd prevalence of 0,40%. 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 1,52%. Explanation of this higher prevalence can be found in special management 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 2008-2011 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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Mycobacterium	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified
Goats	A	Selective sampling	Official sampling	animal sample		Animal	168969	2148	140		2008
Badgers [1)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	70	5	5		
Deer - wild - fallow deer - from hunting - Surveillance [2)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	42	25	25		
Deer - wild - red deer - from hunting - Surveillance [3)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	827	104	104		
Deer - wild - roe deer - from hunting - Surveillance [4)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	10	0			
Foxes - wild - from hunting - Surveillance [5)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	67	1	1		
Wild boars - wild - from hunting - Surveillance [6)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	3577	370	368		

	M. caprae
Goats	
Badgers [1)]	
Deer - wild - fallow deer - from hunting - Surveillance [2)]	

Table Tuberculosis in other animals

		M. caprae
Deer - wild - red deer - from hunting - Surveillance	3)	
Deer - wild - roe deer - from hunting - Surveillance	4)	
Foxes - wild - from hunting - Surveillance	5)	
Wild boars - wild - from hunting - Surveillance	6)	2

Comments:

1) CULTURE/PCR

2) CULTURE/PCR

3) CULTURE/PCR

4) CULTURE/PCR

5) CULTURE/PCR

6) CULTURE/PCR

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	7360	6848	6005	370	241	30	8.11	87.69	6.16	4.01
Aragón	3087	2797	1421	23	15	3	13.04	50.8	1.62	1.06
Asturias	17935	17765	17765	24	21	10	41.67	100	.14	.12
Canarias	1064	1064	1064	0	0	0	N.A.	100	0	0
Cantabria	7712	7673	7673	57	43	0	0	100	.74	.56
Castilla y León	14520	14099	14099	363	250	7	1.93	100	2.57	1.77
Castilla-La Mancha	3044	2130	2130	114	24	8	7.02	100	5.35	1.13
Cataluña	5259	4091	4066	33	19	4	12.12	99.39	.81	.47
Extremadura	10130	9444	9366	291	178	3	1.03	99.17	3.11	1.9
Galicia	45020	45015	37769	71	43	21	29.58	83.9	.19	.11
Illes Balears	584	584	487	0	0	0	N.A.	83.39	0	0
La Rioja	305	266	266	1	1	0	0	100	.38	.38
Madrid	1438	1343	1343	97	74	6	6.19	100	7.22	5.51

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

Murcia	363	301	301	1	1	0	0	100	.33	.33
Navarra	1691	1691	1680	11	7	1	9.09	99.35	.65	.42
País Vasco	6338	6338	5459	18	16	0	0	86.13	.33	.29
Valencia / València	623	619	566	11	5	0	0	91.44	1.94	.88
Total : [1)]	126473	122068	111460	1485	938	93	6.26	91.31	1.33	.84
Total - 1	131623	125245	116399	1755	990	148	8.43	92.94	1.51	.85

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	546015	527217	487978	487777	5208	5208	6448	92.56	1.07
Aragón	317023	205042	111679	111668	269	269	269	54.47	.24
Asturias	373622	358026	358026	358026	204	199	786	100	.06
Canarias	17246	17246	17246	17246	0	0	2	100	0
Cantabria	277502	277282	277282	277282	430	413	474	100	.16
Castilla y León	1119813	1108471	1103301	1103301	2673	2541	4299	99.53	.24
Castilla-La Mancha	394869	245092	245092	245092	1790	1790	2463	100	.73
Cataluña	546988	411573	408641	287091	350	308	535	99.29	.09
Extremadura	787211	737128	699254	691407	1645	1937	1666	94.86	.24
Galicia	948802	763056	763056	763056	424	416	1015	100	.06
Illes Balears	31220	24552	24552	24552	0	0	9	100	0
La Rioja	38994	28510	28510	28510	13	18	18	100	.05
Madrid	86990	80482	80482	80482	649	649	903	100	.81

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

Murcia	61608	45016	45016	45016	1	1	1	100	0
Navarra	111196	96814	91913	91913	129	164	164	94.94	.14
País Vasco	138721	109274	109274	109274	60	60	81	100	.05
Valencia / València	51476	51459	49926	43594	123	123	123	97.02	.25
Total : [1)]	5849296	5086240	4901228	4765287	13968	14096	19256	96.36	.28
Total - 1	6063230	5174145	5043219	4933367	18073	17617	26040	97.47	.36

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	6696	490819	66	915	172	17494	344	36332	6	627	0	0	6108	435451
Aragón	3007	317023	0	0	0	0	293	110412	21	3816	0	0	2693	202795
Asturias	17935	373622	0	0	10	505	238	1399	13	494	0	0	17674	371224
Canarias	1064	17246	0	0	0	0	0	0	0	0	0	0	1064	17246
Cantabria	7673	277282	39	217	19	973	5	157	0	0	0	0	7610	275935
Castilla y León	14091	1056399	15	698	371	56664	522	55327	0	0	0	0	13183	943710
Castilla-La Mancha	2130	245092	0	0	78	16936	88	12544	2	285	0	0	1962	215327
Cataluña	4102	439186	1	3	11	1298	20	4753	28	1078	0	0	4042	432054
Extremadura	9252	772288	0	0	57	12352	323	33660	42	8552	0	0	8830	717724
Galicia	42935	937871	55	164	11	368	1240	8150	60	3025	0	0	41569	926164
Illes Balears	588	30847	0	0	0	0	0	0	1	16	0	0	587	30831
La Rioja	266	28510	0	0	0	0	0	0	0	0	0	0	266	28510
Madrid	1343	80482	0	0	43	3869	19	1434	15	1156	0	0	1266	74023

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

Murcia	297	41070	0	0	0	0	12	344	0	0	0	0	285	40726
Navarra	1691	110010	0	0	6	686	2	125	46	4405	0	0	1637	104794
País Vasco	6338	138710	0	0	0	0	4	250	6	161	0	0	6328	138299
Valencia / València	616	49435	7	47	1	13	7	14	8	1514	0	0	593	47847
Total : [1)]	120024	5405892	183	2044	779	111158	3117	264901	248	25129	0	0	115697	5002660
Total - 1	124215	5598592	1237	103287	922	137990	1862	153406	354	38407	0	0	119840	5165502

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 2011 herd prevalence was 0.12%(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; 0,20% in 2010) in cattle and 0.54% (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; 0,89% in 2010) in goats and sheep.Animal prevalence was 0.02% (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; 0,05% in 2010) in cattle and 0.04% (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; 0,07% in 2010) 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 2011.
Spanish Programme on eradication of brucellosis in goats and sheep 2011.
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.

Additional information

Since 1992, there has been a sharp decline in the number of human cases, marking the beginning of a new phase of low incidence that has been maintained over the last 15 years

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.
2011 is the lowest year in human cases with 104 cases (54 confirmed cases).

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

In 2011, 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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis
Dairy products, unspecified	F		Official sampling	food sample > milk		Single	20	0			

	Brucella spp., unspecified
Dairy products, unspecified	

Footnote:

F: 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 2010/712/UE.
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: 0,12%
Animal prevalence: 0,02%
Herd incidence: 0,08%
Herd status: 95.09% OBF; 2,74% 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, 2009,2010 and 2011.
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); 0,12%(2011).
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); 0,02% (2011) .

Disease is close to eradication in dairy herds.Herd prevalence is below 1%(0,02%).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 2010/712/UE.
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: 0.54%
Animal prevalence: 0,04%
Herd incidence: 0,33%
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); 0,54% (2011).
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); 0,04% (2011).
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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis
Barbary sheep - wild - from hunting - Surveillance [1)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	24	0			
Cantabrian chamois - wild - from hunting - Surveillance [2)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	58	0			
Deer - wild - fallow deer - from hunting - Surveillance [3)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	162	1			
Deer - wild - red deer - from hunting - Surveillance [4)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	520	0			
Deer - wild - roe deer - from hunting - Surveillance [5)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	12	0			
Dogs - at farm - Surveillance [6)]	A	Selective sampling	Official sampling	animal sample > blood		Animal	957	16			
Dromedaries - farmed - at farm - Monitoring - active [7)]	A	Selective sampling	Official sampling	animal sample		Animal	250	0			
Mouflons - wild - from hunting - Surveillance [8)]	A	Selective sampling	Official sampling	animal sample > organ/tissue		Animal	31	0			
Pigs - mixed herds - not raised under controlled housing conditions - at farm - Clinical investigations [9)]	NRL	Suspect sampling	Official sampling	animal sample > organ/tissue		Herd	1	1			
Wild boars - wild - from hunting - Surveillance [10)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal	3116	91	11		

Table Brucellosis in other animals

	Brucella spp., unspecified	B. suis - biovar 2
Barbary sheep - wild - from hunting - Surveillance [1)]		
Cantabrian chamois - wild - from hunting - Surveillance [2)]		
Deer - wild - fallow deer - from hunting - Surveillance [3)]	1	
Deer - wild - red deer - from hunting - Surveillance [4)]		
Deer - wild - roe deer - from hunting - Surveillance [5)]		
Dogs - at farm - Surveillance [6)]	16	
Dromedaries - farmed - at farm - Monitoring - active [7)]		
Mouflons - wild - from hunting - Surveillance [8)]		
Pigs - mixed herds - not raised under controlled housing conditions - at farm - Clinical investigations [9)]		1
Wild boars - wild - from hunting - Surveillance [10)]	37	43

Comments:

[1)] CULTURE/PCR

[2)] CULTURE/PCR

[3)] CULTURE/PCR

Table Brucellosis in other animals

Comments:

[4)] CULTURE/PCR

[5)] CULTURE/PCR

[6)] SEROLOGY

[7)] SEROLOGY

[8)] CULTURE/PCR

[9)] CULTURE/PCR

[10)] CULTURE/PCR

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	7322	6698	6089	1	0	0	0	90.91	.02	0
Aragón	3087	2790	1429	0	0	0	N.A.	51.22	0	0
Asturias	17935	17935	17935	0	0	0	N.A.	100	0	0
Canarias	1064	1064	410	0	0	0	N.A.	38.53	0	0
Cantabria	7712	7673	7673	41	34	0	0	100	.53	.44
Castilla y León	14520	14099	14099	48	30	4	8.33	100	.34	.21
Castilla-La Mancha	3044	3044	2491	2	2	1	50	81.83	.08	.08
Cataluña	5259	4091	4066	0	0	0	N.A.	99.39	0	0
Extremadura	10130	9444	9424	39	20	1	2.56	99.79	.41	.21
Galicia	45020	45015	37889	0	0	0	N.A.	84.17	0	0
Illes Balears	584	584	494	0	0	0	N.A.	84.59	0	0
La Rioja	305	305	305	0	0	0	N.A.	100	0	0
Madrid	1438	1343	1343	4	3	0	0	100	.3	.22

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

Murcia	363	337	337	0	0	0	N.A.	100	0	0
Navarra	1691	1691	1680	0	0	0	N.A.	99.35	0	0
País Vasco	6338	6338	5203	0	0	0	N.A.	82.09	0	0
Valencia / València	623	619	500	1	1	0	0	80.78	.2	.2
Total : [1)]	126435	123070	111367	136	90	6	4.41	90.49	.12	.08
Total - 1	131603	126497	115663	229	147	28	12.23	91.44	.2	.13

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	17538	17488	15345	302	196	19	6.29	87.75	1.97	1.28
Aragón	4114	4048	3934	2	1	0	0	97.18	.05	.03
Asturias	7027	7027	7027	0	0	0	N.A.	100	0	0
Canarias	4261	4261	776	0	0	0	N.A.	18.21	0	0
Cantabria	4487	4485	4485	1	0	0	0	100	.02	0
Castilla y León	10368	10243	10243	1	1	0	0	100	.01	.01
Castilla-La Mancha	6653	6368	6368	81	35	8	9.88	100	1.27	.55
Cataluña	3603	3466	3446	57	36	1	1.75	99.42	1.65	1.04
Extremadura	15759	14505	14223	39	19	1	2.56	98.06	.27	.13
Galicia	23696	23696	23090	0	0	0	N.A.	97.44	0	0
Illes Balears	4590	4590	1568	0	0	0	N.A.	34.16	0	0
La Rioja	444	414	413	1	1	0	0	99.76	.24	.24
Madrid	663	648	648	4	1	1	25	100	.62	.15

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

Murcia	2234	2175	1854	29	7	0	0	85.24	1.56	.38
Navarra	2561	2609	2381	0	0	0	N.A.	91.26	0	0
País Vasco	8323	8323	7036	0	0	0	N.A.	84.54	0	0
Valencia / València	1497	1487	1378	50	42	0	0	92.67	3.63	3.05
Total : [1)]	117818	115833	104215	567	339	30	5.29	89.97	.54	.33
Total - 1	119422	116857	106181	942	549	22	2.34	90.86	.89	.52

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	529883	496389	369305	369305	10	10	10	74.4	0
Aragón	317023	76063	75347	75347	0	0	6	99.06	0
Asturias	373622	280870	280870	280870	0	0	17	100	0
Canarias	17246	6604	6604	4984	0	0	0	100	0
Cantabria	277502	236123	236123	236123	81	81	194	100	.03
Castilla y León	1119813	1063293	812446	812446	414	412	1907	76.41	.05
Castilla-La Mancha	394869	168114	168114	168114	12	24	36	100	.01
Cataluña	546988	195591	195057	194776	0	0	9	99.73	0
Extremadura	792536	563759	539336	531244	215	331	800	95.67	.04
Galicia	948802	676193	676193	676193	0	0	16	100	0
Illes Balears	31220	18762	18762	4561	0	0	0	100	0
La Rioja	38994	22169	22169	22169	0	0	0	100	0
Madrid	86990	76622	76622	76622	4	4	6	100	.01

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

Murcia	61608	10451	10451	10451	0	0	0	100	0
Navarra	111166	71317	71317	71317	0	0	1	100	0
País Vasco	138721	88169	88169	83711	0	0	0	100	0
Valencia / València	51476	51459	40506	40506	1	1	1	78.72	0
Total : [1)]	5838459	4101948	3687391	3658739	737	863	3003	89.89	.02
Total - 1	6242846	4153734	3735155	3700059	1761	1767	4985	89.92	.05

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	3064333	2672219	2556592	2113408	2796	2796	7906	95.67	.11
Aragón	1645333	1328305	1396717	1328272	1	0	158	105.15	0
Asturias	96224	90887	90887	90887	0	0	0	100	0
Canarias	350890	67913	67913	37850	0	0	0	100	0
Cantabria	86227	86227	86227	86227	3	3	28	100	0
Castilla y León	3383671	2827875	2827875	1083432	1	1	50	100	0
Castilla-La Mancha	2938153	2423971	2423971	2422694	1433	1433	3294	100	.06
Cataluña	609077	472563	471172	471172	449	452	470	99.71	.1
Extremadura	4132487	3125093	3098236	1143753	1385	2082	2151	99.14	.04
Galicia	288916	260982	260982	260982	0	0	7	100	0
Illes Balears	351099	340738	340738	37618	0	0	0	100	0
La Rioja	115194	107592	107513	107513	1	1	1	99.93	0
Madrid	84115	79897	79897	79897	177	177	640	100	.22

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

Murcia	632900	493728	467481	467481	272	251	251	94.68	.06
Navarra	571083	567807	562328	185587	0	4	4	99.04	0
País Vasco	303050	198808	198808	162420	0	0	0	100	0
Valencia / València	440218	438689	409805	287847	114	67	67	93.42	.03
Total : [1)]	19092970	15583294	15447142	10367040	6632	7267	15027	99.13	.04
Total - 1	20227844	16699834	14380392	11170673	10593	10304	19417	86.11	.07

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	6630	495580	76	799	0	0	67	1655	0	0	1	259	6486	492867
Aragón	3087	317023	0	0	0	0	0	0	0	0	286	20271	2801	296752
Asturias	17935	373622	0	0	0	0	139	764	0	0	0	0	17796	372858
Canarias	1064	17246	0	0	0	0	0	0	0	0	0	0	1064	17246
Cantabria	7673	236123	39	217	22	1492	3	272	3	214	0	0	7606	233928
Castilla y León	14091	1057190	13	631	29	5530	167	12877	0	0	2291	198435	11591	839717
Castilla-La Mancha	2479	168114	0	0	1	11	423	9202	23	0	0	0	2052	158695
Cataluña	4101	439224	1	3	0	0	7	152	0	0	30	592	4064	438477
Extremadura	9252	786863	0	0	6	723	126	7996	49	6501	695	69389	8376	693002
Galicia	42935	937871	55	164	0	0	1283	6652	7	844	0	0	41590	930211
Illes Balears	588	30847	0	0	0	0	0	0	0	0	0	0	588	30847
La Rioja	305	22169	0	0	0	0	0	0	0	0	0	0	305	22169
Madrid	1343	76622	0	0	0	0	0	0	0	0	0	0	1343	76622

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

Murcia	334	44963	0	0	0	0	10	207	0	0	0	0	324	44756
Navarra	1691	101013	0	0	0	0	0	0	70	4937	0	0	1621	96076
País Vasco	6338	138721	0	0	0	0	0	0	0	0	0	0	6338	138721
Valencia / València	620	49403	8	107	0	0	9	64	0	0	1	13	602	49219
Total : [1)]	120466	5292594	192	1921	58	7756	2234	39841	152	12496	3304	288959	114547	4932163
Total - 1	125576	5672651	1818	129143	121	15909	1068	48552	291	28791	3585	336477	118693	5113779

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	17456	3031928	209	18596	132	48578	1496	152910	34	15902	12106	2295573	3479	500369
Aragón	4114	1645333	0	0	0	0	1	547	43	1423	4070	1643363	0	0
Asturias	7027	96224	0	0	0	0	153	346	0	0	0	0	6874	95878
Canarias	4261	350890	0	0	0	0	0	0	0	0	0	0	4261	350890
Cantabria	4487	86227	0	0	0	0	0	0	2	314	0	0	4485	85913
Castilla y León	10927	3342368	43	6873	4	1237	428	29160	1	77	13	3622	10438	3301399
Castilla-La Mancha	6368	2423971	0	0	44	57840	87	44912	38	22017	2605	867336	3594	1431866
Cataluña	3469	525342	12	836	19	12614	136	16887	24	10461	2730	417996	548	66548
Extremadura	14355	4006123	0	0	20	10438	828	58406	60	2688	13320	3845649	127	88942
Galicia	23043	252723	423	1812	0	0	841	6763	49	606	0	0	21730	243542
Illes Balears	4590	351099	0	0	0	0	0	0	0	0	0	0	4590	351099
La Rioja	414	107592	0	0	0	0	0	0	1	79	0	0	413	107513
Madrid	648	79897	0	0	1	422	2	841	0	0	590	63736	55	14898

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

Murcia	2174	466619	321	7632	19	12337	215	35272	8	2360	1501	363498	110	45520
Navarra	2509	567807	135	4175	0	0	0	0	40	5332	551	332581	1783	225719
País Vasco	8323	303050	0	0	0	0	0	0	0	0	0	0	8323	303050
Valencia / València	1487	438532	6	548	2	1179	45	5692	5	1218	946	316867	483	113028
Total : [1)]	115652	18075725	1149	40472	241	144645	4232	351736	305	62477	38432	10150221	71293	7326174
Total - 1	116522	19189582	1011	58340	386	266002	5485	536219	388	100350	39196	10797026	70056	7431645

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 2011 264 cases of enteric infections by Y enterocolitica was comunicatte.
At animal level, an active monitoring programme in fattening pigs at slaughter in 2011 detected Y. enterocolítica in 43,2% of the slaughter batches tested. All the strains belonged 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, active monitoring programmeshave been performed in pigs at slaugtherhouse in 2007-2011.

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 2011 264 cases has been reported versus 2010 325.

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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis
Meat from pig - carcase - at slaughterhouse	F		Official sampling	food sample > meat		Single	25 g	26	0		
Meat from pig - fresh - at retail [1)]	F		Official sampling	food sample > meat		Single	25 g	43	2	2	0
Meat from bovine animals - carcase - at slaughterhouse	F		Official sampling	food sample > meat		Single	25 g	50	0		
Meat from bovine animals - fresh - at retail	F		Official sampling	food sample > meat		Single	25 g	2	1	1	0
Meat from broilers (Gallus gallus) - fresh - at retail	F		Official sampling	food sample > meat		Single	25 g	3	0		
Meat from other animal species or not specified - fresh - at retail	F		Official sampling	food sample > meat		Single	25 g	4	2	2	0
Meat from other animal species or not specified - meat preparation	F		Official sampling	food sample > meat		Single	25 g	59	4	4	0
Meat from other animal species or not specified - minced meat	F		Official sampling	food sample > meat		Single	25 g	26	3	3	0

	Yersinia spp., unspecified	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - unspecified
Meat from pig - carcase - at slaughterhouse				
Meat from pig - fresh - at retail [1)]	2	0	0	2

Table Yersinia in food

	Yersinia spp., unspecified	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - unspecified
Meat from bovine animals - carcase - at slaughterhouse				
Meat from bovine animals - fresh - at retail	0	0	0	1
Meat from broilers (Gallus gallus) - fresh - at retail				
Meat from other animal species or not specified - fresh - at retail	0	0	0	2
Meat from other animal species or not specified - meat preparation	0	0	0	4
Meat from other animal species or not specified - minced meat	0	0	0	3

Comments:

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

Footnote:

F: Public Health Services of the Autonomous Communities

2.7.4 Yersinia in animals

A. Yersinia enterocolitica in pigs

Monitoring system

Sampling strategy

Animals at slaughter (herd based approach)

Samples have been taken ramdomly (day of each month) in 15 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%). Tonsils of one animal by slaughter batch with 10 animals or more, with a maximun of 30 slaughter batches by slaughterhouse and day of sampling.Each batch belonged to different herds.
Sampling has been performed in 15 slaughterhouses placed in the provinces of Cuenca, Barcelona(3),Ciudad Real, Murcia, Pontevedra, Burgos, Málaga, Gerona, León, Madrid, Huesca, Valencia and Lérida.
A total of 257 samples of tonsils have been taken, belonging to 257 animals of 257 slaughter batches and 257 different holdings.

Frequency of the sampling

Animals at slaughter (herd based approach)

between May and December

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: 257
Number of slaughter batches positive: 111
Slaughter batch prevalence: 43,2% (CI 95%: 37,1-49,5)

Table Yersinia in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp., unspecified
Pigs - fattening pigs - at slaughterhouse - Monitoring	M.A.G.R.A.M.A.	Objective sampling	Not applicable	animal sample > tonsil		Slaughter batch	257	111	111		

	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - unspecified
Pigs - fattening pigs - at slaughterhouse - Monitoring	111		

Footnote:

M.A.G.R.A.M.A.: Ministry of Agriculture, Food and Environment

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.
In 2011, 2 outbreaks has been notified and 18 confirmed cases

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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified	T. britovi
Pigs - fattening pigs - not raised under controlled housing conditions - at slaughterhouse - Surveillance	F	Census	Official sampling	animal sample		Animal	41597557	8		8	
Solipeds, domestic - horses - at slaughterhouse - Surveillance	F	Census	Official sampling	animal sample		Animal	49672	0			
Wild boars - wild - Surveillance	F	Census	Official sampling	animal sample		Animal	104869	176	56	105	15
Deer - wild	F		Official sampling	animal sample		Animal	20	0			
Pigs (Domestic slaughter for self-consumption.)	F	Census	Official sampling	animal sample		Animal	32138	1		1	

Footnote:

F: PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

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 2011 with 55 confirmed cases reporting at National surveillance System.

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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Region	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis
Cattle (bovine animals) - at slaughterhouse - Surveillance	F		Official sampling	animal sample		Animal		2365537	12497	12497	0
Pigs - at slaughterhouse - Surveillance	F		Official sampling	animal sample		Animal		41597557	4983	4983	0
Solipeds, domestic - horses - at slaughterhouse - Surveillance	F		Official sampling	animal sample		Animal		49672	42	42	0
Deer - wild - at game handling establishment	F		Official sampling	animal sample		Animal		136771	5	5	0
Mountain goats - wild	F		Official sampling	animal sample		Animal		4541	0		
Pigs (Domestic killing for self-consumption)	F		Official sampling	animal sample		Animal		27193	172	172	0
Sheep and goats	F		Official sampling	animal sample		Animal		12667838	94972	94972	0
Wild boars - wild	F		Official sampling	animal sample		Animal		55772	15	15	0

	Echinococcus spp., unspecified
Cattle (bovine animals) - at slaughterhouse - Surveillance	
Pigs - at slaughterhouse - Surveillance	

Table Echinococcus in animals

	Echinococcus spp., unspecified
Solipeds, domestic - horses - at slaughterhouse - Surveillance	
Deer - wild - at game handling establishment	
Mountain goats - wild	
Pigs (Domestic killing for self-consumption)	
Sheep and goats	
Wild boars - wild	

Footnote:

F: PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

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

Results of the investigation

Only 5 congenital cases was notified in 2011

Additional information

Only congenital cases

2.10.3 Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Analytical Method	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii	Toxoplasma spp., unspecified
Cattle (bovine animals) - at farm - Monitoring	A	Convenience sampling	Official sampling	animal sample > blood		ELISA	Animal	68	0		
Sheep - at farm - Clinical investigations [1)]	A	Suspect sampling	Not applicable	animal sample > blood			Animal	44	11	11	
Sheep - at farm - Monitoring	A	Convenience sampling	Official sampling	animal sample > blood		ELISA	Animal	6327	2041	2041	
Goats - at farm - Clinical investigations [2)]	A	Suspect sampling	Official sampling	animal sample > blood			Animal	32	18	18	
Dogs - at farm - Monitoring	A	Convenience sampling	Official sampling	animal sample > blood		ELISA	Animal	39	1	1	

Comments:

[1)] SEROLOGY: ELISA, DA

[2)] SEROLOGY: ELISA, DA

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 11 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 11 regions, Ceuta and Melilla.
Voluntary vaccination of dogs in 6 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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Rabies virus (RABV)	EBLV-1
Cattle (bovine animals)	Ministry of Health, Social Services and Equality (MSSSI)						España	0			
Sheep	Ministry of Health, Social Services and Equality (MSSSI)						España	0			
Goats	Ministry of Health, Social Services and Equality (MSSSI)						España	0			
Pigs	Ministry of Health, Social Services and Equality (MSSSI)						España	0			
Solipeds, domestic	Ministry of Health, Social Services and Equality (MSSSI)						España	0			
Dogs - stray dogs	Ministry of Health, Social Services and Equality (MSSSI)	Suspect sampling	Official sampling	animal sample > brain		Animal	España	36	0		
Cats - stray cats	Ministry of Health, Social Services and Equality (MSSSI)	Suspect sampling	Official sampling	animal sample > brain		Animal	España	18	0		

Table Rabies in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Rabies virus (RABV)	EBLV-1
Bats - wild - Monitoring [1)]	Ministry of Health, Social Services and Equality (MSSSI)	Suspect sampling	Official sampling	animal sample > brain		Animal	España	54	2		2
Foxes - wild - Monitoring	Ministry of Health, Social Services and Equality (MSSSI)	Suspect sampling	Official sampling	animal sample > brain		Animal	España	4			
Raccoon dogs - wild - Monitoring	Ministry of Health, Social Services and Equality (MSSSI)						España	0			
Raccoons - wild - Monitoring	Ministry of Health, Social Services and Equality (MSSSI)	Suspect sampling	Official sampling	animal sample > brain		Animal	España	29	0		
Wolves - wild - Monitoring	Ministry of Health, Social Services and Equality (MSSSI)						España	0			
Ferrets - wild - unspecified - Monitoring	Ministry of Health, Social Services and Equality (MSSSI)	Suspect sampling	Official sampling	animal sample > brain		Animal	España	4	0		
Rodents - wild - unspecified - Monitoring	Ministry of Health, Social Services and Equality (MSSSI)	Suspect sampling	Official sampling	animal sample > brain		Animal	España	15	0		

Table Rabies in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Rabies virus (RABV)	EBLV-1
Squirrels - wild - unspecified - Monitoring	Ministry of Health, Social Services and Equality (MSSSI)	Suspect sampling	Official sampling	animal sample > brain		Animal	España	2	0		

	EBLV-2	Lyssavirus (unspecified virus)
Cattle (bovine animals)		
Sheep		
Goats		
Pigs		
Solipeds, domestic		
Dogs - stray dogs		
Cats - stray cats		
Bats - wild - Monitoring [1)]		
Foxes - wild - Monitoring		
Raccoon dogs - wild - Monitoring		
Raccoons - wild - Monitoring		
Wolves - wild - Monitoring		
Ferrets - wild - unspecified - Monitoring		

Table Rabies in animals

	EBLV-2	Lyssavirus (unspecified virus)
Rodents - wild - unspecified - Monitoring		
Squirrels - wild - unspecified - Monitoring		

Comments:

[1)] The two positive bats were from Seville

2.12 STAPHYLOCOCCUS INFECTION

2.12.1 General evaluation of the national situation

2.12.2 Staphylococcus in foodstuffs

Table Staphylococcus in Food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcus	S. aureus, meticillin resistant (MRSA)	S. aureus, meticillin resistant (MRSA) - spa -type t011
Meat from bovine animals - fresh	F		Official sampling	food sample > meat		Single	25 g	4	0		
Meat from bovine animals - meat products	F		Official sampling	food sample > meat		Single	25 g	2	0		
Meat from bovine animals - minced meat	F		Official sampling	food sample > meat		Single	25 g	21	0		
Meat from broilers (Gallus gallus) - fresh	F		Official sampling	food sample > meat		Single	25 g	1	0		
Meat from broilers (Gallus gallus) - meat preparation	F		Official sampling	food sample > meat		Single	25 g	5	0		
Meat from broilers (Gallus gallus) - meat products	F		Official sampling	food sample > meat		Single	25 g	1	0		
Meat from duck	F		Official sampling	food sample > meat		Single	25 g	1	0		
Meat from pig - fresh	F		Official sampling	food sample > meat		Single	25 g	42	1	1	1
Meat from pig - meat products	F		Official sampling	food sample > meat		Single	25 g	50	0		
Meat from pig - minced meat	F		Official sampling	food sample > meat		Single	25 g	13	0		
Meat from turkey	F		Official sampling	food sample > meat		Single	25 g	8	0		

Table Staphylococcus in Food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcus	S. aureus, meticillin resistant (MRSA)	S. aureus, meticillin resistant (MRSA) - spa -type t011
Milk, cows' - raw milk	F		Official sampling	food sample > milk		Single	25 g	7	0		
Milk, goats' - raw milk	F		Official sampling	food sample > milk		Single	25 g	15	0		

	S. aureus, meticillin resistant (MRSA) - spa -type t108	S. aureus, meticillin resistant (MRSA) - spa -type t034	S. aureus, meticillin resistant (MRSA) - MRSA, unspecified
Meat from bovine animals - fresh			
Meat from bovine animals - meat products			
Meat from bovine animals - minced meat			
Meat from broilers (Gallus gallus) - fresh			
Meat from broilers (Gallus gallus) - meat preparation			
Meat from broilers (Gallus gallus) - meat products			
Meat from duck			
Meat from pig - fresh	0	0	
Meat from pig - meat products			
Meat from pig - minced meat			
Meat from turkey			
Milk, cows' - raw milk			

Table Staphylococcus in Food

	S. aureus, meticillin resistant (MRSA) - spa -type t108	S. aureus, meticillin resistant (MRSA) - spa -type t034	S. aureus, meticillin resistant (MRSA) - MRSA, unspecified
Milk, goats' - raw milk			

Footnote:

F: Source of information: Public Health Services of the Autonomous Communities.

2.12.3 Staphylococcus in animals

A. Staphylococcus in Animals

Monitoring system

Sampling strategy

Samples have been taken ramdomly (day of each month) in 15 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%) in the provinces of Cuenca, Barcelona(3),Ciudad Real, Murcia, Pontevedra, Burgos, Málaga, Gerona, León, Madrid, Huesca, Valencia and Lérida.

Frequency of the sampling

between May and December.

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 : 227
Positive to MRSA: 191
Prevalence: 84,14%

Table Staphylococcus in Animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcus	S. aureus, meticillin resistant (MRSA)	S. aureus, meticillin resistant (MRSA) - spa -type t011
Pigs - fattening pigs - at slaughterhouse - Monitoring - active	M.A.G.R.A.M.A.	Objective sampling	Not applicable	animal sample > nasal swab		Slaughter batch		227		191	97

	S. aureus, meticillin resistant (MRSA) - spa -type t108	S. aureus, meticillin resistant (MRSA) - spa -type t034	S. aureus, meticillin resistant (MRSA) - MRSA, unspecified	S. aureus, meticillin resistant (MRSA) - spa -type t1197	S. aureus, meticillin resistant (MRSA) - spa -type t1451	S. aureus, meticillin resistant (MRSA) - spa -type t2346
Pigs - fattening pigs - at slaughterhouse - Monitoring - active	3	8	68	7	5	3

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 2011, 33 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 strategy	Sampler	Sample type	Sample Origin	Analytical Method	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii	No of clinically affected herds
Cattle (bovine animals) - at farm - Clinical investigations	A	Suspect sampling	Official sampling	animal sample > vaginal swab		PCR	Animal	4	0		
Sheep - at farm - Clinical investigations	A	Suspect sampling	Official sampling	animal sample > vaginal swab		PCR	Animal	19	0		
Goats - at farm - Clinical investigations [1)]	NRL	Suspect sampling	Official sampling	animal sample > vaginal swab		PCR	Animal	11	4	4	0

Comments:

[1)] vaginal swabs, milk, faeces

Footnote:

A: Animal Health Services of Autonomous Communities

2.14 TULARAEMIA

2.14.1 General evaluation of the national situation

2.14.2 Francisella in animals

Table Francisella in Animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Francisella	F. tularensis
Hares - wild - from hunting - Surveillance	A	Convenience sampling	Official sampling	animal sample > blood		Animal		51	0	0
Rodents - wild - in total - Surveillance [1)]	A	Convenience sampling	Official sampling	animal sample > organ/tissue		Animal		306	0	0

Comments:

[1)] Apodemus silvaticus, Crocidura russula, Microtus arvalis

Footnote:

A: Animal Health Services of Autonomous Communities.

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

between May and December

Type of specimen taken

faeces(2 samples by slaughter batch in cattle and pigs; 10 samples by slaughter batch in broilers)

Methods of sampling (description of sampling techniques)

Samples have been taken ramdomly (day of sampling each month) in 15 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.
Slaughter batches tested:
cattle (young bovines 1-2 years old): 227 (227 isolates)
broilers: 216 (216 isolates)
fattening pigs: 245 (244 isolates)

Procedures for the selection of isolates for antimicrobial testing

Following EFSA Technical specifications

Methods used for collecting data

Following EFSA Technical specifications

Laboratory methodology used for identification of the microbial isolates

Following EFSA Technical specifications

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Following EFSA Technical specifications

Cut-off values used in testing

Following EFSA Technical specifications

Results of the investigation

EBSLs have been detected in 20 isolates from broilers and 1 isolate from fattening pigs after fenotipic characterization.

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Pigs - fattening pigs - at slaughterhouse - Monitoring - EFSA specifications - Objective sampling - Not applicable - animal sample - faeces - quantitative data [Dilution method]

E.coli, non-pathogenic, unspecified	Pigs - fattening pigs - at slaughterhouse - Monitoring - EFSA specifications	
Isolates out of a monitoring program (yes/no)		
Number of isolates available in the laboratory	170	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Kanamycin	4	128
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64
Amphenicols - Florfenicol	2	64
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Cephalosporins - Ceftazidim	0.25	16
Polymyxins - Colistin	2	4
Sulfonamides - Sulfamethoxazol	8	1024

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

Test Method Used	Standard methods used for testing

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

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 <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		16	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.25	
Fluoroquinolones	Ciprofloxacin		0.03	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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

Test Method Used	Standard methods used for testing
Broth dilution	NCCLS/CLSI ISO 20778-1, CLSI M100-S18, CLSI M31-A3

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	2	
	Kanamycin		8	
	Streptomycin	EFSA	16	
Amphenicols	Chloramphenicol	EFSA	16	
	Florfenicol		16	
Cephalosporins	Cefotaxime	NON-EFSA	2	
	Ceftazidim		2	
Fluoroquinolones	Ciprofloxacin	NON-EFSA	0.06	
Penicillins	Ampicillin	EFSA	8	
Quinolones	Nalidixic acid	EFSA	16	
Sulfonamides	Sulfonamides	EFSA	256	
Tetracyclines	Tetracycline	EFSA	8	
Trimethoprim	Trimethoprim	EFSA	2	

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Trimethoprim + Sulfonamides	Trimethoprim + Sulfonamides		256	

Footnote:

Source of information: Public Health Services of the Autonomous Communities.

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

between May and December

Methods of sampling (description of sampling techniques)

Samples have been taken ramdomly (day of sampling each month) in 15 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.
Slaughter batches tested and results:
cattle (young bovines 1-2 years old): 238 (27 isolates of E. faecium and 12 isolates of E. faecalis). At 31/05/2011 25 isolates of E. faecium and 9 isolates of E. faecalis have been tested for AST.
broilers: 227(76 isolates of E. faecium and 163 isolates of E. faecalis).At 31/05/2011 36 isolates of E. faecium and 63 isolates of E. faecalis have been tested for AST.
fattening pigs: 255 (73 isolates of E. faecium and 54 isolates of E. faecalis).At 31/05/2011 41 isolates of E. faecium and 29 isolates of E. faecalis have been tested for AST.

Procedures for the selection of isolates for antimicrobial testing

Following EFSA Technical specifications

Methods used for collecting data

Following EFSA Technical specifications

Laboratory methodology used for identification of the microbial isolates

Following EFSA Technical specifications

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Following EFSA Technical specifications

Cut-off values used in testing

Following EFSA Technical specifications

Results of the investigation

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

Test Method Used	Standard methods used for testing

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

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

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

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

Test Method Used	Standard methods used for testing

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

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	Gentamicin		32	
	Streptomycin		128	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		1	
Tetracyclines	Tetracycline		2	

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	Gentamicin		32	
	Streptomycin		128	
Amphenicols	Chloramphenicol		32	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
Macrolides	Erythromycin		4	
Oxazolidines	Linezolid		4	
Penicillins	Ampicillin		4	
Streptogramins	Quinupristin/Dalfopristin		1	
Tetracyclines	Tetracycline		2	

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 ENTEROBACTER SAKAZAKII

4.1.1 General evaluation of the national situation

4.1.2 Cronobacter in foodstuffs

Table Enterobacter sakazakii in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Cronobacter	Cronobacter spp, unspecified
Foodstuffs intended for special nutritional uses - dried dietary foods for special medical purposes intended for infants below 6 months	F		Official sampling	food sample		Single	100 g	21	0	
Infant formula - dried	F		Official sampling	food sample		Single	100 g	80	0	

Footnote:

F: Source of information: 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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units in non-conformity	<= 100 mg/kg	>100 - <= 200 mg/kg
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated	F		Official sampling	food sample		Single	200 g	539	40	32	1
Fish - Fishery products which have undergone enzyme maturation treatment in brine	F		Official sampling	food sample		Single	200 g	788	7	7	0

	>200 - <= 400 mg/kg	> 400 mg/kg
Fish - Fishery products from fish species associated with a high amount of histidine - not enzyme maturated	0	7
Fish - Fishery products which have undergone enzyme maturation treatment in brine	0	0

Footnote:

F: Source of information: Public Health Services of the Autonomous Communities

Table Histamine in food

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 strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Cheeses made from cows' milk - hard - made from pasteurised milk			Official sampling	food sample		Single	100 g	45	0
Cheeses made from cows' milk - hard - made from raw or low heat-treated milk			Official sampling	food sample		Single	100 g	7	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk			Official sampling	food sample		Single	100 g	83	0
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk			Official sampling	food sample		Single	100 g	1	1
Cheeses made from goats' milk - hard - made from pasteurised milk			Official sampling	food sample		Single	100 g	2	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk			Official sampling	food sample		Single	100 g	5	1
Cheeses made from sheep's milk - hard - made from pasteurised milk			Official sampling	food sample		Single	100 g	34	0
Cheeses made from sheep's milk - hard - made from raw or low heat-treated milk			Official sampling	food sample		Single	100 g	8	1

Table Staphylococcal enterotoxins in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample Origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk			Official sampling	food sample		Single	100 g	1	1
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk			Official sampling	food sample		Single	100 g	43	4
Dairy products (excluding cheeses) - milk powder and whey powder			Official sampling	food sample		Single	100 g	15	0

Footnote:

Source of information: Public Health Services of the Autonomous Communities and National Reference Laboratory

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:

Trends in numbers of outbreaks and numbers of human cases involved

In 2011 has been comunicatted 424 outbreaks, 165 of them with strong evidence. 1930 patients was involving in strong evidence outbreak

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

	Weak evidence or no vehicle outbreaks					
	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 - Verotoxigenic E. coli (VTEC)	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

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Clostridium - Other Clostridia	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Brucella	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Shigella	0	unknown	unknown	unknown	0	0
Other Bacterial agents - Other Bacterial agents	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

	Weak evidence or no vehicle outbreaks					
	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Unknown agent	0	unknown	unknown	unknown	0	0

merg_level 2011 - Spain - C. coli - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	2011 - Spain - C. coli - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution		
	C. coli		
	N tested	n inhibited	n resistant
Chloramphenicol	14	3	0
Ciprofloxacin	14	1	0
Erythromycin	14	2	0
Gentamicin	14	3	0
Nalidixic acid	14	1	0
Streptomycin	13	11	11
Tetracyclines	14	1	0

merg_level 2011 - Spain - C. coli - animal - Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - C. coli - animal - Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	C. coli		
	N tested	*n inhibited*	*n resistant*
Chloramphenicol	81	45	0
Ciprofloxacin	81	3	0
Erythromycin	81	20	0
Gentamicin	81	4	0
Nalidixic acid	81	7	0
Streptomycin	78	9	0
Tetracyclines	81	1	0

merg_level 2011 - Spain - C. coli - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - C. coli - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	C. coli		
	N tested	*n inhibited*	*n resistant*
Chloramphenicol	81	55	0
Ciprofloxacin	81	4	0
Erythromycin	81	10	0
Gentamicin	81	4	0
Nalidixic acid	81	3	0
Streptomycin	81	72	72
Tetracyclines	81	81	81

merg_level 2011 - Spain - C. jejuni - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	2011 - Spain - C. jejuni - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution		
	C. jejuni		
	N tested	n inhibited	n resistant
Chloramphenicol	76	74	0
Ciprofloxacin	76	8	0
Erythromycin	76	73	0
Gentamicin	76	1	0
Nalidixic acid	76	1	0
Streptomycin	76	57	0
Tetracyclines	76	20	0

merg_level 2011 - Spain - C. jejuni - animal - Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - C. jejuni - animal - Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	C. jejuni		
	N tested	*n inhibited*	*n resistant*
Chloramphenicol	55	47	0
Ciprofloxacin	55	1	0
Erythromycin	55	52	0
Gentamicin	55	1	0
Nalidixic acid	55	1	0
Streptomycin	54	44	0
Tetracyclines	54	6	0

merg_level 2011 - Spain - Enterococcus, non-pathogenic - E. faecalis - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	2011 - Spain - Enterococcus, non-pathogenic - E. faecalis - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution		
	Enterococcus, non-pathogenic - E. faecalis		
	N tested	n inhibited	n resistant
Amphenicols - Florfenicol	9	2	0
Ampicillin	9	9	0
Chloramphenicol	9	1	0
Erythromycin	9	2	0
Fluoroquinolones - Ciprofloxacin	9	1	0
Gentamicin	9	9	0
Linezolid	9	8	0
Penicillins - Penicillin	9	3	0
Streptogramins - Quinupristin/Dalfopristin	9	1	0
Streptomycin	9	4	0
Tetracyclines	9	6	0
Trimethoprim	9	9	0
Vancomycin	9	7	0

merg_level 2011 - Spain - Enterococcus, non-pathogenic - E. faecalis - animal - Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Enterococcus, non-pathogenic - E. faecalis - animal - Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Enterococcus, non-pathogenic - E. faecalis		
	N tested	*n inhibited*	*n resistant*
Amphenicols - Florfenicol	63	5	0
Ampicillin	63	61	0
Chloramphenicol	63	6	6
Erythromycin	63	1	0
Fluoroquinolones - Ciprofloxacin	63	2	0
Gentamicin	63	46	0
Linezolid	63	5	0
Penicillins - Penicillin	63	2	0
Streptogramins - Quinupristin/Dalfopristin	62	20	0
Streptomycin	63	24	0
Tetracyclines	63	8	0
Trimethoprim	61	1	1
Vancomycin	63	38	0

merg_level 2011 - Spain - Enterococcus, non-pathogenic - E. faecalis - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Enterococcus, non-pathogenic - E. faecalis - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Enterococcus, non-pathogenic - E. faecalis		
	N tested	*n inhibited*	*n resistant*
Amphenicols - Florfenicol	29	2	0
Ampicillin	29	27	0
Chloramphenicol	29	4	4
Erythromycin	29	1	0
Fluoroquinolones - Ciprofloxacin	29	1	0
Gentamicin	29	20	0
Linezolid	29	29	0
Penicillins - Penicillin	29	5	5
Streptogramins - Quinupristin/Dalfopristin	29	8	0
Streptomycin	29	4	0
Tetracyclines	29	1	0
Trimethoprim	28	9	9
Vancomycin	29	6	0

merg_level 2011 - Spain - Enterococcus, non-pathogenic - E. faecium - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Enterococcus, non-pathogenic - E. faecium - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Enterococcus, non-pathogenic - E. faecium		
	N tested	*n inhibited*	*n resistant*
Amphenicols - Florfenicol	25	1	1
Ampicillin	25	22	0
Chloramphenicol	25	2	0
Erythromycin	25	8	0
Fluoroquinolones - Ciprofloxacin	25	6	0
Gentamicin	25	24	0
Lincosamides - Lincomycin	25	1	0
Linezolid	25	1	0
Penicillins - Penicillin	25	10	0
Quinupristin/Dalfopristin	25	2	0
Streptomycin	25	1	0
Tetracyclines	25	7	0
Trimethoprim	25	2	2
Vancomycin	25	1	0

merg_level 2011 - Spain - Enterococcus, non-pathogenic - E. faecium - animal - Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Enterococcus, non-pathogenic - E. faecium - animal - Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Enterococcus, non-pathogenic - E. faecium		
	N tested	*n inhibited*	*n resistant*
Amphenicols - Florfenicol	36	4	0
Ampicillin	36	1	1
Chloramphenicol	36	5	0
Erythromycin	36	2	0
Fluoroquinolones - Ciprofloxacin	36	1	0
Gentamicin	36	32	0
Lincosamides - Lincomycin	36	36	36
Linezolid	36	33	0
Penicillins - Penicillin	36	22	22
Quinupristin/Dalfopristin	36	2	0
Streptomycin	36	2	0
Tetracyclines	36	3	0
Trimethoprim	36	2	2
Vancomycin	36	8	0

merg_level 2011 - Spain - Enterococcus, non-pathogenic - E. faecium - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Enterococcus, non-pathogenic - E. faecium - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Enterococcus, non-pathogenic - E. faecium		
	N tested	*n inhibited*	*n resistant*
Amphenicols - Florfenicol	41	35	0
Ampicillin	41	28	0
Chloramphenicol	41	7	0
Erythromycin	41	1	0
Fluoroquinolones - Ciprofloxacin	41	5	0
Gentamicin	41	40	0
Lincosamides - Lincomycin	41	1	0
Linezolid	41	1	0
Penicillins - Penicillin	41	2	0
Quinupristin/Dalfopristin	41	1	0
Streptomycin	41	1	0
Tetracyclines	41	6	0
Trimethoprim	41	2	2
Vancomycin	41	22	0

merg_level 2011 - Spain - Escherichia coli, non-pathogenic - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Escherichia coli, non-pathogenic - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Escherichia coli, non-pathogenic		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	109	2	2
Ampicillin	109	13	0
Cefotaxime	109	1	0
Cephalosporins - Ceftazidim	109	108	0
Chloramphenicol	109	1	0
Ciprofloxacin	109	3	0
Florfenicol	109	4	0
Gentamicin	109	2	0
Nalidixic acid	109	104	0
Polymyxins - Colistin	109	109	0
Streptomycin	109	25	25
Sulfonamides	108	41	41
Tetracyclines	109	55	0
Trimethoprim	109	92	0

merg_level 2011 - Spain - Escherichia coli, non-pathogenic - animal - Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Escherichia coli, non-pathogenic - animal - Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Escherichia coli, non-pathogenic		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	101	9	9
Ampicillin	101	1	0
Cefotaxime	101	30	0
Cephalosporins - Ceftazidim	101	77	0
Chloramphenicol	101	3	0
Ciprofloxacin	101	5	0
Florfenicol	101	2	0
Gentamicin	101	1	0
Nalidixic acid	101	13	0
Polymyxins - Colistin	101	101	0
Streptomycin	101	33	33
Sulfonamides	101	55	55
Tetracyclines	101	37	0
Trimethoprim	101	58	0

merg_level 2011 - Spain - Escherichia coli, non-pathogenic - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Escherichia coli, non-pathogenic - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Escherichia coli, non-pathogenic		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	170	15	15
Ampicillin	170	1	0
Cefotaxime	170	138	0
Cephalosporins - Ceftazidim	170	163	0
Chloramphenicol	170	11	0
Ciprofloxacin	170	1	0
Florfenicol	170	4	0
Gentamicin	170	13	0
Nalidixic acid	169	1	0
Polymyxins - Colistin	170	168	0
Streptomycin	170	68	68
Sulfonamides	170	123	123
Tetracyclines	170	14	0
Trimethoprim	170	59	0

merg_level 2011 - Spain - Salmonella - Other serovars - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - ST10A - dilution

SPAIN	*2011 - Spain - Salmonella - Other serovars - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - ST10A - dilution*		
	Salmonella - Other serovars		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	11	11	0
Ampicillin	11	5	0
Cefotaxime	11	11	0
Cephalosporins - Ceftazidim	11	8	0
Chloramphenicol	11	11	0
Ciprofloxacin	11	8	0
Florfenicol	11	5	0
Gentamicin	11	5	0
Nalidixic acid	11	11	0
Polymyxins - Colistin	11	11	0
Streptomycin	11	9	0
Sulfonamides	11	7	0
Tetracyclines	11	11	1
Trimethoprim	11	11	0

merg_level 2011 - Spain - Salmonella - Other serovars - animal - Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - Other serovars - animal - Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - Other serovars		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	7	7	0
Ampicillin	7	6	0
Cefotaxime	7	6	0
Cephalosporins - Ceftazidim	7	6	0
Chloramphenicol	7	6	0
Ciprofloxacin	7	6	1
Florfenicol	7	5	0
Gentamicin	7	6	1
Nalidixic acid	7	6	1
Polymyxins - Colistin	7	7	0
Streptomycin	7	6	1
Sulfonamides	7	5	2
Tetracyclines	7	7	0
Trimethoprim	7	7	0

merg_level 2011 - Spain - Salmonella - Other serovars - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - Other serovars - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - Other serovars		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	15	15	0
Ampicillin	15	14	6
Cefotaxime	15	12	0
Cephalosporins - Ceftazidim	15	11	0
Chloramphenicol	15	13	0
Ciprofloxacin	15	14	7
Florfenicol	15	14	0
Gentamicin	15	14	0
Nalidixic acid	15	12	4
Polymyxins - Colistin	15	15	0
Streptomycin	15	12	0
Sulfonamides	15	11	2
Tetracyclines	15	12	1
Trimethoprim	15	15	1

merg_level 2011 - Spain - Salmonella - Other serovars - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - Other serovars - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - Other serovars		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	85	82	1
Ampicillin	85	43	1
Cefotaxime	85	64	0
Cephalosporins - Ceftazidim	85	68	0
Chloramphenicol	85	46	0
Ciprofloxacin	85	62	1
Florfenicol	85	58	0
Gentamicin	85	45	0
Nalidixic acid	85	79	3
Polymyxins - Colistin	85	85	0
Streptomycin	85	48	3
Sulfonamides	85	39	3
Tetracyclines	85	45	1
Trimethoprim	85	81	1

merg_level 2011 - Spain - Salmonella - Other serovars - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Salmonella - Other serovars - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Salmonella - Other serovars		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	37	37	0
Ampicillin	37	30	5
Cefotaxime	37	32	1
Cephalosporins - Ceftazidim	37	35	1
Chloramphenicol	37	24	4
Ciprofloxacin	37	25	4
Florfenicol	37	33	0
Gentamicin	37	25	0
Nalidixic acid	37	34	4
Polymyxins - Colistin	37	37	0
Streptomycin	37	24	7
Sulfonamides	37	27	10
Tetracyclines	37	24	8
Trimethoprim	37	32	2

merg_level 2011 - Spain - Salmonella - Other serovars - animal - Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - Industry sampling - dilution

SPAIN	*2011 - Spain - Salmonella - Other serovars - animal - Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - Industry sampling - dilution*		
	Salmonella - Other serovars		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	126	124	121
Ampicillin	126	11	4
Cefotaxime	126	37	0
Cephalosporins - Ceftazidim	126	53	0
Chloramphenicol	126	21	7
Ciprofloxacin	126	29	3
Florfenicol	126	44	0
Gentamicin	126	42	1
Nalidixic acid	126	69	5
Polymyxins - Colistin	126	124	0
Streptomycin	126	17	3
Sulfonamides	126	124	120
Tetracyclines	126	27	4
Trimethoprim	126	36	1

merg_level 2011 - Spain - Salmonella - Other serovars - animal - Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - Other serovars - animal - Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - Other serovars		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	25	21	18
Ampicillin	25	22	17
Cefotaxime	25	11	2
Cephalosporins - Ceftazidim	25	11	2
Chloramphenicol	25	12	7
Ciprofloxacin	25	10	6
Florfenicol	25	10	2
Gentamicin	25	20	0
Nalidixic acid	25	19	7
Polymyxins - Colistin	25	25	2
Streptomycin	25	16	2
Sulfonamides	25	22	18
Tetracyclines	25	21	16
Trimethoprim	25	24	16

merg_level 2011 - Spain - Salmonella - S. 1,4,[5],12:i:- - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. 1,4,[5],12:i:- - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. 1,4,[5],12:i:-		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	3	3	0
Ampicillin	3	3	3
Cefotaxime	3	3	0
Cephalosporins - Ceftazidim	3	2	0
Chloramphenicol	3	3	0
Ciprofloxacin	3	1	0
Florfenicol	3	1	0
Gentamicin	3	1	0
Nalidixic acid	3	2	0
Polymyxins - Colistin	3	3	0
Streptomycin	3	3	3
Sulfonamides	3	3	3
Tetracyclines	3	3	3
Trimethoprim	3	3	0

merg_level 2011 - Spain - Salmonella - S. 4,5,12:i:- - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - ST10A - dilution

SPAIN	*2011 - Spain - Salmonella - S. 4,5,12:i:- - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - ST10A - dilution*		
	Salmonella - S. 4,5,12:i:-		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	1	1	0
Ampicillin	1	1	1
Cefotaxime	1	1	0
Cephalosporins - Ceftazidim	1	1	0
Chloramphenicol	1	1	0
Ciprofloxacin	1	1	0
Florfenicol	1	1	0
Gentamicin	1	1	0
Nalidixic acid	1	1	0
Polymyxins - Colistin	1	1	0
Streptomycin	1	1	0
Sulfonamides	1	1	0
Tetracyclines	1	1	1
Trimethoprim	1	1	0

merg_level 2011 - Spain - Salmonella - S. 4,5,12:i:- - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. 4,5,12:i:- - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Salmonella - S. 4,5,12:i:-		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	13	1	1
Ampicillin	13	13	13
Cefotaxime	13	6	0
Cephalosporins - Ceftazidim	13	10	0
Chloramphenicol	13	10	0
Ciprofloxacin	13	11	0
Florfenicol	13	10	0
Gentamicin	13	5	0
Nalidixic acid	13	1	0
Polymyxins - Colistin	13	12	0
Streptomycin	13	11	11
Sulfonamides	13	12	12
Tetracyclines	13	13	13
Trimethoprim	13	10	0

merg_level 2011 - Spain - Salmonella - S. Derby - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Derby - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Salmonella - S. Derby		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	13	13	0
Ampicillin	13	6	0
Cefotaxime	13	2	0
Cephalosporins - Ceftazidim	13	2	0
Chloramphenicol	13	12	0
Ciprofloxacin	13	4	0
Florfenicol	13	13	0
Gentamicin	13	7	0
Nalidixic acid	13	13	0
Polymyxins - Colistin	13	13	0
Streptomycin	13	9	9
Sulfonamides	12	9	9
Tetracyclines	13	3	3
Trimethoprim	13	13	0

merg_level 2011 - Spain - Salmonella - S. Enteritidis - animal - Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Enteritidis - animal - Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Enteritidis		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	1	1	1
Ampicillin	1	1	0
Cefotaxime	1	1	0
Cephalosporins - Ceftazidim	1	1	0
Chloramphenicol	1	1	0
Ciprofloxacin	1	1	1
Florfenicol	1	1	0
Gentamicin	1	1	0
Nalidixic acid	1	1	1
Polymyxins - Colistin	1	1	0
Streptomycin	1	1	0
Sulfonamides	1	1	0
Tetracyclines	1	1	0
Trimethoprim	1	1	0

merg_level 2011 - Spain - Salmonella - S. Enteritidis - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Enteritidis - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Enteritidis		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	7	7	0
Ampicillin	7	6	0
Cefotaxime	7	3	0
Cephalosporins - Ceftazidim	7	7	0
Chloramphenicol	7	1	0
Ciprofloxacin	7	6	6
Florfenicol	7	1	0
Gentamicin	7	4	0
Nalidixic acid	7	7	7
Polymyxins - Colistin	7	7	0
Streptomycin	7	2	0
Sulfonamides	7	1	0
Tetracyclines	7	4	0
Trimethoprim	7	6	0

merg_level 2011 - Spain - Salmonella - S. Enteritidis - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Enteritidis - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Enteritidis		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	59	58	0
Ampicillin	59	6	0
Cefotaxime	59	27	0
Cephalosporins - Ceftazidim	59	56	0
Chloramphenicol	59	23	0
Ciprofloxacin	59	15	0
Florfenicol	59	1	0
Gentamicin	59	26	0
Nalidixic acid	59	22	0
Polymyxins - Colistin	59	47	0
Streptomycin	59	2	0
Sulfonamides	59	2	2
Tetracyclines	59	13	0
Trimethoprim	59	53	0

merg_level 2011 - Spain - Salmonella - S. Hadar - animal - Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Hadar - animal - Gallus gallus (fowl) - breeding flocks for broiler production line - adult - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Hadar		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	2	2	0
Ampicillin	2	2	0
Cefotaxime	2	1	0
Cephalosporins - Ceftazidim	2	2	0
Chloramphenicol	2	2	0
Ciprofloxacin	2	2	2
Florfenicol	2	2	0
Gentamicin	2	1	0
Nalidixic acid	2	2	2
Polymyxins - Colistin	2	2	0
Streptomycin	2	2	2
Sulfonamides	2	2	0
Tetracyclines	2	2	2
Trimethoprim	2	2	0

merg_level 2011 - Spain - Salmonella - S. Hadar - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Hadar - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Hadar		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	3	2	0
Ampicillin	3	1	0
Cefotaxime	3	1	0
Cephalosporins - Ceftazidim	3	3	0
Chloramphenicol	3	3	0
Ciprofloxacin	3	1	1
Florfenicol	3	3	0
Gentamicin	3	1	0
Nalidixic acid	3	3	3
Polymyxins - Colistin	3	3	0
Streptomycin	3	1	1
Sulfonamides	3	3	0
Tetracyclines	3	2	0
Trimethoprim	3	3	0

merg_level 2011 - Spain - Salmonella - S. Hadar - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	2011 - Spain - Salmonella - S. Hadar - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution		
	Salmonella - S. Hadar		
	N tested	n inhibited	n resistant
Aminoglycosides - Kanamycin	1	1	1
Ampicillin	1	1	1
Cefotaxime	1	1	0
Cephalosporins - Ceftazidim	1	1	0
Chloramphenicol	1	1	0
Ciprofloxacin	1	1	1
Florfenicol	1	1	0
Gentamicin	1	1	0
Nalidixic acid	1	1	1
Polymyxins - Colistin	1	1	0
Streptomycin	1	1	1
Sulfonamides	1	1	0
Tetracyclines	1	1	1
Trimethoprim	1	1	0

merg_level 2011 - Spain - Salmonella - S. Infantis - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Infantis - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Infantis		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	1	1	0
Ampicillin	1	1	0
Cefotaxime	1	1	0
Cephalosporins - Ceftazidim	1	1	0
Chloramphenicol	1	1	0
Ciprofloxacin	1	1	0
Florfenicol	1	1	0
Gentamicin	1	1	0
Nalidixic acid	1	1	0
Polymyxins - Colistin	1	1	0
Streptomycin	1	1	0
Sulfonamides	1	1	0
Tetracyclines	1	1	0
Trimethoprim	1	1	0

merg_level 2011 - Spain - Salmonella - S. Infantis - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Infantis - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Infantis		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	14	13	0
Ampicillin	14	10	0
Cefotaxime	14	4	0
Cephalosporins - Ceftazidim	14	5	0
Chloramphenicol	14	3	0
Ciprofloxacin	14	4	0
Florfenicol	14	2	0
Gentamicin	14	3	0
Nalidixic acid	14	13	0
Polymyxins - Colistin	14	14	0
Streptomycin	14	8	0
Sulfonamides	14	9	0
Tetracyclines	14	4	0
Trimethoprim	14	14	0

merg_level 2011 - Spain - Salmonella - S. Typhimurium - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - ST10A - dilution

SPAIN	*2011 - Spain - Salmonella - S. Typhimurium - animal - Cattle (bovine animals) - meat production animals - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - EFSA specifications - Not applicable - ST10A - dilution*		
	Salmonella - S. Typhimurium		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	1	1	0
Ampicillin	1	1	0
Cefotaxime	1	1	0
Cephalosporins - Ceftazidim	1	1	0
Chloramphenicol	1	1	0
Ciprofloxacin	1	1	0
Florfenicol	1	1	0
Gentamicin	1	1	0
Nalidixic acid	1	1	0
Polymyxins - Colistin	1	1	0
Streptomycin	1	1	0
Sulfonamides	1	1	0
Tetracyclines	1	1	0
Trimethoprim	1	1	0

merg_level 2011 - Spain - Salmonella - S. Typhimurium - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Typhimurium - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Typhimurium		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	4	4	0
Ampicillin	4	2	0
Cefotaxime	4	2	0
Cephalosporins - Ceftazidim	4	4	0
Chloramphenicol	4	1	0
Ciprofloxacin	4	3	0
Florfenicol	4	1	1
Gentamicin	4	3	0
Nalidixic acid	4	3	0
Polymyxins - Colistin	4	4	0
Streptomycin	4	2	2
Sulfonamides	4	2	2
Tetracyclines	4	2	0
Trimethoprim	4	4	0

merg_level 2011 - Spain - Salmonella - S. Typhimurium - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Typhimurium - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Typhimurium		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	4	3	0
Ampicillin	4	1	0
Cefotaxime	4	3	0
Cephalosporins - Ceftazidim	4	4	0
Chloramphenicol	4	2	0
Ciprofloxacin	4	2	0
Florfenicol	4	1	0
Gentamicin	4	4	0
Nalidixic acid	4	4	0
Polymyxins - Colistin	4	4	0
Streptomycin	4	4	0
Sulfonamides	4	1	1
Tetracyclines	4	1	0
Trimethoprim	4	4	0

merg_level 2011 - Spain - Salmonella - S. Typhimurium - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Typhimurium - animal - Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Monitoring - EFSA specifications - Not applicable - Objective sampling - dilution*		
	Salmonella - S. Typhimurium		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	19	2	2
Ampicillin	19	1	0
Cefotaxime	19	1	0
Cephalosporins - Ceftazidim	19	8	0
Chloramphenicol	19	13	0
Ciprofloxacin	19	13	0
Florfenicol	19	1	0
Gentamicin	19	6	0
Nalidixic acid	19	1	0
Polymyxins - Colistin	19	18	0
Streptomycin	19	12	12
Sulfonamides	19	17	17
Tetracyclines	19	2	0
Trimethoprim	19	14	0

merg_level 2011 - Spain - Salmonella - S. Typhimurium - animal - Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Typhimurium - animal - Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Typhimurium		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	3	2	0
Ampicillin	3	3	3
Cefotaxime	3	3	0
Cephalosporins - Ceftazidim	3	3	0
Chloramphenicol	3	3	3
Ciprofloxacin	3	3	3
Florfenicol	3	3	3
Gentamicin	3	2	0
Nalidixic acid	3	3	3
Polymyxins - Colistin	3	3	0
Streptomycin	3	1	1
Sulfonamides	3	3	3
Tetracyclines	3	3	3
Trimethoprim	3	3	0

merg_level 2011 - Spain - Salmonella - S. Typhimurium, monophasic - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Typhimurium, monophasic - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Typhimurium, monophasic		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	2	2	0
Ampicillin	2	2	2
Cefotaxime	2	2	0
Cephalosporins - Ceftazidim	2	2	0
Chloramphenicol	2	1	1
Ciprofloxacin	2	1	0
Florfenicol	2	1	0
Gentamicin	2	1	0
Nalidixic acid	2	1	0
Polymyxins - Colistin	2	2	0
Streptomycin	2	2	2
Sulfonamides	2	2	2
Tetracyclines	2	2	2
Trimethoprim	2	1	0

merg_level 2011 - Spain - Salmonella - S. Virchow - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Virchow - animal - Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Virchow		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	8	1	1
Ampicillin	8	5	0
Cefotaxime	8	4	0
Cephalosporins - Ceftazidim	8	7	0
Chloramphenicol	8	2	0
Ciprofloxacin	8	4	4
Florfenicol	8	8	0
Gentamicin	8	1	0
Nalidixic acid	8	8	8
Polymyxins - Colistin	8	8	0
Streptomycin	8	1	1
Sulfonamides	8	3	3
Tetracyclines	8	8	0
Trimethoprim	8	7	0

merg_level 2011 - Spain - Salmonella - S. Virchow - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution

SPAIN	*2011 - Spain - Salmonella - S. Virchow - animal - Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - Official sampling - dilution*		
	Salmonella - S. Virchow		
	N tested	*n inhibited*	*n resistant*
Aminoglycosides - Kanamycin	4	4	0
Ampicillin	4	3	0
Cefotaxime	4	2	0
Cephalosporins - Ceftazidim	4	4	0
Chloramphenicol	4	1	0
Ciprofloxacin	4	1	0
Florfenicol	4	4	0
Gentamicin	4	3	0
Nalidixic acid	4	1	0
Polymyxins - Colistin	4	4	0
Streptomycin	4	1	0
Sulfonamides	4	2	0
Tetracyclines	4	4	0
Trimethoprim	4	4	0