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 2009

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Spain

Reporting Year:

Laboratory name	Description	Contribution
Subdireccion General de Sanidad de la Producción Primaria	Ministerio de Medio Ambiente y Medio Rural y Marino	Reporting Officer
Subdireccion General de Coordinacion de Alertas y Programacion de Control Oficial	Agencia Española de Seguridad Alimentaria y Nutricion	National Reporter
Centro Nacional de Epidemiologia	Instituto de Salud Carlos III.Ministerio de Ciencia y Tecnología.	National Reporter
Subdireccion General de Explotaciones y Sistemas de Trazabilidad de los Recursos Agrícolas y Ganaderos	Ministerio de Medio Ambiente y Medio Rural y Marino	National Reporter
Subdireccion General de Consevación de Recursos y Alimentación Animal	Ministerio de Medio Ambiente y Medio Rural y Marino	National Reporter
Departamento de Sanidad Animal	Facultad de Veterinaria de la 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 2009 .

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/31/2009.

Dates the figures relate to and the content of the figures

Number of holdings and animals: 31/12/2009

Definitions used for different types of animals, herds, flocks and holdings as well as the

'holding' in REGA means 'Whatever place where farming animals are'. They are clasified in breeding and production holdings and special holdings (such as markets, slaugtherhouses, quarantine centers, ...)

The specific definitions adopted by REGA for diferent types of holdings are those fixed in EU or Spanish Regulations.
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

		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					2087931		88197	
	mixed herds					557480		16552	
	dairy cows and heifers					1386574		26607	
	calves (under 1 year)					1809488		25437	
	- in total					5841473		156793	
Deer	farmed - in total					8551		151	
Ducks	grandparent breeding flocks					51		2	
	parent breeding flocks					523		2	
	meat production flocks					507691		192	
	breeding flocks, unspecified - in total					926		21	
	- in total					604452		473	
Gallus gallus (fowl)	parent breeding flocks, unspecified - in total					6113147		417	
	breeding flocks, unspecified - in total					21998541		633	
	grandparent breeding flocks for egg production line					106874		20	

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)	parent breeding flocks for egg production line					661199		75	
	breeding flocks for egg production line - in total					16414693		368	
	broilers					201304169		5275	
	grandparent breeding flocks, unspecified - in total					16116351		41	
	laying hens					42521283		1377	
	breeding flocks for meat production line - in total					5583848		265	
	parent breeding flocks for meat production line					5451948		342	
	grandparent breeding flocks for meat production line					16009477		21	
	- in total					288053491		7743	
Geese	breeding flocks, unspecified - in total					110		12	
	meat production flocks					1385		25	
	- in total					5423		220	
Goats	mixed herds					563795		8621	
	meat production animals					1032639		51701	

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*
Goats	animals over 1 year					2311852		71573	
	milk goats					1324435		9193	
	animals under 1 year					608917		811	
	- in total					2920869		72393	
Pigs	breeding animals					1683261		29251	
	fattening pigs					15008018		50413	
	mixed herds					407636		11048	
Pigs - breeding animals - unspecified	breeding animals - unspecified - sows and gilts [1)]					0			
Pigs	- in total					17098915		91205	
Sheep	animals over 1 year					17759308		114386	
	mixed herds					1594753		11046	
	milk ewes					3104690		10939	
	meat production animals					16109722		89726	
	animals under 1 year (lambs)					3049857		2086	

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	- in total					20809165		116467	
Solipeds, domestic	horses - in total					559598		133544	
Turkeys	parent breeding flocks					3041		10	
	grandparent breeding flocks					5058		4	
	breeding flocks, unspecified - in total					212274		39	
	meat production flocks					3076691		573	
	- in total					5025568		878	
Wild boars	farmed - in total					4158		149	

Comments:

[1)] el valor "0" corresponde a "datos no comunicados", al estar incluidos en otras categorías

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 2009 show an increased incidence of Salmonella spp (from 3,60% in 2008 to 5,23% in 2009)and of top 5 serovars (2,45% in 2008; 2,59% in 2009).
In layin hens, flock incidence decreased from 34,91%(Salmonella spp.) and 15,62% (S. Enteritidis+ S. Typhimurium) in 2008 to 29,19% and 7,21% respectively in 2009 (adult flocks). In broiler flocks, the flock prevalence decreased from 18,29% (Salmonella spp.) and 10,85% (S. Enteritidis+ S. Typhimurium)in 2008 to 6,70% and 1,61% respectively in 2009 (results of FBO´s and official controls).

Data indicate that prevalence is deceasing in poultry in Spain, with the implementation of control programmes, except in breeding flocks, where the situation is at a standstill

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

It is very difficult to establish the relevance of the data in the different steps of the food chain as sources of infection, because epidemiology of salmonellosis is very complex.

Nevertheless, human cases are mainly linked to eggs and egg derived food consumption.

Recent actions taken to control the zoonoses

Ministery of Environment and Rural and Marine Affairs and Ministry of Health and Social Policy of Spain are carrying out a Control Programme of Salmonella in poultry, eggs and ovoproducts along the overall food chain, starting with monitoring systems at holdings(National Surveillance Programme).

Additional information

Spanish legislation on Salmonella in foodstuff:
Royal Decree 1254/1991 of August 2, laying down rules to preparation and conservation of mayonnaise prepared in the own stablishment and for immediat consumption foods with eggs as ingredient.

Royal Decree 3454/2000 of december 29, laying down hygiene rules to elaboration, distribution and commercialisation of ready-to-eat food
Royal Decree 202/2000 laying down rules for food handlers.
Royal Decree 640/2006, of May 26, 2006, laying down specific implementation conditions of the Communities rules concernig hygiene subjets, as well as foodstuff's production and commercialisation.

2.1.2 Salmonellosis in humans

A. Salmonellosis in humans

Reporting system in place for the human cases

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

All practising doctors are obliged to notify, both those in the public health service and in private practice, and both those practising outside and within hospitals. On occasions the appearance of cases and outbreaks is detected by other means (from the mass media, from citizens complants, etc.) and in these cases the information is checked and if confirmed it is incorporated into the system at the corresponding level.

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

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

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

Case definition

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

Diagnostic/analytical methods used

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

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.

Results of the investigation

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

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

The number of human cases reported to the Microbiological Surveillance System shows a stable trend in recent years

Relevance as zoonotic disease

High

2.1.3 Salmonella in foodstuffs

A. Salmonella spp. in pig meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

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

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Diagnostic/analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

B. Salmonella spp. in bovine meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

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

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

Metodo

Diagnostic/analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

C. Salmonella spp. in broiler meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

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

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Diagnostic/analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

D. Salmonella spp. in eggs and egg products

Monitoring system

Sampling strategy

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

Frequency of the sampling

Eggs at egg packing centres (foodstuff based approach)

Sampling distributed evenly throughout the year

Eggs at retail

Sampling distributed evenly throughout the year

Raw material for egg products (at production plant)

Sampling distributed evenly throughout the year

Egg products (at production plant and at retail)

Sampling distributed evenly throughout the year

Diagnostic/analytical methods used

Eggs at egg packing centres (foodstuff based approach)

Bacteriological method: ISO 6579:2002

Eggs at retail

Bacteriological method: ISO 6579:2002

Raw material for egg products (at production plant)

Bacteriological method: ISO 6579:2002

Egg products (at production plant and at retail)

Bacteriological method: ISO 6579:2002

Control program/mechanisms

Recent actions taken to control the zoonoses

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

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Hadar	S. Schwarzengrund
Meat from broilers (Gallus gallus) - fresh - at slaughterhouse	F	Single	25 g	90	24	5	6	7	6	
Meat from broilers (Gallus gallus) - fresh - at processing plant	F	Single	25 g	105	6	1	1	4		
Meat from broilers (Gallus gallus) - fresh - at retail	F	Single	25 g	167	23	9	2	1	6	5
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant	F	Single	25 g	12	0					
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail	F	Single	25 g	57	2	0	0	2		
Meat from other poultry species - at cutting plant - domestic production	F	Single	25 g	5	3	2	0	1		
Meat from other poultry species - at retail	F	Single	25 g	25	9	0	0	9		
Meat from other poultry species - fresh [1)]	F	Single	25 g	19	9	0	0	9		
Meat from other poultry species - meat products - raw and intended to be eaten raw [2)]	F	Single	25 g	36	0					
Meat from other poultry species - meat products - raw but intended to be eaten cooked [3)]	F	Single	25 g	23	0					

Comments:

[1)] at slaughterhouse
[2)] at retail
[3)] at processing plant

Footnote:

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

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. 4,12:b:-	S. Derby	S. Ohio
Meat from bovine animals - fresh - at slaughterhouse	F	Single	25 g	426	9	0	0	9			
Meat from bovine animals - fresh - at processing plant	F	Single	25 g	104	0						
Meat from bovine animals - fresh - at retail	F	Single	25 g	161	0						
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant	F	Single	25 g	108	3	0	1	2			
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail	F	Single	25 g	127	6	0	0	6			
Meat from pig - fresh - at slaughterhouse	F	Single	25 g	174	12	0	2	9			
Meat from pig - fresh - at processing plant	F	Single	25 g	27	1			1			
Meat from pig - fresh - at retail	F	Single	25 g	85	3			3			
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant	F	Single	25 g	1025	28	0	2	26			
Meat from pig - meat products - raw but intended to be eaten cooked - at retail	F	Single	25 g	588	16	0	0	16			
Meat from other animal species or not specified - fresh	F	Single	25 g	127	3	1	0	2			
Meat from other animal species or not specified - fresh - at cutting plant	F	Single	25 g	2	0						
Meat from other animal species or not specified - fresh - at retail	F	Single	25 g	35	5	0	0	5			
Meat from other animal species or not specified - meat products - at processing plant	F	Single	25 g	36	0						

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. 4,12:b:-	S. Derby	S. Ohio
Meat from other animal species or not specified - meat products - at retail	F	Single	25 g	79	1						
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos) - meat preparation - intended to be eaten cooked	F	Single	25 g	1130	65	5	10	45	1	2	1
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos) - minced meat - intended to be eaten cooked	F	Single	25 g	558	27	1	0	26			

	S. Rissen	S. Schwarzengrund
Meat from bovine animals - fresh - at slaughterhouse		
Meat from bovine animals - fresh - at processing plant		
Meat from bovine animals - fresh - at retail		
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant		
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail		
Meat from pig - fresh - at slaughterhouse	1	
Meat from pig - fresh - at processing plant		

Table Salmonella in red meat and products thereof

	S. Rissen	S. Schwarzengrund
Meat from pig - fresh - at retail		
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant		
Meat from pig - meat products - raw but intended to be eaten cooked - at retail		
Meat from other animal species or not specified - fresh		
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 - meat products - at processing plant		
Meat from other animal species or not specified - meat products - at retail	1	
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos) - meat preparation - intended to be eaten cooked	1	
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos) - minced meat - intended to be eaten cooked		

Footnote:

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

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Eggs - table eggs - at packing centre	F	Single	25 g	1947	4	0	1	3
Eggs - table eggs - at retail	F	Single	25 g	555	30	16	1	13
Infant formula - dried - intended for infants below 6 months	F	Single	25 g	102	1	0	0	1
Live bivalve molluscs	F	Single	25 g	358	14	0	0	14
Bakery products - desserts	F	Single	25 g	1354	3	2	0	1
Egg products	F	Single	25 g	137	0			
Fish - raw [1)]	F	Single	25 g	164	0			
Fishery products, unspecified - non-ready-to-eat	F	Single	25 g	518	4	1	0	3
Other food	F	Single	25 g	541	12	0	0	12
Other processed food products and prepared dishes - unspecified - non-ready-to-eat foods [2)]	F	Single	25 g	3381	1	0	0	1
Other processed food products and prepared dishes - unspecified - ready-to-eat foods [3)]	F	Single	25 g	6039	41	11	8	22
Ready-to-eat salads	F	Single	25 g	248	2	0	0	2
Vegetables	F	Single	25 g	126	0			

Comments:

[1)] chilled or frozen

[2)] need heat treatment before consumption

[3)] 1 Salm. unspecified is S. cerro

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

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Milk, cows' - raw	F	Single	25 g	21	0			
Cheeses, made from unspecified milk or other animal milk - soft and semi-soft	F	Single	25 g	524	4		4	
Cheeses, made from unspecified milk or other animal milk - unspecified	F	Single	25 g	175	0			
Dairy products (excluding cheeses) - dairy products, not specified [1)]	F	Single	25 g	256	0			
Dairy products (excluding cheeses) - ice-cream	F	Single	25 g	305	13	0	10	3
Milk from other animal species or unspecified [2)]	F	Single	25 g	32	0			

Comments:

[1)] ready to eat

[2)] heat treated

Footnote:

F: Source of information: Public Health Services of the Autonomous Communities and 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 (EC) 1003/2005 of 30 june, 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 and amending Regulation (EC) 2160/2003. 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 2008/940/EC.

Frequency of the sampling

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

Every flock is sampled

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

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

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

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

Type of specimen taken

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

Other: internal linings of delivery boxes and dead chicks

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

Faeces

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

Faeces

Methods of sampling (description of sampling techniques)

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

Following point 2 of the Annex of Commisison Regulation (EC) 1003/2005 of 30 june, 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 and amending Regulation (EC) 2160/2003.

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

Following point 2 of the Annex of Commisison Regulation (EC) 1003/2005 of 30 june, 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 and amending Regulation (EC) 2160/2003.

Breeding flocks: Production period

Following point 2 of the Annex of Commisison Regulation (EC) 1003/2005 of 30 june, 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 and amending Regulation (EC) 2160/2003.

Case definition

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

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

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

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

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

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

Diagnostic/analytical methods used

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

Bacteriological method: ISO 6579:2002

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

Bacteriological method: ISO 6579:2002

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

Bacteriological method: ISO 6579:2002

Vaccination policy

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

Voluntary

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 2009, approved for co-financing by Commission Decision 2008/940/EC.

Recent actions taken to control the zoonoses

Compulsory National Control and Monitoring Programme on Salmonella in Breeding Flocks of Gallus gallus 2009, following criteria of Regulations (EC) 2160/2003, 1003/2005 and 1177/2006.

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 2009, 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 (rearing + adults): 1664
Positive flocks: 87 Salmonella spp.; 43 top 5
Incidence:
- Salmonella spp: 5,23%
- Top 5: 2,58%

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

The incidence on Salmonella spp. has increased from 2008 (3,60%) to 2009 (5,23%). The incidence on top 5 have slightly increased from 2008 (2,45%) to 2009 (2,59%).
Breeding flocks for egg production can be considered a very low source of infection for humans, with only 3 positive flocks to Salmonella spp. and 0 positive flocks to top 5.

B. Salmonella spp. in Gallus Gallus - broiler flocks

Monitoring system

Sampling strategy

Broiler flocks

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

Frequency of the sampling

Broiler flocks: Before slaughter at farm

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

Type of specimen taken

Broiler flocks: Before slaughter at farm

Faeces

Methods of sampling (description of sampling techniques)

Broiler flocks: Before slaughter at farm

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

Case definition

Broiler flocks: Before slaughter at farm

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

Diagnostic/analytical methods used

Broiler flocks: Before slaughter at farm

Bacteriological method: ISO 6579:2002

Vaccination policy

Broiler flocks

Does not exist.

Other preventive measures than vaccination in place

Broiler flocks

Biosecurity measures
Compliance with Good Practice Code

Control program/mechanisms

The control program/strategies in place

Broiler flocks

National Control and Monitoring Plan on Salmonella in broiler flocks 2009, approved by Commision Decision 2008/815/CE and for co-financing by Commission Decision2008/940/CE

Recent actions taken to control the zoonoses

National Control and Monitoring Plan on Salmonella in broiler flocks 2008, 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: 13.620
Positive flocks: 912 Salmonella spp.
219 S. enteritidis+typhimurium
Prevalence:
Salmonella spp.: 6,70%
Enteritidis+Typhimurium: 1,61%

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

The decresing trend observed in 2008 continues in 2009.

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 2009, approved by Commision Decision 2007/848/CE and for co-financing by Decision 2008/940/EC.

Frequency of the sampling

Laying hens: Day-old chicks

Every flock is sampled

Laying hens: Rearing period

2 weeks prior to moving (FBO control).

Laying hens: Production period

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

Type of specimen taken

Laying hens: Production period

Other: faecal material and dust samples

Methods of sampling (description of sampling techniques)

Laying hens: Day-old chicks

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

Laying hens: Rearing period

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

Laying hens: Production period

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

Case definition

Laying hens: Day-old chicks

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

Laying hens: Rearing period

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

Laying hens: Production period

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

Diagnostic/analytical methods used

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 2009, approved by Commision Decision 2007/848/CE and for co-financing by Decision 2008/940/EC.

Recent actions taken to control the zoonoses

National Control and Monitoring Programme on Salmonella in Laying Hens 2009, including vaccination, biosecurity measures and compliance with good practices code following criteria of Regulations 2160/2003,1168/2006 and 1177/2006.

Measures in case of the positive findings or single cases

Laying hens flocks

According to National Control and Monitoring Programme on Salmonella in Laying Hens 2009,including movement restrictions of live birds (forbidden),destruction or treatment of eggs, sacrifice-depopulation of the flock,epidemiological investigations, control of the biosecurity measures and of the efficiency of the cleaning and disinfection.

Notification system in place

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

Results of the investigation

Number of flocks (adults and rearing)tested: 1810
Number of positive flocks:
- Salmonella spp.: 474
- Enteritidis+Typhimurium: 111

Incidence:
- Salmonella spp: 26,19%
- Enteritidis+Typhimurium: 6,13%

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

The incidence of both Salmonella spp. and Enteritidis+Typhimurium has decreased from 2008 to 2009, taking into account that results of FBO´S and official controls are considered.

D. Salmonella spp. in bovine animals

Monitoring system

Sampling strategy

Samples have been taken ramdomly (day of sampling each month) in 10 slaughterhouses (distribution of the number of samples according to the capacity of sacrifice of each slaughterhouse) placed in different regions of Spain and representative of the total volume of sacrifice of the country

Frequency of the sampling

Animals at slaughter (herd based approach)

from april 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 10 slaughterhouses placed in the provinces of Barcelona(2), Valencia, Huesca, Lerida, Caceres,Madrid, Orense, Salamanca y Ciudad Real. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain.

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

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

Case definition

Animals at slaughter (herd based approach)

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

Diagnostic/analytical methods used

Animals at slaughter (herd based approach)

Bacteriological method: ISO 6579:2002

Results of the investigation

Number of slaughter batches analyzed: 258
Positive : 29
slaughter batch prevalence: 11,2% (95%CI: 7,8;15,9%)

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

Decrease in apparent prevalence from 27,9% in 2008 to 11,2% in 2009.

E. Salmonella spp. in pigs

Monitoring system

Sampling strategy

Fattening herds

Samples have been taken ramdomly (day of each month) in 11 slaughterhouses (distribution of the number of samples according to the capacity of sacrifice of each slaughterhouse)placed in different regions of Spain and representative of the total volume of sacrifice of the country

Frequency of the sampling

Fattening herds at slaughterhouse (herd based approach)

between april and december

Type of specimen taken

Fattening herds at slaughterhouse (herd based approach)

Other: _faeces and ileocaecal lymph nodes___

Methods of sampling (description of sampling techniques)

Fattening herds at slaughterhouse (herd based approach)

One sample of ileocaecal limph nodes have been taken from one animal and two samples of faeces from two animals 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 11 slaughterhouses placed in the provinces of Cuenca, Barcelona,Ciudad Real, Murcia, Pontevedra, Badajoz, Burgos, Málaga, Gerona, Huesca and Lérida. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain.
A total of 283 samples of limph nodes and 556 samples of faeces have been taken, belonging to 283 slaughter batches and 283 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 limph nodes or faeces.

Diagnostic/analytical methods used

Fattening herds at slaughterhouse (herd based approach)

Bacteriological method: ISO 6579:2002

Results of the investigation

Fattening pigs at slaughterhouses:
Tested slaughter batches: 283
Positive: 112
Slaughter batch prevalence: 39,6% Salmonella spp. (95% CI: 33,99; 45,36)

Table Salmonella in breeding flocks of Gallus gallus

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	Salmonella spp., unspecified
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period	36	M.A.R.M	Flock	30	0	0	0	0	0	0	0
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult	105	M.A.R.M.	Flock	105	3	0	0	0	0	0	3
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period	368	M.A.R.M.	Flock	368	4	1	0	0	0	0	3
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult [1)]	1161	M.A.R.M.	Flock	1161	80	24	16	0	1	1	39

Comments:

[1)] One flock positive to 2 serotypes

Footnote:

RESULTS OF FBO´S AND OFFICIAL CONTROLS.

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Gallus gallus (fowl) - laying hens - during rearing period	497	M.A.R.M	Flock	299	33	2	0	31
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	1727	M.A.R.M	Flock	1511	441	103	6	332
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry	1727	M.A.R.M	Flock	1511	195	6	1	188
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling	1727	M.A.R.M	Flock	825	246	97	5	144
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling	19866	M.A.R.M	Flock	13620	912	199	20	693

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Derby	S. Montevideo	S. Rissen
Cattle (bovine animals) - calves (under 1 year) [1)]	M.A.R.M	Slaughter batch	258	29	0	1	13	1	14	0
Pigs - fattening pigs [2)]	M.A.R.M	Slaughter batch	283	112	3	33	27	20	1	28

Comments:

[1)] National survey

[2)] National survey

2.1.5 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Compound feedingstuffs for cattle - final product [1)]	Regional Services	Single	25 gr	20	1	0	0	1
Compound feedingstuffs for pigs - final product [2)]	Regional Services	Single	25 gr	35	1	0	0	1
Compound feedingstuffs for poultry (non specified) - final product [3)]	Regional Services	Single	25 gr	2	0	0	0	0
Compound feedingstuffs for poultry - laying hens - final product [4)]	Regional Services	Single	25 gr	29	2	0	1	1
Compound feedingstuffs for poultry - laying hens - process control [5)]	Regional Services	Single	25 gr	69	31	18	0	13
Compound feedingstuffs for poultry -breeders - final product [6)]	Regional Services	Single	25 gr	71	4	1	0	3
Compound feedingstuffs for poultry - broilers - final product [7)]	Regional Services	Single	25 gr	3	0	0	0	0
Compound feedingstuffs for poultry - broilers - process control [8)]	Regional Services	Single	25 gr	115	15	7	0	8

Comments:

[1)] Monitoring
[2)] Monitoring
[3)] Monitoring
[4)] Monitoring
[5)] Monitoring
[6)] Monitoring
[7)] Monitoring

Table Salmonella in compound feedingstuffs

[8] Monitoring

Footnote:

Source: Animal Health Services of Valencia, La Rioja, Asturias, Aragón, Cataluña

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of cereal grain origin - barley derived [1)]	Regional services	Single	25 gr	28	2	0	0	2
Feed material of cereal grain origin - maize [2)]	Regional services	Single	25 gr	5	0			
Feed material of cereal grain origin - maize - derived [3)]	Regional services	Single	25 gr	9	0			
Feed material of cereal grain origin - wheat derived [4)]	Regional services	Single	25 gr	1	0			
Feed material of oil seed or fruit origin - cotton seed derived [5)]	Regional services	Single	25 gr	4	1			1
Feed material of oil seed or fruit origin - rape seed derived [6)]	Regional services	Single	25 gr	5	0			
Feed material of oil seed or fruit origin - soya (bean) derived [7)]	Regional services	Single	25 gr	12	1	0	0	1

Comments:

[1)] Monitoring
[2)] Monitoring
[3)] Monitoring
[4)] Monitoring
[5)] Monitoring
[6)] Monitoring
[7)] Monitoring

Footnote:

Source: Animal Health Services of Valencia, La Rioja, Aragón, Asturias y Cataluña.

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of land animal origin - animal fat [1)]	Regional services	Batch	500 gr	89	0	0	0	0
Feed material of land animal origin - meat meal [2)]	Regional services	Batch	500 gr	85	0	0	0	0
Feed material of marine animal origin - fish meal [3)]	Regional services	Batch	500 gr	1	0	0	0	0

Comments:

[1)] Monitoring
[2)] Monitoring
[3)] Monitoring

Footnote:

Source: Animal Health Services of Valencia, La Rioja, Aragón, Asturias y Cataluña

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	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
Number of isolates in the laboratory	29		112		287			
Number of isolates serotyped	29	0	112	0	287	0	0	0
Number of isolates per serovar								
Other serotypes					7			
S. 4,5,12:i:-			10					
S. Agona					2			
S. Altona	6				5			
S. Anatum	2		4		3			
S. Bareilly					1			
S. Blockley					3			

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry	
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
Number of isolates in the laboratory	29		112		287			
Number of isolates serotyped	29	0	112	0	287	0	0	0
Number of isolates per serovar								
S. Bovismorbificans					1			
S. Braenderup					2			
S. Brandenburg			2					
S. Bredeney			1		4			
S. Cerro					3			
S. Corvallis					9			
S. Dabou					9			
S. Derby			20		1			
S. Enteritidis			3		113			
S. Goldcoast			1					
S. Grampian					2			
S. Hadar					6			

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry	
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
Number of isolates in the laboratory	29		112		287			
Number of isolates serotyped	29	0	112	0	287	0	0	0
Number of isolates per serovar								
S. Indiana					3			
S. Infantis					25			
S. Kentucky					1			
S. Kottbus			2		1			
S. Livingstone					8			
S. London					2			
S. Mbandaka	2				9			
S. Meleagridis	2				1			
S. Mikawasima	1				2			
S. Montevideo	14		3		6			
S. Ndolo					1			
S. Newport					1			

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry	
Sources of isolates	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical	Monitoring	Clinical
Number of isolates in the laboratory	29		112		287			
Number of isolates serotyped	29	0	112	0	287	0	0	0
Number of isolates per serovar								
S. Ngili					1			
S. Ohio					22			
S. Oranienburg					2			
S. Paratyphi B			1					
S. Rissen	1		28		3			
S. Schleissheim					1			
S. Senftenberg					1			
S. Szentes			1					
S. Typhimurium	1		33		20			
S. Umbilo			1					
S. Virchow					6			
S. Wien			2					

Table Salmonella serovars in animals

Footnote:

Isolates of Gallus gallus belong to layin hens and broilers. Isolates 2009 stored and serotyped by NRL.

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 (29)

Methods used for collecting data

national survey 2009

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

Breakpoints used in testing

see table of breakpoints

Results of the investigation

Number of isolates tested: 29

Low or no resistance to the antimicrobials tested in general.Moderate to sulfonamides and tetraciclines (13,8%)

B. Antimicrobial resistance in Salmonella in pigs

Sampling strategy used in monitoring

Frequency of the sampling

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

Methods of sampling (description of sampling techniques)

See text forms on Salmonella in pigs.

Procedures for the selection of isolates for antimicrobial testing

All isolates tested for antimicrobial resistance (112)

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.

Breakpoints 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: 112
High or very high levels of resistance to Tetracyclin, Sulfonamides, Ampicillin, Stretomycin and Trimethoprim.Low or moderate levels of resistace to Nalidixic acid Ciprofloxacin . No or very low resistace to third generation Cephalosporins.
One isolate with ESBLs has been detected.

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 2009, a national control programme has been applied in laying hens and in broilers. Then, sampling strategies and frequency of sampling has been performed following Commission Regulation (EC) No 1168/2006 of 31 July 2006 implementing Regulation (EC) No 2160/2003 as regards a Community target for the reduction of the prevalence of certain salmonella serotypes in laying hens of Gallus gallus and amending Regulation (EC) No 1003/2005 and 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.

Type of specimen taken

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

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

Methods of sampling (description of sampling techniques)

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

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

Procedures for the selection of isolates for antimicrobial testing

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

Methods used for collecting data

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

Laboratory methodology used for identification of the microbial isolates

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

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

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.

Breakpoints 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 and broilers 2009.

Recent actions taken to control the zoonoses

Spanish control programmes of Salmonella in breeding flocks of Gallus gallus, laying hens and broilers 2009.

Measures in case of the positive findings or single cases

Spanish control programmes of Salmonella in breeding flocks of Gallus gallus, laying hens and broilers 2009.

Notification system in place

Spanish control programmes of Salmonella in breeding flocks of Gallus gallus, laying hens and broilers 2009.

Results of the investigation

Laying hens:
Number of isolates tested: 210
Low levels of resistance in general, the highest ones to Ciprofloxacin (19%) and Nalidixic acid (17,6%).No resistance to Colistin, Gentamicin and third generation Cephalosporins.

Broilers:
Number of isolates tested: 77
High level of resistance to Ciprofloxacin and Nalidixic acid (>50%).

Table Antimicrobial susceptibility testing of Salmonella in Pigs

Salmonella		S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes	
Isolates out of a monitoring program (yes/no)				yes				yes	
Number of isolates available in the laboratory				33				79	
Antimicrobials:		N	n	N	n	N	n	N	n
Aminoglycosides	Gentamicin			33	1			79	7
	Kanamycin			33	2			79	7
	Streptomycin			33	27			79	26
Amphenicols	Chloramphenicol			33	16			79	12
	Florfenicol			33	4			79	0
Cephalosporins	Cefotaxim			33	1			79	0
	Ceftazidim			33	0			79	0
Fluoroquinolones	Ciprofloxacin			33	6			79	7
Fully sensitive	Fully sensitive			33	2			79	16
Number of multiresistant S. Typhimurium	resistant to other antimicrobials			33	8				
	with penta resistance			33	15				
Penicillins	Ampicillin			33	30			79	25
Quinolones	Nalidixic acid			33	6			79	5
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial			33	0			79	22
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials			33	1			79	1
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials			33	1			79	6
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials			33	12			79	17
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials			33	17			79	17
Sulfonamides	Sulfonamide			33	30			79	38
Tetracyclines	Tetracycline			33	31			79	59

Table Antimicrobial susceptibility testing of Salmonella in Pigs

Salmonella		S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes	
Isolates out of a monitoring program (yes/no)				yes				yes	
Number of isolates available in the laboratory				33				79	
Antimicrobials:		N	n	N	n	N	n	N	n
Trimethoprim	Trimethoprim			33	2			79	27

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

Salmonella		S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes		S. Infantis	
Isolates out of a monitoring program (yes/no)		yes		yes				yes		yes	
Number of isolates available in the laboratory		65		13				107		25	
Antimicrobials:		N	n	N	n	N	n	N	n	N	n
Aminoglycosides	Gentamicin	65	0	13	0			107	0	25	0
	Kanamycin	65	2	13	0			107	8	25	0
	Streptomycin	65	1	13	4			107	5	25	0
Amphenicols	Chloramphenicol	65	2	13	4			107	0	25	0
	Florfenicol	65	0	13	3			107	0	25	0
Cephalosporins	Cefotaxim	65	0	13	0					25	0
	Ceftazidim	65	0	13	1					25	1
Fluoroquinolones	Ciprofloxacin	65	28	13	1			107	10	25	0
Fully sensitive	Fully sensitive	65	25	13	8					25	25
Number of multiresistant S. Typhimurium	resistant to other antimicrobials			13	1						
	with penta resistance			13	3						
Penicillins	Ampicillin	65	7	13	4			107	3	25	0
Quinolones	Nalidixic acid	65	28	13	1			107	8	25	0
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	65	8	13	0					25	0
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	65	22	13	1					25	0
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	65	7	13	0					25	0
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	65	1	13	0					25	9
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	65	2	13	4					25	0
Sulfonamides	Sulfonamide	65	7	13	4			107	5	25	0
Tetracyclines	Tetracycline	65	5	13	4			107	11	25	0

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

Salmonella		S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes		S. Infantis	
Isolates out of a monitoring program (yes/no)		yes		yes				yes		yes	
Number of isolates available in the laboratory		65		13				107		25	
Antimicrobials:		N	n	N	n	N	n	N	n	N	n
Trimethoprim	Trimethoprim	65	6	13	0			107	4	25	0

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

Salmonella		S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes	
Isolates out of a monitoring program (yes/no)		yes		yes				yes	
Number of isolates available in the laboratory		48		7				22	
Antimicrobials:		N	n	N	n	N	n	N	n
Aminoglycosides	Gentamicin	48	1	7	0			22	4
	Kanamycin	48	1	7	0			22	8
	Streptomycin	48	1	7	0			22	5
Amphenicols	Chloramphenicol	48	2	7	0			22	3
	Florfenicol	48	1	7	0			22	0
Cephalosporins	Cefotaxim	48	1	7	0			22	5
	Ceftazidim	48	1	7	0			22	4
Fluoroquinolones	Ciprofloxacin	48	45	7	3			22	14
Fully sensitive	Fully sensitive	48	1	7	4			22	5
Number of multiresistant S. Typhimurium	resistant to other antimicrobials			7	0				
	with penta resistance			7	0				
Penicillins	Ampicillin	48	3	7	0			22	7
Quinolones	Nalidixic acid	48	44	7	3			22	12
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	48	1	7	0			22	1
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	48	43	7	3			22	7
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	48	0	7	0			22	0
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	48	0	7	0			22	1
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	48	3	7	0			22	8
Sulfonamides	Sulfonamide	48	2	7	0			22	5
Tetracyclines	Tetracycline	48	2	7	0			22	7

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

Salmonella		S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes	
Isolates out of a monitoring program (yes/no)		yes		yes				yes	
Number of isolates available in the laboratory		48		7				22	
Antimicrobials:		N	n	N	n	N	n	N	n
Trimethoprim	Trimethoprim	48	0	7	0			22	1

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

Salmonella		S. Enteritidis		S. Typhimurium		Salmonella spp.		Other serotypes	
Isolates out of a monitoring program (yes/no)								yes	
Number of isolates available in the laboratory								29	
Antimicrobials:		N	n	N	n	N	n	N	n
Aminoglycosides	Gentamicin							29	0
	Kanamycin							29	0
	Streptomycin							29	2
Amphenicols	Chloramphenicol							29	1
	Florfenicol							29	0
Fluoroquinolones	Ciprofloxacin							29	0
Fully sensitive	Fully sensitive							29	25
Number of multiresistant S. Typhimurium	resistant to other antimicrobials							1	1
	with penta resistance							1	0
Penicillins	Ampicillin							29	2
Quinolones	Nalidixic acid							28	0
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial							29	0
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials							29	1
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials							29	1
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials							29	1
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials							29	1
Sulfonamides	Sulfonamide							29	4
Tetracyclines	Tetracycline							29	4
Trimethoprim	Trimethoprim							29	2

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

Table Antimicrobial susceptibility testing of Salmonella in meat from other poultry species

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		14	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	14	0
	Kanamycin	14	1
	Neomycin	11	0
	Streptomycin	14	11
Amphenicols	Chloramphenicol	14	11
	Florfenicol	1	0
Cephalosporins	3rd generation cephalosporins	3	0
Fluoroquinolones	Ciprofloxacin	14	0
	Enrofloxacin	11	3
Fully sensitive	Fully sensitive	14	0
Penicillins	Amoxicillin / Clavulanic acid	1	0
	Ampicillin	14	12
Quinolones	Nalidixic acid	14	13
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	14	1
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	14	1
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	14	1
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	14	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	14	11
Sulfonamides	Sulfonamide	13	12
Tetracyclines	Tetracycline	14	11

Table Antimicrobial susceptibility testing of Salmonella in meat from other poultry species

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		14	
Antimicrobials:		N	n
Trimethoprim	Trimethoprim	12	3
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	13	3

Footnote:

Source of information: Public Health Services of the Autonomous Communities

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

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		43	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	43	0
	Kanamycin	42	0
	Neomycin	19	0
	Streptomycin	43	8
Amphenicols	Chloramphenicol	43	1
	Florfenicol	6	1
Cephalosporins	3rd generation cephalosporins	39	1
Fluoroquinolones	Ciprofloxacin	43	4
Fully sensitive	Fully sensitive	43	14
Penicillins	Amoxicillin / Clavulanic acid	18	0
	Ampicillin	43	8
	Piperacillin	18	6
Quinolones	Nalidixic acid	43	22
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	43	11
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	43	4
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	43	1
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	43	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	43	13
Sulfonamides	Sulfonamide	38	1
Tetracyclines	Tetracycline	43	13

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

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		43	
Antimicrobials:		N	n
Trimethoprim	Trimethoprim	40	0
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	39	0

Footnote:

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

Table Antimicrobial susceptibility testing of Salmonella in meat from pig

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)		yes	
Number of isolates available in the laboratory		39	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	39	0
	Kanamycin	28	0
	Neomycin	20	2
	Streptomycin	37	24
Amphenicols	Chloramphenicol	37	12
	Florfenicol	1	0
Cephalosporins	3rd generation cephalosporins	17	0
Fluoroquinolones	Ciprofloxacin	27	0
	Enrofloxacin	11	0
Fully sensitive	Fully sensitive	39	4
Penicillins	Amoxicillin / Clavulanic acid	5	0
	Ampicillin	39	24
	Piperacillin	5	2
Quinolones	Nalidixic acid	37	4
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	39	6
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	39	3
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	39	3
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	39	13
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	39	10
Sulfonamides	Sulfonamide	28	22

Table Antimicrobial susceptibility testing of Salmonella in meat from pig

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)		yes	
Number of isolates available in the laboratory		39	
Antimicrobials:		N	n
Tetracyclines	Tetracycline	37	35
Trimethoprim	Trimethoprim	27	4
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	27	8

Footnote:

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

Table Antimicrobial susceptibility testing of Salmonella in meat from bovine animals

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)		yes	
Number of isolates available in the laboratory		9	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	8	0
	Kanamycin	8	0
	Streptomycin	8	0
Amphenicols	Chloramphenicol	9	0
	Florfenicol	3	0
Cephalosporins	3rd generation cephalosporins	6	0
Fluoroquinolones	Ciprofloxacin	6	0
Fully sensitive	Fully sensitive	9	3
Penicillins	Amoxicillin / Clavulanic acid	1	0
	Ampicillin	9	0
Quinolones	Nalidixic acid	9	0
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	9	5
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	9	0
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	9	1
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	9	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	9	0
Sulfonamides	Sulfonamide	7	3
Tetracyclines	Tetracycline	9	4
Trimethoprim	Trimethoprim	5	0
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	4	1

Table Antimicrobial susceptibility testing of Salmonella in meat from bovine animals

Footnote:

Source of information: Public Health Services of the Autonomous Communities

Table Antimicrobial susceptibility testing of Salmonella in Egg products

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		35	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	26	0
	Kanamycin	28	0
	Neomycin	13	0
	Streptomycin	33	5
Amphenicols	Chloramphenicol	35	0
	Florfenicol	17	0
Cephalosporins	3rd generation cephalosporins	14	0
Fluoroquinolones	Ciprofloxacin	32	5
	Enrofloxacin	1	0
Fully sensitive	Fully sensitive	35	14
Penicillins	Amoxicillin / Clavulanic acid	9	0
	Ampicillin	35	4
	Piperacillin	7	0
Quinolones	Nalidixic acid	35	13
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	35	10
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	35	11
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	35	0
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	35	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	35	0
Sulfonamides	Sulfonamides	13	0

Table Antimicrobial susceptibility testing of Salmonella in Egg products

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		35	
Antimicrobials:		N	n
Tetracyclines	Tetracycline	35	3
Trimethoprim	Trimethoprim	28	0
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	15	0

Footnote:

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

Table Antimicrobial susceptibility testing of Salmonella in Fishery products, unspecified

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		2	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	2	0
	Neomycin	2	0
	Streptomycin	2	0
Amphenicols	Chloramphenicol	2	0
Cephalosporins	3rd generation cephalosporins	2	0
Fluoroquinolones	Enrofloxacin	2	0
Fully sensitive	Fully sensitive	2	0
Penicillins	Amoxicillin / Clavulanic acid	2	0
	Ampicillin	2	0
	Piperacillin	2	0
Quinolones	Nalidixic acid	2	2
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	2	2
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	2	0
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	2	0
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	2	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	2	0
Sulfonamides	Sulfonamide	2	0
Tetracyclines	Tetracycline	2	0
Trimethoprim	Trimethoprim	2	0
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	2	0

Table Antimicrobial susceptibility testing of Salmonella in Fishery products, unspecified

Footnote:

National Reference Laboratory

Table Antimicrobial susceptibility testing of Salmonella in Dairy products (excluding cheeses) - dairy products, not specified

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		4	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	4	0
	Neomycin	4	0
	Streptomycin	4	0
Amphenicols	Chloramphenicol	4	0
Cephalosporins	3rd generation cephalosporins	4	0
Fluoroquinolones	Ciprofloxacin	4	0
Fully sensitive	Fully sensitive	4	4
Penicillins	Amoxicillin / Clavulanic acid	4	0
	Ampicillin	4	0
	Piperacillin	4	0
Quinolones	Nalidixic acid	4	0
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	4	0
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	4	0
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	4	0
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	4	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	4	0
Sulfonamides	Sulfonamide	4	0
Tetracyclines	Tetracycline	4	0
Trimethoprim	Trimethoprim	4	0
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	4	0

Table Antimicrobial susceptibility testing of Salmonella in Dairy products (excluding cheeses) - dairy products, not specified

Footnote:

National Reference Laboratory

Table Antimicrobial susceptibility testing of Salmonella in Meat, mixed meat

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)		yes	
Number of isolates available in the laboratory		46	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	44	0
	Kanamycin	41	0
	Neomycin	7	0
	Streptomycin	44	17
Amphenicols	Chloramphenicol	46	5
	Florfenicol	7	3
Cephalosporins	3rd generation cephalosporins	14	3
Fluoroquinolones	Ciprofloxacin	18	0
	Enrofloxacin	4	0
Fully sensitive	Fully sensitive	46	15
Penicillins	Amoxicillin / Clavulanic acid	3	0
	Ampicillin	46	19
	Piperacillin	1	0
Quinolones	Nalidixic acid	46	6
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	46	8
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	46	2
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	46	2
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	46	11
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	46	8
Sulfonamides	Sulfonamide	42	19

Table Antimicrobial susceptibility testing of Salmonella in Meat, mixed meat

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)		yes	
Number of isolates available in the laboratory		46	
Antimicrobials:		N	n
Tetracyclines	Tetracycline	46	27
Trimethoprim	Trimethoprim	34	3
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	17	4

Footnote:

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

Table Antimicrobial susceptibility testing of Salmonella in Other food

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)		no	
Number of isolates available in the laboratory		36	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	36	0
	Kanamycin	13	0
	Neomycin	34	0
	Streptomycin	35	14
Amphenicols	Chloramphenicol	36	0
Cephalosporins	3rd generation cephalosporins	36	0
Fluoroquinolones	Enrofloxacin	36	0
Fully sensitive	Fully sensitive	36	17
Penicillins	Amoxicillin / Clavulanic acid	20	0
	Ampicillin	36	0
	Piperacillin	18	0
Quinolones	Nalidixic acid	36	4
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	36	17
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	36	2
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	36	0
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	36	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	36	0
Sulfonamides	Sulfonamide	31	1
Tetracyclines	Tetracycline	36	0
Trimethoprim	Trimethoprim	29	0

Table Antimicrobial susceptibility testing of Salmonella in Other food

Salmonella		Salmonella spp.	
Isolates out of a monitoring program (yes/no)		no	
Number of isolates available in the laboratory		36	
Antimicrobials:		N	n
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	36	0

Footnote:

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

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

Salmonella spp.		All foodstuffs																								
Isolates out of a monitoring program (yes/no)																										
Number of isolates available in the laboratory		23																								
Antimicrobials:		Break Point	N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Aminoglycosides	Gentamicin	12	23	0											22												
	Neomycin	12	23	2			2								20												
	Streptomycin	11	22	13	6		7								9												
Amphenicols	Chloramphenicol	12	23	2	2										19												
Fluoroquinolones	Ciprofloxacin	15	23	0											14												
Penicillins	Ampicillin	13	23	7	7										13												
Quinolones	Nalidixic acid	13	23	1			1								15												
Tetracyclines	Tetracycline	14	23	8	6		2								12												
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	10	23	4	4										12												

Salmonella spp.		All foodstuffs						
Isolates out of a monitoring program (yes/no)								
Number of isolates available in the laboratory		23						
Antimicrobials:		29	30	31	32	33	34	>=35
Aminoglycosides	Gentamicin				1			
	Neomycin				1			
	Streptomycin							
Amphenicols	Chloramphenicol				2			
Fluoroquinolones	Ciprofloxacin				9			
Penicillins	Ampicillin				3			

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

Salmonella spp.		All foodstuffs						
Isolates out of a monitoring program (yes/no)								
Number of isolates available in the laboratory		23						
Antimicrobials:		29	30	31	32	33	34	>=35
Quinolones	Nalidixic acid				7			
Tetracyclines	Tetracycline				3			
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides				7			

Footnote:

Source of information: Public Health Services of the Autonomous Communities

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

S. Typhimurium		Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Survey - national survey																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		33																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	33	1						4	13	13	2					1								
	Kanamycin	4	33	2										31	1		1									
	Streptomycin	32	33	27											1	2	3	4	9	14						
Amphenicols	Chloramphenicol	16	33	16										15	2				16							
	Florfenicol	16	33	4										22	1	6	2		2							
Cephalosporins	Cefotaxim	0.5	33	1				9	17	4	2	1														
	Ceftazidim	1	33	0						31	2															
Fluoroquinolones	Ciprofloxacin	0.06	33	6			24	3	1	5																
Penicillins	Ampicillin	4	33	30							1	2						30								
Quinolones	Nalidixic acid	16	33	6										25	2				6							
Sulfonamides	Sulfonamide	256	33	30													1	1	1				30			
Tetracyclines	Tetracycline	8	33	31								1	1			2	5	2	22							
Trimethoprim	Trimethoprim	2	33	2							31							2								

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

Other serotypes		Pigs - fattening pigs - at slaughterhouse - animal sample - lymph nodes - Survey - national survey																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		79																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	79	7						18	23	27	4	1	4		1	1								
	Kanamycin	4	79	7										72	5					2						
	Streptomycin	32	79	26										1	17	21	14	10	6	10						
Amphenicols	Chloramphenicol	16	79	12									1	37	28	1	5	6	1							
	Florfenicol	16	79	0									2	58	11	8										
Cephalosporins	Cefotaxim	0.5	79	0				16	55	8																
	Ceftazidim	1	79	0						28	49	2														
Fluoroquinolones	Ciprofloxacin	0.06	79	7		10	60	2	1	4	2															
Penicillins	Ampicillin	4	79	25							13	41						25								
Quinolones	Nalidixic acid	16	79	5										72		2			5							
Sulfonamides	Sulfonamide	256	79	38											2		10	25	4				38			
Tetracyclines	Tetracycline	8	79	59								14	5		1	1	6	9	43							
Trimethoprim	Trimethoprim	2	79	27							52							27								

Footnote:

Including 3 enteritidis serovar isolates, 28 rissen serovar isolates, and 20 derby serovar isolates

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

S. Enteritidis		Gallus gallus (fowl) - broilers - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - objective sampling																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		48																							
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	48	1						25	16	5	1	1											
	Kanamycin	4	48	1										47	1										
	Streptomycin	32	48	1									17	23	5	2		1							
Amphenicols	Chloramphenicol	16	48	2										15	30	1		1	1						
	Florfenicol	16	48	1									2	37	5	3		1							
Cephalosporins	Cefotaxim	0.5	48	1				21	18	7	1				1										
	Ceftazidim	1	48	1						37	9	1	1												
Fluoroquinolones	Ciprofloxacin	0.06	48	45	1	1	1		13	28	4														
Penicillins	Ampicillin	4	48	3							3	25	13	4				3							
Quinolones	Nalidixic acid	16	48	44										4					44						
Sulfonamides	Sulfonamide	256	48	2													10	23	11	2		1	1		
Tetracyclines	Tetracycline	8	48	2								10	35	1				2							
Trimethoprim	Trimethoprim	2	48	0							45	3													

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

Other serotypes		Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		29																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	29	0							16	12	1													
	Kanamycin	4	29	0										29												
	Streptomycin	32	29	2										2	6	17	2	1		1						
Amphenicols	Chloramphenicol	16	29	1									2	24	2		1									
	Florfenicol	16	29	0									6	21	2											
Cephalosporins	Cefotaxim	0.5	29	0				13	13	3																
	Ceftazidim	1	29	0						22	7															
Fluoroquinolones	Ciprofloxacin	0.06	29	0	1	9	19																			
Penicillins	Ampicillin	4	29	2							4	22	1					2								
Quinolones	Nalidixic acid	16	28	0										28												
Sulfonamides	Sulfonamides	256	29	4												1	8	15	1				4			
Tetracyclines	Tetracycline	8	29	4								17	8						4							
Trimethoprim	Trimethoprim	2	29	2							27							2								

Footnote:

Including one Typhimurium serovar isolate

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

S. Typhimurium		Gallus gallus (fowl) - broilers - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - objective sampling																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		7																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	7	0						2	3	2														
	Kanamycin	4	7	0										7												
	Streptomycin	32	7	0									1	1	2	3										
Amphenicols	Chloramphenicol	16	7	0										3	4											
	Florfenicol	16	7	0									1	5	1											
Cephalosporins	Cefotaxim	0.5	7	0				4	3																	
	Ceftazidim	1	7	0						5	2															
Fluoroquinolones	Ciprofloxacin	0.06	7	3		3	1		3																	
Penicillins	Ampicillin	4	7	0								7														
Quinolones	Nalidixic acid	16	7	3										3	1				3							
Sulfonamides	Sulfonamide	256	7	0													2	3	2							
Tetracyclines	Tetracycline	8	7	0								1	6													
Trimethoprim	Trimethoprim	2	7	0							7															

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

Other serotypes		Gallus gallus (fowl) - broilers - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - objective sampling																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		22																							
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	22	4						2	12	4		1	1		1	1							
	Kanamycin	4	22	8										14	2	1	1	1		3					
	Streptomycin	32	22	5									1	2	5	5	4	2	1	2					
Amphenicols	Chloramphenicol	16	22	3										5	14				3						
	Florfenicol	16	22	0										17	4	1									
Cephalosporins	Cefotaxim	0.5	22	5				4	9	4					5										
	Ceftazidim	1	22	4						10	8						4								
Fluoroquinolones	Ciprofloxacin	0.06	22	14		5	3		2	9	1	2													
Penicillins	Ampicillin	4	22	7								11	4					7							
Quinolones	Nalidixic acid	16	22	12										8	1	1			12						
Sulfonamides	Sulfonamide	256	22	5												2	6	7		2			5		
Tetracyclines	Tetracycline	8	22	7								1	13	1			1	5	1						
Trimethoprim	Trimethoprim	2	22	1							20	1						1							

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

S. Enteritidis		Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - objective sampling																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		65																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	65	0						25	38	1	1													
	Kanamycin	4	65	2										63	2											
	Streptomycin	32	65	1									14	38	6	6				1						
Amphenicols	Chloramphenicol	16	65	2									2	16	45				2							
	Florfenicol	16	65	0									2	55	6	2										
Cephalosporins	Cefotaxim	0.5	65	0				20	40	4	1															
	Ceftazidim	1	65	0						55	8	2														
Fluoroquinolones	Ciprofloxacin	0.06	65	28		11	25	1	5	20	3															
Penicillins	Ampicillin	4	65	7							1	21	34	2	2			5								
Quinolones	Nalidixic acid	16	65	28										34	2	1			28							
Sulfonamides	Sulfonamide	256	65	7												1	9	37	11				7			
Tetracyclines	Tetracycline	8	65	5								10	48	2					5							
Trimethoprim	Trimethoprim	2	65	6							58	1						6								

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

S. Typhimurium		Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - objective sampling																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		13																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	13	0						3	7	2	1													
	Kanamycin	4	13	0										13												
	Streptomycin	32	13	4										2	5	2		2	2							
Amphenicols	Chloramphenicol	16	13	4										3	6				4							
	Florfenicol	16	13	3										8	1	1	1	2								
Cephalosporins	Cefotaxim	0.5	13	0				4	8	1																
	Ceftazidim	1	13	1						10	2		1													
Fluoroquinolones	Ciprofloxacin	0.06	13	2		7	4			2																
Penicillins	Ampicillin	4	13	4								6	3					4								
Quinolones	Nalidixic acid	16	13	1										11	1				1							
Sulfonamides	Sulfonamide	256	13	4												2	1	3	3			3	1			
Tetracyclines	Tetracycline	8	13	4									8		1		2	1	1							
Trimethoprim	Trimethoprim	2	13	0							13															

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

Other serotypes		Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - objective sampling																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		107																							
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	107	0						20	63	20	4												
	Kanamycin	4	107	8										99	7	1									
	Streptomycin	32	107	5									2	38	40	19	3	3	1	1					
Amphenicols	Chloramphenicol	16	107	0										19	86	2									
	Florfenicol	16	107	0									1	87	18	1									
Cephalosporins	Cefotaxim	0.5	107	0				54	47	6															
	Ceftazidim	1	107	0						66	40	1													
Fluoroquinolones	Ciprofloxacin	0.06	107	10	1	44	50	2		7	2	1													
Penicillins	Ampicillin	4	107	3							3	79	20	2				3							
Quinolones	Nalidixic acid	16	107	8										92	6	1		1	7						
Sulfonamides	Sulfonamide	256	107	5													20	58	24			3	2		
Tetracyclines	Tetracycline	8	107	11								17	77	2			3	8							
Trimethoprim	Trimethoprim	2	107	4							98	4	1					4							

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

S. Infantis		Gallus gallus (fowl) - laying hens - at farm - environmental sample - boot swabs - Control and eradication programmes - official sampling - objective sampling																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		25																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	25	0						8	16	1														
	Kanamycin	4	25	0										25												
	Streptomycin	32	25	0										3	13	9										
Amphenicols	Chloramphenicol	16	25	0										2	22	1										
	Florfenicol	16	25	0										7	16	2										
Cephalosporins	Cefotaxim	0.5	25	0					24	1																
	Ceftazidim	1	25	1							24		1													
Fluoroquinolones	Ciprofloxacin	0.06	25	0		8	17																			
Penicillins	Ampicillin	4	25	0								15	10													
Quinolones	Nalidixic acid	16	25	0										24	1											
Sulfonamides	Sulfonamide	256	25	0												1	3	16	4	1						
Tetracyclines	Tetracycline	8	25	0									25													
Trimethoprim	Trimethoprim	2	25	0							23	2														

Table Breakpoints for antibiotic resistance testing of Salmonella in Animals

Test Method Used
Broth dilution

Standard methods used for testing
NCCLS/CLSI VAV EFSA, EUCAST

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
	Florfenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.06	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulfonamides	Sulfonamide		256	
	Sulfonamides		256	
Aminoglycosides	Streptomycin		32	
	Gentamicin		2	
	Kanamycin		4	
Cephalosporins	Cefotaxim		0.5	
	Ceftazidim		1	
Penicillins	Ampicillin		4	

Table Breakpoints for antibiotic resistance testing of Salmonella in Animals

Table Breakpoints for antibiotic resistance testing of Salmonella in Food

Test Method Used
Agar dilution Disc diffusion

Standard methods used for testing
NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	12
Tetracyclines	Tetracycline		8	14
Fluoroquinolones	Ciprofloxacin		0.06	15
Quinolones	Nalidixic acid		16	13
Trimethoprim	Trimethoprim		2	10
Sulfonamides	Sulfonamide		4	12
	Sulfonamides		256	12
Aminoglycosides	Streptomycin		32	11
	Gentamicin		2	12
	Kanamycin			13
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides			10
Cephalosporins	3rd generation cephalosporins		32	14
	Cefotaxim		0.5	14
Penicillins	Ampicillin		4	13

Table Breakpoints for antibiotic resistance testing of Salmonella in Food

Footnote:

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

Table Breakpoints for antibiotic resistance testing of Salmonella in Feed

Test Method Used	Standard methods used for testing

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

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.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

More studies need to de developed. In 2009, surveys have been performed in broilers, cattle and pigs (national surveys).

Recent actions taken to control the zoonoses

Monitoring of the zoonoses according to Council Directive 2003/99/EEC.

2.2.2 Campylobacteriosis in humans

A. Thermophilic Campylobacter in humans

Reporting system in place for the human cases

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

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

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

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

Case definition

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

Diagnostic/analytical methods used

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

Notification system in place

Microbiological Information System
Outbreak reporting System

History of the disease and/or infection in the country

Campylobacter is the second most common cause of bacterial foodborne disease notified to public health authorities in Spain. Despite this, outbreaks of Campylobacter illness are rare in Spain.

Results of the investigation

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

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

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

Relevance as zoonotic disease

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

2.2.3 Campylobacter in foodstuffs

A. Thermophilic Campylobacter in Broiler meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

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

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Type of specimen taken

At slaughterhouse and cutting plant

fresh meat and skin

At meat processing plant

fresh meat and skin

At retail

fresh meat and skin

Diagnostic/analytical methods used

At slaughterhouse and cutting plant

bacteriological method: ISO 10272:2006

At meat processing plant

Bacteriological method:ISO10272:2006

At retail

Bacteriological method: ISO 10272:2006

Table Campylobacter in poultry meat

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus)		---								
Meat from broilers (Gallus gallus) - fresh - at slaughterhouse	F	Single	25 g	72	69	22	31			16
Meat from broilers (Gallus gallus) - fresh - at processing plant	F	Single	25 g	99	70	39	20			11
Meat from broilers (Gallus gallus) - fresh - at retail	F	Single	25 g	273	135	66	65			4
Meat from broilers (Gallus gallus) - meat products - at processing plant [1)]	F	Single	25 g	25	12		12			12
Meat from broilers (Gallus gallus) - meat products - at retail	F	Single	25 g	4	0					
Meat from other poultry species - fresh - at retail	F	Single	25 g	16	4					4
Meat from other poultry species - fresh - at slaughterhouse	F	Single	25 g	66	47	2	2			43
Meat from poultry, unspecified - meat products - at processing plant	F	Single	25 g	7	1					1

Comments:

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

Footnote:

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

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from pig - fresh - at slaughterhouse	F	Single	25 g	80	15	2	6			7
Meat from pig - fresh - at processing plant	F	Single	25 g	6	0					
Cheeses, made from unspecified milk or other animal milk - unspecified	F	Single	25 g	30	0					
Dairy products (excluding cheeses) [1)]	F	Single	25 g	1	0					
Eggs	F	Single	25 g	9	0					
Fishery products, unspecified	F	Single	25 g	7	0					
Meat from bovine animals - meat products - at retail	F	Single	25 g	4	0					
Meat from other animal species or not specified - fresh - at retail	F	Single	25 g	1	0					
Meat from other animal species or not specified - meat products - at retail	F	Single	25 g	10	0					
Meat from pig - meat products - at processing plant	F	Single	25 g	7	0					
Meat from pig - meat products - at retail	F	Single	25 g	15	0					
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos) - meat preparation	F	Single	25 g	43	2					2
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos) - minced meat	F	Single	25 g	22	1		1			
Other food	F	Single	25 g	6	0					

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Other processed food products and prepared dishes	F	Single	25 g	13	0					

Comments:

[1)] ready to eat

Footnote:

F: Source of information: Public Health Services of the Autonomous Communities and 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 9 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 april and december

Type of specimen taken

At slaughter

caecum (faeces)

Methods of sampling (description of sampling techniques)

At slaughter

3 caecum samples have been taken from 3 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 9 slaughterhouses placed in the provinces of Barcelona, Jaen, Madrid, Orense, Tarragona, Murcia, Valladolid 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 594 samples have been taken, belonging to 198 slaughter batches and 198 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 3 samples of the slaughter batch.

Diagnostic/analytical methods used

At slaughter

Other:isolation in agar CCDA and identification by PCR

Vaccination policy

doesn't exist

Other preventive measures than vaccination in place

biosecurity measures, implementation of good higyene practises

Control program/mechanisms

The control program/strategies in place

doesn't exist

Results of the investigation

Number of slaughter batches tested: 198
Number of slaughter batches positive: 118
Slaughter batch prevalence: 59,6% Campylobacter spp. (95% CI: 51,4; 69,9%)

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

More studies need to be performed

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

More studies need to be performed

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

Monitoring system

Sampling strategy

Samples have been taken ramdomly (day of sampling each month) in 11 slaughterhouses (distribution of the samples according to the capacity of sacrifice of each slaughterhouse)placed in different regions of Spain and representative of the total volume of sacrifice of the country.

Frequency of the sampling

2 faecal samples by slaughter batch with 10 animals or more, with a maximun of 30 slaughter batches by slaughterhouse and day of sampling.Sampling has been performed in 11 slaughterhouses placed in the provinces of Cuenca, Barcelona,Ciudad Real, Murcia, Pontevedra, Badajoz, Burgos, Málaga, Gerona, Huesca and Lérida. These slaughterhouses have a high volume of activity, representing an important part of all the fattening pigs sacrified in Spain.

A total of 568 samples have been taken, belonging to 284 slaughter batches and 284 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 CCDA and identification by PCR

Vaccination policy

Doesn't exist

Results of the investigation

Number of slaughter batches tested: 284
Number of slaughter batches positive: 192
Slaughter batch prevalence: 67,6% 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

More studies need to be developed

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

Monitoring system

Sampling strategy

Samples have been taken in ramdomly (day of sampling each month)in 10 slaughterhouses (distribution of the samples according to the capacity of sacrifice of each slaughterhouse) placed in different regions of Spain and representative of the total volume of sacrifice of the country.

Frequency of the sampling

Two faecal samples have been taken in all the slaughter batches in the day of sampling, with a maximun of 30 batches by slaughterhouse and day of sampling . Each batch belonged to different holdings.
Sampling has been performed in 10 slaughterhouses placed in the provinces of Barcelona(2), Valencia, Huesca, Lerida, Caceres,Madrid, Orense, Salamanca y Ciudad Real. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain.
Sampling from april 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 CCDA and PCR

Results of the investigation

Number of slaughter batches analyzed: 258
Number of slaughter batches positive: 107
Slaughter batch prevalence: 41,5% (95% CI: 35,4;47,8)

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Cattle (bovine animals) - calves (under 1 year) [1)]	M.A.R.M.	Slaughter batch	258	107	14	93			
Gallus gallus (fowl) - broilers - at slaughterhouse [2)]	M.A.R.M	Slaughter batch	198	118	55	61			2
Pigs [3)]	M.A.R.M	Slaughter batch	284	192	170	2			20

Comments:

[1)] National survey
[2)] National survey
[3)] National survey

2.2.5 Antimicrobial resistance in Campylobacter isolates

A. Antimicrobial resistance in Campylobacter jejuni and coli in cattle

Sampling strategy used in monitoring

Frequency of the sampling

see text form on thermophilic Campylobacter spp. in cattle

Type of specimen taken

see text form on thermophilic Campylobacter spp. in cattle

Methods of sampling (description of sampling techniques)

see text form on thermophilic Campylobacter spp. in cattle

Procedures for the selection of isolates for antimicrobial testing

105/107 of the isolates of the national survey 2009

Methods used for collecting data

National survey 2009.

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

Breakpoints used in testing

see table

Results of the investigation

Number of isolates tested:
C. coli: 13
C. jejuni:92
High or very high level of resistance of C. coli to Tetraciclyn, Ciprofloxacyn, Doxicyclin and Nalidixic acid. Moderate resistance to Gentamicin and Eritromycin. No resistance to Chloranfenicol, Ampicillin and Amoxicillin.
High level of resistance of C. jejuni to Tetraciclyn, Ciprofloxacyn and Nalidixic acid. No resistance to Chloranfenicol and Kanamycin.

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

169/193 of the isolates of the national survey 2009

Methods used for collecting data

National survey 2009

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

Breakpoints used in testing

see table of breakpoints

Results of the investigation

Number of isolates tested: 167 C. col and 2 C. jejuni.
High or very high level of resistance to Nalidixic acid, Ciprofloxacyn, Tetraciclyn, Eritromycin, Doxicyclin, Kanamycin, Ampicillin, Amoxicillin and Streptomicyn.Low level or no resistance to Chloranfenicol and Meropenem.

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

115/118 isolates of the National survey 2009

Methods used for collecting data

National survey 2009

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.

Breakpoints used in testing

Following Commision Decision 2007/516/EC.

Results of the investigation

Number of isolates tested:
C. jejuni: 60
C. coli: 55

High or very high level of resistance of C. jejuni to Ciprofloxacine, Nalidixic acid, Tetracyclin, Doxicyclin, Ampicillin and Amoxicillin. Low or cero level of resistance to Chloranfenicol, Meropenem and Eritromicyn. High level of resistance of C. coli to Ciprofloxacin, Nalidixic acid, Streptomycin, Tetracyclin, Doxicyclin, Ampicillin, Amoxicillin, Erytromicyn and Gentamicin. No resistance to Chloranfenicol and Meropenem.

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

Campylobacter		Campylobacter spp., unspecified		C. coli		C. jejuni	
Isolates out of a monitoring program (yes/no)				yes		yes	
Number of isolates available in the laboratory				55		60	
Antimicrobials:		N	n	N	n	N	n
Aminoglycosides	Gentamicin			55	15	60	2
	Kanamycin			50	22	51	3
	Streptomycin			55	36	60	5
Amphenicols	Chloramphenicol			55	0	60	0
Fluoroquinolones	Ciprofloxacin			55	53	59	54
Macrolides	Erythromycin			55	24	60	0
Penicillins	Ampicillin			50	35	51	32
Quinolones	Nalidixic acid			55	53	60	53
Tetracyclines	Tetracycline			55	54	60	48

Table Antimicrobial susceptibility testing of Campylobacter in Pigs

Campylobacter		Campylobacter spp., unspecified		C. coli		C. jejuni	
Isolates out of a monitoring program (yes/no)				yes			
Number of isolates available in the laboratory				167			
Antimicrobials:		N	n	N	n	N	n
Aminoglycosides	Gentamicin			167	48		
	Kanamycin			118	73		
	Streptomycin			167	153		
Amphenicols	Chloramphenicol			167	1		
Fluoroquinolones	Ciprofloxacin			167	157		
Macrolides	Erythromycin			167	117		
Penicillins	Ampicillin			118	69		
Quinolones	Nalidixic acid			167	157		
Tetracyclines	Tetracycline			167	166		

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

Campylobacter		Campylobacter spp., unspecified		C. jejuni	
Isolates out of a monitoring program (yes/no)				yes	
Number of isolates available in the laboratory				92	
Antimicrobials:		N	n	N	n
Aminoglycosides	Gentamicin			92	6
	Kanamycin			21	0
	Streptomycin			92	17
Amphenicols	Chloramphenicol			92	0
Fluoroquinolones	Ciprofloxacin			92	54
Macrolides	Erythromycin			92	4
Penicillins	Ampicillin			21	8
Quinolones	Nalidixic acid			92	59
Tetracyclines	Tetracycline			92	58

Table Antimicrobial susceptibility testing of Campylobacter in Meat from other poultry species

Campylobacter		Campylobacter spp., unspecified	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		41	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	9	8
Cephalosporins	Cephalothin	32	32
Fluoroquinolones	Ciprofloxacin	41	32
Fully sensitive	Fully sensitive	41	1
Macrolides	Erythromycin	33	1
Penicillins	Ampicillin	9	8
Quinolones	Nalidixic acid	41	32
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	41	7
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	41	2
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	41	22
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	41	1
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	41	8
Tetracyclines	Tetracycline	9	8

Footnote:

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

Table Antimicrobial susceptibility testing of Campylobacter in Meat from pig

Campylobacter		Campylobacter spp., unspecified	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		15	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	15	0
Fluoroquinolones	Ciprofloxacin	15	0
Fully sensitive	Fully sensitive	15	0
Penicillins	Ampicillin	15	0
Quinolones	Nalidixic acid	15	0
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	15	15
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	15	0
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	15	0
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	15	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	15	0
Tetracyclines	Tetracycline	15	15

Footnote:

Source of information: Public Health Services of the Autonomous Communities

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

Campylobacter		Campylobacter spp., unspecified	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		215	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	3	3
Cephalosporins	Cephalothin	90	88
Fluoroquinolones	Ciprofloxacin	215	135
Fully sensitive	Fully sensitive	215	0
Macrolides	Erythromycin	212	24
Penicillins	Ampicillin	3	3
Quinolones	Nalidixic acid	215	180
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	215	29
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	215	56
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	215	115
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	215	12
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	215	3
Tetracyclines	Tetracycline	3	3

Footnote:

Source of information: Human public health services of the Autonomous Communities and National Reference Laboratory

Table Antimicrobial susceptibility testing of Campylobacter in Meat, mixed meat

Campylobacter		Campylobacter spp., unspecified	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		3	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	3	0
Fluoroquinolones	Ciprofloxacin	3	2
Fully sensitive	Fully sensitive	3	0
Macrolides	Erythromycin	3	1
Penicillins	Ampicillin	3	1
Quinolones	Nalidixic acid	3	2
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	3	1
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	3	0
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	3	1
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	3	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	3	1
Tetracyclines	Tetracycline	3	3

Footnote:

Source of information: Public Health Services of the Autonomous Communities

Table Antimicrobial susceptibility testing of C. coli in Pigs - fattening pigs - raised under controlled housing conditions in integrated production system - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

C. coli		Pigs - fattening pigs - raised under controlled housing conditions in integrated production system - at slaughterhouse - animal sample - faeces - Monitoring																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		167																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	167	48							3	23	93	27		2	19									
	Kanamycin	16	118	73										1	5	39	73									
	Streptomycin	4	167	153								1	3	10	8	3	45	97								
Amphenicols	Chloramphenicol	16	167	1							1	18	83	54	10		1									
Fluoroquinolones	Ciprofloxacin	1	167	157				4	3	3			1	8	84	64										
Macrolides	Erythromycin	16	167	117						3	10	26	8	2		1	3	41	73							
Penicillins	Ampicillin	8	118	73							23	10	5	3	4	4	4	65								
Quinolones	Nalidixic acid	16	167	157										3	7		5	26	126							
Tetracyclines	Tetracycline	2	167	166								1			3	6	157									

Table Antimicrobial susceptibility testing of C. jejuni in Gallus gallus (fowl) - broilers - before slaughter - at slaughterhouse - animal sample - caecum - Monitoring - quantitative data [Dilution method]

C. jejuni		Gallus gallus (fowl) - broilers - before slaughter - at slaughterhouse - animal sample - caecum - Monitoring																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		60																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	1	60	2					1	3	24	30	2													
	Kanamycin	16	51	3								1	5	15	25	2	3									
	Streptomycin	2	60	5							18	28	9	2				3								
Amphenicols	Chloramphenicol	16	60	0								20	25	13	2											
Fluoroquinolones	Ciprofloxacin	1	59	54				2	3				1		23	30										
Macrolides	Erythromycin	4	60	0						33	22	5														
Penicillins	Ampicillin	8	51	36							2	3	2	3	5	4	1	31								
Quinolones	Nalidixic acid	16	60	53										3	3	1	2	6	45							
Tetracyclines	Tetracycline	2	60	48					3	3	3	1	2			8	40									

Table Antimicrobial susceptibility testing of C. coli in Gallus gallus (fowl) - broilers - before slaughter - at slaughterhouse - animal sample - caecum - Monitoring - quantitative data [Dilution method]

C. coli		Gallus gallus (fowl) - broilers - before slaughter - at slaughterhouse - animal sample - caecum - Monitoring																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		55																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	55	15							2	16	22				15									
	Kanamycin	16	50	22											11	17	22									
	Streptomycin	4	55	36							1	2	6	10	2	1	5	28								
Amphenicols	Chloramphenicol	16	55	0								1	26	25	3											
Fluoroquinolones	Ciprofloxacin	1	55	53				1	1					2	19	32										
Macrolides	Erythromycin	16	55	24							13	16	2					5	19							
Penicillins	Ampicillin	8	50	35							2	5	5	1	2	7	6	22								
Quinolones	Nalidixic acid	16	55	53											2			13	40							
Tetracyclines	Tetracycline	2	55	54						1							54									

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

C. jejuni		Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		92																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	1	92	6						3	34	49	4	1		1										
	Kanamycin	16	21	0							1	1	2	11	5	1										
	Streptomycin	2	92	17							3	52	20	6	2	6	1	2								
Amphenicols	Chloramphenicol	16	92	0							1	11	68	10	2											
Fluoroquinolones	Ciprofloxacin	1	92	54				7	20	10	1			1	48	5										
Macrolides	Erythromycin	4	92	4						10	72	5	1				1	3								
Penicillins	Ampicillin	8	21	8							4			5	4	2		6								
Quinolones	Nalidixic acid	16	92	59										13	16	4	3	7	49							
Tetracyclines	Tetracycline	2	92	58					5	26	3				2	6	50									

Table Breakpoints used for antimicrobial susceptibility testing of Campylobacter in Animals

Test Method Used
Broth dilution

Standard methods used for testing
VAV NCCLS/CLSI EFSA, EUCAST

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline		2	
Fluoroquinolones	Ciprofloxacin		1	
Quinolones	Nalidixic acid		16	
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
	Kanamycin		16	
Macrolides	Erythromycin		4	
Penicillins	Ampicillin		8	
Amphenicols	Chloramphenicol		16	

Footnote:

This are the epidemiological cut-off values for C. jejuni

Table Breakpoints used for antimicrobial susceptibility testing of Campylobacter in Food

Test Method Used
Disc diffusion Agar dilution

Standard methods used for testing
NCCLS/CLSI

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Tetracyclines	Tetracycline		2	
Fluoroquinolones	Ciprofloxacin		1	6
Quinolones	Nalidixic acid			6
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
Macrolides	Erythromycin		4	6
Cephalosporins	Cephalothin			6

Footnote:

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

Table Breakpoints used for antimicrobial susceptibility testing of Campylobacter in Feed

Test Method Used	Standard methods used for testing

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

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.

Recent actions taken to control the zoonoses

The activities are made according to Regulation (EC) 178/2002. (i.e. rapid alert system, traceability of food, feed, food-producing animals and all substances incorporated into foodstuffs). must be established at all stages of production, processing and distribution. To this end, business operators are required to apply appropriate systems and procedures.

Sampling is distributed evenly throughout the year.

Additional information

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

2.3.2 Listeriosis in humans

A. Listeriosis in humans

Reporting system in place for the human cases

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

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

Case definition

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

Diagnostic/analytical methods used

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

Notification system in place

Microbiological Information System
Outbreak reporting System

History of the disease and/or infection in the country

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

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 2009, 118 cases of listeriosis has been comunicate to Microbiological Information System versus 86 in 2008.

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 other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Meat from bovine animals - fresh	F	Single	25 g	24	0	24	0	0	0	0
Meat from broilers (Gallus gallus) - fresh	F	Single	25 g	12	4	12	4	0	0	0
Meat from pig - fresh	F	Single	25 g	106	3	106	3	0	0	0
Egg products	F	Single	25 g	44	15	29	0	15	15	0
Fishery products, unspecified - ready-to-eat	F	Single	25 g	721	85	555	48	166	27	10
Meat from bovine animals - meat products - unspecified, ready-to-eat	F	Single	25 g	1	0	1	0	0	0	0
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat	F	Single	25 g	11	3	8	0	3	3	0
Meat from other animal species or not specified - fresh	F	Single	25 g	15	0	15	0	0	0	0
Meat from other animal species or not specified - meat products - cooked, ready-to-eat	F	Single	25 g	49	1	42	1	7	0	0
Meat from other poultry species - meat products - cooked, ready-to-eat	F	Single	25 g	42	15	21	0	21	15	0
Meat from pig - meat products - unspecified, ready-to-eat	F	Single	25 g	1088	137	896	73	192	59	5
Meat, mixed meat - meat preparation	F	Single	25 g	518	73	444	56	74	14	3
Meat, mixed meat - minced meat	F	Single	25 g	325	31	292	20	33	11	0
Other food	F	Single	25 g	1011	22	938	6	73	14	2

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Other processed food products and prepared dishes - unspecified - non-ready-to-eat foods [1)]	F	Single	25 g	878	14	800	9	78	5	0
Other processed food products and prepared dishes - unspecified - ready-to-eat foods	F	Single	25 g	8822	100	8058	62	764	34	4
Ready-to-eat salads	F	Single	25 g	251	41	212	4	39	37	0
Vegetables - products [2)]	F	Single	25 g	61	8	46	4	15	4	0

Comments:

[1)] rte after treatment

[2)] ready to eat without treatment

Footnote:

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

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Listeria	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses, made from unspecified milk or other animal milk	F	Single	25 g	1213	94	1026	65	187	29	0
Dairy products (excluding cheeses) - dairy products, not specified	F	Single	25 g	406	10	378	5	28	5	0
Dairy products (excluding cheeses) - ice-cream	F	Single	25 g	521	0	426	0	95	0	0

Footnote:

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

2.3.4 Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals) - dairy cows [1)]	M.A.R.M	Animal	25	5	5	
Goats [2)]	M.A.R.M	Animal	1	0		
Sheep [3)]	M.A.R.M	Animal	14	0		

Comments:

[1)] clinical investigations
[2)] clinical investigations
[3)] clinical investigations

2.4 E. COLI INFECTIONS

2.4.1 General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

History of the disease and/or infection in the country

Verotoxigenic Escherichia coli have emerged as foodborne pathogens which can cause severe and potencially fatal illness.Rumiants,specially cattle and sheep, have been implicated as the principal reservoir of VTEC.Transmission happened through consumption of undercooked meat, unpasteurized dairy products, vegetables or water contaminated by rumiant faeces.

Studies about VTEC in Spain was firstly developed by Laboratory of E. coli of Veterinary University of Lugo. Between 1980 and 1995, 90% of cattle farms tested in region of Galicia were positive to VTEC, with 26% of animals coloniozed by VTEC no-O157 and 0,9% colonized by ECVT O157:H7. In 1999, 20% of farms and 10% of animals were colonized by ECVT O157:H7.In 1998, 15% of calves tested of others regions of Spain were carrier of ECVT O157:H7.

In sheeps,36% of lambs of region of Extremadura tested in 1997 were carrier of ECVT, but only 0,4% were colonized by strain O157:H7.Similar results have been obtained in studies carried out between 2000 and 2001.

In 2007, 2008 and 2009 a national survey has been performed in cattle for meat production at slaughterhouse under a herd based approach.

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

In cattle, the percentage of animals colonized by strain O157:H7 has been similar in last surveys.Raw beef products are the main source of infection.

Small rumiants may also represent a source of transmision of VTEC to humans.

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

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

Recent actions taken to control the zoonoses

Surveillance of the disease according to Directive 2003/99/EEC. National surveys 2007, 2008 and 2009 in cattle for meat production.

Compulsory and voluntary monitoring programmes in raw meat of different species of animals, minced meat and meat products, other animal origin products, vegetables and others products.

Additional information

Diagnostic methods used in food:

- Bacteriological method: ISO 16654:2001.
- Method ELISA
- PCR-Bax

2.4.2 E. coli infections in humans

A. Verotoxigenic Escherichia coli infections in humans

Reporting system in place for the human cases

Microbiological Information System
Enter-net
Outbreak reporting

Case definition

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

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.

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

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

2.4.3 Escherichia coli, pathogenic in foodstuffs

Table VT E. coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified	Verotoxigenic E. coli (VTEC) - VTEC O157:H7
Meat from bovine animals - fresh - at slaughterhouse [1)]	F	Single	25 g	303	45	45			44
Meat from bovine animals - fresh - at processing plant	F	Single	25 g	5	0				
Meat from bovine animals - fresh - at retail	F	Single	25 g	35	0				
Meat from pig - fresh [2)]	F	Single	25 g	8	0				
Meat from sheep - fresh - at retail	F	Single	25 g	7	0				
Milk, cows' - raw	F	Single	25 g	6	0				
Vegetables	F	Single	25 g	2	0				
Dairy products (excluding cheeses)	F	Single	25 g	4	0				
Fishery products, unspecified	F	Single	25 g	142	0				
Meat from bovine animals - meat products - at processing plant	F	Single	25 g	7	0				
Meat from bovine animals - meat products - at retail	F	Single	25 g	5	0				
Meat from broilers (Gallus gallus) - meat products [3)]	F	Single	25 g	9	0				
Meat from other animal species or not specified - meat products	F	Single	25 g	19	0				
Meat from other animal species or not specified - minced meat	F	Single	25 g	127	0				

Table VT E. coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified	Verotoxigenic E. coli (VTEC) - VTEC O157:H7
Meat from other poultry species - fresh - at retail	F	Single	25 g	10	0				
Meat from pig - meat products - at processing plant	F	Single	25 g	57	1	1			
Meat from pig - meat products - at retail	F	Single	25 g	28	0				
Milk from other animal species or unspecified - pasteurised	F	Single	25 g	7	0				
Other food	F	Single	25 g	30	0				
Other processed food products and prepared dishes - unspecified	F	Single	25 g	18	0				

Comments:

[1)] more than one serotype is isolated from a same sample

[2)] at retail

[3)] at processing plant and at retail

Footnote:

F: Source of information: Public Health Services of the Autonomous Communities and 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 10 slaughterhouses (distribution of the samples according to the capacity of sacrifice of each slaughterhouse) placed in different regions of Spain and representative of the total volume of sacrifice of the country

Frequency of the sampling

Animals at slaughter (herd based approach)

from april 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 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 10 slaughterhouses placed in the provinces of Barcelona(2), Valencia, Huesca, Lerida, Caceres,Madrid, Orense, Salamanca y Ciudad Real. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain.
Faeces were taken from the colon, refrigerated inmediatly and sent to the laboratory and analyzed within 24 hours.

Case definition

Animals at slaughter (herd based approach)

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

Diagnostic/analytical methods used

Animals at slaughter (herd based approach)

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

Vaccination policy

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

Control program/mechanisms

The control program/strategies in place

Does not exist

Recent actions taken to control the zoonoses

National survey in cattle at slaughterhouse

Results of the investigation

Number os slaughter batches tested: 258
Number of slaughter batches positive: 52

Slaughter batch (herd) prevalence: 20,2% (95% CI: 15,6;25,7)

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

Described in General Evaluation

Table VT E. coli in animals

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Cattle (bovine animals) - calves (under 1 year) [1)]	M.A.R.M	Slaughter batch		258	52	52		

Comments:

[1)] National survey

2.5 TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1 General evaluation of the national situation

A. Tuberculosis general evaluation

History of the disease and/or infection in the country

Sanitary importance of bovine tuberculosis has been based in the spread of the disease to humans. Human infection has been linked historically to raw milk consumption. At human level the surveillance of the disease is included in National Net of Epidemiological Surveillance, according with Royal Decree 2210/1995, december 25, by Epidemiological Surveillance National Net is created.

In Spain, control of milk was carried out at council town's level since 1908, but monitoring and eradication programmes in cattle didn't start systematically until begining of 90's, focused mainly in dairy cows. At the moment the programme is being applied to cattle over six weeks of age,and to goats living close to cattle, according to Directive 64/432/EEC.
Control of milk and control of fresh meat production is carried out by Autonomous Communities according to European legislation in force (hygiene package).

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

Spanish programmes for eradication on bovine tuberculosis in last years show the low level of decrease of the disease prevalence in cattle. In 2009 herd prevalence was 1.65%(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), with 96.53% 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 and 97,21% in 2008). Animal prevalence in 2009 was 0.41%(0.47% in 2003, 0.40% in 2004, 0.31% in 2005, 0.42% in 2006, 0,49% in 2007 and 0.48% in 2008).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

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 2009.
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 2005-2009 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

Results of the investigation

Only 5 human cases of M.bovis infection has been reported during 2009 in Spain.

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 2009, 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 in 2009 and consequently, an increase in the sensivity at animal level (intra-herd) has been applied. A total of 197.040 gamma-interferon tests have been performed in 2009. 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 2009. These measures have increased the sensitivity at herd level as well.
More than 110.000 pre-movement tests have been performed in 2009.

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 2008/897/EEC and Decision 2009/470/EEC
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: 1,65%
Animal prevalence: 0,41%
Herd incidence: 1,03%
Status of herds: 96,53% 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 increase of the disease at herd level and decrease at animal level in the country in 2009.Trend analysis show a decreasing trend between 2006 and 2009 (Mantel test for trend: p< 0,05).The annual rate of decrease is 2,2% (95% C.I. for relative change = -7.13 to +2.95%).
In dairy herds, the disease is close to eradication, with a herd prevalence of 0,62%.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 1,93%. Explanation of this higher prevalence can be found in special managemment of this kind of herds: common grazing, ranching systems, fighting bulls, trashumance... Wildlife and goats can also be a source of infection in these holdings.
The increase in the diagnostic sensitivity in 2008 and 2009 has important influence in the herd prevalence and incidence, that are higher than other programmes that use less sensitivity diagnostic strategies. The

comparations between programmes with different diagnostic strategies have to be carefully explained and interpreted.

Table Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified	M. caprae
Badgers	M.A.R.M	Animal	65	1	1			
Goats	M.A.R.M	Animal	629	15				15
Deer - wild - fallow deer - from hunting - Monitoring	M.A.R.M	Animal	436	64	64			
Deer - wild - red deer - from hunting - Monitoring	M.A.R.M	Animal	1301	68	68			
Deer - wild - roe deer - from hunting - Monitoring	M.A.R.M	Animal	745	0				
Foxes - wild - from hunting - Monitoring	MA.R.M	Animal	8	1	1			
Mountain goats - wild - from hunting - Monitoring	M.A.R.M	Animal	1	0				
Pyrenean chamois - wild - from hunting - Monitoring	M.A.R.M	Animal	150	0				
Wild boars - wild - from hunting - Monitoring	M.A.R.M	Animal	3277	290	289			1

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Andalucía	7826	7105	6633	593	453	63	10.62	93.36	8.94	6.83
Aragón	3263	2238	2135	15	13	0	0	95.4	.7	.61
Asturias	19847	19242	19242	40	30	8	20	100	.21	.16
Baleares	565	472	472	0	0	0	N.A.	100	0	0
Canarias	1188	1188	1188	0	0	0	N.A.	100	0	0
Cantabria	8097	8066	8066	73	56	8	10.96	100	.91	.69
Castilla y León	15241	14588	14588	401	195	5	1.25	100	2.75	1.34
Castilla-La Mancha	3212	2161	2161	222	84	12	5.41	100	10.27	3.89
Cataluña	5430	4130	4089	34	18	6	17.65	99.01	.83	.44
Extremadura	10344	9664	9664	365	204	13	3.56	100	3.78	2.11
Galicia	53326	47716	41359	90	83	34	37.78	86.68	.22	.2
La Rioja	329	268	268	2	2	0	0	100	.75	.75
Madrid	1503	1408	1408	78	41	3	3.85	100	5.54	2.91
Murcia	370	313	313	11	10	0	0	100	3.51	3.19

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

Navarra	1776	1666	1666	5	4	0	0	100	.3	.24
País Vasco	6998	5948	5832	33	32	1	3.03	98.05	.57	.55
Valencia	681	681	580	8	6	2	25	85.17	1.38	1.03
Total :	139996	126854	119664	1970	1231	155	7.87	94.33	1.65	1.03
Total - 1	142731	126520	124956	1984	1090	204	10.28	98.76	1.59	.87

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Andalucía	594505	563611	533622	533622	7209	7209	10789	94.68	1.35
Aragón	283317	196484	191453	191453	98	98	99	97.44	.05
Asturias	382164	374867	374867	374867	230	230	646	100	.06
Baleares	32584	24548	24471	24471	0	0	20	99.69	0
Canarias	16624	16624	16624	16624	0	0	192	100	0
Cantabria	282237	281413	281413	281413	410	385	765	100	.15
Castilla y León	1114924	1108344	1108344	1108344	3593	3479	4886	100	.32
Castilla-La Mancha	400689	245504	245504	245504	2730	2730	3158	100	1.11
Cataluña	571116	366659	292661	292661	302	294	541	79.82	.1
Extremadura	1011684	789056	709099	709099	3552	3513	4295	89.87	.5
Galicia	956013	849714	764496	764496	406	406	1921	89.97	.05
La Rioja	35919	25057	25057	25057	7	7	7	100	.03
Madrid	90462	84022	84022	84022	903	903	957	100	1.07
Murcia	63803	56496	56496	56496	40	40	40	100	.07

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

Navarra	106987	94197	83060	83060	314	314	327	88.18	.38
País Vasco	157042	153042	114625	114625	110	110	117	74.9	.1
Valencia	51972	42188	40211	40211	150	150	175	95.31	.37
Total :	6152042	5271826	4946025	4946025	20054	19868	28935	93.82	.41
Total - 1	6255315	5069887	4873183	4873183	23171	22225	30753	96.12	.48

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

	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	7469	537254	133	2610	204	27399	572	31595	0	0	0	0	6560	475650
Aragón	3263	256107	1032	61743	0	0	0	0	10	1959	0	0	2221	192405
Asturias	19242	373465	0	0	18	568	22	1292	26	773	0	0	19176	370832
Baleares	485	25940	0	0	0	0	11	72	0	0	0	0	474	25868
Canarias	1188	16624	0	0	0	0	0	0	4	864	0	0	1184	15760
Cantabria	8066	281413	31	288	25	1608	14	870	0	0	0	0	7996	278647
Castilla y León	15072	1070643	31	1798	339	50749	348	44662	348	36220	0	0	14006	937214
Castilla-La Mancha	2161	245504	0	0	125	25419	147	21422	14	2664	0	0	1875	195999
Cataluña	4102	421401	1	2	14	1461	24	1179	48	2161	0	0	4015	416598
Extremadura	9398	991952	0	0	128	33510	395	60123	63	7941	0	0	8812	890378
Galicia	47716	849714	0	0	36	2034	53	1698	2	54	0	0	47625	845928
La Rioja	268	25057	0	0	0	0	0	0	0	0	0	0	268	25057
Madrid	1503	90462	95	6212	45	3199	3	1024	0	0	0	0	1360	80027

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

Murcia	296	44793	0	0	0	0	8	397	10	6443	0	0	278	37953
Navarra	1666	94187	0	0	2	201	1	582	38	3800	0	0	1625	89604
País Vasco	6974	146995	0	0	0	0	1	84	32	658	0	0	6941	146253
Valencia	681	51312	14	170	4	656	15	91	8	752	0	0	640	49643
Total :	129550	5522823	1337	72823	940	146804	1614	165091	603	64289	0	0	125056	5073816
Total - 1	127542	5416864	314	15941	76	1312120	1857	159174	626	54481	0	0	123969	5056511

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 2009 herd prevalence was 0.32%(1.45% in 2003; 1.54% in 2004; 1.25% in 2005;0,84% in 2006; 0,57% in 2007; 0,40% in 2008))in cattle and 1.64%(5.58% in 2003; 5.12% in 2004; 4.43% in 2005; 3.20% in 2006: 2,79% in 2007; 2,11% in 2008) in goats and sheep.Animal prevalence was 0.07%(0.45% in 2003; 0,59% in 2004; 0.37% in 2005;0.22% in 2006; 0,13% in 2007; 0,09% in 2008)in cattle and 0.11%(0.87% in 2003; 0,62% in 2004; 0.45% in 2005; 0,34% in 2006; 0,25% in 2007; 0,15% in 2008) 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 2009.
Spanish Programme on eradication of brucellosis in goats and sheep 2009.
Milk control and control of the production of fresh meat in accordance to european legislation in force (Hygiene Package).
Furthermore, the Spanish Royal Decree 640/2006, of May 26, 2006, laying down specific implementation conditions of the Community rules concernig hygiene subjets, as well as foodstuff's production and commercialisation, establishes specific conditions regarding to milk and dairy milk.

2.6.2 Brucellosis in humans

A. Brucellosis in humans

Reporting system in place for the human cases

Notifiable Disease Surveillance System (NDSS)

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

Case definition

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

Diagnostic/analytical methods used

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

Notification system in place

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

Notifiable Disease Surveillance System (NDSS)

History of the disease and/or infection in the country

As the single zoonotic disease accountable for the greatest number of cases in Spain, brucellosis has been a statutorily notifiable disease since 1943.

The disease is distributed throughout all of Spain's regions, albeit in varying degrees, there being disease-free regions (Canary Islands), regions with low incidence rates (Mediterranean and Cantabrian seaboards) and regions where incidence can be considered high or very high (central and southern mainland Spain). This pattern is linked to a tradition of sheep- and goat-ranching in these areas.

The disease constitutes a problem, not only from a public health but also from a socio-economic stance. Herein lies the sensitivity surrounding its surveillance, demonstrated by the different Administrations and

reflected from the highest echelons in the form of specific legislation designed to control the disease and comply with international commitments

Results of the investigation

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

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

In 2009, 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 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 herd prevalence=0 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 2008/897/EC.
Legal basis of the programme measures is Directive 64/432/EEC and Royal Decree 2611/1996, at last ammended. Increased measures have been implemented:

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

Recent actions taken to control the zoonoses

More frecuent testing and pre-movement test
Compulsory slaughter of all animals in herds with high incidence or repeating positive results, and in low prevalence areas if infection is confirmed
Research into other test methodologies
Reinforce over herd registers at farm level
Epidemiological studies

Suggestions to the Community for the actions to be taken

Research into other test methodologies and improve existing ones.

Measures in case of the positive findings or single cases

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

Notification system in place

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

Results of the investigation

Herd prevalence: 0,32%
Animal prevalence: 0,07%
Herd incidence: 0,21%
Herd status: 94,80% OBF; 2,97 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 and 2009.
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).
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).
Disease is close to eradication in dairy herds.Herd prevalence is below 1%(0,11%).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 (0,38%).

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

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

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

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

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 2008/897/EC
Legal basis of the programme measures are Directive 91/68/EEC and Royal Decree 1941/2004.

Recent actions taken to control the zoonoses

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

Suggestions to the Community for the actions to be taken

Research into other test methologies and into other vaccines. Authoritation of new tests (ELISA,FPA)

Measures in case of the positive findings or single cases

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

Notification system in place

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

Results of the investigation

Herd prevalence: 1,64%
Animal prevalence: 0,11%
Herd incidence: 1,08%
Herd status: 60,43% OMF; 34,10% 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 decreasingtrend 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).
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).
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

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

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. abortus	B. melitensis	B. suis	Brucella spp., unspecified
Pigs	M.A.R.M	Animal	3295	0				
Barbary sheep - wild - from hunting - Monitoring	M.A.R.M	Animal	31	0				
Deer - wild - fallow deer - from hunting - Monitoring	M.A.R.M	Animal	353	0				
Deer - wild - red deer - from hunting - Monitoring	M.A.R.M	Animal	1516	2				2
Deer - wild - roe deer - from hunting - Monitoring	M.A.R.M	Animal	685	12				12
Mountain goats - wild - from hunting - Monitoring	M.A.R.M	Animal	246	5				5
Pyrenean chamois - wild - from hunting - Monitoring	M.A.R.M	Animal	274	5				5
Wild boars - wild - from hunting - Monitoring	M.A.R.M	Animal	1890	17			17	

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Andalucía	18354	18342	15930	1267	888	42	3.31	86.85	7.95	5.57
Aragón	4497	4497	4497	17	15	5	29.41	100	.38	.33
Asturias	6565	6565	6565	0	0	0	N.A.	100	0	0
Baleares	4383	4383	4383	0	0	0	N.A.	100	0	0
Canarias	4116	4116	1160	0	0	0	N.A.	28.18	0	0
Cantabria	4424	4424	4424	8	6	1	12.5	100	.18	.14
Castilla y León	10904	10712	10712	38	27	3	7.89	100	.35	.25
Castilla-La Mancha	7258	6805	6805	134	77	17	12.69	100	1.97	1.13
Cataluña	3524	3393	3360	52	36	0	0	99.03	1.55	1.07
Extremadura	16546	15247	14790	98	41	2	2.04	97	.66	.28
Galicia	26761	26761	23379	0	0	0	N.A.	87.36	0	0
La Rioja	471	431	429	3	3	0	0	99.54	.7	.7
Madrid	617	603	603	17	14	1	5.88	100	2.82	2.32
Murcia	2318	2286	2286	114	53	2	1.75	100	4.99	2.32

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

Navarra	2365	2345	2136	0	0	0	N.A.	91.09	0	0
País Vasco	7984	7259	7259	3	2	0	0	100	.04	.03
Valencia	1616	1608	1422	50	25	0	0	88.43	3.52	1.76
Total :	122703	119777	110140	1801	1187	73	4.05	91.95	1.64	1.08
Total - 1	119851	117150	110444	2331	1672	91	3.9	94.28	2.11	1.51

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Andalucía	3501904	3026648	2949864	2492586	9222	9222	19670	97.46	.31
Aragón	1813727	1475836	1475836	1475836	100	114	7294	100	.01
Asturias	97123	86030	86030	86030	0	0	1	100	0
Baleares	367014	268003	268003	145005	0	0	0	100	0
Canarias	391685	391685	113053	49668	0	0	0	28.86	0
Cantabria	96153	96153	96153	96153	25	25	63	100	.03
Castilla y León	3531460	3222473	3222473	3222473	542	513	1505	100	.02
Castilla-La Mancha	3232955	2714479	2714479	2714479	2136	2136	7454	100	.08
Cataluña	657457	517025	512209	512209	884	854	854	99.07	.17
Extremadura	4858415	3714622	1386911	1386911	1606	1476	3886	37.34	.12
Galicia	318425	318425	273110	273110	0	0	4	85.77	0
La Rioja	128420	122995	122679	122679	3	2	2	99.74	0
Madrid	95015	86199	86199	86199	69	69	69	100	.08
Murcia	726835	551754	551754	551754	1458	1355	1396	100	.26

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

Navarra	677279	672350	651448	203894	0	26	26	96.89	0
País Vasco	327536	327536	233992	185491	3	3	3	71.44	0
Valencia	495833	283117	277304	277304	186	179	180	97.95	.07
Total :	21317236	17875330	15021497	13881781	16234	15974	42407	84.03	.11
Total - 1	22378452	18566681	15956582	15138942	24874	24007	49837	85.94	.16

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Andalucía	7826	7095	6252	17	11	5	29.41	88.12	.27	.18
Aragón	3263	2113	1779	0	0	0	N.A.	84.19	0	0
Asturias	19847	19242	19242	0	0	0	N.A.	100	0	0
Baleares	564	564	564	0	0	0	N.A.	100	0	0
Canarias	1188	1188	1075	0	0	0	N.A.	90.49	0	0
Cantabria	8097	8066	8066	48	36	2	4.17	100	.6	.45
Castilla y León	15241	14588	14588	185	119	12	6.49	100	1.27	.82
Castilla-La Mancha	3212	2098	2098	10	4	4	40	100	.48	.19
Cataluña	5430	4130	4089	18	17	1	5.56	99.01	.44	.42
Extremadura	10344	9741	9741	65	38	3	4.62	100	.67	.39
Galicia	53326	47669	41319	16	9	13	81.25	86.68	.04	.02
La Rioja	329	268	268	0	0	0	N.A.	100	0	0
Madrid	1502	1406	1406	17	16	0	0	100	1.21	1.14
Murcia	674	560	560	0	0	0	N.A.	100	0	0

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

Navarra	1776	1666	1666	2	2	2	100	100	.12	.12
País Vasco	6988	5762	5645	1	1	0	0	97.97	.02	.02
Valencia	681	681	511	0	0	0	N.A.	75.04	0	0
Total :	140288	126837	118869	379	253	42	11.08	93.72	.32	.21
Total - 1	142339	125687	123584	469	330	79	16.84	98.33	.38	.27

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Andalucía	594505	563611	450519	450519	195	195	819	79.93	.04
Aragón	283317	83140	79556	79554	0	0	1	95.69	0
Asturias	382164	293603	293603	293603	0	0	17	100	0
Baleares	32584	19578	19578	3737	0	0	0	100	0
Canarias	16624	16624	14611	14611	0	0	0	87.89	0
Cantabria	282237	281413	281413	281413	87	84	320	100	.03
Castilla y León	1114924	1108344	1108344	1108344	2039	2032	5357	100	.18
Castilla-La Mancha	400689	175270	175270	175270	77	77	770	100	.04
Cataluña	570116	372212	371580	216949	146	142	309	99.83	.04
Extremadura	1124465	701567	534341	534341	386	384	528	76.16	.07
Galicia	956013	848222	706424	706424	29	29	381	83.28	0
La Rioja	35919	21108	21108	21108	0	0	0	100	0
Madrid	90462	80680	80680	80680	58	58	102	100	.07
Murcia	63803	12534	12534	12534	0	0	0	100	0

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

Navarra	106987	68491	68491	68491	94	296	296	100	.14
País Vasco	150463	146422	92181	92181	1	1	1	62.96	0
Valencia	51972	26599	26331	26331	0	0	0	98.99	0
Total :	6257244	4819418	4336564	4166090	3112	3298	8901	89.98	.07
Total - 1	6306804	4325331	4075953	3774333	3540	3471	9762	94.23	.09

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

	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	6754	532737	25	506	30	2898	165	9497	0	0	0	0	6534	519836
Aragón	3266	256107	1030	61548	0	0	0	0	0	0	530	37328	1706	157231
Asturias	19242	373465	0	0	0	0	277	1082	1	68	0	0	18964	372315
Baleares	552	31556	0	0	0	0	2	32	0	0	0	0	550	31524
Canarias	1188	16624	0	0	0	0	0	0	0	0	0	0	1188	16624
Cantabria	8066	281413	31	288	17	936	9	461	8	373	0	0	8001	279355
Castilla y León	15052	1069828	17	1242	140	14468	262	24630	334	34986	2171	179022	12128	815480
Castilla-La Mancha	2098	175270	0	0	10	1252	16	773	4	1318	0	0	2068	171927
Cataluña	4105	417597	1	2	1	18	26	3485	44	1266	0	0	4033	412826
Extremadura	9398	1087320	0	0	21	4442	111	12818	94	16036	1124	124332	8048	929692
Galicia	47669	848222	0	0	2	6	11	421	0	0	0	0	47656	847795
La Rioja	268	21108	0	0	0	0	0	0	0	0	0	0	268	21108
Madrid	1501	90452	95	6440	8	390	4	183	0	0	0	0	1394	83439

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

Murcia	296	42858	0	0	0	0	1	2	0	0	0	0	295	42856
Navarra	1666	74681	0	0	0	0	0	0	48	2817	0	0	1618	71864
País Vasco	6974	146110	0	0	0	0	0	0	1	19	0	0	6973	146091
Valencia	681	51312	17	174	0	0	12	50	1	18	1	30	650	51040
Total :	128776	5516660	1216	70200	229	24410	896	53434	535	56901	3826	340712	122074	4971003
Total - 1	122721	4937315	304	14352	211	27924	1400	74880	553	53197	3593	314614	116661	4452381

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

	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	18745	3558057	782	112306	407	181638	1996	326539	100	42792	12341	2432006	3119	462776
Aragón	4492	1807006	0	0	1	1050	0	0	7	9609	4484	1796347	0	0
Asturias	6565	97123	0	0	0	0	645	2906	0	0	0	0	5920	94217
Baleares	4383	367138	0	0	0	0	5	284	0	0	0	0	4378	366854
Canarias	4116	391685	0	0	0	0	0	0	0	0	0	0	4116	391685
Cantabria	4424	95608	2	0	4	134	0	0	0	0	0	0	4418	95474
Castilla y León	11540	3323782	185	11919	18	8918	235	60748	187	50086	224	57204	10691	3134907
Castilla-La Mancha	6805	2714479	0	0	67	95466	133	67605	50	23896	2862	1015856	3693	1511656
Cataluña	3398	562249	23	1645	22	10710	155	17120	55	17642	2611	444763	532	70369
Extremadura	15057	4726648	0	0	36	29794	789	124065	130	8591	13994	4465660	108	98538
Galicia	24066	279230	0	0	0	0	0	0	0	0	0	0	24066	279230
La Rioja	431	122995	0	0	1	256	3	1785	2	316	0	0	425	120638
Madrid	617	95015	14	8816	3	2044	1	347	0	0	532	65679	67	18129

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

Murcia	2253	530018	0	0	62	46011	185	47462	28	10339	1898	391008	80	35198
Navarra	2345	672350	3	523	0	0	33	883	42	15869	498	416616	1769	238459
País Vasco	7981	327536	0	0	0	0	0	0	3	86	0	0	7978	327450
Valencia	1608	494105	3	678	7	3386	61	10248	10	3158	1079	363488	448	113147
Total :	118826	20165024	1012	135887	628	379407	4241	659992	614	182384	40523	11448627	71808	7358727
Total - 1	114549	20956280	774	65126	949	545382	6065	898913	647	184697	42908	12055003	63208	7207161

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 2009 247 cases of enteric infections by Y enterocolitica was comunicatte.

Y. enterocolitica serotype O:3, was practically the only serotype identified in Spain but Y. enterocolitica serotype 0:8 has been identified in 2 cases.

At animal level, a national survey 2009 in pigs detected Y. enterocolítica in 48,8% of the slaughter batches tested. All the strains belong to biotype 4 serotype O:3.

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

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

Recent actions taken to control the zoonoses

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

At animal level, national surveys have been performed in pigs at slaugtherhouse in 2007, 2008 and 2009.

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 2009 247 cases has been reported versus 313 in 2008.

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

Infants and young adults are particularly likely to be infected. More than 50% are in the groups less of five years.

It is usually transmitted to humans via consumption of food contaminated with animal feces.

Relevance as zoonotic disease

Enteric yersiniosis can be transmitted between animals and humans.

Yersiniosis have a high relevance as zoonotic disease.

2.7.3 Yersinia in foodstuffs

Table Yersinia in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp., unspecified	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - Y. enterocolitica, unspecified
Meat from pig - meat products [1)]	F	Single	25 g	22	0						
Meat from bovine animals - fresh - at retail	F	Single	25 g	13	5	5	0	0	0	0	5
Meat from broilers (Gallus gallus) - fresh - at retail	F	Single	25 g	14	0						
Meat from other animal species or not specified - fresh - at retail	F	Single	25 g	17	5	5					5
Meat from other animal species or not specified - meat preparation	F	Single	25 g	45	1	1					1
Meat from other animal species or not specified - minced meat	F	Single	25 g	9	0						
Meat from other poultry species - fresh - at retail	F	Single	25 g	14	1	1					1
Meat from other poultry species - fresh - at slaughterhouse	F	Single	25 g	10	0						
Meat from pig - fresh - at processing plant	F	Single	25 g	6	0						
Meat from pig - fresh - at retail	F	Single	25 g	25	12	12					12
Meat from pig - fresh - at slaughterhouse	F	Single	25 g	83	0						
Meat from poultry, unspecified - meat products - at retail	F	Single	25 g	4	0						
Other processed food products and prepared dishes	F	Single	25 g	5	0						

Comments:

Table Yersinia in food

[1)] proccesing plant and retail

Footnote:

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

2.7.4 Yersinia in animals

A. Yersinia enterocolitica in pigs

Monitoring system

Sampling strategy

Animals at slaughter (herd based approach)

Sampling has been performed ramdomly (day of sampling each month)in 11 slaughterhouses (according to the capacity of sacrifice of each slaughterhouse) placed in the provinces of Cuenca, Barcelona,Ciudad Real, Murcia, Pontevedra, Badajoz, Burgos, Málaga, Gerona, Huesca and Lérida. These slaughterhouses have a high volume of activity, representing an important part of all the bovines sacrified in Spain.

Frequency of the sampling

Animals at slaughter (herd based approach)

between april 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: 277
Number of slaughter batches positive: 134
Slaughter batch prevalence: 48,4% (CI 95%: 42,4-54,4)

Table Yersinia in animals

	Source of information	Sampling unit	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp., unspecified	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - Y. enterocolitica, unspecified
Pigs [1)]	M.A.R.M	Slaughter batch	277	134	134			134		

Comments:

[1)] National survey

Footnote:

ALL THE STRAINS BELONG TO BIOTYPE 4.

2.8 TRICHINELLOSIS

2.8.1 General evaluation of the national situation

A. Trichinellosis general evaluation

History of the disease and/or infection in the country

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

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

Sources of infection are mainly associated to the consume of meat and raw meat products of wild boars killed in hunting or pigs slaughtered at home and which carcasses has not been examinated post-mortem.

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

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://cne.isciii.es/bes/bes.htm.

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

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.

Results of the investigation

Provisional data show that in 2009 two outbreak have been reporting. They was caused by consumption wild boar products.

Description of the positive cases detected during the reporting year

Two outbreaks of trichinellosis was reporting in 2009 (provisional data, 9 people was illness).

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

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

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

Relevance as zoonotic disease

high

2.8.3 Trichinella in animals

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Pigs	f	Animal	60295	5		5
Pigs - fattening pigs - not raised under controlled housing conditions in integrated production system	F	Animal	39929716	59		59
Solipeds, domestic - horses	F	Animal	30918	0		
Deer [1)]	F	Animal	60	0		
Wild boars [2)]	F	Animal	64557	104		104

Comments:

[1)] at game handling establisment
[2)] at game handling establisment

Footnote:

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

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

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 2008.

The geographical distribution remains heterogeneous, with more cases in the peninsular plateau regions. The analysis of the demographic variables shows that, although the disease affects all age groups, the older age groups are the most affected. There are not significant sex differences.

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

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

Relevance as zoonotic disease

Cystic echinococcosis caused by the cestode Echinococcus granulosus is an endemic disease in Spain. Although specific control programmes initiated in
the 1980s have led to marked reductions in CE infection rates in Spain, the disease still remains an

important human and animal health problem in many regions of the country.

2.9.3 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling unit	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals) [1)]	F	Animal	2271834	14357			14357
Pigs [2)]	f	Animal	29954	393			393
Solipeds, domestic [3)]	F	Animal	30918	45			45
Deer - at game handling establishment	F	Animal	91715	83			83
Pigs - at slaughterhouse	F	Animal	39929716	7515			7515
Sheep and goats - at slaughterhouse	F	Animal	12791855	86786			86786
Wild boars	F	Animal	80980	61			61

Comments:

[1)] at slaughterhouse
[2)] at slaughterhouse
[3)] at slaughterhouse

Footnote:

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

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

More studies need to be developed about incidence of congenital toxoplasmosis.

Recent actions taken to control the zoonoses

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

2.10.2 Toxoplasmosis in humans

A. Toxoplasmosis in humans

Reporting system in place for the human cases

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

Microbiological Information System

Case definition

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

Diagnostic/analytical methods used

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

Notification system in place

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

2.10.3 Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii
Cattle (bovine animals) [1)]	M.A.R.M	Animal	13	1	1
Goats [2)]	M.A.R.M	Animal	62	12	12
Sheep [3)]	M.A.R.M	Animal	198	49	49

Comments:

[1)] clinical investigations
[2)] clinical investigations
[3)] clinical investigations

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) of the south and east.

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

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

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

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 10 autonomous comunities and Ceuta y Melilla. Voluntary in the rest.

Studies including active surveillance of LB-1 in bats.

Information to the citizens about no manipulation of bats.

A new Action Plan is just about to be 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 2002/253/EC and Commission Decision 2002/543/EC

Diagnostic/analytical methods used

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

Notification system in place

Notifiable Disease Surveillance System (NDSS)

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

History of the disease and/or infection in the country

Spain remained free of human cases from 1975

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

Spain is free of rabies.
In 1987 bat rabies was reported. The description of the illness amongst bats lead to an immediate reaction by the health authorities, who had already brought together a group of experts in 1987 to work out recommendations and establish lines of research.

The Ministry of Health and Consume Affairs backed the study about the distribution of EBL1 in the bat population, as well as studies of aetiology and the distribution of bat populations in different regions of Spain. They established serum prevalence towards EBL1 in different species such as Myotis myotis, Miniopterus schreibersii, Tadarida teniotis and Rhinolophus ferrumequinum, and several origins

The studies carried out in the Instituto de Salud Carlos III of the Ministry of Health, in collaboration with the Biological station in 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) 998/2003)need negative results to enter into Spain.If theses animals belong to spanish citizens coming from these third countries samples are taken when arrival to Spain.
3.Dogs and cats that are going to travel to United Kingdom, Ireland, Sweeden, Norwey and Malta.Samples are taken by private clinics and analisys performed by National Reference Laboratory
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 10 regions, Ceuta and Melilla.
Voluntary vaccination of dogs in 5 regions.

Other preventive measures than vaccination in place

Control of animals coming from third countries not included in part C of Annex II of Council Regulation(EC) 998/2003
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) 998/2003.

Recent actions taken to control the zoonoses

Imports of third countries not included in part C of Annex II of Council Regulation(EC) 998/2003)
A new Action Plan is just about to be approved, 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 25, by Epidemiological Surveillance National Net is created.
Oficcial Notification of the disease
Epidemiologic survey
Cases in Spain (Ceuta and Melilla) are imported from third countries

Notification system in place

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

Results of the investigation

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

High

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	Unspecified Lyssavirus	Classical rabies virus (genotype 1)	European Bat Lyssavirus - unspecified
Bats - wild [1)]	M.S.P.S.: Ministry of Health and Social Policy	Animal	31	1			1
Cats	M.S.P.S.: Ministry of Health and Social Policy	Animal	26	0			
Dogs [2)]	M.S.P.S.: Ministry of Health and Social Policy	Animal	45	3		3	
Foxes - wild	M.S.P.S.: Ministry of Health and Social Policy	Animal	2	0			
Wild boars - wild	M.S.P.S.: Ministry of Health and Social Policy	Animal	1	0			

Comments:

[1)] EBL1

[2)] 1 dog from Ceuta and 2 dogs from Melilla, spanish cities of North Africa. Spain (mainland and islands) is free of rabies

Footnote:

We have also sampled and analysed 24 mice, 3 rats, 5 hamsters, 2 ferrets, 2 rabbits and 1 monkey.All of them negative.

2.12 Q-FEVER

2.12.1 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) (ENDDS) and Microbiological Information System (SIM)

2.12.2 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 2008, 116 cases of Q fever has been comunicate to the Microbiological Information System

Relevance as zoonotic disease

high

2.12.3 Coxiella (Q-fever) in animals

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii
Cattle (bovine animals) [1)]	N.R.L.	Animal	198	60	60
Goats [2)]	N.R.L.	Animal	27	2	2
Sheep [3)]	N.R.L.	Animal	131	82	82

Comments:

[1)] Clinical investigations.Serology.
[2)] Clinical investigations. Serology.
[3)] Clinical investigations.Serology.

Footnote:

TEST USED: ELISA (CATTLE, SHEEP AND GOATS).
IN CATTLE, THE 198 ANIMALS TESTED BELONGED TO 2 HERDS. BULK TANK MILK SAMPLES WERE TAKEN, ANALYZED BY PCR AND NEGATIVES.

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

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

Samples from pigs, poultry and cattle : between the months of april and december 2009

Type of specimen taken

faeces taken at colon (pigs and cattle) and caecum (poultry) level

Methods of sampling (description of sampling techniques)

Pigs: sampling at 11 slaughterhouses belonging to different regions of Spain and representative of the total volume of sacrifice of the country.
2 samples have been taken from each slaughter batch, belonging to different herds.
568 samples belonging to 284 slaughter batches have been taken in 2009.

Poultry: sampling at 9 slaughterhouses belonging to different regions of Spain and representative of the total volume of sacrifice of the country.
3 samples have been taken from each slaughter batch, belonging to different flocks.
594 samples belonging to 198 slaughter batches have been taken in 2009.

Cattle: sampling at 10 slaughterhouses belonging to different regions of Spain and representative of the total volume of sacrifice of the country.
2 samples have been taken from each slaughter batch, belonging to different herds.
516 samples belonging to 258 slaughter batches have been taken in 2009.

Procedures for the selection of isolates for antimicrobial testing

All the isolates have been selected for antimicrobial testing.

Methods used for collecting data

National survey 2009.Data are collected at national level.

Laboratory methodology used for identification of the microbial isolates

Culture and isolation in selective medium (agar McConkey).
Confirmation by PCR (Heininger et al. 1999)

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Following The EFSA Journal(2008) 141: 1-44.
See tables of results.

Breakpoints used in testing

Following The EFSA Journal(2008) 141: 1-44.
See table of breakpoints.

Results of the investigation

Pigs:
number of isolates tested: 256
High or very high level of antimicrobial resistance to Tetracyclin ,Sulfonamides, Streptomycin, Trimethoprim, Ciprofloxacin, Chloranfenicol and Ampicillin. Low or no levels of resistance to 3rd generation

Cephalosporins, Amikacin and Iminipem.
ESBLs have been detected in 2/4 isolates by the synergy test.

Poultry (Gallus gallus):
number of isolates tested: 197
High or very high level of antimicrobial resistance to Nalidixic acid, Ciprofloxacin, Tetracyclin ,Streptomycin and Sulfonamides. Moderate level of resistance to Cephalosporins, Gentamicin and Kanamicin.
ESBL have been detected in 35/52 isolates by the synergy test.

Cattle:
number of isolates tested: 256
high level of antimicrobial resistance to Tetracyclin,Sulfonamides and Streptomycin. Low or no levels of resistance to Quinolones and Fluoroquinolones, Fenicols, Gentamicin, Kanamicin, and Cephalosporins.
ESBL have not been detected in 2 isolates tested by the synergy test.

Table Antimicrobial susceptibility testing of E. coli in Cattle (bovine animals)

Escherichia coli, non-pathogenic		E. coli	
Isolates out of a monitoring program (yes/no)		yes	
Number of isolates available in the laboratory		256	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	256	8
	Kanamycin	256	7
	Streptomycin	256	91
Amphenicols	Chloramphenicol	256	25
	Florfenicol	256	15
Cephalosporins	Cefotaxim	256	1
	Ceftazidim	256	2
Fluoroquinolones	Ciprofloxacin	256	10
Penicillins	Ampicillin	256	40
Quinolones	Nalidixic acid	256	8
Sulfonamides	Sulfonamide	256	90
Tetracyclines	Tetracycline	256	124
Trimethoprim	Trimethoprim	256	45

Table Antimicrobial susceptibility testing of E. coli in Gallus gallus (fowl)

Escherichia coli, non-pathogenic		E. coli	
Isolates out of a monitoring program (yes/no)		yes	
Number of isolates available in the laboratory		197	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	197	20
	Kanamycin	197	25
	Streptomycin	197	134
Amphenicols	Chloramphenicol	197	37
	Florfenicol	197	1
Cephalosporins	Cefotaxim	197	52
	Ceftazidim	197	46
Fluoroquinolones	Ciprofloxacin	197	172
Penicillins	Ampicillin	197	140
Quinolones	Nalidixic acid	197	165
Sulfonamides	Sulfonamide	197	106
Tetracyclines	Tetracycline	197	148
Trimethoprim	Trimethoprim	197	94

Table Antimicrobial susceptibility testing of E. coli in Pigs

Escherichia coli, non-pathogenic		E. coli	
Isolates out of a monitoring program (yes/no)		yes	
Number of isolates available in the laboratory		278	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	278	20
	Kanamycin	278	45
	Streptomycin	278	211
Amphenicols	Chloramphenicol	278	76
	Florfenicol	278	5
Cephalosporins	Cefotaxim	278	3
	Ceftazidim	278	4
Fluoroquinolones	Ciprofloxacin	278	83
Penicillins	Ampicillin	278	192
Quinolones	Nalidixic acid	278	51
Sulfonamides	Sulfonamide	278	194
Tetracyclines	Tetracycline	278	251
Trimethoprim	Trimethoprim	278	198

Table Antimicrobial susceptibility testing of E. coli in Meat from broilers (Gallus gallus)

Escherichia coli, non-pathogenic		E. coli	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		1	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	1	0
Cephalosporins	3rd generation cephalosporins	1	0
Fluoroquinolones	Ciprofloxacin	1	0
Fully sensitive	Fully sensitive	1	0
Penicillins	Ampicillin	1	0
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	1	1
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	1	0
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	1	0
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	1	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	1	0
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	1	1

Footnote:

Source of information: Public Health Services of the Autonomous Communities

Table Antimicrobial susceptibility testing of E. coli in Meat from pig

Escherichia coli, non-pathogenic		E. coli	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		34	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	34	0
	Kanamycin	13	2
	Streptomycin	13	3
Amphenicols	Chloramphenicol	13	3
	Florfenicol	13	0
Cephalosporins	3rd generation cephalosporins	34	0
Fluoroquinolones	Ciprofloxacin	34	4
Fully sensitive	Fully sensitive	34	19
Penicillins	Ampicillin	34	9
Quinolones	Nalidixic acid	13	5
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	34	6
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	34	2
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	34	2
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	34	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	34	5
Sulfonamides	Sulfonamide	13	7
Tetracyclines	Tetracycline	13	7
Trimethoprim	Trimethoprim	13	5
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	21	6

Table Antimicrobial susceptibility testing of E. coli in Meat from pig

Footnote:

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

Table Antimicrobial susceptibility testing of E. coli in Meat from bovine animals

Escherichia coli, non-pathogenic		E. coli	
Isolates out of a monitoring program (yes/no)			
Number of isolates available in the laboratory		18	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	18	0
	Kanamycin	13	0
	Streptomycin	13	1
Amphenicols	Chloramphenicol	13	0
	Florfenicol	13	0
Cephalosporins	3rd generation cephalosporins	18	1
Fluoroquinolones	Ciprofloxacin	18	1
Fully sensitive	Fully sensitive	18	7
Penicillins	Ampicillin	18	7
Quinolones	Nalidixic acid	13	1
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	18	4
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	18	5
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	18	1
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	18	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	18	1
Sulfonamides	Sulfonamide	1	0
Tetracyclines	Tetracycline	13	2
Trimethoprim	Trimethoprim	13	2
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	5	1

Table Antimicrobial susceptibility testing of E. coli in Meat from bovine animals

Footnote:

Source of information: Public Health Services of the Autonomous Communities

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Fishery products, unspecified

Escherichia coli, non-pathogenic		E. coli	
Isolates out of a monitoring program (yes/no)		yes	
Number of isolates available in the laboratory		2	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	2	0
	Kanamycin	2	0
	Streptomycin	2	0
Amphenicols	Chloramphenicol	2	0
	Florfenicol	2	0
Cephalosporins	3rd generation cephalosporins	2	0
Fluoroquinolones	Ciprofloxacin	2	0
Fully sensitive	Fully sensitive	2	0
Penicillins	Ampicillin	2	1
Quinolones	Nalidixic acid	2	0
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	2	1
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	2	0
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	2	1
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	2	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	2	0
Sulfonamides	Sulfonamide	2	0
Tetracyclines	Tetracycline	2	2
Trimethoprim	Trimethoprim	2	1

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

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Other food

Escherichia coli, non-pathogenic		E. coli	
Isolates out of a monitoring program (yes/no)		no	
Number of isolates available in the laboratory		54	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	54	3
	Kanamycin	54	16
	Streptomycin	54	35
Amphenicols	Chloramphenicol	54	7
	Florfenicol	54	0
Cephalosporins	3rd generation cephalosporins	54	7
Fluoroquinolones	Ciprofloxacin	54	41
Fully sensitive	Fully sensitive	54	0
Penicillins	Ampicillin	54	43
Quinolones	Nalidixic acid	54	42
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	54	2
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	54	3
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	54	3
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	54	2
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	54	44
Sulfonamides	Sulfonamide	54	39
Tetracyclines	Tetracycline	54	49
Trimethoprim	Trimethoprim	54	37

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

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Meat, mixed meat

Escherichia coli, non-pathogenic		E. coli	
Isolates out of a monitoring program (yes/no)		no	
Number of isolates available in the laboratory		1	
Antimicrobials:		N	n
Aminoglycosides	Gentamicin	1	0
Cephalosporins	3rd generation cephalosporins	1	0
Fluoroquinolones	Ciprofloxacin	1	0
Fully sensitive	Fully sensitive	1	0
Penicillins	Ampicillin	1	1
Resistant to 1 antimicrobial	Resistant to 1 antimicrobial	1	0
Resistant to 2 antimicrobials	Resistant to 2 antimicrobials	1	1
Resistant to 3 antimicrobials	Resistant to 3 antimicrobials	1	0
Resistant to 4 antimicrobials	Resistant to 4 antimicrobials	1	0
Resistant to >4 antimicrobials	Resistant to >4 antimicrobials	1	0
Trimethoprim + sulfonamides	Trimethoprim + sulfonamides	1	1

Footnote:

Source of information: Public Health Services of the Autonomous Communities

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

E. coli		Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - caecum - Survey - national survey																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		197																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	197	20						16	78	69	14	2	2	2	3	11								
	Kanamycin	8	197	25										161	11	3	2	1		19						
	Streptomycin	16	197	134									1	16	33	13	19	34	33	48						
Amphenicols	Chloramphenicol	16	197	37									4	110	41	5	10	8	19							
	Florfenicol	16	197	1									7	125	54	10		1								
Cephalosporins	Cefotaxim	0.25	197	52				99	43	3			4	10	38											
	Ceftazidim	0.5	197	46						141	10	4	1	3	9	18	11									
Fluoroquinolones	Ciprofloxacin	0.03	197	172		14	11	2	7	18	16	29	8	12	27	53										
Penicillins	Ampicillin	8	197	140								9	28	20			2	138								
Quinolones	Nalidixic acid	16	197	165										28	2	2	2	5	158							
Sulfonamides	Sulfonamide	256	197	106											87	3	1						106			
Tetracyclines	Tetracycline	8	197	148								43	6				7	51	90							
Trimethoprim	Trimethoprim	2	197	94							101	2						94								

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

E. coli		Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Survey - national survey																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		278																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	278	20						36	138	66	18	1		4	9	6								
	Kanamycin	8	278	45										208	25	4			4	37						
	Streptomycin	16	278	211								1	1	17	26	22	46	59	49	57						
Amphenicols	Chloramphenicol	16	278	76									2	126	65	9	27	22	27							
	Florfenicol	16	278	5									4	154	100	15			5							
Cephalosporins	Cefotaxim	0.25	278	3				188	80	7			1		2											
	Ceftazidim	0.5	278	4						246	28	1		1			2									
Fluoroquinolones	Ciprofloxacin	0.03	278	83	2	102	91	2	5	28	27	2	2		4	13										
Penicillins	Ampicillin	8	278	192								2	34	49	1			192								
Quinolones	Nalidixic acid	16	278	51										217	10		2	4	45							
Sulfonamides	Sulfonamide	256	278	194											63	19	1			1			194			
Tetracyclines	Tetracycline	8	278	251								19	5	1	2	1	9	69	172							
Trimethoprim	Trimethoprim	2	278	198							80				1		1	196								

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

E. coli		Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - caecum - Survey - national survey																							
Isolates out of a monitoring program (yes/no)		yes																							
Number of isolates available in the laboratory		256																							
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	2	256	8						17	122	101	8	1		1	3	3							
	Kanamycin	8	256	7										239	10	1		1	1	4					
	Streptomycin	16	256	91									2	44	110	9	11	28	21	31					
Amphenicols	Chloramphenicol	16	256	25									4	179	48		4	2	19						
	Florfenicol	16	256	15									6	180	53	2			15						
Cephalosporins	Cefotaxim	0.25	256	1				194	60	1			1												
	Ceftazidim	0.5	256	2						250	4			1	1										
Fluoroquinolones	Ciprofloxacin	0.03	256	10	5	129	112	1	1	4	2				1	1									
Penicillins	Ampicillin	8	256	40								18	109	88	1			40							
Quinolones	Nalidixic acid	16	256	8										246	1	1			8						
Sulfonamides	Sulfonamide	256	256	90											146	16	4						90		
Tetracyclines	Tetracycline	8	256	124								116	13	2	1	5		24	95						
Trimethoprim	Trimethoprim	2	256	45							206	5						45							

Table Breakpoints used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Animals

Test Method Used
Broth dilution

Standard methods used for testing
EFSA, EUCAST NCCLS/CLSI VAV

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol		16	
	Florfenicol		16	
Tetracyclines	Tetracycline		8	
Fluoroquinolones	Ciprofloxacin		0.03	
Quinolones	Nalidixic acid		16	
Trimethoprim	Trimethoprim		2	
Sulfonamides	Sulfonamide		256	
	Sulfonamides		256	
Aminoglycosides	Streptomycin		16	
	Gentamicin		2	
	Kanamycin		8	
Cephalosporins	Cefotaxim		0.25	
	Ceftazidim		0.5	
Penicillins	Ampicillin		8	

Table Breakpoints used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Animals

Table Breakpoints used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Food

Test Method Used	Standard methods used for testing

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

Table Breakpoints used for antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Feed

Test Method Used	Standard methods used for testing

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

3.2 ENTEROCOCCUS, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

A. Antimicrobial resistance of E. faecium in animal

Sampling strategy used in monitoring

Frequency of the sampling

Samples from pigs, poultry and cattle : between the months of april and december 2009.

Type of specimen taken

Faeces taken at colon (pigs and cattle) and caecum (poultry) level.

Methods of sampling (description of sampling techniques)

Pigs: sampling at 11 slaughterhouses belonging to different regions of Spain and representative of the total volume of sacrifice of the country.
2 samples have been taken from each slaughter batch, belonging to different herds.
568 samples belonging to 284 slaughter batches have been taken in 2009.

Poultry: sampling at 9 slaughterhouses belonging to different regions of Spain and representative of the total volume of sacrifice of the country.
3 samples have been taken from each slaughter batch, belonging to different flocks.
594 samples belonging to 198 slaughter batches have been taken in 2009.

Cattle: sampling at 10 slaughterhouses belonging to different regions of Spain and representative of the total volume of sacrifice of the country.
2 samples have been taken from each slaughter batch, belonging to different herds.
516 samples belonging to 258 slaughter batches have been taken in 2009.

Procedures for the selection of isolates for antimicrobial testing

All the isolates have been selected for antimicrobial testing.

Methods used for collecting data

National survey 2009.Data are collected at national level.

Laboratory methodology used for identification of the microbial isolates

Culture and isolation in agar M-enterococcus.
Identification by Rapid ID32 Strep.and PCR (Dutka-malen el al. 1995)

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Following The EFSA Journal(2008) 141: 1-44.
See tables of results.

Breakpoints used in testing

Following The EFSA Journal(2008) 141: 1-44.
See table of breakpoints

Results of the investigation

Pigs:
number of isolates tested: 104 E.faecium and 94 E. faecalis.
E. faecium: high level of antimicrobial resistance to Lincomycin, Erythromycin, Tetracyclin, Bacitracin, Streptomicin and Quinupristin/Dalfopristin.Low level of resistance to Gentamicin, Ciprofloxacin and Chloranfenicol. No resistance to Linezolid.
E. faecalis: high level of antimicrobial resistance to Lincomycin, Erythromycin, Tetracyclin, Bacitracin, Streptomicin, Chloranfenicol, Trimethoprim and Gentamicin. Low or no level of resistance to Quinupristin/Dalfopristin, Ampicillin, Penicillin, Vancomycin and Linezolid.

Poultry (Gallus gallus):
number of isolates tested: 104 E. faecium and 143 E. faecalis.
E. faecium: high level of resistance to Lincomycin, Tetracyclin, Erythromicin, Bacitracin, Streptomicin and Quinupristin/Dalfopristin. Low or no level of resistance to Chloranfenicol, Vancomicin and Linezolid.
E. faecalis:high level of resistance to Lincomycin, Tetracyclin, Erythromicin, Bacitracin, Streptomicin, Trimetoprim and Ciprofloxacin. Low or no level of resistance to Quinupristin/Dalfopristin, Vancomicin and Linezolid.

Cattle:
number of isolates tested: 21 E. faecium and 16 E. faecalis.
E. faecium: high level of resistance to Lincomycin, Bacitracin, Tetracyclin and Quinupristin/Dalfopristin. Low or no level of resistance to Vancomicyn, Chloranfenicol, Trimetoprim, Penicillin, Ampicillin, Gentamicin, Ciprofloxacin and Linezolid.
E. faecalis: high level of resistance to Lincomycin, Bacitracin, Tetracyclin, Trimetoprim and Eritomycin. Low or no level of resistance to Vancomicyn, Penicillin, Ampicillin, Quinupristin/Dalfopristin and Linezolid.

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Survey - national survey

Enterococcus, non-pathogenic		E. faecalis		E. faecium	
Isolates out of a monitoring program (yes/no)		yes		yes	
Number of isolates available in the laboratory		16		21	
Antimicrobials:		N	n	N	n
Aminoglycosides	Gentamicin	16	3	21	0
	Streptomycin	16	2	21	3
Amphenicols	Chloramphenicol	16	2	21	0
	Florfenicol	16	0	21	0
Fluoroquinolones	Ciprofloxacin	16	2	21	0
Glycopeptides (Cyclic peptides, Polypeptides)	Bacitracin	16	13	21	15
	Vancomycin	16	0	21	0
Lincosamides	Lincomycin	16	16	21	18
Macrolides	Erythromycin	12	4	21	4
Oxazolidines	Linezolid	16	0	21	0
Penicillins	Ampicillin	16	0	21	0
	Penicillin	16	0	21	0
Streptogramins	Quinupristin/Dalfopristin			21	15
Tetracyclines	Tetracycline	16	10	21	15
Trimethoprim	Trimethoprim	16	4	21	0

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Survey - national survey

Enterococcus, non-pathogenic		E. faecalis		E. faecium	
Isolates out of a monitoring program (yes/no)		yes		yes	
Number of isolates available in the laboratory		94		104	
Antimicrobials:		N	n	N	n
Aminoglycosides	Gentamicin	94	28	104	3
	Streptomycin	94	74	104	77
Amphenicols	Chloramphenicol	94	32	104	1
	Florfenicol	94	1	104	6
Fluoroquinolones	Ciprofloxacin	94	14	104	2
Glycopeptides (Cyclic peptides, Polypeptides)	Bacitracin	94	93	104	94
	Vancomycin	94	0	104	0
Lincosamides	Lincomycin	93	93	104	101
Macrolides	Erythromycin	94	74	104	72
Oxazolidines	Linezolid	94	0	104	0
Penicillins	Ampicillin	94	0	104	12
	Penicillin	94	0	104	46
Streptogramins	Quinupristin/Dalfopristin			104	101
Tetracyclines	Tetracycline	94	90	104	90
Trimethoprim	Trimethoprim	94	40	104	7

Table Antimicrobial susceptibility testing of Enterococcus, non-pathogenic in Gallus gallus (fowl) - broilers - before slaughter - at slaughterhouse - animal sample - Survey - national survey

Enterococcus, non-pathogenic		E. faecalis		E. faecium	
Isolates out of a monitoring program (yes/no)		yes		yes	
Number of isolates available in the laboratory		143		104	
Antimicrobials:		N	n	N	n
Aminoglycosides	Gentamicin	143	22	104	7
	Streptomycin	143	63	104	64
Amphenicols	Chloramphenicol	143	23	104	1
	Florfenicol	143	0	104	8
Fluoroquinolones	Ciprofloxacin	143	60	104	22
Glycopeptides (Cyclic peptides, Polypeptides)	Bacitracin	143	141	104	97
	Vancomycin	143	0	104	1
Lincosamides	Lincomycin	143	143	104	97
Macrolides	Erythromycin	143	100	104	80
Oxazolidines	Linezolid	143	0	104	0
Penicillins	Ampicillin	143	1	104	26
	Penicillin	143	1	104	58
Streptogramins	Quinupristin/Dalfopristin	143	142	104	92
Tetracyclines	Tetracycline	143	130	104	90
Trimethoprim	Trimethoprim	143	70	104	20

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

E. faecalis		Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		94																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	32	94	28												61	5		28							
	Streptomycin	512	94	74														7	11		2	74				
Amphenicols	Chloramphenicol	32	94	32										2	45	14	1	9	23							
	Florfenicol	4	94	1									5	88			1									
Fluoroquinolones	Ciprofloxacin	4	94	14						2	3	56	15	4		14										
Glycopeptides (Cyclic peptides, Polypeptides)	Bacitracin	32	94	93												1		7	32	34	20					
	Vancomycin	4	94	0							4	80	9	1												
Lincosamides	Lincomycin	8	93	93													4	89								
Macrolides	Erythromycin	4	94	74					1	2	3	7	7						74							
Oxazolidines	Linezolid	4	94	0								6	81	7												
Penicillins	Ampicillin	4	94	0									94													
	Penicillin	8	94	0								4	55	33	2											
Streptogramins	Quinupristin/Dalfopristin	1	94	94									3	3	38	44	5	1								
Tetracyclines	Tetracycline	2	94	90								4					1	28	61							
Trimethoprim	Trimethoprim	8	94	40										54				40								

Table Antimicrobial susceptibility testing of E. faecium in Pigs - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

E. faecium		Pigs - at slaughterhouse - animal sample - faeces - Monitoring																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		104																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	32	104	3												98	3		3							
	Streptomycin	128	104	77													13	14				77				
Amphenicols	Chloramphenicol	32	104	1											69	28	6	1								
	Florfenicol	4	104	6									2	96	5		1									
Fluoroquinolones	Ciprofloxacin	4	104	2						2	18	36	27	19		2										
Glycopeptides (Cyclic peptides, Polypeptides)	Bacitracin	32	104	94										3	2	2	3	4	17	35	38					
	Vancomycin	4	104	0							70	27	6	1												
Lincosamides	Lincomycin	8	104	101								3				4	11	86								
Macrolides	Erythromycin	4	104	72					3	6	2		6	15	9	2		1	60							
Oxazolidines	Linezolid	4	104	0									55	49												
Penicillins	Ampicillin	4	104	12									61	31	11		1									
	Penicillin	8	104	46								2	20	33	3	16	30									
Streptogramins	Quinupristin/Dalfopristin	1	104	101							3		30	42	26	2		1								
Tetracyclines	Tetracycline	2	104	90								14					1	6	83							
Trimethoprim	Trimethoprim	8	104	7										95	2		1	6								

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

E. faecalis		Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		143																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	32	143	22												118	3	1	21							
	Streptomycin	512	143	63														18	57		5	63				
Amphenicols	Chloramphenicol	32	143	23										1	104	15		13	10							
	Florfenicol	4	143	0									3	140												
Fluoroquinolones	Ciprofloxacin	4	143	60						2	4	63	9	5	1	59										
Glycopeptides (Cyclic peptides, Polypeptides)	Bacitracin	32	143	141										1			1	2	30	53	56					
	Vancomycin	4	143	0							1	81	61													
Lincosamides	Lincomycin	8	143	143													11	132								
Macrolides	Erythromycin	4	143	100						17	8	10	7	1			3	1	96							
Oxazolidines	Linezolid	4	143	0								25	115	3												
Penicillins	Ampicillin	4	143	1									139	3		1										
	Penicillin	8	143	1									109	33			1									
Streptogramins	Quinupristin/Dalfopristin	1	143	142							1		1	18	99	20	4									
Tetracyclines	Tetracycline	2	143	130								13				8	25	28	69							
Trimethoprim	Trimethoprim	8	143	70										71	2		1	69								

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

E. faecium		Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		104																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	32	104	7												95	2	1	6							
	Streptomycin	128	104	64													8	27	5		3	61				
Amphenicols	Chloramphenicol	32	104	1										3	73	26	1	1								
	Florfenicol	4	104	8									4	92	7		1									
Fluoroquinolones	Ciprofloxacin	4	104	22								10	18	54	15	7										
Glycopeptides (Cyclic peptides, Polypeptides)	Bacitracin	32	104	97											1	4	2	4	8	21	64					
	Vancomycin	4	104	1							36	55	11	1	1											
Lincosamides	Lincomycin	8	104	97								6	1			5	4	88								
Macrolides	Erythromycin	4	104	80					1	5	1	3	6	8	5	5	1		69							
Oxazolidines	Linezolid	4	104	0									71	33												
Penicillins	Ampicillin	4	104	26									49	29	13	5	4	4								
	Penicillins	8	104	58								1	14	23	8	20	38									
Streptogramins	Quinupristin/Dalfopristin	1	104	92							6	6	30	36	18	6	2									
Tetracyclines	Tetracycline	2	104	90								14					3	11	76							
Trimethoprim	Trimethoprim	8	104	20										82	2	2	10	8								

Table Antimicrobial susceptibility testing of E. faecalis in Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

E. faecalis		Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		16																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	32	16	3												13			3							
	Streptomycin	512	16	2												1		1	12			2				
Amphenicols	Chloramphenicol	32	16	2										2	12			1	1							
	Florfenicol	4	16	0									3	13												
Fluoroquinolones	Ciprofloxacin	4	16	2						1	1	11	1			2										
Glycopeptides (Cyclic peptides, Polypeptides)	Bacitracin	32	16	13										1		1	1		2	7	4					
	Vancomycin	4	16	0							1	10	5													
Lincosamides	Lincomycin	8	16	16													3	13								
Macrolides	Erythromycin	4	16	4					1	3	4	1	2	1					4							
Oxazolidines	Linezolid	4	16	0							1	15														
Penicillins	Ampicillin	4	16	0									16													
	Penicillin	8	16	0								1	11	4												
Streptogramins	Quinupristin/Dalfopristin	1	16	16									1	1	10	4										
Tetracyclines	Tetracycline	2	16	10								6					2	5	3							
Trimethoprim	Trimethoprim	8	16	4										12				4								

Table Antimicrobial susceptibility testing of E. faecium in Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring - quantitative data [Dilution method]

E. faecium		Cattle (bovine animals) - young cattle (1-2 years) - at slaughterhouse - animal sample - faeces - Monitoring																								
Isolates out of a monitoring program (yes/no)		yes																								
Number of isolates available in the laboratory		21																								
Antimicrobials:		Break Point	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides	Gentamicin	32	21	0											21											
	Streptomycin	128	21	3													7	10	1			3				
Amphenicols	Chloramphenicol	32	21	0										3	17	1										
	Florfenicol	4	21	0									3	18												
Fluoroquinolones	Ciprofloxacin	4	21	0						2	3	4	2	10												
Glycopeptides (Cyclic peptides, Polypeptides)	Bacitracin	32	21	15										1		3	2	1		12	2					
	Vancomycin	4	21	0							6	12	3													
Lincosamides	Lincomycin	8	21	18								3				6	6	6								
Macrolides	Erythromycin	4	21	4					5			1	2	9	1	1			2							
Oxazolidines	Linezolid	4	21	0									6	15												
Penicillins	Ampicillin	4	21	0									21													
	Penicillin	8	21	0								5	6	9	1											
Streptogramins	Quinupristin/Dalfopristin	1	21	15							5	1	14		1											
Tetracyclines	Tetracycline	2	21	15								6		1		1	4	2	7							
Trimethoprim	Trimethoprim	8	21	0										21												

Table Breakpoints for antibiotic resistance of Enterococcus, non-pathogenic in Animals

Test Method Used
Broth dilution

Standard methods used for testing
NCCLS/CLSI EUCAST/VAV/CASFM

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Streptomycin		512	
	Gentamicin		32	
Amphenicols	Chloramphenicol		32	
	Florfenicol	EUCAST	4	
Penicillins	Ampicillin		4	
	Penicillin		8	
Glycopeptides (Cyclic peptides, Polypeptides)	Vancomycin		4	
	Bacitracin	EUCAST	32	
Macrolides	Erythromycin		4	
Streptogramins	Quinupristin/Dalfopristin		1	
Tetracyclines	Tetracycline		2	
Oxazolidines	Linezolid		4	
Trimethoprim	Trimethoprim	VAV	8	
Fluoroquinolones	Ciprofloxacin	EUCAST	4	

Table Breakpoints for antibiotic resistance of Enterococcus, non-pathogenic in Animals

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Lincosamides	Lincomycin	CASFM	8	

Table Breakpoints for antibiotic resistance of Enterococcus, non-pathogenic in Food

Test Method Used	Standard methods used for testing

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

Table Breakpoints for antibiotic resistance of Enterococcus, non-pathogenic in Feed

Test Method Used	Standard methods used for testing

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

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 ENTEROBACTER SAKAZAKII

4.1.1 General evaluation of the national situation

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

4.3 STAPHYLOCOCCAL ENTEROTOXINS

4.3.1 General evaluation of the national situation

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

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

Notifiable Disease Surveillance System (NDSS)

In December of 1995 the National Network of Epidemiological Surveillance was created by law.
During 1997 the protocols of statutory notification of diseases were approved and implemented in Spain. In Spain the Autonomous Regions have wide powers with respect to epidemiological surveillance and national decisions are usually taken by consensus.
All practising doctors are obliged to notify, both those in the public health service and in private practice, and both those practising outside and within hospitals. On occasions the appearance of cases and outbreaks is detected by other means (from the mass media, from citizens complants, etc.) and in these cases the information is checked and if confirmed it is incorporated into the system at the corresponding level.
The notification may be carried out using a variety of systems: mail, fax, telephone, e-mail, etc. Presently all the regions (and in many cases levels below) transmit the data by e-mail. A network is being developed for the National Epidemiological Surveillance Network which will permit the flow of data from the local level.

The notification of outbreaks is mandatory and standardised. All the outbreaks must be reported immediately at the regional level. At the national level it is obligatory to report immediately only those outbreaks which, by law, are defined as being supra-communitary (considered to be of national interest) in order to facilitate their rapid control, where as the rest of the outbreaks are reported quarterly. Some regions have set up early warning systems in order to support doctors in reporting and investigating outbreaks. A similar national system is entering into operation.
In 1997 a uniform outbreak reporting format (variables and codification) was developed in all of Spain in accordance with the one recommended by the WHO Programme. The report includes relevant information such as agent, food involved, place of consumption and contributing factors.
The results of the statistical and epidemiological analysis are disseminated in annual reports. In addition they are published in epidemiological bulletins (national, regional and other). The weekly national epidemiological bulletin can be found at: http://cne.isciii.es/bes/bes.htm.

In Spain the investigation of outbreaks of any diseases in humans is regulated within the National Epidemiological Surveillance Network.
The responsibility and coordination falls on the epidemiologist charged with the investigation of each outbreak. In foodborne outbreaks this is also the case, but in close coordination with those who have to investigate.

Description of the types of outbreaks covered by the reporting:

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

National evaluation of the reported outbreaks in the country:

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

Salmonella is the agent more frequently implied in foodborne outbreak, emphasizing S. Enteritidis.

The food implied in its majority was eggs and eggs products
Eggs
Meat
Milk

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

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

Control measures or other actions taken to improve the situation

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

Table Foodborne Outbreaks: summarised data

	Total number of outbreaks	Outbreaks	Human cases	Hospitalized	Deaths	Number of verified outbreaks
Bacillus	2	2	39	0	0	0
Campylobacter	7	7	183	6	0	0
Clostridium	6	6	220	0	0	0
Escherichia coli, pathogenic	1	1	2	0	0	0
Foodborne viruses	10	10	182	0	0	0
Listeria	0	0	0	0	0	0
Other agents	0	0	unknown	unknown	unknown	0
Parasites	1	1	2	0	0	0
Salmonella	102	102	772	134	2	0
Staphylococcus	19	19	245	1	0	0
Unknown	112	112	1755	11	0	0
Yersinia	0	0	0	0	0	0