



SPAIN

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

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

including information on foodborne outbreaks, antimicrobial resistance in zoonotic agents and some pathogenic microbiological agents

IN 2006

INFORMATION ON THE REPORTING AND MONITORING SYSTEMCountry: **Spain**Reporting Year: **2006****Institutions and laboratories involved in reporting and monitoring:**

Laboratory name	Description	Contribution
Subdireccion General de Sanidad Animal	Ministerio de Agricultura Pesca y Alimentacion	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 Sanidad y Consumo	National Reporter
Subdireccion General de Ordenacion y Buenas Practicas Ganaderas	Ministerio de Agricultura Pesca y Alimentacion	National Reporter
Subdireccion General de Alimentacion Animal y Zootecnia	Ministerio de Agricultura Pesca y Alimentacion	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/EC¹. 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 2006. The information covers the occurrence of these diseases and agents in humans, animals, foodstuffs and in some cases also in feedingstuffs. In addition the report includes data on antimicrobial resistance in some zoonotic agents and commensal bacteria as well as information on epidemiological investigations of foodborne outbreaks. Complementary data on susceptible animal populations in the country is also given.

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

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

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

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

¹ Directive 2003/99/EC of the European Parliament and of the Council of 12 December 2003 on the monitoring of zoonoses and zoonotic agents, amending Decision 90/424/EEC and repealing Council Directive 92/117/EEC, OJ L 325, 17.11.2003, p. 31

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1. ANIMAL POPULATIONS

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

A. Information on susceptible animal population

Sources of information:

REGA (National Register for Livestock Holdings) was the source for the total number of holdings in all species. The figures in this report were taken at May/ 1/ 2006.

The figures in table 14.2 (Susceptible animal populations: number of animals) were collected as follows:

--Bovine animals from SIMOGAN (spanish register for identification and movement of bovines).

--Rest of species from the 2004 Livestock Statistics Report (Secretaría General Técnica/ Ministerio de Agricultura, Pesca y Alimentación).

Data of slaughtered animals were also collected from the 2004 Livestock Statistics Report.

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

Number of animals:

--Bovine: Jan/ 1/ 2006

--Rest of species: December/ 31/ 2004

Slaughtered animals:

--Total number of slaughtered animals at December/ 31/ 2004

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

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

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

Table Susceptible animal populations

* Only if different than current reporting year

Animal species	Category of animals	Livestock numbers (live animals)		Number of slaughtered animals		Number of holdings		Number of herds or flocks	
			Year*		Year*		Year*		Year*
Cattle (bovine animals)	mixed herds	1050857	2007			25868			
	dairy cows and heifers	1407522	2007			30832	2007		
	meat production animals					105538	2007		
	calves (under 1 year)					26549	2007		
	in total	6359710	2007	2676133	2006	200343	2007		
Deer	farmed - in total (1)					120	2007		
Ducks	parent breeding flocks					6	2007		
	grandparent breeding flocks					4	2007		
	meat production flocks					198	2007		
	breeding flocks, unspecified - in total					38	2007		
	in total					378	2007		
Gallus gallus (fowl)	grandparent breeding flocks, unspecified - in total					94	2007		
	broilers	128195395	2007	567211000	2005				
	parent breeding flocks, unspecified - in total					415	2007		
	breeding flocks, unspecified - in total					713	2007		
	breeding flocks for meat production line - in total					321			
	laying hens	42014506	2007	34824000	2005				
	grandparent breeding flocks for meat production line					54	2007		
	parent breeding flocks for egg production line					99	2007		
	parent breeding flocks for meat production line					316	2007		
	grandparent breeding flocks for egg production line					50	2007		
	breeding flocks for egg production line - in total					392	2007		
	in total	201716594	2007			9968	2007		
	Geese	breeding flocks, unspecified - in total					27	2007	
grandparent breeding flocks						3	2007		

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	parent breeding flocks					5	2007		
	meat production flocks					62	2007		
	in total					188	2007		
Goats	meat production animals	1347225	2007			52116	2007		
	mixed herds	473575	2007			10543	2007		
	animals under 1 year	542505	2007						
	animals over 1 year (2)	2426750	2007						
	milk goats	1148455	2007			9355	2007		
	in total	2969255	2007	1454029	2006	73025	2007		
Pigs	mixed herds					27869	2007		
	breeding animals (3)	2899361	2007			23561	2007		
	fattening pigs (4)	14527040	2007			44727	2007		
	in total	24353445	2007	39067667	2006	99373	2007		
Sheep	milk ewes	2392205	2007			9417	2007		
	mixed herds	980018	2007			15652	2007		
	animals under 1 year (lambs)	3806668	2007						
	animals over 1 year (5)	18312524	2007						
	meat production animals (6)	18741588	2007			98723	2007		
	in total	22119192	2007	20158500	2006	127472	2007		
Solipeds, domestic	horses - in total	403194	2007	27654	2006	97668	2007		
Turkeys	parent breeding flocks					10	2007		
	breeding flocks, unspecified - in total					45	2007		
	meat production flocks	2819328	2007			558	2007		
	grandparent breeding flocks					3	2007		
	in total	2999436	2007			740	2007		
Wild boars	farmed - in total					116	2007		

(1): Deers (*Cervus elaphus*), Fallow deers (*Dama dama*) and Roe deers (*Capreolus capreolus*)

(2): Male and female for breeding purposes

(3): For holdings: grandparent breeding herds, parent breeding herds, breeding herds.

For livestock numbers: breeding male and female

(4): Pigs heavier than 20 Kg. for slaughtering purposes.

(5): Ewes and rams

(6): Ewes (other than milk ewes), rams and lambs for meat production

Footnote

Data source:

REGA MAY-2007 (REGA is the national register for livestock holdings. It keeps also livestock census for some species. The specific definitions adopted by REGA for the different types of holdings are those fixed in EU or Spanish regulations.)

-n° of holdings

-livestock numbers:

+sheep

+goats

+pigs

+laying hens

+broilers

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+turkeys

+solipeds, domestic

SIMOGAN MAY-2007 (SIMOGAN is the national register for bovine animals):

-bovine livestock numbers

-bovine, number of slaughtered animals

NATIONAL QUERY ON LIVESTOCK SLAUGHTERING/ UPDATED JANUARY-2007:

-n° of slaughtered animals (number of animals slaughtered in 2006)

2. INFORMATION ON SPECIFIC ZOOSES AND ZOOZOTIC AGENTS

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

2.1. SALMONELLOSIS

2.1.1. General evaluation of the national situation

A. General evaluation

History of the disease and/ or infection in the country

Salmonellosis is the main zoonoses in European Union, also in Spain. Salmonella is the agent more frequently implied in foodborne outbreak in Spain.

In poultry, after the introduction in 60's of the American production method, the specific pathology of avian salmonellosis was caused by *S. pullorum* and *S. gallinarum*. In the middle of 80's came 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 2006 show a prevalence of zoonotic salmonellas (*enteritidis* and *typhimurium*) of 9,2% (8,39% in 2005) in all age groups of all production lines (but 0% in egg production line). The prevalence of top 5 was 14%.

Data indicate that prevalence remains constant and high in Spain, and outbreaks appear mainly in summer, with the highest incidence in July, August.

At human level salmonellosis is a notifiable disease according to Royal Decree 2210/ 1995, laying down Epidemiological Surveillance National Network

According to Royal Decree 328/ 2003, laying down the Poultry Health Plan, all veterinarians have to notify to the Competent Authority cases of zoonoses and zoonotic agents.

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

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

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

Recent actions taken to control the zoonoses

Ministry of Fisheries, Food and Agriculture and Ministry of Health and Consumer Affairs of Spain are carrying out a Control Programme of Salmonella in eggs and ovoproducts along the overall food chain, starting with monitoring systems at holdings (National Surveillance Programme).

A baseline study on the prevalence of Salmonella in broilers has been published.

Additional information

Spanish legislation about Salmonella in foodstuff:

Royal Decree 1254/ 1991 of August 2, laying down rules to preparation and conservation of mayonnaise prepared in the own establishment and for immediate consumption foods with eggs as ingredient.

Royal Decree 3454/ 2000 of december 29, laying down hygiene rules to elaboration, distribution and commercialisation of ready-to-eat food

Royal Decree 202/ 2000 laying down rules for food handlers.

Royal Decree 640/ 2006, of May 26, 2006, laying down specific implementation conditions of the Communities rules concernig hygiene subjets, as well as foodstuff's production and commercialisation.

2.1.2. Salmonellosis in humans

A. Salmonellosis in humans

Reporting system in place for the human cases

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

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

Microbiological Information System

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

Enter-net

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

Outbreak reporting

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

Case definition

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

Diagnostic/ analytical methods used

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

Notification system in place

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

2.1.3. Salmonella in foodstuffs

A. Salmonella spp. in eggs and egg products

Monitoring system

Sampling strategy

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

Frequency of the sampling

Eggs at egg packing centres (foodstuff based approach)

Sampling distributed evenly throughout the year

Eggs at retail

Sampling distributed evenly throughout the year

Raw material for egg products (at production plant)

Sampling distributed evenly throughout the year

Egg products (at production plant and at retail)

Sampling distributed evenly throughout the year

Diagnostic/ analytical methods used

Eggs at egg packing centres (foodstuff based approach)

Bacteriological method: ISO 6579:2002

Eggs at retail

Bacteriological method: ISO 6579:2002

Raw material for egg products (at production plant)

Bacteriological method: ISO 6579:2002

Egg products (at production plant and at retail)

Bacteriological method: ISO 6579:2002

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". In 2006 we have evaluated the actions taken and we study new proposals for improvement.

In this field the spanish order PRE 1377/ 2005 establishes surveillance and control messures for salmonella in holdings of laying hens for the purposes of a National Programme.

B. Salmonella spp. in broiler meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

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

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Diagnostic/ analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

C. Salmonella spp. in pig meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

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

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Diagnostic/ analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

D. Salmonella spp. in bovine meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

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

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

Metodo

Diagnostic/ analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Cerro	S. Anatum	S. Hadar
Meat from poultry, unspecified											
fresh											
- at slaughterhouse	F	single	25g	93	14	1	4	6		1	2
- at cutting plant	F	single	25g	120	5	4			1		
- at retail	F	single	25g	294	10	1		8			1
meat products											
- at processing plant	F	single	25g	38	2			2			
- at retail	F	single	25g	104	1			1			

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Milk, cows'								
UHT milk	F	single	25g	724	2			2
Dairy products (excluding cheeses)								
ice-cream	F	single	25g	457	0			
dairy products, not specified								
ready-to-eat	F	single	25g	1415	0			

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Mbandaka	S. Lagos	S. Mikawasima	S. Wien	S. Rissen	S. Anatum	S. Altona	S. Derby	S. Newport	S. Uganda	S. Offa	
Meat from pig	fresh - at slaughterhouse - at cutting plant - at retail	F	single	25g	297	19	6	4			1		4	2		1			1	
		F	single	25g	88	0														
		F	single	25g	227	26	1		25											
meat products	- at processing plant - at retail	F	single	25g	713	16	7	6				1	1							
		F	single	25g	367	12	2	10												
Meat from bovine animals	fresh - at slaughterhouse - at cutting plant - at retail	F	single	25g	67	5			3										2	
		F	single	25g	99	3									3					
		F	single	25g	153	1	1													
meat products	- at processing plant	F	single	25g	246	1	1													

		single	2.5g	96	3	3														
	- at retail																			
Meat, mixed meat																				
	minced meat																			
Meat from other animal species or not specified fresh																				
	- at slaughterhouse																			
	- at cutting plant																			
	- at retail																			
meat products																				
	- at processing plant																			
	- at retail																			
F		single	2.5g	96	3	3														
F		single	2.5g	1519	68	7	6	45	2	1										
F		single	2.5g	122	3															
F		single	2.5g	5	0															
F		single	2.5g	102	2			1												
F		single	2.5g	90	0															
F		single	2.5g	193	1			1												

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Hadar	S. Livingstone	S. Tennessee	S. group C
Eggs												
table eggs												
- at packing centre	F	single	25g	2956	33	23	1	5		2		2
raw material (liquid egg) for egg products	F	single	25g	264	0							
Egg products												
Fishery products	F	single	25g	67	1			1				
Live bivalve molluscs	F	single	25g	251	0							
Fish	F	single	25g	464	3			3				
raw	F	single	25g	584	1			1				
Vegetables	F	single	25g	896	3			3				
Bakery products												
desserts	F	single	25g	1179	9	2		7				
Other processed food products and prepared dishes	F	single	25g	6598	20	10		8	1			1
Other food	F	single	25g	896	3			3				

All foodstuffs	F	single	25g	3583	20	20
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Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

2.1.4. Salmonella in animals

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

Monitoring system

Sampling strategy

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

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

Laying hens flocks

During 2006, an intensified Programme on monitoring and control measures on laying hens flocks has been laid down. The sampling strategy is the same as established in Commission Regulation (E) 1168/ 2006.

Frequency of the sampling

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

Every hatch is sampled all of them

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

Every flock is sampled

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

Every 2 weeks

Laying hens: Before slaughter at farm

In one flock per year per holding comprising at least 1000 birds maximum 9 weeks before depopulation weeks prior to slaughter

Type of specimen taken

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

Other: Internal linings of the delivery boxes, dead chicks

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

Faeces

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

Other: Faeces, Dead chicks, Meconium

Laying hens: Before slaughter at farm

Other: faecal material and dust samples

Methods of sampling (description of sampling techniques)

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

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

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

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

Breeding flocks: Production period

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

Laying hens: Production period

In order to maximise sensitivity of sampling, both faecal material and the environment shall be sampled at least as provided:

- In cage flocks, 2 × 150 grams of naturally pooled faeces shall be taken from all belts or scrapers in the house after running the manure removal system; however, in the case of step cage houses without scrapers or belts 2 × 150 grams of mixed fresh faeces must be collected from 60 different places beneath the cages in the dropping pits.

- In barn or free-range houses, two pairs of boot swabs or socks be taken, without changing overboots between boot swabs.

In the case of sampling by the competent authority, 250 ml containing at least 100 gram of dust shall be collected from prolific sources of dust throughout the house. If there is not sufficient dust, an additional sample of 150 grams naturally pooled faeces or an additional pair of boot swabs or socks shall be taken.

Case definition

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

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

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

idem

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

idem

Laying hens: Production period

A flock is considered positive for the purpose of this study if the presence of *S. Enteritidis* and *S. Typhimurium* is confirmed in at least one of the samples. However, all serotypes shall be reported separately, including untypable serotypes.

Diagnostic/ analytical methods used

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

Bacteriological method: ISO 6579:2002 MSRV

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

Bacteriological method: ISO 6579:2002 MSRV

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

Bacteriological method: ISO 6579:2002 MSRV

Laying hens: Before slaughter at farm

Other: ISO 6579:2002 MSRV

Vaccination policy

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

voluntary

Laying hens flocks

Compulsory in rearing period against species of *Salmonella* with impact in public health. It can be voluntary in a holding if:

it is satisfied with the preventive measures taken on the holding, and the absence of Salmonella enteritidis was demonstrated during the 12 months preceding the arrival of the animals.

Other preventive measures than vaccination in place

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

biosecurity measures
Compliance of Good Practice Guide

Laying hens flocks

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

Control program/ mechanisms

The control program/ strategies in place

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

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

Laying hens flocks

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

Recent actions taken to control the zoonoses

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

Surveillance and Control programmes in holdings of laying hens, including vaccination, biosecurity measures and compliance of Good Practises Code

Measures in case of the positive findings or single cases

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

According to Annex III of Directive 92/ 117/ EEC and Annex V of Royal Decree 328/ 2003:
movement of live birds forbidden
destruction or treatment of eggs
sacrifice

Laying hens flocks

idem

Notification system in place

Since 1952, at least (Epizootic Diseases Law)

At the moment by Animal Health Law 8/ 2003 and Royal Decree 328/ 2003

Results of the investigation

Sampled flocks: 131 breeding flocks

Positive flocks: 2

Prevalence Salmonella spp.: 1,53% (3,49% IN 2005)

- Salmonella enteritidis: 0%

- Salmonella typhimurium: 0%

- Salmonella hadar, infantis, virchow : 0%

Results of the investigation in laying hens:

Sampled flocks of laying hens: 1125

Positive flocks: 351

Prevalence Salmonella spp.: 31,2% (flocks)

- Salmonella enteritidis: 11,91% (flocks of laying hens in dust+faeces samples)

- Salmonella typhimurium: 1,24% (flocks of laying hens in dust+faeces samples)

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

The prevalence of Salmonella ssp. is very low

The prevalence of top 5 Salmonella is 0%

Control and monitoring programmes should be differentiated of the ones for breeding flocks for meat production

Breeding flocks for egg production can be considered as a very low source of infection for humans

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

Monitoring system

Sampling strategy

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

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

Frequency of the sampling

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

Every hatch is sampled all of them

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

Every flock is sampled

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

Every 2 weeks

Type of specimen taken

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

Other: Internal linings of the deliveboxesry , dead chicks

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

Faeces

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

Other: Faeces, Dead chicks, Meconium

Methods of sampling (description of sampling techniques)

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

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

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

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

Breeding flocks: Production period

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

Case definition

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

necessary): Day-old chicks

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

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

idem

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

idem

Diagnostic/ analytical methods used

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

Bacteriological method: ISO 6579:2002 MSRV

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

Bacteriological method: ISO 6579:2002 MSRV

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

Bacteriological method: ISO 6579:2002 MSRV

Vaccination policy

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

voluntary

Control program/ mechanisms

The control program/ strategies in place

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

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

Recent actions taken to control the zoonoses

Compulsory health programme for control of Salmonella in all breeding flocks, following criteria of Annex V of Royal Decree 328/2003, laying down the Health Poultry Plan

Official samples must be taken each 8 weeks

Measures in case of the positive findings or single cases

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

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

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

idem

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

idem

Notification system in place

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

Results of the investigation

Sampled flocks: 1133

Positive flocks: 222

Prevalence Salmonella spp.: 19,59%

- prevalence top 5: 15,79%

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

The prevalence of Salmonella ssp. is high

Control and monitoring programmes should be differentiated of the ones for breeding flocks for egg production, in which prevalence is very low.

Since 2007 the National Control Programme in breeding poultry will be based on Regulation (EC) N° 1003/ 2005 and Regulation (EC) N° 2160/ 2003.

Table Salmonella in breeding flocks of Gallus gallus

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Hadar	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Virchow	S. Infantis
Gallus gallus (fowl)										
parent breeding flocks for egg production line	a	flock	131	2				2		
day-old chicks	a	flock	11	0						
during rearing period	a	flock	49	2				2		
during production period	a	flock	71	0						
grandparent breeding flocks for meat production line	a	flock	48	0						
parent breeding flocks for meat production line	a	flock	1087	223	55	101	16	44	6	1
day-old chicks	a	flock	259	34	6	21	3	3	1	
during rearing period	a	flock	249	24	15		1	6	1	1
during production period	a	flock	577	164	33	80	12	35	4	

Footnote

a: Data belonging to National control programme 2006

Table Salmonella in other poultry

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Gallus gallus (fowl)							
laying hens	a	flock	1125	351	134	14	203
during production period	a	flock	1125	351	134	14	203
broilers	a	flock	388	160	114	1	45
during rearing period	a	flock	388	160	114	1	45

Footnote

a: data belonging to baseline study 2005-2006

2.1.5. Salmonella in feedingstuffs

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of land animal origin								
dairy products	A	single	500gr	1	0	0	0	0
meat meal	A	single	500 gr	72	4	2	0	2
poultry offal meal	A	single	500gr	8	1	0	0	1
animal fat	A	single		48	0			0
Feed material of marine animal origin								
fish meal	A	single	500gr	42	0	0	0	0

Footnote

Animal Health Services of Asturias, Cantabria, Extremadura, Madrid and Valencia

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified
Feed material of cereal grain origin								
barley derived	A	single	500gr	40	2	0	1	1
wheat derived	A	single	500gr	8	0	0	0	0
maize derived	A	single	500gr	25	0	0	0	0
		single	500gr	29	0	0	0	0
other cereal grain derived	A	single	500gr	9	0	0	0	0
Feed material of oil seed or fruit origin								
palm kernel derived	A	single	500gr	1	0	0	0	0
soya (bean) derived	A	single	500gr	26	1	0	0	1
cotton seed derived	A	single	500gr	10	3	0	0	3
sunflower seed derived	A	single	500gr	2	0	0	0	0
linseed derived	A	single	500gr	1	0	0	0	0
other oil seeds derived	A	single	500gr	1	0	0	0	0
Other feed material								
legume seeds and similar products	A	single	500gr	3	0	0	0	0
tubers, roots and similar products	A	single	500gr	4	0	0	0	0
forages and roughages	A	single	500gr	2	0	0	0	0

Footnote

Animal Health Services of Autonomous Communities

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified	S. Newport
Compound feedingstuffs for cattle									
final product	A	single	500gr	123	6	0	0	5	1
Compound feedingstuffs for pigs									
final product	A	single	500gr	84	0	0	0	0	0
Compound feedingstuffs for poultry -breeders									
final product	A	single	500gr	1	0	0	0	0	0
Compound feedingstuffs for poultry - laying hens									
final product	A	single	500gr	48	2	0	0	2	0
Compound feedingstuffs for poultry - broilers									
final product	A	single	500gr	17	0	0	0	0	0
Compound feedingstuffs, not specified		single	500gr	1	0	0	0	0	0
Compound feedingstuffs for horses									
final product		single	500gr	2	0	0	0	0	0
non-pelleted/ meal									

Footnote

A:Animal Helth Services of Authonomous Communities of Asturias, Cantabria,Extremadura, Madrid and Valencia

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 food

Serovars	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Other poultry		Other products of animal origin	
	M	C	M	C	M	C	M	C	M	C
Sources of isolates (*)										
Number of isolates in the laboratory	N=									
Number of isolates serotyped	N=	0	0	0	0	0	0	0	0	0

Footnote

(*) M : Monitoring, C : Clinical

2.1.7. Antimicrobial resistance in Salmonella isolates

Antimicrobial resistance is the ability of certain microorganisms to survive or grow in the presence of a given concentration of antimicrobial agent that usually would kill or inhibit the microorganism species in question. Antimicrobial resistant Salmonella strains may be transferred from animals or foodstuffs to humans.

A. Antimicrobial resistance in Salmonella in pigs

Sampling strategy used in monitoring

Frequency of the sampling

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

Type of specimen taken

Faeces from healthy animals

Methods of sampling (description of sampling techniques)

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

Procedures for the selection of isolates for antimicrobial testing

One isolate per serotype and per farm

Methods used for collecting data

Laboratory antimicrobial susceptibility test centralised approach

Laboratory methodology used for identification of the microbial isolates

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

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Those mentioned in tables plus apramycin, cephalotin, amikacin, amoxicillin plus clavulanic acid, aztreonam, ceftiofur and imipenem

Breakpoints used in testing

NCCLS breakpoints when available.

B. Antimicrobial resistance in Salmonella in poultry

Sampling strategy used in monitoring

Frequency of the sampling

National antimicrobial resistance surveillance programme running from 2003 at national level

Type of specimen taken

Full intestinal content of healthy animals

Methods of sampling (description of sampling techniques)

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

Procedures for the selection of isolates for antimicrobial testing

One isolate per serovar per farm

Methods used for collecting data

Those mentioned in the pig monitoring

Laboratory methodology used for identification of the microbial isolates

The mentioned in the pig monitoring

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Those mentioned in the pig monitoring

Breakpoints used in testing

NCCLS when available

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to		S. Derby																						
		Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																						
Isolates out of a monitoring programme	Yes	N	n	<=0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
																								Number of isolates available in the laboratory
Antimicrobials:																								
Tetracyclines																								
Doxycyclin		0	0																					
Tetracyclin		29	29											1	0	20	8						05	256
Amphenicols																								
Chloramphenicol		29	4								2	22	1	1	1	0	1	1					2	256
Florfenicol		29	0						00	21	6	2	0	0									2	64
Cephalosporins																								
3rd generation cephalosporins		0	0																					
Cefotaxim		29	0		0	21	7	1														003	4	
Cefoxitin		0	0																					
Fluoroquinolones																								
Ciprofloxacin		29	2		27	1	1																006	32
Enrofloxacin		0	0																					
Quinolones																								
Nalidixic acid		29	1						1	25	2						1					05	128	
Sulfonamides																								
Sulfonamide		0	0																					
Trimethoprim		0	0																					
Aminoglycosides																								
Streptomycin		8	2									3	3	0	1	1						2	64	
Gentamicin		29	0				1	24	4				0									025	64	
Neomycin		29	0					4	21	4												025	64	

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

Number of resistant isolates (n) and number of isolates with the concentration $\mu\text{l/ml}$ or zone (mm) of inhibition equal to		S. Derby																																			
		Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																																			
Isolates out of a monitoring programme	yes	N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35				
																																		Number of isolates available in the laboratory			
Antimicrobials:																																					
Tetracyclines																																					
Doxycyclin		29	28	12	9	7																															
Tetracyclin		0																																			
Amphenicols																																					
Chloramphenicol		0																																			
Florfenicol		0																																			
Cephalosporins																																					
3rd generation cephalosporins		0																																			
Cefotaxim		0																																			
Cefoxitin		29	0																	1	9	14	4	1													
Ceftazidim		29	0																								1	12	8	4	4						
Fluoroquinolones																																					
Ciprofloxacin		0																																			
Enrofloxacin		0																																			
Quinolones																																					
Nalidixic acid		0																																			
Sulfonamides																																					
Sulfonamide		29	15	15										1						1	1	4	3	2													
Trimethoprim		29	3	3																			1														
Aminoglycosides																																					
Streptomycin		21	13	11	1																																
Gentamicin (I)		0																																			

Neomycin	0																																											
Kanamycin	0																																											
Amikacin	29	0					1	13	11	4																																		
Apramycin	8	0								2	2	3	1																															
Carbapenems																																												
Imipenem	29	0																																										
Penicillins																																												
Amoxicillin	0																																											
Amoxicillin/ Clavulanic acid	29	1					1																																					
Ampicillin	0																																											
Trimethoprim + sulfonamides	0																																											

(1) : C. jejuni >1

Table Antimicrobial susceptibility testing of S. Derby - qualitative data

n = Number of resistant isolates		
S. Derby		
Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling		
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		29
Antimicrobials:		
	N	n
Tetracyclines		
Doxycyclin	29	28
Tetracyclin	29	29
Amphenicols		
Chloramphenicol	29	4
Florfenicol	29	0
Cephalosporins		
Cefotaxim	29	0
Cefoxitin	29	0
Ceftazidim	29	0
Fluoroquinolones		
Ciprofloxacin	29	2
Quinolones		
Nalidixic acid	29	1
Sulfonamides		
Sulfonamide	29	15
Trimethoprim	29	3
Aminoglycosides		
Streptomycin	29	15
Gentamicin	29	0
Neomycin	29	0
Amikacin	29	0
Apramycin	29	0
Carbapenems		
Imipenem	29	0
Penicillins		
Amoxicillin	29	5
Amoxicillin / Clavulanic acid	29	1

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to																																						
S. Typhimurium																																						
Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																																						
Isolates out of a monitoring programme	yes																																					
Number of isolates available in the laboratory	35																																					
Antimicrobials:	N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35						
Tetracyclines																																						
Doxycyclin	35	24	21	2		1				3	6	2																										
Tetracyclin	0																																					
Amphenicols																																						
Chloramphenicol	0																																					
Florfenicol	0																																					
Cephalosporins																																						
3rd generation cephalosporins	0																																					
Cefotaxim	0																																					
Cefoxitin	35	0																1	8	13	10	3																
Ceftazidim	35	0																4	9	16	3	3																
Fluoroquinolones																																						
Ciprofloxacin	0																																					
Enrofloxacin	0																																					
Quinolones																																						
Nalidixic acid	0																																					
Sulfonamides																																						
Sulfonamide	35	27	27														1	2	2		3																	
Trimethoprim																																						
Trimethoprim	35	3	3																																			
Aminoglycosides																																						
Streptomycin	27	14	10	2	1				1	3	3		6	1																								
Gentamicin	0																																					

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to		S. Typhimurium																					
Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																							
Isolates out of a monitoring programme	Yes																						
	N	n	<=0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																							
Tetracyclines																							
Doxycyclin	0	0																					
Tetracyclin	35	35										8	3	3	21						05	256	
Amphenicols																							
Chloramphenicol	35	23							1	10	1	1	7	5	10						2	256	
Florfenicol	35	11						1	17	3	3	11									4	128	
Cephalosporins																							
3rd generation cephalosporins	35	35		6	14	7	8														003	4	
Cefotaxim	35	0		6	14	7	8														003	4	
Cefoxitin	0	0																					
Fluoroquinolones																							
Ciprofloxacin	35	1		34		1															006	32	
Enrofloxacin	0	0																					
Quinolones																							
Nalidixic acid	35	1							31	3					1						05	128	
Sulfonamides																							
Sulfonamide	0	0																					
Trimethoprim	0	0																					
Aminoglycosides																							
Streptomycin	8	5									1	2	3	2							2	64	
Gentamicin	35	1				9	23	2		1											025	64	
Neomycin	35	0				16	16	3													025	64	

Table Antimicrobial susceptibility testing of S.Typhimurium in animals

n = Number of resistant isolates								
S. Typhimurium								
	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys	
Isolates out of a monitoring programme				yes				
Number of isolates available in the laboratory				35				
Antimicrobials:	N	n	N	n	N	n	N	n
Tetracyclines								
Doxycyclin			35	24				
Tetracyclin			35	35				
Amphenicols								
Chloramphenicol			35	23				
Florfenicol			35	11				
Cephalosporins								
3rd generation cephalosporins			35	0				
Cefotaxim			35	0				
Cefoxitin			35	0				
Ceftazidim			35	0				
Fluoroquinolones								
Ciprofloxacin			35	1				
Quinolones								
Nalidixic acid			35	1				
Sulfonamides								
Sulfonamide			35	27				
Trimethoprim			35	3				
Aminoglycosides								
Streptomycin			27	14				
Gentamicin			35	1				
Neomycin			35	0				
Amikacin			35	0				
Apramycin			35	1				
Carbapenems								
Imipenem			35	0				
Penicillins								
Amoxicillin			35	26				
Amoxicillin / Clavulanic acid			35	4				
Fully sensitive (1)			27	0				
Resistant to 1 antimicrobial			27	6				
Resistant to 2 antimicrobials			27	1				
Resistant to 3 antimicrobials			27	0				
Resistant to 4 antimicrobials			27	11				
Resistant to >4 antimicrobials			27	9				

(1) : resistance profile of 27 isolates against 10 antimicrobials (amox. tet, clor, genta, strep, trime, sulfa, cefoxitin, nalidixic, cipro)

Table Antimicrobial susceptibility testing of Salmonella in animals

n = Number of resistant isolates								
Salmonella spp.								
	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys	
Isolates out of a monitoring programme				yes		yes		
Number of isolates available in the laboratory				135		10		
Antimicrobials:	N	n	N	n	N	n	N	n
Tetracyclines								
Doxycyclin			135	110				
Tetracyclin			135	125				
Amphenicols								
Chloramphenicol			135	43				
Florfenicol			135	12				
Cephalosporins								
Cefotaxim			135	0				
Cefoxitin			135	0				
Ceftazidim			135	0				
Fluoroquinolones								
Ciprofloxacin			135	7				
Quinolones								
Nalidixic acid			135	6				
Sulfonamides								
Sulfonamide			135	63				
Trimethoprim			135	19				
Aminoglycosides								
Streptomycin			135	49				
Gentamicin			135	3				
Neomycin			135	5				
Amikacin			135	0				
Apramycin			134	3				
Carbapenems								
Imipenem			135	0				
Penicillins								
Amoxicillin			135	58				
Amoxicillin / Clavulanic acid			135	5				
Fully sensitive			108	7				
Resistant to 1 antimicrobial			108	40				
Resistant to 2 antimicrobials			108	3				
Resistant to 3 antimicrobials			108	16				
Resistant to 4 antimicrobials			108	24				
Resistant to >4 antimicrobials			108	18				

Footnote

Data of *S. enterica* serovar typhimurium are included into the pig table of all *S. enterica* isolates. Resistance profiles are

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done using 10 antimicrobilas (amox, tet, chlor, genta, strepto, trimet, sulfa, cefoxitim, nalidixic and cipro)
Data of Salmonella from Gallus are not done because the low number of isolates (10) is not representative

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to		Salmonella spp.																					
Isolates out of a monitoring programme		Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																					
Number of isolates available in the laboratory		Yes																					
		135																					
Antimicrobials:	N	n	<=0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Tetracyclines																							
Doxycyclin	0	0																					
Tetracyclin	135	125					10				1	17	6	57	44							05	256
Amphenicols																							
Chloramphenicol	135	43							10	77	5	2	8	10	9	14						2	256
Florfenicol	134	12					1	68	41	12	12											2	64
Cephalosporins																							
3rd generation cephalosporins	0	0																					
Cefotaxim	135	0		12	86	27	10															003	4
Cefoxitin	0	0																					
Fluoroquinolones																							
Ciprofloxacin	135	7		128	1	4	2															006	32
Enrofloxacin	0	0																					
Quinolones																							
Nalidixic acid	135	6					1	116	10	2					6							05	128
Sulfonamides																							
Sulfonamide	0	0																					
Trimethoprim	0	0																					
Aminoglycosides																							
Streptomycin	27	10							1	8	5	3	4	6								2	64
Gentamicin	135	3			33	86	12	1			2	1										025	64
Neomycin	135	5				52	69	8	1					5								025	64

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to		Salmonella spp.																																			
		Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																																			
Isolates out of a monitoring programme	yes	N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35				
																																		Number of isolates available in the laboratory			
Antimicrobials:																																					
Tetracyclines																																					
Doxycyclin		135	110	57	25	15	5	4	4		3	7	4	4	4	5	2																				
Tetracyclin		0																																			
Amphenicols																																					
Chloramphenicol		0																																			
Florfenicol		0																																			
Cephalosporins																																					
3rd generation cephalosporins		0																																			
Cefotaxim		0																																			
Cefoxitin		135	0							2	12	30	37	31	18	5																					
Ceftazidim		135	0												3	34	43	34	13	7	1																
Fluoroquinolones																																					
Ciprofloxacin		0																																			
Enrofloxacin		0																																			
Quinolones																																					
Nalidixic acid		0																																			
Sulfonamides																																					
Sulfonamide		135	63	63								1	1	1			1	3	10	18	12	9	6	5	3	3											
Trimethoprim		135	19	19																	3	4	30	51	15	11	1	1									
Aminoglycosides																																					
Streptomycin		108	39	30	3	1			5	7	6	8	28	17	2		1																				
Gentamicin		0																																			

Neomycin	0																																					
Kanamycin	0																																					
Amikacin	135	0																																				
Apramycin	26	1	1																																			
Carbapenems																																						
Imipenem	135	0																																				
Penicillins																																						
Amoxicillin	0																																					
Amoxicillin / Clavulamic acid	135	5																																				
Ampicillin	0																																					
Trimethoprim + sulfonamides	0																																					

Table Antimicrobial susceptibility testing of Salmonella spp. in food

n = Number of resistant isolates								
	Salmonella spp.							
	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species	
Isolates out of a monitoring programme				yes				
Number of isolates available in the laboratory				9				
Antimicrobials:	N	n	N	n	N	n	N	n
Tetracyclines								
Tetracyclin			9	7				
Amphenicols								
Chloramphenicol			9	4				
Cephalosporins								
3rd generation cephalosporins			9	0				
Fluoroquinolones								
Ciprofloxacin			9	0				
Quinolones								
Nalidixic acid			9	0				
Trimethoprim			6	3				
Aminoglycosides								
Streptomycin			9	6				
Gentamicin			9	1				
Kanamycin			9	1				
Penicillins								
Ampicillin			9	4				
Trimethoprim + sulfonamides								
Trimethoprim + Sulfonamide			9	3				
Fully sensitive			9	1				
Resistant to 1 antimicrobial			9	1				
Resistant to 2 antimicrobials			9	1				
Resistant to 3 antimicrobials			9	2				
Resistant to 4 antimicrobials			9	1				
Resistant to >4 antimicrobials			9	3				

Table Breakpoints for antibiotic resistance testing in Animals

Test Method Used

Disc diffusion

Agar dilution

Broth dilution

E-test

Standards used for testing

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content microg	Breakpoint Zone diameter (mm)		
		Susceptible ≤	Intermediate	Resistant >	lowest	highest		Susceptible ≥	Intermediate	Resistant ≤
Amphenicols										
Chloramphenicol				16	2	256				
Florfenicol				16	2	64				
Tetracyclines										
Tetracyclin				8	0.5	256				
Doxycyclin							30			12
Fluoroquinolones										
Ciprofloxacin				0.06	0.06	32				
Enrofloxacin										
Quinolones										
Nalidixic acid				16	0.5	128				
Trimethoprim							30			10
Sulfonamides										
Sulfonamide							300			12
Aminoglycosides										
Streptomycin				32	2	64	10			11
Gentamicin				2	0.25	64				
Neomycin				8	0.25	64				
Kanamycin										
Amikacin							30			14
Apramycin				16	1	32				16
Trimethoprim + sulfonamides										
Carbapenems										
Imipenem							10			13
Cephalosporins										
Cefotaxim				0.5	0.03	4				
Cefoxitin							30			14
Ceftazidim							30			14
3rd generation cephalosporins										
Penicillins										
Amoxicillin				4	1	256				
Amoxicillin / Clavulanic acid							2010			13
Ampicillin										

Footnote

Cut-off values suggested by EFSA (The EFSA Journal, 2007, 96:1-46) have been applied

Table Breakpoints for antibiotic resistance testing in Food

Test Method Used

Disc diffusion

Agar dilution

Broth dilution

E-test

Standards used for testing

NCCLS

M100-S16

M2-A9

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content microg	Breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest		Susceptible >=	Intermediate	Resistant <=
Amphenicols										
Chloramphenicol	M100-S16						30	18	13	12
Florfenicol										
Tetracyclines										
Tetracyclin	M100-S16						30	19	15	14
Doxycyclin										
Fluoroquinolones										
Ciprofloxacin	M100-S16						5	21	16	15
Enrofloxacin										
Quinolones										
Nalidixic acid	M100-S16						30	19	14	13
Trimethoprim	M100-S16						5	16	11	10
Sulfonamides										
Sulfonamide										
Aminoglycosides										
Streptomycin	M100-S16						10	15	12	11
Gentamicin	M100-S16						10	15	13	12
Neomycin										
Kanamycin	M100-S16						30	18	14	13
Amikacin										
Apramycin										
Trimethoprim + sulfonamides	M100-S16						25	16	11	10
Carbapenems										
Imipenem										
Cephalosporins										
Cefotaxim										
Cefoxitin										
Ceftazidim										
3rd generation cephalosporins	M100-S16						30	23	15	14
Penicillins										
Amoxicillin										
Amoxicillin / Clavulanic acid										
Ampicillin	M100-S16						10	17	14	13

2.2. CAMPYLOBACTERIOSIS

2.2.1. General evaluation of the national situation

A. Thermophilic Campylobacter general evaluation

History of the disease and/ or infection in the country

Campylobacter spp. is at the moment one of the more frequent causes of gastroenteritis in humans. Poultry are the main reservoir, and infection happens usually by consume of poultry meat.

Until the end of 60's importance of Campylobacter spp. was not valued.

Notification of the disease is also infravaluated in surveillance systems. Epidemiology investigations associated cases to poultry meat consume and a deficient handle of food.

The number of cases in Spain is at the moment supported in the notification maken to Microbiology Information System (SIM).

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

Poultry meat is the main source of infection. Another food implicated are red meat, raw milk, non pasteurized cheese, and water.

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

More studies need to de developed. In 2006, a survey has been developed in broilers and pigs with the scientific assesment of Animal Health Departement of Veterinary College-Universidad Complutense de Madrid

Recent actions taken to control the zoonoses

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

2.2.2. Campylobacteriosis in humans

A. Thermophilic Campylobacter in humans

Reporting system in place for the human cases

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

- Microbiological Information System

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

- Enter-net

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

- Outbreak reporting

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

Case definition

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

Diagnostic/ analytical methods used

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

Notification system in place

Microbiological Information System

Outbreak reporting System

History of the disease and/ or infection in the country

Campylobacter is the second most common cause of bacterial foodborne disease notified to public health authorities in Spain. Despite this, outbreaks of Campylobacter illness are rare in Spain. In 2006 only 1 Campylobacter outbreak were reported to the Outbreak Surveillance System.

Relevance as zoonotic disease

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

2.2.3. Campylobacter in foodstuffs

A. Thermophilic Campylobacter in Broiler meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

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

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Type of specimen taken

At slaughterhouse and cutting plant

Other: fresh meat and skin

At meat processing plant

Other: fresh meat and skin

At retail

Other: fresh meat and skin

Diagnostic/ analytical methods used

At slaughterhouse and cutting plant

Other: bacteriological method: ISO 10272:2006

At meat processing plant

Other: Bacteriological method:ISO10272:2006

At retail

Other: Bacteriological methods: ISO 10272:2006

Table Campylobacter in poultry meat

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for thermophilic Campylobacter spp.	C. coli	C. lari	C. jejuni	C. upsaliensis	thermophilic Campylobacter spp., unspecified
Meat from poultry, unspecified										
fresh										
- at slaughterhouse (1)	F	single	25g	242	141	83	5	45	2	10
- at cutting plant	F	single	25g	87	22	9				13
- at retail (2)	F	single	25g	215	27	8	1	10		9
meat products										
- at processing plant	F	single	25g	14	2					2
- at retail	F	single	25g	46	0					

(1) : In four samples we found two serotypes

(2) : In one sample we found two serotypes

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for thermophilic Campylobacter spp.	C. jejuni	C. coli	C. upsaliensis	C. lari	thermophilic Campylobacter spp., unspecified
Meat from pig										
fresh										
- at slaughterhouse	F	single	25g	15	0					
- at cutting plant	F	single	25g	4	0					
- at retail	F	single	25g	40	0					
meat products										
- at processing plant	F	single	25g	19	0					
- at retail	F	single	25g	45	0					
Meat from bovine animals										
fresh										
- at retail	F	single	25g	18	0					
meat products										
- at processing plant	F	single	25g	12	0					
- at retail	F	single	25g	41	0					
Meat from other animal species or not specified										
fresh										
- at slaughterhouse	F	single	25g	11	0					
- at retail	F	single	25g	41	0					
meat products										
- at processing plant	F	single	25g	22	0					
- at retail	F	single	25g	50	0					
Milk, cows'										
UHT milk	F	single	25g	562	0					
Meat, mixed meat										
minced meat	F	single	25g	96	5	1	1			3

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Dairy products (excluding cheeses)									
dairy products, not specified									
ready-to-eat	F	single	25g	104	0				
Fishery products, unspecified	F	single	25g	36	0				
Eggs	F	single	25g	3	0				
Ready-to-eat salads									
- at retail (1)	F	single	25g	200	0				
Other processed food products and prepared dishes	F	single	25g	182	2	1	1		
All foodstuffs	F	single	25g	6	0				

(1) : University study

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

2.2.4. Campylobacter in animals

A. Thermophilic Campylobacter in Gallus gallus

Monitoring system

Sampling strategy

Sampling strategy is random, stratified by regions (slaughterhouses of 5 regions) and taken by Veterinary College of Madrid at farm to perform a prevalence study.

Frequency of the sampling

At slaughter

Sampling takes place during the months from may to september

Type of specimen taken

At slaughter

Organs: intact caecae

Methods of sampling (description of sampling techniques)

At slaughter

caecum

3 samples by slaughter batch

Case definition

At slaughter

isolation by bacteriological method and identification by PCR

Diagnostic/ analytical methods used

At slaughter

Bacteriological method: isolation in agar CCDA and PCR

Vaccination policy

don't exist

Other preventive measures than vaccination in place

biosecurity measures, implementation of good hygiene practises

Control program/ mechanisms

The control program/ strategies in place

don't exist

Results of the investigation

50% of flock prevalence

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

More studies need to be performed

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

More studies need to be performed

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

Monitoring system

Sampling strategy

Samples have been taken in 8 slaughterhouses belonging to 6 different regions of Spain.

Samples have been taken only if the slaughter batch had 10 or more animals

Samples taken between march and september

Number of samples: 392, belonging to 195 farms

Type of specimen taken

Faeces

Methods of sampling (description of sampling techniques)

2 faecal material samples by slaughter batch and by holding

Case definition

isolation by bacteriological method

Diagnostic/ analytical methods used

isolation in agar CCDA and identification by PCR

Vaccination policy

Don't exist

Results of the investigation

73,85% of holding prevalence

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

More studies need to be developed

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

More studies need to be developed

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for thermophilic Campylobacter spp.	C. jejuni	C. coli	C. lari	C. upsaliensis	thermophilic Campylobacter spp., unspecified
Pigs	survey	slaughter batch	195	144	6	131			7
Gallus gallus (fowl)									
broilers									
- at slaughterhouse	survey	slaughter batch	98	49	20	29			

Footnote

slaughter batches belong to different holdings

2.2.5. Antimicrobial resistance in *Campylobacter* isolates

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to																						
C. coli																						
Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																						
Isolates out of a monitoring programme	Yes																					
	132																					
Number of isolates available in the laboratory																						
Antimicrobials:																						
	N	n	<=0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Tetracyclines																						
Tetracyclin	132	132							2	1	4	11	24	50	40						05	256
Fluroquinolones																						
Ciprofloxacin	132	113		5	11	3		6	32	60	12	3									006	32
Quinolones																						
Naftidixic acid	132	111					1		1	3	2	12	2	17	84	10					05	128
Sulfonamides																						
Sulfonamide	0	0																				
Aminoglycosides																						
Streptomycin	0	0																				
Gentamicin	132	25				1		16	90	9	1		2	13							025	64
Neomycin	131	41						2	26	62	6	1	1	33							025	64
Kanamycin	0	0																				
Macrolides																						
Erythromycin	132	78				2	9	23	15	3	1	1	1	77							025	32
Tylosine	0	0																				
Penicillins																						
Amoxicillin	132	76						32	5	7	12	17	3	2	12	27	15				1	256
Ampicillin	0	0																				

Footnote

Broth micro-dilution method

Table Antimicrobial susceptibility testing of C. coli - qualitative data

n = Number of resistant isolates				
	C. coli			
	Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling		Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling	
Isolates out of a monitoring programme		yes		yes
Number of isolates available in the laboratory		132		29
Antimicrobials:	N	n	N	n
Tetracyclines				
Tetracyclin	132	132	29	26
Fluoroquinolones				
Ciprofloxacin	132	113	29	27
Quinolones				
Nalidixic acid	132	111	29	24
Sulfonamides				
Sulfonamide	132	86	29	11
Aminoglycosides				
Streptomycin	100	84	29	12
Gentamicin	132	25	29	3
Macrolides				
Erythromycin	132	78	29	12
Tylosine	132	76	29	12
Penicillins				
Amoxicillin	132	76	29	21

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to																						
C. coli																						
Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																						
Isolates out of a monitoring programme	yes																					
	29																					
Number of isolates available in the laboratory																						
	N	n	<=0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Antimicrobials:																						
Tetracyclines																						
Tetracyclin	29	26				3								9	10	6	1				05	256
Fluroquinolones																						
Ciprofloxacin	29	27		1		1		2	3	13	7	2									006	32
Quinolones																						
Nalidixic acid	29	24						2	2	1	16	6	2								05	128
Sulfonamides																						
Sulfonamide	0	0																				
Aminoglycosides																						
Streptomycin	29	6					11	6	1		2	3	6								4	64
Gentamicin	29	3				4	19	3			1	2									025	64
Neomycin	29	5					6	13	5			5									025	64
Kanamycin	0	0																				
Macrolides																						
Erythromycin	29	12				2	5	10					12								025	32
Tylosine	0	0																				
Penicillins																						
Amoxicillin	29	21					5	1		2	5	3	1	8	4						1	256
Ampicillin	0	0																				

Footnote

Broth microdilution method

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

Number of resistant isolates (n) and number of isolates with the concentration $\mu\text{l/ml}$ or zone (mm) of inhibition equal to		C. coli																																		
		Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																																		
Isolates out of a monitoring programme	yes																																			
	132																																			
Number of isolates available in the laboratory																																				
		N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35			
Antimicrobials:		0	0																																	
Tetracyclines		0	0																																	
Fluoroquinolones		0	0																																	
Ciprofloxacin		0	0																																	
Quinolones		0	0																																	
Nalidixic acid		0	0																																	
Sulfonamides		132	86	80	2	1	1	2	1	2	1	2	2	2	4	2	2	2	2	2	6	3	3	5	2	2	2	8	1	2	1	1				
Sulfonamide		132	86	80	2	1	1	2	1	2	1	2	2	2	4	2	2	2	2	6	3	3	5	2	2	2	8	1	2	1	1					
Aminoglycosides		0	0																																	
Streptomycin		0	0																																	
Gentamicin		0	0																																	
Neomycin		0	0																																	
Kanamycin		132	34	34	2	3	2	7	9	24	13	11	14	6	4	2	1																			
Macrolides		0	0																																	
Erythromycin		0	0																																	
Tylosine (I)		132	76	76	75	1			1				2	1				3	1	3	1	7	4	3	8	1	11	3	4	3	1					
Penicillins		0	0																																	
Amoxicillin		0	0																																	
Ampicillin		0	0																																	

(1) : Tablets (Rosco)

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to		C. coli																																				
Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																																						
Isolates out of a monitoring programme	yes																																					
	N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35						
Antimicrobials:																																						
Tetracyclines																																						
Tetracyclin	0																																					
Fluoroquinolones																																						
Ciprofloxacin	0																																					
Quinolones																																						
Nalidixic acid	0																																					
Sulfonamides																																						
Sulfonamide	29	11	11											1	2	1	1	1	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1		
Aminoglycosides																																						
Streptomycin	0	0																																				
Gentamicin	0																																					
Neomycin	0																																					
Kanamycin	29	5	5											1	5	2	4	3	4	3	1	1																
Macrolides																																						
Erythromycin	0																																					
Tylosine (I)	29	12																																				
Penicillins																																						
Amoxicillin	0																																					
Ampicillin	0																																					

(1) : Tablets (Rosco)

Table Antimicrobial susceptibility testing of *C. jejuni* - qualitative data

n = Number of resistant isolates				
<i>C. jejuni</i>				
	Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling		Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling	
Isolates out of a monitoring programme		yes		
Number of isolates available in the laboratory		18		
Antimicrobials:	N	n	N	n
Tetracyclines				
Tetracyclin	17	14		
Fluoroquinolones				
Ciprofloxacin	17	16		
Quinolones				
Nalidixic acid	17	16		
Sulfonamides				
Sulfonamide	17	2		
Aminoglycosides				
Streptomycin	17	3		
Gentamicin	17	4		
Neomycin	17	1		
Kanamycin	18	1		
Macrolides				
Erythromycin	17	2		
Tylosine	18	2		
Penicillins				
Amoxicillin	17	9		

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to																																						
<i>C. jejuni</i>																																						
Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																																						
Isolates out of a monitoring programme	yes																																					
		18																																				
Number of isolates available in the laboratory		18	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35	
Antimicrobials:	N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35						
Tetracyclines	0	0																																				
Fluoroquinolones	0	0																																				
Quinolones	0	0																																				
Sulfonamides	17	2	2										1				1	1	1	2	2	1	1	1	1	2	1	1									1	
Aminoglycosides	18	1	1														4	4																				
Streptomycin	0	0																																				
Gentamicin	0	0																																				
Neomycin	0	0																																				
Kanamycin	0	0																																				
Macrolides	0	0																																				
Erythromycin	18	2				2															1	1	1	1	3	1		5	1		2	1						
Tylosine (I)																																						
Penicillins	0	0																																				
Amoxicillin	0	0																																				
Ampicillin	0	0																																				

(1) : Tablets (Rosco)

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

Number of resistant isolates (n) and number of isolates with the concentration $\mu\text{l/ml}$ or zone (mm) of inhibition equal to																							
<i>C. jejuni</i>																							
Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																							
Isolates out of a monitoring programme	yes																						
	18																						
Number of isolates available in the laboratory																							
	N	n	<=0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																							
Tetracyclines																							
Tetracyclin	17	14				2	1	1	2	3	4	1	3	1	3	1					05	256	
Fluoroquinolones																							
Ciprofloxacin	17	16		1						3	6	6	1								005	32	
Quinolones																							
Nalidixic acid	17	14						1			2	2	10	2							05	128	
Sulfonamides																							
Sulfonamide	0	0																					
Aminoglycosides																							
Streptomycin	17	1						14	1			1	1								2	64	
Gentamicin	17	0				3	10	3	1												025	64	
Neomycin	17	1				2		10	4	1											025	64	
Kanamycin	0	0																					
Macrolides																							
Erythromycin	17	2				4	7	3	1			1	1								025	32	
Tylosine	0	0																					
Penicillins																							
Amoxicillin	17	10						2		2	3	1	1	2	1	2	3				1	256	
Ampicillin	0	0																					

Footnote

Broth micro-dilution method

Table Breakpoints used for antimicrobial susceptibility testing in Animals

Test Method Used

Disc diffusion

Agar dilution

Broth dilution

E-test

Standards used for testing

Campylobacter	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content microg	Breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest		Susceptible >=	Intermediate	Resistant <=
Tetracyclines										
Tetracyclin				2	05	256				
Fluoroquinolones										
Ciprofloxacin				1	006	32				
Quinolones										
Nalidixic acid (1)				32	05	128				
Sulfonamides										
Sulfonamide							300			12
Aminoglycosides										
Streptomycin		4	2	64			10			12
Gentamicin (2)				2	025	64				
Neomycin				8						
Kanamycin							30			14
Macrolides										
Erythromycin (3)				16	025	32				
Tylosine							150			12
Penicillins										
Amoxicillin (4)				8	1	256				
Ampicillin										

(1) : C. jejuni >16

(2) : C. jejuni >1

(3) : C. jejuni >4

(4) : C. jejuni >16

Footnote

Cut-off values suggested by EFSA (The EFSA Journal, 2007, 96:1-46) were applied. Those mentioned are for C. coli. When different for C. jejuni, they are reported into a comment

2.3. LISTERIOSIS

2.3.1. General evaluation of the national situation

A. Listeriosis general evaluation

History of the disease and/ or infection in the country

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

Recent actions taken to control the zoonoses

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

Additional information

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

2.3.2. Listeriosis in humans

A. Listeriosis in humans

Reporting system in place for the human cases

Microbiological Information System

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

Outbreak reporting

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

Case definition

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

Diagnostic/ analytical methods used

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

Notification system in place

Microbiological Information System

Outbreak reporting System

History of the disease and/ or infection in the country

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

Results of the investigation

Listeriosis is most often found in young children 0-1 years old, especially babies and in elder people. Among young adult women up to 44 years of age 4x more cases were reported as for males of the same age but the numbers involved are low. 100% of the reported Listeria spp. cases concerned Listeria monocytogenes.

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

Relevance as zoonotic disease

The public health importance of listeriosis is not always recognised particularly because listeriosis is a

relatively rare disease compared to other common food-borne illnesses such as salmonellosis. .

2.3.3. *Listeria* in foodstuffsTable *Listeria monocytogenes* in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for <i>L.monocytogenes</i>	<i>Listeria monocytogenes</i> presence in x g	> detection limit but =< 100 cfu/ g	<i>L. monocytogenes</i> > 100 cfu/ g
Dairy products (excluding cheeses)								
dairy products, not specified	F	single	25g	1488	18	18		
ice-cream	F	single	25g	547	0			

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L.monocytogenes	Listeria monocytogenes presence in x g	> detection limit but =< 100 cfu/ g	L. monocytogenes > 100 cfu/ g
Meat from pig								
fresh	F	single	25g	50	9	9		
meat products								
unspecified, ready-to-eat (detection method)	F	single	25g	868	28	28	17	11
(enumeration method) (1)	F	single	25g	868	28	28		
	F	single		28			17	11
Meat from bovine animals								
fresh	F	single	25g	21	2	2		
Meat from poultry, unspecified								
fresh	F	single	25g	118	12	12		
meat products								
unspecified, ready-to-eat	F	single	25g	33	1	1		
Meat from other animal species or not specified								
fresh	F	single	25g	6	0			
meat products	F	single	25g	167	4	4	4	
(Detection method)	F	single	25g	167	4	4		
(Enumeration method) (2)	F	single		4			4	
Meat, mixed meat								
minced meat	F	single	25g	476	67	24	30	18
(Detection method)	F	single	25g	267	24	24		
(Enumeration method) (3)	F	single		233	43		30	18
Fishery products, unspecified	F	single	25g	483	30	30		
Egg products	F	single	25g	30	0			
Vegetables	F	single	25g	192	3	3		
Bakery products								
desserts	F	single	25g	27	0			
Other processed food products and prepared dishes	F	single	25g	6047	55	48	3	12
(Detection method)	F	single	25g	4980	48	48		
(Enumeration method) (4)	F	single		1075	15		3	12

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Other food	F	single	25g	466	12	12		
All foodstuffs	F	single	25g	788	14	14		

- (1) : All these 28 positive samples by detection method, were also tested by enumeration method.
 (2) : All these 4 positive samples by detection method, were also tested by enumeration method
 (3) : 209 samples were only tested by enumeration method and 24 were tested by both detection and enumeration method.
 (4) : 1067 samples were only tested by enumeration method and 8 samples were tested by both detection and enumeration method.

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

2.3.4. Listeria in animals

2.4. E. COLI INFECTIONS

2.4.1. General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

History of the disease and/ or infection in the country

Verotoxigenic Escherichia coli have emerged as foodborne pathogens which can cause severe and potentially fatal illness. Ruminants, 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 ruminant faeces.

Studies about VTEC in Spain has been developed by Reference Laboratory of E. coli of Veterinary University of Lugo, that belongs to Colinetwork O157 inside Commission Research FAIR6-CT98-409, as a Thematic Network of Cooperative Research of Health and Consumer Ministry of Spain.

Between 1980 and 1995, 90% of cattle farms tested in region of Galicia were positive to VTEC, with 26% of animals colonized by VTEC no-O157 and 0,9% colonized by ECVT O157:H7. In 1999, 20% of farms and 10% of animals were colonized by ECVT O157:H7. In 1998, 15% of calves tested of others regions of Spain were carrier of ECVT O157:H7.

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

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

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

Small ruminants may also represent a source of transmission of VTEC to humans.

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

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

Recent actions taken to control the zoonoses

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

Compulsory and voluntary monitoring programmes in raw meat of 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

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

Outbreak reporting

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

2.4.3. Escherichia coli, pathogenic in foodstuffs

Table VT E. coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Escherichia coli, pathogenic	E.coli, pathogenic, unspecified	Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified	Verotoxigenic E. coli (VTEC) - VTEC O157:H7	Verotoxigenic E. coli (VTEC) - VTEC O103
Meat from pig											
fresh											
- at slaughterhouse	F	single	25g	25	2		2		2		
- at cutting plant	F	single	25g	46	0						
- at retail	F	single	25g	61	12		12		12		
meat products											
- at processing plant	F	single	25g	28	0						
- at retail	F	single	25g	43	1		1			1	
Meat from bovine animals											
fresh											
- at slaughterhouse	F	single	25g	21	0						
- at cutting plant	F	single	25g	131	6		6		4	2	
- at retail	F	single	25g	22	0						
meat products											
- at processing plant	F	single	25g	13	0						
- at retail	F	single	25g	1	0						
Meat from sheep											
fresh											
- at slaughterhouse	F	single	25g	69	1		1		1		
- at cutting plant	F	single	25g	18	4		4				4
- at retail	F	single	25g	11	0						
Milk, cows'											
raw	F	single	25g	7	0						
UHT milk	F	single	25g	4	0						
Vegetables	F	single	25g	51	0						

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Meat from poultry, unspecified										
fresh										
- at slaughterhouse	F	single	25g	8	0					
- at retail	F	single	25g	37	0					
meat products										
- at processing plant	F	single	25g	12	0					
Meat from goat										
fresh										
- at slaughterhouse	F	single	25g	1	0					
Meat from other animal species or not specified										
meat products										
- at processing plant	F	single	25g	4	0					
Meat, mixed meat										
minced meat	F	single	25g	735	5		5	1		4
Dairy products (excluding cheeses)										
dairy products, not specified	F	single	25g	237	0					
Fishery products, unspecified	F	single	25g	350	13		13		13	
Eggs	F	single	25g	76	0					
Other processed food products and prepared dishes	F	single	25g	503	6		6		6	
Other food	F	single	25g	39	5		5		3	2
All foodstuffs	F	single	25g	2758	29	29				

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES.

Used test:

- Method ELISA
- PCR-Bax
- ISO 16.654

Confirmation of the strain by serogrouping (agglutination)

2.4.4. Escherichia coli, pathogenic in animals

A. Verotoxigenic Escherichia coli in cattle (bovine animals)

Monitoring system

Sampling strategy

Sampling strategy in studies has been random and developed at two levels:

- at farm in region of Galicia
- at abattoir over feedlot calves coming from other regions of Spain

Studies has been carried out by Reference Laboratory

Frequency of the sampling

Animals at farm

Other: Different studies since 1980

Animals at slaughter (herd based approach)

Other: Diferent studies in several years

Type of specimen taken

Animals at farm

Faeces

Animals at slaughter (herd based approach)

Faeces

Methods of sampling (description of sampling techniques)

Animals at farm

swabs

Animals at slaughter (herd based approach)

swabs

Case definition

Animals at farm

isolation of VTEC and PCR/ IMS

Animals at slaughter (herd based approach)

isolation of VTEC and PCR/ IMS

Diagnostic/ analytical methods used

Animals at farm

Other: PCR, Immunomagnetic separation(IMS)

Animals at slaughter (herd based approach)

Other: PCR, IMS

Vaccination policy

In Spain doesn't exist a vaccination policy.

At farms, vaccines can be used by private veterinarians to control neonatal septicemia in calves.

Control program/ mechanisms

The control program/ strategies in place

Don't exist

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

Described in General Evaluation

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

Described in General Evaluation

2.5. TUBERCULOSIS, MYCOBACTERIAL DISEASES

2.5.1. General evaluation of the national situation

A. Tuberculosis general evaluation

History of the disease and/ or infection in the country

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

In Spain, control of milk was carried out at council town's level since 1908, but monitoring and eradication programmes in cattle didn't start systematically until beginning 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 of bovin tuberculosis in last years show the continuous decrease of the disease prevalence in cattle. In 2006 herd prevalence was 1.76%(2.14% in 2003, 1.80% in 2004 and 1,54% in 2005), with the 96.94% of herds officially free(95.77% in 2003, 96,56% in 2004 and 97.34% in 2005). Animal prevalence in 2006 was 0.42%(0.47% in 2003, 0.40% in 2004 and 0.31% in 2005)). Raw milk only can be consumed if produced in herds OTF.

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

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

Recent actions taken to control the zoonoses

Spanish Programme for eradication of bovine tuberculosis 2006

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 2005-2006 from cattle, goats, wild boards, foxes.

2.5.2. Tuberculosis, Mycobacterial Diseases in humans

A. Tuberculosis due to Mycobacterium bovis in humans

Reporting system in place for the human cases

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

Case definition

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

Diagnostic/ analytical methods used

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

Notification system in place

Microbiological Information System

History of the disease and/ or infection in the country

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

Results of the investigation

A few (5) human cases of M.bovis infection have been reported during 2006 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 transmission due to the VIH+/ AIDS epidemic

Relevance as zoonotic disease

The risk of obtaining tuberculosis from animal sources is negligible

2.5.3. Mycobacterium in animals

A. Mycobacterium bovis in bovine animals

Monitoring system

Sampling strategy

Sampling strategy is defined in Spanish Programme for eradication of bovine tuberculosis, covering cattle according Directive 64/ 432/ EEC(animals over six week of age)and goats living close to cattle.Test are taken by competent authorities of Autonomous Communities.At slaughterhouse samples are taken in suspicious animals and in animals with suspicious injuries.Strategic use on gamma-interferon assay is starting to be implemented.

Frequency of the sampling

Once a year at least, more frequent test in not officially free herds.
Premovement test in movements except if animals go to a closed fattening unit that exclusively send animals to a slaughterhouse.

Type of specimen taken

Other: skin test, blood, organs/ tissues

Methods of sampling (description of sampling techniques)

In herds intradermal skin test is used in animals over 6 weeks of age and gamma interferon as supplementary test.

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

Total number of samples taken in 2006 by the different diagnostic methods was 5.239.104.

Case definition

IDT:positives and inconclusive results. In OTF herds also M. bovis isolation.

Gamma-interferon: positive results

Organs/ tissues:compatible lesions, isolation or positive PCR

Diagnostic/ analytical methods used

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

Vaccination policy

Forbidden

Other preventive measures than vaccination in place

Premovement test; Cleaning and disinfecting of positive holdings; Control of common grazing

areas; Investigation of wild live in some regions; Epidemiological investigations in breakdowns

Control program/ mechanisms

The control program/ strategies in place

Spain has an Eradication Programme approved for co-financing according to Decision 2005/ 873/ EEC and Decision 90/ 424/ EEC

Legal basis of the progame measures is Directive 64/ 432/ EEC

Recent actions taken to control the zoonoses

More frequent testing and pre-movement test

Compulsory slaughtering of all animals in herds with high incidence or repeating positive results

Severe interpretation of tuberculin test

Research into other test methodologies

Reinforce over herd registers at farm level

Epidemiological studies

Suggestions to the Community for the actions to be taken

Research into other test methodologies and improve the existing ones.

Measures in case of the positive findings or single cases

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

Notification system in place

Since 1952, at least (Epizootic Diseases Law)

At the moment by Animal Health Law 8/ 2003

Results of the investigation

Herd prevalence: 1,76%

Animal prevalence: 0,42%

Herd incidence: 0,84%

Status of herds: 96,94% 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 in the country, breaking the trends of last years.

Herd prevalence: 2,24%(2002); 2,14%(2003); 1,80% (2004); 1,52 in 2005

Animal prevalence: 0,52%(2002); 0,47%(2003); 0,40%(2004); 0,31% (2005)

Disease is close to eradication in dairy herds (0.66% of herd prevalence in 2006). In conclusion, milk consumption can't be considered as a current source of infection in Spain, even more if it is assumed that cow milk is thermally treated.

In fattening herds, herd prevalence is 2,10%. Explanation of this higher prevalence can be found in special management of this kind of herds: common grazing, ranching systems, fighting bulls,

trashumance... Wildlife and goats can also be a source of infection in these holdings.

Additional information

Increase of the number of isolations of *Mycobacterium caprae*.

Table Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium spp.	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified	M. caprae
Goats	A	animal	74	6	2	0		4
Pigs	F,f	animal	132790	29			29	
- at slaughterhouse		animal	37601623	67			67	
Zoo animals, all	A	animal	5	0	0	0	0	
Badgers	A	animal	1	1	1			
Wild boars								
wild	A	animal	1223	158	26	0	132	
- at game handling establishment	F	animal	70566	377	3		374	
Deer								
wild	A	animal	532	39	23		16	
red deer	A	animal	463	1	1	0		
roe deer	A	animal	1	0	0	0	0	
- at game handling establishment	F	animal	159878	1681	56		1625	
fallow deer	A	animal	138	55	37		18	
Wolves								
wild	A	animal	2	0	0	0	0	
Cats	A	animal	1	0	0	0	0	
Foxes								
wild	A	animal	21	3	3	0	0	
Mountain goats								
wild	A	animal	16	0	0	0	0	
Ostriches								
zoo animals	A	animal	1	0	0	0	0	
Turtles								
pet animals	A	animal	7	1	0	0	1	
Pigeons	A	animal	63	0	0	0	0	
Birds								
wild	A	animal	86	22	0	0	22	

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Dogs	A	animal	2	0	0	0	0
Parrots	A	animal	13	0	0	0	0
Mouflons	A	animal	144	34	33	0	1
Other carnivores	A	animal	1	1	0	0	1
Antelopes	A	animal	2	0	0	0	0
Fish	A	animal	2	1			1
Cattle (bovine animals)							
- at slaughterhouse	F	animal	2606899	8379			8379
Sheep and goats							
- at slaughterhouse	F	animal	16014018	1172			1172
Solipeds, domestic							
horses							
- at slaughterhouse	F	animal	27251	0			
Barbary sheep							
wild	A	animal	20	0			

Footnote

A ANIMAL HEALTH SERVICES OF AUTONOMOUS COMMUNITIES: surveillance programme
 F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES (results of routine post-mortem examination at slaughterhouse).
 f: domestic killing for self consumption

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
Galicia	52805	50659	50659	101	93	40	39.604	100	0.199	0.184
Asturias	22227	21848	21848	38	28	7	18.421	100	0.174	0.128
Cantabria	9228	9206	9206	97	74	34	35.052	100	1.054	0.804
Madrid	1747	1747	1547	40	29	8	20	88.552	2.586	1.875
Cataluña	6373	4695	4610	76	39	10	13.158	98.19	1.649	0.846
Canarias	1386	1386	1386	5	3	1	20	100	0.361	0.216
Castilla-La Mancha	3467	2191	2191	169	91	7	4.142	100	7.713	4.153
Andalucía	9128	8096	7154	412	126	4	0.971	88.365	5.759	1.761
Aragón	3388	1022	1022	20	13	1	5	100	1.957	1.272
Baleares	577	470	445	1	0	1	100	94.681	0.225	0
Castilla y León	25244	17610	17610	899	562	18	2.002	100	5.105	3.191
Extremadura	12058	10523	10411	504	65	8	1.587	98.936	4.841	0.624
La Rioja	376	278	278	2	1	0	0	100	0.719	0.36
Murcia	414	383	383	19	9	1	5.263	100	4.961	2.35
Navarra	1956	1877	1838	5	4	0	0	97.922	0.272	0.218
País Vasco	13358	9155	5775	11	11	0	0	63.08	0.19	0.19
Valencia	703	564	559	9	7	1	11.111	99.113	1.61	1.252
Total	164435	141710	136922	2408	1155	141	5.855	96.621	1.759	0.844
Total - I	166306	146924	142840	2168	1412	165	7.611	97.22	1.518	0.989

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
Asturias	379582	372242	372242	372242	144	144	432	100	0.039
Cantabria	290593	282477	282477	282477	1124	1124	2502	100	0.398
Madrid	118708	100857	100857	100857	527	527	740	100	0.523
Cataluña	662960	302327	301264	301264	946	892	1264	99.648	0.314
Canarias	19050	19050	19050	19050	38	38	331	100	0.199
Castilla-La Mancha	391296	220012	220012	220012	3036	3036	3933	100	1.38
Andalucía	651539	588933	499301	499301	4003	4003	4003	84.781	0.802
Aragón	316401	78678	78678	78678	253	253	301	100	0.322
Baleares	26227	26227	22166	22166	8	8	8	84.516	0.036
Castilla y León	1228784	1011824	1011824	1011824	5324	5148	6354	100	0.526
Extremadura	680553	615746	615746	615746	2701	2565	2693	100	0.439
Galicia	956444	767312	767312	765312	400	400	1093	100	0.052
La Rioja	39774	22755	22755	22755	34	1	39	100	0.149
Murcia	72884	36001	36001	36001	394	381	485	100	1.094
Navarra	103993	95503	90293	90293	39	39	48	94.545	0.043
País Vasco	225397	149174	104124	104124	54	54	54	69.8	0.052
Valencia	61013	47437	47402	47212	169	169	205	99.926	0.357
Total	6225198	4736555	4591504	4589314	19194	18782	24485	96.938	0.418
Total - 1	6327398	4771759	4690709	4690709	14581	15535	21510	98.301	0.311

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

Region	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
	Herds	Animals	Herds	Animals	Last check positive		Last check negative		Herds	Animals	Herds	Animals	Herds	Animals
					Herds	Animals	Herds	Animals						
Asturias	21848	372242	0	0	7	298	64	1162	48	1817	0	0	21729	368965
Cantabria	9206	282477	1	46	49	2506	9	802	0	0	0	0	9147	279123
Madrid	1747	100857	8	221	18	763	19	1451	0	0	0	0	1502	98422
Cataluña	4695	302327	0	0	44	4566	44	3167	106	6166	0	0	4500	288483
Canarias	1386	19050	0	0	3	580	1	1	0	0	0	0	1382	18469
Castilla-La Mancha	2191	220012	6	221	89	16663	120	14252	6	962	0	0	1970	187914
Andalucía	8096	588933	222	7560	245	29409	717	45007	0	0	0	0	6912	506957
Aragón	1022	78678	0	0	4	275	1	150	11	850	0	0	1006	77403
Baleares	470	26227	6	192	1	90	16	149	16	210	0	0	431	25489
Castilla y León	17610	1011824	13	661	146	23054	428	56278	213	15988	0	0	16810	915843
Extremadura	10523	615746	0	0	115	17039	956	72071	66	4891	0	0	9386	521745
Galicia	50659	767312	0	0	29	164	37	717	11	240	0	0	50582	766191
La Rioja	278	22755	0	0	2	289	0	0	0	0	0	0	276	22466
Murcia	383	36001	0	0	4	587	15	131	6	611	0	0	358	34672
Navarra	1877	95503	0	0	2	385	3	427	42	3121	0	0	1830	99814
País Vasco	9155	149174	0	0	0	0	0	0	11	547	0	0	9144	148627
Valencia	564	47437	4	36	5	401	35	1584	1	63	0	0	519	45358
Total	141710	4736555	260	8937	763	97069	2465	197349	537	35466	0	0	137484	4405941
Total - I	146929	4919481	298	11134	701	92231	2668	178532	236	9723	0	0	143036	4627879

Footnote

In some regions, the sum of the different status of herds and animals is not the same as the number of herds or animals under the programme. The data on herds and animals under the programme are taken from the tables data on herds and data on animals automatically, and include the herds and animals tested during the entire year 2006 (from 1st January to 31st December), while data on the status of herds and animals are those at 31 December 2006. This is the reason for the small differences in some regions.

2.6. BRUCELLOSIS

2.6.1. General evaluation of the national situation

A. Brucellosis general evaluation

History of the disease and/ or infection in the country

Sanitary importance of brucellosis has been based in the spread of the disease to humans. At the moment brucellosis is still the main direct transmission zoonoses in the world, and in Spain as well, mainly linked to *Brucella melitensis*. The source of infection for human more frequent have been contacts with goats and sheeps, but raw milk products consumption have had historical importance as well. Nowadays brucellosis is considered as a professional 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 sheeps didn't start systematically until beginig of 90's. Before, human cases had the highest incidence in last thirty years, with arround 8500 cases in middle 80's. The sistematic application of national programmes has resulted in a continous decrease of the disease in humans, with 328 cases in 2005. At the moment the Programmes are being applied according to Directive 64/ 432/ EEC and Directive 91/ 68/ EEC.

At human level disease brucellosis is a mandatory notifiable disease since 1943. It is included in National Network of Epidemiology Surveillance, (Royal Decree 2210/ 1995, december 25, by Epidemiological Surveillance National Net is created.

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

Spanish Programmes for eradication and monitoring of Brucellosis in cattle, goats and sheeps show the continous decreasing, in generall, of the disease prevalence in domestic animals. In 2006 herd prevalence was 0.84%(1.45% in 2003; 1.54% in 2004; 1.25% in 2005) in cattle and 3.20%(5.58% in 2003; 5.12% in 2004; 4.43% in 2005) in goats and sheeps. Animal prevalence was 0.22%(0.45% in 2003; 0,59% in 2004; 0.37% in 2005) in cattle and 0.34%(0.87% in 2003; 0,62% in 2004; 0.45% in 2005) in goats and sheeps.

Raw milk only can be consumed if produced in herds free or officially free.

Recent actions taken to control the zoonoses

Spanish Programme for eradication of brucellosis in cattle 2006

Spanish Programme for eradication of brucellosis in goats and sheeps 2006

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 complaints, 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 seaboard) 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 2006, 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 foodstuffs. The foodstuff most frequently associated with the outbreaks was cottage-style cheese.

Relevance as zoonotic disease

High

2.6.3. Brucella in foodstuffs

2.6.4. Brucella in animals

A. Brucella abortus in bovine animals

Monitoring system

Sampling strategy

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

Frequency of the sampling

Twice a year at least
Pre-movement test

Type of specimen taken

Other: blood, milk, organs/ tissues, swabs

Methods of sampling (description of sampling techniques)

In herds, in animals over one year of age Rose Bengal as screening test or Milk Ring Test or ELISA in milk; and Complement Fixation test or ELISA as confirmation test. As complementary test has been used competition ELISA as well.

At slaughterhouses, swabs, organs and tissues are taken in suspicious animals, mainly from herds with free or officially free status suspended to isolate Brucella and confirm the infection.

Total number of samples taken in 2006 was 7.059.620

Case definition

Positive result to Rose Bengal confirmed by positive result to Complement Fixation or ELISA. In free or officially free herds Brucella abortus isolation as well.

Positive result in Milk Ring Test or Elisa confirmed by serological methods.

Diagnostic/ analytical methods used

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

Vaccination policy

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

Other preventive measures than vaccination in place

Premovement test
Cleaning and disinfecting of positive holdings
Control of common grazing areas
Investigation of possible wildlife reservoirs in some regions
Epidemiological investigations in breakdowns

Control program/ mechanisms

The control program/ strategies in place

Spain has an Eradication and Monitoring Programme approved for co-financing according to Decision 2005/ 873/ EEC and Decision 90/ 424/ EEC
Legal basis of the programme measures is Directive 64/ 432/ EEC and Royal Decree 2611/ 1996, at last ammended.

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
Research into other test methodologies
Reinforce over herd registers at farm level
Epidemiological studies

Suggestions to the Community for the actions to be taken

Research into other test methodologies and improve existing ones

Measures in case of the positive findings or single cases

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

Notification system in place

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

Results of the investigation

Herd prevalence: 0,84%
Animal prevalence: 0,22%
Herd incidence: 0,31%
Herd status: 95,82% OBF; 2,24 BF

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

Data obtained in applying of Spanish Bovine Brucellosis Eradication and Monitoring Programme in showed a moderate increase of the disease in the country in 2004, following by an important decrease in 2005 and 2006.

Herd prevalence: 2,30%(2002);1,45%(2003);1,54(2004); 1,25%(2005); 0,84%(2006)
Animal prevalence: 0,39%(2002);0,45%(2003);0,59%(2004); 0,37% (2005); 0,22(2006)

Disease is close to eradication in dairy herds. Herd prevalence is below 1% (0,26%). In conclusion, milk consumption can't be considered as a current source of infection in Spain, even more if it is assumed that almost all the cow milk is thermally treated.

In fattening herds, herd prevalence is 1,02%. Explanation of this higher prevalence can be found in special management of this type of herds: common grazing, ranching systems, fighting bulls, trashumance... Wildlife can also be a source of infection in these holdings.

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

Brucellosis in humans is linked in Spain mainly to *B. melitensis*.

B. Brucella melitensis in sheep

Status as officially free of ovine brucellosis during the reporting year

Free regions

Canarias by Decision 2001/ 292/ EC

Monitoring system

Sampling strategy

Sampling strategy is defined in Spanish Programme for eradication and monitoring of brucellosis in sheeps and goats, according to Directive 91/ 68/ EEC:

- animals over 6 months of age if not vaccinated
- animals over 18 months of age if vaccinated

Test are carried out by competent authorities of Autonomous Communities. At slaughterhouse samples are taken in suspicious animals, mainly in positive animals coming from free or officially free herds (suspended status) to confirm disease.

Frequency of the sampling

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

Type of specimen taken

Other: 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 slaughterhouses 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.

Total number of samples taken in 2006 was 19.929.328.

Case definition

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

Diagnostic/ analytical methods used

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

Vaccination policy

Animals between 3 and 6 months of age (not in officially free herds or free herds that are on the way to obtain officially free status in low prevalence areas)

In high incidence areas adults can be vaccinated exceptionally to control the spread of the disease to other herds or humans.

Other preventive measures than vaccination in place

Premovement test in trashumance in certain areas

Cleaning and disinfecting of positive holdings

Control of common grazing areas

Epidemiological investigations in breakdowns

Control program/ mechanisms

The control program/ strategies in place

Spain has an Eradication Programme approved for co-financing according to Decision 2005/ 873/ EEC and Decision 90/ 424/ EEC

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 slaughtering of all animals in herds with high incidence or repeating positive results

Research in other test methodologies

Reinforce over herd register at farm level

Epidemiological studies

Suggestions to the Community for the actions to be taken

Research into other test methodologies and into other vaccines

Measures in case of the positive findings or single cases

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

Notification system in place

Since 1952, at least (Epizootic Diseases Law)

At the moment by Animal Health Law 8/ 2003

Results of the investigation

Herd prevalence: 3,20%

Animal prevalence: 0,34%

Herd incidence: 1,02%

Herd status: 54,08%OF; 35,81% free

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

Data obtained in applying of Spanish Programme for Eradication and Monitoring of Brucellosis in Sheeps and Goats show a moderate but continuous decrease of the disease in the country, following the trends of previous years:

Herd prevalence: 7,18%(2002); 5,58%(2003); 5,12%(2004); 4,43%(2005); 3,20(2006)

Animal prevalence: 0,98%(2002); 0,87%(2003); 0,61%(2004); 0,45%(2005); 0,34(2006)

Explanation of this still high prevalence can be found in special management of this type of animals: ranching systems, common grazing, trashumance... Wildlife can also be a source of infection in these holdings

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

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

C. *Brucella melitensis* in goats

Status as officially free of caprine brucellosis during the reporting year

Free regions

Canarias by Decision 2001/ 292/ EC

Monitoring system

Sampling strategy

see *brucella melitensis* in sheeps

Frequency of the sampling

see *brucella melitensis* in sheeps

Methods of sampling (description of sampling techniques)

see *brucella melitensis* in sheeps

Case definition

see *brucella melitensis* in sheeps

Diagnostic/ analytical methods used

see brucella melitensis in sheeps

Vaccination policy

see brucella melitensis in sheeps

Other preventive measures than vaccination in place

see brucella melitensis in sheeps

Control program/ mechanisms

The control program/ strategies in place

see brucella melitensis in sheeps

Recent actions taken to control the zoonoses

see brucella melitensis in sheeps

Suggestions to the Community for the actions to be taken

see brucella melitensis in sheeps

Measures in case of the positive findings or single cases

see brucella melitensis in sheeps

Notification system in place

see brucella melitensis in sheeps

Results of the investigation

see brucella melitensis in sheeps

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

see brucella melitensis in sheeps

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

see brucella melitensis in sheeps

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella spp.	B. melitensis	B. abortus	B. suis	Brucella spp., unspecified
Pigs								
- at slaughterhouse	F	animal	37601623	0				0
Wild boars								
wild	A	animal	261	33	0	0	0	33
Deer								
wild	A	animal	681	3				3
red deer	A	animal	375	8	0	0	0	8
roe deer	A	animal	522	4	0	0	0	4
fallow deer	A	animal	91	0				
Wolves								
wild	A	animal	6	0	0	0	0	0
Mountain goats								
wild	A	animal	359	1	0	0	0	1
Alpine chamois								
wild	A	animal	104	0	0	0	0	0
Mouflons								
wild	A	animal	2	0	0	0	0	0
Hares								
wild	A	animal	4	2	0	0	2	0
Other ruminants								
wild	A	animal	4	0	0	0	0	0
zoo animals	A	animal	3	0	0	0	0	0
Cattle (bovine animals)								
- at slaughterhouse	F	animal	2606899	6717				6717
Sheep and goats								
- at slaughterhouse	F	animal	16014018	1652				1652
Solipeds, domestic horses								
- at slaughterhouse	F	animal	27251	0				0

Footnote

Spain 2006 Report on trends and sources of zoonoses

A: ANIMAL HEALTH SERVICES OF AUTONOMOUS COMMUNITIES: surveillance programme

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES (results of routine post-mortem examination at slaughterhouse)

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
Asturias	22227	21848	21848	9	5	2	22.222	100	0.041	0.023
Cantabria	9228	9206	9206	61	54	18	29.508	100	0.663	0.587
Madrid	1747	1747	1547	32	22	1	3.125	88.552	2.069	1.422
Cataluña	6373	4695	3863	13	13	1	7.692	82.279	0.337	0.337
Canarias	1386	1215	1215	0	0	0	0	100	0	0
Castilla-La Mancha	3534	2201	2201	42	27	8	19.048	100	1.908	1.227
Andalucía	9128	8096	7128	68	39	6	8.824	88.043	0.954	0.547
Aragón	3388	1022	1022	3	2	0	0	100	0.294	0.196
Baleares	649	470	444	0	0	0	0	94.468	0	0
Castilla y León	25243	17610	17610	489	146	77	15.746	100	2.777	0.829
Extremadura	12035	10424	10415	415	96	28	6.747	99.914	3.985	0.922
Galicia	53808	49850	49850	30	28	8	26.667	100	0.006	0.056
La Rioja	376	278	278	0	0	0	0	100	0	0
Murcia	414	383	383	1	1	0	0	100	0.261	0.261
Navarra	1956	1877	1837	0	0	0	0	97.869	0	0
País Vasco	13358	11951	10314	5	5	0	0	86.302	0.048	0.048
Valencia	703	564	561	0	0	0	0	99.468	0	0
Total	165553	143437	139722	1168	438	149	12.757	97.41	0.836	0.313
Total - I	166306	146403	141463	1774	851	319	17.982	96.626	1.254	0.602

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
Asturias	379582	297250	297250	297250	30	30	95	100	0.01
Cantabria	290593	245264	245264	245264	111	111	1181	100	0.045
Madrid	118708	90955	90955	90955	245	245	260	100	0.269
Cataluña	662917	194275	191328	191328	124	115	236	98.483	0.065
Canarias	19050	13570	13570	13570	0	0	0	100	0
Castilla-La Mancha	388393	169277	169277	169277	451	451	990	100	0.266
Andalucía	651540	588934	493425	493425	548	548	1460	83.783	0.111
Aragón	316401	68357	68357	68357	13	13	13	100	0.019
Baleares	24200	20464	19955	2933	0	0	0	97.513	0
Castilla y León	1228784	756743	756743	756743	4545	4563	10934	100	0.601
Extremadura	680785	515587	515587	485887	2294	1913	3777	100	0.445
Galicia	956444	695772	695772	695772	96	96	243	100	0.014
La Rioja	39258	21288	21288	21288	0	0	1	100	0
Murcia	72880	11011	11011	11011	2	2	2	100	0.018
Navarra	96466	60966	60963	59483	0	0	0	99.995	0
País Vasco	225394	151035	141505	119495	6	6	48	93.69	0.004
Valencia	61009	27525	27525	27525	0	0	0	100	0
Total	6212404	3928273	3819775	3749563	8465	7893	19240	97.238	0.222
Total - 1	6315410	4026406	3940168	3895679	14523	15069	32071	97.858	0.369

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

Region	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
	Herds	Animals	Herds	Animals	Last check positive		Last check negative		Herds	Animals	Herds	Animals	Herds	Animals
					Herds	Animals	Herds	Animals						
Asturias	21848	297250	0	0	2	13	102	563	23	483	0	0	21721	296191
Cantabria	9206	245264	0	0	11	1067	4	809	0	0	3	427	9188	242961
Cataluña	4695	194275	0	0	8	395	28	2349	38	892	0	0	4621	190657
Canarias	1215	13570	0	0	0	0	0	0	0	0	0	0	1215	13570
Castilla-La Mancha	2201	169277	6	191	13	1564	32	2592	14	1128	20	1910	2116	161892
Andalucía	8096	588934	401	12348	73	5565	403	16172	0	0	0	0	7397	560738
Aragón	1022	68357	0	0	0	0	1	700	2	500	455	25200	564	41957
Castilla y León	17610	756743	12	655	207	23148	444	45450	157	12761	1682	101877	15108	574450
Extremadura	10424	515587	0	0	126	9413	607	27967	19	1185	1051	41917	8636	434668
Galicia	49850	695772	0	0	7	49	17	473	10	691	0	0	49816	660835
Murcia	383	11011	0	0	0	0	15	227	0	0	0	0	368	10784
Navarra	1877	60966	0	0	0	0	1	65	47	4117	0	0	1829	98436
Valencia	564	27525	2	12	0	0	36	1617	0	0	0	0	526	43347
Pais Vasco	11951	151035	0	0	0	0	0	0	6	275	0	0	11945	148947
La Rioja	278	21288	0	0	0	0	0	0	0	0	0	0	278	21288
Baleares	470	20464	6	192	0	0	18	99	17	82	0	0	431	19970
Madrid	1747	90955	8	221	18	1310	13	825	0	0	0	0	1508	91294
Total	143437	3928273	435	13619	465	42524	1721	99908	333	22114	3211	171331	137267	3612005
Total - 1	146410	4708082	300	11094	516	53574	2025	103417	386	19091	2252	110110	140931	4410796

Footnote

In some regions, the sum of the different status of herds and animals is not the same as the number of herds or animals under the programme. The data on herds and animals under the programme are taken from the tables data on herds and data on animals automatically, and include the herds and animals tested during the entire year 2006 (from 1st January to 31st December), while data on the status of herds and animals are those at 31 December 2006. This is the reason for the small differences in some regions.

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
Asturias	6434	6434	6434	0	0	0	0	100	0	0
Cantabria	3254	3254	3254	16	11	2	12.5	100	0.492	0.338
Madrid	798	761	761	49	41	1	2.041	100	6.439	5.388
Cataluña	3780	3624	3601	343	148	6	1.749	99.365	9.525	4.11
Canarias	3796	3796	913	0	0	0	0	24.052	0	0
Castilla-La Mancha	8537	7925	7925	281	105	14	4.982	100	3.546	1.325
Andalucía	21563	20322	18237	2108	617	61	2.894	89.74	11.559	3.383
Aragón	5102	5102	5102	81	19	11	13.58	100	1.588	0.372
Baleares	3693	3693	3659	0	0	0	0	99.079	0	0
País Vasco	7607	7135	5156	6	0	0	0	72.263	0.116	0
Galicia	25570	25570	25570	3	3	3	100	100	0.012	0.012
Navarra	2637	2637	2312	0	0	0	0	87.675	0	0
La Rioja	516	452	450	5	4	0	0	99.558	1.111	0.889
Extremadura	17932	17370	17370	385	28	17	4.416	100	2.216	0.161
Valencia	1815	1787	1766	143	83	12	8.392	98.825	8.097	4.7
Castilla y León	12620	12620	12620	249	102	17	6.827	100	1.973	0.808
Murcia	2930	2604	2604	103	44	0	0	100	3.955	1.69
Total	128584	125086	117734	3772	1205	144	3.818	94.122	3.204	1.023
Total - I	132280	128660	120569	5342	2041	86	1.61	93.711	4.431	1.693

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
Asturias	89331	86339	86339	86339	0	0	1	100	0
Cantabria	84465	84465	84465	84465	42	41	210	100	0.05
Madrid	129894	119277	119277	94201	2158	2158	3885	100	1.809
Cataluña	779857	595989	593249	593249	5716	4769	8289	99.54	0.964
Canarias	362174	118617	118617	39326	0	0	0	100	0
Castilla-La Mancha	3691625	3180537	3180537	3180537	15483	15483	22775	100	0.487
Galicia	318297	309188	309188	309188	80	80	282	100	0.026
País Vasco	334896	265597	263597	76246	8	8	8	100	0.003
Navarra	707947	707937	677082	219688	0	8	8	95.642	0
La Rioja	153850	148168	148084	148084	333	322	398	99.943	0.225
Aragón	2082071	1584197	1584197	1584197	2257	2143	9844	100	0.142
Castilla y León	4643018	3687996	3687996	3687996	2323	2046	8409	100	0.063
Extremadura	4819431	3863461	3863461	1736286	6202	5011	17159	100	0.161
Baleares	279505	279505	278408	129924	0	0	0	99.608	0
Valencia	511744	414145	413965	413965	2999	2976	6046	99.957	0.724
Andalucía	4129830	3821044	3508211	3475449	27529	26645	50995	91.813	0.785
Murcia	1245415	580817	580817	580817	903	821	821	100	0.155
Total	24363350	19845279	19497490	16439957	66033	62511	129130	98.247	0.339
Total - I	23338503	20401175	19223925	16674433	85720	84581	105929	94.229	0.446

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

Region	Status of herds and animals under the programme														
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free		
	Herds	Animals	Herds	Animals	Last check positive		Last check negative		Herds	Animals	Herds	Animals	Herds	Animals	
					Herds	Animals	Herds	Animals							
Asturias	6434	86339	0	0	0	0	469	4944	0	0	0	0	0	5965	81395
Cantabria	3254	84465	0	0	9	432	2	178	0	0	0	0	0	3243	83855
Cataluña	3624	595989	5	87	238	102084	268	61726	40	6067	2473	362175	597	75977	
Canarias	3796	118617	0	0	0	0	0	0	0	0	0	0	0	3796	362174
Castilla-La Mancha	7925	3180537	14	4698	141	173087	247	163072	38	22141	3002	1048777	4483	1768762	
Galicia	25570	309188	0	0	87	3060	0	0	1	4	0	0	25482	306124	
País Vasco	7135	263597	0	0	0	0	0	0	6	1215	0	0	7129	26	
Navarra	2637	707937	3	98	0	0	1	653	321	30401	1005	452100	1308	225348	
La Rioja	452	148168	0	0	2	1891	9	4394	2	84	0	0	439	141799	
Aragón	5102	1584197	0	0	21	16450	23	12650	16	10100	5042	1554997	0	0	
Extremadura	17370	3863461	0	0	183	126092	2009	289233	653	103365	14393	3281718	132	75224	
Baleares	3693	279505	0	0	0	0	469	4944	75	2740	0	0	3384	269259	
Murcia	2604	580817	0	0	31	22313	217	48496	26	9353	2284	475473	46	16438	
Madrid	761	119277	22	3048	24	5362	25	6309	0	0	620	95626	70	8932	
Andalucía	20322	3821044	710	38546	1137	478468	3453	654796	756	121937	11749	2157392	2526	369905	
Valencia	1787	414145	7	180	31	22617	377	71487	9	2208	1235	309495	128	30285	
Castilla y León	12620	3687996	21	3475	95	44318	524	126410	64	27077	2997	866570	8919	2620146	
Total	125086	19845279	782	50132	1999	996174	8093	1449292	2007	336992	44800	10604323	67647	6435649	
Total - 1	127605	20471778	578	42309	3055	1305171	9332	1536613	1449	388501	49372	11769191	68823	5428303	

Footnote

In some regions, de sumes of the different status of herds and animals is not the same to the number of herds or animals under the programme. The data on herds and animals under the programme are taken from the tables data on herds and data on animals automatically, and include the herds and animals tested during the entire year 2006 (from 1th january to 31th december), while data on the status of herds and animals are those at 31 december 2006. This is the reason of the small differences in some regions.

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

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

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

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

Recent actions taken to control the zoonoses

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

2.7.2. Yersiniosis in humans

A. Yersiniosis 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, 290 cases in 1996 to 365 in 2006.

In 2006, 365 cases were notified.

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

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

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

Relevance as zoonotic disease

Enteric yersiniosis can be transmitted between animals and humans. It is usually transmitted to humans via consumption of food contaminated with animal feces.

Yersiniosis have a high relevance as zoonotic disease.

2.7.3. *Yersinia* in foodstuffsTable *Yersinia* in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for <i>Yersinia</i> spp.	<i>Y. enterocolitica</i>	<i>Yersinia</i> spp., unspecified	<i>Y. enterocolitica</i> - O:3	<i>Y. enterocolitica</i> - O:9	<i>Y. enterocolitica</i> - unspecified
Meat from pig										
fresh										
- at slaughterhouse	F	single		86	0					
- at retail	F	single		43	0					
meat products										
- at processing plant	F	single		16	0					
- at retail	F	single		40	0					
Meat from bovine animals										
fresh										
- at slaughterhouse	F	single		4	1	1				1
- at retail	F	single		37	0					
meat products										
- at processing plant	F	single		12	0					
- at retail	F	single		32	0					
Milk, cows'										
UHT milk	F	single		562	0					
Meat from poultry, unspecified										
fresh										
- at slaughterhouse	F	single		5	0					
- at retail	F	single		77	8	8				8
meat products										
- at processing plant	F	single		12	0					
- at retail	F	single		40	0					
Meat from other animal species or not specified										
fresh										
- at slaughterhouse	F	single		11	0					
- at retail	F	single		40	0					
meat products										

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- at processing plant	F	single	12	0					
- at retail	F	single	40	0					
Other processed food products and prepared dishes	F	single	135	0					

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES

2.7.4. Yersinia in animals

2.8. TRICHINELLOSIS

2.8.1. General evaluation of the national situation

A. Trichinellosis general evaluation

History of the disease and/ or infection in the country

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

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

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

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

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

Recent actions taken to control the zoonoses

The activities against this zoonoses are the Official Control:

Examination of fresh meat and killed in hunting according to European legislation in force:

Commission Regulation (EC) Number 2075/ 2005 of December 5, 2005 laying down specific rules on official controls for trichinella in meat and Commission Regulation (EC) Number 1665/ 2006 amending Commission 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 subjects, 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 carcase(s);
- (b) measures for dealing with infested carcase(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 carcase(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, whereas 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 two to three outbreaks per year in Spain. Most outbreaks are caused by *Trichinella spiralis*. *Trichinella britovi* has been associated with outbreaks

due to the consumption of pig meat, boar meat, and meat from other wild animals.

Results of the investigation

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

Description of the positive cases detected during the reporting year

Two outbreaks of trichinellosis was reporting in 2006. 30 people was illness. The majority of human trichinellosis is linked to the consumption of undercooked or raw meat products

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

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

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 spp.	T. spiralis	Trichinella spp., unspecified	T. britovi
Pigs							
- at slaughterhouse	F	animal	37601623	3		3	
- at slaughterhouse - domestic production	F, f	animal	132790	6		6	
Solipeds, domestic							
horses							
- at slaughterhouse	F	animal	27251	0		0	
Wild boars							
wild							
- at game handling establishment (1)	F	animal	70566	172	47	120	5

(1) : The National Reference Laboratory has only classified 55 samples (47 T. spiralis, 5 T. britovi y 3 T. spiralis + T. britovi)

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES (results of routine post-mortem 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

Hydatidosis is an endemic disease in Spain, mainly in regions with extensive systems of animal production.

Human hydatidosis has been an Mandatory Notifiable disease since 1982, year in which were communicated around 2000 cases. Royal Decree 2210/ 1995, laying down the National Epidemiologic Surveillance Network, classify hydatidosis as an endemic disease at regional frame.

In 80's many regions started to set up a control programme based in control of animal hydatidosis and in general people's health education and focused in professionals related with animals and at school level. Similar control programmes have been developed in others Autonomous 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 have 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 decrease of the disease at human level. Main source of infection in Spain is cycle between sheep, dog and humans.

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

Higher incidence values of human cases are situated in regions with the highest census of 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 Epidemiologic 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

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 complaints, 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 2006.

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

Hydatidosis is the first parasitic disease in Spain

2.9.3. Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling unit	Units tested	Total units positive for Echinococcus spp.	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals)							
- at slaughterhouse	F	animal	2606899	19612			19612
Pigs							
- at slaughterhouse	F	animal	37601623	17511			17511
- at slaughterhouse - domestic production	F, f	animal	132790	656			656
Solipeds, domestic horses							
- at slaughterhouse	F	animal	27251	41			41
Sheep and goats							
- at slaughterhouse	F	animal	16014018	71476			71476
Wild boars							
- at game handling establishment	F, f	animal	70566	41			41
Deer wild							
- at game handling establishment	F	animal	159878	13			13

Footnote

F: HUMAN PUBLIC HEALTH SERVICES OF THE AUTONOMOUS COMMUNITIES (results of routine post-mortem 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 fertilisation 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 consumption 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

In 2003, data communicated by Autonomous Communities about toxoplasmosis in production animals showed incidence in sheep of 35,4%; 19% in cattle and 18% in goats.

Main sources of infection for humans are cats and consumption of meat insufficiently cooked.

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

More studies need to be developed.

Recent actions taken to control the zoonoses

Surveillance according to Directive 2003/ 99/ EC

Primary prevention of the disease with recommendations to prevent infection during pregnancy 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

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 epidemiological 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 focus was reported in 1975 in the province of Málaga by introduction of dogs coming from North Africa. This focus ended in 1977 with 122 animals infected(dogs and cats, and 2 foxes) and one case of human rabies.

Since 1979 only have been notified 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 Spanish mainland and islands remains free of rage in terrestrial mammals. Only a few cases of EBL1 has been reported in bats.

In 2006 only one case in Ceuta, Spanish city in north Africa has been reported in a dog.

These data shows that the main source and risk for the apparition of cases of rabies in Spain is the importation of animals with the infection from Morocco and other countries of North Africa.

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

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

Recent actions taken to control the zoonoses

Compulsory surveillance of the disease according to article 4 of Directive 2003/ 99/ EEC,came into

force by Royal Decree 1940/ 2004.

Compulsory vaccination of dogs in 10 autonomous communities and Ceuta y Melilla. Voluntary in the rest.

Studies including active surveillance of LB-1 in bats.

Information to the citizens about no manipulation of bats.

2.11.2. Rabies in humans

A. Rabies in humans

Reporting system in place for the human cases

Notifiable Disease Surveillance System (NDSS)

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

Royal Decree 1940/ 2004, september 27, about zoonoses disease and zoonoses agents surveillance

Case definition

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

Diagnostic/ analytical methods used

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

Notification system in place

Notifiable Disease Surveillance System (NDSS)

In December of 1995 the National Network of Epidemiological Surveillance was created by law. This law and its development produced changes in the surveillance system.

During 1997 the protocols of statutory notification of diseases were approved and implemented in Spain. In Spain the Autonomous Regions have wide powers with respect to epidemiological surveillance and national decisions are usually taken by consensus.

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

This notification has been compulsory by law for all doctors since 1901.

History of the disease and/ or infection in the country

Spain remained free of human cases from 1975

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

Spain is free of rabies.

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

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

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

Relevance as zoonotic disease

High

2.11.3. Lyssavirus (rabies) in animals

A. Rabies in dogs

Monitoring system

Sampling strategy

Sampling strategy is targeted at 3 levels:

1. apparently healthy dogs that injure a person and die into the quarantine(kept under observation) period of 14 days or if the animal is suspected to be rabid(euthanasia).Samples are taken by competent authority
- 2.dogs and cats imported from third countries not included in part C of Annex II of Council Regulation(EC) 998/ 2003)need negative results to enter into Spain.If these 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, Sweden, Norway and Malta.Samples are taken by private clinics and analisis performed by National Reference Laboratory

Frequency of the sampling

indeterminated

Type of specimen taken

Other: Brain, Blood

Methods of sampling (description of sampling techniques)

Brain of dead or sacrificed animals have to be sent to National Reference Laboratory following a protocol of sending.The sample has to be taken with sterility, be submerged in salinum serum and glicerine in 50% solution and envoided refrigerated quickly.

Blood are taken by private clinics and serum(0,5 ml minimun) have to be sent following a protocol, by a quick transport service refrigerated or frozen.4948 samples have been taken in 2004.

Case definition

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

Diagnostic/ analytical methods used

Other: FAT, ELISA

Vaccination policy

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

Other preventive measures than vaccination in place

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

Identification and registration of dogs.

Pick up of stray dogs by council town authorities.

Control program/ mechanisms

The control program/ strategies in place

Different regional prevention programmes.

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

Recent actions taken to control the zoonoses

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

Measures in case of the positive findings or single cases

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

Official Notification of the disease

Epidemiologic survey

Cases in Spain (Ceuta and Melilla) are imported from third countries

Notification system in place

Since 1952, at least, by Epizootic Law.

At the moment by Animal Health Law 8/ 2003.

Results of the investigation

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

Investigations of the human contacts with positive cases

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

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

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

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

High

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	unspecified Lyssavirus	European Bat Lyssavirus - unspecified	classical rabies virus (genotype 1)
Dogs							
stray dogs	EDO	animal		1			1

Footnote

EDO= Mandatory Notifiable diseases Surveillance System
 1 dog from Ceuta Spanish City in North Africa

2.12. Q-FEVER

2.12.1. General evaluation of the national situation

2.12.2. Q-fever in humans

A. C. burnetii 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

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.

Relevance as zoonotic disease

important

2.12.3. Coxiella (Q-fever) in animals

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 Enteropathogenic E. coli have been detected since 60's, but these focus have reduced importantly in last decades. Serotypes in rabbits or ruminants are different than human ones. In Spain, the main serotype in rabbits is O103:H2.

E. coli Enterotoxigenic are more frequent associated with focus of gastroenteritis in humans, by consume of water and animal products. But predominant human serotypes in Spain (O25:H-; O153:H45; O169:H41) are different than the ones that causes diarrhea in animals. In piglets predominant 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 pathogenic 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 infection.

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

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

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

Table Antimicrobial susceptibility testing of E. coli in animals

n = Number of resistant isolates								
	E. coli							
	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys	
Isolates out of a monitoring programme				yes		yes		
Number of isolates available in the laboratory			193		96			
Antimicrobials:	N	n	N	n	N	n	N	n
Tetracyclines								
Doxycyclin			193	160	96	59		
Tetracyclin			193	170	96	67		
Amphenicols								
Chloramphenicol			193	59	96	26		
Florfenicol			193	1	96	1		
Cephalosporins								
Cefotaxim			193	2	96	18		
Cefoxitin			193	0	96	4		
Fluoroquinolones								
Ciprofloxacin			193	10	96	37		
Quinolones								
Nalidixic acid			193	38	96	79		
Sulfonamides								
Sulfonamide			193	128	96	52		
Trimethoprim			193	124	96	35		
Aminoglycosides								
Streptomycin			193	110	96	40		
Gentamicin			193	8	96	10		
Neomycin			193	21	96	15		
Amikacin			193	0	96	0		
Apramycin			193	6	96	1		
Carbapenems								
Imipenem			193	0	96	0		
Penicillins								
Amoxicillin			193	131	96	52		
Amoxicillin / Clavulanic acid			193	0	96	6		
Fully sensitive			173	9	96	3		
Resistant to 1 antimicrobial			173	11	96	7		
Resistant to 2 antimicrobials			173	16	96	15		
Resistant to 3 antimicrobials			173	28	96	18		
Resistant to 4 antimicrobials			173	41	96	10		
Resistant to >4 antimicrobials			173	68	96	53		

Footnote

Resistance profiles using 10 antimicrobials (amox, tetra, cloram, genta, strepto, trimeto, sulfa, cefoxitim, nalidix and cipro)

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to																								
E. coli																								
Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																								
Isolates out of a monitoring programme	Yes																							
	96																							
Number of isolates available in the laboratory	96																							
	N	n	<=0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest		
Antimicrobials:																								
Tetracyclines																								
Tetracyclin	96	67						6	21	1	1	3	2	23	32	7						05	256	
Amphenicols																								
Chloramphenicol	96	26								40	24	6	10	6	3	6	1					2	256	
Florfenicol	96	1						1	57	36	1	1										2	64	
Cephalosporins																								
3rd generation cephalosporins	0	0																						
Cefotaxim	96	18	3	61	11	1	2	4	2	3	9											003	4	
Fluoroquinolones																								
Ciprofloxacin	89	32		17	4	19	7	5	5	22	9	1											006	32
Enrofloxacin	0	0																						
Quinolones																								
Nalidixic acid	96	79						1	10	4	1	1	3	4	11	61							05	128
Sulfonamides																								
Sulfonamide	0	0																						
Trimethoprim																								
Trimethoprim	0	0																						
Aminoglycosides																								
Streptomycin	0	0																						
Gentamicin	96	10				2	37	41	3	1	2	4	2	3	1							025	64	
Neomycin	96	15					2	59	20			2	5	3	5							025	64	
Kanamycin	0	0																						
Apramycin	96	1							1	59	34	1		1								1	32	

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to		E. coli																																		
Gallus gallus (fowl) - broilers - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																																				
Isolates out of a monitoring programme	yes																																			
Number of isolates available in the laboratory	96																																			
Antimicrobials:	N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35				
Tetracyclines																																				
Doxycyclin	96	59	16	4	7	13	5	8	6	4	1	1	3	2	4	11	3	5	2	1																
Tetracyclin	0																																			
Amphenicols																																				
Chloramphenicol	0																																			
Florfenicol	0																																			
Cephalosporins																																				
3rd generation cephalosporins	0																																			
Cefotaxim	0																																			
Cefoxitin	96	4		1				1	1	1		1	1					2	5	8	16	30	17	6	2	2		1								
Ceftazidim	96	0									2	1	3		1	2	1	1	1	1	1	1	1	1	6	7	31	20	10	2	3	2				
Fluoroquinolones																																				
Ciprofloxacin	0																																			
Enrofloxacin	0																																			
Quinolones																																				
Nalidixic acid	0																																			
Sulfonamides																																				
Sulfonamide	96	52	52											1				2	1	5	15	8	8	3				1								
Trimethoprim	96	35	35										1				1	1	1	3	7	14	10	9	6	8										
Aminoglycosides																																				
Streptomycin	96	40	23	2	5	2	4	4	7	4	13	17	13	2																						
Gentamicin	0																																			

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to		E. coli																																			
Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																																					
Isolates out of a monitoring programme	yes																																				
Number of isolates available in the laboratory	193																																				
Antimicrobials:	N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	>=35					
Tetracyclines																																					
Doxycyclin	193	160	41	15	19	19	24	25	17	7	1	1	2	8	8	3	2	1																			
Tetracyclin	0																																				
Amphenicols																																					
Chloramphenicol	0																																				
Florfenicol	0																																				
Cephalosporins																																					
3rd generation cephalosporins	0																																				
Cefotaxim	0																																				
Cefoxitin	193	0														1	1	14	14	31	54	44	22	4	5	1	1	1									
Ceftazidim	193	0																1				2	10	19	54	49	35	13	4	6							
Fluoroquinolones																																					
Ciprofloxacin	0																																				
Enrofloxacin	0																																				
Quinolones																																					
Nalidixic acid	0																																				
Sulfonamides																																					
Sulfonamide	193	128	128																1	4	2	15	14	14	10	1	2	1	1								
Trimethoprim	193	124	124																1			4	13	24	14	6	5	1	1								
Aminoglycosides																																					
Streptomycin	172	96	36	5	13	14	12	16	15	12	17	13	12	7																							
Gentamicin	0																																				

Neomycin	0																																																	
Kanamycin	0																																																	
Amikacin	193	0					1	14	40	81	38	10	7	1																										1										
Apramycin	20	1				1					1	13	2	1	2																																			
Carbapenems																																																		
Imipenem	191	0												1																					1						7									
Monobactams																																																		
Aztreonam	193						1																																		2	5	16	39	129					
Penicillins																																																		
Amoxicillin	0																																																	
Amoxicillin / Clavulanic acid	193	0					1	9	18	23	29	28	30	19	14	15	2	3	1																														1	
Ampicillin	0																																																	
Trimethoprim + sulfonamides																																																		
Trimethoprim + Sulfonamide	0																																																	

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

Number of resistant isolates (n) and number of isolates with the concentration µl/ml or zone (mm) of inhibition equal to																							
E. coli																							
Pigs - fattening pigs - at slaughterhouse - animal sample - faeces - Monitoring - monitoring survey - objective sampling																							
Isolates out of a monitoring programme	Yes																						
	193																						
Number of isolates available in the laboratory																							
	N	n	<=0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest	
Antimicrobials:																							
Tetracyclines																							
Tetracyclin	193	170				1	7	8	4	4	3	2	12	55	79	22					05	256	
Amphenicols																							
Chloramphenicol	193	59					3	88	33	10	25	14	10	10	10						2	256	
Florfenicol	193	1					5	131	52	4	1										2	64	
Cephalosporins																							
3rd generation cephalosporins	0	0																					
Cefotaxim	193	2	30	124	33	4					2										003	4	
Fluoroquinolones																							
Ciprofloxacin	193	10		152	5	19	4	3			8	2									006	32	
Enrofloxacin	0	0																					
Quinolones																							
Nalidixic acid	193	38				2	93	51	6	1	1	5	10	19	3						05	128	
Sulfonamides																							
Sulfonamide	0	0																					
Trimethoprim																							
Trimethoprim	0	0																					
Aminoglycosides																							
Streptomycin	0	0																					
Gentamicin	193	8			3	70	103	6	3	3	3	1	1	1							025	64	
Neomycin	193	21				2	64	92	2	2	5	8	6	6							025	64	
Kanamycin	0	0																					
Apramycin	173	6					2	16	98	51	1	5									1	32	

	193	131	2	9	31	15	5	2	2	2	2	4	121	1	256
Penicillins															
Amoxicillin															
Ampicillin	0	0													

Table Antimicrobial susceptibility testing of E. coli in food

n = Number of resistant isolates										
	E. coli									
	Meat from pig	Meat from bovine animals		Meat from broilers (Gallus gallus)		Meat from other poultry species		Meat from sheep - fresh		
Isolates out of a monitoring programme		yes						yes		
Number of isolates available in the laboratory		2						4		
Antimicrobials:										
	N	n	N	n	N	n	N	n	N	n
Tetracyclines										
Tetracyclin			2	0					4	1
Amphenicols										
Chloramphenicol			2	0					4	0
Cephalosporins										
Cefotaxim			2	0					4	0
Fluoroquinolones										
Ciprofloxacin			2	0					4	0
Quinolones										
Nalidixic acid			2	0					4	0
Trimethoprim			2	0					4	0
Aminoglycosides										
Streptomycin			2	0					4	1
Gentamicin			2	0					4	0
Kanamycin			2	0					4	0
Penicillins										
Ampicillin			2	0					4	0
Trimethoprim + sulfonamides										
Trimethoprim + Sulfonamide			2	0					4	0
Fully sensitive			2	2					4	3
Resistant to 2 antimicrobials									4	1

Table Breakpoints used for antimicrobial susceptibility testing in Animals

Test Method Used

Disc diffusion

Agar dilution

Broth dilution

E-test

Standards used for testing

Escherichia coli, non-pathogenic	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content microg	Breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest		Susceptible >=	Intermediate	Resistant <=
Amphenicols										
Chloramphenicol				16	2	256				
Florfenicol				16	2	64				
Tetracyclines										
Tetracyclin				8	0.5	256				
Doxycyclin							30			12
Fluoroquinolones										
Ciprofloxacin				2	0.06	32				
Enrofloxacin										
Quinolones										
Nalidixic acid				16	0.5	128				
Trimethoprim							30			10
Sulfonamides										
Sulfonamide							300			12
Aminoglycosides										
Streptomycin				32	2	64	10			11
Gentamicin				8	0.25	64				
Neomycin				8	0.25	64				
Kanamycin										
Amikacin							30			14
Apramycin (1)				16	1	32	40			16
Trimethoprim + sulfonamides										
Trimethoprim + Sulfonamide										
Carbapenems										
Imipenem							10			13
Cephalosporins										
Cefotaxim				0.5	0.03	4				
Cefoxitin							30			14
Ceftazidim							30			14
3rd generation cephalosporins										
Penicillins										
Amoxicillin				16	1	256				
Amoxicillin / Clavulanic acid							2010			13
Ampicillin										

(1) : Tablets (Rosco)

Table Breakpoints used for antimicrobial susceptibility testing in Food

Test Method Used

Disc diffusion

Agar dilution

Broth dilution

E-test

Standards used for testing

NCCLS

M100-S16

M2-A9

Escherichia coli, non-pathogenic	Standard for breakpoint	Breakpoint concentration (microg/ ml)			Range tested concentration (microg/ ml)		Disk content microg	Breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest		Susceptible >=	Intermediate	Resistant <=
Amphenicols										
Chloramphenicol	M100-S16						30	18	13	12
Florfenicol										
Tetracyclines										
Tetracyclin	M100-S16						30	19	15	14
Doxycyclin										
Fluoroquinolones										
Ciprofloxacin	M100-S16						5	21	16	15
Enrofloxacin										
Quinolones										
Nalidixic acid	M100-S16						30	19	14	13
Trimethoprim	M100-S16						5	16	11	10
Sulfonamides										
Sulfonamide										
Aminoglycosides										
Streptomycin	M100-S16						10	15	12	11
Gentamicin	M100-S16						10	15	13	12
Neomycin										
Kanamycin	M100-S16						30	18	14	13
Amikacin										
Apramycin										
Trimethoprim + sulfonamides										
Trimethoprim + Sulfonamide	M100-S16						25	16	11	10
Carbapenems										
Imipenem										
Cephalosporins										
Cefotaxim	M100-S16						30	23	15	14
Cefoxitin										
Ceftazidim										
3rd generation cephalosporins										
Penicillins										
Amoxicillin										
Amoxicillin / Clavulanic acid										
Ampicillin	M100-S16						10	17	14	13

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1. HISTAMINE

4.1.1. General evaluation of the national situation

4.1.2. Histamine in foodstuffs

4.2. ENTEROBACTER SAKAZAKII

4.2.1. General evaluation of the national situation

4.2.2. Enterobacter sakazakii in foodstuffs

4.3. STAPHYLOCOCCAL ENTEROTOXINS

4.3.1. General evaluation of the national situation

4.3.2. Staphylococcal enterotoxins in foodstuffs

5. **FOODBORNE OUTBREAKS**

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

A. Foodborne outbreaks

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

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

In December of 1995 the National Network of Epidemiological Surveillance was created by law.

During 1997 the protocols of statutory notification of diseases were approved and implemented in Spain. In Spain the Autonomous Regions have wide powers with respect to epidemiological surveillance and national decisions are usually taken by consensus.

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

The notification may be carried out using a variety of systems: mail, fax, telephone, e-mail, etc. Presently all the regions (and in many cases levels below) transmit the data by e-mail. A network is being developed for the National Epidemiological Surveillance Network which will permit the flow of data from the local level.

The notification of outbreaks is mandatory and standardised. All the outbreaks must be reported immediately at the regional level. At the national level it is obligatory to report immediately only those outbreaks which, by law, are defined as being “supra-communitary“ (considered to be of national interest) in order to facilitate their rapid control, where as the rest of the outbreaks are reported quarterly. Some regions have set up early warning systems in order to support doctors in reporting and investigating outbreaks. A similar national system is entering into operation.

In 1997 a uniform outbreak reporting format (variables and codification) was developed in all of Spain in accordance with the one recommended by the WHO Programme. The report includes relevant information such as agent, food involved, place of consumption and contributing factors.

The results of the statistical and epidemiological analysis are disseminated in annual reports. In addition they are published in epidemiological bulletins (national, regional and other). The weekly national epidemiological bulletin can be found at: <http://cne.isciii.es/bes/bes.htm>.

In Spain the investigation of outbreaks of any diseases in humans is regulated within the National Epidemiological Surveillance Network.

The responsibility and coordination falls on the epidemiologist charged with the investigation of each outbreak. In foodborne outbreaks this is also the case, but in close coordination with those who have to investigat

Description of the types of outbreaks covered by the reporting:

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

National evaluation of the reported outbreaks in the country:

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

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

Salmonella high

Brucella medium

Campylobacter high

The food implied in its majority was eggs and eggs products

Eggs

Meat

Milk

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

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

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 in humans

Causative agent	General outbreak		Household outbreak	Total Number of persons		Food implicated		Type of evidence for implication of the food		Place where food was consumed	Contributing factors
	1	2		3	4	5	6	7	8		
<i>Brucella</i>		1	3	24	0		cheese (3) Other(1)	3	Epidemiological	household (3)	
<i>Campylobacter</i>		2	2	54	0		meat and products thereof (2)	4			
<i>Escherichia coli</i> , pathogenic - Enteroinvasive <i>E. coli</i> (EIEC)		1		4	0		cheese	1			
<i>Escherichia coli</i> , pathogenic - Enterotoxigenic <i>E. coli</i> (ETEC)		1		97	0		other	1	Epidemiological		
<i>Listeria</i>		1		3	0		Other	1			
<i>Salmonella</i> - Other serotypes		8	2	348	0		meat and products thereof (2), other (5)	7	Laboratory (1), Epidemiological (2)		
<i>Salmonella</i> - <i>S. Enteritidis</i>		100	63	1724	1		Eggs and egg products (91), meat and products thereof (11), cheese(1), others (30)	97	Laboratory (3), Epidemiological (66), Epidemiological and laboratory (3)	household (60)	
<i>Salmonella</i> - <i>S. Typhimurium</i>		14	5	112	0		Eggs and egg products (8), other(2)	16	laboratory (3)		
<i>Salmonella</i> - <i>Salmonella</i> spp.		61	85	1095	0		Eggs and egg products (76), meat and products thereof (11), others (25)	92	Laboratory (4), Epidemiological (46), Epidemiological and laboratory (4)		
<i>Trichinella</i>		2		30	0		meat and products thereof (2)	1	Epidemiological (1)		