European Food Safety Authority

ZOONOSES MONITORING

GREECE

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

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

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

IN 2010

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Greece

Reporting Year:

PREFACE

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

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

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

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

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

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

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

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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

SUSCEPTIBLE ANIMAL POPULATION: (please advise the relevant electronic summary tables on EFSA Web – based zoonoses monitoring system for 2010 Data Collection.)

Source of information: Internal Data Base computerized system of Hellenic Ministry of Agriculture (update 2010). These statistics may vary from other national or E.U. sources of animal population records.

Table Susceptible animal populations

* Only if different than current reporting year

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Cattle (bovine animals)	meat production animals			196206		470141		19940	
	mixed herds					41098		10800	
	dairy cows and heifers			28628		214982		7746	
	calves (under 1 year)			18024					
	- in total			242858		726221		38486	
Deer	farmed - in total	378				25261			
Ducks	- in total	7089		40941		15722			
Gallus gallus (fowl)	parent breeding flocks for egg production line	39				267950			
	broilers	8457		109601336		101388532			
	laying hens	706		2600920		8421970			
	breeding flocks for meat production line - in total	414				2104931			
	- in total	9616		112202256		112183383			
Geese	- in total	789		19368		7782			

Table Susceptible animal populations

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Goats	animals over 1 year					303465			
	milk goats			472892		4066441			
	animals under 1 year			3020148		703815			
	- in total			3493040		5073721		18870	
Pigs	breeding animals					119948			
	fattening pigs			1804625		1997995			
	- in total	5019		1804625		2223552			
Sheep	animals over 1 year					434600			
	milk ewes			856175		9423277			
	animals under 1 year (lambs)			5757744		1698275			
	- in total			6613919		11556152		55015	
Solipeds, domestic	horses - in total					42558		20288	
Turkeys	parent breeding flocks	4				10950			
	meat production flocks	18				58418			

Table Susceptible animal populations

		Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
Animal species	Category of animals	Data	Year*	Data	Year*	Data	Year*	Data	Year*
Turkeys	- in total	22		390433		69368			
Wild boars	farmed - in total					9662			
Birds	- unspecified [1)]	428				565706			
	pet animals	286				23105			
Cats	pet animals					169953		55483	
Dogs	pet animals					234898		62124	
Guinea fowl	- unspecified			1550					
Ostriches	- unspecified	87		874		4411			
Other animals	unspecified	5629		265800		295654			
Pigeons	meat production flocks			178000					
Rabbits	farmed	9683		2126065		313742			
Sheep and goats	- unspecified [2)]					16629873		137068	

Comments:

[1)] Productive unspecifed birds from different species

Table Susceptible animal populations

Comments:

[2)] Total of sheep and goats (all farms together) included mixed farms raised sheep and goats

2. INFORMATION ON SPECIFIC ZOONOSES AND ZOONOTIC AGENTS

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

2.1 SALMONELLOSIS

2.1.1 General evaluation of the national situation

A. General evaluation

History of the disease and/or infection in the country

DISEASE/AGENT: Salmonellosis, Salmonella spp.
Contaminated materials: Feed materials of animal origin, plant origin and Compound feedingstuffs

Surveillance system
The legal provisions in place and relevant requirements (Zoonoses Directive 2003 and Zoonoses Regulation 2160) had significantly improved the effectiveness of the existing monitoring situation and management practices in the field of Salmonella surveillance. New strategies and schemes for monitoring Salmonella zoonotic agents are in force in accordance with Community Salmonella reduction targets approved. Rapid adaptation and compliance on the new mandatory EU Salmonella control and eradication programmes were observed in all EU member states.

Measures in case of positiive findings
According to the current EU Directives and Community Legislation.

In 2010, five (5) Salmonella positive units (from fish meal) were reported from 212 sampling units tested in total under selective sampling and routine monitoring schemes.

In 2009, no Salmonella positive units were reported from 232 samples tested in total under selective sampling and routine monitoring schemes.

The method ISO 6579 (2002) is used for the detection and isolation of Salmonella serovars.

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

DISEASE/AGENT: Salmonellosis, Salmonella Serovars
INFECTED SPECIES: Poultry breeding flocks- Callus gallus

Susceptible population
Parent breeding stock for egg and meat production line is estimated around 2.372.881 birds of 355 breeding flocks (2010 national zoonoses statistics).

Surveillance system
From the past (Historical data), according to the Annex III of the Dir. 92/117, a Salmonella control program has been carried out since 1998. In 2009, the Salmonella national control programme in breeding flocks of Gallus gallus has been implemented and approved (co- financed) by European Commission. The programme was supervised by the Hellenic central veterinary competent authorities and was in line with the uniform EU guidelines and rules approved by the Commission. The results were collected, analyzed and evaluated by the Commission, EFSA and Member States in accordance with the Community pre-

defined targets towards the reduction of Salmonella prevalence in Breeding flocks of Gallus gallus (fowl).

Method used:
The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars.

The Salmonella serotyping was conducted in the National Reference Veterinary Laboratory (NRVLS) for Salmonellosis in animals (located in Chalkida – Prefecture of Evia) by using the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur) .

Measures in case of positive findings
Slaughter of infected flocks, restrictions of placing hatching eggs to
the hatchery for as long as the disease exists and all the relevant control measures were taken based on EU Legislation and requirements in force.

Epidemiological and statistical report

The reported Salmonella Serovars from adult poultry breeders, isolated and identified during the year 2010 by the National Reference Laboratory were: S. Enteritidis (n= 5) ,S. Derby (n= 2), S.enterica sub salamae (n=1), S. Livingstone(n= 1), S. Hadar (n= 2), S. Tennessee (n=2) , S. Anatum (n=1) and S. Anatum (n=1).

The reported Salmonella Serovars from adult poultry breeders, isolated and identified during the year 2009 by the National Reference Laboratory were: S. Enteritidis (n= 5) , S. Typhimurium (n= 1), S. Blockley (n= 1) , S. Livingstone(n= 6) , S. Hadar (n= 13), S.Enterica (n= 1) , S. Umbilo (n= 1) , S.enterica sub enterica 6,7:d unspecified (n= 1).

Note: n = number of positive flocks

DISEASE/AGENT: Salmonellosis / Salmonella serovars
INFECTED SPECIES: Laying Hens and Broilers of Gallus, gallus (fowl)

Surveillance system
In 2010, Salmonella control and eradication EU- programmes in Laying hens and broilers have been implemented in the country based on suspected and objective samples submitted into the laboratories under the official investigation in 2010. Under the framework of the programme industry sampling was carried out as well.

Method used
The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars in Laying hens and other poultry.
The Salmonella serotyping was performed by using the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur) .

Fifty two (52) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Laying hens during the year 2010. The most 5 frequent Salmonella reported serovars in Layin hens at production stage is presented below:

1.S.Enteritidis (n= 6)

2.S. Typhimurium (n= 4)
3.S.Infantis (n= 9)
4.S. Branderup (n= 6)
5.S.Corvallis (n = 7)

The remaining Serovars from positive laying flocks can be analytically retrieved by the Web Reporting System

Forty one (41) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Laying hens during the year 2009. Distribution for the most 6 frequent Salmonella serovars in Layin hens – production stage is given below:

1. S.Enteritidis (n= 8)
2. S. Typhimurium (n= 3)
3. S.Corvalis (n = 4)
4. S.Newport (n=3)
5. S. Heidelberg (n= 2)
6. S.Branderup (n = 2)

Note: n = number of Salmonella positive flocks

Twenty eight (28) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Broilers during the year 2010. Distribution for the most 5 frequent Salmonella serovars in Broilers – production perios is given below:

1.S. Hadar (n= 5)
2.S. Thompson (n=5)
3. S. Tennesse (n= 3)
4.S.Infantis (n= 2)
5.S. Bredeney (n=2)

DISEASE/AGENT: Salmonellosis/ Salmonella serovars
INFECTED SPECIES: In other poultry (or other birds) and other Animals (non poultry)

Surveillance system
No specific and systematic monitoring control program in place
Data are based on clinical samples submitted to the laboratories.

Method used
The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars in other animals.
The Salmonella serotyping was performed by the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur)

In 2010, the reported Salmonella serovars derived from 92 tested sampling units (poultry and other animals) were: S. Typhimurium (n= 7) and Salmonella spp – unspecified (n= 6).

Recent actions taken to control the zoonoses

EU LEGISLATION FOR CONTROL SALMONELLA PROGRAMMES IN POYLTRY
ZOONOSES DIRECTIVE
HYGIENE PACKAGE

Additional information

DISEASE/AGENT: Salmonella/ Salmonella serovars
TARGET OF MONITORING: Contaminated Food

Surveillance system
Routine examination and selective official sampling at retail level, processing plan and slaughterhouse carried out based on National and Community legislation.

Method used
The ISO 6579 (2002) is used for the detection of Salmonella in food.
The Salmonella serotyping was performed by the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur)

Summary National Report (Reporting Year: 2010). Official and selective sampling – Routine monitoring

1. Broiler meat and products thereof (all categories)
Samples tested: 376
Samples positive: 14
Reported serovars : S. Thompson (n=5), S.Livingstone (n=6) and S. Hadar (n=3)

2. Pig meat and products thereof (all categories)
Samples tested: 546
Samples positive: 54
Reported serovars : S. Enteritidis (n=1), S. Typhimurium (n=5), S. Madelia (n=2), S. Rissen (n=4), S.Infantis (n=3), S. Bredeney (n=5), S. Derby, (n=24), S. Enterica (n=10).

3. Bovine meat and products thereof (all categories)
Samples tested: 358
Samples positive: 1
Reported serovars : S. Thompson (n=1)

4. Meat from other animals and products thereof (all categories)
Samples tested: 21
Samples positive: 0

5. Milk and milk products (all categories)
Samples tested: 797
Samples positive: 0

6. Eggs and egg products(all categories)
Samples tested: 5
Samples positive: 0

7. Fish and fish products (all categories)
Samples tested: 174
Samples positive: 4
Reported serovars : S.Enteritidis (n=1), S.Typhimurium (n=1), S. Paratyphi (n=1), S. Enterica (n=1)

8. Other Food (all categories)
Samples tested: 80
Samples positive: 2
Reported serovars : S.Salford (n=1), S.Hvittingfoses (n=1)

2010 Overall Salmonella reported Food Prevalence (for all food categories) = 3,17 % (75/2367*100)

2.1.2 Salmonellosis in humans

A. Salmonellosis in humans

Relevance as zoonotic disease

DISEASE/AGENT: Salmonella
AFFECTED SPECIES: Humans

Surveillance system
Mandatory reporting of foodborne infections and intoxications with laboratory confirmation. Hospitalized cases are the main reporting source for further epidemiological investigation. Notification is required within 24 hours after the identification of a case.

Epidemiological history and evaluation

Results of the 2006 zoonoses monitoring period.
A total of 984 human Salmonellosis cases were reported to the competent authorities (incidence per 100.000 persons = 9). The reported cases were classified as autochone (n=749), Imported (n=131) and unknown (n=104) cases respectively. The 2006 annual incidence rate reported significantly lower compared to 2004 for Salmonellosis in humans.

History
In 2004 , 1493 (incidence: 13,70 per 100.000 inhabitants) cases of salmonella were reported including the species : S. enteritidis (309), S.typhimurium (20), S. Adaustua (2), S. Anatum (1), S.enteritica- arizonae (29), S. blockley (1), S. infantis (1), S. paratyphi (2), S.Typhi (6) and the remaining Salmonella spp. (1121).

Historically, the officially reported Salmonella cases in humans the reporting years 1998, 1999 and 2000 were 918 , 221 and 206 respectively. For the year 2001, 284 human cases were reported. Human Salmonellosis cases in 2004 caused by S. Enteritidis, S, Typhimurium and other Salmonella serotypes were 1493 in total compared to 837 (2003) and 460 (2002) in previous years. According to these data an increase of Salmonella cases has been observed during 2004 in man, but in order to epidemiologically evaluate the real trends of Salmonella incidence, we must have in mind the significant underreporting practice which leads to underestimate figures providing non representative salmonella statistics. Moreover it is important to emphasize that the factor underlined above (underestimation) is considered constant for each reporting year.

Results of monitoring
Human Salmonella Data are presented in the relevant tables of the EFSA web based electronic system for zoonoses monitoring.

Source of human infection
Mainly from the consumption of infected, contaminated and croos- contaminated food and poultry meat and products there of.

Additional information

In 2005, all Salmonella serovars derived from the Antimicrobial Resistance monitoring system are presented in the following summary list with the number of all Salmonella isolates that were serotyped.

List of isolates by serotype

Salmonella serovars	Number of isolates
Salmonella Enteritidis	732
Salmonella Typhimurium	120
Salmonella Oranienburg	24
Salmonella Blockley	17
Salmonella enterica ss. salamae	15
Salmonella Kottbus	13
Salmonella Bovismorbificans	9
Salmonella Typhi	9
Salmonella Bredeney	7
Salmonella Agona	5
Salmonella Muenchen	5
Salmonella Muenster	5
Salmonella Thompson	5
Salmonella Virchow	4
Salmonella Derby	3
Salmonella Infantis	3
Salmonella Kedougou	3
Salmonella Mbandaka	3
Salmonella Newport	3
Salmonella Paratyphi B	3
Salmonella enterica ss. diarizonae	2
Salmonella Hadar	2
Salmonella Anatum	1
Salmonella Bareilly	1
Salmonella Brandenburg	1
Salmonella Cerro	1
Salmonella enterica ss. houtenae	1
Salmonella Goldcoast	1
Salmonella Kentucky	1
Salmonella Litchfield	1
Salmonella Lomita	1
Salmonella Montevideo	1
Salmonella Paratyphi A	1
Salmonella Poona	1
Salmonella Rissen	1
Salmonella Tennessee	1
All	1006

2.1.3 Salmonella in foodstuffs

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bredeney	S. Derby	S. Hadar
Meat from broilers (Gallus gallus) - fresh - at processing plant	NVLabs	Single	25 g	12	0						
Meat from broilers (Gallus gallus) - fresh - at retail	NVLabs	Single	25 g	28	0						
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant	NVLabs	Single	25 g	116	8						
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant	NVLabs	Single	25 g	20	0						
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail	NVLabs	Single	25 g	1	0						
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at processing plant	NVLabs	Single	25 g	160	2						
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail	NVLabs	Single	25 g	39	4						3
Meat from turkey - meat products - raw but intended to be eaten cooked - at retail	NVLabs	Single	25 g	10	0						

Table Salmonella in poultry meat and products thereof

	S. Infantis	S. Livingstone	S. Madelia	S. Rissen	S. Thompson	S. enterica subsp. enterica
Meat from broilers (Gallus gallus) - fresh - at processing plant						
Meat from broilers (Gallus gallus) - fresh - at retail						
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant		5			3	
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant						
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail						
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at processing plant					2	
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail		1				
Meat from turkey - meat products - raw but intended to be eaten cooked - at retail						

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Cheeses made from cows' milk - at retail		---						
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail	NVLabs	Single	25 gr	7	0			
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at retail	NVLabs	Single	25 g	12	0			
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant	NVLabs	Single	25 g	20	0			
Dairy products (excluding cheeses) - butter - made from raw or low heat-treated milk - at retail	NVL	Single	25 g	1	0			
Dairy products (excluding cheeses) - ice-cream - at retail	NVL	Single	25 g	650	0			
Dairy products (excluding cheeses) - milk powder and whey powder - at retail	NVL	Single	25 g	5	0			
Milk, cows' - pasteurised milk - at retail	NVL	Single	25 gr	2	0			
Cheeses made from sheep's milk - hard - made from pasteurised milk - at processing plant	NVLabs	Single	25 g	20	0			
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at processing plant	NVLabs	Single	25 g	5	0			
Dairy products (excluding cheeses) - at retail	NVLabs	Single	25 g	48	0			
Dairy products (excluding cheeses) - yoghurt - at retail	NVLabs	Single	25 g	27	0			
Milk, cows' - pasteurised milk	NVLabs	Single	25 g	2	0			

Table Salmonella in milk and dairy products

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Hvittingfoss	S. Paratyphi	S. Salford
Crustaceans - unspecified - raw - at processing plant	NVL	Single	25 g	37	2	1	1				
Egg products - at processing plant	NVL	Batch	25 g	5	0						
Egg products - at retail		---									
Infant formula - dried - intended for infants below 6 months	NVL	Single	25 g	30	0						
Live bivalve molluscs	NVL	Single	25 g	101	2					1	
Molluscan shellfish - raw - at retail	NVL	Single	25 g	5	0						
Bakery products - cakes	NVL	Single	25 g	25	0						
Fish - gravad /slightly salted	NVL	Single	25 g	8	0						
Fish - raw	NVL	Single	25 g	5	0						
Frogs leg - at retail	NVL	Batch	25 g	2	2				1	1	
Other food - at retail	NVL	Single	25 g	11	0						
Other processed food products and prepared dishes - pasta - at retail	NVL	Single	25 g	5	0						
Other processed food products and prepared dishes - sandwiches	NVL	Single	25 g	5	0						
Snails - at processing plant	NVL	Batch	25 g	2	0						

Table Salmonella in other food

	S. enterica subsp. enterica
Crustaceans - unspecified - raw - at processing plant	
Egg products - at processing plant	
Egg products - at retail	
Infant formula - dried - intended for infants below 6 months	
Live bivalve molluscs	1
Molluscan shellfish - raw - at retail	
Bakery products - cakes	
Fish - gravad /slightly salted	
Fish - raw	
Frogs leg - at retail	
Other food - at retail	
Other processed food products and prepared dishes - pasta - at retail	
Other processed food products and prepared dishes - sandwiches	
Snails - at processing plant	

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bredeney	S. Derby	S. Infantis
Meat from bovine animals - fresh - at retail	NVLabs	Single	25 g	2	0						
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant	NVLabs	Single	10 g	67	0						
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail	NVLabs	Single	10 g	20	0						
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail	NVLabs	Single	25 g	12	0						
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant	NVLabs	Single	10 g	28	1						
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail	NVLabs	Single	10 g	11	0						
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant	NVLabs	Single	10 g	130	0						
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail	NVLabs	Single	10 g	88	0						
Meat from pig - fresh - at processing plant		Single	25 g	5	0						
Meat from pig - fresh - at retail	NVLabs	Single	10 g	4	0						
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant	NVLabs	Single	10 g	239	30				2	16	3
Meat from pig - meat preparation - intended to be eaten cooked - at retail	NVLabs	Single	10 g	30	0						

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Bredeney	S. Derby	S. Infantis
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	NVLabs	Single	25 g	144	16				3	8	
Meat from pig - meat products - cooked, ready-to-eat - at retail	NVLabs	Single	10 g	28	0						
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant	NVLabs	Single	25 g	5	0						
Meat from pig - meat products - raw but intended to be eaten cooked - at retail	NVLabs	Single	10 g	49	3	1					
Meat from pig - minced meat - intended to be eaten cooked - at processing plant	NVLabs	Single	10 g	22	5		5				
Meat from pig - minced meat - intended to be eaten cooked - at retail	NVLabs	Single	10 g	20	0						
Meat from sheep - fresh - at processing plant	NVLabs	Batch	10 g	6	0						
Meat, mixed meat - minced meat - intended to be eaten cooked [1)]		Single	10 g	15	0						

	S. Madelia	S. Rissen	S. Thompson	S. enterica subsp. enterica
Meat from bovine animals - fresh - at retail				
Meat from bovine animals - meat preparation - intended to be eaten cooked - at processing plant				

Table Salmonella in red meat and products thereof

	S. Madelia	S. Rissen	S. Thompson	S. enterica subsp. enterica
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail				
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail				
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant			1	
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail				
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant				
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail				
Meat from pig - fresh - at processing plant				
Meat from pig - fresh - at retail				
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant		4		5
Meat from pig - meat preparation - intended to be eaten cooked - at retail				
Meat from pig - meat products - cooked, ready-to-eat - at processing plant				5
Meat from pig - meat products - cooked, ready-to-eat - at retail				

Table Salmonella in red meat and products thereof

	S. Madelia	S. Rissen	S. Thompson	S. enterica subsp. enterica
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant				
Meat from pig - meat products - raw but intended to be eaten cooked - at retail	2			
Meat from pig - minced meat - intended to be eaten cooked - at processing plant				
Meat from pig - minced meat - intended to be eaten cooked - at retail				
Meat from sheep - fresh - at processing plant				
Meat, mixed meat - minced meat - intended to be eaten cooked [1)]				

Comments:

[1)] Meet frim oig and bovine

2.1.4 Salmonella in animals

A. Salmonella spp. in Gallus Gallus - breeding flocks

Measures in case of the positive findings or single cases

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

Measures in case of positive findings:
Slaughter of infected flocks, restrictions of placing hatching eggs to
the hatchery for as long as the disease exists and all the relevant control measures were taken based on EU Legislation and requirements in force.

Notification system in place

DISEASE/AGENT: Salmonellosis, Salmonella Serovars
INFECTED SPECIES: Poultry breeding flocks- Callus gallus

Susceptible population
Parent breeding stock for egg and meat production line is estimated around 2.196.476 birds / 366 breeding flocks (2009 national zoonoses statistics) raised in 91 holdings.

Surveillance system
From the past (Historical data), according to the Annex III of the Dir. 92/117, a Salmonella control program has been carried out since 1998. In 2009, the Salmonella national control programme in breeding flocks of Gallus gallus has been implemented and approved (co- financed) by European Commission. The programme was supervised by the Hellenic central veterinary competent authorities and was in line with the uniform EU guidelines and rules approved by the Commission. The results were collected, analyzed and evaluated by the Commission, EFSA and Member States in accordance with the Community pre-defined targets towards the reduction of Salmonella prevalence in Breeding flocks of Gallus gallus (fowl).

Method used:
The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars.

The Salmonella serotyping was conducted in the National Reference Veterinary Laboratory (NRVLS) for Salmonellosis in animals (located in Chalkida – Prefecture of Evia) by using the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur) .

Results of the investigation

Epidemiological and statistical report

The reported Salmonella Serovars from adult poultry breeders, isolated and identified during the year 2009 by the National Reference Laboratory were: S. Enteritidis (n= 5) , S. Typhimurium (n= 1), S. Blockley (n= 1) , S. Livingstone(n= 6) , S. Hadar (n= 13), S.Enterica (n= 1) , S. Umbilo (n= 1) , S.enterica sub senterica 6,7:d unspecified (n= 1).

Note: n = number of positive flocks

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

Notification system in place

Surveillance system

In 2009, Salmonella control EU- programmes in Laying hens and broilers have been implemented in the country based on suspected and objective samples submitted into the laboratories under the official investigation in 2009.

Method used

The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars in Laying hens and other poultry.

The Salmonella serotyping was performed by using the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur) .

Results of the investigation

Forty one (41) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Laying hens during the year 2009. Distribution for the most 6 frequent Salmonella serovars in Layin hens – production stage is given below:

1. S.Enteritidis (n= 8)
2. S. Typhimurium (n= 3)
3. S.Corvallis (n = 4)
4. S.Newport (n=3)
5. S. Heidelberg (n= 2)
6. S.Branderupa (n = 2)

Note: n = number of Salmonella positive flocks

Nineteen (19) Salmonella positive flocks isolated, serotyped and reported by the National Reference Laboratory for Salmonellosis in Greece (NRLS, Located in Chalkida, Evia prefecture) under the national control programme for Broilers during the year 2009. Distribution for the most 5 frequent Salmonella serovars in Broilers – production perios is given below:

1. S. Hadar (n= 7)
2. S. Tennesse (n= 2)
3. S. Senftanbe (n = 2)
4. S. Miami (n=2)
5. S.Tennes (n= 2)

Note: n = number of positive flocks

C. Salmonella spp. in bovine animals

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

Epidemiological history

In the year 2007 the reported salmonella serovars were associated with the results from an EU Pig baseline study. The study was carried out in order to identify the real and observed Salmonella prevalence in pigs in line with Community Legislation and relevant targets to reduce the prevalence over time. The majority of positive Salmonella strains were pig strains. The predominant reported serovars were: S. Typhimurium (n= 18), Salmonella spp – unspecified (n= 17), S. Derby (n=9) , , S. Enterica.sub.enterica (n= 7), S. Thomson (n=6) and S. Bredeney (n= 5) .

In a prospective study during 1985-1990, 1184 strains of Salmonella spp have been isolated from animals. The predominant serotype was S.Gallinarum. For 2002 and 2003 S. Typhimurium and S. Agona respectively had been exclusively reported based on the small sample frame tested. In the year 2004 the reported salmonella serovars were S. Typhimurium (Goats, rabbits and turtles), S. Dublin (cattle), S. Corvallis (Cattle), S. Litchfield (Turtles)and Salmmonella spp- non typed (Turtles).

Additional information

BOVINE ANIMALS AND OTHER ANIMALS (NON POULTRY)
DISEASE/AGENT: Salmonellosis/ Salmonella serovars
INFECTED SPECIES: Animals (non poultry)

Surveillance system

Not specific and systematic monitoring control program in force for the other (non poultry) animals.
Data are based on the samples incidentally submitted to the laboratories.

Method used

The methods ISO 6579 (2002) and ISO 6579 Amendment 1: Annex D (2007) were used for the detection and isolation of Salmonella serovars in other animals.
The Salmonella serotyping was performed by the Agglutination technique: Antigenic formulas of the Salmonella Serovars (9th edition- 2007- WHO Institute Pasteur)

In 2009, the reported Salmonella serovars derived from 256 tested units (animals) were: Salmonella spp – unspecified (n= 2) and S. Dublin (n= 1).

In 2008, the reported Salmonella serovars were: S. Bredeney (n= 2), Salmonella spp – unspecified (n= 2),
S. Enterica.subsp.enterica (n= 1).

Note: n = number of positive flocks

Table Salmonella in breeding flocks of Gallus gallus

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult - at farm - animal sample	292	NVA (National Veterinary authorities	Flock	292	10		2				
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks - at farm - animal sample	120	NVA	Flock	120	0						
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period - at farm - animal sample	122	NVA	Flock	5	5	5					
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult - at farm - animal sample	31	NVA	Flock	31	0						
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks - at farm - animal sample	7	NVA	Flock	7	0						
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - at farm - animal sample	8	NVA	Flock	8	0						

	Salmonella spp., unspecified	Other serovars	S. Anatum	S. Derby	S. Livingstone	S. Newport	S. Tennessee
Gallus gallus (fowl) - parent breeding flocks for broiler production line - adult - at farm - animal sample		1	1	2	1	1	2

Table Salmonella in breeding flocks of Gallus gallus

	Salmonella spp., unspecified	Other serovars	S. Anatum	S. Derby	S. Livingstone	S. Newport	S. Tennessee
Gallus gallus (fowl) - parent breeding flocks for broiler production line - day-old chicks - at farm - animal sample							
Gallus gallus (fowl) - parent breeding flocks for broiler production line - during rearing period - at farm - animal sample							
Gallus gallus (fowl) - parent breeding flocks for egg production line - adult - at farm - animal sample							
Gallus gallus (fowl) - parent breeding flocks for egg production line - day-old chicks - at farm - animal sample							
Gallus gallus (fowl) - parent breeding flocks for egg production line - during rearing period - at farm - animal sample							

Footnote:

Salmonella Salmonae

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Canary - pet animals - at farm - animal sample - organ/tissue - Clinical investigations	NVLabs	Flock	6	6		6	
Pigeons - at farm - animal sample - organ/tissue - Clinical investigations	NVLabs	Flock	1	1		1	

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Pigs [1)]	NVLabs	Animal	2	0				
Buffalos - wild [2)]	NVLabs	Animal	1	0				
Cattle (bovine animals) - adult cattle over 2 years - at farm - animal sample - organ/tissue - Clinical investigations	NVLabs	Animal	7	1				1
Cattle (bovine animals) - calves (under 1 year) - at farm - animal sample - organ/tissue - Clinical investigations	NVLabs	Animal	16	2				2
Deer [3)]	NVLabs	Animal	1	0				
Rabbits - farmed - at farm [4)]	NVLabs	Animal	1	0				
Rats - wild [5)]	NVLabs	Animal	19	0				
Sheep and goats - at farm - animal sample - foetus/stillbirth - Clinical investigations	NVLabs	Animal	38	3				3

Comments:

[1)] clinical cases

[2)] clinical case

[3)] clinical case

[4)] clinical case

[5)] Pest Control programme

Table Salmonella in other animals

Footnote:

Targeted sampling, ISO 6579/200.

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Agona	S. Braenderup
Gallus gallus (fowl) - laying hens - day-old chicks	92	NVA	Flock	28	0						
Gallus gallus (fowl) - laying hens - during rearing period	137	NVA	Flock	66	0						
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	554	NVA & industry	Flock	554	52	6	4				6
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry [1)]	554	industry	Flock	554	3						
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling [2)]	554	NVA	Flock	209	49	6	4				6
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - suspect sampling [3)]	554	NVA	Flock	11	6	3	3				
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling	8457	NVA	Flock	8319	28	1	1			1	2
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes - official and industry sampling	4	NVA	Flock	4	0						
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official and industry sampling	18	NVA	Flock	14	1						

Table Salmonella in other poultry

	Number of existing flocks	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Agona	S. Braenderup
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - industry sampling	8457	industry	Flock	8208	5						
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official sampling - objective sampling	8457	NVA	Flock	111	23	1	1			1	
Turkeys - breeding flocks, unspecified - at farm - Control and eradication programmes - industry sampling	4	industry	Flock	2	0						
Turkeys - breeding flocks, unspecified - at farm - Control and eradication programmes - official sampling - objective sampling	4	NVA	Flock	2	0						
Turkeys - fattening flocks - before slaughter - at farm	18	industry	Flock	12	0						
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official sampling - objective sampling	18	NVA	Flock	14	1						

	S. Bredeney	S. Cerro	S. Corvallis	S. Cubana	S. Escanaba	S. Gloucester	S. Haardt	S. Hadar	S. Havana	S. Heidelberg	S. Idikan
Gallus gallus (fowl) - laying hens - day-old chicks											
Gallus gallus (fowl) - laying hens - during rearing period											

Table Salmonella in other poultry

	S. Bredeney	S. Cerro	S. Corvallis	S. Cubana	S. Escanaba	S. Gloucester	S. Haardt	S. Hadar	S. Havana	S. Heidelberg	S. Idikan
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling		1	7		1	1	1		1	1	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry [1)]							1				
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling [2)]		1	7		1	1	1		1	1	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - suspect sampling [3)]											
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling				1				5			
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes - official and industry sampling											
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official and industry sampling											
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - industry sampling								1			
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official sampling - objective sampling	2			1				4			

Table Salmonella in other poultry

	S. Bredeney	S. Cerro	S. Corvallis	S. Cubana	S. Escanaba	S. Gloucester	S. Haardt	S. Hadar	S. Havana	S. Heidelberg	S. Idikan
Turkeys - breeding flocks, unspecified - at farm - Control and eradication programmes - industry sampling											
Turkeys - breeding flocks, unspecified - at farm - Control and eradication programmes - official sampling - objective sampling											
Turkeys - fattening flocks - before slaughter - at farm											
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official sampling - objective sampling											

	S. Infantis	S. Inglis	S. Isangi	S. Kedougou	S. Lexington	S. Livingstone	S. Macclesfield	S. Marburg	S. Mbandaka	S. Mishmarhaemek	S. Montevideo
Gallus gallus (fowl) - laying hens - day-old chicks											
Gallus gallus (fowl) - laying hens - during rearing period											
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	9	1	1	1	1			1	1	1	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry [1)]	2	1							1		

Table Salmonella in other poultry

	S. Infantis	S. Inglis	S. Isangi	S. Kedougou	S. Lexington	S. Livingstone	S. Macclesfield	S. Marburg	S. Mbandaka	S. Mishmarhaemek	S. Montevideo
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling [2)]	7		1	1	1			1		1	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - suspect sampling [3)]											
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling	2					1	2		1		
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes - official and industry sampling											
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official and industry sampling											
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - industry sampling						1	1				
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official sampling - objective sampling	2						2		1		
Turkeys - breeding flocks, unspecified - at farm - Control and eradication programmes - industry sampling											
Turkeys - breeding flocks, unspecified - at farm - Control and eradication programmes - official sampling - objective sampling											

Table Salmonella in other poultry

	S. Infantis	S. Inglis	S. Isangi	S. Kedougou	S. Lexington	S. Livingstone	S. Macclesfield	S. Marburg	S. Mbandaka	S. Mishmarhaemek	S. Montevideo
Turkeys - fattening flocks - before slaughter - at farm											
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official sampling - objective sampling											

	S. Muenchen	S. Ndolo	S. Newport	S. Oranienburg	S. Rissen	S. Schwarzengrund	S. Tennessee	S. Thompson	S. Yoruba	S. enterica subsp. enterica	S. enterica subsp. salamae
Gallus gallus (fowl) - laying hens - day-old chicks											
Gallus gallus (fowl) - laying hens - during rearing period											
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official and industry sampling	2		1	3	1	2	2	1	2	1	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - sampling by industry [1)]						2			2		
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - objective sampling [2)]	2		1	3	1	2	2	1	2	1	1
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes - official sampling - suspect sampling [3)]											

Table Salmonella in other poultry

	S. Muenchen	S. Ndolo	S. Newport	S. Oranienburg	S. Rissen	S. Schwarzengrund	S. Tennessee	S. Thompson	S. Yoruba	S. enterica subsp. enterica	S. enterica subsp. salamae
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official and industry sampling		1					3	5		1	1
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes - official and industry sampling											
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official and industry sampling			1								
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - industry sampling							2				
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes - official sampling - objective sampling							1	5		1	1
Turkeys - breeding flocks, unspecified - at farm - Control and eradication programmes - industry sampling											
Turkeys - breeding flocks, unspecified - at farm - Control and eradication programmes - official sampling - objective sampling											
Turkeys - fattening flocks - before slaughter - at farm											
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes - official sampling - objective sampling			1								

Comments:

Table Salmonella in other poultry

Comments:

[1)] 3 positive flocks infected with 9 serovars

[2)] Positive flocks were found with more than one serovar

[3)] Confirmatory official tests

Footnote:

The Sum of Serovars is greater of the 52 positive units because 7 positive laying hens flocks were found with more than one (1) Salmonella Serovar (mixed infected flocks)

2.1.5 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Pet food - dog snacks (pig ears, chewing bones) - at processing plant - domestic production - Monitoring - official sampling - convenience sampling	NVLabs	Single	25 g	45	0			

Footnote:

Routine monitoring

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of land animal origin - bone meal [1)]	NVLabs	Single	25 g	70	0			
Feed material of marine animal origin - fish meal	NVLabs	Single	25 g	55	5			5
Bio-proteins - at processing plant	NVLabs	Single	25 g	40	0			

Comments:

[1)] at farm, routine monitoring

Footnote:

Official control, ISO 6579/2002

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Feed material of cereal grain origin - maize [1)]	NVLabs	Single	25 g	2	0			

Comments:

[1)] at farm

Footnote:

Official control, ISO 6579/2002

2.1.6 Salmonella serovars and phagetype distribution

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

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory							1		95				
Number of isolates serotyped	0	0	0	0	0	0	1	0	95	0	0	0	0
Number of isolates per serovar													
S. 1,4,[5],12:i:-									1				
S. Braenderup									6				
S. Bredeney									2				
S. Corvallis									10				
S. Cubana									2				
S. Derby							1						

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory							1		95				
Number of isolates serotyped	0	0	0	0	0	0	1	0	95	0	0	0	0
Number of isolates per serovar													
S. Enteritidis									22				
S. Escanaba									1				
S. Haardt									1				
S. Hadar									1				
S. II 6,7:z29:z42									1				
S. Idikan									1				
S. Infantis									6				
S. Kedougou									1				
S. Lexington									2				
S. Livingstone									3				
S. Marburg									1				

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory							1		95				
Number of isolates serotyped	0	0	0	0	0	0	1	0	95	0	0	0	0
Number of isolates per serovar													
S. Mbandaka									3				
S. Mishmarhaemek									3				
S. Muenchen									1				
S. Newport									3				
S. Rissen									1				
S. Schwarzengrund									2				
S. Tennessee									6				
S. Thompson									2				
S. Typhimurium									9				
S. Yoruba									2				
S. enterica subsp. enterica									1				

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
Sources of isolates	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Number of isolates in the laboratory							1		95				
Number of isolates serotyped	0	0	0	0	0	0	1	0	95	0	0	0	0
Number of isolates per serovar													
S. enterica subsp. salamae									1				

Serovar	Other poultry			Goats			
Sources of isolates	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory						1	
Number of isolates serotyped	0	0	0	0	0	1	0
Number of isolates per serovar							
S. 1,4,[5],12:i:-							
S. Braenderup							
S. Bredeney							
S. Corvallis							
S. Cubana							

Table Salmonella serovars in animals

Serovar / Sources of isolates	Other poultry			Goats			
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory						1	
Number of isolates serotyped	0	0	0	0	0	1	0
Number of isolates per serovar							
S. Derby							
S. Enteritidis							
S. Escanaba							
S. Haardt							
S. Hadar							
S. II 6,7:z29:z42							
S. Idikan							
S. Infantis							
S. Kedougou							
S. Lexington							
S. Livingstone							

Table Salmonella serovars in animals

Serovar / Sources of isolates	Other poultry			Goats			
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory						1	
Number of isolates serotyped	0	0	0	0	0	1	0
Number of isolates per serovar							
S. Marburg							
S. Mbandaka							
S. Mishmarhaemek							
S. Muenchen							
S. Newport							
S. Rissen							
S. Schwarzengrund							
S. Tennessee							
S. Thompson							
S. Typhimurium						1	
S. Yoruba							

Table Salmonella serovars in animals

Serovar / Sources of isolates	Other poultry			Goats			
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory						1	
Number of isolates serotyped	0	0	0	0	0	1	0
Number of isolates per serovar							
S. enterica subsp. enterica							
S. enterica subsp. salamae							

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin	
Sources of isolates	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
Number of isolates in the laboratory			14		8					
Number of isolates serotyped	0	0	14	0	5	0	0	0	0	0
Number of isolates per serovar										
S. Derby			1							
S. Livingstone					5					
S. Rissen			8							
S. Typhimurium			5							

2.1.7 Antimicrobial resistance in Salmonella isolates

A. Antimicrobial resistance in Salmonella in poultry

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

ANTIMICROBIAL RESISTANCE

No official national program is in force. Efforts commenced to develop a systematic reporting system of antimicrobial resistance in various animal species. The results are limited and the only available information is mainly provided from the National Reference Laboratory for Salmonella. Relevant reports for Antimicrobial susceptibility testing in Animals (for both quantative and qualitative data) have been increased year per year at national level, especially for Salmonella agents.

Additional information

The overall monitoring of antimicrobial resistance , especially for the Salmonella isolates in Poultry was carried out using two laboratory methods.
1. Performance Standards for Antmicrobial Disk Susceptibility Tests-Ninth Edition; Approved Standard January 2006 CLSI (M2-A9,Vol.26.No1 and Eighteenth Information Supplement CLSI (M100-S18, Vol.28 No 1)
2. Broth Microdilution Method (MIC)- Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria that grow Aerobically; Approved Standard January 2009 CLSI (M07-A8, Vol. 29 No2) and Standard for breakpoint from EFSA suggestions.

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

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. enterica subsp. enterica	
Isolates out of a monitoring program (yes/no)							no	
Number of isolates available in the laboratory							1	
Antimicrobials:	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol							1	0
Fluoroquinolones - Ciprofloxacin							1	0
Quinolones - Nalidixic acid							1	0
Trimethoprim							1	1
Sulphonamides - Sulfonamide							1	1
Aminoglycosides - Streptomycin							1	1
Aminoglycosides - Gentamicin							1	1
Penicillins - Ampicillin							1	0
Tetracyclines - Tetracycline							1	1
Resistant to >4 antimicrobials							1	1
Cephalosporins - Cefotaxim							1	0

Table Antimicrobial susceptibility testing of Salmonella in meat from bovine animals

Salmonella	Salmonella spp.		S. 1,4,[5],12:i:-		S. Bredeney		S. Derby		S. Enteritidis		S. Madelia		S. Thompson	
Isolates out of a monitoring program (yes/no)	yes		yes		yes		yes		yes		yes		yes	
Number of isolates available in the laboratory			2		2		14		1		2		2	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol			1	0	1	0	6	0	1	0	1	0	2	0
Fluoroquinolones - Ciprofloxacin			1	0	1	0	6	0	1	1	1	0	2	0
Quinolones - Nalidixic acid			1	0	1	0	6	0	1	1	1	0	2	0
Trimethoprim			1	0	1	0	6	0	1	0	1	0	2	0
Sulphonamides - Sulfonamide			1	1	1	1	6	6			1	0	2	0
Aminoglycosides - Streptomycin			1	1	1	1	6	6	1	0	1	0	2	0
Aminoglycosides - Gentamicin			1	0	1	0	6	0	1	0	1	0	2	0
Penicillins - Ampicillin			1	0	1	0	6	0	1	0	1	0	2	0
Tetracyclines - Tetracycline			1	1	1	0	6	6	1	0	1	0	2	0
Fully sensitive											1	1	2	2
Resistant to 2 antimicrobials									1	1				
Resistant to 3 antimicrobials					1	1	6	6						
Resistant to >4 antimicrobials			1	1										
Cephalosporins - Cefotaxim			1	0	1	0	6	0	1	0	1	0	2	0
Cephalosporins - Ceftazidim			1	0	1	0	6	0	1	0	1	0	2	0
Cephalosporins - Ceftiofur			1	0	1	0	6	0	1	0	1	0	2	0

Table Antimicrobial susceptibility testing of Salmonella in meat from pig

Salmonella	Salmonella spp.		S. 1,4,[5],12:i:-		S. Bredeney		S. Derby		S. Give		S. Infantis		S. London		S. Rissen		S. Thompson		S. Typhimurium	
Isolates out of a monitoring program (yes/no)			yes		yes		yes		yes		yes		yes		yes		yes		yes	
Number of isolates available in the laboratory			9		2		13		1		1		1		11		1		5	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol			3	0	1	0	6	0	1	0	1	0	1	0	2	0	1	0	1	1
Fluoroquinolones - Ciprofloxacin			3	0	1	0	6	0	1	0	1	0	1	0	2	0	1	0	1	0
Quinolones - Nalidixic acid			3	0							1	0	1	0	2	0			1	0
Trimethoprim			3	1	1	0	6	1	1	0	1	0	1	1	2	0	1	0	1	0
Sulphonamides - Sulfonamide			3	3	1	0	6	6	1	0	1	0	1	1	2	0	1	0	1	1
Aminoglycosides - Streptomycin			3	3	1	0	6	5	1	0	1	0	1	1	2	0	1	0	1	1
Aminoglycosides - Gentamicin			3	0	1	0	6	0	1	0	1	0	1	0	2	0	1	0	1	0
Penicillins - Ampicillin			3	2	1	0	6	1	1	0	1	0	1	1	2	0	1	0	1	1
Tetracyclines - Tetracycline			3	2	1	0	6	6	1	0	1	0	1	1	2	0	1	0	1	1
Fully sensitive					1	0			1	0	1	0			2	0				
Resistant to 3 antimicrobials			3	1			6	5									1	0		
Resistant to 4 antimicrobials			3	2			6	1									1	0		
Resistant to >4 antimicrobials													1	0					1	1
Cephalosporins - Cefotaxim			3	0	1	0	6	0	1	0	1	0	1	0	2	0	1	0	1	0
Cephalosporins - Ceftazidim			3	0	1	0	6	0	1	0	1	0	1	0	2	0	1	0	1	0
Cephalosporins - Ceftiofur			3	0	1	0	6	0	1	0	1	0	1	0	2	0	1	0	1	0

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

Salmonella	Salmonella spp.		S. Blockley		S. Hadar		S. Kottbus		S. Livingstone		S. Muenster		S. Senftenberg		S. Thompson	
Isolates out of a monitoring program (yes/no)			yes		yes		yes		yes		yes		yes		yes	
Number of isolates available in the laboratory			1		7		3		8		2		1		5	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol			1	0	5	0	2	0	4	0	2	0	1	0	2	0
Fluoroquinolones - Ciprofloxacin			1	1	5	4	2	0	4	0	2	0	1	0	2	0
Quinolones - Nalidixic acid			1	1	5	4	2	0	4	0	2	0	1	0	2	0
Trimethoprim			1	0	5	0	2	0	4	1	2	0	1	0	2	0
Sulphonamides - Sulfonamide			1	0	5	0	2	0	4	1	2	0	1	0	2	0
Aminoglycosides - Streptomycin			1	1	5	3	2	0	4	0	2	0	1	0	2	0
Aminoglycosides - Gentamicin			1	0	5	0	2	0	4	0	2	0	1	0	2	0
Penicillins - Ampicillin			1	0	5	3	2	0	4	1	2	0	1	0	2	0
Tetracyclines - Tetracycline			1	1	5	3	2	0	4	0	2	0	1	0	2	0
Cephalosporins - Cefotaxim			1	0	5	0	2	0	4	0	2	0	1	0	2	0
Cephalosporins - Ceftazidim			1	0	5	0	2	0	4	0	2	0	1	0	2	0
Cephalosporins - Ceftiofur			1	0	5	0	2	0	4	0	2	0	1	0	2	0

Table Antimicrobial susceptibility testing of Salmonella in Turkeys

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. Newport	
Isolates out of a monitoring program (yes/no)							yes	
Number of isolates available in the laboratory							1	
Antimicrobials:	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol							1	0
Fluoroquinolones - Ciprofloxacin							1	0
Quinolones - Nalidixic acid							1	0
Trimethoprim							1	0
Sulphonamides - Sulfonamide							1	0
Aminoglycosides - Streptomycin							1	0
Aminoglycosides - Gentamicin							1	0
Penicillins - Ampicillin							1	0
Tetracyclines - Tetracycline							1	0
Fully sensitive							1	1
Cephalosporins - Cefotaxim							1	0
Cephalosporins - Ceftazidim							1	0
Cephalosporins - Ceftiofur							1	0

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

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. Braenderup		S. Corvallis		S. Heidelberg		S. Infantis		S. Mbandaka		S. Mishmarhaemek		S. Muenchen		S. Oranienburg		S. Senftenberg		S. Thompson	
Isolates out of a monitoring program (yes/no)	yes		yes				yes		yes		yes		yes		yes		yes		yes		yes		yes		yes	
Number of isolates available in the laboratory	22		10				9		14		1		9		3		3		2		5		1		3	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol	6	0	6	1			7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0	1	0	3	0
Fluoroquinolones - Ciprofloxacin	6	0					7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0	1	1	3	0
Quinolones - Nalidixic acid	6	0	6	0			7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0			3	0
Trimethoprim	6	0	6	0			7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0	1	0	3	0
Sulphonamides - Sulfonamide	6	0	6	0			7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0	1	0	3	0
Aminoglycosides - Streptomycin	6	0	6	1			7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0	1	0	3	0
Aminoglycosides - Gentamicin	6	0	6	1			7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0	1	0	3	0
Penicillins - Ampicillin	6	0	6	1			7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0	1	0	3	0
Tetracyclines - Tetracycline	6	0	6	1			7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0	1	0	3	0
Fully sensitive	6	6	3	3			7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0			3	3
Resistant to 2 antimicrobials																							1	1		
Resistant to 4 antimicrobials			3	3																						
Cephalosporins - Cefotaxim	6	0	6	0			7	0	9	0	1	0	7	0	1	0	1	0	2	0	3	0	1	0	3	0
Cephalosporins - Ceftazidim	3	0	4	0			3	0	2	0	1	0	3	0	1	0	1	0	2	0			1	0	3	0
Cephalosporins - Ceftiofur	3	0	4	0			3	0	2	0	1	0	3	0	1	0	1	0	2	0			1	0	3	0

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

Salmonella	S. Enteritidis		S. Typhimurium		Salmonella spp.		S. 1,4,[5],12:i:-		S. Agona		S. Bredeney		S. Hadar		S. I, monophasic strain		S. Livingstone		S. Tennessee		S. Thompson	
Isolates out of a monitoring program (yes/no)	yes		yes				yes		yes		yes		yes		yes		yes		yes		yes	
Number of isolates available in the laboratory	1		1				1		1		4		4		1		1		7		4	
Antimicrobials:	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n	N	n
Amphenicols - Chloramphenicol	1	0	1	0			1	0	1	0	1	0	2	0			1	0	3	0	2	0
Fluoroquinolones - Ciprofloxacin	1	0	1	0			1	0	1	0	1	0	2	1			1	0	3	0	2	0
Quinolones - Nalidixic acid	1	0	1	0					1	0	1	0	2	1			1	0	3	0	2	0
Trimethoprim	1	0	1	0			1	1	1	0	1	0	2	0			1	0	3	0	2	0
Sulphonamides - Sulfonamide	1	0	1	0			1	1	1	0	1	0	2	0			1	0	3	0	2	0
Aminoglycosides - Streptomycin	1	0	1	0			1	1	1	0	1	0	2	1			1	0	3	0	2	0
Aminoglycosides - Gentamicin	1	0	1	0			1	0	1	0	1	0	2	0			1	0	3	0	2	0
Penicillins - Ampicillin	1	0	1	0			1	1	1	0	1	0	2	0			1	0	3	0	2	0
Tetracyclines - Tetracycline	1	0	1	0			1	1	1	0	1	0	2	1			1	0	3	0	2	0
Fully sensitive	1	1	1	1					1	1	1	1							3	3	2	2
Resistant to 1 antimicrobial																	1	1				
Resistant to 4 antimicrobials													1	1								
Resistant to >4 antimicrobials							1	1														
Cephalosporins - Cefotaxim	1	0	1	0			1	0	1	0			2	0			1	0	3	0	2	0
Cephalosporins - Ceftazidim	1	0	1	0			1	0	1	0			2	0			1	0	3	0	2	0
Cephalosporins - Ceftiofur	1	0	1	0					1	0			2	0			1	0	3	0	2	0

Table Antimicrobial susceptibility testing of S. Hadar in Meat from broilers (Gallus gallus) - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Hadar	Meat from broilers (Gallus gallus) - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	7																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	5	0									2	3											2	64
Tetracyclines - Tetracycline	8	5	3									2				3								2	32
Fluoroquinolones - Ciprofloxacin	0.06	5	4			1			4															0.03	4
Quinolones - Nalidixic acid	16	5	4										1					4						4	128
Trimethoprim	2	5	0									5												2	16
Sulphonamides - Sulfonamide	256	5	0														1	4						64	1024
Aminoglycosides - Streptomycin	32	5	1											2		2	1							4	128
Aminoglycosides - Gentamicin	2	5	0							5														0.5	16
Penicillins - Ampicillin	4	5	3								2					3								1	32
Cephalosporins - Cefotaxim	0.5	6	0				2	3	1															0.06	8
Cephalosporins - Ceftazidim	2	5	0						5															0.25	8
Cephalosporins - Ceftiofur	2	5	0							5														0.12	4

Table Antimicrobial susceptibility testing of S. Livingstone in Meat from broilers (Gallus gallus) - fresh - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Livingstone	Meat from broilers (Gallus gallus) - fresh - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	8																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	4	0									4												2	64
Tetracyclines - Tetracycline	8	4	0									4												2	32
Fluoroquinolones - Ciprofloxacin	0.06	4	0			4																		0.03	4
Quinolones - Nalidixic acid	16	4	0										4											4	128
Trimethoprim	2	4	1									3			1									2	16
Sulphonamides - Sulfonamide	256	4	1															3			1			64	1024
Aminoglycosides - Streptomycin	32	8	4										4					4						4	128
Aminoglycosides - Gentamicin	2	4	0							4														0.5	16
Penicillins - Ampicillin	4	4	1								2		1			1								1	32
Cephalosporins - Cefotaxim	0.5	4	0				4																	0.06	8
Sulphonamides	256	4	1															3			1			64	1024
Cephalosporins - Ceftazidim	2	4	0						4															0.25	8
Cephalosporins - Ceftiofur	2	4	0							4														0.12	4

Table Antimicrobial susceptibility testing of S. Thompson in Meat from broilers (Gallus gallus) - fresh - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Thompson	Meat from broilers (Gallus gallus) - fresh - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	5																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	2	0										2											2	64
Tetracyclines - Tetracycline	8	2	0									2												2	32
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																		0.03	4
Quinolones - Nalidixic acid	16	2	0										2											4	128
Trimethoprim	2	2	0									2												2	16
Sulphonamides - Sulfonamide	256	2	0																2					64	1024
Aminoglycosides - Streptomycin	32	2	0										2											4	128
Aminoglycosides - Gentamicin	2	2	0							2														0.5	16
Penicillins - Ampicillin	4	2	0								2													1	32
Cephalosporins - Cefotaxim	0.5	2	0				2																	0.06	8
Sulphonamides	256	2	0																2					64	1024
Cephalosporins - Ceftazidim	2	2	0						2															0.25	8
Cephalosporins - Ceftiofur	2	2	0							2														0.12	4

Table Antimicrobial susceptibility testing of S. Muenster in Meat from broilers (Gallus gallus) - fresh - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Muenster	Meat from broilers (Gallus gallus) - fresh - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	2																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	2	0									2												2	64
Tetracyclines - Tetracycline	8	2	0									2												2	32
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																		0.03	4
Quinolones - Nalidixic acid	16	2	0										2											4	128
Trimethoprim	2	2	0									2												2	16
Sulphonamides - Sulfonamide	256	2	0															1	1					64	1024
Aminoglycosides - Streptomycin	32	2	0										2											4	128
Aminoglycosides - Gentamicin	2	2	0							2														0.05	16
Penicillins - Ampicillin	4	2	0								2													1	32
Cephalosporins - Cefotaxim	0.5	2	0					2																0.06	8
Sulphonamides	256	2	0															1	1					64	1024
Cephalosporins - Ceftazidim	2	2	0						2															0.25	8
Cephalosporins - Ceftiofur	2	2	0							1	1													0.12	4

Table Antimicrobial susceptibility testing of S. Kottbus in Meat from broilers (Gallus gallus) - fresh - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Kottbus	Meat from broilers (Gallus gallus) - fresh - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	3																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	2	0									2												2	64
Tetracyclines - Tetracycline	8	2	0									2												2	32
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																		0.03	4
Quinolones - Nalidixic acid	16	2	0										2											4	128
Trimethoprim	2	2	0									2												2	16
Sulphonamides - Sulfonamide	256	2	0															2						64	1024
Aminoglycosides - Streptomycin	32	2	0										2											4	128
Aminoglycosides - Gentamicin	2	2	0							2														0.5	16
Penicillins - Ampicillin	4	2	0								2													1	32
Cephalosporins - Cefotaxim	0.5	2	0				2																	0.06	8
Sulphonamides	256	2	0															2						64	1024
Cephalosporins - Ceftazidim	2	2	0						2															0.25	8
Cephalosporins - Ceftiofur	2	2	0							2														0.12	14

Table Antimicrobial susceptibility testing of S. Blockley in Meat from broilers (Gallus gallus) - fresh - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Blockley	Meat from broilers (Gallus gallus) - fresh - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	1																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0										1											2	64
Tetracyclines - Tetracycline	8	1	1												1									2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	1						1															0.03	4
Quinolones - Nalidixic acid	16	1	1															1						4	128
Trimethoprim	2	1	0									1												2	16
Sulphonamides - Sulfonamide	256	1	0															1						64	1024
Aminoglycosides - Streptomycin	32	1	0													1								4	128
Aminoglycosides - Gentamicin	2	1	0							1														0.5	16
Penicillins - Ampicillin	4	1	0								1													1	32
Cephalosporins - Cefotaxim	0.5	1	0					1																0.06	8
Cephalosporins - Ceftazidim	2	1	0						1															0.25	8
Cephalosporins - Ceftiofur	2	1	0							1														0.12	4

Table Antimicrobial susceptibility testing of S. Derby in Meat from bovine animals - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Derby	Meat from bovine animals - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	14																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	6	0									2	4											2	64
Tetracyclines - Tetracycline	8	6	6													6								2	32
Fluoroquinolones - Ciprofloxacin	0.06	6	0			6																		0.03	4
Quinolones - Nalidixic acid	16	6	0										6											4	128
Trimethoprim	2	6	0									6												2	16
Aminoglycosides - Streptomycin	32	6	6														1	5						4	128
Aminoglycosides - Gentamicin	2	6	0							6														0.5	16
Penicillins - Ampicillin	4	6	0								6													1	32
Cephalosporins - Cefotaxim	0.5	6	0					6																0.06	8
Sulphonamides	256	6	6																		6			64	1024
Cephalosporins - Ceftazidim	2	6	0						1	5														0.25	8
Cephalosporins - Ceftiofur	2	6	0							5	1													0.12	4

Table Antimicrobial susceptibility testing of S. Enteritidis in Meat from bovine animals - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Enteritidis	Meat from bovine animals - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	1																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0									1												2	64
Tetracyclines - Tetracycline	8	1	0									1												2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	1						1															0.03	4
Quinolones - Nalidixic acid	16	1	1															1						4	128
Trimethoprim	2	1	0									1												2	16
Aminoglycosides - Streptomycin	32	1	0										1											4	128
Aminoglycosides - Gentamicin	2	1	0							1														0.5	16
Penicillins - Ampicillin	4	1	0								1													1	32
Cephalosporins - Cefotaxim	0.5	1	0					1																0.06	8
Sulphonamides	256	1	0															1						64	1024
Cephalosporins - Ceftazidim	2	1	0						1															0.25	8
Cephalosporins - Ceftiofur	2	1	0							1														0.12	4

Table Antimicrobial susceptibility testing of S. 1,4,[5],12:i:- in Meat from bovine animals - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. 1,4,[5],12:i:-	Meat from bovine animals - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	2																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0									1												2	64
Tetracyclines - Tetracycline	8	1	1													1								2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.03	4
Quinolones - Nalidixic acid	16	1	0										1											4	128
Trimethoprim	2	1	1												1									2	16
Aminoglycosides - Streptomycin	32	1	1															1						4	128
Aminoglycosides - Gentamicin	2	1	0							1														0.5	16
Penicillins - Ampicillin	4	1	1													1								1	32
Cephalosporins - Cefotaxim	0.5	1	0				1																	0.06	8
Sulphonamides	256	1	1																		1			64	1024
Cephalosporins - Ceftazidim	2	1	0						1															0.25	8
Cephalosporins - Ceftiofur	2	1	0							1														0.12	4

Table Antimicrobial susceptibility testing of S. Thompson in Meat from bovine animals - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Thompson	Meat from bovine animals - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	2																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	2	0										2											2	64
Tetracyclines - Tetracycline	8	2	0									2												2	32
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																		0.03	4
Quinolones - Nalidixic acid	16	2	0										2											4	128
Trimethoprim	2	2	0									2													
Sulphonamides - Sulfonamide																								2	16
Aminoglycosides - Streptomycin	32	2	0										2											4	128
Aminoglycosides - Gentamicin	2	2	0							2														0.5	16
Penicillins - Ampicillin	4	2	0								2													1	32
Cephalosporins - Cefotaxim	0.5	2	0				2																	0.06	8
Sulphonamides	256	2	0															1	1					64	1024
Cephalosporins - Ceftazidim	2	2	0						2															0.25	8
Cephalosporins - Ceftiofur	2	2	0							2														0.12	4

Table Antimicrobial susceptibility testing of S. Bredeney in Meat from bovine animals - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Bredeney	Meat from bovine animals - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	2																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0									1												2	64
Tetracyclines - Tetracycline	8	1	1													1								2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.03	4
Quinolones - Nalidixic acid	16	1	0										1											4	128
Trimethoprim	2	1	0									1												2	16
Aminoglycosides - Streptomycin	32	1	1														1							4	128
Aminoglycosides - Gentamicin	2	1	0							1														0.5	16
Penicillins - Ampicillin	4	1	0								1													1	32
Cephalosporins - Cefotaxim	0.5	1	0					1																0.06	8
Sulphonamides	256	1	1																		1			64	1024
Cephalosporins - Ceftazidim	2	1	0						1															0.25	8
Cephalosporins - Ceftiofur	2	1	0							1														0.12	4

Table Antimicrobial susceptibility testing of S. Rissen in Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Rissen	Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	11																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	2	0										2											2	64
Tetracyclines - Tetracycline	8	2	0									2												2	32
Fluoroquinolones - Ciprofloxacin	0.06	2	0			2																		0.03	4
Quinolones - Nalidixic acid	16	2	0										2											4	128
Trimethoprim	2	2	0									2												2	16
Aminoglycosides - Streptomycin	32	2	0										2											4	128
Aminoglycosides - Gentamicin	2	2	0							1	1													0.5	16
Penicillins - Ampicillin	4	2	0								2													1	32
Cephalosporins - Cefotaxim	0.5	2	0					2																0.06	8
Sulphonamides	256	2	0															2						64	1024
Cephalosporins - Ceftazidim	2	2	0						1		1													0.25	8
Cephalosporins - Ceftiofur	2	2	0							1	1													0.12	4

Table Antimicrobial susceptibility testing of S. Infantis in Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Infantis	Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	3																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0										1											2	64
Tetracyclines - Tetracycline	8	1	0									1												2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.03	4
Quinolones - Nalidixic acid	16	1	0										1											4	128
Trimethoprim	2	1	0									1												2	16
Aminoglycosides - Streptomycin	32	1	0											1										4	128
Aminoglycosides - Gentamicin	2	1	0							1														0.5	16
Penicillins - Ampicillin	4	1	0								1													1	32
Cephalosporins - Cefotaxim	0.5	1	0					1																0.06	8
Sulphonamides	256	1	0															1						64	1024
Cephalosporins - Ceftazidim	2	1	0							1														0.25	8
Cephalosporins - Ceftiofur	2	1	0								1													0.12	4

Table Antimicrobial susceptibility testing of S. London in Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. London	Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling																							
Isolates out of a monitoring program (yes/no)	yes																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0									1												2	64
Tetracyclines - Tetracycline	8	1	1													1								2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.03	4
Quinolones - Nalidixic acid	16	1	0										1											4	128
Trimethoprim	2	1	1												1									2	16
Aminoglycosides - Streptomycin	32	1	1															1						4	128
Aminoglycosides - Gentamicin	2	1	0							1														0.5	16
Penicillins - Ampicillin	4	1	1													1								1	32
Cephalosporins - Cefotaxim	0.5	1	0				1																	0.06	8
Sulphonamides	256	1	1																		1			64	1024
Cephalosporins - Ceftazidim	2	1	0						1															0.25	8
Cephalosporins - Ceftiofur	2	1	0							1														0.12	4

Table Antimicrobial susceptibility testing of S. Thompson in Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Thompson	Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	1																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0									1												2	64
Tetracyclines - Tetracycline	8	1	0									1												2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.03	4
Quinolones - Nalidixic acid	16	1	0										1											4	128
Trimethoprim	2	1	0									1												2	16
Aminoglycosides - Streptomycin	32	1	0										1											4	128
Aminoglycosides - Gentamicin	2	1	0							1														0.5	16
Penicillins - Ampicillin	4	1	0								1													1	32
Cephalosporins - Cefotaxim	0.5	1	0				1																	0.06	8
Sulphonamides	256	1	0														1							64	1024
Cephalosporins - Ceftazidim	2	1	0						1															0.25	8
Cephalosporins - Ceftiofur	2	1	0							1														0.12	4

Table Antimicrobial susceptibility testing of S. 1,4,[5],12:i:- in Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. 1,4,[5],12:i:-	Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	9																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	4	0									2		2										2	64
Tetracyclines - Tetracycline	8	3	2									1				2								2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		1	4
Quinolones - Nalidixic acid	16	1	0										1											1	128
Trimethoprim	2	3	1									2			1									2	16
Aminoglycosides - Streptomycin	32	3	3															3						4	128
Aminoglycosides - Gentamicin	2	3	0							3														0.5	16
Penicillins - Ampicillin	4	3	2								1					2								1	32
Cephalosporins - Cefotaxim	0.5	3	0				2	1																0.06	8
Sulphonamides	256	3	3																		3			64	1024
Cephalosporins - Ceftazidim	2	1	0						1															1	8
Cephalosporins - Ceftiofur	2	3	0							3														0.12	4

Table Antimicrobial susceptibility testing of S. Typhimurium in Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Typhimurium	Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	5																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	1														1							2	64
Tetracyclines - Tetracycline	8	1	1													1								2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.03	4
Quinolones - Nalidixic acid	16	1	0											1										4	128
Trimethoprim	2	1	0									1												2	16
Aminoglycosides - Streptomycin	32	1	1															1						4	128
Aminoglycosides - Gentamicin	2	1	0							1														0.5	16
Penicillins - Ampicillin	4	1	1													1								1	32
Cephalosporins - Cefotaxim	0.5	1	0					1																0.06	8
Sulphonamides	256	1	1																		1			64	1024
Cephalosporins - Ceftazidim	2	1	0						1															0.25	8
Cephalosporins - Ceftiofur	2	1	0							1														0.12	4

Table Antimicrobial susceptibility testing of S. Derby in Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling - quantitative data [Dilution method]

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

S. Derby	Meat from pig - at retail - domestic production - Monitoring - official sampling - convenience sampling																								
Isolates out of a monitoring program (yes/no)	yes																								
Number of isolates available in the laboratory	13																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	6	0									1	5											2	64
Tetracyclines - Tetracycline	8	6	6													6								2	32
Fluoroquinolones - Ciprofloxacin	0.06	6	0			6																		0.03	4
Quinolones - Nalidixic acid	16	6	0										6											4	128
Trimethoprim	2	6	1									5			1									2	16
Aminoglycosides - Streptomycin	32	6	5											1			1	4						4	128
Aminoglycosides - Gentamicin	2	6	0							6														0.5	16
Penicillins - Ampicillin	4	6	1								5					1								1	32
Cephalosporins - Cefotaxim	0.5	6	0					5	1															0.06	8
Sulphonamides	256	6	6																		6			64	1024
Cephalosporins - Ceftazidim	2	6	0						1	4	1													0.25	8
Cephalosporins - Ceftiofur	2	6	0							5	1													0.12	4

Table Antimicrobial susceptibility testing of S. Typhimurium in Goats - at farm - animal sample - organ/tissue - Clinical investigations - quantitative data [Dilution method]

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

S. Typhimurium	Goats - at farm - animal sample - organ/tissue - Clinical investigations																								
Isolates out of a monitoring program (yes/no)	no																								
Number of isolates available in the laboratory	5																								
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	3	0									3												2	64
Tetracyclines - Tetracycline	8	3	2									1				2								2	32
Fluoroquinolones - Ciprofloxacin	0.06	3	0			3																		0.03	4
Quinolones - Nalidixic acid	16	3	0										3											4	128
Trimethoprim	2	3	0									3												2	16
Sulphonamides - Sulfonamide	256	3	0															3						64	1024
Aminoglycosides - Streptomycin	32	3	0										1	2										4	128
Aminoglycosides - Gentamicin	2	3	0							2	1													0.5	16
Penicillins - Ampicillin	4	3	0								2	1												1	32
Cephalosporins - Cefotaxim	0.5	3	0				2	1																0.06	8
Cephalosporins - Ceftazidim	2	3	0						3															0.25	8
Cephalosporins - Ceftiofur	2	3	0							2	1													0.12	4

Table Antimicrobial susceptibility testing of S. enterica subsp. enterica in Cattle (bovine animals) - at farm - animal sample - organ/tissue - Clinical investigations - quantitative data [Dilution method]

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

S. enterica subsp. enterica	Cattle (bovine animals) - at farm - animal sample - organ/tissue - Clinical investigations																							
Isolates out of a monitoring program (yes/no)	no																							
Number of isolates available in the laboratory	1																							
Antimicrobials:	Cut-off value	N	n	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Amphenicols - Chloramphenicol	16	1	0									1												2	64
Tetracyclines - Tetracycline	8	1	1													1								2	32
Fluoroquinolones - Ciprofloxacin	0.06	1	0			1																		0.03	4
Quinolones - Nalidixic acid	16	1	0										1											4	128
Trimethoprim	2	1	1												1									2	16
Sulphonamides - Sulfonamide	256	1	1																		1			64	1024
Aminoglycosides - Streptomycin	32	1	1															1						4	128
Aminoglycosides - Gentamicin	2	1	1												1									0.5	16
Penicillins - Ampicillin	4	1	1													1								1	32
Cephalosporins - Cefotaxim	0.5	1	0				1																	0.06	8
Cephalosporins - Ceftazidim	2	1	0						1															0.25	8
Cephalosporins - Ceftiofur	2	1	0							1														0.12	4

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing
Broth dilution	Eucast / EURL-AR

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

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

2.2 CAMPYLOBACTERIOSIS

2.2.1 General evaluation of the national situation

A. Thermophilic Campylobacter general evaluation

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

DISEASE/AGENT: Thermophilic Campylobacter
TARGETS : Animals / Contaminated Food

Surveillance system- History
There is not yet in force an official systematic national Campylobacter control program for animals and food. Sporadic selective samples are collected and examined, especially from sheep (aborted fetus in the field) and broilers (at slaughterhouse).

Results of 2009 zoonoses monitoring

Animals: Cattle (n=20), Sheep (n=56) , Goats, Pigs, Horses (n=1) were officially tested and 11 animals (sheep) were found positive to Campylobacter fetus (animal sample: aborted fetus / stomach content).
Food : Targeted official sampling of fresh broiler meat at processing plant level revealed 33 positive samples out of 47 tested (Campylobacter spp- unspecified)

Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

2.2.2 Campylobacteriosis in humans

A. Thermophilic Campylobacter in humans

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

DISEASE/AGENT: Cambylobacteriosis
AFFECTED SPECIES: Human

Results of the investigations in the year 2006

In 2006 , 286 cases (incidence: 2,61 per 100.000 inhabitants) of campylobacteriosis in humans were reported . From the total number of Campylobacter cases, 23 human cases were identified as C. jejuni (223 Unknown).

2.2.3 Antimicrobial resistance in Campylobacter isolates

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

2.3 LISTERIOSIS

2.3.1 General evaluation of the national situation

A. Listeriosis general evaluation

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

DISEASE/AGENT: Listeriosis
AFFECTED SPECIES: Animals and Food

Surveillance system
Routine and targeted official sampling performed by the national veterinary public health authorities and the Hellenic Food Safety Authority (EFET) respecting the microbiological criteria foreseen by Community Legislation and Hygiene Package.

Method used
The laboratory methods used for Listeria detection and enumeration were : ISO 11290.01 Part 1 (1997), ISO 11290.01/A1 Amendment 1 (2005) and ISO 11290.02 /A1 Part 2 and Amendment 1 (2005) respectively.

Summary selected statistical results of 2010 zoonoses monitoring

Sample CategoriesPercentage % of positive samples among tested units for Listeria monocytogenes
Animals (sheep and Goats) 20,40
Other products0
Pig Meat 8.9
Milk and dairy products0

Data analysis are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

Summary Statistical Results

The overall 2010 reported and calculated percentage of Listeria positive findings (units) in all tested samples was 1,06 % (5/468*100) for all food categories examined. This rate is significantly lower compared to the related percertage of positive samples tested in 2009 and was attributed to Pig meat and products thereof contaminated with Listeria monocytogenes.

The overall 2009 reported and calculated percentage of Listeria positive findings (units) in all tested samples was 5,87 % (84/1432*100) for all food categories examined. This rate is significantly higher from the related percertage of positive samples tested in 2008 and was attributed to Pig meat and products thereof contaminated with Listeria monocytogenes.

The overall 2008 reported and calculated percentage of Listeria positive findings (units) in all tested samples was 1,53 %

(28/1826*100) for all food categories examined.

2.3.2 Listeriosis in humans

A. Listeriosis in humans

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

DISEASE/AGENT: Listeriosis
AFFECTED SPECIES: Humans

Surveillance system
Mandatory Notification of the disease within week (reporting time period following diagnosis)

Results of the monitoring in the year 2006
Seven (7) human cases (3 males and 4 females) were reported in 2006.

2.3.3 Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant	NVLabs	Single	25 g	14	0	14	0			
Cheeses made from cows' milk - soft and semi-soft - made from raw or low heat-treated milk - at processing plant	NVLabs	Single	25 g	1	0	1	0			
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at processing plant	NVLabs	Single	25 g	1	0	1	0			
Cheeses made from sheep's milk - hard - made from pasteurised milk - at retail	NVLabs	Single	25 g	95	0	95	0			
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant		---								
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at retail	NVlabs	Single	25 g	33	0	33	0			
Cheeses made from sheep's milk - soft and semi-soft - made from raw or low heat-treated milk - at retail	NVlabs	Single	25 g	13	0	13	0			
Dairy products (excluding cheeses) - butter - at retail	NVLabs	Single	25 g	1	0	1	0			
Milk, cows' - pasteurised milk - at processing plant	NVLabs	Single	25 ml	5	0	5	0			

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Milk, cows' - pasteurised milk - at retail	NVLabs	Single	25 ml	5	0	5	0			
Cheeses, made from mixed milk from cows, sheep and/or goats - soft and semi-soft - made from pasteurised milk - at retail - domestic production	NVLabs	Single	25 g	40	0	40	0			
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk	NVLabs	Single	25 g	6	0	6	0			
Dairy products (excluding cheeses) - milk powder and whey powder - at retail - domestic production	NVLabs	Single	25 g	5	0	5	0			
Dairy products (excluding cheeses) - yoghurt - at retail - domestic production [1)]	NVLabs	Single	25 g	15	0	15	0			
Infant formula - ready-to-eat - at retail - domestic production [2)]	NVLabs	Single	25 g	10	0	10	0			

Comments:

[1)] From sheep milk

[2)] Infant formula with yoghurt

Footnote:

Detection method: ISO 11290-1:1996/AMENDED 1:2004
Enumeration method: ISO 11290-2:1998/AMENDED 1:2004

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Crustaceans - unspecified - cooked - at retail	NVLabs	Single	25 g	5	0	5	0			
Fish - smoked - at processing plant	NVLabs	Single	25 g	6	0	6	0			
Foodstuffs intended for special nutritional uses	NVLabs	Single	25 g	10	0	10	0			
Infant formula	NVLabs	Single	25 g	55	0	55	0			
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant	NVLabs	Single	25 g	13	0	13	0			
Meat from pig - meat products - cooked, ready-to-eat - at processing plant	NVLabs	Single	25 g	20	5	20	5			
Meat from pig - meat products - cooked, ready-to-eat - at retail	NVLabs	Single	25 g	36	0	36	0			
Molluscan shellfish - cooked - at retail	NVLabs	Single	25 g	5	0	5	0			
Cheeses, made from unspecified milk or other animal milk - unspecified	NVLabs	Single	25 g	5	0	5	0			
Egg products - at retail - domestic production	NVLabs	Single	25 g	2	0	2	0			
Fish - gravad /slightly salted - at retail - domestic production	NVLabs	Single	25 g	20	0	20	0			
Meat from turkey - meat products - cooked, ready-to -eat - at retail - domestic production	NVLabs	Single	25 g	7	0	7	0			
Other food - at retail - domestic production [1)]	NVLabs	Single	25 g	4	0	4	0			
Other processed food products and prepared dishes - sandwiches - with meat - at retail - domestic production [2)]	NVLabs	Single	25 g	36	0	36	0			

Table Listeria monocytogenes in other foods

Comments:

[1)] Ready to eat food

[2)] With meet and cheese

2.3.4 Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified	L. innocua
Cattle (bovine animals) - dairy cows [1)]	NVLabs	Animal	1	0			
Goats [2)]	NVLabs	Animal	24	9	7	2	
Sheep [3)]	NVLabs	Animal	25	1			1

Comments:

[1)] At farm,clinical investigation

[2)] At farm,clinical investigation

[3)] At farm,clinical investigation

Footnote:

Detection method: ISO 11290-1:1996/AMENDED 1:2004
Enumeration method: ISO 11290-2:1998/AMENDED 1:2004
Sample type: Brain (Head)- Internal organs

2.4 E. COLI INFECTIONS

2.4.1 General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

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

DISEASE/AGENT: Verocytotoxic E.coli
AFFECTED SPECIES: Animals / Food

Surveillance system
There is no official National monitoring program in force for detecting VTEC serovars in animals and food.

Results of investigations in the year 2010
Only severar animal and food samples were tested for E.coli spp in 2010

2.4.2 E. coli infections in humans

A. Verotoxigenic Escherichia coli infections in humans

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

DISEASE/AGENT: Verocytotoxic E.Coli
AFFECTED SPECIES: Human

Surveillance system
Mandatory Notification of the disease within 24 hours (reporting time period following diagnosis)

Results of zoonoses monitoring
No cases of VTEC in humans were reported for the year 2006

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

Susceptible population (overall Bovine population size estimate)
726.221 animals raised in 38.486 holdings.

Surveillance system
National Eradication program for bovine tuberculosis.

Method used
Registration and identification of all bovines.
Tuberculin testing of all bovines over the age of 6 weeks.

Case definition
Infected animal: Animal positive to tuberculin testing.
Infected herd: Herd with one or more animals positive to tuberculin testing

Vaccination policy
Vaccination is not permitted.

Measures in case of positive findings
Slaughter of positive animals.
Ban of animal movement from and within the infected herd
Re-examination of the herd and re-establishment of the “tuberculosis free” health status.

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

Epidemiological overview, history and technical evaluation
Variations have been recorded on the evolution of bovine Tuberculosis compared to the previous year (2009) as the herd prevalence increased from 1.94 % (2009) to 2.70 % this year (2010). The herd incidence rate similarly increased from 0,84 % (2009) to 1.05% (2010). The 2010 animal reported prevalence (1,27%) was lower compared to the previous year 2009 (1.73%). In general, the epidemiological indicators are influenced by the number of herds and animals tested in areas with high infection rates.

Concerning the overall infection status in the framework of the eradication programme, 140 positive herds with 13.371 animals were reported at the end of the reporting year 2010. However, following epidemiological data analysis at country level, 14.341 herds reported officially free, 3.984 herds reported with suspended health status and 2464 herds reported as herds of unknown health status.

The significant number of herds with unknown health status is mainly due to the livestock structure of nomos of Etoloakarnania. This area has a significant number of bovine herds with semi-wild animals of no tuberculosis history that were previously categorized as officially free and from the year 2003 were

characterized as herds of unknown health status due to the difficult access in applying animal health programmes at local level.

In general, the epidemiological impact of M. bovis situation in 2010 remained steady in endemic areas with observed variations in prevalence and incidence rates in comparison with previous years epidemiological figures. In general, Bovine Tuberculosis infection remains a significant animal health problem in several areas of Greece with endemic characteristics, especially in previous infected herds with adult animals. In addition Control and eradication measures for old and new infected herds should be a major continuous task for the veterinary services at regional and local level. In conclusion, further attempts and actions for investigating the epidemiology of the disease, identifying the source of infection, control the animal movements, tracing the infected farms after identifying TB lesions at slaughterhouse and properly implementing the program respecting the appropriate timetable between the checks will be followed in order to meet the eradication targets of Bovine Tuberculosis for the coming implementation years.

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

Relevance as zoonotic disease:
In general, bovine Tuberculosis infection remains a significant animal health problem in several areas of Greece.

Additional information

Summary results of the zoonoses monitoring for the year 2010

- Number of herds under the programme (official controls): 21.467
- Number of animals under the programme (official controls): 585.902
- Number of herds tested by tuberculin test: 5.119
- Number of herds positive: 138
- Number of new herds positive : 54
- Number of animals tested by tuberculin test: 184.955
- Number of animals as positive TB reactors: 2.343
- Total number of animals slaughtered under the programme: 3.053

2.5.2 Tuberculosis, mycobacterial diseases in humans

A. Tuberculosis due to Mycobacterium bovis in humans

Additional information

DISEASE/AGENT: Tuberculosis (Mycobacterium tuberculosis)
SUSCEPTIBLE SPECIES: Humans

Susceptible population
10.934.097 (National Census, 2001)

Surveillance system
Mandatory reporting and notification policy
Epidemiological surveillance

Methods used
Clinical symptoms, X -ray diagnosis and microbiological confirmation.

Epidemiological history and evaluation
The prevalent causal agent of Human Tuberculosis in Greece is M.Tuberculosis. A decreasing trend of reported cases has been observed during the year 2000 (93) compared to 1999 (186) and 1998 (990) respectively. In 2001 the number of TB reported cases (576 cases) significantly increased compared to the cases of 2000 (93 cases). No human cases of Bovine Tuberculosis (M. bovis) have been reported to the public Health services during 2004 in Greece. In the year 2004, the year of Olympic games in Greece, a significant increase of Human Tuberculosis cases (713 cases due to M. Tuberculosis) was recorded via the national epidemiological surveillance system which was rapid, well â€“ functioned end effective in detecting new cases. Immigration is considered an important risk factor for the TB re-emerge. During the year 2005 , an incidence rate of 1,62 per 100.000 inhabitants was reported . In addition, reactivation of previous TB cases was observed in 2005 (71 cases).

Results for the year 2006
Epidemiologic and Statistical TB Human Data for the year 2006 are available in central and regional public health authorities supervised by the Hellenic Disease Center for Control and Prevention under the Ministry of Health.

Results of the investigations in the year 2005
Based on reports from the Ministry of Health (Source: Hellenic center of infectious diseases and control) , 748 cases of Human tuberculosis were recorded for the year 20045 Relative information and Data are shown in relevant Tables of EFSA zoonoses monitoring electronic system.

Source of human infection
Human contact.

Relevance as zoonotic disease
Human Tuberculosis is a disease of high public concern and significance. The Continuous evaluation of the TB trends in Humans and animals will improve the disease management and intervention at national level. Inter- sector collaboration between Veterinary and Health services should be encouraged in the

field of disease epidemiology for each reported TB case in Humans and animals.

2.5.3 Mycobacterium in animals

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

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Ελλαδα	24229	21467	5119	138	54	10	7.25	23.85	2.7	1.05
Total : [1)]	24229	21467	5119	138	54	10	7.25	23.85	2.7	1.05

Comments:

[1)] N.A.

Footnote:

The Bovine Tuberculosis eradication programme has not been co-financed for 2010. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past TB programmes were co- financed by the EU.

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

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Ελλαδα	629171	585902	184955	184955	2343	2343	3053	31.57	1.27
Total : [1)]	629171	585902	184955	184955	2343	2343	3053	31.57	1.27

Comments:

[1)] N.A.

Footnote:

The Bovine Tuberculosis eradication programme has not been co-financed for 2010. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past TB programmes were co- financed by the EU.

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

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Ελλαδα	21467	585902	2464	69393	140	13371	538	12283	3984	72942			14341	417913
Total : [1)]	21467	585902	2464	69393	140	13371	538	12283	3984	72942	0	0	14341	417913

Comments:

[1)] N.A.

Footnote:

The Bovine Tuberculosis eradication programme has not been co-financed for 2010. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past TB programmes were co- financed by the EU.

Table Bovine tuberculosis in countries and regions that do not receive Community co-financing for eradication programmes

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

Region	Total number of existing bovine		Officially free herds		Infected herds		Routine tuberculin testing		Number of tuberculin tests carried out before the introduction into the herds (Annex A(I)(2)(c) third indent (1) of Directive 64/432/EEC)	Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological	Number of animals detected positive in bacteriological examination
	Herds	Animals	Number of herds	%	Number of herds	%	Interval between routine tuberculin tests	Number of animals tested			
Ελλαδα	24229	629171	14341	59.19	140	.58	once a year	184955			
Total : [1)]	24229	629171	14341	59.19	140	.58	N.A.	184955	0	0	0

Comments:

[1)] N.A.

Footnote:

The Bovine Tuberculosis eradication programme has not been co-financed for 2010. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past TB programmes were co- financed by the EU.

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

DISEASE: Bovine Brucellosis
AFFECTED SPECIES: Animals, Bovines

Susceptible population
726.221 animals raised in 38.486 holdings

Surveillance system
National Eradication program for bovine brucellosis.

Method used
Registration and identification of all bovines
Serological tests (Rose Bengal and Complement Fixation Test according the Dir. 64/432 as well as Elisa in milk and serum and Serum Agglutination Test) of all bovines over the age of 12 months.
Laboratory examination of reported abortions.

Case definition
Infected animal: Animal positive to serological tests.
Infected herd: Herd with one or more animals positive to serological tests.

Vaccination policy
Vaccination is not permitted.

Measures in case of positive findings
Slaughter of positive animals.
Ban of animal movement from and into the infected herd.
Reexamination of the herd and restoration of the “brucellosis free” health status.

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

Data analysis
Tables on data for herds and animals investigated during the year 2010 were reported to Commission and EFSA web- based data system alongside the tabulated values of the herd health status according to the epidemiological situation at the end of the year 2010 in the whole country.

From 17.234 reported herds at central level under the program, 5.407 herds were tested and 250 herds were found infected (period herd prevalence: 4,62%). From the positive herds, 108 were new cases (incidence: 2,00%). Among 375.394 animals under the program, 198.202 were tested (62.321 tested individually) and 2.536 disease-positive reactors were recorded.

Concerning the epidemiological situation at the end of the year, 187 herds were classified as infected

herds, 1.553 herds have never been investigated and remained in the unknown health status, 484 herds tested negative and 11.760 herds were reported as officially free. Additionally, in 3.126 herds the health status has been suspended, mainly because the routine serology testing in Blood serum or bulk milk has not been performed during the required by the programme intervals.

Further epidemiological investigation of positive herds is necessary to be done as reactors originated from officially free herds based on Reports from Regional and local veterinary authorities.

Technical evaluation.
Observed variations have been recorded on the evolution of bovine Brucellosis for the year 2010. The 2010 period prevalence rate reported slighter lower (4,62%) compared to the previous year 2009 (4,70%). The estimated herd incidence rate decreased from 2,19 % (2009) to 2% (2010). The 2010 animal prevalence (1,28%) reported lower in comparison with the previous year 2009 (1,85%). In general, the epidemiological indicators are influenced by the number of herds and animals tested in areas of high infection rate of Bovine Brucellosis.

Although the epidemiological situation in 2010 has not significantly improved compared to 2009, Bovine Brucellosis infection still remains a significant animal health problem in several areas of Greece with endemic characteristics, especially in previous infected herds or herds not periodically tested according to the programme requirements. In addition, strict Control and eradication measures for old and new infected herds should be a major task and priority for the veterinary services at regional and local level. In conclusion, further attempts and actions for investigating the epidemiology of the disease, identifying the source of infection and properly implementing the national program shall be urgently undertaken in order to meet the disease eradication targets for the next years.

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

Relevance as zoonotic disease
In general, bovine Brucellosis infection remains a significant animal health problem in several areas of Greece. The systematic implementation of bovine brucellosis eradication program is associated with the public health relevance of this zoonotic disease.

Recent actions taken to control the zoonoses

RB-51 Vaccination programme in Thessaloniki prefecture
As an additional preventive measure in order to rapidly reduce the prevalence of Bovine Brucellosis, a vaccination policy using the RB-51 vaccine (Brucella abortus strain) was implemented in the specific high risk area (Thessaloniki) in order to facilitate the progress of the existing Brucellosis eradication programme in Bovine Herds (dairy herds) which is in force and works concurrently with the vaccination strategy. During 2010, 124 Bovine herds (12.235 animals) reported vaccinated.

Suggestions to the Community for the actions to be taken

Source of human infection- Causal association.
The presence of B. abortus in animals compared to Brucella melitensis in small ruminants, has a lesser public health impact in Humans based on the epidemiology and official records from public health services.

Additional information

Summary Epidemiological and Statistical Data on the evolution of 2010 Bovine Brucellosis Programme are presented in the Reporting Tables of EFSA web-based zoonoses system.

Summary results of the zoonoses monitoring in the year 2010

- Number of herds under the programme (official control): 17.234
- Number of animals under the programme (official control): 375.394
- Number of herds tested: 5.407
- Number of herds positive: 250
- Number of new herds positive: 108
- Number of animals tested: 198.202
- Number of animals tested individually: 62.321
- Number of animals positive: 2.536
- Total number of animals slaughtered: 4.127

2.6.2 Brucellosis in humans

A. Brucellosis in humans

Results of the investigation

Results of the 2006 zoonoses monitoring period.
A total of 284 human Brucellosis cases were reported to the competent authorities (incidence per 100.000 persons = 2,59). The reported cases were classified as autochone (n=186), Imported (n=33) and unknown (n=65) cases respectively. The 2006 annual incidence rate reported lower compared to 2005 for Brucellosis in humans.

Results of the 2005 zoonoses monitoring period.

A total of 331 human Brucellosis cases were reported to the competent authorities (incidence per 100.000 persons = 3,02). All the reported cases were classified as autochone cases. Among the overall Brucella prevalence, 7 human cases were B. abortus , 16 B. melitensis, and 172 occupational respectively. The remaining Brucella spp cases , although have not been confirmed and typed, are considered to be B . melitensis due to epidemiological outcome and history of the disease occurrence.

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

DISEASE/AGENT: Brucellosis
SUSCEPTIBLE SPECIES: Humans

Susceptible population
10.934.097 (National Census ,2001)

Surveillance system
Mandatory reporting and notification policy
Epidemiological surveillance

Methods used
Clinical symptoms, serology,culture and microbiological confirmation.

Epidemiological history and evaluation
The continuous implementation of the control and eradication programmes in animals, especially in sheep and goats appears to have a successful impact on decreasing Human Brucellosis cases in Greece over time. In addition the widespread pasteurization, obligatory by law of milk and milk products has scientifically reduced the Human Brucellosis incidence.

For the year 1996 the reported cases were 451, slightly increased compared to those of 1998 (419 cases). For the years 1999 â€“ 2003 the reported human cases were 451, 334, 379 , 327 and 255 respectively.

Relevance as zoonotic disease

Relevance as zoonotic disease

The relevance and public health significance of B. melitensis as the main causative zoonotic agent remains very high in humans.

Source of human infection

Animal contact and consumption of dairy un- pasteurized products are mainly the source of human infection.

2.6.3 Brucella in animals

A. Brucella abortus in bovine animals

Vaccination policy

RB-51 Vaccination programme in Thessaloniki prefecture
As an additional preventive measure in order to rapidly reduce the Bovine Brucellosis Prevalence, a vaccination policy using the RB-51 vaccine (Brucella abortus strain) was implemented in the specific high risk area (Thessalonika) in order to facilitate the progress of the existing Brucellosis eradication programme in Bovine Herds (dairy herds) which is in force and works simultaneously with the vaccination strategy.
The evolution of the 2005 vaccination programme is presented in the table below :
TABLE 1

HERDS UNDER THE PROGRAM800
ANIMALS UNDER THE PROGRAM42.445
VACCINATED HERDS 141
ANIMALS IN VACCINATED HERDS10.295
VACCINATED ANIMALS8.203
CUMULATIVE HERD COVERAGE AT THE END OF THE YEAR 200542%
ANIMAL COVERAGE IN VACCINATED HERDS80 %
CUMULATIVE ANIMAL VACCINATION COVERAGE AT THE END OF THE YEAR 200545%

B. Brucella melitensis in sheep

Status as officially free of ovine brucellosis during the reporting year

The entire country free

Non officially free Country

Additional information

Total Susceptible population (Data 2010 / Directorate of Animal Health , MRDF)
16.629.873 sheep and Goats raised in 137.068 Flocks.

Surveillance system
The control program for ovine and caprine brucellosis is in force in the mainland (includes mass vaccination policy in young and adult sheep and goat population) and Brucellosis eradication program runs in islands.

Method used
Registration and identification systems applied in animals.
Serological test (test and slaughter policy) in animals raising in the islands.
Animal mass vaccination in the mainland.

Case definition
Infected animal: Animal positive to serological tests.
Infected Flock: Flock with one or more animals positive .

Vaccination policy
Vaccination according to the control program.

Measures in case of positive findings (according to the eradication program)
Slaughter of positive animals.
Ban of animal movement from and to the infected herd.
Re-examination of the herd and re establishment of the “brucellosis free” health status.

Vaccination policy

SEMI-WILD BOVINE VACCINATION WITH REV 1 VACCINE

As an additional preventive measure under the existing control and eradication brucellosis programme for sheep and goats, the free-ranged (semi-wild) bovines that are sharing common pastures with small ruminants, were vaccinated with REV-1 vaccine in order to reduce the spread of Brucella infection in the field.

Number of Bovine herds vaccinated with REV-1 vaccine: 788
Number of Bovine animals vaccinated with REV-1 : 9.239

Control program/mechanisms

The control program/strategies in place

EPIDEMIOLOGICAL SITUATION IN THE ISLANDS – DATA ANALYSIS

In the islands (eradication zone), except Evia, Lesvos and Leros, the 2010 flock incidence and prevalence rates among tested sheep and goats flocks were reported 2,04 % and 6,12 % respectively. The animal prevalence reported 1,07 % in 2010 . The islands of Lesvos and Leros have been excluded from the eradication policy and belong to the mainland vaccination programme status.

The 2010 Brucella Melitensis flock prevalence and incidence rates within eradication zone are mainly influenced (not representative from all the regions of the eradication zone with low herd coverage and no positive results) by the positive reactors reported from the regions Lasithi , Rethymno, Hraklio and Dodekanissa where the programme is carried out.

Summary results of the zoonoses monitoring in the year 2009 from the eradication zone

•Number of flocks under the programme (official control): 23.733
•Number of animals under the programme (official control): 3.711.777
•Number of flocks tested: 833
•Number of flocks positive: 51
•Number of new flocks positive: 17
•Number of animals tested individually: 66.731
•Number of animals positive: 715
•Total number of animals slaughtered: 995

Notification system in place

Mandatory notification status.

Results of the investigation

EPIDEMIOLOGICAL SITUATION IN THE MAINLAND – DATA ANALYSIS

Summary results of the official mass vaccination 2010 programme in sheep and goats:

Mass vaccination carried out in the Mainland. During 2010, based on vaccination records and reports from the Regional Veterinary Directorates (at Prefecture level) , 682.700 sheep and goats from 26.440 flocks were vaccinated with the vaccine REV 1 . Further analysis and detailed statistics (flock and animal vaccination data, follow –up and up to date vaccination activities) are available through the central data base files of the Department of Zoonoses (Animal Health Directorate).

Number of flocks vaccinated: 26.440
Number of animals vaccinated : 682.700

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

Epidemiological and Technical evaluation

The Ovine and Caprine Brucellosis control and eradication programme has been implemented in the mainland and islands of Greece in 2010. The 2010 B.melitensis programme was carried out without co-financing status by the E.U based on the Commission Decision 2008/897/EC. Greek Farmers obtained

compensation for positive-infected sheep and goats based on the requirements and provisions of the National Ministerial Decision 713/2009. The Country is divided in 54 prefectures - Nomos. For the implementation of brucellosis control and eradication programme, Greece is divided in two programme zones in which different policies and measures are applied, the control strategy in the mainland (mass vaccination of young and adult female small ruminants) and the eradication policy in the islands which is based on test and slaughter of positive reactors receptively.

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

Relevance as zoonotic disease

The relevance of the disease has a significant impact at Public Health level for the Community and consumers.

Source of human infection

Mainly from animal contact and consumption of dairy products (especially consumption of dairy products derived from non heated and pasteurized milk or immature types of sheep and goat cheese). In addition, it should be acknowledged the possible risk of obtaining the disease, if various home- made dairy products of unknown origin and hygiene quality are eaten by the consumers.

Additional information

Epidemiological history

Ovine and caprine brucellosis due to B. melitensis is a significant disease for both public health and animal production in Greece. During the last years a control and eradication program is running by the veterinary services of the Ministry of Rural Development and Food. The aim of the program is to control the incidence and prevalence of the disease in areas of the country where these estimates are reported high, by vaccination of lambs and kids. At the same time, in the remaining parts of the country, where the prevalence of the disease is reported low among sheep and goat flocks, an eradication program is implemented by test and slaughter policy.

Source of human infection

Mainly from animal contact and consumption of dairy products of unknown origin and hygiene quality. (Especially, consumption of dairy products prepared from non pasteurized milk or immature types of sheep and goat cheese).

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

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Ελλαδα	24229	17234	5407	250	108	21	8.4	31.37	4.62	2
Total : [1)]	24229	17234	5407	250	108	21	8.4	31.37	4.62	2

Comments:

[1)] N.A.

Footnote:

The Bovine Brucellosis eradication programme has not been co-financed for 2010. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past TB programmes were co- financed by the EU.

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

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds Period herd prevalence	% new positive herds Herd Incidence
Ελλαδα	25323	23733	833	51	17	5	9.8	3.51	6.12	2.04
Total : [1)]	25323	23733	833	51	17	5	9.8	3.51	6.12	2.04

Comments:

[1)] N.A.

Footnote:

The ovine and caprine B, Melitansis eradication programme covers only the islands of Greece. For The remaining country regions , the mainland, a mass vaccination programme was carried out in 2010 with no co-financing by the EU. The past 2009 and the current 2011 programmes have been aprooved for Co- financing. Programme implementation, Data collection and presentation are in acordance with all the EU requirements.

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

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Ελλαδα	629171	375394	198202	62321	2536	2536	4127	52.8	1.28
Total : [1)]	629171	375394	198202	62321	2536	2536	4127	52.8	1.28

Comments:

[1)] N.A.

Footnote:

The Bovine Brucellosis eradication programme has not been co-financed for 2010. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past TB programmes were co- financed by the EU.

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

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of positive animals	Slaughtering		Indicators	
						Number of animals with positive result slaughtered or culled	Total number of animals slaughtered	% coverage at animal level	% positive animals - animal prevalence
Ελλαδα	4113395	3711777	66731	66731	715	653	955	1.8	1.07
Total : [1)]	4113395	3711777	66731	66731	715	653	955	1.8	1.07

Comments:

[1)] N.A.

Footnote:

The ovine and caprine B, Melitansis eradication programme covers only the islands of Greece. For The remaining country regions , the mainland, a mass vaccination programme was carried out in 2010 with no co-financing by the EU. The past 2009 and the current 2011 programmes have been aprooved for Co- financing. Programme implementation, Data collection and presentation are in acordance with all the EU requirements.

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

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Ελλαδα	17234	375394	1553	16411	187	16835	484	9012	3126	43854	124	12235	11760	277047
Total : [1)]	17234	375394	1553	16411	187	16835	484	9012	3126	43854	124	12235	11760	277047

Comments:

[1)] N.A.

Footnote:

The Bovine Brucellosis eradication programme has not been co-financed for 2010. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past TB programmes were co- financed by the EU.

Table Ovine or Caprine Brucellosis in countries and regions that do not receive Community co-financing for eradication programme

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

Region	Total number of existing		Officially free herds		Infected herds		Surveillance			Investigations of suspect cases				
	Herds	Animals	Number of herds	%	Number of herds	%	Number of herds tested	Number of animals tested	Number of infected herds	Number of animals tested with serological blood tests	Number of animals positive serologically	Number of animals examined microbio logically	Number of animals positive microbio logically	Number of suspended herds
Ελλαδα	25323	4113395	5418	21.4	51	.2	833	66731	51					
Total : [1)]	25323	4113395	5418	21.4	51	.2	833	66731	51	0	0	0	0	0

Comments:

[1)] N.A.

Footnote:

The ovine and caprine B, Melitansis eradication programme covers only the islands of Greece. For The remaining country regions , the mainland, a mass vaccination programme was carried out in 2010 with no co-financing by the EU. The past 2009 and the current 2011 programmes have been aprooved for Co- financing. Programme implementation, Data collection and presentation are in acordance with all the EU requirements.

Table Bovine brucellosis in countries and regions that do not receive Community co-financing for eradication programme

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

Region	Total number of existing bovine		Officially free herds		Infected herds		Surveillance						Investigations of suspect cases								
							Serological tests			Examination of bulk milk			Information about			Epidemiological investigation					
	Herds	Animals	Number of herds	%	Number of herds	%	Number of bovine herds tested	Number of animals tested	Number of infected herds	Number of bovine herds tested	Number of animals or pools tested	Number of infected herds	Number of notified abortions whatever cause	Number of isolations of Brucella infection	Number of abortions due to Brucella abortus	Number of animals tested with serological blood tests	Number of suspended herds	Number of positive animals		Number of animals examined microbio logically	Number of animals positive microbio logically
																		Sero logically	BST		
Ελλαδα	24229	629171	11760	48.54	187	.77	5407	62321	250		135881										
Total : [1)]	24229	629171	11760	48.54	187	.77	5407	62321	250	0	135881	0	0	0	0	0	0	0	0	0	0

Comments:

[1)] N.A.

Footnote:

The Bovine Brucellosis eradication programme has not been co-financed for 2010. Data collection and presesentation since many years ago follows the Community format and layout because the programme implementation respects the EU rules and requirements. The past TB programmes were co- financed by the EU.

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

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

	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
Region	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
Ελλαδα	23733	3711777	7306	1461146	51	14577	2302	246886	8656	1616607			5418	372561
Total : [1)]	23733	3711777	7306	1461146	51	14577	2302	246886	8656	1616607	0	0	5418	372561

Comments:

[1)] N.A.

Footnote:

The ovine and caprine B, Melitansis eradication programme covers only the islands of Greece. For The remaining country regions , the mainland, a mass vaccination programme was carried out in 2010 with no co-financing by the EU. The past 2009 and the current 2011 programmes have been aprooved for Co- financing. Programme implementation, Data collection and presentation are in acordance with all the EU requirements.

2.7 YERSINIOSIS

2.7.1 General evaluation of the national situation

A. Yersinia enterocolitica general evaluation

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

DISEASE/AGENT: Yersiniosis
AFFECTED SPECIES: Animals and Food

No Data were available at central authority level for animal and Food in 2009

2.7.2 Yersiniosis in humans

A. Yersinosis in humans

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

Twenty two (22) cases of Human Yersiniosis were reported in total. The predominant causal agent was Y. enterocolitica (21 cases).

Humans: Data 2006
Y. enterocolitica : 22 cases (incidence: 0,2 per 100.000 inhabitants), Unknown : 1 case

2.8 TRICHINELLOSIS

2.8.1 General evaluation of the national situation

A. Trichinellosis general evaluation

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

DISEASE/AGENT: Trichinellosis , Trichinella spp.
AFFECTED SPECIES: Animals

Susceptible population
All domestic farmed and wild swine eligible for slaughter.

Surveillance system
Compulsory examination for detection of Trichinellosis at Slaughterhouse level.

Method used
Two main diagnostic methods for Trichinella spp in fresh pork meat are used. The first comprises the digestion in artificial gastric juice of muscle tissues from Trichinella pre- determined sites, followed by the microscopic examination of parasitic larvae. The second commonly used in the past covers the examination of tissues from diaphragm in the trichinoscope. New Community legislation (Commission Regulation 2075/2005) which has been adopted by the EU describes diagnostics techniques and sampling methods for target species (swine) expected to be fully implemented on mandatory basis by the national monitoring Trichinella systems in all Member- States.

Epidemiological history

Five (5) positive findings (Trichinella spp. Unspecified) were reported at slaughterhouse level under the meat inspections activities in 2010. The positive samples derived from meat of wild farmed boars raised in Northern Greece. The positive units were sent to Community Reference Laboratory for further diagnostics and parasitic identification.
During the reporting year 2010, 1.295.043 pigs were tested for trichinella spp at slaughterhouse level. The targeted animals were examined by the new official reference method of Trichinella detection as forseen and described in the Annex 1 of the Commission Regulation 2075/2005 (Magnetic stirrer method for pooled sample digestion).

Results of monitoring
Five (5) positive wild farmed boars were found in the framework of zoonosis monitoring. The causative agent was Trichinella spp- unspecified. In addition, ELISA method was carried out in blood sera (n= 363) from swine breeders and 4 blood samples have been found suspected for infection.

Data are presented in the relevant table of EFSA web based electronic system for zoonoses monitoring.

2.8.2 Trichinellosis in humans

A. Trichinellosis in humans

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

DISEASE/AGENT: Trichinellosis
AFFECTED SPECIES: Human

Results of the investigations in the year 2006
No cases of human trichinellosis were reported during the year 2006.

2.8.3 Trichinella in animals

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Pigs - fattening pigs - not raised under controlled housing conditions [1)]	At slaughterhouse	Animal	10823	0		
Pigs - fattening pigs - raised under controlled housing conditions [2)]	At slaughterhouse	Animal	1259071	0		
Wild boars - farmed [3)]	At slaughterhouse	Animal	4159	5		5
Wild boars - wild [4)]	At slaughterhouse	Animal	9	0		
Deer - wild - fallow deer [5)]	At slaughterhouse	Animal	2	0		
Pigs - breeding animals [6)]	National Reference Laboratory - Serology/ELISA	Animal	83	0		
Pigs - breeding animals - raised under controlled housing conditions - boars [7)]	At slaughterhouse	Animal	612	0		
Pigs - breeding animals - raised under controlled housing conditions - sows [8)]	At slaughterhouse	Animal	20369	0		
Wild boars [9)]	National Reference Laboratory - Serology/ELISA	Animal	280	15		15

Table Trichinella in animals

Comments:

[1] Regional Veterinary Official Inspection

[2] Regional Veterinary Official Inspection

[3] Regional Veterinary Official Inspection

[4] Regional Veterinary Official Inspection

[5] Regional Veterinary Official Inspection

[6] Animals tseted: 75 sows and 8 boars

[7] Regional Veterinary Official Inspection

[8] Regional Veterinary Official Inspection

[9] Farmed pigs

2.9 ECHINOCOCCOSIS

2.9.1 General evaluation of the national situation

A. Echinococcus spp. general evaluation

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

DISEASE/AGENT: Echinococcosis
AFFECTED SPECIES: Susceptible Animals: Cattle, sheep, Goats, Pigs.

Susceptible population
All animals eligible for slaughter at country level.

Surveillance system
Inspection of all carcasses at slaughterhouse level.
Preventive treatment of all domestic and farm dogs with antiparasitic tablets.

Method used
For farmed animals , meat inspection of carcasses at slaughterhouses. For dogs the arecolin test applied in the past.

Epidemiological history
The infection among the owned dogs has been almost disappeared due to systematic preventive treatment of animals with antiparasitic medication. The infection rate in stray dogs is difficult to be estimated. The overall infection in farmed animals remained stable compared to previous reporting years.

Results of 2010 zoonoses monitoring

Animal species Prevelance (%) at slaughterhouse level
Sheep1,85
Goats1,21
Bovine1,28
Pigs0.04
Results of 2009 zoonoses monitoring

Animal species Prevelance (%) at slaughterhouse level
Sheep1,85
Goats0,46
Bovines1.01
Pigs 0,00

Data analysis are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

Source of human infection
Mainly through the consumption of contaminated raw foodstuffs (i.e vegetables).

2.9.2 Echinococcosis in humans

A. Echinococcus spp. in humans

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

DISEASE/AGENT: Echinococcosis
AFFECTED SPECIES: Human

Surveillance system
Clinical cases referred to the competent authority.
Mandatory Notification of the disease within week (reporting time period following diagnosis).

Method used
X-ray, echo and serological tests.

Epidemiological history
A slight decrease in the number of clinical cases for the year 1999 comparing to the year 1998 was noticed. 99 autochthon cases and 6 imported were notified for the year 1999. For the 2000 ,2001, 2002, 2003 and 2004 years, 20,37,5,17 and 17 human cases were reported respectively.

Results of the investigations in the year 2006
Six (6) human cases (1 male and 6 females) were reported to the competent authorities of the Ministry of Health for the year 2006.

Source of human infection
Mainly consumption of infected food (i.e vegetables) and animal contact in conjunction with poor sanitary and hygiene conditions in rural areas.

2.9.3 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling unit	Region	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals)	At slaughterhouse	Animal	Ελλαδα	137052	1748			1748
Goats	At slaughterhouse	Animal	Ελλαδα	737614	8916			8916
Pigs	At slaughterhouse	Animal	Ελλαδα	1290875	464			464
Reindeers		---						
Sheep	At slaughterhouse	Animal	Ελλαδα	1807624	33423			33423
Wild boars - farmed	At slaughterhouse	Animal	Βορεια Ελλαδα	4159	0			
Wild boars - wild	At slaughterhouse	Animal	Βορεια Ελλαδα	9	0			

2.10 TOXOPLASMOSIS

2.10.1 General evaluation of the national situation

A. Toxoplasmosis general evaluation

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

DISEASE/AGENT: Toxoplasmosis
AFFECTED SPECIES: Animals

Toxoplasma gondii is detected in Sheep and Goats tested under national Surveys. The laboratory methods used for the year 2010 was the IFAT (Indirect Immunofluorescence Antibody test) for detecting Toxoplasma antibodies in blood sera and microscopic examination of the brain of aborted fetuses. The sampling schemes were not random or representative, originated from sheep and goats flocks with reported abortions under clinical investigation practices.

Results of 2010 zoonoses monitoring
Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring

2.10.2 Toxoplasmosis in humans

A. Toxoplasmosis in humans

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

DISEASE/AGENT: Toxoplasmosis
AFFECTED SPECIES: Human

No human cases of Congenital toxoplasmosis were reported in 2006.

2.10.3 Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii
Goats - at farm - animal sample - foetus/stillbirth - Clinical investigations [1)]	University, Vet school	Flock	3	2	2
Sheep - at farm - animal sample - foetus/stillbirth - Clinical investigations (Brain from aborted fetuses and blood from breeding adult animals)	University, Vet school	Flock	14	12	12

Comments:

[1)] Clinical investigation

2.11 RABIES

2.11.1 General evaluation of the national situation

A. Rabies general evaluation

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

DISEASE/AGENT: Rabies
AFFECTED SPECIES: Animals

Surveillance system
Monitoring activities covering the whole country are in force.

Vaccination policy
Dog vaccination is highly recommended and applied at National level.

Epidemiological history
No cases of human or animal rabies were reported. Greece is a Rabies- free country.
The disease in humans is notifiable through mandatory system.. Last case in humans was recorded in 1970. In animals 2 cases (a fox/1974 and a domestic dog /1987) were additionally reported. Rabies vaccine included into the standard vaccination protocols for dogs and cats respectively. However, the disease is present in neighbouring countries. Although rabies is a very rare disease in the EU, a risk of re-emerge does exist, especially through the cross- border movements of potentially rabid animals.

The disease is notifiable following a clinical suspicion in all-animal species. In the framework of National sporadic surveys, samples, especially brain from dead targeted animals and wildlife species are submitted to the National Reference laboratory (Athens – Greece) for further rabies diagnostic examinations.

Results of 2010 zoonoses monitoring
Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

2.11.2 Lyssavirus (rabies) in animals

Table Rabies in animals

	Source of information	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Lyssavirus, unspecified	Classical rabies virus (genotype 1)	European Bat Lyssavirus - unspecified
Cats [1)]	NRLab Rabies	Animal	Ελλαδα	1	0			
Dogs [2)]	National Reference Lab for Rabies	Animal	Ελλαδα	11	0			
Rats - wild - at farm - animal sample - organ/tissue	NRL Rabies	Animal	Ελλαδα	10	0			

Comments:

[1)] Animal Head, Clinical investigation

[2)] Animal Head,clinical investigation

2.12 STAPHYLOCOCCUS INFECTION

2.12.1 General evaluation of the national situation

2.13 Q-FEVER

2.13.1 General evaluation of the national situation

A. Coxiella burnetii (Q-fever) general evaluation

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

DISEASE/AGENT: Coxiella burnetii (Q fever) in animals
AFFECTED SPECIES: Animals/ sheep and goats mainly

Surveillance system
There is no official National monitoring program in place. Sporadic blood (sera) samples are officially collected and examined following notification of abortion at farm level, especially from sheep and goats.

Results of monitoring

In 2010 , 306 sampling units (animals : Cattle n= 11, sheep n =181, goats n=114) were tested for Coxiella burnetii and 56 found positive.
Data are presented in the relevant table of EFSA web based electronic system for 2010 zoonoses monitoring

In 2009 , 66 units (animals) were tested for Coxiella burnetii and 13 found positive.
Data are presented in the relevant table of EFSA web based electronic system for 2009 zoonoses monitoring

Epidemiological history
During the period 2001-2006 Coxiella burnettii was detected in 68 small ruminant flocks and 1 bovine herd (Table 1). Animal infection rate in affected flocks ranged from 2.1 % to 31.5%. Findings, along with previously conducted studies indicate the existence of the disease in animals. However, no data for animals or foods exist on a systematic basis.

Table 1.: Q fever in small ruminants, 2000-2006.

Year	2001	2002	2003	2004	2005	2006
Number of infected flocks	28	17	1	8	7	7

Source: MRDF

2.13.2 Coxiella (Q-fever) in animals

A. C. burnetii in animal - Sheep and goats - at farm - Clinical investigations - suspect sampling

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

DISEASE/AGENT: Coxiella burnetii (Q fever) in animals
AFFECTED SPECIES: Animals/ sheep and goats mainly

Surveillance system
There is no official / National program in place. Sporadic blood (sera) samples are collected and examined following notification of abortion at farm level , especially from sheep and goats.

Results of monitoring
Data are presented in the relevant table of 2008 EFSA web based electronic system for zoonoses monitoring

Epidemiological history
During the period 2001-2006 Coxiella burnettii was detected in 68 small ruminant flocks and 1 bovine herd (Table 1). Animal infection rate in affected flocks ranged from 2.1 % to 31.5%. Findings, along with previously conducted studies (7), indicate the existence of the disease in animals. However, no data for animals or foods exist on a systematic basis.

Table 1. Q fever in small ruminants, 2000-2006.
Number of infected flocks:
Year200120022003200420052006
28171877
Source: MRDF (Hellenic Ministry of Rural Development and Food)

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii
Cattle (bovine animals) - at farm - animal sample - blood - Clinical investigations [1)]	Local Veterinary services and Athens Reference Lab for Q fever	Animal	11	0	
Goats - at farm - animal sample - blood - Clinical investigations [2)]	Local Veterinary services and Athens Reference Lab for Q fever	Animal	114	25	25
Sheep - at farm - animal sample - blood - Clinical investigations [3)]	Local Veterinary services and Athens Reference Lab for Q fever	Animal	181	31	31

Comments:

[1)] Blood sera

[2)] Blood sera

[3)] Blood sera

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

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

Additional information

Results of investigations in the year 2010
Only targeted food samples (n= 148) were tested for E.coli spp- non pathogenic in 2010 with negative results.

3.1.2 Escherichia coli, non-pathogenic in foodstuffs

Table Escherichia coli, non-pathogenic in Food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified
All foodstuffs - at retail - domestic production [1)]	NVLabs	Single	25 gr	269	18	18

Comments:

[1)] The positive samples derived from fishery products

Footnote:

Lab method:ISO 16649-2, ISO 16649-3

3.1.3 Antimicrobial resistance in Escherichia coli, non-pathogenic

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

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	45	
Antimicrobials:	N	n
Fluoroquinolones - Enrofloxacin	45	16
Quinolones - Nalidixic acid	45	31
Sulphonamides - Sulfonamide	1	1
Aminoglycosides - Streptomycin	45	45
Aminoglycosides - Gentamicin	45	24
Trimethoprim + Sulphonamides	45	33
Penicillins - Ampicillin	45	45
Tetracyclines - Tetracycline	45	41
Resistant to 3 antimicrobials	45	7
Resistant to 4 antimicrobials	45	6
Resistant to >4 antimicrobials	45	32
Cephalosporins - Cefquinom	45	15
Cephalosporins - Ceftiofur	45	18

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Goats - at farm - animal sample - organ/tissue

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	6	
Antimicrobials:	N	n
Amphenicols - Florfenicol	6	1
Tetracyclines - Tetracycline	6	6
Fluoroquinolones - Enrofloxacin	6	0
Quinolones - Nalidixic acid	6	3
Aminoglycosides - Streptomycin	6	6
Aminoglycosides - Gentamicin	6	1
Trimethoprim + Sulphonamides	6	6
Penicillins - Ampicillin	6	6
Cephalosporins - Ceftiofur	6	1
Resistant to 4 antimicrobials	6	2
Resistant to >4 antimicrobials	6	4

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Sheep - at farm - animal sample - organ/tissue

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	14	
Antimicrobials:	N	n
Amphenicols - Florfenicol	14	5
Tetracyclines - Tetracycline	14	14
Fluoroquinolones - Enrofloxacin	14	4
Quinolones - Nalidixic acid	14	9
Aminoglycosides - Streptomycin	14	14
Aminoglycosides - Gentamicin	14	9
Trimethoprim + Sulphonamides	14	7
Penicillins - Ampicillin	14	14
Cephalosporins - Cefquinom	14	5
Cephalosporins - Ceftiofur	14	3
Resistant to 4 antimicrobials	14	4
Resistant to >4 antimicrobials	14	10

Table Antimicrobial susceptibility testing of Escherichia coli, non-pathogenic in Rabbits - at farm - animal sample - organ/tissue

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
Isolates out of a monitoring program (yes/no)	no	
Number of isolates available in the laboratory	1	
Antimicrobials:	N	n
Tetracyclines - Tetracycline	1	1
Aminoglycosides - Gentamicin	1	0
Penicillins - Ampicillin	1	0
Sulphonamides	1	0
Cephalosporins - Cefoperazone	1	0

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Sheep and goats - at farm - animal sample - organ/tissue - quantitative data [Diffusion method]

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

E.coli, non-pathogenic, unspecified	Sheep and goats - at farm - animal sample - organ/tissue																									
Isolates out of a monitoring program (yes/no)	no																									
Number of isolates available in the laboratory	12																									
Antimicrobials:	Cut-off value	N	n	<=6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Amphenicols - Chloramphenicol	12																									
Tetracyclines - Tetracycline	11	12	6	6										1	1	3				1						
Fluoroquinolones - Ciprofloxacin	15																									
Quinolones - Nalidixic acid	13																									
Trimethoprim	10																									
Aminoglycosides - Streptomycin	11																									
Aminoglycosides - Gentamicin	12	10	1	1												1		3	1	1	1	1		1		
Aminoglycosides - Kanamycin	13																									
Trimethoprim + Sulphonamides	10																									
Penicillins - Ampicillin	13	11	6	6								2	1			2										
Cephalosporins - Cefotaxim	15																									
Sulphonamides	10	9	3	3										1						1		3		1		
Cephalosporins - Cefoperazone	15	12	0												1	1	1		1			1	1	2	1	2

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Sheep and goats - at farm - animal sample - organ/tissue - quantitative data [Diffusion method]

E.coli, non-pathogenic, unspecified	Sheep and goats - at farm - animal sample - organ/tissue						
Isolates out of a monitoring program (yes/no)	no						
Number of isolates available in the laboratory	12						
Antimicrobials:	29	30	31	32	33	34	>=35
Amphenicols - Chloramphenicol							
Tetracyclines - Tetracycline							
Fluoroquinolones - Ciprofloxacin							
Quinolones - Nalidixic acid							
Trimethoprim							
Aminoglycosides - Streptomycin							
Aminoglycosides - Gentamicin							
Aminoglycosides - Kanamycin							
Trimethoprim + Sulphonamides							
Penicillins - Ampicillin							
Cephalosporins - Cefotaxim							
Sulphonamides							
Cephalosporins - Cefoperazone		1					

Footnote:

These E.Coli isolates have been tested for AR using cut-off values (breakpoints) from other standard testing methods. All isolates derived from clinical investigation cases.

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

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Amphenicols	Chloramphenicol			17
	Florfenicol			18
Tetracyclines	Tetracycline			18
Fluoroquinolones	Enrofloxacin			21
Quinolones	Nalidixic acid			18
Aminoglycosides	Streptomycin			14
	Gentamicin			14
Trimethoprim + Sulphonamides	Trimethoprim + Sulphonamides			15
Cephalosporins	Cefquinom			21
	Ceftiofur			17
Penicillins	Ampicillin			16

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

3.2 ENTEROCOCCUS, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

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

Test Method Used	Standard methods used for testing

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

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

			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Oxazolidines	Linezolid		4	

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 ENTEROBACTER SAKAZAKII

4.1.1 General evaluation of the national situation

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

A. Histamine General evaluation

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

DISEASE/AGENT: Histamine in Food

Surveillance system

There is no official monitoring program or systematic scheme applied for Histamine in food. Sporadic samples from fish and fishery products are examined in the designated national veterinary laboratory in Thessalonica- Grrece. Targeted fish species for testing and detecting Histamine are: Scrombridae, Clupeidae, Engraulidae, Coryfenidae, Pomatomidae and Scrombresosidae. Related Legislation: Community Regulation (EC): 1141/2007.

Results of monitoring

Data are presented in the relevant table of EFSA web based electronic system for 2009 zoonoses monitoring.

4.3 STAPHYLOCOCCAL ENTEROTOXINS

4.3.1 General evaluation of the national situation

5. FOODBORNE

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

A. Foodborne outbreaks

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

Notification of food-borne outbreaks through Mandatory Notification System was introduced for the first time in 2004. The competent authority is the Food-borne and Water-borne Diseases Section of the Hellenic Centre for Diseases Control and Prevention (HCDCP).
Once a food-borne outbreak is notified, the public health professionals conduct an epidemiological investigation in order to estimate the extent of the outbreak, identify the source and take control measures. Furthermore, the Public Health Directorate of the competent Prefecture, the National Food Agency as well as the Ministry of Rural Development and Food are informed and conduct the environmental investigation, whenever it is needed.

Description of the types of outbreaks covered by the reporting:

Any type of outbreak, either general or household, is reported through Mandatory Notification System.

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

In 2010, 62 food-borne/water-borne outbreaks were reported. The number of reported food-borne outbreaks has been quite stable since 2004. Forty seven (76%) of the outbreaks were domestic (only one household was involved). For the rest 15 outbreaks, we chose to present data for those with more than 10 cases involved.

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

Salmonella spp. was the predominant causative agent of the reported food-borne outbreaks. This is a finding consistent with previous years. There was an increase in outbreaks caused by viruses. This is probably explained by the fact that the laboratory diagnosis of viruses has become more frequent.

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

Forty seven (76%) of the outbreaks were domestic (only one household was involved).

Evaluation of the severity and clinical picture of the human cases

With regard to the severity of illness, 154 (19.1%) out of the 807 outbreak-related cases, were hospitalized. Finally, no outbreak-related deaths were reported in 2010.

Additional information

It should be mentioned that the reporting date was used for the analysis of data.

Table Foodborne Outbreaks: summarised data

	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Salmonella - S. Typhimurium	0	0	0	0	0	0
Salmonella - S. Enteritidis	1	11	3	0	0	1
Salmonella - Other serovars	0	0	0	0	0	0
Campylobacter	0	0	0	0	0	0
Listeria - Listeria monocytogenes	0	0	0	0	0	0
Listeria - Other Listeria	0	0	0	0	0	0
Yersinia	0	0	0	0	0	0
Escherichia coli, pathogenic -	0	0	0	0	0	0
Bacillus - B. cereus	0	0	0	0	0	0
Bacillus - Other Bacillus	0	0	0	0	0	0
Staphylococcal enterotoxins	0	0	0	0	0	0
Clostridium - Cl. botulinum	0	0	0	0	0	0
Clostridium - Cl. perfringens	0	0	0	0	0	0
Clostridium - Other Clostridia	0	0	0	0	0	0
Other Bacterial agents - Brucella	0	0	0	0	0	0

	Number of outbreaks	Human cases	Hospitalized	Deaths	Strong evidence Number of Outbreaks	Total number of outbreaks
Other Bacterial agents - Shigella	0	0	0	0	0	0
Other Bacterial agents - Other Bacterial	0	0	0	0	0	0
Parasites - Trichinella	0	0	0	0	0	0
Parasites - Giardia	0	0	0	0	0	0
Parasites - Cryptosporidium	0	0	0	0	0	0
Parasites - Anisakis	0	0	0	0	0	0
Parasites - Other Parasites	0	0	0	0	0	0
Viruses - Norovirus	1	166	37	0	0	1
Viruses - Hepatitis viruses	0	0	0	0	0	0
Viruses - Other Viruses	0	0	0	0	0	0
Other agents - Histamine	0	0	0	0	0	0
Other agents - Marine biotoxins	0	0	0	0	0	0
Other agents - Other Agents	0	0	0	0	0	0
Unknown agent	1	16	8	0	0	1