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 and antimicrobial resistance in zoonotic agents

IN 2005

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: **Greece**

Reporting Year: **2005**

Institutions and laboratories involved in reporting and monitoring:

Laboratory name	Description	Contribution

PREFACE

This report is submitted to the European Commission in accordance with Article 9 of Council Directive 2003/99/EC[1]. 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 2005. 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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[1] Directive 2003/99/EC of the European Parliament and of the Council of 12 December 2003 on the monitoring of zoonoses and zoonotic agents, amending Decision 90/424/EEC and repealing Council Directive 92/117/EEC, OJ L 325, 17.11.2003, p. 31

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1. ANIMAL POPULATIONS

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

A. Information on susceptible animal population

Sources of information:

2005 DEMOGRAPHIC DATA. GREECE
SUSCEPTIBLE POPULATION: (please advise electronic tables in the EFSA Web - based zoonoses system)
Source of information: Internal Data Base computerized system of Hellenic Ministry of Agriculture (update 2005). 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

Animal species	Category of animals	Livestock numbers (live animals)	Year*	Number of slaughtered animals	Year*	Number of holdings	Year*	Number of herds or flocks	Year*
Birds	pet animals	26104				557			
Cats	pet animals	228956				74082			
Cattle (bovine animals)	mixed herds					4505			
	dairy cows and heifers	310796		19312		15106			
	young cattle (1-2 years)	201233		22457					
	meat production animals	231630		168618		12702			
	in total	837956		210387		32313			
Deer	farmed - in total	1289				55			
Dogs	pet animals	287058				86885			
	stray dogs	150000	2004						
Ducks	parent breeding flocks	16885		5628		1916			
Gallus gallus (fowl)	mixed flocks/holdings	126900						137	
	parent breeding flocks for egg production line	88950						14	
	parent breeding flocks for meat production line	1182870						211	
	breeding flocks for egg production line - in total	88950						14	
	breeding flocks for meat production line - in total	1182870						211	
	laying hens	7227260						419	
	broilers	120000000		120000000		1301	2004		
	in total	121398720		120000000				781	
Geese	in total	9520		3173		1109			
Goats	in total	2914511		986734				22149	
Ostriches	farmed	7371						184	
Pigs	fattening pigs	1894721		928376					
	breeding animals	122664		52721					
	in total	2017385		982097		4573			
Rabbits	farmed	366850				11236			
Sheep	in total	5325223		2206332				65675	
Solipeds, domestic	horses - in total	49751						27372	
Turkeys	in total	366041		99452				3079	
Wild boars	farmed - in total	15365		559					
Sheep and goats	in total	5124240						36033	

Footnote

Other live animals and fish: beehives 12.000.000(2004), Beekeepers 24.000, Sparus aurata (250 holdings,42000 tn/year), Trout (100 holdings, 2200 tn/year), Bass Fish (300 holdings, 18.000 tn/year / year 2004) live-Bivalvia molluscs (150 holdings, 40.000 tn/year / year 2004), Echinoderma (57 holdings , 8000 animals/ year 2003)

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: Salmonella
AFFECTED SPECIES: Animals (non poultry)
Surveillance system
There is not any specific or systematic monitoring program in place.
Data are based on the samples sporadically submitted to the laboratories.
Method used
The bacteriological method ISO 6579 for the detection of Salmonella spp
In the year 2005 three (3) unspecified salmonella spp. serotypes were identified and reported.
Epidemiological history
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).
DISEASE/AGENT: Salmonella
AFFECTED SPECIES: Food
Surveillance system
Routine examination and targeted sampling at retail level, processing plan and slaughterhouse based on National and Community legislation.
Method used
The ISO 6579/2002 is used for the detection of Salmonella in food.
Report summary evaluation
The 2005 Serovars in Food reported by the National Reference Laboratory (NRL) for Salmonellosis in Greece (Located in Chalkida, Evia prefecture) are presented below:
S Enteritidis, S, Blockley, S. Typhimurium, S. kottbus, S. Adamstua, S.Infantis S. Kentucky, S. Salamae, S. Schwarzengrum, S. Indiana, S. S.Livingstone, S. Heidelberg, S. Bredeney, S. Derby, S. Enterica, S.Meleagridis, S. virchow and Salmonella spp.
Epidemiological report analysis:
The reporting rate in 2005 remained almost stable with no significant variations compared to 2004 and 2003 respectively. The total food units (samples) tested under a targeted sampling procedure from meat , dairy , egg , fishery and other food products were 7.064. The Salmonella positive food sample units found out of the total number, were 81 (isolates). Based on 2005 results , the three most frequent and predominant Salmonella reported serovars in food were: S.enteritidis, S. Livingstone and S. Blockley.
History:
In 2003, an increased trend of reporting samples from food products was observed. More than a 2-fold increase (7.192 units) occurred in samples tested in 2003 for Salmonella compared to 2001 report (3.064). A total number of 125 Salmonella isolates were isolated during 2003

compared to 101 in 2002. The predominant serovars in 2003, 2002 and 2001 were S. Enteritidis (61 Isolates), S. Enteritidis (38 isolates) and 2001 S. Livingstone (34 isolates) respectively. In the year 2004 the predominant Salmonella serovar originated from breeding poultry (Gallus gallus) was S. Blockley.
The 2004 Serovars in Food reported by the National Reference Laboratory (NRL) for Salmonellosis in Greece (Located in Chalkida, Evia prefecture) are:
S Enteritidis, S. Amootive, S, Diarizonae, S, Blockley, S. Typhimurium, S. Indiana, S. Hadar, S. S.Livingstone, S.Meleagridis, S. virchow, S. Muenchey, S. Schwein, and S. Anatum.
Results of monitoring:
Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

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

DISEASE/AGENT: Salmonella
AFFECTED materials: Feed material of animal origin, vegetable origin and compound feedingstuffs
Surveillance system
The new legal requirements (new zoonoses Directive and Regulation) will change the existing monitoring situation and system and new surveillance strategies for monitoring Salmonella agents will be in force in fore coming years in accordance with Community targets approved . Rapid adaptation and compliance on the new Salmonella monitoring programmes and schemes is expected to be finalized the next years at EU member states.
Measures in case of positive findings
According to the current EU Directives.
The 2005 reported Salmonella serovars (n=18) from feed of animal origin , isolated and serotyped by the National Reference Laboratory for Salmaonella are presented below:
1. S.Bredeney (from poultry offal meal)
2. S.Blockley (from poultry offal meal)
3. S. Carro (from poultry offal meal)
4. S.Kedougou (from poultry offal meal)
5. S.Agona (from poultry offal meal)
6. S.Oranienberg (from poultry offal meal)
7. S.Typhimurium (from poultry offal meal)
The 2005 monitoring in compound feedstuffs revealed the following Salmonella serovares (n=14) :
1. S. Bredeney (8) (from poultry- meat line / final product)
2. S. Mbandaka (3) (from poultry- meat line / final product)
3. S. Havana (1) (from poultry- meat line / final product)
4. S. Salamae (1) (reported on the web as unspecified salmonella serovar in some tables. Raw data identified S. salamae as S. 1,4,12,27:b:[e,n,x]- from poultry- meat line / final product)
5. S. Salmonella spp. (1)

Additional information

DISEASE/AGENT: Salmonella
AFFECTED SPECIES: Poultry breeding flocks- Callus gallus
Susceptible population

Parent stock for egg ,meat and mixed production line is estimated around 1.398.720 birds (2005 national zoonoses records).

Surveillance system

A control program, according to the Annex III of the Dir. 92/117, is already in force since 1998. Moreover, it is important to mention the implementation of the baseline study in breeding flocks of Gallus gallus supervised by the Hellenic central competent veterinary authorities which was in line with the uniform EU guidelines approved by the Commission. The results were evaluated by the Commission in order to set up the foreseen Community targets towards the reduction of Salmonella prevalence in Breeders at flock level.

Method used

The methods ISO 6579/2002 and ISO 6580 are mainly used for the detection of Salmonella spp.

Measures in case of positive findings

Slaughter of infected flock or prohibition of placement of hatching eggs to
the hatchery for as long as the disease exists.

Epidemiological and statistical report

Serovars (n=30) isolated and identified during the year 2005 by the National Reference Laboratory (NRL-Located in Chalkida, Evia prefecture) for Salmonella are presented below :

1. S. Enteritidis (15)
2. S. Typhimurium (1)
3. S. Seftenberg (1)
4. S. Infantis (1)
5. S. Enterica (1)
6. S. Blockley (3)
7. S. Isangi (1)
8. S. Corvalis(1)
9. S. Kottbus (5)
10. S. Livingstone (1)

DISEASE/AGENT: Salmonella

AFFECTED SPECIES: Commercial and non -commercial Poultry other than breeding flocks

Surveillance system

Various survey activities are implemented in the country based on suspected samples submitted into the laboratories to be investigated.

Methods used:

ISO 6579/93 and ISO 6579/2002 for the detection of Salmonella serovars

Monitoring Results

One hundred ninety six (196) Serovars isolated, serotyped and reported by the National Reference Laboratory (NRL) for Salmonella in Greece during the Year 2005.

The majority of Salmonella serovars in positive poultry flocks were reported from Broilers at rearing period (n=46), Laying hens in the production stage (n= 105) and from one day old Broilers chicks (n= 38) respectively.

Among all (n= 196, 43 different serotypes), the seven (7) most frequent and predominant Salmonella serovars are given below:

1. S. Enteritidis (n=27)
2. S. Livingstone (n=39)
3. S. Typhimurium (n= 12)
4. S. Virchow (n= 12)
5. S. Blockley (n=10)

6. S. meleagridis (n=17)
7. S. Cerro (n=11)

2.1.2. 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. Livingstone	S. Blockley	S. Indiana	S. Meleagridis	S. Virchow	S. enterica subsp. enterica
Meat from broilers (Gallus gallus)														
fresh														
- at processing plant		S	25GR	785	22	1			7	11	1	1	1	
- at retail		S	1,5 KGR	33	6	3		2						1
meat products														
raw but intended to be eaten cooked														
- at processing plant		S	25GR	35	1					1				
- at retail		S	25GR	474	(0)									
cooked, ready-to-eat														
- at processing plant		S	25GR	295	(0)									
- at retail		S	25GR	4	(0)									
mechanically separated meat (MSM)														
- at processing plant		S	25GR	77	7	6				1				
Meat from turkey														

meat products														
raw but intended to be eaten cooked														
- at retail		S	25GR	4	(0)									
cooked, ready-to-eat														
- at retail		S	25GR	23	(0)									

Table Salmonella spp. in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Milk, cows'								
raw		S	1 LIT	162	(0)			
pasteurised milk		S	1LIT	51	(0)			
Cheeses made from sheep's milk		S		82	(0)			
Dairy products (excluding cheeses)								
butter								
made from raw or low heat-treated milk		S	250GR	8	(0)			
milk powder and whey powder		S	1KGR	1	(0)			
ice-cream		S	500 GR	136	(0)			
dairy products, not specified								
ready-to-eat		S	200GR	788	(0)			
dairy desserts								
chilled		S	25	25	(0)			
Cheeses, made from unspecified milk or other animal milk		S	500GR	1036	(0)			

Footnote

Targeted sampling, official national control by law at retail revel. Routine microbiology and serotyping by the National Reference Laboratory for Salmonella (NRLS). ISO 6579/2002

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. Derby
Meat from pig									
fresh									
- at processing plant		S	25GR	6	(0)				
- at retail		S	200GR	28	1	1			
meat products									
raw but intended to be eaten cooked									
- at processing plant		S	25GR	40	5	3			2
- at retail		S	200GR	14	(0)				
cooked, ready-to-eat									
- at processing plant		S	25GR	26	(0)				
- at retail		S	25gr(56),200gr(31),1kg (15)	102	(0)				
Meat from bovine animals									
fresh		S	200GR	41	1			1	
meat products									
raw but intended to be eaten cooked		S	1KG	8	(0)				
cooked, ready-to-eat		S	25GR	1	(0)				
mechanically separated meat (MSM)		S	25GR	5	(0)				

Table Salmonella spp. 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. Infantis	S. Kottbus	S. Adamstua	S. Kentucky	S. Schwarzengrund
Eggs													
table eggs													
- at packing centre		B		81	2					2			
- at retail		S		197	(0)								
raw material (liquid egg) for egg products		B	25GR	3	(0)								
Egg products		B	25GR	2	(0)								
Fishery products		S		26	(0)								
Live bivalve molluscs		S	25GR,1KG	238	4	1		1				1	1
Fish													
raw		S		61	2		1		1				
Fishery products, unspecified													
raw													
frozen		S	1KGR	19	(0)								
Meat from sheep		S	2KGR	9	(0)								

Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos)													
meat products													
fermented sausages		S	200GR	5	(0)								
Meat, mixed meat													
minced meat													
intended to be eaten cooked		S		5	(0)								
Vegetables													
products													
canned													
- at retail		S	25GR	31	(0)								
Meat from other animal species or not specified													
meat products		S	25GR	109	(0)								
Bakery products		S	25GR	34	(0)								
Other processed food products and prepared dishes													
unspecified													
ready-to-eat foods		S	25GR	64	(0)								
sandwiches		S	100GR	68	(0)								
Frogs leg		S		3	1						1		
Snails		S		1	(0)								
ready-to-eat salads		S		16	(0)								

Footnote

Targeted sampling, official national control by law at retail revel. Routine microbiology and serotyping by the National Reference Laboratory for Salmonella (NRLS). ISO 6579/2002

2.1.3. Salmonella in animals

Table Salmonella in breeding flocks of Gallus gallus

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. enterica subsp. salamae	S. Senftenberg	S. Infantis	S. Isangi	S. Corvallis	S. Blockley	S. Livingstone	S. Kottbus
Gallus gallus (fowl)															
parent breeding flocks for egg production line															
day-old chicks		flock	11	2				1	1						
during rearing period		flock	13	(0)											
during production period		flock	117	18	11	1				1	1	1	2	1	
parent breeding flocks for meat production line															
day-old chicks		flock	55	(0)											
during rearing period		flock	14	(0)											
during production period		flock	99	10	4								1	5	
parent breeding flocks, unspecified															
during production period		flock	2	(0)											

Table Salmonella in other poultry (Part A)

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Infantis	S. Mbandaka	S. Muenchen	S. enterica subsp. salamae	S. Rissen	S. Albany	S. enterica subsp. enterica	S. Hadar	S. 6,7:b:-	S. Ikeja	S. 3,10:-:-	S. Oranienburg	S. Idikan
Gallus gallus (fowl)																				
laying hens																				
day-old chicks		A	1	(0)																
during rearing period		A	4	2																
during production period		A	214	105	25	8		7	2		2	2	2	1	1		1		1	1
broilers																				
day-old chicks		A	353	38	1				1	1						1				
during rearing period		A	227	46		2			1	1						1		1		
Ducks		A	3	(0)																
Geese		A	2	1		1														
Turkeys																				
meat production flocks		A	15	(0)		2			1	1										

Table Salmonella in other poultry (Part B)

	S. Cubana	S. Veneziana	S. Blockley	S. Umbilo	S. Virchow	S. Agona	S. Meleagridis	S. Lille	S. Livingstone	S. Anatum	S. Mishmarhaemek	S. Djugu	S. Westhampton	S. Heidelberg	S. Bredeney	S. Poona	S. Gallinarum	S. Havana	S. Carno	S. Montevideo
Gallus gallus (fowl)																				
laying hens																				
day-old chicks																				
during rearing period																	2			
during production period	1	1	1	1	5	2		1	5		4	1	1	1	5	1		1		
broilers																				
day-old chicks			1		2		1		27	1									2	
during rearing period			8	1	5		16		7						1		1		1	1
Ducks																				
Geese																				
Turkeys																				
meat production flocks			8		5		16		7						1		1		1	1

Table Salmonella in other poultry (Part C)

	S. Cerro	S. Tennessee	S. Newport	S. Kottbus	S. 6,7:d:-	S. Braenderup
Gallus gallus (fowl)						
laying hens						
day-old chicks						
during rearing period						
during production period	11		1			7
broilers						
day-old chicks					1	
during rearing period		1			1	
Ducks						
Geese						
Turkeys						
meat production flocks		1				

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Kottbus	S. Gallinarum
Pigeons		A	8	(0)					
Quails		A	1	(0)					
Pheasants		A	6	1					1
Partridges		A	8	(0)					
Ostriches		A	9	(0)					
Birds		A	8	1				1	
wild		A	10	(0)					
Parrots									
pet animals		A	11	1	1				
Canary									
pet animals		A	9	1		1			

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Cattle (bovine animals)	clinical examination	Animal	46	3			3
Sheep	clinical examination	Animal	107				
Goats	clinical examination	Animal	77				
Pigs							
fattening pigs	clinical examination	Animal	18	1			1
Hares							
wild	clinical examination	Animal	1				
Rabbits	clinical examination	Animal	16				
Turtles	clinical examination	Animal	1				

2.1.4. Salmonella in feedingstuffs

Table Salmonella in feed material of animal origin

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Oranienburg	S. Kedougou	S. Bredeney	S. Blockley	S. Cerro	S. Agona
Feed material of land animal origin					(0)									
dairy products		S		5	(0)									
meat meal		B		15	(0)									
poultry offal meal		B		261	18		2		1	2	6	1	5	1
animal fat		B		1	(0)									
Feed material of marine animal origin					(0)									
fish meal		S		65	(0)									

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified
Feed material of cereal grain origin								
wheat derived		S		2				
maize derived		S		4				
Feed material of oil seed or fruit origin								
soya (bean) derived		S		2				
Other feed material								
forages and roughages		S		25				

Footnote

Targeted sampling. ISO 6579/2002

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified	S. Bredeney	S. Mbandaka	S. Havana
Compound feedingstuffs for poultry (non specified)											
final product		S		227	14			2	8	3	1
Pet food											
dog snacks (pig ears, chewing bones)		S		2							
Compound feedingstuffs for fish											
final product		S		16							

2.1.5. Salmonella serovars and phagetype distribution

Table Salmonella serovars in animals

Serovars		Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Gallus gallus (fowl) - at farm - environmental sample		Gallus gallus (fowl) - at hatchery - environmental sample	
Sources of isolates		M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
Number of isolates in the laboratory	N=					79	23		1	33		4	
Number of isolates serotyped	N=					111	49		1	51		4	
Number of isolates per type													
S. Agona						1							
S. Albany										2			
S. Anatum						1							
S. Blockley						4	8			2			
S. Braenderup						4				3			
S. Bredeney						1	1						

S. Carno					2	1						
S. Cerro					3				2			
S. Corvallis									1			
S. Cubana					1							
S. Enteritidis					24				19		2	
S. Havana					1							
S. Idikan					1							
S. Ikeja					1							
S. Infantis					3				5			
S. Isangi					1							
S. Kottbus					5							
S. Lille					1				1			
S. Livingstone					39	10			4			
S. Mbandaka					1	1			1			
S. Meleagridis					1	16						
S. Mishmarhaemek					1				2			
S. Montevideo						1					1	
S. Muenchen						1						
S. Newport									1			
S. Oranienburg					1							
S. Ouakam									1			
S. Poona					1							
S. Senftenberg											1	
S. Tennessee					1							
S. Typhimurium					5	1		1	3			
S. Umbilo					1				1			
S. Virchow					3	5			3			
S. 3,10:-:-						1						
S. 6,7:b:-					1							
S. 6,7:d:-					1	1						
S. 6,7:z10:-					1							
S. Gallinarum						2						

Total of typed *Salmonella* isolates												

Footnote

(*) M : Monitoring, C : Clinical
Dimitris Vourvidis MRDF

Table Salmonella serovars in food

Serovars	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Other poultry		Other products of animal origin	
Sources of isolates	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)	M(*)	C(*)
Number of isolates in the laboratory N=			3		26		1		4	
Number of isolates serotyped N=			3		72		1		11	
Number of isolates per type										
S. Adamstua									1	
S. Anatum					12					
S. Blockley					14					
S. Bredeney					1					
S. Carno					1					
S. Derby			1							
S. Enteritidis			1		11				1	
S. Hadar					2					
S. Havana					1					
S. Heidelberg							1			
S. Indiana					7					
S. Kentucky									5	
S. Kottbus									1	

S. Livingstone					14					
S. Meleagridis					1					
S. Muenchen					1					
S. Oranienburg					1					
S. Schwarzengrund									1	
S. Senftenberg					1					
S. Typhimurium					2				1	
S. Virchow					1					
S. 4,12:b:-					1				1	
S. 6,7:b:-					1					
S. enterica subsp. enterica			1							
Total of typed *Salmonella* isolates										

Footnote

(*) M : Monitoring, C : Clinical

2.1.6. Antimicrobial resistance in Salmonella isolates

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.

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.

Table Antimicrobial susceptibility testing of S. Agona in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Agona
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																						1									
Amphenicols																																
Chloramphenicol	1																						1									
Cephalosporins																																
3rd generation cephalosporins	1																													1		
Fluoroquinolones																																
Ciprofloxacin	1																															1
Quinolones																																
Nalidixic acid	1																					1										
Sulfonamides																																
Sulfonamide	1																		1													
Aminoglycosides																																
Streptomycin	1														1																	
Gentamicin	1																						1									
Kanamycin	1																						1									
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																										1					
Penicillins																																
Ampicillin	1																						1									

Table Antimicrobial susceptibility testing of S. Blockley in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Blockley
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	5

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	5	4	2	1				1												1												
Amphenicols																																
Chloramphenicol	4	1	1																	1			2									
Cephalosporins																																
3rd generation cephalosporins	4																			1							2		1			
Fluoroquinolones																																
Ciprofloxacin	2																							1						1		
Enrofloxacin	2																					1			1							
Quinolones																																
Nalidixic acid	3	1	1																1	1												
Trimethoprim	2																								2							
Sulfonamides																																
Sulfonamide	4																1	1		1							1					
Aminoglycosides																																
Streptomycin	3	3	1	1	1																											
Gentamicin	4														2		1	1														
Kanamycin	3	3	3																													
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	4																					1	1	1	1							
Penicillins																																
Ampicillin	4																			1	1	2										

Table Antimicrobial susceptibility testing of S. Braenderup in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Braenderup
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	5

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	5	1	1										1	1					1		1											
Amphenicols																																
Chloramphenicol	5																	1			1		2		1							
Cephalosporins																																
3rd generation cephalosporins	4																										1			2		1
Fluoroquinolones																																
Ciprofloxacin	5																										1	1	1	1		1
Quinolones																																
Nalidixic acid	5																				1	1	2	1								
Sulfonamides																																
Sulfonamide	5														1			1	3													
Aminoglycosides																																
Streptomycin	4											1	1	2																		
Gentamicin	2															1		1														
Kanamycin	5															1		2			2											
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	5																						1			1	3					
Penicillins																																
Ampicillin	5																				1		2	1	1							

Table Antimicrobial susceptibility testing of S. Bredeney in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Bredeney
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	2

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	2																	1	1													
Amphenicols																																
Chloramphenicol	2																			1	1											
Cephalosporins																																
3rd generation cephalosporins	2																										1		1			
Fluoroquinolones																																
Ciprofloxacin	1																												1			
Enrofloxacin	1																								1							
Quinolones																																
Nalidixic acid	2																			1			1									
Trimethoprim	1																						1									
Sulfonamides																																
Sulfonamide	2												1					1														
Aminoglycosides																																
Streptomycin	2									1			1																			
Gentamicin	2													1		1																
Kanamycin	2														1		1															
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	2																						1		1							
Penicillins																																
Ampicillin	2																				1	1										

Table Antimicrobial susceptibility testing of S. Carno in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Carno
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																		1													
Amphenicols																																
Chloramphenicol	1																			1												
Cephalosporins																																
3rd generation cephalosporins	1																									1						
Fluoroquinolones																																
Ciprofloxacin	1																													1		
Quinolones																																
Nalidixic acid	1																						1									
Sulfonamides																																
Sulfonamide	1																	1														
Aminoglycosides																																
Streptomycin	1												1																			
Gentamicin	1																1															
Kanamycin	1																1															
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																						1									
Penicillins																																
Ampicillin	1																					1										

Table Antimicrobial susceptibility testing of S. Cerro in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Cerro
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	5

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	4																					1	1	2								
Amphenicols																																
Chloramphenicol	5																			1			2		2							
Cephalosporins																																
3rd generation cephalosporins	4																						1				1		1	1		
Fluoroquinolones																																
Ciprofloxacin	3																											1	1		1	
Enrofloxacin	1																												1			
Quinolones																																
Nalidixic acid	3																				1	1	1									
Trimethoprim	1																								1							
Sulfonamides																																
Sulfonamide	4																			2		1	1									
Aminoglycosides																																
Streptomycin	4											1		1	1	1																
Gentamicin	3																1			1	1											
Kanamycin	4																	1		2	1											
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	4																								2	2						
Penicillins																																
Ampicillin	4																			1			3									

Table Antimicrobial susceptibility testing of S. Corvallis in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Corvallis
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																				1											
Cephalosporins																																
3rd generation cephalosporins	1																													1		
Fluoroquinolones																																
Ciprofloxacin	1																														1	
Quinolones																																
Nalidixic acid	1																							1								
Sulfonamides																																
Sulfonamide	1																										1					
Aminoglycosides																																
Streptomycin	1															1																
Gentamicin	1																	1														
Kanamycin	1																		1													
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																											1				
Penicillins																																
Ampicillin	1																						1									

Table Antimicrobial susceptibility testing of S. Cubana in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Cubana
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																					1										
Amphenicols																																
Chloramphenicol	1																								1							
Cephalosporins																																
3rd generation cephalosporins	1																														1	
Fluoroquinolones																																
Ciprofloxacin	1																												1			
Quinolones																																
Nalidixic acid	1																							1								
Sulfonamides																																
Sulfonamide	1																						1									
Aminoglycosides																																
Streptomycin	1														1																	
Gentamicin	1																				1											
Kanamycin	1																				1											
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																									1						
Penicillins																																
Ampicillin	1																							1								

Table Antimicrobial susceptibility testing of S. Enteritidis in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Enteritidis
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	27

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	27																			5	3	8	4	6	1							
Amphenicols																																
Chloramphenicol	25																		1	3	1	5	8	5	1	1						
Cephalosporins																																
3rd generation cephalosporins	25																							1	2	2		7	6	3	1	
Fluoroquinolones																																
Ciprofloxacin	16																				1			1	1				3	5	3	2
Enrofloxacin	8																					2	1	1	1		1	2				
Quinolones																																
Nalidixic acid	27	5	5																1	14	14	2										
Trimethoprim	10													1								2	1	2	2	1	1					
Sulfonamides																																
Sulfonamide	25													1		1	3	5	8	4	3											
Aminoglycosides																																
Streptomycin	25											1	1	7	6	4	2	3		1												
Gentamicin	25														1	3	8	2			6	3	2									
Kanamycin	27																3	11	2		6	3	2									
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	25																		1		1	2	3	3	3	4	5	3				

Footnote

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Table Antimicrobial susceptibility testing of S.Enteritidis in animals

n = Number of resistant isolates

	S. Enteritidis							
	Cattle (bovine animals)		**Pigs**		**Gallus gallus (fowl)**		**Turkeys**	
Isolates out of a monitoring programme					no			
Number of isolates available in the laboratory					27			
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Tetracyclines					27	0		
Amphenicols								
Chloramphenicol					25	0		
Cephalosporins								
Cefotaxim					25	0		
Trimethoprim					10	0		
Sulfonamides								
Sulfonamide					25	0		
Aminoglycosides								
Streptomycin					25	0		
Gentamicin					25	0		
Kanamycin					27	0		
Trimethoprim + sulfonamides								
Trimethoprim + Sulfonamide					25	0		
Penicillins								
Ampicillin					26	1		
Fully sensitive					27	22		
Resistant to 1 antimicrobial					27	4		
Resistant to 2 antimicrobials					27	1		

Table Antimicrobial susceptibility testing of S. Havana in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Havana
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																					1										
Amphenicols																																
Chloramphenicol	1																							1								
Cephalosporins																																
3rd generation cephalosporins	1																											1				
Fluoroquinolones																																
Enrofloxacin	1																										1					
Quinolones																																
Nalidixic acid	1																					1										
Trimethoprim	1																									1						
Sulfonamides																																
Sulfonamide	1																1															
Aminoglycosides																																
Streptomycin	1											1																				
Gentamicin	1															1																
Kanamycin	1																	1														
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																								1							
Penicillins																																
Ampicillin	1																					1										

Table Antimicrobial susceptibility testing of S. Idikan in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Idikan
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	2

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	2																		1	1												
Amphenicols																																
Chloramphenicol	2																			1			1									
Cephalosporins																																
3rd generation cephalosporins	2																								1		1					
Fluoroquinolones																																
Ciprofloxacin	1																										1					
Enrofloxacin	1																								1							
Quinolones																																
Nalidixic acid	2																			1	1											
Trimethoprim	1																						1									
Sulfonamides																																
Sulfonamide	1																1															
Aminoglycosides																																
Streptomycin	2											1		1																		
Gentamicin	2															1																
Kanamycin	2																1					1										
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	2																						1		1							
Penicillins																																
Ampicillin	2																				1		1									

Table Antimicrobial susceptibility testing of S. Ikeja in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Ikeja
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																			1												
Amphenicols																																
Chloramphenicol	1																					1										
Cephalosporins																																
3rd generation cephalosporins	1																									1						
Fluoroquinolones																																
Enrofloxacin	1																											1				
Quinolones																																
Nalidixic acid	1																			1												
Trimethoprim	1																					1										
Aminoglycosides																																
Streptomycin	1										1																					
Gentamicin	1														1																	
Kanamycin	1															1																
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																					1										
Penicillins																																
Ampicillin	1																			1												

Table Antimicrobial susceptibility testing of S. Infantis in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Infantis
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	7

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	7																		5			1	1									
Amphenicols																																
Chloramphenicol	6																1	1			1		2	1								
Cephalosporins																																
3rd generation cephalosporins	6																							2	1		1	1	1			
Fluoroquinolones																																
Ciprofloxacin	4																												1	1	1	1
Enrofloxacin	3																									1	2					
Quinolones																																
Nalidixic acid	7																		2		1	2	2									
Trimethoprim	1																					1										
Sulfonamides																																
Sulfonamide	7															3	2							2								
Aminoglycosides																																
Streptomycin	7								1		1	1																				
Gentamicin	7														2	2	1			1	1											
Kanamycin	7														1	2	2			2												
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	7																		2	3							1	1				
Penicillins																																
Ampicillin	7																		1	2	2	1	1									

Table Antimicrobial susceptibility testing of S. Isangi in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Isangi
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																			1												
Amphenicols																																
Chloramphenicol	1																					1										
Cephalosporins																																
3rd generation cephalosporins	1																															
Ceftiofur																													1			
Fluoroquinolones																																
Ciprofloxacin	1																														1	
Quinolones																																
Nalidixic acid	1																1															
Sulfonamides																																
Sulfonamide	1															1																
Aminoglycosides																																
Streptomycin	1																	1														
Gentamicin	1																				1											
Kanamycin	1																		1													
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																										1					
Penicillins																																
Ampicillin	1																					1										

Table Antimicrobial susceptibility testing of S. Lille in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Lille
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																					1										
Amphenicols																																
Chloramphenicol	1																				1											
Cephalosporins																																
3rd generation cephalosporins	1																												1			
Fluoroquinolones																																
Ciprofloxacin	1																														1	
Quinolones																																
Nalidixic acid	1																					1										
Sulfonamides																																
Sulfonamide	1																							1								
Aminoglycosides																																
Streptomycin	1													1																		
Gentamicin	1																				1											
Kanamycin	1																		1													
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																												1			
Penicillins																																
Ampicillin	1																					1										

Table Antimicrobial susceptibility testing of S. Livingstone in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Livingstone
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	6

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	6	2					2														3	1										
Amphenicols																																
Chloramphenicol	6																1						2	3								
Cephalosporins																																
3rd generation cephalosporins	2																									1			1			
Fluoroquinolones																																
Ciprofloxacin	5																										2	1				2
Enrofloxacin	2																											1		1		
Quinolones																																
Nalidixic acid	5																					1	2	2								
Trimethoprim	2																						1		1							
Sulfonamides																																
Sulfonamide	6																1				1	1	2	1								
Aminoglycosides																																
Streptomycin	6										2		2	1	1																	
Gentamicin	6																	2	1	3												
Kanamycin	6																	2	3			1										
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	6																								1	1	4					
Penicillins																																
Ampicillin	6																					2	1	2	1							

Table Antimicrobial susceptibility testing of S. Mbandaka in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Mbandaka
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																		1													
Amphenicols																																
Chloramphenicol	1																						1									
Cephalosporins																																
3rd generation cephalosporins	1																									1						
Fluoroquinolones																																
Enrofloxacin	1																										1					
Quinolones																																
Nalidixic acid	1																				1											
Trimethoprim	1																						1									
Sulfonamides																																
Sulfonamide	1															1																
Aminoglycosides																																
Streptomycin	1											1																				
Gentamicin	1														1																	
Kanamycin	1														1																	
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																						1									
Penicillins																																
Ampicillin	1																				1											

Table Antimicrobial susceptibility testing of S. Meleagridis in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Meleagridis
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	2

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	2																			1		1										
Amphenicols																																
Chloramphenicol	2																					1					1					
Cephalosporins																																
3rd generation cephalosporins	2																											2				
Fluoroquinolones																																
Ciprofloxacin	2																															2
Quinolones																																
Nalidixic acid	2																					1			1							
Sulfonamides																																
Sulfonamide	2	2	2																													
Aminoglycosides																																
Streptomycin	2	2	2																													
Gentamicin	2																	1		1												
Kanamycin	2																		1	1												
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	2																		1	1												
Penicillins																																
Ampicillin	2																					1	1									

Table Antimicrobial susceptibility testing of S. Mishmarhaemek in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Mishmarhaemek
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																			1												
Amphenicols																																
Chloramphenicol	1																				1											
Cephalosporins																																
3rd generation cephalosporins	1																											1				
Fluoroquinolones																																
Ciprofloxacin	1																												1			
Quinolones																																
Nalidixic acid	1																				1											
Sulfonamides																																
Sulfonamide	1																							1								
Aminoglycosides																																
Streptomycin	1												1																			
Gentamicin	1																		1													
Kanamycin	1																	1														
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																		1													
Penicillins																																
Ampicillin	1																				1											

Table Antimicrobial susceptibility testing of S. Muenchen in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Muenchen
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																		1													
Amphenicols																																
Chloramphenicol	1																						1									
Cephalosporins																																
3rd generation cephalosporins	1																											1				
Fluoroquinolones																																
Ciprofloxacin	1																												1			
Quinolones																																
Nalidixic acid	1																						1									
Sulfonamides																																
Sulfonamide	1																				1											
Aminoglycosides																																
Streptomycin	1											1																				
Gentamicin	1															1																
Kanamycin	1														1																	
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																										1					
Penicillins																																
Ampicillin	1																					1										

Table Antimicrobial susceptibility testing of S. Newport in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Newport
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																			1												
Amphenicols																																
Chloramphenicol	1																			1												
Fluoroquinolones																																
Ciprofloxacin	1																											1				
Quinolones																																
Nalidixic acid	1																			1												
Sulfonamides																																
Sulfonamide	1																	1														
Aminoglycosides																																
Streptomycin	1											1																				
Gentamicin	1															1																
Kanamycin	1															1																
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																					1										
Penicillins																																
Ampicillin	1																				1											

Table Antimicrobial susceptibility testing of S. Oranienburg in Sheep and goats - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Oranienburg
	Sheep and goats
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																						1									
Amphenicols																																
Chloramphenicol	1																					1										
Cephalosporins																																
3rd generation cephalosporins	1																													1		
Fluoroquinolones																																
Ciprofloxacin	1																														1	
Quinolones																																
Nalidixic acid	1																							1								
Sulfonamides																																
Sulfonamide	1																				1											
Aminoglycosides																																
Streptomycin	1																		1													
Gentamicin	1																				1											
Kanamycin	1																			1												
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																											1				
Penicillins																																
Ampicillin	1																				1											

Table Antimicrobial susceptibility testing of S. Papuana in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Papuana
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																			1												
Amphenicols																																
Chloramphenicol	1																										1					
Cephalosporins																																
3rd generation cephalosporins	1																									1						
Fluoroquinolones																																
Enrofloxacin	1																										1					
Quinolones																																
Nalidixic acid	1																	1														
Sulfonamides																																
Sulfonamide	1													1																		
Aminoglycosides																																
Streptomycin	1											1																				
Gentamicin	1																	1														
Kanamycin	1															1																
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																				1											
Penicillins																																
Ampicillin	1																				1											

Table Antimicrobial susceptibility testing of S. Poona in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Poona
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1																	1														
Amphenicols																																
Chloramphenicol	1																					1										
Cephalosporins																																
3rd generation cephalosporins	1																							1								
Fluoroquinolones																																
Enrofloxacin	1																									1						
Quinolones																																
Nalidixic acid	1																			1												
Trimethoprim	1																					1										
Sulfonamides																																
Sulfonamide	1																															
Aminoglycosides																																
Streptomycin	1									1																						
Gentamicin	1													1																		
Kanamycin	1															1																
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																				1											
Penicillins																																
Ampicillin	1																			1												

Table Antimicrobial susceptibility testing of S. Tennessee in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Tennessee
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	1

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	1														1																	
Amphenicols																																
Chloramphenicol	1															1																
Cephalosporins																																
3rd generation cephalosporins	1																		1													
Fluoroquinolones																																
Ciprofloxacin	1																											1				
Quinolones																																
Nalidixic acid	1																			1												
Sulfonamides																																
Sulfonamide	1																		1													
Aminoglycosides																																
Streptomycin	1	1	1																													
Gentamicin	1																1															
Kanamycin	1																	1														
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	1																															
Penicillins																																
Ampicillin	1																		1													

Table Antimicrobial susceptibility testing of S. Typhimurium in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Typhimurium
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	8

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	6	2	1					1												1		2	2	1								
Amphenicols																																
Chloramphenicol	8	1	1																			1	1	4		1						
Cephalosporins																																
3rd generation cephalosporins	8																								1		1		5			1
Fluoroquinolones																																
Ciprofloxacin	6																											1	2	2	1	
Enrofloxacin	2																				1							1				
Quinolones																																
Nalidixic acid	8																				5	2	1									
Trimethoprim	1																									1						
Sulfonamides																																
Sulfonamide	8	1	1																	1		1	4	1								
Aminoglycosides																																
Streptomycin	8	1	1									3	1	2			1															
Gentamicin	8														1		2		2	1	1			1								
Kanamycin	8															1			2	3	1		1									
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	8																			1				2	2	1	2					
Penicillins																																
Ampicillin	8	1	1																	1		2	2	2								

Table Antimicrobial susceptibility testing of S.Typhimurium in animals

n = Number of resistant isolates

	S. Typhimurium							
	Cattle (bovine animals)		**Pigs**		**Gallus gallus (fowl)**		**Turkeys**	
Isolates out of a monitoring programme					no			
Number of isolates available in the laboratory					8			
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Tetracyclines					6	2		
Amphenicols								
Chloramphenicol					8	1		
Cephalosporins								
Cefotaxim					8	0		
Fluoroquinolones								
Ciprofloxacin					6	0		
Enrofloxacin					2	0		
Quinolones								
Nalidixic acid					8	0		
Trimethoprim					1	0		
Sulfonamides								
Sulfonamide					8	1		
Aminoglycosides								
Streptomycin					8	1		
Gentamicin					8	0		
Kanamycin					8	0		
Trimethoprim + sulfonamides								
Trimethoprim + Sulfonamide					8	0		
Penicillins								
Ampicillin					8	1		
Fully sensitive					8	6		
Resistant to 1 antimicrobial					8	1		
Resistant to 4 antimicrobials					8	1		

Table Antimicrobial susceptibility testing of S. Virchow in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	S. Virchow
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	5

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	5																		2	1			2									
Amphenicols																																
Chloramphenicol	4																		1		3											
Cephalosporins																																
3rd generation cephalosporins	4																								1		1	1	1			
Fluoroquinolones																																
Ciprofloxacin	2																												1	1		
Enrofloxacin	2																						1					1				
Quinolones																																
Nalidixic acid	4																		1		1	1	1									
Trimethoprim	2																						2									
Sulfonamides																																
Sulfonamide	4	1	1												1		1					1										
Aminoglycosides																																
Streptomycin	4										2		1		1																	
Gentamicin	4														2		1						1									
Kanamycin	3															1	1				1											
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	4	1	1																				1	1			1					
Penicillins																																
Ampicillin	4																			1		3										

Table Antimicrobial susceptibility testing of Salmonella spp. in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	Salmonella spp.
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	89

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	89	9	4	1			2	2					1	1	1			2	13	15	8	16	12	9	1							
Amphenicols																																
Chloramphenicol	84	2	2													1	2	2	2	9	9	11	23	14	5							
Cephalosporins																																
Cefotaxim	78																			1			1	5	7	6	12	20	15	7	3	1
Fluoroquinolones																																
Ciprofloxacin	58	0																		1				2	1		5	5	13	12	10	9
Enrofloxacin	27	0																			1	3	2	1	4	2	7	5	1	1		
Quinolones																																
Nalidixic acid	82	6	6														1	1	5	7	16	24	12	9	1							
Trimethoprim	31													1								5	7	2	7	4	5					
Sulfonamides																																
Sulfonamide	83	4	4										3	2	2	12	12	13	8	6	5	9	5				2					
Aminoglycosides																																
Streptomycin	83	7	5	4	1					4	3	14	10	15	10	6	3	4	1	1	1	2	1									
Gentamicin	81													3	8	13	15	9	4	10	10	5	3	1								
Kanamycin	86	3	3												3	12	8	20	10	12	10	5	3									
Trimethoprim + sulfonamides																																
Trimethoprim + Sulfonamide	77	2	2															3	2	3	4	12	10	11	10	13	7					
Penicillins																																
Ampicillin	88	2	2																2	2	17	25	19	6	2	1						

Table Antimicrobial susceptibility testing of Salmonella in animals

n = Number of resistant isolates

	Salmonella spp.									
	Cattle (bovine animals)		**Pigs**		**Gallus gallus (fowl)**		**Turkeys**		**Turtles - pet animals**	
Isolates out of a monitoring programme	no		no		no				no	
Number of isolates available in the laboratory	3		1		112				1	
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Tetracyclines	2	2	1	1	89	2				
Amphenicols										
Chloramphenicol					84	2				
Cephalosporins										
3rd generation cephalosporins	1									
Cefotaxim					78					
Ceftiofur	2									
Cefoperazone	2								1	
Fluoroquinolones										
Ciprofloxacin					58					
Enrofloxacin	3		1		27				1	
Quinolones										
Nalidixic acid					82	6				
Trimethoprim					31					
Sulfonamides										
Sulfonamide					83	4				
Aminoglycosides										
Streptomycin	2	2			83	7			1	1
Gentamicin	2	2	1		81				1	
Neomycin	2	2	1						1	1
Kanamycin					86	3				
Trimethoprim + sulfonamides	2	2	1		77	2			1	1
Trimethoprim + Sulfonamide	1									
Penicillins										
Ampicillin	2	2			88	2			1	1
Fully sensitive					89	71				
Resistant to 1 antimicrobial					89	7				
Resistant to 2 antimicrobials					89	7				
Resistant to 3 antimicrobials			1	1	89	2			1	
Resistant to 4 antimicrobials					89				1	1
Resistant to >4 antimicrobials	2	2			89	2				

Table Antimicrobial susceptibility testing of Other serotypes - qualitative data

n = Number of resistant isolates

	Other serotypes	
	Gallus gallus (fowl) - at farm - Clinical investigations - suspect sampling	
Isolates out of a monitoring programme	no	
Number of isolates available in the laboratory	56	
Antimicrobials:	**N**	**n**
Tetracyclines	56	7
Amphenicols		
Chloramphenicol	51	1
Cephalosporins		
Cefotaxim	45	0
Fluoroquinolones		
Ciprofloxacin	36	0
Enrofloxacin	17	0
Quinolones		
Nalidixic acid	47	0
Trimethoprim	20	0
Sulfonamides		
Sulfonamide	50	3
Aminoglycosides		
Streptomycin	50	6
Gentamicin	48	0
Kanamycin	51	0
Trimethoprim + sulfonamides		
Trimethoprim + Sulfonamide	44	2
Penicillins		
Ampicillin	54	0
Fully sensitive	56	43
Resistant to 1 antimicrobial	56	2
Resistant to 2 antimicrobials	56	6
Resistant to 3 antimicrobials	56	2
Resistant to >4 antimicrobials	56	1

Table Breakpoints for antibiotic resistance testing of Salmonella in Animals

Test Method Used

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS

Salmonella	Standard for breakpoint	Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		disk content	breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Tetracyclines							30	19	16.5	14
Amphenicols										
Chloramphenicol							30	18	15	12
Florfenicol										
Fluoroquinolones										
Ciprofloxacin							5	21	18	15
Enrofloxacin							5	22	19.5	17
Quinolones										
Nalidixic acid							30	19	16	13
Trimethoprim							5	16	13	10
Sulfonamides										
Sulfonamide							300	17	14.5	12
Aminoglycosides										
Streptomycin							10	15	13	11
Gentamicin							10	15	13.5	12
Neomycin										
Kanamycin							30	18	15	13
Trimethoprim + sulfonamides										
Trimethoprim + Sulfonamide							25	16	13	10
Cephalosporins										
Ceftiofur							30	18	16	14
3rd generation cephalosporins							30	23	18.5	14
Cefoperazone							75	21	18	15
Penicillins										
Ampicillin							10	17	15	13

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
AFFECTED SPECIES: Animals,Food
Surveillance system
There is no official National program for animals and food. Sporadic samples are examined, especially from broilers at slaughterhouse level.
Results of monitoring
Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

2.2.2. Campylobacter, thermophilic in foodstuffs

Table Campylobacter in poultry meat

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for thermophilic Campylobacter spp.	C. coli	C. lari	C. jejuni	C. upsaliensis	thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus)	CVIA. Survey in Broilers	B / S		4 / 30	30					
meat products										
raw but intended to be eaten cooked	CVIA - Survey in Broilrers	B and S		30/30	26					

Footnote

The positive results referred to food samples tested from the related batches. CVIA = Central Veterinary Institutions of Athens

2.2.3. Campylobacter, thermophilic in animals

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for Campylobacter, thermophilic	C. jejuni	C. coli	C. lari	C. upsaliensis	thermophilic Campylobacter spp., unspecified
Cattle (bovine animals)									
dairy cows	RVL	ANIMAL	17						
Sheep	RVL	ANIMAL	24	1					1
Goats	RVL	ANIMAL	3						
Pigs	RVL	ANIMAL	2						

Footnote

Routine Lab microbiology

2.2.4. Antimicrobial resistance in Campylobacter, thermophilic isolates

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
There is no specific monitoring program in force for Listeriosis. Routine and targeted sampling performed by the national veterinary authorities and the Hellenic Food Safety Authority (EFET) supervised by the Ministry of Rural Development and Food and the Ministry of Development respectively.
Results of monitoring
Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

2.3.2. Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Definition used	Units tested	=<100 cfu/g	>100 cfu/g	Total units positive for L.monocytogenes	Listeria monocytogenes presence in x g
Milk, cows'									
raw									
intended for direct human consumption	RVL	S		ISO 11290-1/96	24	NONE		(0)	
Dairy products (excluding cheeses)									
dairy products, not specified									
ready-to-eat	RVL	S	*	ISO 11290-1/96	317	NONE		(0)	
- at processing plant	RVL	S	**	ISO 11290-1/96	133	NONE		(0)	
Cheeses, made from unspecified milk or other animal milk									
- at processing plant - Monitoring - official sampling	RVL	S	***	ISO 11290-1/96	280	NONE		(0)	
- at retail - domestic production - Monitoring - official sampling - selective sampling	RVL	S	****	1203	1203		5	5	

Footnote

Routine Microbiology in food samples. All units tested are single samples. Targeted sampling (not random) method was used. * - 500gr (S43), 200gr (S143); ** - 200gr (S21); *** - 25gr (5S). 500gr (41S), 200gr (S50/B10); **** - 1Kgr, 250gr (S914), 500gr (S8), 200gr (S102/B33)

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Definition used	Units tested	=<100 cfu/g	>100 cfu/g	Total units positive for L.monocytogenes	Listeria monocytogenes presence in x g
Meat from broilers (Gallus gallus)									
meat products									
- at retail	RVL	S	2 KGR	ISO 11290-1/96	10			NONE	
Meat from pig									
- at retail	RVL	S	200GR(S31)	ISO 11290-1/96	54			2	25
- at processing plant	RVL	S	25GR(1B/4S)	ISO 11290-1/96	27			1	25
Meat from bovine animals									
meat products									
cooked, ready-to-eat	RVL	S		ISO 11290-1/96	1			1	25
- at retail	RVL	S		ISO 11290-1/96	26			NONE	
Fish									
smoked	RVL	S		ISO 11290-1/96	12			NONE	
Molluscan shellfish									
raw	RVL	S		ISO 11290-1/96	31			NONE	
ready-to-eat salads	RVL	S		ISO 11290-1/96	12			NONE	
Other food of non-animal origin									
- at retail	RVL	B	1GR	ISO 11290-1/96	12			NONE	
Other food	RVL	S	100GR	ISO 11290-1/96	37			NONE	
Bakery products	RVL	B	1GR	ISO 11290-1/96	11			NONE	
Other processed food products and prepared dishes									
sandwiches									
non-meat	RVL	S		ISO 11290-1/96	26			NONE	
Meat from poultry, unspecified									
- at processing plant	RVL	S		ISO 11290-1/96	62			6	25
- at processing plant - environmental sample	RVL	S	1 KGR	ISO 11290-1/96	5			NONE	
Meat from other animal species or not specified									

- at processing plant	RVL	S		ISO 11290-1/96	11			NONE	
- at retail	RVL	S	100GR(S42) 1KG(S7)	ISO 11290-1/96	103			NONE	
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos)									
meat products									
- at retail - domestic production	RVL	S		ISO 11290-1/96	12			NONE	

2.3.3. Listeria in animals

Table Listeria spp. in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals)	NVL	ANIMAL(2), FETUS(1(	3	NONE		
Sheep	NVL	ANIMAL	73	6	4	2
Goats	NVL	ANIMAL	48	6	5	1

Footnote

NVL = National Veterinary Labs, Targeted sampling, Brain examination

2.4. E. COLI INFECTIONS

2.4.1. General evaluation of the national situation

2.4.2. Escherichia coli, pathogenic in foodstuffs

Table VT E.coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Escherichia coli, pathogenic	E. coli spp., unspecified	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC O157:H7
Meat from pig	RVL	S		4				
Meat from bovine animals	RVL	S		7				
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos)								
minced meat	RVL	S		5				
meat preparation	RVL	S		9				
meat products	RVL	S		68				
Meat from poultry, unspecified								
- at retail	RVL	S		10	10	10		
Dairy products (excluding cheeses)	RVL	S		158				
Fish								
raw	RVL	S		163	30	30		
Live bivalve molluscs	RVL	S		70				
Water								
potable water	RVL	S		115				
Fishery products, unspecified	RVL	S		12				

2.4.3. Escherichia coli, pathogenic in animals

Table VT E.coli in animals

	Source of information	Sampling unit	Units tested	Total units positive for Escherichia coli, pathogenic	E. coli spp., unspecified	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC O157:H7
Cattle (bovine animals)	RVL	ANIMAL	3	(0)			
Sheep	RVL	ANIMAL	19	(0)			
Goats	RVL	ANIMAL	17	(0)			
Poultry, unspecified	RVL	FLOCK	18	4	4		
Birds	RVL	ANIMAL	3	2	2		

Footnote

Routine microbiology, Targeted sampling (not random). On this table all E.Coli dedected are common E.coli spp bacteria and non specific pathogenic like VTEC, ETEC etc..

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
713.420 animals raised in 30.553 herds.
Surveillance system
Eradication program for bovine tuberculosis.
Method used
Registration and marking 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 (2004) as the period prevalence decreased from 1,21% to 0,97% (2004). Similarly, the incidence rate reduced from 0,74% (2004) to 0,34%. The 2005 animal prevalence (0,66%) recorded significantly lower than the previous year 2004 (0,99%). In general, the epidemiological indicators are influenced by the number of herds and animals tested in areas with high infection rates such as Attica, Evia and Larisa.
Concerning the overall infection status, 76 positive herds with 7.634 animals were reported at the end of 2005 compared to 110 positive herds and 7.781 animals at the end of 2004. However, following epidemiological analysis for each nomos, 2.819 herds were reported as officially suspended health status in 2005 compared to 1.406 herds reported in 2004. In addition, significant change for the unknown herd health status from last to current year, thus; 1782 herds were reported of unknown status compared to 945 for the year 2004.
The large 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 beef herds with semi-wild bovines with no tuberculosis history that were previously categorized as officially free and from the year 2003 were characterized as herds of unknown health status.
In general, although the epidemiological situation in 2005 has slightly improved compared to 2004, 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 and properly implementing the program respecting the appropriate timetable between the checks will be urgently addressed in order to meet the eradication targets of Bovine Tuberculosis 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 Brucellosis infection remains a significant animal health problem in several areas of Greece included the co-financed prefectures and the relevance of the disease is considered significant by means of zoonotic and public health impact.

Additional information

Summary results of the investigations for the year 2005
· Number of herds under official control: 30.553
· Number of animals under official control: 713.420
· Number of herds tested by tuberculin test: 8.492
· Number of herds positive: 82
· Number of animals tested by tuberculin test: 204.025
· Number of animals as positive reactors: 1364
· Total number of animals slaughtered: 1.364
· Number of positive animals-reactors slaughtered: 1.464
TUBERCULOSIS IN HUMANS DUE TO MYCOBACTERIUM TUBERCULOSIS
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 - 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 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.

2.5.2. Mycobacterium in animals

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds period herd prevalence	% new positive herds - herd incidence
GREECE	34286	30553	8492	82	29	5	6.098	27.794	0.966	0.341
Total	34286	30553	8492	82	29	5	6.098	27.794	0.966	0.341
Total - 1	37778	31097	11273	136	83	16	11.76	36.25	1.21	0.74

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of new 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
GREECE	868060	713420	204025	204025	1364	1364	1464	28.598	0.669
Total	868060	713420	204025	204025	1364	1364	1464	28.598	0.669
Total - 1	870663	687122	247375	247375	2455	2455	3983	36	0.99

Footnote

Estimated animal prevalence based on the reported data= 0.67 %

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

Region	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
GREECE	30553	713420	1782	55932	76	7634	533	12364	2819	95281			21674	481242
Total	30553	713420	1782	55932	76	7634	533	12364	2819	95281	0	0	21674	481242
Total - 1	29745	685279	945	21174	110	7781	361	12548	1406	48209			21302	485598

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

BOVINE BRUCELLOSIS
Susceptible population
490.666 animals, in 25.489 herds.
Surveillance system
Eradication program for bovine brucellosis.
Method used
Registration and marking 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.

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

BOVINE BRUCELLOSIS
Epidemiological history and technical evaluation
No significant variations have been recorded on the evolution of bovine Brucellosis compared to the previous year as the period prevalence rate remained at the level of 4,30% (Year 2004: 4,19%). The estimated incidence rate reduced from 2,04 % (2004) to 1,93 % (2005). Moreover, the 2005 animal prevalence (0,75%) reported slightly higher than the previous year 2004 (0,58%). In general, the epidemiological indicators are influenced by the number of herds and animals tested in areas with high infection rate of Bovine Brucellosis.
In general, although the epidemiological situation at the end of the year 2005 has improved compared to 2004, Bovine Brucellosis infection 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 Control and eradication measures for old and new infected have been set as a major 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 and properly implementing the program have been undertaken and coordinated by the central authorities in order to meet the eradication targets of Bovine Brucellosis 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 included the co-financed prefectures. The implementation of bovine brucellosis eradication program influences the relevance of such a zoonotic disease which is high.
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.

Recent actions taken to control the zoonoses

BOVINE BRUCELLOSIS
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.

Additional information

BOVINE BRUCELLOSIS
Summary results of the investigations in the year 2005
· Number of herds under official control: 25.489
· Number of animals under official control: 490.666
· Number of herds tested: 6.578
· Number of herds positive: 283
· Number of animals tested: 188.564
· Number of animals tested individually: 97.895
· Number of animals positive: 1.406
· Total number of animals slaughtered: 2.050
· Number of positive animals slaughtered: 1.406

2.6.2. Brucella in foodstuffs

Table Brucella in food

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. melitensis	B. abortus	B. suis	Brucella spp., unspecified
Milk, cows'								
raw	RVL	Sample	213	13				

Footnote

Targeted sampling and relevant examination. RVL= Regional Veterinary Labs

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 PROGRAM 800
ANIMALS UNDER THE PROGRAM 42.445
VACCINATED HERDS 141
ANIMALS IN VACCINATED HERDS 10.295
VACCINATED ANIMALS 8.203
CUMULATIVE HERD COVERAGE AT THE END OF THE YEAR 2005 42%
ANIMAL COVERAGE IN VACCINATED HERDS 80 %
CUMULATIVE ANIMAL VACCINATION COVERAGE AT THE END OF THE YEAR 2005 45%

B. Brucella melitensis in Sheep

Vaccination policy

Vaccination policy
Mass vaccination of adult and young sheep and goats in accordance with 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.

Results of the investigation

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

BRUCELLA MELITENSIS IN SHEEP AND GOATES (COMMON APROACH FOR BOTH SPECIES)
Susceptible population
13.363.974 sheep and Goats, in 123.851 Flocks
Surveillance system
A control program for ovine and caprine brucellosis is in force in the mainland (includes mass vaccination policy in young and adult female sheep and goat population) and a 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 herd: Herd with one or more animals positive .
Epidemiological history and Technical evaluation
Introduction
The 2005 ovine and caprine Brucellosis control and eradication programme was implemented in mainland and islands of Greece. The program was approved and co-financed by the E.U. based on the Decision 2004/840/EC . Greece is divided in 54 prefectures - Nomos. For the implementation of brucellosis control and eradication programme the country is divided in two parts in which different policies and measures are applied, the control strategy (mass vaccination of young and adult female small ruminants) and the eradication policy based on test and slaughter of positive reactors receptively.
EPIDEMIOLOGICAL SITUATION IN THE MAINLAND - DATA ANALYSIS
Mass vaccination carried out in the Mainland. During 2005, based on vaccination records, 1.024.885 sheep and goats were vaccinated in accordance with the validated data as extracted from the computerized management system which receives reports for vaccination applications on daily basis. Further analysis and detailed statistics (flock and animal vaccination data, follow -up and up to date flock & animal coverage) are available through the central data base of the specific computerized system for monitoring and recording sheep and goat vaccination activities at national level (mainland) or through the attached excel file (RESULTS BMEL 2005. xls - Table 1 of this report).
EPIDEMIOLOGICAL SITUATION IN THE ISLANDS - DATA ANALYSIS
In the islands (eradication zone), except Evia, Lesvos and Leros, the 2005 flock and animal prevalence of brucellosis in tested sheep and goats was reported 5,13 % and 0,82 % respectively. The islands of Lesvos and Leros have been excluded from the eradication policy and belong to the mainland programme status.
The high 2005 Brucella Melitensis flock prevalence rate within eradication zone is mainly due to the significant increase of positive reactors reported from the regions Hraklio, Lasithi, Kefalinia and Pireas.
The results of the eradication programme for the year 2005 is presented in Table 2.
BOVINE VACCINATION WITH THE REV 1 VACCINE UNDER THE SHEEP AND GOAT BRUCELLA MELITENSIS CONTROL AND ERADICATION PROGRAMME
As an additional preventive measure under the existing control brucellosis programme for sheep and goats, free-ranged 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.
The 2005 Bovine vaccination Data is given in Table 3.

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

RESULTS FROM THE b. MELITENSIS VACCINATION PROGRAMME
TOTAL : ELECTRONIC SYSTEM RECORDS+ FILE RECORDS FROM SEVERAL PREFECTURES
Vaccinated Flocks: 24.015
Vaccinated sheep & Goats: 1.024.885

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella	B. melitensis	B. abortus	B. suis	Brucella spp., unspecified
Pigs	RVL	Animal	2	(0)				

Footnote

Clinical examination, serology in blood samples from tested pigs (n=2)

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds period herd prevalence	% new positive herds - herd incidence
GREECE	33150	25489	6578	283	127	13	4.594	25.807	4.302	1.931
Total	33150	25489	6578	283	127	13	4.594	25.807	4.302	1.931
Total - 1	37778	27224	10503	440	214	26	5.91	38.58	4.19	2.04

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of new 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
GREECE	857986	490666	188564	97895	1406	1406	2050	38.43	0.746
Total	857986	490666	188564	97895	1406	1406	2050	38.43	0.746
Total - 1	870663	480158	138173	62816	806	806	1420	2878	0.58

Footnote

Estimated animal prevalence based on reported data = 0,75%.

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

Region	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
GREECE	25477	489854	658	9026	193	16944	499	8074	1362	28443			19113	364112
Total	25477	489854	658	9026	193	16944	499	8074	1362	28443	0	0	19113	364112
Total - 1	25403	495386	842	11064	277	20546	553	11109	1374	33306			22294	418781

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

Region	Total number of herds	Total number of herds under the programme	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated	% positive herds depopulated	Indicators		
								% herd coverage	% positive herds period herd prevalence	% new positive herds - herd incidence
GREECE	20268	20268	917	47			0	4.524	5.125	0
Total	20268	20268	917	47	0	0	0	4.524	5.125	0
Total - 1										

Footnote

The above mentioned data cover only the island zone of Greece where eradication programme based on test and slaughter policy is applied. For The remaining areas of Greece (mainland) a mass vaccination control programme is implemented. Vaccination records are given separetely within the text Brucella section For the empty columns non validated data were provided to be reported. It shoud be stated that during 2005 none of sheep and goats flocks have been depopulated based on the relevant reports

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

Region	Total number of animals	Number of animals to be tested under the programme	Number of animals tested	Number of animals tested individually	Number of new 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
GREECE	2312829	2312829	58995	58955	486	486	1095	2.551	0.824
Total	2312829	2312829	58995	58955	486	486	1095	2.551	0.824
Total - 1									

Footnote

Estimated sheep and goat animal prevalence = 0,82%.
Note:The above mentioned data cover only the island zone of Greece where eradication programme based on test and slaughter policy is applied. The remaining areas of Greece (mainland) a mass vaccination control programme is implemented. Vaccination records are given separetely within the text Brucella section

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

Region	Status of herds and animals under the programme													
	Total number of herds and animals under the programme		Unknown		Not free or not officially free				Free or officially free suspended		Free		Officially free	
					Last check positive		Last check negative							
	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals	Herds	Animals
GREECE	19269	2771479	3702	846330	90	16298	5922	672756	3722	746874			5833	489221
Total	19269	2771479	3702	846330	90	16298	5922	672756	3722	746874	0	0	5833	489221
Total - 1														

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 reported from animal and Food.

2.7.2. Yersinia in foodstuffs

2.7.3. Yersinia in animals

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: Trichinella spirallis
AFFECTED SPECIES: Animals
Susceptible population
All 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 prediction sites, followed by the microscopic examination of the deposit for the larvae. The second is the examination of tissues from diaphragm in the trichinoscope. New Commmunity legislation covering diagnostics techniques and sampling methods from the target species (swine) has recently adopted by the EU and is expected to be integrated in the existing monitoring schemes for Trichinella in Member- States.
Epidemiological history
No positive findings were reported among the samples, which were examined in slaughterhouses.
Results of monitoring
Data are presented in the relevant tables of EFSA web based electronic system for zoonoses monitoring.

2.8.2. Trichinella in animals

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total animals positive for Trichinella	T. spiralis	Trichinella spp., unspecified
Pigs						
fattening pigs						
raised under controlled housing conditions in integrated production system	Control at slaughterhouse	animal	292507	0		
breeding animals						
unspecified						
sows and boars	Control at slaughterhouse	animal	3394	0		
Wild boars						
farmed	Control at slaughterhouse	animal	10	0		

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: Animals
Susceptible population
All animals eligible for slaughter at country level.
Surveillance system
Inspection of all carcasses at the slaughterhouses.
Preventive treatment of all owned dogs with antiparasitic tablets.
Method used
For farm animals , meat inspection of carcasses at slaughterhouses. For
dogs the arecolin test applied and for humans X-ray, echo and serological investigation performed.
Epidemiological history
The infection among the owned dogs has been almost disappeared due to systematic preventive treatment of animals with antiparasitic medicine. The infection in stray dogs is unknown. The overall infection in farm animals is decreasing over time.
Results of monitoring
Data 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 food (i.e vegetables).

2.9.2. Echinococcus in animals

Table Echinococcus spp. in animals

	Source of information	Sampling unit	Units tested	Total units positive for Echinococcus spp.	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals)	Inspection at slaughterhouse	animal	199631	1859			
Sheep	nspection at slaughterhouse	animal	2794692	45728			
Goats	nspection at slaughterhouse	animal	973598	3422			
Pigs	nspection at slaughterhouse	animal	928376	72			

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 has been dedected in Sheep and Goats under few relevant national Surveys and isolated clinical cases

2.10.2. Toxoplasma in animals

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
No special program 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.
Results of 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	Units tested	Total units positive for Lyssavirus (rabies)	unspecified lyssavirus
Dogs	NRLR	Animal	5		
Cats	NRLR	Animal	1		
Bats					
wild	National Reference Laboratory for Rabies (NRLR)	Animal	1		
Dogs and cats					
pet animals (1)	NRLR	Animal	1355		
All animals					
wild	NRLR	Animal	3		

(1) : Blood sample (sera)

Footnote

Animals diagnostic tests used: Fluorescent antibody test (FAT), mouse inoculation,cell culture and FAVN (sera antibody testing for small animal movement purposes). Pathological material: Brain tissue examined

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1. ESCHERICHIA COLI, NON-PATHOGENIC

3.1.1. General evaluation of the national situation

A. E. coli general evaluation

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

DISEASE/AGENT: E.coli spp.
AFFECTED SPECIES: Animals, Food
Surveillance system
There is no official National program in force. Nevertheless some laboratories are using standard techniques for E.coli. detection , isolation and strain identification.
Results of investigations in the year 2005
E.coli spp was detected in animals and food.
Positive samples were detected in various categories of meat, dairy and fish products.

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

Table Antimicrobial susceptibility testing of E. coli in Gallus gallus (fowl) - quantitative data [Diffusion method]

Number of resistant isolates (n) and number of isolates with the concentration (µl/ml) or zone (mm) of inhibition equal to

	E. coli
	Gallus gallus (fowl)
Isolates out of a monitoring programme	no
Number of isolates available in the laboratory	10

Antimicrobials:	**N**	**n**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Tetracyclines	10	7	6	1															2	1												
Amphenicols																																
Chloramphenicol	10	5	4					1									1		1	2			1									
Cephalosporins																																
3rd generation cephalosporins	10	2				1		1						1										1	2	2	1	1				
Fluoroquinolones																																
Ciprofloxacin	8	1										1							2	1	1	2	1									
Enrofloxacin	5	2						1						1			1	1			1											
Quinolones																																
Nalidixic acid	10	10	7	1		1				1																						
Trimethoprim	2	2																														
Sulfonamides																																
Sulfonamide	7	6	6																			1										
Aminoglycosides																																
Streptomycin	10	6	6							1		2			1																	
Gentamicin	10	1							1				1	1	1	4	1	1														
Kanamycin	10	5	4						1						1	2	1	1														
Trimethoprim + sulfonamides	6														1				1					1	1							
Penicillins																																
Ampicillin	10	5	5									1		1			3															

Table Antimicrobial susceptibility testing of E. coli in animals

n = Number of resistant isolates

	E. coli									
	Cattle (bovine animals)		**Pigs**		**Gallus gallus (fowl)**		**Turkeys**		**Sheep and goats**	
Isolates out of a monitoring programme	no		no		no		no		no	
Number of isolates available in the laboratory	50		7		26		1		39	
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Tetracyclines	50	35	7	5	20	13			39	32
Amphenicols										
Chloramphenicol					15	6	1	1	35	35
Cephalosporins										
3rd generation cephalosporins					10	2				
Cefoperazone	49	26							35	23
Fluoroquinolones										
Ciprofloxacin					8	1				
Enrofloxacin	50	17	7		15	4			39	6
Quinolones										
Nalidixic acid	49	24	4	1	10	10			35	14
Trimethoprim	1		3	1	2	2			4	
Sulfonamides										
Sulfonamide	1		3	1	14	8			4	
Aminoglycosides										
Streptomycin	49	44			10	6			35	28
Gentamicin	50	43	7	5	10	1			39	26
Neomycin	50	43	7	5	16	13	1	1	39	34
Kanamycin	49	43			10	5			39	31
Trimethoprim + sulfonamides	50	35	7	3	10	6			39	28
Penicillins										
Ampicillin	50	48	7	5	12	5	1	1	4	
Fully sensitive					4	1				
Resistant to 1 antimicrobial					6	2				
Resistant to 2 antimicrobials					13	3				
Resistant to 3 antimicrobials					11	1	1	1		
Resistant to 4 antimicrobials			4	1	13	2				
Resistant to >4 antimicrobials	49	49	4	3	12	7			35	35

Table Breakpoints used for antimicrobial susceptibility testing of E. coli in Animals

Test Method Used

Disc diffusion
Agar dilution
Broth dilution
E-test

Standards used for testing

NCCLS

Escherichia coli, non-pathogenic	Standard for breakpoint	Breakpoint concentration (microg/ml)			Range tested concentration (microg/ml)		disk content	breakpoint Zone diameter (mm)		
		Susceptible <=	Intermediate	Resistant >	lowest	highest	microg	Susceptible >=	Intermediate	Resistant <=
Tetracyclines							30	19	16.5	14
Amphenicols										
Chloramphenicol							30	18	15	12
Florfenicol										
Fluoroquinolones										
Ciprofloxacin							5	21	18	15
Enrofloxacin							5	22	20	18
Quinolones										
Nalidixic acid							30	19	16	13
Trimethoprim							5	16	13	10
Sulfonamides										
Sulfonamide							300	17	14.5	12
Aminoglycosides										
Streptomycin							10	15	13	11
Gentamicin							10	15	13.5	12
Neomycin							30	17	14.5	12
Kanamycin							30	18	15.5	13
Trimethoprim + sulfonamides							25	16	13	10
Cephalosporins										
3rd generation cephalosporins							30	17	15	13
Cefoperazone							75	21	18	15
Penicillins										
Ampicillin							10	17	15	13

4. FOODBORNE OUTBREAKS

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

A. Foodborne outbreaks

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

Food borne outbreaks in humans. Reference Year: 2005
In 2005, 44 confirmed food borne outbreaks cases were reported under the standard food borne investigation procedure and protocols. Salmonella spp are the predominant etiologic agents for the majority of the reported food borne outbreaks. Detailed analysis as regards the causative agent, the source infection and the location of exposure is presented in the designated Food borne outbreak Table of the EFSA zoonoses monitoring data base system on the Web.

Table 12. Foodborne outbreaks in humans

Causative agent	General outbreak	Family outbreak	Total Number in persons			Source			Type of evidence	Location of exposure	Contributing factors
			ill	died	in hospital		Suspected	Confirmed			
1	2	3	4	5	6	7			8	9	10
Unknown	1		5		1					House	
Unknown		1	2		2	Chicken	1		Medical history	Restaurant	
Unknown	1		26			Dairy Products		1	Cohort study	Restaurant	
Unknown		1	3		3	Eggs	1		Medical history	House	
Unknown	1		39		4	Pastries	1		Cohort study	Reataurant	Non reported
Unknown	1		4		4	Fish	1		Medical history	Camping	
Unknown	1		18							Workplace	
Unknown		1	3								
Salmonella - S. Enteritidis	1		3		1					School	
Salmonella - S. Enteritidis	1		67			Eggs		1	Cohort study	Nursing Home	
Salmonella - S. Enteritidis		1	3		3						
Salmonella - S. Enteritidis		1	2		1	Eggs	1		Medical history	House	non reported
Salmonella - S. Enteritidis	1		73		73	Pork		1	Laboratory confirmed	Hotel	
Salmonella - S. Enteritidis	1		133		117	Dairy products		1	Case-Control study	Hospital	
Salmonella - S. Enteritidis		1	3		2	Chicken	1		Medical history	House	
Salmonella - S. Enteritidis		1	5		5	Seafood	1		Medical history	House	
Salmonella - S. Enteritidis		1	6		1	Chicken	1		Medical history	House	Non reported
Salmonella - S. Enteritidis		1	4		2	Non reported			Non reported	House	non reported
Shigella - S. sonnei	1		11		9						
Salmonella - Salmonella spp.	1		30		8	Pastries	1			School	
Salmonella - Salmonella spp.	1		16		10	Beef	1		Medical history	Restaurant	
Salmonella - Salmonella spp.	1		18		2	Lamb	1		Medical history	Festival	
Salmonella - Salmonella spp.		1	3		3				Medical history	House	
Salmonella - Salmonella spp.	1		5		3	Eggs	1		Medical history	Nursing Home	
Salmonella - Salmonella spp.		1	6		4	Pastries	1		Medical history	House	
Salmonella - Salmonella spp.	1		6							Cruiseship	
Salmonella - Salmonella spp.		1	3		2	Eggs	1		Medical history	House	
Salmonella - Salmonella spp.	1		3		2					Hotel	
Salmonella - Salmonella spp.	1		5			Meat	1		Medical history	Reataurant	
Salmonella - Salmonella spp.	1		11		1	Pastries	1		Medical history	Prison	
Salmonella - Salmonella spp.	1		20			Non reported			Non reported	Nursing Home	Non reported
Salmonella - Salmonella spp.	1		11							Hotel	

Salmonella - Salmonella spp.	1		8	5	Chicken	1		Medical history	Hotel	
Salmonella - Salmonella spp.	1		38	19	Lamb		1	Cohort study	Restaurant	
Salmonella - Salmonella spp.		1	3	2	Pastries	1		Medical history	House	non reported
Salmonella - Salmonella spp.		1	3	3				Medical history	House	
Salmonella - Salmonella spp.		1	2	2	Chicken	1		Medical history	Restaurant	
Salmonella - Salmonella spp.	1		73	62	Pork	1		Medical history		
Salmonella - Salmonella spp.	1		8	1	Chicken	1		Medical history	Restaurant	
Salmonella - Salmonella spp.		1	10	5	Eggs	1		Medical history	House	
Salmonella - S. enterica subsp. arizonae		1	2	1	Eggs	1		Medical history	House	
Food borne viruses - hepatitis A virus	1		7	7						
Food borne viruses - calicivirus (including norovirus) - norovirus (Norwalk-like virus)	1		38	38	Water		1	Descriptive Epidemiology		Inadequate water treatment
Food borne viruses - calicivirus (including norovirus) - norovirus (Norwalk-like virus)	1		702		Water		1	Descriptive Epidemiology		Inadequate water treatment