ZOONOSES MONITORING

AUSTRIA

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

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

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

IN 2007

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: **Austria**
Reporting Year: **2007**
Institutions and laboratories involved in reporting and monitoring:

Laboratory name	Description	Contribution
Central Veterinary Services	Federal Ministry for Health, Family and Youth	Data concerning notifiable zoonoses in animals; Revision of the draft of the Trend Report; Approval of the Trend Report for Submission
Food Office	Federal Ministry for Health, Family and Youth	Revision of the draft of the Trend Report
DG Public Health	Federal Ministry for Health, Family and Youth	Revision of the draft of the Trend Report
Provincial Veterinary Services	9 provinces, one Veterinary Service per province	Data concerning notifiable zoonoses in animals
Regional Health Boards	One Regional Health Board per province	Collection of the data concerning food borne outbreaks
Statistics Austria	The independent and non-profit-making federal institution, Statistics Austria, provides data on the economy, demography, environment and social and cultural situation in Austria to federal bodies. Federal agencies can then implement controlling measures in the scientific community, business and public institutions.	Demographic and livestock census data
Competence Centre Infectious Diseases Epidemiology (CC-INFE)	Austrian Agency for Health and Food Safety, AGES	Compilation, validation, data entry and submission of the Zoonoses Trend Report
Area of Data, Statistics and Risk Assessment	Austrian Agency for Health and Food Safety, AGES	Analysis of laboratory results for antimicrobial resistance of Campylobacter spp. and E. coli
Area of Human Medicine	AGES	Data entry into internal data base concerning each single case notified as foodborne disease

National Reference Centre for Salmonella Institute for Medical Microbiology and Hygiene, (IMED), Graz	Austrian Agency for Health and Food Safety, AGES	Data concerning salmonellosis in feedingstuff, animals, foodstuff and humans
National Reference Laboratory for Campylobacter, Institute for Medical Microbiology and Hygiene, (IMED), Graz	Medical University of Graz	Data concerning campylobacteriosis in humans
National Reference Laboratory for Tuberculosis, Institute for Medical Microbiology and Hygiene (IMED), Vienna	Austrian Agency for Health and Food Safety, AGES	Data concerning mycobacteriosis in humans
National Reference Center for EHEC (VTEC) and Listeria, Department of Hygiene, Microbiology and Social Medicine, Division of Hygiene & Medical Microbiology	Innsbruck Medical University	Data concerning VTEC and listeriosis in humans

National Reference Laboratory for Yersinia, analyse BioLab limited company (GmbH)	Cooperative venture of Elisabethinen Linz, MBB BioLab limited company (GmbH) and AGES	Data concerning yersiniosis in humans
National Reference Laboratory for Toxoplasmosis, Echinococcosis, Toxocarosis and other Parasitic Diseases, Clinical Institute for Hygiene and Medical Microbiology	Medical University of Vienna	Data concerning parasitic diseases in humans
National Reference Laboratory for Brucellosis, Institute for Veterinary Disease Control, (IVET), Moedling	Austrian Agency for Health and Food Safety, AGES	Data concerning brucellosis in animals and humans
Official Food Control Laboratories (ILMU)	Austrian Agency for Health and Food Safety, AGES; Laboratories in Graz, Innsbruck, Linz, Salzburg and Vienna	Data concerning investigations in foodstuffs
Food Safety Department of the City of Vienna	Regional Food Laboratory	Data concerning investigations in foodstuffs
Institute for Environment and Food Safety of the State of Vorarlberg	Regional Food Laboratory	Data concerning investigations in foodstuffs
Carinthian Institute for Food Analysis and Quality Control	Regional Food Laboratory	Data concerning investigations in foodstuffs

National Reference Laboratory for Rabies, Institute for Veterinary Disease Control, Moedling	Austrian Agency for Health and Food Safety, AGES	Data concerning rabies
National Reference Laboratory for Tuberculosis in Animals, Institute for Veterinary Disease Control, Moedling	Austrian Agency for Health and Food Safety, AGES	Data concerning tuberculosis in animals
National Reference Laboratory for Trichinellosis in Animals, Institute for Veterinary Disease Control, (IVET), Innsbruck	Austrian Agency for Health and Food Safety, AGES	Data concerning trichinellosis in animals
Institutes for Veterinary Disease Control (IVET)	Austrian Agency for Health and Food Safety, AGES; Laboratories in Graz, Innsbruck, Linz and Moedling	Data concerning investigations in animals; bacteriological investigation in slaughtered animals
Carinthian Institute for Veterinary Disease Control, Ehrental	Regional Veterinary Laboratory	Data concerning investigations in animals
Austrian Poultry Health Service	Association installed by law, running different programs e.g. salmonella control and hygiene programs, Control of veterinarians and poultry farmers	Data concerning the Austrian poultry industry
Institute for Agricultural Analysis, Linz	Austrian Agency for Health and Food Safety, AGES	Data concerning feeding stuff

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 Austria during the year 2007. The information covers the occurrence of these diseases and agents in humans, animals, foodstuffs and in some cases also in feedingstuffs. In addition the report includes data on antimicrobial resistance in some zoonotic agents and commensal bacteria as well as information on epidemiological investigations of foodborne outbreaks. Complementary data on susceptible animal populations in the country is also given.
The information given covers both zoonoses that are important for the public health in the whole European Community as well as zoonoses, which are relevant on the basis of the national epidemiological situation.
The report describes the monitoring systems in place and the prevention and control strategies applied in the country. For some zoonoses this monitoring is based on legal requirements laid down by the Community Legislation, while for the other zoonoses national approaches are applied.
The report presents the results of the examinations carried out in the reporting year. A national evaluation of the epidemiological situation, with special reference to trends and sources of zoonotic infections, is given. Whenever possible, the relevance of findings in foodstuffs and animals to zoonoses cases in humans is evaluated.
The information covered by this report is used in the annual Community Summary Report on zoonoses that is published each year by EFSA.

---

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

LIST OF CONTENTS

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:

The independent and non-profit-making federal institution, Statistics Austria, provides data on the economy, demography, environment and social and cultural situation in Austria to federal bodies. Federal agencies can then implement controlling measures in the scientific community, business and public institutions. The data for this report are available from an online database established by Statistics Austria, except for poultry livestock numbers which are provided directly to CC INFE. Theses data are provided from the Austrian Poultry Health Service.
The number of holdings and animals is based on extrapolations of the latest livestock census from the year 1999 in combination with the data of the yearly random sample survey performed by Statistics Austria. Exception: The official database for cattle and the Veterinary Information System (VIS) provides the source of data for the number of holdings within Austria.

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

All data relate to 2007. Livestock numbers (statistical extrapolation): 01.12.2007.

Table Susceptible animal populations

* Only if different than current reporting year

Animal species	Category of animals	Number of herds or flocks	Year*	Number of slaughtered animals	Year*	Livestock numbers (live animals)	Year*	Number of holdings	Year*
Cattle (bovine animals)	young cattle (1-2 years)					437058			
	mixed herds					271327			
	dairy cows and heifers			277538		629209			
	meat production animals					28513			
	breeding bulls (1)			311827					
	calves (under 1 year)			86009		634089			
	in total			675374		2000196		77460	
Deer	farmed - in total					35120		1861	
Gallus gallus (fowl)	parent breeding flocks, unspecified - in total	88				570398		72	
	parent breeding flocks for meat production line	72				494928			
	laying hens					5271161		1772	
	broilers					9136589		459	
	parent breeding flocks for egg production line	16				75470			
	in total			66251757					
Goats	mixed herds			8578		21003			
	animals under 1 year			32030					
	milk goats					27693			
	animals over 1 year					39484			
	in total			40608		60487		10925	
Pigs	breeding animals					318349			
	fattening pigs			5474203		1272889			
	breeding animals - unspecified - sows and gilts			110553					
	breeding animals - unspecified - gilts					898630			
	in total			5584756		3286292			
Sheep	animals over 1 year					228950			
	animals under 1 year (lambs)			188553					
	mixed herds			58084		122379			
	meat production animals					20031			
	in total			246637		351329		16443	
Solipeds, domestic	horses - in total			781		70459		16701	
Turkeys	meat production flocks					778893		120	
	in total			1884994		778893		120	

(1): and oxes

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

Human salmonellosis remains a major health problem in Austria. However, in 2007, the number of reported cases of campylobacteriosis exceeded – as in the previous year - the number of notified salmonellosis cases.

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

The incidence of human salmonellosis has significantly declined since the peak in 1998/ 1999. The salmonella-contamination of poultry meat has declined from more than 33% to less than 10% in 2007. The consumption of eggs that are contaminated with Salmonella is presently the main source of human infection.
The number of salmonellosis cases presented in this report reflects the number of primary human isolates and respectively the number of laboratory confirmed cases sent to the National Reference Centre for Salmonella, n = 4,050. This number shows a reduction of 25% compared to the year 2006 and reflects the success of interventions aimed at combating salmonella. According to the Federal Ministy of Health, Family and Youth (BMGFJ), the official number of notified cases is 3,587 (as of February 2nd 2007, vorläufiger Jahresausweis über angezeigte Fälle übertragbarer Krankheiten 2007). As compared to the number of notified cases of campylobacteriosis (see chapter campylobacteriosis), salmonellosis is the second most important cause for enteric diseases in Austria.

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

In 2007, data from feedingstuffs indicate that the prevalence of salmonella (<1%) is decreasing compared to previous years. The number of cases which test positive for Salmonella is highest in poultry. Therefore, poultry is considered the main source for human infection. Although only few eggs were positive for salmonella (approx. 0.1 - 1% of the total number of tested eggs), infected eggs pose the main source of human infections.

Recent actions taken to control the zoonoses

There were various programs implemented to control the contamination of Salmonella in poultry, most programs involved meat and egg production. The main effort of the intervention is directed toward improving the sanitation of breeding flocks and laying flocks.

Suggestions to the Community for the actions to be taken

Continue the efforts already started, especially to improve the harmonization of national monitoring and control programs along the food chain.

Additional information

Nil

2.1.2. Salmonellosis in humans

A. Salmonellosis in humans

Case definition

Clinical picture compatible with salmonellosis, e. g. diarrhoea, abdominal pain, nausea and sometimes vomiting. The organism may cause extraintestinal infections.
Laboratory criteria for diagnosis: Isolation of Salmonella spp. (non-typhi, non-paratyphi) from a clinical specimen.
Case classification
• Probable case: A laboratory confirmed isolate without clinical information or, a case with clinical symptoms that has an epidemiological link
• Confirmed case: A clinically compatible case that is laboratory confirmed

Diagnostic/ analytical methods used

Bacteriology: Sample material is processed as described in Richtlinien für die Diagnostik von Salmonellen (Anonymus: Standardisierung und Qualitätssicherung in der mikrobiologischen Diagnostik. Richtlinien. Bundesministerium für Soziale Sicherheit und Generationen. ISBN 3-84123-126-0, Wien, 2001, pg. 11-12).
At the National Reference Centre for Salmonella (NRC Salmonella), all strains are serotyped according to the Kauffmann-White-Scheme. And further all S. Enteritidis and S. Typhimurium isolates are phage typed according to the methods used by HPA, Colindale, UK.

Notification system in place

Specialists in Laboratory Diagnosis or Microbiology and Hygiene and the attending physicians are required to report all Salmonella cases. Notification of salmonellosis according to the epidemic act has been mandatory since 1950 (BGBl. 1950/ 186 Epidemiegesetz, as amended). Since 2002, a note of the Federal Ministry for Social Security and Generations has been implemented (Meldepflicht infektiöser Erkrankungen für Labors GZ: 21.700/ 5- VIII/ D/ 5/ 02), in which medical doctors specialised in Laboratory Diagnosis or Microbiology and Hygiene are required to report all cases of Salmonella which are clinically verified.
The number of salmonellosis cases presented in this report reflects the number of primary human isolates and respectively the number of laboratory confirmed cases sent to the National Reference Centre for Salmonella.
On July 24, 2006, the amendment of the Epidemic Act (114. Bundesgesetz: Änderung des Epidemiegesetzes 1950) was published. According to the Act, all notifiable zoonotic agents that are isolated from humans in a laboratory have to be sent to the corresponding national reference laboratory/ centre for speciation.

History of the disease and/ or infection in the country

In 1989 and 1990, human infections with S. Enteritidis increased markedly in Austria. After a peak in 1992, the incidence of salmonella illness decreased, but the number of infections has remained at a high level until 2003. Since that year the number of laboratory confirmed cases of human Salmonella infections decreased by approx. 30 % but from 2005 to 2006 only by 4 %.

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

The number of laboratory confirmed cases of human Salmonella infections decreased lower than the previous years.
The proportion of S. Enteritidis, out of all Salmonella isolates, decreased in 2007 slightly to 77 % (compared to 83 % in 2005). The distribution and order of the three most common phage types (in 2006: PT4, PT8 and PT21 are very similar, 27 %, 23 % and 21 %) has changed in 2007, PT8 has been the most frequently identified (34%), followed by PT4 (30%) and PT21 (15%). In 2007, the three most common phage types make up 79% of all S. Enteritidis strains, compared to 71% in 2006. The number of S. Typhimurium isolates reported dropped to nearly half (n=354) compared to 2006 (n=627). This represents 9% of all Salmonella spp. isolates from human stool samples.
The overall resistance rates against antibiotics remained stable over the past years. Table eggs are probably still the main source of human infections of S. Enteritidis and S. Typhimurium.

Relevance as zoonotic disease

In 2007, the number of notified human cases of campylobacteriosis exceeded the number of salmonellosis cases. It is believed that the reduction in the number of human salmonellosis cases is due to EU wide control programs and establishment of goals for the reduction of prevalences of salmonella in laying hen flocks and broilers.

B. Antimicrobial resistance of Salmonella spp. in humans

History of the disease and/ or infection in the country

The overall resistance-rates against antibiotics remained stable over the past years. High level resistances against Ciprofloxacin and third generation cephalosporins (Cefotaxime) were still extremely rare in comparison to rates reported within the EU.

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

In 2006, there was no change detectable in the resistance-rates. The increase in the number of resistant isolates against ampicillin is due to more human cases affected by ampicillin resistant S. Enteritidis PT6a (2006: 185 cases, 2005: 18 cases).

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Additional information

Nil

2.1.3. Salmonella in foodstuffs

A. Salmonella spp. in food

Monitoring system

Sampling strategy

No surveillance programmes are applied.
Foodstuff was sampled according to the Erlass der Bundesministerin für Gesundheit und Frauen: Revisions- und Probenplan für das Jahr 2007 gemäß §31 LMSVG; Richtlinien über die Vollziehung der Überwachung des Verkehrs mit den durch das LMSVG erfassten Waren; Berichtsschema 2007 (BMGF-75500/ 0313-IV/ 7/ 2006 of 09.01.2007). The Revision-Plan determines the number of food enterprises e.g. restaurants, dairies, retail outlets etc. that have to be randomly sampled and tested according to the number of food enterprises per province. Every business within Austria has to be sampled at least once per year. The inspection can comprise sampling, hygienic investigations of the employees, checking of HACCP, control of manufacturing processes etc.
The sampling plan determines the number of samples of each class of goods that have to be investigated randomly, these include: raw meat, fresh or frozen; sausages; cheeses; milk; preserved food etc..
In addition to the routine monitoring plan, there is one separate monitoring plan for special food items.
In 2007, the following special food campaign programs, according to the Erlass der Bundesministerin für Gesundheit und Frauen: Schwerpunktprogramm 2007 (BMGF-75500/ 0295-IV/ 7/ 2006), were conducted throughout Austria:
Campaign A-003-07
food item: mixed meat products, ready-to-eat, sliced, packed, from retail
Investigation period: February – April
Pathogen: Listeria monocytogenes: 133 samples were tested, 0 positive
Campaign A-008-07
food item: infant formula, from retail
Investigation period: March - May
Pathogen: Salmonella: 90 samples were tested, 0 positive
Enterobacter sakazakii: 91 samples were tested, 7 positive
Campaign A-013-07
food item: egg products, from producer, wholesale and retail
Investigation period: May - July
Pathogen: Salmonella: 191 samples were tested, 2 positive
Campaign A-021-07
food item: mixed soft cheeses, raw and pasteurised milk, from wholesale and retail
Investigation period: June - August
Pathogen: Listeria monocytogenes: 172 samples were tested, 0 positive
Campaign A-027-07
food item: poultry meat fresh and deep-frozen, from producer, wholesale and retail
Investigation period: August - October
Pathogen: Campylobacter: 126 samples of poultry meat fresh were tested, 98 positive; 57

samples of poultry meat deep-frozen, 18 positive
Campaign A-030-07
food item: raw milk from primary production
Investigation period: September – October
Pathogen: 101 samples were tested for
Salmonella 0 positive
Campylobacter 0 positive
Listeria 1 positive
EHEC 0 positive
Campaign A-022-07
food item: raw meat products mixed, seasoned, from producer and retail
Investigation period: June – August
Pathogen: EHEC: 201 samples tested, 1 positive
Salmonella: 201 samples tested, 0 positive
Samples from suspected foodstuffs are taken following outbreak investigation, complaint, confiscation, violation etc.

Diagnostic/ analytical methods used

According to ISO 6579: 1999, with modifications: After preenrichment, selective enrichment in modified semisolid Rappaport-Vassiliadis or Diasalm, 18-24 hours at 42°C. Subsequently plating on XLD agar, Brilliant green-Phenolred-Lactose-Saccharose agar (BPLS), Salmonella Detection and Identification Medium (SMID) or Rambach agar.
25 g of raw material for egg products or 25 g of pooled content of 5 table eggs are either incubated directly or preenriched in peptone water. Further steps are performed as described above.
All isolates are sent to the NRL Salmonella and serotyped according to the Kauffmann-White-Scheme. All S. Enteritidis and S. Typhimurium isolates are phage-typed according to the methods used by HPA, Colindale, UK.

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

Salmonella spp. was detected in fresh or raw single broiler meat samples in 8.3 % (4 out of 48), in 4.8 % single turkey meat samples (4/ 84), and in 50 out of 552 samples (9.1 %) of single poultry meat fresh samples. There was no Salmonella spp. sample found positive in 45 samples of cooked meat products of broilers, ready-to-eat.
In all the tested bovine meat samples, 2 out of 127 single samples (1.6 %) were detected positive. In all the pig meat samples (fresh and cooked), nine of the 880 tested single samples (1 %) were found positive. In mixed meat samples (pig and bovine meat) including monitoring program A-022-07 (see above), none of the samples were found positive.
In 2007, 2,477 samples from milk, milk products and cheeses (all from cows', sheeps' or goats') were tested for Salmonella spp. and no sample was found positive (including monitoring program A-030-07).
Out of the 323 sample units, each containing 25 g of table eggs that were sampled and examined at packing centres or at the retail level, 2 samples (0.6 %) tested positive for salmonella, both S. Enteritidis.

Table Salmonella in poultry meat and products thereof (Part A)

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Bredeney	S. Minnesota	S. group C1, monophasic strain	S. enterica subsp. enterica, rough	S. Hadar	S. Infantis	S. Saintpaul	S. Worthington	S. Thompson	S. group C1	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Anatum	S. Indiana
Meat from broilers (Gallus gallus)																				
fresh																				
- at processing plant		single	10 g	63	5						1					4				
- at retail		single	10 g	48	4				1		1					1				1
- at retail - Monitoring - official sampling - objective sampling		single	25 g	38	1	1														
- at processing plant - Monitoring - official sampling - objective sampling		single	25	4	0															
- Monitoring - official sampling - objective sampling		single	10 g	31	1						1									
- Monitoring - official sampling - objective sampling (25 g)		single	25 g	23	2			1			1									

meat preparation																				
intended to be eaten cooked																				
- at retail		single	25 g	18	2	1				1										
meat products																				
raw but intended to be eaten cooked																				
- at processing plant		single	10 g	10	0															
- at retail		single	10 g	27	3						2								1	
- at retail - Monitoring - official sampling - objective sampling		single	25 g	5	1							1								
cooked, ready-to-eat																				
- at processing plant		single	10 g	1	0															
- at retail		single	10 g	5	0															
- at retail - Monitoring - official sampling - objective sampling		single	25 g	34	0															
- at retail - Monitoring		single	50 g	5	0															
Meat from turkey																				
fresh																				
- at processing plant		single	10 g	3	1												1			
- at retail		single	10 g	34	3				1	1						1				
- at retail (25 g)		single	25 g	39	0															
- at processing plant (25 g)		single	25 g	8	0															
meat preparation																				
intended to be eaten cooked																				
- at retail		single	25 g	6	3							1			2					
meat products																				
cooked, ready-to-eat																				
- at retail		single	25 g	2	0															

Meat from other poultry species																				
- at retail		single	10 g	28	4		1		2							1				
- at retail - Monitoring - official sampling - objective sampling		single	25 g	10	0															
- at retail - Monitoring		single	50 g	4	0															
- at processing plant		single	10 g	7	0															
- at processing plant - Monitoring		single	25 g	3	0															
Meat from poultry, unspecified																				
fresh																				
- Monitoring - official sampling - objective sampling (10 g)		single	10 g	270	22	1				2	2	1	1			5	4		2	1
- Monitoring - official sampling - objective sampling (100 cm2)		single	100 cm2	3	0															
- Monitoring - official sampling - objective sampling (25 g)		single	25 g	14	2						1									1
- at retail - Monitoring - official sampling - objective sampling (10 g)		single	10 g	9	0															
- at retail - Monitoring - official sampling - objective sampling (100 cm2)		single	100 cm2	7	5						5									
- at retail - Monitoring - official sampling - objective sampling (25 g)		single	25 g	36	8					1	1			2		1	3			

- at processing plant - Monitoring - official sampling - objective sampling (10 g)		single	10 g	13	0															
- at processing plant - Monitoring - official sampling - objective sampling (25 g)		single	25 g	4	0															

Footnote

Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

Table Salmonella in poultry meat and products thereof (Part B)

	S. Montevideo	S. Ohio
Meat from broilers (Gallus gallus)		
fresh		
- at processing plant		
- at retail		
- at retail - Monitoring - official sampling - objective sampling		
- at processing plant - Monitoring - official sampling - objective sampling		
- Monitoring - official sampling - objective sampling		
- Monitoring - official sampling - objective sampling (25 g)		
meat preparation intended to be eaten cooked		
- at retail		
meat products raw but intended to be eaten cooked		
- at processing plant		

- at retail		
- at retail - Monitoring - official sampling - objective sampling		
cooked, ready-to-eat		
- at processing plant		
- at retail		
- at retail - Monitoring - official sampling - objective sampling		
- at retail - Monitoring		
Meat from turkey		
fresh		
- at processing plant		
- at retail		
- at retail (25 g)		
- at processing plant (25 g)		
meat preparation		
intended to be eaten cooked		
- at retail		
meat products		
cooked, ready-to-eat		
- at retail		
Meat from other poultry species		
- at retail		
- at retail - Monitoring - official sampling - objective sampling		
- at retail - Monitoring		
- at processing plant		

- at processing plant - Monitoring		
Meat from poultry, unspecified		
fresh		
- Monitoring - official sampling - objective sampling (10 g)	2	1
- Monitoring - official sampling - objective sampling (100 cm2)		
- Monitoring - official sampling - objective sampling (25 g)		
- at retail - Monitoring - official sampling - objective sampling (10 g)		
- at retail - Monitoring - official sampling - objective sampling (100 cm2)		
- at retail - Monitoring - official sampling - objective sampling (25 g)		
- at processing plant - Monitoring - official sampling - objective sampling (10 g)		
- at processing plant - Monitoring - official sampling - objective sampling (25 g)		

Footnote Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

Table Salmonella in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Milk, cows'								
raw								
- at processing plant (25 g)		single	25 g	7	0			
(Campaign A-030-07, raw milk from primary production)		single	25 g	101	0			
raw milk for manufacture								
intended for manufacture of raw or low heat-treated products								
- at retail (25 g)		single	25 g	5	0			
- at retail (25 ml)		single	25 ml	10	0			
- at processing plant (25 g)		single	25 g	4	0			
- at retail (50 g)		single	50 g	8	0			
pasteurised milk								
- at processing plant		single	unknown	1	0			
- at retail		single	unknown	9	0			
- at retail (25 g)		single	25 g	12	0			
- at retail (50 g)		single	50 g	3	0			
- at processing plant (25 g)		single	25 g	37	0			
Cheeses made from cows' milk								
- at processing plant		single	unknown	1	0			
- at retail		single	unknown	10	0			
soft and semi-soft								
made from raw or low heat-treated milk								
- at processing plant		single	unknown	25	0			
- at retail		single	unknown	4	0			
- at retail (25 g)		single	25 g	51	0			
- at retail (50 g)		single	50 g	4	0			
- at processing plant (25 g)		single	25 g	109	0			

made from pasteurised milk								
- at processing plant		single	unknown	7	0			
- at retail		single	unknown	12	0			
- at retail (50 g)		single	50 g	21	0			
- at retail (25 g)		single	25 g	187	0			
- at processing plant (25 g)		single	25 g	204	0			
- at retail (25 g)		single	25 g	42	0			
- at processing plant (25 g)		single	25 g	108	0			
Dairy products (excluding cheeses)								
butter								
made from raw or low heat-treated milk								
- at retail		single	50 g	9	0			
- at retail (unknown)		single	unknown	17	0			
- at retail (25 g)		single	25 g	263	0			
- at processing plant (25 g)		single	25 g	140	0			
cream								
made from raw or low heat-treated milk								
- at processing plant		single	25 g	12	0			
ice-cream								
- at processing plant		single	unknown	71	0			
- at retail		single	unknown	64	0			
- at retail (25 g)		single	25 g	596	0			
- at processing plant (25 g)		single	25 g	269	0			
- at retail (50 g)		single	50 g	9	0			
Cheeses, made from mixed milk from cows, sheep and/ or goats								
unspecified								
made from raw or low heat-treated milk								
- at retail (unknown)		single	unknown	2	0			
- at retail (25 g)		single	25 g	24	0			
- at retail (50 g)		single	50 g	1	0			
- at processing plant (unknown)		single	1	0	0			
- at processing plant (25 g)		single	17	0	0			

Footnote

Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. II 16:g,[m],[s],t:[e,n,x]	S. Derby	S. Infantis	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Meat from pig											
fresh											
- at processing plant		single	25 g	1	0						
- at retail		single	10 g	400	4			1		3	
- at retail (25 g)		single	25 g	23	0						
- at retail (50 g)		single	50 g	4	0						
minced meat											
intended to be eaten cooked											
- at retail		single	10 g	185	3			1		2	
- at retail (25 g)		single	25 g	1	0						
meat preparation											
intended to be eaten cooked											
- at processing plant		single	25 g	1	0						
- at retail		single	10 g	68	0						
- at retail (25 g)		single	25 g	58	2	1				1	
- at retail (50 g)		single	50 g	1	0						
meat products											
raw but intended to be eaten cooked											
- at retail		single	10 g	4	0						
cooked, ready-to-eat											
- at processing plant		single	25 g	11	0						
- at retail		single	10 g	8	0						
- at retail (25 g)		single	25 g	144	0						
- at retail (50 g)		single	50 g	11	0						
Meat from bovine animals											
minced meat											
intended to be eaten cooked											
- at retail		single	10 g	53	1				1		
- at retail (25 g)		single	25 g	4	0						
meat preparation											

intended to be eaten cooked											
- at processing plant		single	10 g	1	0						
- at retail		single	10 g	14	0						
- at retail (25 g)		single	25 g	8	0						
- at retail (50 g)		single	50 g	2	0						
meat products											
raw but intended to be eaten cooked											
- at processing plant		single	10 g	1	0						
- at retail		single	10 g	19	0						
- at retail (25 g)		single	25 g	9	0						
- at retail (50 g)		single	50 g	5	1			1			
cooked, ready-to-eat											
- at retail		single	10 g	9	0						
- at retail (50 g)		single	50 g	2	0						
Meat from sheep											
fresh											
- at retail		single	10 g	4	0						
- at retail (25 g)		single	25 g	1	0						
- at retail (50 g)		single	50 g	2	0						
Meat, mixed meat											
- at retail		single	10 g	29	0						
- at retail (25 g)		single	25 g	51	1				1		
- at retail (50 g)		single	50 g	1	0						
- at processing plant (10 g)		single	10 g	3	0						
- at processing plant (25 g)		single	25 g	12	0						
(Campaign A-022-07, seasoned, from produced and retail)		single	10 g	201	0						
Meat from farmed game- land mammals											
fresh											
- at retail (Rabbit)		single	10 g	5	0						
Meat from bovine animals and pig											
- at retail (Cooked, ready-to-eat)		single	10 g	26	0						
minced meat											
intended to be eaten cooked											
- at retail (10 g)		single	10 g	105	0						
- at retail (25 g)		single	25 g	17	0						
- at retail (50 g)		single	50 g	1	0						
- at processing plant		single	10 g	5	0						
Meat from other animal species or not specified											
- at retail (10 g)		single	10 g	22	1		1				
- at retail (25 g)		single	25 g	1	0						

- at retail (50 g)		single	50 g	2	0						
- at processing plant (10 g)		single	10 g	2	0						

Footnote

Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

Table Salmonella in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Cerro
Eggs									
table eggs									
- at retail (unknown)		single	unknown	162	0				
- at retail (25 g)		single	25 g	30	1	1			
- at retail (50 g)		single	50 g	33	0				
shell									
- at retail (unknown)		single	unknown	25	1	1			
- at retail (1 egg)		single	1 egg	5	0				
- at retail (4 eggs)		single	4 eggs	2	0				
- at retail (5 eggs)		single	5 eggs	50	0				
- at processing plant (25 g)		single	25 g	16	0				
raw material (liquid egg) for egg products									
- at retail (unknown)		single	unknown	1	0				
- at retail (25 g)		single	25 g	9	0				
- at processing plant (25 g)		single	25 g	4	0				
Egg products									
- at processing plant		single	25 g	4	0				
- at retail		single	25 g	34	0				
(Campaign A-013-07, egg products, wholesale and retail)		single	25 g	191	2	1			1
Fishery products, unspecified									
- at processing plant		single	25 g	1	0				
- at retail		single	10 g	1	0				
- at retail (25 g)		single	25 g	13	0				
- at retail (50 g)		single	50 g	26	0				
Crustaceans									
- at processing plant		single	25 g	1	0				
- at retail		single	unknown	1	0				
- at retail (25 g)		single	25 g	15	0				

- at retail (50 g)		single	50 g	7	0				
Juice									
fruit juice									
- at retail (50 g)		single	50 g	1	0				
- at retail (50 ml)		single	50 ml	7	0				
Infant formula									
dried									
- at retail (25 g)		single	25 g	2	0				
(Campaign A-008-07, infant formula, from retail)		single	25	90	0				
- at retail (25 g)		single	25 g	23	0				
- at retail (50 g)		single	50 g	2	0				
Bakery products									
- at retail (unknown)		single	unknown	17	0				
- at processing plant (unknown)		single	unknown	4	0				
- at retail (25 g)		single	25 g	165	0				
- at retail (50 g)		single	50 g	6	0				
- at processing plant (25 g)		single	25 g	15	0				
Beverages, non-alcoholic									
- at processing plant (50 ml)		single	50 ml	9	0				
- at processing plant (25 g)		single	25 g	2	0				
Chocolate									
- at retail (unknown)		single	unknown	8	0				
- at retail (25 g)		single	25 g	14	0				
- at retail (50 g)		single	50 g	1	0				
- at processing plant (25 g)		single	25 g	1	0				
Cocoa and cocoa preparations, coffee and tea									
- at retail (unknown)		single	unknown	2	0				
- at retail (10 ml)		single	10 ml	1	0				
- at retail (25 g)		single	25 g	8	0				
- at retail (50 g)		single	50 g	1	0				
- at processing plant (25 g)		single	25 g	3	0				
Fats and oils (excluding butter)									
- at retail (50 g)		single	50 g	2	0				
- at retail (25 ml)		single	25 ml	3	0				
Fish									
raw									
- at retail (unknown)		single	unknown	3	0				
- at retail (10 g)		single	10 g	1	0				
- at retail (25 g)		single	25 g	109	0				
- at retail (50 g)		single	50 g	10	0				

- at processing plant (25 g)		single	25 g	2	0				
Fruits									
- at retail (unknown)		single	unknown	3	0				
- at retail (25 g)		single	25 g	7	0				
- at retail (50 g)		single	50 g	3	0				
pre-cut									
ready-to-eat									
- at retail (25 g)		single	25 g	43	0				
Mushrooms									
- at retail (25 g)		single	25 g	3	0				
- at retail (50 g)		single	50 g	2	0				
Nuts and nut products									
- at retail (25 g)		single	25 g	38	0				
Dairy products (excluding cheeses)									
dairy products, not specified									
- at retail (25 g)		single	25 g	2	0				
Other food									
- at retail (unknown)		single	unknown	89	1	1			
- at retail (10 g)		single	10 g	5	0				
- at retail (25 g)		single	25 g	527	1	1			
- at retail (50 g)		single	50 g	132	8	8			
- at processing plant (unknown)		single	unknown	5	0				
- at processing plant (25 g)		single	25 g	64	0				
- at processing plant (50 g)		single	50 g	9	0				
Other processed food products and prepared dishes									
- at retail (unknown)		single	unknown	10	0				
- at retail (25 g)		single	25 g	83	0				
- at retail (50 g)		single	50 g	2	0				
- at processing plant (unknown)		single	unknown	32	0				
- at processing plant (25 g)		single	25 g	67	0				
Ready-to-eat salads									
- at retail (unknown)		single	unknown	2	0				
- at retail (25 g)		single	25 g	21	0				
- at retail (50 g)		single	50 g	3	0				
- at processing plant (unknown)		single	unknown	5	0				
- at processing plant (25 g)		single	25 g	2	0				
Sauce and dressings									
- at retail (unknown)		single	unknown	3	0				
- at retail (25 g)		single	25 g	5	0				

- at retail (50 g)		single	50 g	2	0				
- at processing plant (25 g)		single	25 g	1	0				
Soups									
- at retail (25 g)		single	25 g	1	0				
- at retail (50 g)		single	50 g	7	0				
Spices and herbs									
- at retail (25 g)		single	25 g	90	0				
- at retail (50 g)		single	50 g	4	0				
- at processing plant (25 g)		single	25 g	2	0				
Sweets									
- at retail (25 g)		single	25 g	41	0				
Vegetables products									
- at retail (25 g)		single	25 g	10	0				
- at retail (50 g)		single	50 g	12	0				
- at retail (25 g)		single	25 g	12	0				
- at retail (50 g)		single	50 g	4	0				
- at processing plant (25 g)		single	25 g	2	0				

Footnote

Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

2.1.4. Salmonella in animals

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

Monitoring system

Sampling strategy

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

Only parent flocks exist in Austria. The permanent monitoring plan performed by a national program takes place at hatcheries; each flock is tested regularly as well by the farmer as by the Veterinary Authorities.
If S. Enteritidis, S. Typhimurium, S. Pullorum Gallinarum and S. Arizonae is isolated from breeding flocks at the hatchery the flock is banned and a sample of 20 birds at random from within the incriminated flock has to be taken. The inner organs, such as ovaries, liver and the intestinal content is investigated.
If a parent flock tests positive for other salmonellas, official veterinarians are required to take pooled feces samples from the flock being investigated. In the event of a second positive result for Salmonella spp. within a two week period, then organs from a minimum of 20 chickens must be tested.
Since April 30, 2007 the EU-Regulation 2005/ 1003 is in force. Additional Salmonella serotypes are to be included in the national program: S. Infantis, S. Hadar and S. Virchow.

Laying hens flocks

At least 3 weeks prior to slaughter, two pairs of boot swabs must be taken from each flock. Since May 2007, every flock has been tested in accordance to regulation 1168/ 2006.

Frequency of the sampling

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks! Every flock is tested at day one

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks! Monitoring by national program, takes place at hatchery, each flock is tested every two weeks at hatch by the farmer, and every 6 weeks by the Veterinary Authorities; additional each flock is tested every 4 weeks by the farmer by boot swabs.

Laying hens: Day-old chicks

Other: no legal requirements, e.g. at day one of each flock

Laying hens: Rearing period

Other: 3 times at day one, week 8 to 12 and 2 weeks before the laying period start

Laying hens: Production period

Other: Each flock is tested every 15 weeks with two pairs of boot swabs

Laying hens: Before slaughter at farm

Other: 3 weeks before slaughter at farm with two pairs of boot swabs

Laying hens: At slaughter

Other: Not applicable. no sampling

Eggs at packing centre (flock based approach)

Other: according to the program of the cooperatives voluntary surface swabs (e.g. every eight weeks)

Type of specimen taken

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks! Visibly soiled hatcher basket liners, dead chicks if available

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks! Routine testing: drag swabs, pooled feces. For confirmation: organs as ovaries, liver and intestinal content from a minimum of 20 chickens.

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks! Routine testing: Drag swabs, pooled feces and dust in the hatchery, meconium, broken eggshells and hatched eggs. For confirmation: Inner organs as ovaries, liver and intestinal content from a minimum of 20 chickens. Inner organs of 5

chickens or intestinal content of 5 chickens were pooled.

Laying hens: Day-old chicks

Other: no legal requirements, e.g. visibly soiled hatcher basket liners

Laying hens: Rearing period

Other: no legal requirements, e.g. pooled feces

Laying hens: Production period

Other: no legal requirements, e.g. pooled feces or drag swabs

Laying hens: Before slaughter at farm

Other: two pairs of boot swabs per flock

Laying hens: At slaughter

Other: no sampling

Eggs at packing centre (flock based approach)

Other: Voluntary e.g. surface swabs

Methods of sampling (description of sampling techniques)

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks! Visibly soiled hatcher basket liners, dead chicks if available

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks! Routine testing: 60 pooled droppings a 1gram per flock, collection of dust. For confirmation: Diagnostically killing of 20 random chickens from within the incriminated flock

Breeding flocks: Production period

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!
Routine testing: 1 drag swab, pooled feces, collection of dust. For confirmation: Diagnostically killing of 20 random chickens from within the incriminated flock

Laying hens: Day-old chicks

No legal requirements, e.g. visibly soiled hatcher basket liners

Laying hens: Rearing period

No legal requirements, e.g. 60 pooled droppings a 1 gram per flock

Laying hens: Production period

No legal requirements, e.g. 60 pooled droppings a 1 gram per flock or 1 drag swab

Laying hens: Before slaughter at farm

Two pairs of boot swabs per flock

Laying hens: At slaughter

No sampling

Eggs at packing centre (flock based approach)

No legal requirements, e.g. surface swabs

Case definition

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!
Routine testing: Salmonella spp. isolated from hatcher basket liners

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!
Salmonella spp. isolated from inner organs or from content of intestines of chickens killed for diagnosis

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!
Salmonella spp. isolated from inner organs or from content of intestines of chicken

Laying hens: Day-old chicks

No legal requirements, e.g. Salmonella spp. isolated from hatcher basket liners

Laying hens: Rearing period

No legal requirements

Laying hens: Production period

No legal requirements

Laying hens: Before slaughter at farm

Salmonella spp. isolated from boot swabs

Laying hens: At slaughter

No sampling

Eggs at packing centre (flock based approach)

Salmonella spp. isolated from surface swabs

Diagnostic/ analytical methods used

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks! Sample material is incubated in liquid medium. Modification of ISO 6579 (2002), where a semi solid medium (MSRV) is used as the single selective enrichment medium. The semi solid medium is incubated at 41.5+/ - 1°C for 24 or 48 hours. All isolates are sent to the NRL Salmonella and serotyped according to the Kauffmann-White-Scheme. All S. Enteritidis and S. Typhimurium isolates are phage-typed according to the methods used by HPA, Colindale, UK.

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

Other: See day old chicks

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

Other: See day old chicks

Laying hens: Day-old chicks

Other: Sample material is incubated in liquid medium. Modification of ISO 6579 (2002), where a semi solid medium (MSRV) is used as the single selective enrichment medium. The semi solid medium is incubated at 41.5 +/ - 1 °C for 24 or 48 hours. All isolates are sent to the NRL Salmonella and serotyped according to the Kauffmann-White-Scheme. All S. Enteritidis and S. Typhimurium isolates are phage-typed according to the methods used by HPA, Colindale, UK.

Laying hens: Rearing period

Other: See laying hens, day old chicks.

Laying hens: Production period

Other: See laying hens, day old chicks.

Laying hens: Before slaughter at farm

Other: See laying hens, day old chicks.

Laying hens: At slaughter

Other: no testing

Eggs at packing centre (flock based approach)

Other: See laying hens, day old chicks.

Vaccination policy

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks! The national program for parent flocks made vaccination against Salmonella mandatory for all flocks

Laying hens flocks

The national program recommended vaccination against S. Enteritidis

Other preventive measures than vaccination in place

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

Nil

Laying hens flocks

Nil

Control program/ mechanisms

The control program/ strategies in place

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks! The Austrian control program is conducted according to the National Poultry Hygiene Regulation (BGBl. I Nr. 6/ 2007, Geflügelhygieneverordnung 2007 of April 30th, 2007). The Austrian program for monitoring and eradication of Salmonella in breeding flocks of poultry was again (already since 2000) approved for the year 2006 by Commission Decision 2005/ 887/ EG of 12 December 2005.

Laying hens flocks

The Austrian control program is conducted according to the National Poultry Hygiene Regulation (BGBl. I Nr. 6/ 2007, Geflügelhygieneverordnung 2007 of April 30th,

2007).

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!
Measures according to the National Poultry Hygiene Regulation:
• Banning of the incriminated sector of the holding
• Culling of the infected flock
• Disposal of the hatched eggs
• Abolishing of the restriction after cleaning and disinfection
• If necessary prescriptions of GMP to prevent re-infection

Laying hens flocks

Flocks were either treated with antimicrobials or competitive exclusion and a hygiene plan is performed. Slaughtering was only permitted for Salmonella negative flocks.

Notification system in place

All positive results from parent flocks must be reported to the local authorities and via the Austrian Poultry Health Service to the Federal Ministry of Health and Women (BMGFJ).

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

In 2007, Salmonella spp. was not detected in any parent flock.

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

Nil

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

Monitoring system

Sampling strategy

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

There are only parent flocks existing in Austria. The national permanent monitoring program takes place at a hatchery; each flock is tested regularly as well by the farmer as by the Veterinary Authority. If S. Enteritidis, S. Typhimurium, S. Pullorum Gallinarum and S. Arizonae is isolated from breeding flocks at the hatchery the flock is banned and a sample of 20 birds at random from within the incriminated flock has to be taken. The inner organs, such as ovaries, liver and the intestinal content is investigated.
If a parent flock tests positive for other salmonellae, official veterinarians are required to take pooled feces samples from the flock being investigated. In the event of a second positive result for Salmonella spp. within a two week period, then organs from a minimum of 20 chickens must be tested.

Broiler flocks

Earliest 3 weeks prior to slaughter boot swabs have to be taken. Other programs are not foreseen, only voluntary sampling by the farmer or sampling according to private cooperatives is performed.

Frequency of the sampling

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!

Broiler flocks: Day-old chicks

Other: no legal requirements, e.g. at day one each flock

Broiler flocks: Rearing period

Other: no legal requirements

Broiler flocks: Before slaughter at farm

Other: 3 weeks before slaughter at farm

Broiler flocks: At slaughter (flock based approach)

Other: No sampling

Type of specimen taken

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!

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

Other: Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!

Broiler flocks: Day-old chicks

Other: no legal requirements, e.g. visibly soiled hatcher basket liners

Broiler flocks: Rearing period

Other: no legal requirements, e.g. pooled feces

Broiler flocks: Before slaughter at farm

Other: two pairs of boot swabs per flock per flock

Broiler flocks: At slaughter (flock based approach)

Other: No sampling

Methods of sampling (description of sampling techniques)

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!
Visibly soiled hatcher basket liners, dead chicks if available

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

Routine testing: 60 pooled droppings a 1 gram per flock, collection of dust. For confirmation: Diagnostically killing of 20 random chickens from within the incriminated flock.

Breeding flocks: Production period

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!
Routine testing: 1 drag swab, pooled feces, collection of dust For confirmation: Diagnostically killing of 20 random chickens from within the incriminated flock

Broiler flocks: Day-old chicks

No legal requirements, e.g. visibly soiled hatcher basket liners

Broiler flocks: Rearing period

No legal requirements, e.g. 60 pooled droppings a 1 gram per flock

Broiler flocks: Before slaughter at farm

two pairs of boot swabs per flock

Broiler flocks: At slaughter (flock based approach)

Other: No sampling

Case definition

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!
Routine testing: Salmonella spp. isolated from hatcher basket liners and dead chicks if available

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!
Salmonella spp. isolated from inner organs or from content of intestines of chickens killed
for diagnosis.

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

Not applicable. There are no separate elite and grand parent flocks in Austria, only parent flocks!
Salmonella spp. isolated from inner organs or from content of intestines of chicken

Broiler flocks: Day-old chicks

No legal requirements

Broiler flocks: Rearing period

No legal requirements

Broiler flocks: Before slaughter at farm

Salmonella spp. isolated from boot swabs

Broiler flocks: At slaughter (flock based approach)

No sampling

Vaccination policy

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

There are no separate elite and grand parent flocks in Austria, only parent flocks! The national program for parent flocks made vaccination against Salmonella mandatory for all flocks

Broiler flocks

Neither legal requirements nor recommendations

Other preventive measures than vaccination in place

Broiler flocks

Nil

Control program/ mechanisms

The control program/ strategies in place

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

There are no separate elite and grand parent flocks in Austria, only parent flocks! The Austrian control program is conducted according to the National Poultry Hygiene Regulation (BGBl. I Nr. 6/ 2007, Geflügelhygieneverordnung 2007 of April 30th, 2007). The Austrian program for monitoring and eradication of Salmonella in breeding flocks of poultry was again (already since 2000) approved for the year 2006 by Commission Decision 2005/ 887/ EG of 12 December 2005.

Broiler flocks

The Austrian control program is conducted according to the National Poultry Hygiene Regulation (BGBl. I Nr. 6/ 2007, Geflügelhygieneverordnung 2007 of April 30th, 2007)

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

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

There are no separate elite and grand parent flocks in Austria, only parent flocks!
Measures according to the National Poultry Hygiene Regulation:
• Banning of the incriminated sector of the holding
• Culling of the infected flock
• Disposal of the hatched eggs
• Abolishing of the restriction after cleaning and disinfection
• If necessary prescriptions of GMP to prevent re-infection

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

See day-old chicks.

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

See day-old chicks.

Broiler flocks: Day-old chicks

Flocks were treated either with antimicrobials or competitive exclusion strategies takes place.

Broiler flocks: Rearing period

Flocks were treated either with antimicrobials or competitive exclusion strategies takes place.

Broiler flocks: Before slaughter at farm

Flocks were treated either with antimicrobials or competitive exclusion strategies takes place. Slaughtering was only permitted for Salmonella spp. negative flocks.

Broiler flocks: At slaughter (flock based approach)

No testing

Notification system in place

All positive findings in parent flocks had to be notified to the local authority and via the Austrian Poultry Health Service to the Federal Ministry of Health and Women.

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

In 2007, Salmonella spp. was not detected in any parent flock.

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

source of infection)

Nil.

C. Salmonella spp. in turkey - breeding flocks and meat production flocks

Monitoring system

Sampling strategy

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

There are no breeding flocks in Austria

Meat production flocks

Earliest 3 weeks prior to slaughter boot swabs have to be taken. Other programs are not foreseen, only voluntary sampling by the farmer or sampling according to private cooperatives is performed.

Frequency of the sampling

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

Other:

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

Other:

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

Other:

Meat production flocks: Day-old chicks

Other: no legal requirements, e.g. at day one each flock

Meat production flocks: Rearing period

Other: no legal requirements

Meat production flocks: Before slaughter at farm

Other: 3 weeks before slaughter at farm

Meat production flocks: At slaughter (flock based approach)

Other: No sampling

Type of specimen taken

Meat production flocks: Day-old chicks

Other: no legal requirements, e.g. visibly soiled hatcher basket liners

Meat production flocks: Rearing period

Other: no legal requirements, e.g. pooled feces

Meat production flocks: Before slaughter at farm

Other: two pairs of boot swabs per flock per flock

Meat production flocks: At slaughter (flock based approach)

Other: no sampling

Methods of sampling (description of sampling techniques)

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

No legal requirements, e.g. visibly soiled hatcher basket liners

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

No legal requirements, e.g. 60 pooled droppings a 1 gram per flock

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

two pairs of boot swabs per flock

Meat production flocks: Day-old chicks

No sampling

Meat production flocks: Rearing period

No legal requirements

Meat production flocks: Before slaughter at farm

two pairs of boot swabs per flock

Meat production flocks: At slaughter (flock based approach)

no sampling

Case definition

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

necessary): Rearing period

No flocks in Austria

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

No flocks in Austria

Meat production flocks: Day-old chicks

No legal requirements

Meat production flocks: Rearing period

No legal requirements

Meat production flocks: Before slaughter at farm

Salmonella spp. isolated from boot swabs

Meat production flocks: At slaughter (flock based approach)

No sampling

Diagnostic/ analytical methods used

Meat production flocks: Day-old chicks

Other: Sample material is incubated in liquid medium. Modification of ISO 6579 (2002), where a semi solid medium (MSRV) is used as the single selective enrichment medium. The semi solid medium is incubated at 41.5 +/ - 1 °C for 24 or 48 hours.

Meat production flocks: Rearing period

Other: see day-old chicks

Meat production flocks: Before slaughter at farm

Other: see day-old chicks

Meat production flocks: At slaughter (flock based approach)

Other: see day-old chicks

Vaccination policy

Meat production flocks

Neither legal requirements nor recommendations

Other preventive measures than vaccination in place

Meat production flocks

Nil

Control program/ mechanisms

The control program/ strategies in place

Meat production flocks

The Austrian control program is conducted according to the National Poultry Hygiene Regulation (BGBl. I Nr. 6/ 2007, Geflügelhygieneverordnung 2007 of April 30th, 2007).

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

Flocks were treated with antimicrobials. Slaughtering was only permitted for Salmonella negative flocks.

Notification system in place

Notification not mandatory

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

Slaughtering was only permitted for Salmonella negative flocks.

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

Slaughtering was only permitted for Salmonella negative flocks.

Table Salmonella in breeding flocks of Gallus gallus

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Montevideo	S. Enteritidis	S. Typhimurium	S. Hadar	S. Infantis	S. Virchow	Salmonella spp., unspecified	S. Indiana	S. Saintpaul
Gallus gallus (fowl)													
parent breeding flocks for egg production line	QGV	flock	16	0									
during rearing period	QGV	flock	5	0									
during production period	QGV	flock	11	0									
parent breeding flocks for meat production line													
during rearing period	QGV	flock	22	0									
during production period	QGV	flock	50	4	1							2	1

Footnote

QGV = Austrian Poultry Health Service

Table Salmonella in other poultry (Part A)

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Albany	S. Blockley	S. Indiana	S. Infantis	S. Bredeney	S. Corvallis	S. Derby	S. Muenchen	S. Jerusalem	S. Kentucky	S. Senftenberg	S. Thompson	S. Worthington
Gallus gallus (fowl)																				
laying hens																				
day-old chicks	QGV	flock	943	0																
during rearing period	QGV	flock	1457	20	10	2	2		3									1		
during production period	QGV	flock	2565	111	64	12	2	1	1		17	1		1		2		2		
broilers																				
day-old chicks	QGV	flock	1328	3	2															
during rearing period	QGV	flock	3795	93	4	2	1		3	3	12	4	1	1	3		2		2	2
Ducks																				
meat production flocks	QGV	flock	33	7					1	2										
Geese																				
meat production flocks	QGV	flock	94	11		4			3									1	1	
Turkeys																				
meat production flocks	QGV	flock	276	15			1													

Footnote

QGV = Austrian Poultry Health Service

Table Salmonella in other poultry (Part B)

	S. enterica subsp. enterica, rough	S. group B H-	S. enterica, monophasic	S. Kottbus	S. Regent	S. Saintpaul	S. Schwarzengrund	S. Hadar	S. Montevideo	S. Braenderup	S. London
Gallus gallus (fowl)											
laying hens											
day-old chicks											
during rearing period		1		1							
during production period	1						1		3	1	2
broilers											
day-old chicks									1		
during rearing period						2		8	42	1	
Ducks											
meat production flocks				3	1						
Geese											
meat production flocks				1	1						
Turkeys											
meat production flocks	1		2				1	3	7		

Footnote QGV = Austrian Poultry Health Service

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. group E1, monophasic strain	S. Indiana	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Kottbus	S. Blockley
Pigeons	VET	animal	8	1				1			
Guinea fowl	VET	animal	1	0							
Pheasants	VET	animal	4	0							
Ostriches	VET	animal	22	0							
Ducks	VET	animal	10	1							1
Geese (1)	VET	animal	57	14		1		1	7	5	
Parrots	VET	animal	12	0							
Falcons	VET	animal	3	0							
Birds											
pet animals	VET	animal	5	0							
wild	VET	animal	5	0							
Other poultry	VET	animal	3	0							
Swans	VET	animal	1	0							

(1) : 2 isolates in one sample

Footnote

VET: all 4 AGES Institutes for Veterinary Disease Control and Carinthian Institute for Veterinary Disease Control, Ehrental

Table Salmonella in other animals (Part A)

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. IIIb61:k:1,5,7	S. Derby	S. IIIb 57:k:e,n,x,z15	S. II 58:1,z,13,z28:z6	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. IIIb 38:k:z35	S. Montevideo	S. Infantis	S. Anatum	S. Dublin	S. Napoli	S. Koketime	S. Monschaui	S. Braenderup
Cattle (bovine animals)	VET																			
calves (under 1 year)	VET	animal	203	0																
adult cattle over 2 years	VET	animal	296	2	1															1
unspecified	VET	animal	2421	8		1			1	2						3	1			
Sheep	VET	animal	108	12	5											2				
Goats	VET	animal	17	1							1									
Pigs																				
fattening pigs	VET	animal	86	0																
unspecified	VET	animal	300	6					1	2										
Solipeds, domestic	VET	animal	28	0																
Dogs	VET	animal	117	1										1						
Cats	VET	animal	104	2					1							1				
Wild boars	VET	animal	13	0																
Camels	VET	animal	3	0																
Reptiles	VET	animal	9	4				1										1	1	

Guinea pigs	VET	animal	10	0																
Hares																				
wild	VET	animal	1	0																
Rabbits	VET	animal	64	0																
Snakes																				
((2 serotypes in one sample))	VET	animal	7	6			1		3			1	1		1					
Deer	VET	animal	27	0																
Chinchillas	VET	animal	1	0																
Mouflons	VET	animal	5	1						1										
Fish	VET	animal	1	0																
Monkeys	VET	animal	1	0																
Moose	VET	animal	7	1					1											
Rats	VET	animal	1	0																
Reindeers	VET	animal	1	0																
Turtles	VET	animal	3	0																
Capricorns	VET	animal	2	0																
Raccoons	VET	animal	1	0																

Footnote

VET: all 4 AGES Institutes for Veterinary Disease Control and Carinthian Institute for Veterinary Disease Control, Ehrental

Table Salmonella in other animals (Part B)

	S. group B H-	S. Waycross	S. IIIb	S. Kedougou
Cattle (bovine animals)				
calves (under 1 year)				
adult cattle over 2 years				
unspecified				
Sheep			5	
Goats				
Pigs				
fattening pigs				
unspecified		1		2
Solipeds, domestic				
Dogs				
Cats				
Wild boars				
Camels				
Reptiles		1		
Guinea pigs				
Hares				
wild				
Rabbits				
Snakes				
((2 serotypes in one sample))				
Deer				

Chinchillas										
Mouflons										
Fish										
Monkeys										
Moose										
Rats										
Reindeers										
Turtles										
Capricorns										
Raccoons										

Footnote

VET: all 4 AGES Institutes for Veterinary Disease Control and Carinthian Institute for Veterinary Disease Control, Ehrental

2.1.5. Salmonella in feedingstuffs

A. Salmonella spp. in feed - All feedingstuffs - in total - Monitoring

Monitoring system

Sampling strategy

Random sampling is performed without regional criteria. The sampling is carried out by competent authorities; the samples were taken on farms, slaughterhouses, processing plants, retailers. The sampling is part of the national permanent monitoring program.

Frequency of the sampling

Domestic feed material of plant origin

Other: The sampling plan is assigned and the tests are evenly distributed throughout the year. Every farm, processing plant, and retailer is sampled at least twice per year. The final product is then inspected. Discrepancies within reported batches lead to further testing.

Domestic feed material of animal origin

Other: See above

Imported feed material of plant origin

Other: See above

Imported feed material of animal origin

Other: See above

Process control in feed mills

Other: See above

Compound feedingstuffs

Other: See above

Type of specimen taken

Domestic feed material of plant origin

Oil seed meals and cakes

Domestic feed material of animal origin

Fish meal, dried animal by-products for pets

Imported feed material of plant origin

Oil seed meals and cakes

Imported feed material of animal origin

Fish meal, dried animal by-products for pets

Process control in feed mills

Not applicable (n. a.)

Compound feedingstuffs

Feed for poultry

Methods of sampling (description of sampling techniques)

Domestic feed material of plant origin

Sampling is performed according EC-Directive 76/ 371/ EEC applying special hygiene requirements or sampling of original packaged products.

Domestic feed material of animal origin

See above

Imported feed material of plant origin

See above

Imported feed material of animal origin

See above

Process control in feed mills

See above

Compound feedingstuffs

See above

Definition of positive finding

Domestic feed material of plant origin

Salmonella spp. isolated from the sample

Domestic feed material of animal origin

Salmonella spp. isolated from the sample

Imported feed material of plant origin

Salmonella spp. isolated from the sample

Imported feed material of animal origin

Salmonella spp. isolated from the sample

Process control in feed mills

Salmonella spp. isolated from the sample

Compound feedingstuffs

Salmonella spp. isolated from the sample

Diagnostic/ analytical methods used

Domestic feed material of plant origin

Other: Bacteriological method: ISO 6579:2002; sample weight: 50 g; all isolates are sent to the NRL Salmonella and serotyped according to the Kauffmann-White-Scheme. All S. Enteritidis and S. Typhimurium isolates are phage typed according to the methods used by HPA, Colindale, UK.

Domestic feed material of animal origin

Other: as above

Imported feed material of plant animal

Other: as above

Imported feed material of animal origin

Other: as above

Process control in feed mills

Other: as above

Compound feedingstuffs

Other: as above

Control program/ mechanisms

The control program/ strategies in place

National legislation: BGBl. Nr. 139/ 1999 (Futtermittelgesetz 1999, § 3) and BGBl. Nr. 93/ 2000 (Futtermittelverordnung 2000, as amended) containing general requirements for feedingstuffs and BGBl. II Nr. 243/ 2000 (Geflügelhygieneverordnung 2000).
EC: salmonella monitoring, general requirements for feed material and compound feed, coordinated annual control program

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings

Domestic feed material of plant origin

In the event of a positive result, the notification results in the confiscation of the infected feedingstuffs according to official measures. This includes the withdrawal of the feedingstuffs from the market, the recall of feed, decontamination of the feed, disposal or other use of the feed, exploration and elimination of the sources of contamination and operational measures to prevent future contaminations.

Domestic feed material of animal origin

See above

Imported feed material of plant origin

See above

Imported feed material of animal origin

See above

Process control in feed mills

See above

Compound feedingstuffs

See above

Notification system in place

The Rapid Alert System for Food and Feed (RASFF) notifies the local authorities and the system has been in place since 1979. The legal basis of the RASFF is Regulation EC/ 178/ 2002.

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

In the last 20 years, the quality of feed has improved due to the increase of numbers of farms, processing plants and retailer using HACCP concepts, traceability of contaminated feed/ components of feed and palletizing feed/ contaminated feed.

Additional information

Nil

Table Salmonella in other feed matter

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Senftenberg	S. Tennessee	S. Livingstone	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Mbandaka
Feed material of cereal grain origin												
barley derived	Compulsory Monitoring Program	batch	50 g	2	0							
(Private Testing)	Quality Assurance Program	batch	25 g	18	0							
wheat derived	Compulsory Monitoring Program	batch	50 g	5	0							
(Private Testing)	Quality Assurance Program	batch	25 g	9	0							
maize	Quality Assurance Program	batch	25 g	6	0							
derived	Compulsory Monitoring Program	batch	50 g	2	0							
(Private Testing)	Quality Assurance Program	batch	25 g	5	0							
other cereal grain derived	Quality Assurance Program	batch	25 g	3	0							

Feed material of oil seed or fruit origin																			
groundnut derived	Compulsory Monitoring Program	batch	50 g	1	0														
(Private Testing)	Quality Assurance Program	batch	25 g	1	0														
rape seed derived	Compulsory Monitoring Program	batch	50 g	11	1			1											
(Private Testing)	Quality Assurance Program	batch	25 g	163	2			2											
palm kernel derived	Compulsory Monitoring Program	batch	50 g	2	0														
(Private Testing)	Quality Assurance Program	batch	25 g	1	0														
soya (bean) derived	Compulsory Monitoring Program	batch	50 g	58	3	1				1									1
(Private Testing)	Quality Assurance Program	batch	25 g	30	0														
cotton seed derived	Compulsory Monitoring Program	batch	50 g	7	0														
sunflower seed derived	Compulsory Monitoring Program	batch	50 g	2	0														
(Private Testing)	Quality Assurance Program	batch	25 g	98	3	1		2											
linseed derived	Compulsory Monitoring Program	batch	50 g	6	0														
other oil seeds derived	Compulsory Monitoring Program	batch	50 g	4	0														
(Private Testing)	Quality Assurance Program	batch	25 g	4	0														
Other feed material																			

legume seeds and similar products	Quality Assurance Program	batch	25 g	2	0						
tubers, roots and similar products	Compulsory Monitoring Program	batch	50 g	1	0						
(Private Testing)	Quality Assurance Program	batch	25 g	2	0						
other seeds and fruits	Quality Assurance Program	batch	25 g	1	0						
forages and roughages	Quality Assurance Program	batch	25 g	11	0						

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Senftenberg	S. Richmond	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified
Compound feedingstuffs for cattle										
final product	Compulsory Monitoring Program	batch	50 g	2	0					
(Private Testing)	Quality Assurance Program	batch	25 g	11	0					
Compound feedingstuffs for pigs										
final product	Compulsory Monitoring Program	batch	50 g	5	1	1				
(Private Testing)	Quality Assurance Program	batch	25 g	7	0					
Compound feedingstuffs for poultry (non specified)										
final product	Compulsory Monitoring Program	batch	50 g	9	0					
(Private Testing)	Quality Assurance Program	batch	25 g	33	0					
Compound feedingstuffs for poultry -breeders										
final product	Compulsory Monitoring Program	batch	50 g	17	0					
(Private Testing)	Quality Assurance Program	batch	25 g	88	0					
Compound feedingstuffs for poultry - laying hens										
final product	Compulsory Monitoring Program	batch	50 g	131	0					
(Private Testing)	Quality Assurance Program	batch	25 g	30	0					
Compund feedingstuffs for poultry - broilers										
final product	Compulsory Monitoring Program	batch	50 g	31	0					
(Private Testing)	Quality Assurance Program	batch	25 g	54	0					
Pet food										

dog snacks (pig ears, chewing bones)	Compulsory Monitoring Program	batch	50 g	16	1		1			

2.1.6. Salmonella serovars and phagetype distribution

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

Table Salmonella serovars in animals

Serovars		Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Turkeys	
Sources of isolates (*)		M	C	M	C	M	C	M	C	M	C
Number of isolates in the laboratory	N=										
Number of isolates serotyped	N=	0	21	0	32	0	436	0	0	0	260
Number of isolates per type											
S. Albany							1				
S. Anatum			1								
S. Blockley							10				1
S. Braenderup			1				4				
S. Brandenburg											2
S. Bredeney							9				2
S. Cerro							2				
S. Corvallis							1				
S. Derby			1		7		2				3
S. Dublin			7								
S. Enteritidis			2		8		156				2
S. Hadar							14				78
S. Indiana							12				
S. Infantis					1		63				
S. Jerusalem							2				
S. Kedougou			2								
S. Kentucky							8				2

S. Kottbus						5				5
S. Livingstone						2				
S. London						2				
S. Mbandaka						3				
S. Montevideo						58				35
S. Muenchen						4				
S. Napoli		1								
S. Newport						1				12
S. Regent						2				
S. Saintpaul						10				76
S. Schwarzengrund						2				
S. Senftenberg						9				22
S. Thompson						3				
S. Typhimurium		3		14		39				10
S. Worthington						2				
S. IIIb61:k:1,5,7		2								
S. Gallinarum						4				
S. group B, monophasic strain				1		2				6
S. enterica subsp. enterica, rough						3				3
S. group B H-		1		1		1				
S. group C2, monophasic strain										1

Footnote

(*) M : Monitoring, C : Clinical
Isolates from monitoring as well as from clinical isolates

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=										
Number of isolates serotyped	N=	0	3	0	2	0	96	0	0	0	0
Number of isolates per type											
S. Anatum							2				
S. Blockley							1				
S. Bredeney							2				
S. Derby			1								
S. Enteritidis			1				34				
S. Hadar							3				
S. Indiana							4				
S. Infantis			1				21				
S. Kentucky							1				
S. Kottbus							1				
S. Minnesota							1				
S. Montevideo							6				
S. Senftenberg							2				
S. Thompson							5				

S. Typhimurium				2		1				
S. Worthington						1				
S. Zanzibar						1				
S. group B, monophasic strain						1				
S. group C1, monophasic strain						1				
S. enterica subsp. enterica, rough						7				
S. group B H-						1				

Footnote

(*) M : Monitoring, C : Clinical
Isolates from monitoring as well from clinical isolates

Table Salmonella Enteritidis phagetypes in animals

Phagetype		Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Turkeys	
Sources of isolates (*)		M	C	M	C	M	C	M	C	M	C
Number of isolates in the laboratory	N=										
Number of isolates phagetyped	N=	0	2	0	8	0	156	0	0	0	2
Number of isolates per type											
PT 1					1		28				
PT 4					2		38				
PT 6							1				
PT 8			2		2		18				
PT 21					1		35				2
PT 6a					1						
PT 12							1				
PT 7							14				
PT U							3				
PT 5a					1						
PT 7a							1				
RDNC							17				

Footnote

(*) M : Monitoring, C : Clinical
Isolates from monitoring as well as from clinical isolates

Table Salmonella Enteritidis phagetypes in food

Phagetype		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=										
Number of isolates phagetyped	N=	0	1	0	0	0	34	0	0	0	0
Number of isolates per type											
PT 1							1				
PT 4							10				
PT 8			1				3				
PT 21							14				
PT 7							4				
PT 5a							1				
RDNC							1				

Footnote

(*) M : Monitoring, C : Clinical
Isolates from monitoring as well as clinical isolates

Table Salmonella Enteritidis phagetypes in humans

Phagetype	humans	
Sources of isolates (*)	M	C
Number of isolates in the laboratory N=		
Number of isolates phagetyped N=	0	3110
Number of isolates per type		
PT 1		124
PT 4		932
PT 5		11
PT 6		180
PT 8		1055
PT 14b		83
PT 21		461
PT 1b		2
PT 21c		1
PT 3		3
PT 44		1
PT 13a		26
PT 2		10
PT 35		1
PT 4b		2
PT 6a		35
PT 12		14
PT 23		3
PT 7		12
PT 5a		6
PT 29		8
PT 7a		6
PT 6c		1
PT 13		16
PT 11		6
PT 27		1
U		14
RDNC		92
PT 1d		3
PT 19a		1

Footnote

(*) M : Monitoring, C : Clinical

Table Salmonella Typhimurium phagetypes in animals

Phagetype		Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry		Turkeys	
Sources of isolates (*)		M	C	M	C	M	C	M	C	M	C
Number of isolates in the laboratory	N=										
Number of isolates phagetyped	N=	0	3	0	14	0	39	0	0	0	10
Number of isolates per type											
DT 8							1				
DT 46							2				
DT 104l			1		4		2				10
DT 120					2		2				
DT 193			2				2				
U 302					1						
DT 41					1		11				
DT 85							1				
DT 99					3		1				
DT 2							2				
DT 104H							3				
RDNC					3		12				

Footnote

(*) M : Monitoring, C : Clinical
Isolates from monitoring as well as from clinical isolates

Table Salmonella Typhimurium phagetypes in food

Phagetype		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=										
Number of isolates phagetyped	N=	0	0	0	2	0	1	0	0	0	19
Number of isolates per type											
DT 8											2
DT 12											1
DT 104l							1				4
DT 120					1						3
DT 193											1
DT 41											1
DT 85											2
RDNC					1						5

Footnote

(*) M : Monitoring, C : Clinical
Isolates from monitoring as well as clinical isolates

Table Salmonella Typhimurium phagetypes in humans

Phagetype	humans	
Sources of isolates (*)	M	C
Number of isolates in the laboratory N=		
Number of isolates phagetyped N=	0	354
Number of isolates per type		
DT 8		12
DT 12		2
DT 46		21
DT 104l		91
DT 120		33
DT 193		23
DT 208		2
U 302		3
DT 41		63
DT 193a		1
DT 160		1
DT 15a		1
DT 17		1
DT 85		4
DT 99		1
DT 10		4
DT 110		2
DT 135		1
DT 1		11
DT 2		2
DT 104H		7
U 291		1
U		8
RDNC		57
DT 166		1
DT 89		1

Footnote

(*) M : Monitoring, C : Clinical

2.1.7. Antimicrobial resistance in Salmonella isolates

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

A. Antimicrobial resistance of Salmonella spp. in animal

Sampling strategy used in monitoring

Frequency of the sampling

There currently is no monitoring program in Austria. All Salmonella spp. isolated in veterinary and food laboratories, as well as all primary isolates from humans were sent to the NRC-S where the susceptibility testing was performed using the disk diffusion method.

Type of specimen taken

Clinical samples from humans; for animals and food see chapters Salmonella spp. in animal species and Salmonella spp. in food.

Methods of sampling (description of sampling techniques)

Clinical samples from humans; for animals and food see chapters Salmonella spp. in animal species and Salmonella spp. in food.

Procedures for the selection of isolates for antimicrobial testing

All Salmonella spp. isolated in veterinary and food laboratories, as well as all primary isolates from humans were sent to the NRC-S where the susceptibility testing was performed using the disk diffusion method.

Laboratory methodology used for identification of the microbial isolates

See chapter salmonellosis in humans

Laboratory used for detection for resistance

Antimicrobials included in monitoring

All Salmonella isolates were susceptibility tested (disc diffusion) according to CLSI. See corresponding tables!

Control program/ mechanisms

Recent actions taken to control the zoonoses

All Salmonella spp. isolates that were sent to the NRC-S have been tested.

Suggestions to the Community for the actions to be taken

An EU standardarized antimicrobial resistance monitoring system would be highly welcome.

Additional information

Nil

B. Antimicrobial resistance of Salmonella spp. in humans

History of the disease and/ or infection in the country

The overall resistance-rates against antibiotics remained stable over the past years. High level resistances against Ciprofloxacin and third generation cephalosporins (Cefotaxime) were still extremely rare in comparison to rates reported within the EU.

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

In 2006, there was no change detectable in the resistance-rates. The increase in the number of resistant isolates against ampicillin is due to more human cases affected by ampicillin resistant S. Enteritidis PT6a (2006: 185 cases, 2005: 18 cases).

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Additional information

Nil

C. Antimicrobial resistance of Salmonella spp. in food

Sampling strategy used in monitoring

Frequency of the sampling

There currently is no monitoring program in Austria. All Salmonella spp. isolated in veterinary and food laboratories, as well as all primary isolates from humans were sent to the NRC-S where the susceptibility testing was performed using the disk diffusion method.

Type of specimen taken

Clinical samples from humans; for animals and food see chapters Salmonella spp. in animal species and Salmonella spp. in food.

Methods of sampling (description of sampling techniques)

Clinical samples from humans; for animals and food see chapters Salmonella spp. in animal species and Salmonella spp. in food.

Procedures for the selection of isolates for antimicrobial testing

All Salmonella spp. isolated in veterinary and food laboratories, as well as all primary isolates from humans were sent to the NRC-S where the susceptibility testing was performed using the disk diffusion method.

Laboratory methodology used for identification of the microbial isolates

See chapter salmonellosis in humans

Laboratory used for detection for resistance

Antimicrobials included in monitoring

All Salmonella isolates were susceptibility tested (disc diffusion) according to CLSI. See corresponding tables!

Control program/ mechanisms

Recent actions taken to control the zoonoses

All Salmonella spp. isolates that were sent to the NRC-S have been tested.

Suggestions to the Community for the actions to be taken

An EU standardarized antimicrobial resistance monitoring system would be highly welcome.

Additional information

Nil

Table Antimicrobial susceptibility testing of S.Enteritidis in animals

n = Number of resistant isolates

S. Enteritidis

	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys		Gallus gallus (fowl) - laying hens		Gallus gallus (fowl) - broilers	
Isolates out of a monitoring programme									no			
Number of isolates available in the laboratory									78			
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides												
Gentamicin									78	0		
Kanamycin									78	0		
Streptomycin									78	1		
Amphenicols												
Chloramphenicol									78	0		
Cephalosporins												
Cefotaxim									78	0		
Fluoroquinolones												
Ciprofloxacin									78	0		
Fully sensitive									78	77		
Penicillins												
Ampicillin									78	0		
Quinolones												
Nalidixic acid									78	0		
Resistant to 1 antimicrobial									78	1		
Resistant to 2 antimicrobials									78	0		
Resistant to 3 antimicrobials									78	0		
Resistant to 4 antimicrobials									78	0		
Resistant to >4 antimicrobials									78	0		
Sulfonamides												
Sulfamethoxazol									78	0		
Tetracyclines												
Tetracyclin									78	0		
Trimethoprim									78	0		

Table Antimicrobial susceptibility testing in S. Enteritidis

n = Number of resistant isolates	S. Enteritidis	
	Meat from broilers (Gallus gallus)	
Isolates out of a monitoring programme		no
Number of isolates available in the laboratory		34
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	34	0
Kanamycin	34	0
Streptomycin	34	0
Amphenicols		
Chloramphenicol	34	0
Cephalosporins		
Cefotaxim	34	0
Fluoroquinolones		
Ciprofloxacin	34	0
Fully sensitive	34	31
Penicillins		
Ampicillin	34	0
Quinolones		
Nalidixic acid	34	3
Resistant to 1 antimicrobial	34	1
Resistant to 2 antimicrobials	34	0
Resistant to 3 antimicrobials	34	0
Resistant to 4 antimicrobials	34	0
Resistant to >4 antimicrobials	34	0
Sulfonamides		
Sulfamethoxazol	34	0
Tetracyclines		
Tetracyclin	34	0
Trimethoprim	34	0

Table Antimicrobial susceptibility testing of Salmonella in humans, Salmonella Enteritidis

n = Number of resistant isolates	S. Enteritidis	
	humans	
Isolates out of a monitoring programme		no
Number of isolates available in the laboratory		3110
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	3110	1
Kanamycin	3110	3
Streptomycin	3110	9
Amphenicols		
Chloramphenicol	3110	1
Cephalosporins		
Cefotaxim	3110	4
Fluoroquinolones		
Ciprofloxacin	3110	1
Fully sensitive	3110	2933
Penicillins		
Ampicillin	3110	67
Quinolones		
Nalidixic acid	3110	90
Resistant to 1 antimicrobial	3110	140
Resistant to 2 antimicrobials	3110	20
Resistant to 3 antimicrobials	3110	7
Resistant to 4 antimicrobials	3110	9
Resistant to >4 antimicrobials	3110	1
Sulfonamides		
Sulfamethoxazol	3110	30
Tetracyclines		
Tetracyclin	3110	17
Trimethoprim	3110	19

Table Antimicrobial susceptibility testing in S. Hadar

n = Number of resistant isolates	S. Hadar	
	Turkeys	
Isolates out of a monitoring programme		no
Number of isolates available in the laboratory		78
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	78	5
Kanamycin	78	1
Streptomycin	78	74
Amphenicols		
Chloramphenicol	78	0
Cephalosporins		
Cefotaxim	78	0
Fluoroquinolones		
Ciprofloxacin	78	0
Fully sensitive	78	0
Penicillins		
Ampicillin	78	5
Quinolones		
Nalidixic acid	78	0
Resistant to 1 antimicrobial	78	3
Resistant to 2 antimicrobials	78	65
Resistant to 3 antimicrobials	78	0
Resistant to 4 antimicrobials	78	5
Resistant to >4 antimicrobials	78	5
Sulfonamides		
Sulfamethoxazol	78	10
Tetracyclines		
Tetracyclin	78	78
Trimethoprim	78	6

Table Antimicrobial susceptibility testing in S. Infantis

n = Number of resistant isolates		
	S. Infantis	
	Gallus gallus (fowl) - laying hens	
Isolates out of a monitoring programme		no
Number of isolates available in the laboratory		17
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	17	0
Kanamycin	17	0
Streptomycin	17	0
Amphenicols		
Chloramphenicol	17	0
Cephalosporins		
Cefotaxim	17	0
Fluoroquinolones		
Ciprofloxacin	17	0
Fully sensitive	17	16
Penicillins		
Ampicillin	17	0
Quinolones		
Nalidixic acid	17	1
Resistant to 1 antimicrobial	17	1
Resistant to 2 antimicrobials	17	0
Resistant to 3 antimicrobials	17	0
Resistant to 4 antimicrobials	17	0
Resistant to >4 antimicrobials	17	0
Sulfonamides		
Sulfamethoxazol	17	0
Tetracyclines		
Tetracyclin	17	0
Trimethoprim	17	0

Table Antimicrobial susceptibility testing in S. Infantis

n = Number of resistant isolates		
	S. Infantis	
	Meat from broilers (Gallus gallus)	
Isolates out of a monitoring programme		no
Number of isolates available in the laboratory		21
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	21	0
Kanamycin	21	0
Streptomycin	21	15
Amphenicols		
Chloramphenicol	21	0
Cephalosporins		
Cefotaxim	21	0
Fluoroquinolones		
Ciprofloxacin	21	0
Fully sensitive	21	0
Penicillins		
Ampicillin	21	2
Quinolones		
Nalidixic acid	21	19
Resistant to 1 antimicrobial	21	2
Resistant to 2 antimicrobials	21	1
Resistant to 3 antimicrobials	21	3
Resistant to 4 antimicrobials	21	15
Resistant to >4 antimicrobials	21	0
Sulfonamides		
Sulfamethoxazol	21	19
Tetracyclines		
Tetracyclin	21	17
Trimethoprim	21	1

Table Antimicrobial susceptibility testing in S. Montevideo

n = Number of resistant isolates	S. Montevideo	
	Gallus gallus (fowl) - broilers	
Isolates out of a monitoring programme		no
Number of isolates available in the laboratory		12
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	12	0
Kanamycin	12	0
Streptomycin	12	0
Amphenicols		
Chloramphenicol	12	0
Cephalosporins		
Cefotaxim	12	0
Fluoroquinolones		
Ciprofloxacin	12	0
Fully sensitive	12	12
Penicillins		
Ampicillin	12	0
Quinolones		
Nalidixic acid	12	0
Resistant to 1 antimicrobial	12	0
Resistant to 2 antimicrobials	12	0
Resistant to 3 antimicrobials	12	0
Resistant to 4 antimicrobials	12	0
Resistant to >4 antimicrobials	12	0
Sulfonamides		
Sulfamethoxazol	12	0
Tetracyclines		
Tetracyclin	12	0
Trimethoprim	12	0

Table Antimicrobial susceptibility testing in S. Saintpaul

n = Number of resistant isolates	S. Saintpaul	
	Turkeys	
Isolates out of a monitoring programme		no
Number of isolates available in the laboratory		76
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	76	4
Kanamycin	76	3
Streptomycin	76	23
Amphenicols		
Chloramphenicol	76	0
Cephalosporins		
Cefotaxim	76	0
Fluoroquinolones		
Ciprofloxacin	76	0
Fully sensitive	76	34
Penicillins		
Ampicillin	76	19
Quinolones		
Nalidixic acid	76	23
Resistant to 1 antimicrobial	76	11
Resistant to 2 antimicrobials	76	11
Resistant to 3 antimicrobials	76	4
Resistant to 4 antimicrobials	76	8
Resistant to >4 antimicrobials	76	8
Sulfonamides		
Sulfamethoxazol	76	16
Tetracyclines		
Tetracyclin	76	27
Trimethoprim	76	8

Table Antimicrobial susceptibility testing of S.Typhimurium in animals

n = Number of resistant isolates

S. Typhimurium

	Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys		Gallus gallus (fowl) - laying hens		Gallus gallus (fowl) - broilers	
Isolates out of a monitoring programme			no				no		no			
Number of isolates available in the laboratory			14				10		13			
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides												
Gentamicin			14	0			10	0	13	0		
Kanamycin			14	0			10	0	13	1		
Streptomycin			14	7			10	10	13	0		
Amphenicols												
Chloramphenicol			14	4			10	3	13	0		
Cephalosporins												
Cefotaxim			14	0			10	0	13	0		
Fluoroquinolones												
Ciprofloxacin			14	0			10	0	13	0		
Fully sensitive			14	5			10	0	13	12		
Penicillins												
Ampicillin			14	8			10	3	13	0		
Quinolones												
Nalidixic acid			14	1			10	0	13	0		
Resistant to 1 antimicrobial			14	1			10	0	13	1		
Resistant to 2 antimicrobials			14	1			10	7	13	0		
Resistant to 3 antimicrobials			14	0			10	0	13	0		
Resistant to 4 antimicrobials			14	2			10	0	13	0		
Resistant to >4 antimicrobials			14	5			10	3	13	0		
Sulfonamides												
Sulfamethoxazol			14	8			10	10	13	0		
Tetracyclines												
Tetracyclin			14	8			10	3	13	0		
Trimethoprim			14	1			10	0	13	0		

Table Antimicrobial susceptibility testing of Salmonella in humans, Salmonella Typhimurium

n = Number of resistant isolates	S. Typhimurium	
	humans	
Isolates out of a monitoring programme		no
Number of isolates available in the laboratory		354
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	354	6
Kanamycin	354	6
Streptomycin	354	142
Amphenicols		
Chloramphenicol	354	106
Cephalosporins		
Cefotaxim	354	0
Fluoroquinolones		
Ciprofloxacin	354	0
Fully sensitive	354	169
Penicillins		
Ampicillin	354	146
Quinolones		
Nalidixic acid	354	17
Resistant to 1 antimicrobial	354	23
Resistant to 2 antimicrobials	354	19
Resistant to 3 antimicrobials	354	6
Resistant to 4 antimicrobials	354	31
Resistant to >4 antimicrobials	354	106
Sulfonamides		
Sulfamethoxazol	354	152
Tetracyclines		
Tetracyclin	354	168
Trimethoprim	354	19

Table Antimicrobial susceptibility testing of Salmonella in humans, Salmonella spp.

n = Number of resistant isolates		
	Salmonella spp.	
	humans	
Isolates out of a monitoring programme		no
Number of isolates available in the laboratory		4050
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	4050	16
Kanamycin	4050	20
Streptomycin	4050	243
Amphenicols		
Chloramphenicol	4050	118
Cephalosporins		
Cefotaxim	4050	6
Fluoroquinolones		
Ciprofloxacin	4050	7
Fully sensitive	4050	3490
Penicillins		
Ampicillin	4050	290
Quinolones		
Nalidixic acid	4050	186
Resistant to 1 antimicrobial	4050	233
Resistant to 2 antimicrobials	4050	58
Resistant to 3 antimicrobials	4050	38
Resistant to 4 antimicrobials	4050	94
Resistant to >4 antimicrobials	4050	137
Sulfonamides		
Sulfamethoxazol	4050	279
Tetracyclines		
Tetracyclin	4050	332
Trimethoprim	4050	85

Table Antimicrobial susceptibility testing in Other serotypes

n = Number of resistant isolates	Other serotypes	
	humans	
Isolates out of a monitoring programme		no
Number of isolates available in the laboratory		586
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	586	9
Kanamycin	586	11
Streptomycin	586	92
Amphenicols		
Chloramphenicol	586	11
Cephalosporins		
Cefotaxim	586	2
Fluoroquinolones		
Ciprofloxacin	586	6
Fully sensitive	586	388
Penicillins		
Ampicillin	586	77
Quinolones		
Nalidixic acid	586	79
Resistant to 1 antimicrobial	586	70
Resistant to 2 antimicrobials	586	19
Resistant to 3 antimicrobials	586	25
Resistant to 4 antimicrobials	586	54
Resistant to >4 antimicrobials	586	30
Sulfonamides		
Sulfamethoxazol	586	97
Tetracyclines		
Tetracyclin	586	147
Trimethoprim	586	47

Table Breakpoints for antibiotic resistance testing in Animals

Test Method Used

Disc diffusion

Standards used for testing

CLSI

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 <=
Amphenicols										
Chloramphenicol							30	18		12
Florfenicol										
Tetracyclines										
Tetracyclin							30	15		11
Fluoroquinolones										
Ciprofloxacin							5	21		15
Enrofloxacin										
Quinolones										
Nalidixic acid							30	19		13
Trimethoprim							5	16		10
Sulfonamides										
Sulfonamide										
Sulfamethoxazol							300	17		12
Aminoglycosides										
Streptomycin							10	15		11
Gentamicin							10	15		12
Neomycin										
Kanamycin							30	18		13
Trimethoprim + sulfonamides										
Cephalosporins										
Cefotaxim							30	23		14
3rd generation cephalosporins										
Penicillins										
Ampicillin							10	17		13

Table Breakpoints for antibiotic resistance testing in Food

Test Method Used

Disc diffusion

Standards used for testing

CLSI

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 <=
Amphenicols										
Chloramphenicol							30	18		12
Florfenicol										
Tetracyclines										
Tetracyclin							30	15		11
Fluoroquinolones										
Ciprofloxacin							5	21		15
Enrofloxacin										
Quinolones										
Nalidixic acid							30	19		13
Trimethoprim							5	16		10
Sulfonamides										
Sulfonamide										
Sulfamethoxazol							300	17		12
Aminoglycosides										
Streptomycin							10	15		11
Gentamicin							10	15		12
Neomycin										
Kanamycin							30	18		13
Trimethoprim + sulfonamides										
Cephalosporins										
Cefotaxim							30	23		14
3rd generation cephalosporins										
Penicillins										
Ampicillin							10	17		13

Table Breakpoints for antibiotic resistance testing in Feedingstuff

Test Method Used

Disc diffusion

Standards used for testing

CLSI

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 <=
Amphenicols										
Chloramphenicol							30	18		12
Florfenicol										
Tetracyclines										
Tetracyclin							30	15		11
Fluoroquinolones										
Ciprofloxacin							5	21		15
Enrofloxacin										
Quinolones										
Nalidixic acid							30	19		13
Trimethoprim							5	16		10
Sulfonamides										
Sulfonamide										
Sulfamethoxazol							300	17		12
Aminoglycosides										
Streptomycin							10	15		11
Gentamicin							10	15		12
Neomycin										
Kanamycin							30	18		13
Trimethoprim + sulfonamides										
Cephalosporins										
Cefotaxim							30	23		14
3rd generation cephalosporins										
Penicillins										
Ampicillin							10	17		13

Table Breakpoints for antibiotic resistance testing in Humans

Test Method Used

Disc diffusion

Standards used for testing

CLSI

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 <=
Amphenicols										
Chloramphenicol							30	18		12
Florfenicol										
Tetracyclines										
Tetracyclin							30	15		11
Fluoroquinolones										
Ciprofloxacin							5	21		15
Enrofloxacin										
Quinolones										
Nalidixic acid							30	19		13
Trimethoprim							5	16		10
Sulfonamides										
Sulfonamide										
Sulfamethoxazol							300	17		12
Aminoglycosides										
Streptomycin							10	15		11
Gentamicin							10	15		12
Neomycin										
Kanamycin							30	18		13
Trimethoprim + sulfonamides										
Cephalosporins										
Cefotaxim							30	23		14
3rd generation cephalosporins										
Penicillins										
Ampicillin							10	17		13

2.2. CAMPYLOBACTERIOSIS

2.2.1. General evaluation of the national situation

A. Thermophilic Campylobacter general evaluation

History of the disease and/ or infection in the country

In 2006, the number of notified human campylobacteriosis cases in Austria exceeded the number of notified salmonellosis cases for the first time. Since then, the gap between the number of human campylobacter cases and salmonalla cases is widening.

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

In recent years, the number of notified cases of campylobacteriosis – with the exception of 2003 – steadily increased, reaching a new peak of 6,077 cases in 2007.
The sources of infection are still unclear. The few published outbreaks in Austria were due to contaminated cow's milk or chicken meat. Pets may be considered another possible source.

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

Feedingsstuffs has no obvious relevance. Animals are heavily infected: broiler flocks up to 60 %.The actual source of infection is unknown in most cases, chicken meat may account for approx. 40% of human infections.

Recent actions taken to control the zoonoses

On January 1st, 2006, the Federal Zoonoses Act (128. Bundesgesetz: Zoonosengesetz, published on 18th November 2005) was implemented. The subject of this Act is to ensure that zoonoses, zoonotic agents and related antimicrobial resistance are properly monitored, that food-borne outbreaks receive proper epidemiological investigation, to enable the collection of the information necessary in the EU. According to this Zoonoses Act, to survey and combat the zoonoses in Austria, a Federal Commission for Zoonoses (Zoonoses Commission) has been founded to advise the Federal Minister. The first meeting took place on May 3rd, 2006. The tasks of this Zoonoses Commission are
• Securing of effective and continuous teamwork of special fields concerned
• Cooperation based on free exchange of general information and where necessary, of specific data
• Determination of measures in case of Austrian-wide food borne outbreaks (concerning several provinces by one outbreak)
• Issues the annually report on trends and sources of zoonoses in Austria
• Preparation of risk based, integrated monitoring and surveillance programmes
The Austria-wide monitoring program on the trends of campylobacter prevalence and antimicrobial resistance of campylobacter in poultry and bovine animals was continued for the fourth year according to the directive 2003/ 99/ EC of the European Parliament and the Council of 17 November 2003 and the Federal Zoonoses Act. The sampling was carried out from January to December2007, and follow up programs will be implemented in the forthcoming years.

Suggestions to the Community for the actions to be taken

Continue to work for harmonization of monitoring programs

Additional information

Nil

2.2.2. Campylobacteriosis in humans

A. Thermophilic Campylobacter in humans

Case definition

Clinical picture compatible with campylobacteriosis, e.g.: diarrheal illness of variable severity and isolation of Campylobacter spp. from stool.

Diagnostic/ analytical methods used

Stool samples are plated on selective media and incubated in microaerobic atmosphere at 37 - 42 °C for a minimum of 36 hours (Anonymus: Standardisierung und Qualitätssicherung in der mikrobiologischen Diagnostik. Richtlinien. Bundesministerium für Soziale Sicherheit und Generationen. ISBN 3-84123-126-0, Wien, 2001, pg. 13). Campylobacter is confirmed by observing the typical colony morphology and characteristic motility and morphology under the microscope. For typing and differentiation of isolates to species level the production of catalase and oxidase, the reaction in hippurate and indoxylacetate-hydrolysis is performed. The differentiation to species-level is not performed in each laboratory.

Notification system in place

Notification of campylobacteriosis since 1996 according to the epidemic act (BGBl. 1950/ 186 Epidemiegesetz, as amended): Primarily the attending physicians have to notify. Since 2002, an order has been implemented (Meldepflicht infektiöser Erkrankungen für Labors GZ: 21.700/ 5- VIII/ D/ 5/ 02), in which medical doctors specialised in Laboratory Diagnosis or Microbiology and Hygiene are subjected to notification.
The number of campylobacter cases presented in this report reflects the number of laboratory primary human isolates and respectively the number of laboratory confirmed cases.
On July 24th 2006 the amendments of the epidemic act (114. Bundesgesetz: Änderung des Epidemiegesetzes 1950) has been published: Accordingly, all zoonotic agents that are isolated in a laboratory and that are notifiable have to be sent to the corresponding reference laboratory for speciation.

History of the disease and/ or infection in the country

In 2006, the number of notified human campylobacteriosis cases in Austria exceeded the number of notified salmonellosis cases for the first time.

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

Following the number of notifications per year, campylobacteriosis is the most frequently notified foodborne enteric disease in 2007. In comparison to 2006, an increase of 17% of the notified cases could be observed in 2007. Two possible reasons for this new situation are the improvement of the notification system and the higher awareness of possible Campylobacter infections by physicians and laboratories. Additionally the amendments of the Epidemic Act that were published on July 24th 2006 (114. Bundesgesetz: Änderung des Epidemiegesetzes 1950) mandate that all notifiable zoonotic agents that have been isolated from humans must be sent to the corresponding reference laboratory for speciation.

The main sources of infections seem to be chicken meat and raw milk (Feierl G. 2007. Jahresbericht 2006 der Nationalen Referenzzentrale für Campylobacter. Mitteilungen der Sanitätsverwaltung 4/ 2007).

Relevance as zoonotic disease

In 2007, campylobacteriosis became the most frequently notified food borne disease in Austria. The number of campylobacteriosis cases increased by 17% compared with the previous year, whereas notified human salmonellosis cases decreased by 28% in the same period.

Additional information

On July 24, 2006, the amendment of the Epidemic Act (114. Bundesgesetz: Änderung des Epidemiegesetzes 1950) was published. According to the Act, all notifiable zoonotic agents that are isolated from humans in a laboratory have to be sent to the corresponding national reference laboratory/ centre for speciation.

B. Antimicrobial resistance of Campylobacter spp., unspecified in humans

History of the disease and/ or infection in the country

A sentinel surveillance program for Campylobacter isolates from human infections was installed in October 2006. On a monthly basis, the first 10 isolates collected at each of four diagnostic laboratories serving different provinces in Austria are sent to the National Reference Laboratory for Campylobacter for speciation analysis and antimicrobial resistance testing.
Stool specimens were plated on Campylobacter blood-free selective media at 37 °C or 42 °C for 48 hours under micro aerobic conditions, and organisms were identified as Campylobacter spp. by oxidase testing and cell morphology. Isolates were speciated by hippurate hydrolysis, indoxyl acetate hydrolysis, katalase production, and species-specific real-time PCR.
Broth micro dilution susceptibility testing of Campylobacter spp. isolates was done using customised Sensititre® susceptibility micro titre plates (TREK Diagnostic Systems, Ltd., East Grinstead, West Sussex, and England). Briefly, Campylobacter spp. strains were subcultivated on Columbia blood agar and incubated for 48 hours at 37 °C in a microaerophilic atmosphere. Inocula from fresh cultures were prepared by suspension in physiological saline to obtain a turbidity equivalent to that of a McFarland standard 0.5. The suspension was added to Mueller Hinton bouillon for a final concentration of approximately 5x105 cfu/ ml and incubated for 48 hours at 37 °C in a microaerophilic atmosphere. Campylobacter jejuni ATCC 33560 was used as control.
The number of isolates that are fully sensitive and the number of isolates resistant to 1, 2, 3, 4 and > 4 antimicrobials for Campylobacter includes only resistance to tetracycline, erythromycin, ciprofloxacin, gentamicin, and streptomycin!

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

Due to the fact that this sentinel surveillance system was performed for the first time in 2007, there is no comparison of results possible at this time.

Suggestions to the Community for the actions to be taken

Continue to work for harmonization of monitoring programs

Additional information

The newly established sentinel surveillance system will be continued.

2.2.3. Campylobacter in foodstuffs

A. C.,thermophilic in food

Monitoring system

Sampling strategy

No surveillance programmes are applied.
Foodstuff was sampled according to the Erlass der Bundesministerin für Gesundheit und Frauen: Revisions- und Probenplan für das Jahr 2007 gemäß §31 LMSVG; Richtlinien über die Vollziehung der Überwachung des Verkehrs mit den durch das LMSVG erfassten Waren; Berichtsschema 2007 (BMGF-75500/ 0313-IV/ 7/ 2006 of 09.01.2007).The Revision-Plan determines the number of food enterprises e.g. restaurants, dairies, retail etc. that have to be tested randomly per province according to the number of food enterprises per province. Each business has to be sampled at least once per year. The inspection can comprise sampling, hygienic investigations of the employees, checking of HACCP, control of manufacturing processes etc.
The sampling plan determines the number of samples of each class of goods, as raw meat, fresh or frozen; sausages; cheeses; milk; preserved food etc. that have to be investigated randomly. Samples from suspected foodstuffs are taken following outbreak investigation, complaint, confiscation, violation etc.
Information about the special monitoring programs (Schwerpunktprogramm 2007) for Campylobacter can be found on page 17.

Diagnostic/ analytical methods used

Samples are cultured either according to ISO 10272: 1995 or preenriched in Bolton bouillon at 42 °C for 48 hours and subsequent plated on CCDA- or modified CCDA agar at 42 °C for 48 hours microaerophilic. Campylobacter-like colonies were identified serologically, observing their characteristic motility and morphology under the microscope and the production of catalase and oxidase. Not all isolates of Campylobacter spp. are differentiated.

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

487 single samples of fresh or deep-frozen poultry meat (broiler and turkey) were tested and in 36.1 % (=176 samples) thermotolerant Campylobacter was found. The percentage of positive Campylobacter spp. samples was much higher in fresh than in deep-frozen poultry meat as shown in table 43 – special monitoring program A-027-07.
In campaign A-030-07, no sample tested positive for thermotolerant Campylobacter out of 101 single samples of raw milk from primary production.

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

The relevance has to be investigated scientifically.

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. upsaliensis	C. jejuni	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus)										
fresh		single	25 g	16	6					6
- at processing plant		single	25 g	1	0					
- at retail		single	25 g	19	15					15
chilled										
- at retail - Monitoring - official sampling - objective sampling (Campaign A-027-07)		single	25 g	126	98					98
frozen										
- at retail - Monitoring - official sampling - objective sampling (Campaign A-027-07)		single	25 g	57	18					18
meat preparation										
intended to be eaten cooked										
- at retail		single	25 g	147	5					5
meat products										
raw but intended to be eaten cooked										
- at retail		single	unknown	3	0					
- at retail (25 g)		single	25 g	5	3	1			2	
cooked, ready-to-eat										
- at retail		single	25 g	8	0					
Meat from turkey										
fresh										
- at retail		single	25 g	92	26					26
Meat from poultry, unspecified										
fresh										

- at retail (25 g)		single	25 g	8	4					4
(25 g)		single	25 g	4	1				1	
Meat from other poultry species										
- at retail (25 g)		single	25 g	9	0					

Footnote

Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for thermophilic Campylobacter spp.	C. jejuni	C. coli	C. upsaliensis	C. lari	Thermophilic Campylobacter spp., unspecified
Meat from pig										
fresh										
- at retail		single	25 g	109	1					1
minced meat										
intended to be eaten cooked										
- at retail (25 g)		single	25 g	1	0					
meat preparation										
intended to be eaten cooked										
- at retail (25 g)		single	25 g	1	0					
meat products										
cooked, ready-to-eat										
- at retail (25 g)		single	25 g	32	0					
Meat from bovine animals										
fresh										
- at retail		single	25 g	7	0					
meat products										
cooked, ready-to-eat										
- at retail (25 g)		single	25 g	2	0					
meat preparation										
intended to be eaten cooked										
- at retail (25 g)		single	25 g	3	0					
Meat from sheep										
fresh										
- at retail		single	25 g	2	0					
Milk, cows'										
raw										

- at processing plant (25 g)		single	25 g	6	0					
- at processing plant (Campaign A-030-07, raw milk from primary production)		single	25 g	101	0					
raw milk for manufacture										
intended for manufacture of raw or low heat-treated products										
- at retail (25 g)		single	25 g	18	0					
- at processing plant (25 g)		single	25 g	2	0					
pasteurised milk										
- at retail (25 g)		single	25 g	4	0					
- at processing plant (25 g)		single	25 g	7	0					
Bakery products										
- at retail (25 g)		single	25 g	2	0					
Beverages, non-alcoholic										
- at retail (25 ml)		single	25 ml	9	0					
Cheeses made from cows' milk										
- at retail (25 g)		single	25 g	1	0					
unspecified										
made from pasteurised milk										
- at retail (25 g)		single	25 g	14	0					
Cheeses, made from mixed milk from cows, sheep and/ or goats										
unspecified										
made from raw or low heat-treated milk										
- at retail (25 g)		single	25 g	3	0					
Cocoa and cocoa preparations, coffee and tea										
- at retail (unknown)		single	unknown	1	0					
- at retail (25 g)		single	25 g	1	0					
Crustaceans										
- at retail (25 g)		single	25 g	10	0					
Fish										
raw										
- at retail (unknown)		single	unknown	3	0					
- at retail (25 g)		single	25 g	14	0					
Fishery products, unspecified										
- at retail (25 g)		single	25 g	38	0					
Juice										
fruit juice										
- at retail (25 g)		single	25 g	1	0					
- at retail (25 ml)		single	25 ml	5	0					
Fruits										

- at retail (25 g)		single	25 g	3	0					
Dairy products (excluding cheeses)										
ice-cream										
- at retail (25 g)		single	25 g	16	0					
dairy products, not specified										
- at retail (25 g)		single	25 g	6	0					
- at processing plant (25 g)		single	25 g	7	0					
Infant formula										
- at retail (25 g)		single	25 g	1	0					
Meat, mixed meat										
- at retail (25 g)		single	25 g	6	0					
Meat from bovine animals and pig										
meat products										
- at retail (25 g)		single	25 g	7	0					
minced meat										
intended to be eaten cooked										
- at retail (25 g)		single	25 g	1	0					
Other food										
- at retail (unknown)		single	unknown	27	0					
- at retail (25 g)		single	25 g	118	0					
- at processing plant (25 g)		single	25 g	7	0					
Other processed food products and prepared dishes										
- at retail (25 g)		single	25 g	4	0					
Eggs										
raw material (liquid egg) for egg products										
- at retail (unknown)		single	unknown	1	0					
table eggs										
- at retail (unknown)		single	unknown	7	0					
Sauce and dressings										
- at retail (unknown)		single	unknown	3	0					
- at retail (25 g)		single	25 g	1	0					
Soups										
- at retail (25 g)		single	25 g	5	0					
Spices and herbs										
- at retail (25 g)		single	25 g	2	0					
Vegetables										
products										
- at retail (25 g)		single	25 g	10	0					
- at retail (25 g)		single	25 g	9	0					

Footnote Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

2.2.4. Campylobacter in animals

A. thermophilic Campylobacter spp., unspecified in animal - Cattle (bovine animals) - at slaughterhouse - Monitoring

Monitoring system

Sampling strategy

The monitoring program on the occurrence and trends of antimicrobial resistance in thermophilic Campylobacter is based on the prevalence of campylobacter in slaughtered animals. In 2007, at a desired accuracy of 6 % for a confidence level of 95 %, 200 isolates of Campylobacter jejuni/ coli from bovine animals were required.
Based on an estimated prevalence of Campylobacter jejuni/ coli of 19 %,
957 slaughtered bovine animals must be tested. This calculation is based on the approximately 650,000 slaughtered bovine animals processed in 2004, in Austria. The sampling had been stratified on the number of slaughtered animals by abattoirs all over Austria. The date of sampling was randomized over the period of the study.
In Austria, all 68 abattoirs in which more than 500 bovine animals were slaughtered in 2004 accounted for approximately 83% of the total annual bovine production. Sampling was planned in 55 of the 68 abattoirs excluding those in which only one sampling in the whole period of the study would have been carried out.

Frequency of the sampling

The sampling was distributed by randomization over the period of the study from January 29th to December 4th 2007.

Methods of sampling (description of sampling techniques)

The sampling was performed by official veterinarians carrying out the post-mortem inspection. At time of evisceration a part of the colon was ligated and wrapped in a sterile plastic bag. After cooling down to 4 °C the sample was sent in a hobbock or polystyrene box after adding cooling units to the Institute of Veterinary Diseases Control (IVET) in Graz. In the laboratory some content of each colon was inoculated in selective bouillon suitable for Campylobacter jejuni/ coli.

Case definition

A bovine animal is considered to be infected with thermotolerant Campylobacter following isolation of Campylobacter jejuni or C. coli from its caecum.

Diagnostic/ analytical methods used

Approximately 1 gram of content of the colon was enriched in Preston bouillon in microaerophilic atmosphere for 24 hours at 42 °C. Subsequently the preenrichment was plated on modified CCD agar (mCCDA) and incubated in microaerophilic atmosphere at 42 ± 1 °C for 48 hours. Campylobacter-like colonies were identified by observing their characteristic motility and morphology under the microscope and the production of catalase and oxidase.

For typing and differentiating of C. jejuni and C. coli isolates, hippurate reaction and indoxylacetate-hydrolysis was performed. All C. jejuni and C. coli isolates were frozen in proteose pepton solution containing 10% glycerol or thioglycolate-broth at -70 °C.
For quality control Campylobacter jejuni ATCC 33560, Escherichia coli ATCC 25922 and internal control isolates of C. jejuni and C. coli.
Statistical analysis was performed with EpiInfo version 3.3.2.

Vaccination policy

Vaccination is not performed in Austria

Other preventive measures than vaccination in place

None

Control program/ mechanisms

The control program/ strategies in place

None

Recent actions taken to control the zoonoses

None

Suggestions to the Community for the actions to be taken

Emphasis should be placed on education of the people for a better care in kitchen hygiene.

Measures in case of the positive findings or single cases

None

Notification system in place

Findings of C. jejuni and C. coli in animals must not be reported to authorities in Austria.

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

In 2007, 25.4 % (231 out of 911 samples) of slaughtered bovine animals were positive for thermotolerant Campylobacter. In meat production animals, thermotolerant Campylobacter could be detected in 34.4% compared to 20.2 % in dairy cows. There was no significant change in the prevalence compared to the previous years. Due to the 61.4% prevalence of positive poultry slaughter batches for thermotolerant Campylobacter, there may be a higher risk for humans to get infected from poultry meat than from the consumption of beef or veal.

B. thermophilic Campylobacter spp., unspecified in animal - Poultry, unspecified - at slaughterhouse - Monitoring (- active monitoring (slaughter batch))

Monitoring system

Sampling strategy

Monitoring program on the occurrence and trend of antimicrobial resistance in thermophilic Campylobacter is based on the prevalence of campylobacter in slaughter batches: In 2007, at a desired accuracy of 5 % for a confidence level of 95%, 50 isolates of Campylobacter jejuni/ coli from poultry were required.
Based on an estimated prevalence of Campylobacter jejuni/ coli of 61.4 %, 90 slaughter batches of poultry must be tested. This calculation is based the on approximately more than 10,000 slaughter batches of poultry processed in 2004 in Austria. In a second sample size, the caeca of 10 animals per slaughter batch had to be collected. The sampling had been stratified on the number of slaughter batches by slaughter facilities all over Austria. The date of sampling was randomized over the period of the study.
Sampling was performed in the 7 poultry slaughter facilities with slaughter batches consisting of >2000 animals in Austria in 2004. The 7 slaughter plants included in the monitoring program accounted for almost 100% of slaughtered broilers, layers and turkeys of the total production in Austria.

Frequency of the sampling

Rearing period: no program
Before slaughter at farm: no program
At slaughter: Detection of annual prevalence in slaughter batches of 61.4 % at a 5 % desired accuracy for a 95 % level of confidence. The sampling was distributed by randomization over the period of the study from January 29th to December 4th 2007.

Methods of sampling (description of sampling techniques)

Rearing period: no program
Before slaughter at farm: no program
At slaughter: The sampling was performed by official veterinarians carrying out the post-mortem inspection. At time of evisceration the whole intestines of 10 animals were taken and wrapped in a sterile plastic bag. After cooling down to 4 °C the sample was sent in a hobbock or polystyrene box after adding cooling units to the Institute of Veterinary Diseases Control (IVET) in Graz. In the laboratory a caecum of each intestinal convolute was identified, some content of each caecum pooled and plated on selective medium suitable for Campylobacter jejuni/ coli.

Case definition

At slaughter: A slaughter batch is considered to be infected with thermotolerant Campylobacter following isolation of Campylobacter jejuni or C. coli from its colon.

Diagnostic/ analytical methods used

At slaughter: The pooled samples were examined by direct inoculation on modified CCD agar (mCCDA) that was incubated in microaerophilic atmosphere at 42 ± 1 °C for 48 hours. Campylobacter-like colonies were identified by observing their characteristic motility and morphology under the microscope and the production of catalase and oxidase. For typing and differentiating of C. jejuni and C. coli isolates, hippurate reaction and indoxylacetate-hydrolysis was performed. All C. jejuni and C. coli isolates were frozen in proteose peptone solution containing 10 % glycerol or thioglycolat-broth at -70 °C. For quality control Campylobacter jejuni ATCC 33560, Escherichia coli ATCC 25922 and internal control isolates C. jejuni and C.

coli were used. Statistical analysis was performed with EpiInfo version 3.3.2.

Vaccination policy

Vaccination is not performed in Austria.

Other preventive measures than vaccination in place

None

Control program/ mechanisms

The control program/ strategies in place

None

Recent actions taken to control the zoonoses

None

Suggestions to the Community for the actions to be taken

Emphasis should be placed on education of the people for a better care in kitchen hygiene.

Measures in case of the positive findings or single cases

None.

Notification system in place

Findings of C. jejuni and C. coli in animals must not be reported to authorities in Austria.

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

In 2007, 61.4 % (54 out of 88) of the tested poultry (broiler, layers and turkey) slaughter batches/ flocks were positive for thermotolerant Campylobacter. There was no increase in the prevalence compared to the previous years. The prevalence in broiler flocks was 60.0 % (48 out of 80). Due to the fact that poultry is the animal species with the highest prevalence of Campylobacter jejuni and coli, poultry meat seem to be the most risky food combined with mistakes in kitchen hygiene for humans acquiring an infection with C. jejuni/ coli.

C. thermophilic Campylobacter spp., unspecified in animal - Pigs - at slaughterhouse - Monitoring (active monitoring)

Monitoring system

Sampling strategy

Due to the fact that 99 % of the isolated thermotolerant campylobacters in pigs are C. coli, which are only rarely detected in humans (approx. 5 %, see tables), there was no monitoring program conducted in pigs in 2007.

Table Campylobacter in animals

	Source of information	Sampling unit	Units tested	Total units positive for thermophilic Campylobacter spp.	C. jejuni	C. coli	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Cattle (bovine animals)									
- at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling (Calves younger than 6 months)	Graz	animal	16	4	3	1			
- at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling (Cattle between 6 and 18 months of age)	Graz	animal	326	112	99	13			
- at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling (Cattle older 18 months)	Graz	animal	569	115	106	9			
Gallus gallus (fowl)									
broilers									
- at slaughterhouse - Monitoring - official sampling - objective sampling	Graz	slaughter batch	80	48	23	25			
laying hens									
- at slaughterhouse - Monitoring - official sampling - objective sampling	Graz	slaughter batch	6	6	3	3			
Turkeys									
meat production flocks									
- at slaughterhouse - Monitoring - official sampling - objective sampling	Graz	slaughter batch	2	0					

(1) : (under 6 months of age)

Footnote

Graz: AGES Institute for Veterinary Disease Control in Graz

2.2.5. Campylobacter serovars and phagetype distribution

2.2.6. Antimicrobial resistance in Campylobacter isolates

A. Antimicrobial resistance in Campylobacter jejuni and coli in cattle

Sampling strategy used in monitoring

Frequency of the sampling

Described in chapter: Thermotolerant campylobacter in bovine animals

Type of specimen taken

Described in chapter: Thermotolerant campylobacter in bovine animals

Methods of sampling (description of sampling techniques)

Described in chapter: Thermotolerant campylobacter in bovine animals

Procedures for the selection of isolates for antimicrobial testing

Testing of all isolates will be performed in the AGES Institute for Medical Microbiology and Hygiene in Graz. The testing has not been finalized and the results will be presented at a later point in time.

Methods used for collecting data

All informations concerning the tested animals, sampled slaughterhouses and results of the antimicrobial testing were entered and analysed in a Microsoft® Excel tables.

Laboratory methodology used for identification of the microbial isolates

Described in chapter: Thermotolerant campylobacter in bovine animals.
Broth micro dilution susceptibility testing of Campylobacter spp. isolates was done using customised Sensititre® susceptibility micro titre plates (TREK Diagnostic Systems, Ltd., East Grinstead, West Sussex, and England). Briefly, Campylobacter spp. strains were subcultivated on Columbia blood agar and incubated for 48 hours at 37 °C in a microaerophilic atmosphere. Inocula from fresh cultures were prepared by suspension in physiological saline to obtain a turbidity equivalent to that of a McFarland standard 0.5. The suspension was added to Mueller Hinton bouillon for a final concentration of approximately 5x105 cfu/ ml and incubated for 48 hours at 37 °C in a microaerophilic atmosphere. Campylobacter jejuni ATCC 33560 was used as control.
MIC values have been entered in a Microsoft® Excel datasheet.
The number of isolates that are fully sensitive and the number of isolates resistant to 1, 2, 3, 4 and > 4 antimicrobials for Campylobacter includes only resistance to tetracycline, erythromycin, ciprofloxacin, gentamicin, and streptomycin!

Preventive measures in place

None

Control program/ mechanisms

The control program/ strategies in place

Samples from food animals were monitored for antimicrobial residues according to a randomized sampling scheme (BMGF-74320/ 0003-IV/ B/ 7/ Rückstandsuntersuchung-Durchführungserlass 2007).

Recent actions taken to control the zoonoses

None.

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

Nil

Notification system in place

No notification sytem in place at this time.

Additional information

Nil

B. Antimicrobial resistance in Campylobacter jejuni and coli in poultry

Sampling strategy used in monitoring

Frequency of the sampling

Described in chapter: Thermotolerant Campylobacter in poultry

Type of specimen taken

Described in chapter: Thermotolerant Campylobacter in poultry

Methods of sampling (description of sampling techniques)

Described in chapter: Thermotolerant Campylobacter in poultry

Procedures for the selection of isolates for antimicrobial testing

Testing of all isolates will be performed in the AGES Institute for Medical Microbiology and Hygiene in Graz. The testing has not been finalized and the results will be presented at a later point in time.

Methods used for collecting data

All informations concerning the tested flocks, sampled slaughterhouses and results of the antimicrobial testing were entered and analysed in a Microsoft® Excel tables.

Laboratory methodology used for identification of the microbial isolates

Described in chapter: Thermotolerant Campylobacter in poultry

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Described in chapter: Thermotolerant campylobacter in bovine animals.
Broth micro dilution susceptibility testing of Campylobacter spp. isolates was done using customised Sensititre® susceptibility micro titre plates (TREK Diagnostic Systems, Ltd., East Grinstead, West Sussex, and England). Briefly, Campylobacter spp. strains were subcultivated on Columbia blood agar and incubated for 48 hours at 37 °C in a microaerophilic atmosphere. Inocula from fresh cultures were prepared by suspension in physiological saline to obtain a turbidity equivalent to that of a McFarland standard 0.5. The suspension was added to Mueller Hinton bouillon for a final concentration of approximatelly 5x105 cfu/ ml and incubated for 48 hours at 37 °C in a microaerophilic atmosphere. Campylobacter jejuni ATCC 33560 was used as control.MIC values have been entered in a Microsoft® Excel datasheet.
The number of isolates that are fully sensitive and the number of isolates resistant to 1, 2, 3, 4 and > 4 antimicrobials for Campylobacter includes only resistance to tetracycline, erythromycin, ciprofloxacin, gentamicin, and streptomycin!

Preventive measures in place

None

Control program/ mechanisms

The control program/ strategies in place

Samples from food animals were monitored for antimicrobial residues according to a randomized sampling scheme (BMGF-74320/ 0003-IV/ B/ 7/ Rückstandsuntersuchung-Durchführungserlass 2007).

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

Nil

Additional information

Nil

C. Antimicrobial resistance of Campylobacter spp., unspecified in humans

History of the disease and/ or infection in the country

A sentinel surveillance program for Campylobacter isolates from human infections was installed in October 2006. On a monthly basis, the first 10 isolates collected at each of four diagnostic laboratories serving different provinces in Austria are sent to the National Reference Laboratory for Campylobacter for speciation analysis and antimicrobial resistance testing.
Stool specimens were plated on Campylobacter blood-free selective media at 37 °C or 42 °C for 48 hours under micro aerobic conditions, and organisms were identified as Campylobacter spp. by oxidase testing and cell morphology. Isolates were speciated by hippurate hydrolysis, indoxyl acetate hydrolysis, katalase production, and species-specific real-time PCR.
Broth micro dilution susceptibility testing of Campylobacter spp. isolates was done using customised Sensititre® susceptibility micro titre plates (TREK Diagnostic Systems, Ltd., East Grinstead, West Sussex, and England). Briefly, Campylobacter spp. strains were subcultivated on Columbia blood agar and incubated for 48 hours at 37 °C in a microaerophilic atmosphere. Inocula from fresh cultures were prepared by suspension in physiological saline to obtain a turbidity equivalent to that of a McFarland standard 0.5. The suspension was added to Mueller Hinton bouillon for a final concentration of approximately 5x105 cfu/ ml and incubated for 48 hours at 37 °C in a microaerophilic atmosphere. Campylobacter jejuni ATCC 33560 was used as control.
The number of isolates that are fully sensitive and the number of isolates resistant to 1, 2, 3, 4 and > 4 antimicrobials for Campylobacter includes only resistance to tetracycline, erythromycin, ciprofloxacin, gentamicin, and streptomycin!

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

Due to the fact that this sentinel surveillance system was performed for the first time in 2007, there is no comparison of results possible at this time.

Suggestions to the Community for the actions to be taken

Continue to work for harmonization of monitoring programs

Additional information

The newly established sentinel surveillance system will be continued.

Table Antimicrobial susceptibility testing in C. coli

n = Number of resistant isolates		
	C. coli	
	Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - monitoring survey - objective sampling	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		25
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	25	0
Neomycin	25	0
Streptomycin	25	8
Amphenicols		
Chloramphenicol	25	0
Fluoroquinolones		
Ciprofloxacin	25	17
Fully sensitive	25	3
Macrolides		
Erythromycin	25	2
Penicillins		
Amoxicillin / Clavulanic acid	25	0
Ampicillin	25	0
Polymyxins		
Colistin	25	0
Quinolones		
Nalidixic acid	25	17
Resistant to 1 antimicrobial	25	10
Resistant to 2 antimicrobials	25	5
Resistant to 3 antimicrobials	25	6
Resistant to 4 antimicrobials	25	1
Resistant to >4 antimicrobials	25	0
Tetracyclines		
Tetracyclin	25	15

Table Antimicrobial susceptibility testing of C. coli in Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling (slaughter batch) - quantitative data [Dilution method]

	C. coli
	Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling (slaughter batch)
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	25

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																						
	Break point	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	2	25	0					8	17														
Neomycin	2	25	0						16	9													
Streptomycin	4	25	8						3	11	3			2	6								
Amphenicols																							
Chloramphenicol	16	25	0							17	7	1											
Fluoroquinolones																							
Ciprofloxacin	1	25	17		3	5				1	3	8	5										
Macrolides																							
Erythromycin	16	25	2				3	10	5	5					1		1						
Penicillins																							
Amoxicillin / Clavulanic acid	16	25	0						12	9	4												
Ampicillin	16	25	0					2	1	8	6	8											
Polymyxins																							
Colistin	32	25	0									23	2										
Quinolones																							
Nalidixic acid	32	25	17							1	4	3			7	10							
Tetracyclines																							
Tetracyclin	2	25	15			6	4								3	12							

Table Antimicrobial susceptibility testing of C. coli in Meat from broilers (Gallus gallus) - quantitative data [Dilution method]

C. coli

Meat from broilers (Gallus gallus)

Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	22

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																						
	Break point	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	2	22	0				6	15	1														
Neomycin	2	22	0						20	2													
Streptomycin	4	22	6						11	5				1	3	2							
Amphenicols																							
Chloramphenicol	16	22	0							16	6												
Fluoroquinolones																							
Ciprofloxacin	1	22	16		4	2					7	7	2										
Macrolides																							
Erythromycin	16	22	0				6	5	9	2													
Penicillins																							
Amoxicillin / Clavulanic acid	16	22	0						7	7	4	4											
Ampicillin	16	22	3						3	5	5	6			1	2							
Polymyxins																							
Colistin	32	22	0								20	1	1										
Quinolones																							
Nalidixic acid	32	22	14							4	2			2	10	3	1						
Tetracyclines																							
Tetracyclin	2	22	15				7								4	6	5						
Trimethoprim	8	22	22											2	4	16							

Table Antimicrobial susceptibility testing in C. coli

n = Number of resistant isolates		
	C. coli	
	Meat from broilers (Gallus gallus)	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		22
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	22	0
Neomycin	22	0
Streptomycin	22	6
Amphenicols		
Chloramphenicol	22	0
Fluoroquinolones		
Ciprofloxacin	22	16
Fully sensitive	22	2
Macrolides		
Erythromycin	22	0
Penicillins		
Amoxicillin / Clavulanic acid	22	0
Ampicillin	22	3
Polymyxins		
Colistin	22	0
Quinolones		
Nalidixic acid	22	14
Resistant to 1 antimicrobial	22	7
Resistant to 2 antimicrobials	22	9
Resistant to 3 antimicrobials	22	0
Resistant to 4 antimicrobials	22	0
Resistant to >4 antimicrobials	22	0
Tetracyclines		
Tetracyclin	22	15
Trimethoprim	22	22

Table Antimicrobial susceptibility testing in C. coli

n = Number of resistant isolates		
	C. coli	
	humans	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		51
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	51	1
Neomycin	51	2
Streptomycin	51	9
Amphenicols		
Chloramphenicol	51	0
Fluoroquinolones		
Ciprofloxacin	51	35
Fully sensitive	51	13
Macrolides		
Erythromycin	51	3
Penicillins		
Amoxicillin / Clavulanic acid	51	0
Ampicillin	51	3
Polymyxins		
Colistin	51	0
Quinolones		
Nalidixic acid	51	33
Resistant to 1 antimicrobial	51	25
Resistant to 2 antimicrobials	51	7
Resistant to 3 antimicrobials	51	4
Resistant to 4 antimicrobials	51	1
Resistant to >4 antimicrobials	51	1
Tetracyclines		
Tetracyclin	51	12
Trimethoprim	51	51

Table Antimicrobial susceptibility testing of C. coli in humans (quantitative data) - quantitative data [Dilution method]

	C. coli
	humans (quantitative data)
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	51

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																						
	Break point	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	2	51	1				20	29	1							1							
Neomycin	2	51	2						45	4						2							
Streptomycin	4	51	9						34	6	2			4	3	2							
Amphenicols																							
Chloramphenicol	16	51	0							37	13	1											
Fluoroquinolones																							
Ciprofloxacin	1	51	35		11	5					21	6	6		2								
Macrolides																							
Erythromycin	16	51	3				17	14	10	4	2	1					3						
Penicillins																							
Amoxicillin / Clavulanic acid	16	51	0						10	27	12	2											
Ampicillin	16	51	3						3	5	28	11	1		2	1							
Polymyxins																							
Colistin	32	51	0								49	1	1										
Quinolones																							
Nalidixic acid	32	51	33							6	5	5		2	23	9	1						
Tetracyclines																							
Tetracyclin	2	51	12				37		2					1	1	8	2						
Trimethoprim	8	51	51										1	1	4	45							

Table Antimicrobial susceptibility testing of C. jejuni in Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling ((slaughter batch)) - quantitative data [Dilution method]

	C. jejuni Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling ((slaughter batch))
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	26

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																						
	Break point	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	1	26	0			3	8	14	1														
Neomycin	1	26	0				1	8	17														
Streptomycin	2	26	0					9	15	2													
Amphenicols																							
Chloramphenicol	16	26	0							25	1												
Fluoroquinolones																							
Ciprofloxacin	1	26	15		9	2						13	2										
Macrolides																							
Erythromycin	4	26	0				22	2	2														
Penicillins																							
Amoxicillin / Clavulanic acid	16	26	0						19	7													
Ampicillin	8	26	6					6	2	8	3	1	1	4	1								
Polymyxins																							
Colistin	32	26	0									23	3										
Quinolones																							
Nalidixic acid	16	26	13							4	8	1				10	3						
Tetracyclines																							
Tetracyclin	2	26	7			17	2						3	1	2	1							

Table Antimicrobial susceptibility testing in C. jejuni

n = Number of resistant isolates				
	C. jejuni			
	Cattle (bovine animals)		**Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - monitoring survey - objective sampling**	
Isolates out of a monitoring programme	yes		yes	
Number of isolates available in the laboratory	202		26	
Antimicrobials:	**N**	**n**	**N**	**n**
Aminoglycosides				
Gentamicin	202	0	26	0
Neomycin	202	6	26	0
Streptomycin	202	1	26	0
Amphenicols				
Chloramphenicol	202	0	26	0
Fluoroquinolones				
Ciprofloxacin	202	15	26	15
Fully sensitive	202	7	26	112
Macrolides				
Erythromycin	202	0	26	0
Penicillins				
Amoxicillin / Clavulanic acid	202	0	26	0
Ampicillin	202	6	26	6
Polymyxins				
Colistin	202	0	26	0
Quinolones				
Nalidixic acid	202	85	26	13
Resistant to 1 antimicrobial	202	17	26	69
Resistant to 2 antimicrobials	202	2	26	21
Resistant to 3 antimicrobials	202	0	26	0
Resistant to 4 antimicrobials	202	0	26	0
Resistant to >4 antimicrobials	202	0	26	0
Tetracyclines				
Tetracyclin	202	55	26	7

Table Antimicrobial susceptibility testing of C. jejuni in Cattle (bovine animals) - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling - quantitative data [Dilution method]

C. jejuni

Cattle (bovine animals) - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling

Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	202

Antimicrobials:	Break point	N	n	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																			
				<=0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024	2048	>2048	lowest	highest
Aminoglycosides																							
Gentamicin	1	202	0			20	64	117	1														
Neomycin	1	202	6				7	52	137	6													
Streptomycin	2	202	1					36	156	9					1								
Amphenicols																							
Chloramphenicol	16	202	0							188	11	3											
Fluoroquinolones																							
Ciprofloxacin	1	202	83		73	34	9	2	1		4	55	14	6	4								
Macrolides																							
Erythromycin	4	202	0				121	59	21	1													
Penicillins																							
Amoxicillin / Clavulanic acid	16	202	0						171	31													
Ampicillin	8	202	25					33	8	91	38	7	6	9	10								
Polymyxins																							
Colistin	32	202	0								161	36	5										
Quinolones																							
Nalidixic acid	16	202	85						45		59	12	1		7	48	30						
Tetracyclines																							
Tetracyclin	2	202	55			126	14	5	2			1		9	17	28							

Table Antimicrobial susceptibility testing of C. jejuni in Meat from broilers (Gallus gallus) - quantitative data [Dilution method]

C. jejuni

Meat from broilers (Gallus gallus)

Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	80

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																						
	Break point	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	1	80	0				70	10															
Neomycin	1	80	1						79	1													
Streptomycin	2	80	0						80														
Amphenicols																							
Chloramphenicol	16	80	0							76	3	1											
Fluoroquinolones																							
Ciprofloxacin	1	80	53		11	12	2	1	1	1	8	32	11	1									
Macrolides																							
Erythromycin	4	80	0				55	20	4	1													
Penicillins																							
Amoxicillin / Clavulanic acid	16	80	0						43	34	3												
Ampicillin	8	80	22						20	10	22	6	1	16	2	1	2						
Polymyxins																							
Colistin	32	80	0								71	8	1										
Quinolones																							
Nalidixic acid	16	80	53							7	14	5	1	2	11	31	9						
Tetracyclines																							
Tetracyclin	2	80	13				64	3							7	3	3						
Trimethoprim	8	80	80											1	1	78							

Table Antimicrobial susceptibility testing in C. jejuni

n = Number of resistant isolates		
	C. jejuni	
	Meat from broilers (Gallus gallus)	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		80
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	80	0
Neomycin	80	1
Streptomycin	80	0
Amphenicols		
Chloramphenicol	80	0
Fluoroquinolones		
Ciprofloxacin	80	53
Fully sensitive	80	23
Macrolides		
Erythromycin	80	0
Penicillins		
Amoxicillin / Clavulanic acid	80	0
Ampicillin	80	22
Polymyxins		
Colistin	80	0
Quinolones		
Nalidixic acid	80	53
Resistant to 1 antimicrobial	80	48
Resistant to 2 antimicrobials	80	9
Resistant to 3 antimicrobials	80	0
Resistant to 4 antimicrobials	80	0
Resistant to >4 antimicrobials	80	0
Tetracyclines		
Tetracyclin	80	13
Trimethoprim	80	80

Table Antimicrobial susceptibility testing of C. jejuni in humans (sentinel system) - quantitative data [Dilution method]

	C. jejuni
	humans (sentinel system)
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	430

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																						
	Break point	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	1	430	1				328	99	2							1							
Neomycin	1	430	5						425	4						1							
Streptomycin	2	430	6						421	3	2		1	3									
Amphenicols																							
Chloramphenicol	16	430	0							403	22	4	1										
Fluoroquinolones																							
Ciprofloxacin	1	430	224		100	91	12	3			22	146	32	15	9								
Macrolides																							
Erythromycin	4	430	0				270	128	31	1													
Penicillins																							
Amoxicillin / Clavulanic acid	16	430	0						242	174	14												
Ampicillin	8	430	80						54	96	174	26	8	23	44	3	2						
Polymyxins																							
Colistin	32	430	0								324	91	13	2									
Quinolones																							
Nalidixic acid	16	430	226							63	101	38	2	9	37	137	43						
Tetracyclines																							
Tetracyclin	2	430	127				293	7	3		1	2	3	1	51	55	14						
Trimethoprim	8	430	430										1	6	23	400							

Table Antimicrobial susceptibility testing in C. jejuni

n = Number of resistant isolates	C. jejuni	
	humans	
Isolates out of a monitoring programme		yes
Number of isolates available in the laboratory		430
Antimicrobials:	**N**	**n**
Aminoglycosides		
Gentamicin	430	1
Neomycin	430	5
Streptomycin	430	6
Amphenicols		
Chloramphenicol	430	0
Fluoroquinolones		
Ciprofloxacin	430	224
Fully sensitive	430	167
Macrolides		
Erythromycin	430	0
Penicillins		
Amoxicillin / Clavulanic acid	430	0
Ampicillin	430	80
Polymyxins		
Colistin	430	0
Quinolones		
Nalidixic acid	430	226
Resistant to 1 antimicrobial	430	173
Resistant to 2 antimicrobials	430	85
Resistant to 3 antimicrobials	430	5
Resistant to 4 antimicrobials	430	0
Resistant to >4 antimicrobials	430	0
Tetracyclines		
Tetracyclin	430	127
Trimethoprim	430	430

Table Breakpoints used for antimicrobial susceptibility testing in Animals

Test Method Used

Broth dilution

Standards used for testing

CLSI

Campylobacter	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 <=
Amphenicols										
Chloramphenicol	EUCAST			16	2	64				
Tetracyclines										
Tetracyclin	EUCAST			2	0.125	64				
Fluoroquinolones										
Ciprofloxacin	EUCAST			1	0.06	32				
Quinolones										
Nalidixic acid	EUCAST			16	2	256				
Trimethoprim										
Aminoglycosides										
Streptomycin	EUCAST			2	0.5	32				
Gentamicin	EUCAST			1	0.125	16				
Neomycin	EUCAST			1	0.125	8				
Macrolides										
Erythromycin	EUCAST			4	0.25	128				
Penicillins										
Amoxicillin / Clavulanic acid	EUCAST			16	1	64				
Ampicillin	EUCAST			8	0.5	64				
Polymyxins										
Colistin	EUCAST			32	4	128				

Table Breakpoints used for antimicrobial susceptibility testing in Food

Test Method Used

Agar dilution

Standards used for testing

Campylobacter	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 <=
Amphenicols										
Chloramphenicol	EUCAST			16	2	32				
Tetracyclines										
Tetracyclin	EFSA			2	0.25	128				
Fluoroquinolones										
Ciprofloxacin	EFSA			1	0.06	32				
Quinolones										
Nalidixic acid	EUCAST			16	2	128				
Trimethoprim	DANMAP			8	0.5	64				
Aminoglycosides										
Streptomycin	EFSA			2	1	64				
Gentamicin	EFSA			1	0.25	64				
Neomycin	EUCAST			1	1	64				
Macrolides										
Erythromycin	EFSA			4	0.25	128				
Penicillins										
Amoxicillin / Clavulanic acid	DANMAP			16	1	128				
Ampicillin	EFSA			8	1	128				
Polymyxins										
Colistin	DANMAP			32	4	64				

Table Breakpoints used for antimicrobial susceptibility testing in Humans

Test Method Used

Agar dilution

Standards used for testing

Campylobacter	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 <=
Amphenicols										
Chloramphenicol	EUCAST			16	2	32				
Tetracyclines										
Tetracyclin	EFSA			2	0.25	128				
Fluoroquinolones										
Ciprofloxacin	EFSA			1	0.06	32				
Quinolones										
Nalidixic acid	EUCAST			16	2	128				
Trimethoprim	DANMAP			8	0.5	64				
Aminoglycosides										
Streptomycin	EFSA			2	1	64				
Gentamicin	EFSA			1	0.25	64				
Neomycin	EUCAST			1	1	64				
Macrolides										
Erythromycin	EFSA			4	0.25	128				
Penicillins										
Amoxicillin / Clavulanic acid	DANMAP			16	1	128				
Ampicillin	EFSA			8	1	128				
Polymyxins										
Colistin	DANMAP			32	4	64				

2.3. LISTERIOSIS

2.3.1. General evaluation of the national situation

A. Listeriosis general evaluation

History of the disease and/ or infection in the country

Listeriosis can be regarded as a relatively rare infectious disease in Austria with an annual incidence between 0.1 and 0.25 cases per 100,000 inhabitants in the years 1996 to 2007. In 2007, a record total of 20 culturally verified human cases of listeriosis were recorded for Austria (incidence 0.25 per 100,000 inhabitants), none of them was associated with pregnancy – one case (Li 1) was not counted, as only a pustula of the skin of the thumb was infected. The incidences are similar to those of most other western European countries (0.2-0.7). Lethality was high with 20% (4 out of 20) in 2007. This (usually) high rate and the sometimes severe permanent disabilities demand every effort to ascertain potential food-associated outbreaks as early as possible. However, the geographical distribution and the molecular subtyping results argue against any epidemic in Austria in 2007 (Würzner R, Heller I, Grif, K. 2008. Taetigkeitsbericht für das Jahr 2007. Mitteilungen der Sanitaetsverwaltung, in press)

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

See History of the disease

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

Listeriosis is a rare disease, but not a rare bacterium, which means that a systemic disease develops only under certain particular predispositions, including pregnancy and immunosuppression.
Although dairy products and salmon are likely candidates, the source of an infection often remains unclear. Ready-to-eat meat and meat products harbour listeria in 0–7 % and ready-to-eat smoked fish in 9 %.

Recent actions taken to control the zoonoses

A monthly report is sent to the Ministry of Health by the National Reference Center, whereas outbreaks are reported immediately.
Restrictions tightened to sell unpasteurised milk in remote areas (Alps).

Suggestions to the Community for the actions to be taken

More widespread information for pregnant and immunocompromised persons should be provided.

Additional information

The National Reference Center at Innsbruck Medical University coordinates the confirmation, subtyping and comparison of isolates.

2.3.2. Listeriosis in humans

A. Listeriosis in humans

Reporting system in place for the human cases

A monthly report is sent to the Ministry of Health by the National Reference Center, whereas outbreaks are reported immediately.

Case definition

A clinically compatible case that is laboratory confirmed after isolation of L. monocytogenes from a normally sterile site or vaginal swabs.

Diagnostic/ analytical methods used

Bacteriology: Smears of the samples are Gram stained. Specimen from normally sterile sites are inoculated in blood culture broth or thioglycollate broth and Columbia blood agar plates, vaginal swabs are plated only directly on Columbia blood and colistin-nalidixic acid (CNA) agar. L. monocytogenes is identified by catalase and Api Coryne test.
All isolates obtained in Austria are sent to the National Reference Center for confirmation, subtyping and comparison.

Notification system in place

Medical doctors specialised in Laboratory Diagnosis or Microbiology and Hygiene and the attended physicians are subjected to notification. Infections, fatal cases and suspected cases of listeriosis have to be notified according to the National Regulation 254/ 2004 (BGBl. II, 254/ 2004, Anzeigepflichtige übertragbare Krankheiten 2004).

History of the disease and/ or infection in the country

See 2.3.1.A. History of the disease

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

See 2.3.1.A. History of the disease

Relevance as zoonotic disease

Listeriosis is a rare disease, but not a rare bacterium, which means that a systemic disease develops only under certain particular predispositions, including pregnancy and immunosuppression.
Although dairy products and salmon are likely candidates, the source of an infection often remains unclear.

Additional information

The National Reference Center at Innsbruck Medical University coordinates the confirmation, subtyping and comparison of isolates.

2.3.3. Listeria in foodstuffs

A. Listeria spp., unspecified in food - All foodstuffs - Monitoring - monitoring survey - objective sampling

Monitoring system

Sampling strategy

No surveillance programmes are applied.
Foodstuff was sampled according to the Erlass der Bundesministerin für Gesundheit und Frauen: Revisions- und Probenplan für das Jahr 2007 gemäß §31 LMSVG; Richtlinien über die Vollziehung der Überwachung des Verkehrs mit den durch das LMSVG erfassten Waren; Berichtsschema 2007 (BMGF-75500/ 0313-IV/ 7/ 2006 of 09.01.2007). The Revision-Plan determines the number of food enterprises e.g. restaurants, dairies, retail etc. that have to be tested randomly per province according to the number of food enterprises per province. Each business has to be sampled at least once per year. The inspection can comprise sampling, hygienic investigations of the employees, checking of HACCP, control of manufacturing processes etc.
The sampling plan determines the number of samples of each class of goods, as raw meat, fresh or frozen; sausages; cheeses; milk; fish; preserved food etc. that have to be investigated randomly. Samples from suspected foodstuffs are taken following outbreak investigation, complaint, confiscation, violation etc.
Information about the special monitoring programs (Schwerpunktprogramm 2007) for Listeriosis can be found on page 17.

Diagnostic/ analytical methods used

At the production plant

Other: Qualitative detection of Listeria spp. is performed according to ISO 11290: Part 1 (1996). Quantification of Listeria spp. content in food is conducted either according to ISO 11290: Part 2 (1998) with following modifications: Listeria monocytogenes are confirmed on Ottaviani Agosti Agar, ALOA Agar, RapidLmono agar, using Gram stain, motility testing and catalase production or by the Api Listeria test or Vidas LMO II.

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

Listeria monocytogenes was detected in samples of cheeses from cow milk in 0.4 % (3/ 974) - the content of L. monocytogenes was >100 cfu/ g. Additionally 2 samples were positive for L. innocua. In all the 134 tested samples of cows' milk raw (including special monitoring program A-030-07) only one sample was found positive for L. monocytogenes, the content was lower than 100 cfu/ g. In 22 out of 246 single samples of cooked pig meat products, ready-to-eat, in 19 (8.5 %) samples the content of L. monocytogenes was >100 cfu/ g and in 1 (0.4 %) it was <100 cfu/ g.
6.7 % of samples from fresh fisch and fishery products (19/ 283) revealed a contamination with L. monocytogenes of >100 cfu/ g and also with L. innocua 6-times.

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L.monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/ g	L. monocytogenes > 100 cfu/ g	L. innocua
Milk, cows'		single	25 g	14	0	14	0	14	0	0	0
raw											
intended for direct human consumption		single	25 g	3	0	3	0	3	0	0	0
- at farm - Monitoring - official sampling - objective sampling (Campaign A-030-007, raw milk from primary production)		single	25 g	101	1	101	1	101	1	0	0
raw milk for manufacture											
intended for manufacture of raw or low heat-treated products		single	25 g	8	0	8	0	8	0	0	0
- at retail		single	25 g	2	0	2	0	2	0	0	0
- at farm		single	25 g	5	0	5	0	5	0	0	0
- at processing plant		single	25 g	1	0	1	0	1	0	0	0
pasteurised milk		single	25 g	4	0	4	0	4	0	0	0
- at processing plant		single	25 g	43	0	43	0	43	0	0	0
- at retail		single	25 g	23	0	23	0	23	0	0	0
- at farm		single	25 g	1	0	1	0	1	0	0	0
Cheeses made from cows' milk											
soft and semi-soft											
made from raw or low heat-treated milk		single	25 g	21	0	21	0	21	0	0	0
- at processing plant		single	25 g	114	0	114	0	114	0	0	0
- at retail		single	25 g	54	0	54	0	54	0	0	0
- at farm		single	25 g	6	0	6	0	6	0	0	0
made from pasteurised milk		single	25 g	74	2	74	2	74	2	0	1
- at processing plant		single	25 g	139	0	139	0	139	0	0	0
- at retail		single	25 g	140	1	140	1	140	1	0	0
- at farm		single	25 g	12	0	12	0	12	0	0	0
hard											

made from raw or low heat-treated milk		single	25 g	9	0	9	0	9	0	0	0
- at processing plant		single	25 g	137	0	137	0	137	0	0	1
- at retail		single	25 g	96	0	96	0	96	0	0	0
Cheeses made from sheep's milk											
soft and semi-soft											
made from raw or low heat-treated milk		single	25 g	4	0	4	0	4	0	0	0
- at processing plant		single	25 g	6	0	6	0	6	0	0	0
- at retail		single	25 g	31	0	31	0	31	0	0	0
- at farm		single	25 g	11	0	11	0	11	0	0	0
made from pasteurised milk											
- at retail		single	25 g	2	0	2	0	2	0	0	0
Dairy products (excluding cheeses)											
ice-cream		single	25 g	4	0	4	0	4	0	0	0
- at retail		single	25 g	48	0	48	0	48	0	0	0
- at processing plant		single	25 g	18	0	18	0	18	0	0	0
dairy products, not specified		single	25 g	15	0	15	0	15	0	0	0
- at retail		single	25 g	97	0	97	0	97	0	0	0
- at processing plant		single	25 g	94	0	94	0	94	0	0	0
- at farm		single	25 g	4	0	4	0	4	0	0	0
Cheeses, made from mixed milk from cows, sheep and/ or goats											
unspecified											
- at retail - Monitoring - official sampling - objective sampling (Campaign A-021-07, mixed soft cheeses, raw and pasteurised milk, from wholesale and retail)		single	25 g	172	0	172	0	172	0	0	0

Footnote

Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

Table Listeria monocytogenes in other foods

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L.monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/ g	L. monocytogenes > 100 cfu/ g	L. innocua	L. seeligeri
Meat from broilers (Gallus gallus)												
fresh		single	25 g	67	1	67	1	67	1	0	0	0
- at retail												
meat products												
cooked, ready-to-eat												
- at retail		single	25 g	8	0	8	0	8	0	0	0	0
Meat from pig												
fresh												
- at retail		single	25 g	2	1	2	1	2	1	0	0	0
meat products												
cooked, ready-to-eat		single	25 g	12	1	12	1	12	1	0	0	0
- at processing plant		single	25 g	15	1	15	1	15	1	0	0	0
- at retail		single	25 g	219	20	219	20	219	19	1	0	0
meat preparation												

intended to be eaten cooked		single	25 g	1	1	1	1	1	1	0	0	0
Meat from bovine animals												
meat products												
cooked, ready-to-eat												
- at retail		single	25 g	1	0	1	0	1	0	0	0	0
Fish												
raw		single	25 g	12	2	12	2	12	2	0	1	0
- at retail		single	25 g	71	5	71	5	71	5	0	0	0
- at processing plant		single	25 g	1	0	1	0	1	0	0	0	0
Crustaceans												
unspecified												
cooked												
- at retail		single	25 g	1	0	1	0	1	0	0	0	0
- at retail		single	25 g	19	1	19	1	19	1	0	0	0
Meat from poultry, unspecified												
fresh		single	25 g	2	0	2	0	2	0	0	0	0
Meat from other animal species or not specified												
- at retail		single	25 g	23	0	23	0	23	0	0	0	0
- at processing plant		single	25 g	12	2	12	2	12	2	0	0	0
Meat, mixed meat												
meat products												
cooked, ready-to-eat												
- at retail - Monitoring - official sampling - objective sampling (Campaign A-003-07, mixed meat products, ready-to-eat, sliced, packed, at retail)		single	25 g	133	0	133	0	133	0	0	0	0
Vegetables		single	25 g	11	0	11	0	11	0	0	0	0

Sweets												
- at retail		single	25 g	1	0	1	0	1	0	0	0	0
Spices and herbs												
- at retail		single	25 g	2	0	2	0	2	0	0	0	0
Sauce and dressings												
- at retail		single	25 g	1	0	1	0	1	0	0	0	0
Ready-to-eat salads												
- at retail		single	25 g	13	1	13	1	13	1	0	0	0
- at processing plant		single	25 g	2	0	2	0	2	0	0	0	0
Other processed food products and prepared dishes		single	25 g	78	0	78	0	78	0	0	0	0
- at processing plant		single	25 g	2	0	2	0	2	0	0	0	0
Other food		single	25 g	36	0	36	0	36	0	0	0	1
- at retail		single	25 g	44	2	44	2	44	1	1	1	0
- at processing plant		single	25 g	48	1	48	1	48	1	0	1	0
Fruits												
- at retail		single	25 g	2	0	2	0	2	0	0	0	0
Chocolate												
- at processing plant		single	25 g	1	0	1	0	1	0	0	0	0
Bakery products		single	25 g	5	0	5	0	5	0	0	0	0
- at retail		single	25 g	18	0	18	0	18	0	0	0	0
- at processing plant		single	25 g	5	0	5	0	5	0	0	0	0
Fishery products, unspecified		single	25 g	26	1	26	1	26	1	0	1	0
- at retail		single	25 g	166	11	166	11	166	11	0	4	0
- at processing plant		single	25 g	7	0	7	0	7	0	0	0	0

Footnote Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

2.3.4. Listeria in animals

A. Listeria spp., unspecified in animal

Monitoring system

Sampling strategy

There is no active surveillance system and detection of cases is based on clinical observations.

Frequency of the sampling

When there is a suspected case.

Case definition

A case may be defined with positive histopathology and/ or positive bacteriology. The animal is the epidemiological unit.

Diagnostic/ analytical methods used

The diagnostic methods used include histopathology and bacteriology.

Measures in case of the positive findings or single cases

None

Notification system in place

No notification system of listeriosis in animal species available at this time.

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

As Listeria spp are present in the environment and also to a small degree in food-producing animals, a risk of contracting domestic listeriosis does exist.

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria spp.	L. innocua	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals)		animal	8	3	0	2	1
Sheep		animal	60	11	1	10	0
Goats		animal	5	3	0	1	2
Pigs		animal	2	1	0	1	0
Alpine chamois		animal	1	0			
Deer		animal	5	1	0	1	0
Solipeds, domestic							
horses		animal	1	0			

Footnote

Source of information: all Institutes for Veterinary Disease Control (AGES and Carinthian)

2.4. E. COLI INFECTIONS

2.4.1. General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

History of the disease and/ or infection in the country

In the year 2007, 394 samples were investigated at the Austrian Reference Center for Enterohemorrhagic Escherichia coli (EHEC). Thereby, 132 isolates (from 85 human [one human with two different isolates], 26 veterinary und 20 food samples) were confirmed, comprising 56 human EHEC and 30 human LP-STEC (Shiga toxin producing E. coli without eae-gene) isolates. In addition, 8 serologically identified EHEC cases were diagnosed (93 human cases in total). As in the year before, the ratio of EHEC O157 (24 isolates and 8 serologic cases) to EHEC non-O157 (32) was similar. Among the 93 diagnosed human EHEC and STEC cases in 2007, 16 cases were diagnosed with hemolytic uremic syndrome (HUS) as post infectious complication (11 caused by O157, 2 by O26:H11, 1 by O55:H7, 1 by Orough:H- and, interestingly, another case by STEC Orough:H21). The incidence of HUS in children in Austria due to EHEC and STEC was about one HUS-case per 100.000 children of age between 0 and 14 years in the year 2007.
The number of EHEC/ STEC cases varied markedly between the different provinces, led by the province Tyrol with 52 confirmed EHEC/ STEC cases. The reason for that may lie in a new EHEC screening program initiated in 2004.
There were no big outbreaks in Austria in 2007, only 3 small family outbreaks.

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

See 2.4.1.A. History of the disease

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

In 2007, 9.1% (4 out of 44 samples) of tested slaughtered calves were positive in the VT ELISA. Two VTEC strains could be isolated only from 1 ELISA-positive sample. These isolates, E. coli O150:H-, and E. coli 150:H30 were both positive for stx1, eaeA and hly.
4.2% (2 out of 48 samples) of slaughtered sheep were positive in the VT-ELISA. No isolate could be obtained.

Recent actions taken to control the zoonoses

An Austrian wide monitoring program on the trends of VTEC prevalence in bovine animals and sheep/ goats was implemented according to the directive 2003/ 99/ EC of the European Parliament and the Council of 17 November 2003 in the National Order GZ: BMGF-74600/ 0092--IV/ B/ 8/ 05 (Überwachungsprogramme 2005 zu ausgewählten Zoonosen und Antibiotikaresistenzen). The sampling was carried out from January 29 to December 4 2007 and follow up programs will be realized in the forthcoming years.

Suggestions to the Community for the actions to be taken

More widespread information for parents, paediatrics and general practitioners.

Additional information

The National Reference Center at Innsbruck Medical University coordinates the confirmation, subtyping and comparison of isolates.
In addition, the Reference Center is involved in outbreak investigations. When EHEC is diagnosed in a patient's specimen the patient and his family are interviewed using a questionnaire. Thereby, information about the clinical illness of the patient and the exposure in the 6 days prior to the onset of the illness is collected. Thus, the Reference Center contributes to finding the source of infection. The Reference Center is also in close contact with the Local and Regional Health Authorities by reporting EHEC cases and discussing the necessary environmental investigations.

2.4.2. E. Coli Infections in humans

A. Verotoxigenic Escherichia coli infections in humans

Reporting system in place for the human cases

A monthly report is sent to the Ministry of Health by the National Reference Center, whereas outbreaks are reported immediately.

Case definition

Clinical description: Clinical picture compatible with EHEC infection, e.g. diarrhoea (often bloody) and abdominal cramps. Illness may be complicated by haemolytic uraemic syndrome (HUS) or thrombotic thrombocytopenic purpura (TTP).
Laboratory criteria for diagnosis: Detection of genes coding for Stx1/ Stx2 production.
For probable cases: Isolation of E. coli belonging to a serogroup known to cause enterohaemorrhagic disease.
Serological confirmation in patients with HUS or TTP (only in selected cases).

Diagnostic/ analytical methods used

1. Detection of E. coli O157 (most prominent serotype in HUS cases):
- Bacteriology: Isolation of O157 colonies on Sorbitol-MacConkey agar after incubation for 24 hours at 37 °C. O157 is confirmed via the E. coli O157 Latex Test.
- Serology: This method is constantly used at the German HUS-"Konsiliarlabor"; anti-O157 antibodies of IgG and IgM types can be distinguished.
2. Detection of Verotoxin (VTEC)-producing strains (used at the National Reference Center for EHEC/ VTEC/ STEC in Innsbruck): Stools are enriched overnight in a medium containing mitomycin C (EHEC Direct Medium, Heipha, Heidelberg, Germany). Enriched cultures are investigated for presence of Shiga toxins by commercial EIA (e.g. Premier, Novitec). Isolate identification is further confirmed by conventional biochemical tests (API 20 E, bioMerieux, Marcy-l´Etoile, France). Enrichments are plated on Sorbitol-MacConkey agar and incubated for 24 hours at 37 °C. Detection of stx1 and stx2 genes and of the genes encoding EHEC hemolysin (hlyA) and intimin (eae) is done by PCR (Gerber et al. (2002) J Infect Dis 186:493-500).
All EHEC/ STEC/ VTEC isolates obtained in Austria are to be sent to the National Reference Center for confirmation, subtyping and comparison. All Shiga toxin producing E. coli are serotyped with E. coli antisera (E. coli antisera, Statens Serum Institut, Copenhagen, Denmark). Comparison of the isolates is done by Pulsed-Field-Gel-Electrophoresis and Ribotyping.

Notification system in place

Medical doctors specialised in Laboratory Diagnosis or Microbiology and Hygiene and the attended physicians are subjected to notification. Notification of bacteriological food-borne illness according to the epidemic act has been mandatory since 1950 (BGBl. 1950/ 186 Epidemiegesetz, as amended).

History of the disease and/ or infection in the country

See History of the disease

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

See History of the disease

Relevance as zoonotic disease

HUS is a rare disease, but EHECs themselves are not rare, which means that a systemic disease develops only under certain particular predispositions, most of which are currently unknown. Although uncooked meat and unpasteurised dairy products are likely candidates to contract the bacterium, the source of an infection often remains unclear.

Additional information

The National Reference Center at Innsbruck Medical University coordinates the confirmation, subtyping and comparison of isolates.

2.4.3. Escherichia coli, pathogenic in foodstuffs

Table VT E. coli in food

	Source of information	Sampling unit	Sample weight	Units tested	Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O22:H8	Verotoxigenic E. coli (VTEC) - VTEC O22:H40	Verotoxigenic E. coli (VTEC) - VTEC O91:H21	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified	Verotoxigenic E. coli (VTEC) - VTEC O135:H4
Meat from pig												
minced meat intended to be eaten cooked												
- at retail		single	25 g	1	0							
meat preparation intended to be eaten cooked												
- at retail		single	25 g	1	0							
Meat from bovine animals												
fresh												
- at retail		single	25 g	1	0							
minced meat intended to be eaten cooked												

- at retail	single	25 g	12	1				1						
Milk, cows'														
raw	single	25 g	1	0										
intended for direct human consumption														
- at farm - Monitoring - official sampling - objective sampling (Campaign A-030-07, raw milk from primary production)	single	25 g	101	0										
raw milk for manufacture														
intended for manufacture of raw or low heat-treated products	single	25 g	4	0										
Vegetables														
products														
- at retail	single	1 g	1	0										
Meat from bovine animals and pig														
minced meat														
intended to be eaten cooked														
- at retail (2 serotypes in 1 sample)	single	25 g	48	1	1		1							
Meat, mixed meat														
meat products														
raw but intended to be eaten cooked														
- at retail - Monitoring - official sampling - objective sampling (Campaign A-022-07 raw meat products mixed, seasoned, from producer and retail)	single	25 g	201	1										1

Meat from other animal species or not specified												
- at retail		single	25 g	5	0							
Cheeses made from cows' milk												
unspecified												
made from pasteurised milk												
- at retail		single	1 g	2	0							
made from raw or low heat-treated milk												
- at retail		single	25 g	2	0							
Cheeses made from sheep's milk												
unspecified												
made from raw or low heat-treated milk												
- at retail		single	25 g	1	0							
Infant formula												
dried												
- at retail		single	25 g	6	0							
Dairy products (excluding cheeses)												
dairy products, not specified												
- at retail		single	1 g	2	0							
- at retail ((25 g))		single	25 g	4	0							
Other food												
- at retail (1 g)		single	1 g	1	0							
- at retail (25 g)		single	25 g	14	0							

Footnote

Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

2.4.4. Escherichia coli, pathogenic in animals

A. Verotoxigenic Escherichia coli in cattle (bovine animals)

Monitoring system

Sampling strategy

The monitoring program on the prevalence of VTEC in slaughtered animals: In the previous years, a higher prevalence of VTEC in calves could be observed compared to cattle of other age groups. Therefore, in 2007, the monitoring program was directed toward calves. Based on approx. 80,000 slaughtered calves in 2006, 50 slaughtered calves had to be tested in 2007.
The sampling was stratified on the number of slaughtering by abattoirs all over Austria. The date of sampling was randomized over the period of the study.
In all 17 abattoirs slaughtering more than 80 % of Austrias calves in 2006 sampling was performed.

Frequency of the sampling

Animals at slaughter (herd based approach)

Other: The sampling was distributed by randomization over the period of the study from January 29th to December 4th 2007.

Type of specimen taken

Animals at slaughter (herd based approach)

Other: Colon containing a minimum of 50 to 100 grams of faeces.

Methods of sampling (description of sampling techniques)

Animals at slaughter (herd based approach)

The sampling was performed by official veterinarians carrying out the post – mortem inspection. At time of evisceration a part of the colon was ligated and wrapped in a sterile plastic bag. After cooling down to 4 °C the sample was sent within the same day in a hobbock or polystyrene box after adding cooling units to the AGES Institute of Veterinary Diseases Control (IVET) in Graz. In the laboratory some content of each colon was inoculated into bouillon.

Case definition

Animals at slaughter (herd based approach)

An animal is considered to be infected with VTEC following the isolation of VTEC from its intestine.

Diagnostic/ analytical methods used

Animals at slaughter (herd based approach)

Other: At first approximately 1 g of content of the colon was preenriched in modified tryptic soy bouillon containing novobiocin (mTSB + n) for 5 hours at 37 °C on a shaker. Then 1 ml was inoculated into mTSB + n containing mitomycin C for 18-20 hours at 37 °C on a shaker too. The process was followed by testing the enrichment for the occurrence of verotoxin in an enzyme immune assay (Ridascreen®, Premier (TM) EHEC). Positive enrichments were plated on MacConkey (MAC) - and on cefixime tellurite sorbitol MAC (CTSMAC) agar and incubated for 24 hours at 37 °C. 2-4 colonies from each of the plates were subcultered on MAC as well as on CTSMAC. Afterwards the genomes of subcultered E. coli were investigated in a real time PCR for harboring the genes for Verotoxin 1, Verotoxin 2, Intimin and Enterohemolysin (Reischl U. et al. (2002): Real-Time Fluorescence PCR Assays for Detection and Characterization of Shiga Toxin, Intim and Enterohemolysin Genes from Shiga Toxin-Producing Escherichia coli. Journ. of Clin. Microb., 40, p. 2555-2565).

Vaccination policy

No vaccination

Other preventive measures than vaccination in place

No measures

Control program/ mechanisms

Suggestions to the Community for the actions to be taken

Harmonization of methods

Measures in case of the positive findings or single cases

No measures foreseen

Notification system in place

No notification system in place at this time.

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

The prevalence of isolated VTEC for cattle and small ruminants is stable below 10 %.

Additional information

Nil

B. Verotoxigenic E. coli (VTEC) in animal - Sheep and goats

Monitoring system

Sampling strategy

Monitoring program on the prevalence of VTEC in sheep at farm:
The monitoring in 2007 was directed towards sheep at farm. 50 sheep had to be tested,

calculated on a population of sheep of 350,000 in Austria in 2006.
The sampling had been stratified on the number of sheep holdings in Austrian provinces. The sampling of feces was done after blood sampling in course of the Brucella melitensis control program.

Frequency of the sampling

Animals at farm

Other: The sampling was distributed by randomization over the period of the study from January 29th to December 4th 2007.

Type of specimen taken

Animals at farm

Faeces

Methods of sampling (description of sampling techniques)

Animals at farm

Feces was wrapped in a sterile plastic bag. After cooling down to 4°C the sample was sent in a hobbock or polystyrene box after adding cooling units to the AGES Institute of Veterinary Diseases Control (IVET) in Graz. In the laboratory some content of each colon was inoculated into bouillon.

Case definition

Animals at farm

A sheep or goat is considered to be infected with VTEC following the isolation of VTEC from its feces.

Diagnostic/ analytical methods used

Animals at farm

Other: The same analytical method was used as described in Verotoxigenic Escherichia coli in cattle (bovine animals).

Vaccination policy

No vaccination

Other preventive measures than vaccination in place

No measures

Control program/ mechanisms

Suggestions to the Community for the actions to be taken

Harmonization of methods

Measures in case of the positive findings or single cases

No measures foreseen

Notification system in place

No notification

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

The prevalence of isolated VTEC for cattle and small ruminants is stable below 10 %. In 4,2% of samples verotxin could be detected by EIA but it was not possible to extract a VTEC-isolate from both samples.

Additional information

Nil

Table VT E. coli in animals

	Source of information	Sampling unit	Sample weight	Units tested	Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified	Verotoxigenic E. coli (VTEC) - VTEC O150
Cattle (bovine animals)									
calves (under 1 year)									
- at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling (1)	Graz	animal	1 g	44	1		1		1
Sheep									
mixed herds									
- at farm - animal sample - faeces - Monitoring - official sampling - objective sampling (2)	Graz	animal	1 g	48	0				

(1) : 4 calves positive by EIA; in one sample 2 differenzt isolates: O150H- and O150H30
(2) : 2 animals positive by EIA but no isolate could be obtained

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

Human tuberculosis has steadily declined during the last decades. In 2007, Mycobacterium bovis accounted for 1 of all human cases (definite cases) no case with M. caprae was found. Incidence of definitive human tuberculosis was 6,11/ 100,000 (507 cases) and an overall incidence of 10.37/ 100,000 (861 cases definite and other than definite cases combined) in 2007.

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

Bovine tuberculosis poses no major public health problem. Cattle, sheep, goats and pigs are free of bovine tuberculosis. Only one single case of M. bovis in humans was detected in 2007. In one cattle holding M. caprae was detected.

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

No findings of M. bovis in animals, although M. caprae was detected in one cattle holding.

Recent actions taken to control the zoonoses

No new measures implemented

Suggestions to the Community for the actions to be taken

Continuation of the existing control programs.

Additional information

Nil

2.5.2. Tuberculosis, Mycobacterial Diseases in humans

A. Tuberculosis due to Mycobacterium bovis in humans

Case definition

Definite: A case with isolation of M. tuberculosis complex (except M. bovis BCG) from any clinical specimen.
Other than definite: A case that meets the clinical criteria above but does not meet the laboratory criteria of a definite case.

Diagnostic/ analytical methods used

- Definite: Staining: Ziehl-Neelsen, Auramin-Rhodamin stains are performed on histological preparation and smears of the sample material
- Culture: After decontamination of the homogenised sample material in NALC-NaOH and centrifugation, the sample material is transferred in parallel on Loewenstein-Jensen agar containing glycerol and PACT and Stonebrink agar containing PACT and MGITmedium.
The media are incubated at 37 °C up to 8 weeks.
Confirmation of the species by Amplicor (Roche)
- Other than definite: A skin test and an X-Ray of the thorax are performed.

Notification system in place

The person who diagnoses (laboratory/ hospital/ general practitioner) has to notify definite (M. tuberculosis and M. bovis) and other than definite cases (this excludes radiologists) to the local health authority (Federal Law BGBl. 127/ 1968: Tuberkulose-gesetz, as amended; National Regulation BGBl. Nr. 254/ 2004: Anzeigepflichtige übertragbare Krankheiten 2004). M. bovis is notifiable since 2004 (National Regulation BGBl. Nr. 254/ 2004: Anzeigepflichtige übertragbare Krankheiten 2004).

History of the disease and/ or infection in the country

The National Reference Laboratory for Tuberculosis (NRL-T) has been nominated since 1995. Since 1998 all data are compiled in a national Database.

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

One human case of M. bovis is under investigation.

Relevance as zoonotic disease

The relevance is inconsiderable; in 2007 only one out of 861 human tuberculosis cases is caused by M. bovis.

Table Mycobacterium in humans - Species/ serotype distribution

Mycobacterium	Cases 0	Cases Inc. 0	Autochthon cases 0	Autochthon Inc. 0	Imported cases 0	Imported Inc. 0
M. bovis						
M. tuberculosis						
M. caprae	0					
Reactivation of previous cases						
M. tuberculosis other than definitive according to WHO						

2.5.3. Mycobacterium in animals

A. Mycobacterium bovis in bovine animals

Status as officially free of bovine tuberculosis during the reporting year

The entire country free

Yes

Additional information

According to Council Directive 64/ 432/ EWG from June 26th 1964 Austria has the status Officially Tuberculosis Free Member State declared in the Commission Decision 1999/ 467/ EC from July 15th, 1999, replaced by Commission Decision 2003/ 467/ EC from June 23rd, 2003. The national surveillance programme is regulated by the Directive GZ 39.624/ 9-IX/ A/ 8/ 00. The monitoring programme is based on the compulsory ante-mortem and post-mortem inspection in which all cattle and goats originating from an official tuberculosis free holding have to be tested for tuberculous alterations.

Monitoring system

Sampling strategy

Specimen from carcasses with macroscopically alterations suspicious for tuberculosis of are sampled in slaughterhouses and sent to an Institute for Veterinary Diagnosis.

Frequency of the sampling

Permanent post-mortem inspections of each slaughtered bovine and caprine animal.

Methods of sampling (description of sampling techniques)

The alterations and lymph nodes are excised and sent to the laboratory.

Case definition

According to Order Richtlinien für die veterinärbehördliche Überwachung zur Erhaltung der Freiheit der österreichischen Rinderbestände von Rindertuberkulose und zur Durchführung und Beurteilung der intrakutanen Tuberkulinprobe (GZ 39.624/ 9-IX/ A/ 8/ 00): Tubercles pathognomically for tuberculosis detected in course of the post-mortem inspection or Mycobacterium bovis or Mycobacterium tuberculosis isolated from suspected material.

Diagnostic/ analytical methods used

Staining: Ziehl-Neelsen stains are performed on histological preparation and smears of the sample material
Culture: After decontamination of the homogenised sample material in NALC and centrifugation, the sample material is transferred in parallel on Loewenstein-Jensen agar containing glycerol and PACT and Stonebrink agar containing PACT and Middlebrook medium. The media are incubated at 37 °C up to 8 weeks.

Confirmation of the Mycobacterium species by PCR (De los Monteros et al. 1998: Journal of Clinical Microbiology 36: 239-242) in the National Reference Laboratory for Tuberculosis in Animals.

Vaccination policy

Vaccination is prohibited.

Other preventive measures than vaccination in place

Compulsory ante-mortem and post-mortem inspection of all slaughtered bovine and caprine carcasses originating from official tuberculosis free holding.

Control program/ mechanisms

The control program/ strategies in place

The control programs are based on the compulsory ante-mortem and post-mortem inspection of all slaughtered bovine and caprine carcasses originating from an official tuberculosis free holding.

Recent actions taken to control the zoonoses

No need at the moment.

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

The carcass is condemned.
Loss of the status OTF for the holding from which the animal was originated and for contact holdings.
Slaughtering of cows and goats from NON-OTF-holdings is forbidden
Prohibition of keeping these animals together with animals from OTF-holdings on mountain pastures or market places etc.
Regaining the status OTF:
There are no animals in the holding showing signs of clinical tuberculosis
All animals are recruited from an OTF-holding
- M. bovis reactors after performing the skin test and contact animals have been eliminated as well as the compulsory follow-up examination and disinfection have been carried out
No reactors identified after two intradermal testings of all animals in the holding older than 6 months examined earliest 60 days (first tuberculin test) and earliest 4 months (second tuberculin test) but latest 12 months after elimination of the last reactor.

Notification system in place

A suspicion of tuberculosis has to be notified by the veterinarian/ animal keeper/ the person who takes care of the animals/ other persons to the mayor; the veterinarian additionally has to report the suspicion to the local authority; and the Institute for Veterinary diagnosis has to reort the diagnostic finding as well to the local authority as to the office of the provincial government responsible for the holding, from which the tuberculosis-positive animal was originated. (BGBl. 1994/ 395,

Fleischuntersuchungsverordnung, § 10 (8), as amended or BGBl. 1909/ 177, Tierseuchengesetz, as amended).

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

Due to the fact that M. caprae is endemic in wildlife dear in Western parts of Austria (and South-Western parts of Germany), cattle in this areas should be observed with higher sensitivity. The National Regulation concerning Bovine Tuberculosis is revised (as of May 2007).

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

Nil

Additional information

M. caprae is differentiated in Austria.

B. Mycobacterium bovis in farmed deer

Monitoring system

Sampling strategy

Nil

Frequency of the sampling

Every shot farmed deer that is foreseen to be used as a food is subjected to pre and post mortem inspection. Pre mortem inspection can be performed by the livestock owner if the owner is trained in this special inspection and if the Veterinarian has assured himself of the physical health of the animal within the last month prior to slaughtering.

Methods of sampling (description of sampling techniques)

The alterations and lymph nodes are excised and sent to the laboratory

Case definition

Tubercles pathognomically for tuberculosis detected in course of the post-mortem inspection or Mycobacterium bovis or Mycobacterium tuberculosis isolated from suspected material

Diagnostic/ analytical methods used

Staining: Ziehl-Neelsen stain is performed on histological preparation and smears of the sample material
Culture: After decontamination of the homogenised sample material in NALC and centrifugation, the sample material is transferred in parallel on Loewenstein-Jensen agar containing glycerol and PACT and Stonebrink agar containing PACT and Middlebrook medium. The media are incubated at 37 °C up to 8 weeks.
Confirmation of the Mycobacterium species by PCR (De los Monteros et al. 1998: Journal of Clinical Microbiology 36: 239-242) in the National Reference Laboratory for Tuberculosis in

Animals

Vaccination policy

Vaccination is prohibited.

Other preventive measures than vaccination in place

Nil

Control program/ mechanisms

The control program/ strategies in place

The control programs are based on the compulsory ante-mortem and post-mortem inspection of all slaughtered carcasses originating from an official tuberculosis free holding

Recent actions taken to control the zoonoses

No need at the moment

Measures in case of the positive findings or single cases

The carcass is condemned. Further measures according to Tierseuchengesetz RGBl. 1909/ 177 as amended.

Notification system in place

The suspicion and finding of tuberculosis is notifiable according to BGBl. 1994/ 395, Fleischuntersuchungsverordnung, as amended) and RGBl. 1909/ 177, Tierseuchengesetz, as amended.

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

No cases in Austria in 2007.

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

No cases in Austria in 2007.

Additional information

Nil

C. M. bovis in animal - All animals - at slaughterhouse - Control or eradication programmes - national programmes (no Community co-financing) - official sampling

Monitoring system

Sampling strategy

Samples from macroscopically suspected swine are taken in slaughterhouses

Frequency of the sampling

Permanent post-mortem inspections of each slaughtered animal

Methods of sampling (description of sampling techniques)

The alterations and lymph nodes are excised and sent to the laboratory

Case definition

Tubercles pathognomically for tuberculosis detected in course of the post-mortem inspection or Mycobacterium bovis or Mycobacterium tuberculosis or Mycobacterium avium isolated from suspected material

Diagnostic/ analytical methods used

Staining: Ziehl-Neelsen stains are performed on histological preparation and smears of the sample material
Culture: After decontamination of the homogenised sample material in NALC and centrifugation, the sample material is transferred in parallel on Loewenstein-Jensen agar containing glycerol and PACT and Stonebrink agar containing PACT and Middlebrook medium. The media are incubated at 37°C up to 8 weeks.
Confirmation of the Mycobacterium species by PCR (De los Monteros et al. 1998: Journal of Clinical Microbiology 36: 239-242) in the National Reference Laboratory for Tuberculosis in Animals

Vaccination policy

Vaccination is prohibited.

Other preventive measures than vaccination in place

Nil

Control program/ mechanisms

The control program/ strategies in place

The control programs are based on the compulsory ante-mortem and post-mortem inspection of all slaughtered carcasses originating from an official tuberculosis free holding

Recent actions taken to control the zoonoses

No need at the moment

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

The carcass is condemned. Further measures according to Tierseuchengesetz RGBl. 1909/ 177 as amended.

Notification system in place

The suspicion and finding of tuberculosis is notifiable according to BGBl. 1994/ 395, Fleischuntersuchungsverordnung, as amended) and RGBl. 1909/ 177, Tierseuchengesetz, as amended.

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

No cases in Austria in 2007.

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

No cases in Austria in 2007.

Additional information

Nil

Table Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium spp.	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified
Sheep	CVS	animal	246637	0	0	0	0
Goats	CVS	animal	40608	0	0	0	0
Pigs	CVS	animal	5584756	0	0	0	0

Footnote

CSV: Central Veterinary Services

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

Region	Total number of existing bovine		Officially free herds		Infected herds		Routine tuberculin testing		Number of tuberculin tests carried out before the introduction into the herds (Annex A(I)(2)(c) third indent (1) of Directive 64/ 432/ EEC)	Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological examinations	Number of animals detected positive in bacteriological examination
	Herds	Animals	Number of herds	%	Number of herds	%	Interval between routine tuberculin tests (*)	Number of animals tested			
ÖSTERREICH	81407	2006840	81407	100	0	0	0	8214	361	3	0
Total	81407	2006840	81407	100	0	0		8214	361	3	0

Footnote

In 2007, in one holding M. caprae was diagnosed

(*) Legend:

In column "Interval between routine tuberculin tests" use the following numeric codes: (0) no routine tests; (1) tests once a year; (2) tests each two years; (3) tests each three years concerning 24 month-old animals; (4) tests each 4 years; (5) others (please give details).

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

Since decades, in Austria human brucellosis is considered to be an imported infectious disease. Austria has the status Officially Brucellosis Free (OBF).

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

The single human cases occurring in Austria in 2007 concerned an immigrant worker who returned from holiday at home and was most likely acquired abroad.

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

Due to the fact that Austria is OBF and OBmF, food is not investigated for Brucella spp.

Recent actions taken to control the zoonoses

No new measures implemented

Suggestions to the Community for the actions to be taken

Continuation of the existing control programs

Additional information

Nil

2.6.2. Brucellosis in humans

A. Brucellosis in humans

Reporting system in place for the human cases

Nil

Case definition

Clinical description: Clinical picture compatible with brucellosis, e.g. acute or insidious onset of fever, night sweats, undue fatigue, anorexia, weight loss, headache and arthralgia.

Diagnostic/ analytical methods used

- Serological examination: Serum samples are tested in the Complement Fixation Test (CFT) with reference standard antisera from CVL-Weybridge. Participation in international ring trials: Brucellosis European Ring Trial 2000 and 2002 (VLA Weybridge) with ELISA, CFT, RBT and SAT.
- Bacteriological: Several blood samples are inoculated in blood culture broth in consecutive days. The incubation lasted 4 to 6 weeks, once per week medium is transferred on brucella agar and incubated 5 -10 % CO2 atmosphere (Anonymus: Standardisierung und Qualitätssicherung in der mikrobiologischen Diagnostik. Richtlinien. Bundesministerium für Soziale Sicherheit und Generationen. ISBN 3-84123- 126-0, Wien, 2001, pg. 56).
- The genus is identified by microscopic examination, catalase-, oxidase- and the slide agglutination test using brucella serum. The species is identified by CO2 requirement, H2S formation, urease activity, growth on media containing standard concentrations of basic fuchsin or thionin and agglutination with monospecific sera and by PCR (Real-time detection of Brucella abortus, Brucella melitensis and Brucella suis. 2001: Redkar et al., Mol Cell Probes. 2001 Feb;15(1):43-52.)

Notification system in place

Medical doctors specialised in Laboratory Diagnosis or Microbiology and Hygiene and the attended physicians are subjected to notification. Notification of brucellosis according to the epidemic act has been mandatory since 1950 (BGBl. 1950/ 186 Epidemiegesetz, as amended).

History of the disease and/ or infection in the country

Austria is OBF and OBmF. All cases are epidemiologically linked to holidays in endemic countries or foreign workers from endemic countries.

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

This zoonosis has no relevance in Austria.

Relevance as zoonotic disease

Nil

Table Brucella in humans - Species/ serotype distribution

Brucella	Cases 1	Cases Inc. 0.01	Autochthon cases 0	Autochthon Inc. 0	Imported cases 1	Imported Inc. 0.01
B. abortus	0	0	0	0	0	0
B. melitensis	1	0.01	0	0	1	0.01
B. suis	0	0	0	0	0	0
Occupational cases						

Table Brucella in humans - Age distribution

Age Distribution	B. abortus			B. melitensis			Brucella spp.		
	All	M	F	All	M	F	All	M	F
<1 year									
1 to 4 years									
5 to 14 years									
15 to 24 years									
25 to 44 years									
45 to 64 years				1	1	0	1	1	0
65 years and older									
Age unknown									
Total :	0	0	0	1	1	0	1	1	0

2.6.3. Brucella in foodstuffs

2.6.4. Brucella in animals

A. Brucella abortus in bovine animals

Status as officially free of bovine brucellosis during the reporting year

The entire country free

Yes

Free regions

All regions

Additional information

According to the Council Directive 64/ 432/ EEC of 26 June 1964, Austria revealed upon request in Commission Decision of July 15th 1999, CD 1999/ 466/ EC, as amended, the status officially brucellosis-free for bovine herds.
Amendments to the National Regulation BGBl 2003/ 526 (Bangseuchen-Untersuchungsverordnung 2004) became effective as of 28. November 2007 (BGBl. 330/ 2007): If testings, retestings or follow up examinations have not been completed by 15. November 2007, the examinations can be carried out according to the new national Regulation "Bangseuchen-Untersuchungsverordnung 2008" (BGBl. II Nr. 305/ 2007). This means that in the case of dairy herds, the examination of milk samples in accordance with Annex C of Council Directive 64/ 432/ EEC of 26 June 1964 can be performed.

Monitoring system

Sampling strategy

- Periodical monitoring scheme: Blood samples from cattle older than 2 years are monitored by means of serological tests. Samples are taken in the holdings; the sampling is part of a periodical monitoring scheme.
Abortion or premature birth: Abortive material and blood of the cow is sampled

Frequency of the sampling

- Periodical monitoring scheme: Annually in 20 % of the holdings in each province all cattle >= 2 years had to be examined. All holdings in each province were tested at least once in five years. Principally the sampling was performed during the cold season, between January and May and in November and December when the animals were kept in the stables.
- Abortion or premature birth: Abortion material and blood from the cow that had an abort was sampled immediately post abortion. If the result of the first serological examination was negative, a second blood sample was taken 2 weeks post abortion and tested again serologically. If this result was negative again, sampling and testing was repeated after two weeks.

Methods of sampling (description of sampling techniques)

- Periodical monitoring scheme: Individual blood samples are taken in the holdings and sent to the laboratories.
- Abortion or premature birth: Abortive material and blood samples of the cow that had an abort had been sent to a veterinary laboratory.

Case definition

An animal is considered to be positive for Brucella abortus, in case of positive serological test result and the epidemiological situation of the herd indicates the possibility that a brucella infection has been introduced to the herd (BGl 1957/ 280, Bangseuchen-Verordnung, §2 Untersuchungsergebnisse) or in case of bacteriological isolation. Although detection can be done on a single animal, the epidemiological unit in tracing back and tracing on is the herd.

Diagnostic/ analytical methods used

Periodical monitoring scheme: Routinely single serum samples or serum pools (5 sera in one pool) were tested in the Indirect-ELISA (I-ELISA) using the three OIE ELISA Brucella Standard Sera (OIE ELISAwpSS, OIE ELISAspSS, OIE ELISAnSS) and the OIE Brucella abortus Positive International Standard Antiserum (OIEISS) to calibrate the method (Commission Regulation 535/ 2002/ EC of 21 March 2002 amending Annex C to Council Directive 64/ 432/ EEC and amending Decision 2000/ 330/ EC). Following a positive or suspected test result in the IELISA single serum samples were also tested in the Complement Fixation Test (CFT), Rose Bengal test (RBT) and Competitive ELISA (C-ELISA).
Participation in international ring trials:
Brucellosis European Ring Trial 2000 and 2002 (VLA Weybridge) with ELISA, CFT, RBT and Serum Agglutination Test (SAT). The National Reference Laboratory for Brucellosis, Institute for Veterinary Disease Control in Moedling organized the national Brucellosis Ring Trials for all Veterinary Institutes.
Abortion or premature birth: Abortive material was tested bacteriologically and the cow that had an abort serologically as described above.
Bacteriology: Smears of the samples are stained by Stableforth´s method. Brucella agar and Columbia agar (Merck) containing selective additives were used (Oxoid). After inoculation the media were incubated for 4-10 days at 37 °C in an atmosphere containing 10 % CO2. The genus was identified by microscopic examination, catalase-, oxidase- and the slide agglutination test using brucella serum. The species was differentiated by CO2 requirement, H2S formation, urease activity, growth on media containing standard concentrations of basic fuchsin or thionin and agglutination with monospecific sera and by PCR (Real-time detection of Brucella abortus, Brucella melitensis and Brucella suis. 2001: Redkar et al., Mol Cell Probes. 2001 Feb;15(1):43-52.).

Vaccination policy

Vaccination is not allowed (BGBl. 1957/ 147, Bangseuchengesetz, § 13 Impfung)

Other preventive measures than vaccination in place

Periodical examinations, culling of reactors

Control program/ mechanisms

The control program/ strategies in place

Periodical monitoring scheme according the National Regulation BGBl 2003/ 526 (Bangseuchen-Untersuchungsverordnung 2004, as amended – see chapter additional information). Abortion or premature birth: Compulsory notification according BGBl 1957/ 147, Bangseuchengesetz, as amended, §11 Anzeigepflicht;
BGBl 1957/ 280, Bangseuchen-Verordnung, as amended, §9 Anzeigepflicht).

Recent actions taken to control the zoonoses

No actions, because OBF.

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

According to BGBl 1957/ 147, Bangseuchengesetz, as amended, and BGBl 1909/ 177, Tierseuchengesetz, as amended.

Notification system in place

Abortion or premature birth: Notification of abortions: The livestock owner has to notify each abortion within 24 hours to the mayor (Gemeinde). The mayor has to forward the notification to the local authority (Bezirksverwaltungsbehörde) (BGBl. 1957/ 147, Bangseuchengesetz, § 11 Anzeigepflicht). If the cow is under treatment of a veterinarian or the veterinarian has been informed about the abortion, the veterinarian has to notify to the official authority (Bezirksverwaltungsbehörde).

Results of the investigation

See tables

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

OBF.

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

Nil

Additional information

Nil

B. B. suis in animal - Pigs

Monitoring system

Sampling strategy

According to Commission Decision Nr. 93/ 52/ EWG, as amended, Austria has the status officially brucellosis (B. melitensis) free (ObmF).

Frequency of the sampling

Targeted, following abortion and in positive cases contact holdings.

Type of specimen taken

Other: Monitoring: Blood samples, Clinical cases: Abortion material and blood samples from the animal that had an abort

Methods of sampling (description of sampling techniques)

Individual blood samples and abortion material are taken in the holdings and sent to the laboratories.

Case definition

An animal is considered to be serologically positive for brucellosis following one/ more positive CFT Complement Fixation Test (CFT) and RBT Rose Bengal test (RBT) results (B. abortus used antigen) or infected with B. suis in case of bacteriological isolation

Diagnostic/ analytical methods used

- Due to the fact that a Brucella suis antigen is not available, the B. abortus antigen is used for the Complement Fixation Test (CFT) and the Rose Bengal test (RBT) because B. abortus shows cross reactions with B. suis antibodies.
- ELISA and CFT is not available, the B. abortus ELISA and CFT are used because these tests show cross reactions with B. suis antibodies.
- Participation in international ring trials: Brucellosis European Ring Trial 2000 and 2002 (VLA Weybridge) with ELISA, CFT, RBT and Serum Agglutination Test (SAT). The National Reference Laboratory for Brucellosis, Institute for Veterinary Disease Control in Moedling organized the national Brucellosis Ring Trials for all Veterinary Institutes.

Bacteriology: Quality control: Laboratory strains
- Smears of the samples are stained by Stableforth´s method
- Brucella agar and Columbia agar (Merck) containing selective additives (Oxoid) were used. After inoculation the media are incubated for 4-10 days at 37 °C in an atmosphere containing 10 % CO2. The genus was identified by microscopic examination, catalase-, oxidase- and the slide agglutination test using brucella serum. The species were differentiated by CO2 requirement, H2S formation, urease activity, growth on media containing standard concentrations of basic fuchsin or thionin and agglutination with monospecific sera and by PCR (Real-time detection of Brucella abortus, Brucella melitensis and Brucella suis. 2001: Redkar et al., Mol Cell Probes. 2001 Feb;15(1):43-52.).

Vaccination policy

Nil

Other preventive measures than vaccination in place

Nil

Control program/ mechanisms

The control program/ strategies in place

Nil

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

No mandatory measures but notification.

Notification system in place

B. suis is notifiable since 1993 according to BGBl 1993/ 756, Tierseuchen-Anzeigepflichtverordnung, as amended

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

Due to the results of the passive monitoring in pigs (no cases of B. suis) we conclude that there is no need for an active monitoring program.

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

Nil

Additional information

Nil

C. B. melitensis in animal - Sheep and goats

Monitoring system

Sampling strategy

To maintain the status officially brucellosis (B. melitensis) free, according to BGBl. 2002/ 184 (Brucella melitensis-Überwachungsverordnung, of 14 May 2002) representative samples had been examined with a confidence level of 95 % to detect infected holdings at a target prevalence of 0.2 %. Sampling was performed by the competent authority or under its supervision, by bodies to which it had delegated this responsibility. Samples were taken in the holdings.

Abortion material and blood samples from the animal that had an abort were also investigated.

Frequency of the sampling

Principally the sampling was performed during the cold season, between January and May and in November and December when the animals were kept in the stables.

Type of specimen taken

Other: • Monitoring: Blood samples.

Methods of sampling (description of sampling techniques)

Individual blood samples and abortion material are taken in the holdings and sent to the laboratories.

Case definition

An animal is considered to be infected with B. melitensis in case of bacteriological isolation or positive serological test result.

Diagnostic/ analytical methods used

- Routinely single serum samples were tested in the Indirect ELISA. Confirmation of suspected or positive results was performed by the Complement Fixation Test (CFT) with reference standard antisera from CVL-Weybridge. Participation in international ring trials: Brucellosis European Ring Trial 2000 and 2002 (VLA Weybridge) with ELISA, CFT, RBT and SAT. The National Reference Laboratory for Brucellosis, Institute for Veterinary Disease Control in Moedling organized the national Brucellosis Ring Trials for all national Veterinary Institutes.
Bacteriology: Smears of the samples were stained by Stableforth´s method.
Brucella agar and Columbia agar (Merck) containing selective additives (Oxoid) were used. After inoculation the media are incubated for 4-10 days at 37 °C in an atmosphere containing 10 % CO2. The genus was identified by microscopic examination, catalase-, oxidase- and the slide agglutination test using brucella serum. The species were differentiated by CO2 requirement, H2S formation, urease activity, growth on media containing standard concentrations of basic fuchsin or thionin and agglutination with monospecific sera and by PCR (Real-time detection of Brucella abortus, Brucella melitensis and Brucella suis. 2001: Redkar et al., Mol Cell Probes. 2001 Feb;15(1):43-52.).

Vaccination policy

According to BGBl. 2002/ 184 (Brucella melitensis-Überwachungsverordnung, of 14 May 2002, §4, Impfverbot) vaccination is not allowed.

Other preventive measures than vaccination in place

Monitoring program and investigation of aborts.

Control program/ mechanisms

The control program/ strategies in place

To maintain the status officially brucellosis (B. melitensis) free, according to BGBl. 2002/ 184 (Brucella melitensis-Überwachungsverordnung, of 14 May 2002) representative samples have to be examined with a confidence level of 95 % to detect infected holdings at a prevalence of 0.2 %. Sampling is performed by the competent authority or under its supervision, by bodies to which it has delegated this responsibility. Samples are taken in the holdings.
Notification and clarification of each clinical case by bacteriology and serology.

Recent actions taken to control the zoonoses

ObmF

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

According to BGBl. 2002/ 184 (Brucella melitensis-Überwachungsverordnung, of 14 May 2002, §3, Ausmerzung von Reagenten) reactors have to be culled, the carcasses have to be incinerated in an incineration plant.

Notification system in place

Notification of brucellosis or a suspicion of brucellosis according to BGBl. 2002/ 184 (Brucella melitensis-Überwachungsverordnung, of 14 May 2002.

Results of the investigation

See tables

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

ObmF

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

Nil

Additional information

Nil

Table Brucellosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Brucella spp.	B. melitensis	B. abortus	B. suis	Brucella spp., unspecified
Pigs								
(Brucella abortus, rose bengal test)	IVET	animal	577	0				
(Brucella spp. antibody, complement fixation test) (1)	IVET	animal	563	27				
(Bang antibody ELISA)	IVET	animal	1	0				
Wild boars								
(Brucella spp. anitbody, complement fixation test) (2)	IVET	animal	56	9				
(Brucella spp. qPCR) (3)	IVET	animal	1	1				
(bacteriologically) (4)	IVET	animal	1	1	0	0	1	0

(1) : * serologically positive, not confirmed microbiologically
(2) : * serologically positive, not confirmed microbiologically
(3) : same animal as bacteriologically confirmed
(4) : same animal as by PCR detected

Footnote

IVET: AGES Institutes for Veterinary Control

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

Region	Total number of existing bovine		Officially free herds		Infected herds		Surveillance						Investigations of suspect cases								
							Serological tests			Examination of bulk milk samples			Information about abortions			Epidemiological investigation					
	Herds	Animals	Number of herds	%	Number of herds	%	Number of bovine herds tested	Number of animals tested	Number of infected herds tested	Number of bovine herds tested	Number of animals or pools tested	Number of infected herds	Number of notified abortions whatever cause	Number of isolations of Brucella infection	Number of abortions due to Brucella abortus	Number of animals tested with serological blood tests	Number of suspended herds	Number of positive animals		Number of animals examined microbio logically	Number of animals positive microbio logically
																		Serologically	BST		
ÖSTERREICH	81407	2006840	81407	100	0	0	11931	146548	0	14799	14865	0	724	0	0	116	63	0	0	0	0
Total	81407	2006840	81407	100	0	0	11931	146548	0	14799	14865	0	724	0	0	116	63	0	0	0	0

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

Region	Total number of existing ovine / caprine		Officially free herds		Infected herds		Surveillance			Investigations of suspect cases				
	Herds	Animals	Number of herds	%	Number of herds	%	Number of herds tested	Number of animals tested	Number of infected herds	Number of animals tested with serological blood tests	Number of animals positive serologically	Number of animals examined microbiologically	Number of animals positive microbiologically	Number of suspended herds
ÖSTERREICH	29257	431603	29255	99.993	2	0.007	1638	14074	2	31	7	5	0	2
Total	29257	431603	29255	99.993	2	0.007	1638	14074	2	31	7	5	0	2

2.7. YERSINIOSIS

2.7.1. General evaluation of the national situation

A. Yersinia enterocolitica general evaluation

History of the disease and/ or infection in the country

Yersiniosis is not considered a major food borne illness in Austria. The incidence of human disease is low when compared to salmonellosis or campylobacteriosis.

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

In 2007, a total of 150 human infections were notified (vorläufiger Jahresausweis, Stand 6. 2. 2008). 117 primary isolates from patients were sent to the National Reference Laboratory for Yersinia. The sources of infections are unclear. Neither studies on sporadic cases nor scientific outbreak investigations were performed in Austria so far.

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

Nil

Recent actions taken to control the zoonoses

None

Suggestions to the Community for the actions to be taken

Nil

Additional information

Nil

2.7.2. Yersiniosis in humans

A. Yersinosis in humans

Reporting system in place for the human cases

Case definition

Clinical description: An illness of variable severity characterised by diarrhoea, fever, nausea, cramps and tenesmus.
Laboratory criteria for diagnosis: Isolation of Yersinia enterocolitica Serogroup O3, O9 or O5 or Y. pseudotuberculosis from a clinical specimen.

Diagnostic/ analytical methods used

Faecal (Yersinia enterocolitica) or resection (Y. pseudotuberculosis) sample material is plated directly on cefsulodin-irgasan-novobiocin (CIN) agar and incubated for 18 hours at 30 °C. Suspicious colonies are identified in an Api 20 E reaction and API 50 CHE reaction. Y. enterocolitica is agglutinated with sera against serogroups O3, O5, O9 and O8. Biovar and pathogenicy are defined.

Notification system in place

Medical doctors specialised in Laboratory Diagnosis or Microbiology and Hygiene and the attended physicians are subjected to notification. Notification of yersiniosis according to the epidemic act has been mandatory since 1950 (BGBl. 1950/ 186 Epidemiegesetz, as amended).

History of the disease and/ or infection in the country

Nil

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

The number of human cases has been similar in the last years.

Relevance as zoonotic disease

Compared to salmonellosis and campylobacteriosis, yersiniosis is not an important food borne pathogen.

Table Yersinia in humans - Species/ serotype distribution

Yersinia	Cases 118	Cases Inc. 1.42	Autochthon cases 0	Autochthon Inc. 0	Imported cases 0	Imported Inc. 0
Y. enterocolitica						
Y. pseudotuberculosis	1	0.01				
Yersinia spp., unspecified	3	0.04				
Y. enterocolitica - O:3	112	1.35				
Y. enterocolitica - O:9	2	0.02				

Table Yersinia in humans - Age distribution

Age Distribution	Y. enterocolitica			Yersinia spp.		
	All	M	F	All	M	F
<1 year	5			5		
1 to 4 years	23			23		
5 to 14 years	30			28		
15 to 24 years	17			16		
25 to 44 years	23			22		
45 to 64 years	15			13		
65 years and older	5			5		
Age unknown	0			0		
Total :	118	0	0	112	0	0

Table Yersinia in humans - Seasonal distribution

Month	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp.	O:3	O:9
	Cases	Cases	Cases	Cases	Cases
January	18	0	0	17	0
February	11	0	0	11	0
March	10	0	0	10	0
April	6	0	0	6	0
May	6	1	0	6	0
June	4	0	0	4	0
July	10	0	0	9	0
August	7	0	0	7	0
September	11	0	0	10	1
October	11	0	0	11	0
November	14	0	0	13	0
December	9	0	0	8	1
not known	0	0	3	0	0
Total :	117	1	3	112	2

2.7.3. Yersinia in foodstuffs

2.7.4. Yersinia in animals

A. Yersinia spp., unspecified in animal

Monitoring system

Sampling strategy

Not relevant in Austria therefore no testing.

Vaccination policy

No vaccination.

Other preventive measures than vaccination in place

Nil

Control program/ mechanisms

Suggestions to the Community for the actions to be taken

EU wide harmonized monitoring program.

Notification system in place

Findings of Yersinia are not notifiable in animals.

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

The relevance has not been investigated.

2.8. TRICHINELLOSIS

2.8.1. General evaluation of the national situation

A. Trichinellosis general evaluation

History of the disease and/ or infection in the country

No documented human infections in 2007.

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

No documented human infections in 2007.

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

No documented infections in food-animals in 2007.

Recent actions taken to control the zoonoses

No new measures implemented

Suggestions to the Community for the actions to be taken

Reconsider the necessity of routine trichinella meat inspection in pig carcasses

Additional information

Nil

2.8.2. Trichinellosis in humans

A. Trichinellosis in humans

Case definition

Clinical description: A disease caused by ingestion of Trichinella larvae. The disease has variable clinical manifestations. Common signs and symptoms among symptomatic persons include eosinophilia, fever, myalgia, and periorbital edema. Laboratory criteria for diagnosis: Demonstration of Trichinella larvae in tissue obtained by muscle biopsy, or positive serologic test for Trichinella

Diagnostic/ analytical methods used

ELISA and Westernblot

Notification system in place

Notification of trichionellosis according to the epidemic act since 1950 (BGBl. 1950/ 186 Epidemiegesetz, as amended).

History of the disease and/ or infection in the country

The last autochthonous cases have been reported in 1970

Description of the positive cases detected during the reporting year

No cases identified in 2007.

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

Nil

Relevance as zoonotic disease

No relevance in Austria

Table Trichinella in humans - Species/ serotype distribution

Trichinella	Cases 0	Cases Inc. 0	Autochthon cases 0	Autochthon Inc. 0	Imported cases 0	Imported Inc. 0
Trichinella spp.	0	0				

2.8.3. Trichinella in animals

A. Trichinella in pigs

Monitoring system

Sampling strategy

General

Targeted sampling of all slaughtered pigs except pigs slaughtered by the farmer for his own consumption; the sampling is performed by competent authorities; the samples are taken at slaughterhouses; the sampling is part of a permanent monitoring scheme

Frequency of the sampling

General

Other: Permanent post-mortem sampling of each slaughtered pig

Type of specimen taken

General

Muscles: Diaphragm (crus), tongue, masseter and abdominal muscles.

Methods of sampling (description of sampling techniques)

General

Appropriate muscle is excised out of the carcass.

Case definition

General

When trichinosis is detected with one of the given methods

Diagnostic/ analytical methods used

General

According to Regulation (EC) Nr. 2075/ 2005

Preventive measures in place

Nil

Control program/ mechanisms

The control program/ strategies in place

Lebensmittelsicherheits- und Verbraucherschutzgesetz (LMSVG, BGBl. I 2006/ 13, as amended), Fleischuntersuchungsverordnung (BGBl II 2006/ 109 as amended)

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

According to Regulation (EC) Nr. 854/ 2004 as amended.

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

Nil

Additional information

Nil

B. Trichinella in horses

Monitoring system

Sampling strategy

Targeted sampling of all slaughtered horses; the sampling is performed by competent authorities; the samples are taken at slaughterhouses; the sampling is part of a permanent monitoring scheme

Frequency of the sampling

Permanent post-mortem sampling of each slaughtered horse

Type of specimen taken

Muscles from tongue, masseter, diaphragm and neck.

Methods of sampling (description of sampling techniques)

Appropriate muscle is excised out of the carcass.

Case definition

When trichinosis is detected with one of the given methods.

Diagnostic/ analytical methods used

According to Regulation (EC) Nr. 2075/ 2005

Results of the investigation including the origin of the positive animals

No findings in horses.

Control program/ mechanisms

The control program/ strategies in place

Lebensmittelsicherheits- und Verbraucherschutzgesetz (LMSVG, BGBl. I 2006/ 13, as amended), Fleischuntersuchungsverordnung (BGBl II 2006/ 109 as amended)

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

According to Regulation (EC) Nr. 854/ 2004 as amended.

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

Nil

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

Nil

Additional information

Nil

C. Trichinella spp., unspecified in animal - Wild boars - wild

Monitoring system

Sampling strategy

Sampling of all hunted or harvested wild boars; the sampling is performed by hunters with special knowledge about trichnella investigation or by competent authorities; the sampling is stratified by geographical regions depending to the habitats of wild boar in Austria; samples are taken after shouting or at the cold storage depots; the sampling is part of a monitoring scheme.

Frequency of the sampling

All farmed wild boars are controlled for trichinella.

Type of specimen taken

Diaphragm muscles (crus), tongue, masseter and abdominal muscles.

Methods of sampling (description of sampling techniques)

Appropriate muscle is excised out of the carcass.

Case definition

When trichinosis is detected with one of the given methods.

Diagnostic/ analytical methods used

According to Regulation (EC) Nr. 2075/ 2005

Preventive measures in place

Nil

Control program/ mechanisms

The control program/ strategies in place

Lebensmittelsicherheits- und Verbraucherschutzgesetz (LMSVG, BGBl. I 2006/ 13, as amended), Fleischuntersuchungsverordnung (BGBl II 2006/ 109 as amended)

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

According to Regulation (EC) Nr. 854/ 2004 as amended.

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

Nil

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

Nil

Additional information

Nil

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total units positive for Trichinella spp.	T. spiralis	Trichinella spp., unspecified
Pigs	CVS	animal	5410886	0		
fattening pigs						
not raised under controlled housing conditions in integrated production system	CVS	animal	110553	0		
Solipeds, domestic						
horses	CVS	animal	781	0		

Footnote

CVS = Central Veterinary Services

2.9. ECHINOCOCCOSIS

2.9.1. General evaluation of the national situation

A. Echinococcus spp. general evaluation

History of the disease and/ or infection in the country

Austria is a low risk country for both forms of echinococcosis

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

We expect the prevalence to be low also in future. In 2007 6 cases of Echinococcus multilocularis infestation were diagnosed in Austria, all probable autochtone cases; in 2007 there were even 17 patients with the large majority of cases who acquired the cystic infection during childhood in countries like former Jugoslawia or Turkey (in 2006: 24 imported cases).

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

Alveolar echinococcosis: Due to the infection rates of red foxes in Austria (0-40 %) there is a relatively elevated risk for hunters, cat owners and farmers.

Recent actions taken to control the zoonoses

Tools for preventive serological screening of hunters (and also other persons) have been established to detect Echinococcus multilocularis infections in an early stage. The early detection of the infection is the prerequisite for a successful curative treatment.

Suggestions to the Community for the actions to be taken

Nil

Additional information

Nil

2.9.2. Echinococcosis in humans

A. Echinococcus spp. in humans

Case definition

Clinical apparent case (differentiation between alveolar and cystic echinococcosis necessary) with laboratory diagnostic confirmation: = histopathology or combination of imaging (ultrasound, X-ray, computed tomography or others) and positive serology or combination of specific DNA (by PCR) and positive serology).

Diagnostic/ analytical methods used

ELISA and Westernblot technique, participant of the UK National External Quality Assessment Service for Microbiology, National Reference Laboratory for Echinococcosis.

Notification system in place

Echinococcosis is a notifiable disease since June 2004 according to the National Regulation 254/ 2004 (BGBl. II, 254/ 2004 of 18 June in 2004, Anzeigepflichtige übertragbare Krankheiten 2004)

History of the disease and/ or infection in the country

• Alveolar echinococcosis has been known in Austria since 1897; annual incidence (1897- 2004): 0-6 cases, mean incidence: 2.4 cases/ year (only autochthonous cases); geographic distribution in Austria: mainly in the western provinces (Vorarlberg, Tyrol, Salzburg), but cases are known from each province; outbreaks are not known.
• Cystic echinococcosis has been known in Austria at least since 1819; Cases of cystic echinococcosis have been registered in the Clinical Institute of Hygiene and Medical Microbiology (Medical University Vienna) regularly since the beginning of the 1980ies. Annual incidence (1984 - 2006): 20 - 60 cases; mean incidence: 31 cases per year, one third of patients are of Austrian origin; two thirds are from abroad. Geographic distribution in Austria is unknown; a few autochthonous infections could be observed mainly in the eastern and southern provinces (Lower Austria, Burgenland, Styria); outbreaks are not known.

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

• Alveolar echinococcosis: We expect the prevalence to be low in future; sources of infection: fox faeces (contaminated hands and fingers, vegetables, water).
• Cystic echinococcosis: We expect the prevalence to be low in future; sources of infection: dog faeces, presumably in a very few foci (in or around farmers houses)

Relevance as zoonotic disease

Low prevalence of both forms of echinococcosis

Table Echinococcus in humans - Species/ serotype distribution

Echinococcus	Cases 17	Cases Inc. 0.2	Autochthon cases 7	Autochthon Inc. 0	Imported cases 10	Imported Inc. 0
E. granulosus	11	0.13	1		10	
E. multilocularis	6	0.07	6		0	
Echinococcus spp.						

Table Echinococcus in humans - Age distribution

Age Distribution	E. granulosus			E. multilocularis			Echinococcus spp.		
	All	M	F	All	M	F	All	M	F
<1 year									
1 to 4 years									
5 to 14 years									
15 to 24 years	3		3				3	0	3
25 to 44 years	5	4	1	1	1		6	5	1
45 to 64 years	3		3	2	2		5	2	3
65 years and older				3	1	2	3	1	2
Age unknown									
Total :	11	4	7	6	4	2	17	8	9

2.9.3. Echinococcus in animals

A. Echinococcus spp., unspecified in animal

Monitoring system

Sampling strategy

Targeted sampling of all in abattoirs slaughtered animals; the sampling is performed by competent authorities in course of the post-mortem meat inspection; the sampling is part of a permanent monitoring scheme

Frequency of the sampling

Permanent post-mortem sampling of each slaughtered animal

Methods of sampling (description of sampling techniques)

All organs and muscles that were used for human consumption

Case definition

Each carcass in which cystic or alveolar hydatids are detected in muscles or organs

Vaccination policy

No vaccination

Other preventive measures than vaccination in place

No measures

Control program/ mechanisms

The control program/ strategies in place

Post mortem meat inspection act according to BGBl. 1982/ 522, Fleischuntersuchungsgesetz, as amended

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

In 2007, no case was detected in the post-mortem inspection.

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

Cystic or alveolar echinococcosis in animals that are used for food production do not play a role for the infection of humans; it is primarily a hygienic problem. Only when infected waste from animals is used as feed for carnivores the risk of infection for humans increases.

Additional information

Nil

Table Echinococcus in animals

	Source of information	Sampling unit	Units tested	Total units positive for Echinococcus spp.	E. granulosus	E. multilocularis	Echinococcus spp., unspecified
Cattle (bovine animals) (1)	CVS	animal	589365	28	28		
Sheep	CVS	animal	246637				
Goats	CVS	animal	40608				
Pigs	CVS	animal	5521439				
Solipeds, domestic	CVS	animal	781				

(1) : Positive animals not from austria but from Intra Community Trade

Footnote

CVS = Central veterinary services

2.10. TOXOPLASMOSIS

2.10.1. General evaluation of the national situation

A. Toxoplasmosis general evaluation

History of the disease and/ or infection in the country

No data available

2.10.2. Toxoplasmosis in humans

A. Toxoplasmosis in humans

Reporting system in place for the human cases

No data available

2.10.3. Toxoplasma in animals

A. Toxoplasma spp., unspecified in animal

Monitoring system

Sampling strategy

There is no official surveillance for Toxoplasma spp. in animals. Sampling of cattle, sheep, goats or pigs is performed in case of clinical suspicion of toxoplasmosis and after abortion. Other species of animals are also occasionally sampled.

Frequency of the sampling

In case of clinical suspicion and abortion.

Type of specimen taken

Blood

Case definition

A case is defined as an animal being tested positive. The animal is the epidemiological unit.

Diagnostic/ analytical methods used

The diagnostic methods used for serology is the microagglutination test.

Vaccination policy

No vaccination

Control program/ mechanisms

The control program/ strategies in place

Nil

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Notification system in place

Toxoplasmosis is not notifiable in animals.

Results of the investigation

No valid data available

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

Nil

2.11. RABIES

2.11.1. General evaluation of the national situation

A. Rabies general evaluation

History of the disease and/ or infection in the country

Rabies in humans was a major public health issue in the 1960s.

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

In 2007, there was no case of rabies detected in animals in Austria.

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

Nil

Recent actions taken to control the zoonoses

In 2007 there was still vaccination programs carried out in areas of higher risk.

Suggestions to the Community for the actions to be taken

Nil

Additional information

Nil

2.11.2. Rabies in humans

A. Rabies in humans

Case definition

Laboratory criteria for diagnosis
Detection by direct fluorescent antibody of viral antigens in a clinical specimen (preferably the brain or the nerves surrounding hair follicles in the nape of the neck)
Detection of rabies nucleic acid in clinical specimen
Isolation (in cell culture or in a laboratory animal) of rabies virus from saliva, cerebrospinal fluid (CSF), or central nervous system tissue
Identification of a rabies-neutralising antibody titre (complete neutralization) in the serum or CSF of an unvaccinated person.

Diagnostic/ analytical methods used

Liquor, smears from pharynx, swab from conjuntivae biopsy at the nape of the neck and serum were examined in the fluorescent antibody test (FAT), immunohistochemistry and RT-PCR (Ito M., Itou T., Sakai T., et al. (2001). Detection of Rabies Virus RNA isolated from several species of animals in Brazil by RT-PCR. Journal of Veterinary medicine Science 63(12): 1309-1313.).

Notification system in place

Rabies and bite of an infected animal or an animal suspected to be infected according to the epidemic act (BGBl. 1950/ 186 Epidemiegesetz, as amended).

History of the disease and/ or infection in the country

Nil

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

Nil

Relevance as zoonotic disease

Nil

2.11.3. Lyssavirus (rabies) in animals

A. unspecified Lyssavirus in animal - Foxes - wild

Monitoring system

Sampling strategy

According to (GZ:39.642/ 14-VII/ B/ 03): 8 foxes per 100km² in rabies infested and rabies endangered areas, 4 foxes per 100km² in not endangered and free areas (definition of areas: GZ 30.517/ 35-IV/ 12/ 03).

Frequency of the sampling

8 foxes per 100 km² in rabies infested and rabies endangered areas, 4 foxes per 100km² in not endangered and free areas.

Type of specimen taken

Other: Brain (stem brain or ammon´s brain)

Methods of sampling (description of sampling techniques)

Whole animals or heads of the dead animals are sent to the laboratories; sometimes brain tissue (derived from other laboratories). Brain-Tissue (e.g. 1 cm²) is examined.

Case definition

An animal is considered positive if the fluorescent antibody test (FAT) shows a positive signal.

Diagnostic/ analytical methods used

The routine test was the fluorescent antibody test (FAT).
RTCIT (rabies tissue culture infection test) was performed on mouse neuroblastoma cells.
(The MIT (mouse inoculation test) was used to confirm positive findings) MIT is only performed on demand, not for routine confirmation

Vaccination policy

Oral vaccination of foxes twice a year according to GZ: 30.517/ 52-IV/ 12/ 03

Other preventive measures than vaccination in place

No measures

Control program/ mechanisms

The control program/ strategies in place

Fuchs-Tollwutbekämpfungsverordnung BGBl II 2001/ 75, Tierseuchengesetz TSG RGBl 1909/ 177 as amended, BGBl I 2002/ 65 IV. Abschnitt, §41, §42, Tierseuchengesetz-Durchführungsverordnung 1909/ 178 as amended: BGBl 1955/ 76

TSG-DVO zum IV. Abschnitt Wutkrankheiten
• Control of vaccination: Detection of tetracycline in jaw bones of randomly chosen fox from the vaccination area; additionally an ELISA is performed to proof seroconversion.

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

Tierseuchengesetz TSG RGBl 1909/ 177 as amended, BGBl I 2002/ 65 IV. Abschnitt, §41, §42, and vaccination of the Fox Population

Notification system in place

According to Tierseuchengesetz TSG RGBl 1909/ 177 as amended, BGBl I 2002/ 65 IV. Abschnitt, §41, §42

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

The virus isolated from a dead fox was not a wild rabies strain, but a vaccination strain. It is well known that vaccination of fox populations can cause lethality in very young animals.

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

Nil

B. unspecified Lyssavirus in animal - All animals (except foxes)

Monitoring system

Sampling strategy

Sampling is targeted when animals are observed with central nervous symptoms or after biting a person. The suspicious animal is killed or euthanized and the carcasses or heads sent to the laboratory.

Frequency of the sampling

In case of suspicion

Type of specimen taken

Other: Brain (ammon´s horn and brain stem)

Methods of sampling (description of sampling techniques)

Routinely there will be taken one site from the brain either a part from the amon´s horn, brain stem or cerebellum. If an animal has bitten a person then 2 sites from the brain will be taken: ammon´s horn and brain stem.

Case definition

An animal is considered positive if the fluorescent antibody test (FAT) or the rabies tissue culture infection test or the mouse inoculation test reveal a positive result.

Diagnostic/ analytical methods used

The routine test was the fluorescent antibody test (FAT).
RTCIT (rabies tissue culture infection test) was performed on mouse neuroblastoma cells.
(The MIT (mouse inoculation test) was used to confirm positive findings); MIT is only performed on demand, not for routine confirmation.

Vaccination policy

Voluntary vaccination of pets.

Other preventive measures than vaccination in place

No measures

Control program/ mechanisms

The control program/ strategies in place

Tierseuchengesetz TSG RGBl 1909/ 177 as amended, BGBl I 2002/ 65 IV. Abschnitt, §41, §42; Tierseuchengesetz-Durchführungsverordnung 1909/ 178 as amended: BGBl 1955/ 76

Recent actions taken to control the zoonoses

Nil

Suggestions to the Community for the actions to be taken

Nil

Measures in case of the positive findings or single cases

Tierseuchengesetz TSG RGBl 1909/ 177 as amended, BGBl I 2002/ 65 IV. Abschnitt, §41, §42. If a rabies suspicious pet bites a person, the person is treated.

Notification system in place

According to Tierseuchengesetz TSG RGBl 1909/ 177 as amended, BGBl I 2002/ 65 IV. Abschnitt, §41, §42

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

Nil

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

Nil

Additional information

Nil

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	Unspecified Lyssavirus	European Bat Lyssavirus - unspecified	Classical rabies virus (genotype 1)
Cattle (bovine animals)	B: Clinical Signs / Sampling Unit: Hippocampus and second location	animal	11	0			
Sheep		animal	0	0			
Goats	B: Clinical Signs / Sampling Unit: Hippocampus and second location	animal	1	0			
Pigs		animal	0	0			
Solipeds, domestic	B: Clinical Signs / Sampling Unit: Hippocampus and second location	animal	2	0			
Dogs	B: Clinical Signs / Sampling Unit: Hippocampus and second location e.g. brainstem	animal	63	0			
stray dogs		animal	0	0			
Cats	B: Clinical Signs / Sampling Unit: Hippocampus and second location e.g. brainstem	animal	93	0			
stray cats		animal	0	0			
Bats							
wild	A: Screening of wildlife animals / Sampling Unit: Hippocampus	animal	45	0			
Foxes							
wild	A: Screening of wildlife animals / Sampling Unit: Hippocampus	animal	8190	0			

Raccoon dogs							
wild		animal	0	0			
Raccoons							
wild		animal	0	0			
Wolves							
wild		animal	0	0			
Badgers							
wild	A: Screening of wildlife animals / Sampling Unit: Hippocampus	animal	69	0			
Marten							
wild	A: Screening of wildlife animals / Sampling Unit: Hippocampus	animal	735	0			
Wild boars							
wild		animal	0	0			
Deer							
wild							
roe deer	A: Screening of wildlife animals / Sampling Unit: Hippocampus	animal	31	0			
red deer		animal	0	0			
fallow deer		animal	0	0			
Other mustelides	A: Screening of wildlife animals / Sampling Unit: Hippocampus	animal	24	0			
Other ruminants							
((mice, hamsters, squirrels))	B: Clinical Signs / Sampling Unit: Hippocampus and second location e.g. brainstem	animal	26	0			

2.12. Q-FEVER

2.12.1. General evaluation of the national situation

2.12.2. Coxiella (Q-fever) in animals

A. C. burnetii in animal

Monitoring system

Sampling strategy

There is no official surveillance for Coxiella burnetii in animals. Sampling of cattle, sheep or goats is performed in case of clinical suspicion of Q-fever and after abortion.

Frequency of the sampling

In case of clinical suspicion and abortion.

Type of specimen taken

Blood

Case definition

A case is defined as an animal being tested positive. The animal is the epidemiological unit.

Diagnostic/ analytical methods used

The diagnostiv method is the complement fixation reaction detecting phase 1 and phase 2 antigen.

Vaccination policy

No vaccination.

Other preventive measures than vaccination in place

Nil

Control program/ mechanisms

The control program/ strategies in place

Nil

Recent actions taken to control the zoonoses

Nil

Notification system in place

Q-fever is not notifiable in animals

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

Human cases of Q-fever are not notifiable.

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii
Cattle (bovine animals)	VET	animal	1070	16	16
Sheep	VET	animal	9	0	0
Goats	VET	animal	5	0	0

Footnote

VET: all AGES Institute for Veterinary Disease Control

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1. ENTEROCOCCUS, NON-PATHOGENIC

3.1.1. General evaluation of the national situation

3.1.2. Antimicrobial resistance in Enterococcus, non-pathogenic isolates

A. Antimicrobial resistance of Enterococcus spp., unspecified in animal - All animals - farmed - at slaughterhouse - Monitoring - official sampling - objective sampling

Sampling strategy used in monitoring

Frequency of the sampling

A sampling plan was created according to the federal surveillance program: „Überwachung ausgewählter Zoonosen und Antibiotikaresistenzen 2007 (GZ BMGF-74600/ 0421-IV/ 5/ 2006)". The sampling plan for Enterococcus spp. includes cattle, pigs and poultry.

Type of specimen taken

The intestinal contents of cattle, pigs and poultry are investigated for E. faecalis and E. faecium and tested for their antimicrobial susceptibility. The cecum is removed from one cow or pig, or from ten chickens within a single slaughter batch at each slaughterhouse.

Methods of sampling (description of sampling techniques)

The intestines were cooled down to 4 °C and samples were sent to the Institute of Veterinary Disease Control (IVET) in Graz, where each pathogen was isolated and further characterized. The Institute of Medical Microbiology and Hygiene (IMED) in Graz performed the antimicrobial susceptibility testing for all samples.

Procedures for the selection of isolates for antimicrobial testing

The sampling plan was calculated by experts of the Division for Data, Statistics and Risk Assessment of the AGES based on the expected prevalence of Enterococcus spp. in the different animal species (cattle, pigs, poultry flocks). All isolated strains of Enterococcus spp. were sent to the IMED Graz for antimicrobial susceptibility testing.

Methods used for collecting data

All information concerning the tested animals, sampled slaughterhouses and results of the antimicrobial testing were recorded in a questionnaire. In the laboratory, the data were entered into a database and later analysed in a Microsoft® Excel tables.

Laboratory methodology used for identification of the microbial isolates

The samples are injected into the Citrate Azide Tween Carbonate Agar (CATC-AGAR, Merck Art.Nr. 1.10279) and incubated at 37 °C ± 1°C for 24 h. Then, the medium is left at room temperature for another 24 hrs. Potential colonies are subcultivated on blood agar (Oxoid Nr. CM0055, 5% Sheep blood) for 24 h at 37 ±1 °C which results in the differentiation of E. faecalis and E. faecium through Gram's method, Catalase Test, Arabinose- and Pyruvate-breakdown.

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Enterococcus spp. samples isolated from cattle, pigs and poultry slaughter batches are tested for antimicrobial resistance against gentamicin, streptomycin, vancomycin, ciprofloxacin, erythromycin, nitrofurantoin, avilamycin, ampicillin, chloramphenicol, bacitracin, synercid and tetracyclin.

Breakpoints used in testing

See respective tables

Preventive measures in place

None

Control program/ mechanisms

The control program/ strategies in place

None

Recent actions taken to control the zoonoses

None

Suggestions to the Community for the actions to be taken

None

Measures in case of the positive findings or single cases

None

Notification system in place

None

Results of the investigation

See respective tables

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

Not yet available

Additional information

None

Table Antimicrobial susceptibility testing of E. faecium in Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling (slaugter batch) - quantitative data [Dilution method]

	E. faecium
	Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling (slaugter batch)
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	60

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																			
				<=0.03	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	32	60	0								23	30	6	1									
Streptomycin	128	60	11										3	13	29	4	4		1	1	5		
Amphenicols																							
Chloramphenicol	32	60	0								18	35	4	3									
Fluoroquinolones																							
Ciprofloxacin	4	60	7				1	4	16	20	12	5	1	1									
Glycopeptides (Cyclic peptides, Polypeptides)																							
Bacitracin	64	60	39									4		4	13	18	8	13					
Vancomycin	4	60	4						43	9	4	3				1							
Macrolides																							
Erythromycin	4	60	19					9	8	16	8	1	1			17							
Nitroimidazoles and Nitrofurans																							
Nitrofurantoin	256	60	0									8	5	7	28	12							
Orthosomycins																							
Avilamycin	16	60	1						10	37	11	1		1									
Penicillins																							
Ampicillin	4	60	5				1	13	30	8	3	5											
Streptogramins																							
Quinupristin/ Dalfopristin	1	60	49					4	7	12	28	8	1										
Tetracyclines																							
Tetracyclin	2	60	32					26		2		1	1		21	9							

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

	E. faecium
	Pigs - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	56

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																						
	Break point	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	32	56	0								18	30	8										
Streptomycin	128	56	1											20	33	2					1		
Amphenicols																							
Chloramphenicol	32	56	0								22	33	1										
Fluoroquinolones																							
Ciprofloxacin	4	56	0				4	13	31	4	4												
Glycopeptides (Cyclic peptides, Polypeptides)																							
Bacitracin	64	56	43									4		3	6	35	5	3					
Vancomycin	4	56	0						55	1													
Macrolides																							
Erythromycin	4	56	19					8	3	6	20	16	1		1	1							
Nitroimidazoles and Nitrofurans																							
Nitrofurantoin	256	56	0									3	3	5	44	1							
Orthosomycins																							
Avilamycin	16	56	0						5	43	6	2											
Penicillins																							
Ampicillin	4	56	0				2	7	34	13													
Streptogramins																							
Quinupristin/ Dalfopristin	1	56	48					7	1	11	34	2	1										
Tetracyclines																							
Tetracyclin	2	56	8					47	1						4	4							

Table Antimicrobial susceptibility testing of E. faecium in Cattle (bovine animals) - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling - quantitative data [Dilution method]

	E. faecium Cattle (bovine animals) - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	50

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																			
				<=0.03	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	32	50	0								23	19	7	1									
Streptomycin	128	50	0										9	11	29	1							
Amphenicols																							
Chloramphenicol	32	50	0								17	33											
Fluoroquinolones																							
Ciprofloxacin	4	50	5				1	15	17	6	6	5											
Glycopeptides (Cyclic peptides, Polypeptides)																							
Bacitracin	64	50	27									6	4		13	19	8						
Vancomycin	4	50	4						33	5	8	4											
Macrolides																							
Erythromycin	4	50	5					15	5	12	13	5											
Nitroimidazoles and Nitrofurans																							
Nitrofurantoin	256	50	0									9	10	7	20	4							
Orthosomycins																							
Avilamycin	16	50	0						3	32	13	2											
Penicillins																							
Ampicillin	4	50	0				2	16	20	11	1												
Streptogramins																							
Quinupristin/ Dalfopristin	1	50	37					7	6	12	25												
Tetracyclines																							
Tetracyclin	2	50	1					38	11						1								

Table Antimicrobial susceptibility testing in E. faecium

n = Number of resistant isolates	E. faecium					
	Cattle (bovine animals) - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling		**Pigs - mixed herds - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling**		**Gallus gallus (fowl) - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling**	
Isolates out of a monitoring programme	yes		yes		yes	
Number of isolates available in the laboratory	50		56		60	
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides						
Gentamicin	50	0	56	0	60	0
Streptomycin	50	0	56	1	60	11
Amphenicols						
Chloramphenicol	50	0	56	0	60	0
Fluoroquinolones						
Ciprofloxacin	50	5	56	0	60	7
Fully sensitive	50	40	56	31	60	20
Glycopeptides (Cyclic peptides, Polypeptides)						
Bacitracin	50	27	56	43	60	39
Vancomycin	50	4	56	0	60	4
Macrolides						
Erythromycin	50	5	56	19	60	19
Nitroimidazoles and Nitrofurans						
Nitrofurantoin	50	0	56	0	60	0
Orthosomycins						
Avilamycin	50	0	56	0	60	1
Penicillins						
Ampicillin	50	0	56	0	60	5
Resistant to 1 antimicrobial	50	9	56	23	60	22
Resistant to 2 antimicrobials	50	1	56	1	60	8
Resistant to 3 antimicrobials	50	0	56	1	60	9
Resistant to 4 antimicrobials	50	0	56	0	60	1
Resistant to >4 antimicrobials	50	0	56	0	60	0
Streptogramins						
Quinupristin/ Dalfopristin	50	0	56	3	60	9
Tetracyclines						
Tetracyclin	50	1	56	8	60	32

Table Antimicrobial susceptibility testing in E. faecalis

n = Number of resistant isolates

E. faecalis

	Cattle (bovine animals) - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling		Pigs - mixed herds - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling		Gallus gallus (fowl) - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling	
Isolates out of a monitoring programme	yes		yes		yes	
Number of isolates available in the laboratory	37		44		120	
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides						
Gentamicin	37	0	44	4	120	0
Streptomycin	37	1	44	12	120	30
Amphenicols						
Chloramphenicol	37	1	44	2	120	6
Fluoroquinolones						
Ciprofloxacin	37	0	44	0	120	8
Fully sensitive	37	34	44	11	120	22
Glycopeptides (Cyclic peptides, Polypeptides)						
Bacitracin	37	3	44	13	120	56
Vancomycin	37	0	44	0	120	0
Macrolides						
Erythromycin	37	1	44	18	120	56
Nitroimidazoles and Nitrofurans						
Nitrofurantoin	37	0	44	3	120	3
Orthosomycins						
Avilamycin	37	0	44	1	120	4
Penicillins						
Ampicillin	37	0	44	0	120	0
Resistant to 1 antimicrobial	37	2	44	15	120	48
Resistant to 2 antimicrobials	37	0	44	6	120	24
Resistant to 3 antimicrobials	37	0	44	9	120	20
Resistant to 4 antimicrobials	37	1	44	2	120	6
Resistant to >4 antimicrobials	37	0	44	1	120	0
Streptogramins						
Quinupristin/ Dalfopristin	37	0	44	0	120	0
Tetracyclines						
Tetracyclin	37	3	44	31	120	88

Table Antimicrobial susceptibility testing of E. faecalis in Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling (slaughter batch) - quantitative data [Dilution method]

	E. faecalis
	Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling (slaughter batch)
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	120

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																			
				<=0.03	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	32	120	0								17	69	33	1									
Streptomycin	512	120	30											4	55	27	3	1	2	11	17		
Amphenicols																							
Chloramphenicol	32	120	6								47	65	1	1	5	1							
Fluoroquinolones																							
Ciprofloxacin	4	120	8				3	29	73	6	1		2	6									
Glycopeptides (Cyclic peptides, Polypeptides)																							
Bacitracin	64	120	56									2	1	12	49	11	3	42					
Vancomycin	4	120	0						80	36	4												
Macrolides																							
Erythromycin	4	120	56					32	13	9	10	5	4	4	2	41							
Nitroimidazoles and Nitrofurans																							
Nitrofurantoin	64	120	3									88	22	4	3	2		1					
Orthosomycins																							
Avilamycin	8	120	4						48	61	7		2	1			1						
Penicillins																							
Ampicillin	4	120	0				4	6	102	8													
Streptogramins																							
Quinupristin/ Dalfopristin	32	120	0							1	15	82	21	1									
Tetracyclines																							
Tetracyclin	2	120	88					28	3	1			2	24	36	26							

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

	E. faecalis
	Pigs - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	44

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																						
	Break point	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	32	44	4								10	19	10	1				3			1		
Streptomycin	512	44	12											4	22	5	1		1	4	7		
Amphenicols																							
Chloramphenicol	32	44	2								19	20	2	1	1	1							
Fluoroquinolones																							
Ciprofloxacin	4	44	0				9	18	15	2													
Glycopeptides (Cyclic peptides, Polypeptides)																							
Bacitracin	64	44	13									9	5	1	16	11	2						
Vancomycin	4	44	0						38	5	1												
Macrolides																							
Erythromycin	4	44	18					12	7	6	1	2				16							
Nitroimidazoles and Nitrofurans																							
Nitrofurantoin	64	44	3									21	3	10	7	3							
Orthosomycins																							
Avilamycin	8	44	1						15	24	3	1					1						
Penicillins																							
Ampicillin	4	44	0				5	7	28	3	1												
Streptogramins																							
Quinupristin/ Dalfopristin	32	44	0					4		6	7	20	7										
Tetracyclines																							
Tetracyclin	2	44	31					13							15	16							

Table Antimicrobial susceptibility testing of E. faecalis in Cattle (bovine animals) - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling - quantitative data [Dilution method]

	E. faecalis
	Cattle (bovine animals) - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	37

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																			
				<=0.03	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	32	37	0								6	14	15	2									
Streptomycin	512	37	1										2	1	25	8					1		
Amphenicols																							
Chloramphenicol	32	37	1								25	11	0	0	1								
Fluoroquinolones																							
Ciprofloxacin	4	37	0				8	17	10	1	1												
Glycopeptides (Cyclic peptides, Polypeptides)																							
Bacitracin	64	37	3									9	12	2	11	2	1						
Vancomycin	4	37	0						35	1	1												
Macrolides																							
Erythromycin	4	37	1					29	2	5						1							
Nitroimidazoles and Nitrofurans																							
Nitrofurantoin	64	37	0									13	2	17	5								
Orthosomycins																							
Avilamycin	8	37	0						7	28	2												
Penicillins																							
Ampicillin	4	37	0				2	8	25	2													
Streptogramins																							
Quinupristin/ Dalfopristin	32	37	0					2	4	8	12	9	2										
Tetracyclines																							
Tetracyclin	2	37	3					34								3							

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

Test Method Used

Broth dilution

Standards used for testing

CLSI

Enterococcus, 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										
Tetracyclin	EUCAST			2	0.5	64				
Amphenicols										
Chloramphenicol	EUCAST			32	4	256				
Fluoroquinolones										
Ciprofloxacin	EUCAST			4	0.25	32				
Aminoglycosides										
Streptomycin	EUCAST			512	16	2048				
Gentamicin	EUCAST			32	4	2048				
Macrolides										
Erythromycin	EUCAST			4	0.5	64				
Glycopeptides (Cyclic peptides, Polypeptides)										
Bacitracin	EUCAST			64	8	256				
Vancomycin	EUCAST			4	1	64				
Nitroimidazoles and Nitrofurans										
Nitrofurantoin	EUCAST			64	8	512				
Orthosomycins										
Avilamycin	EUCAST			8	1	128				
Penicillins										
Ampicillin	EUCAST			4	0.25	32				
Streptogramins										
Quinupristin/ Dalfopristin	EUCAST			32	0.5	128				

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

Test Method Used

Broth dilution

Standards used for testing

CLSI

Enterococcus, 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										
Tetracyclin										
Amphenicols										
Chloramphenicol										
Fluoroquinolones										
Ciprofloxacin										
Aminoglycosides										
Streptomycin										
Gentamicin										
Macrolides										
Erythromycin										
Glycopeptides (Cyclic peptides, Polypeptides)										
Bacitracin										
Vancomycin										
Nitroimidazoles and Nitrofurans										
Nitrofurantoin										
Orthosomycins										
Avilamycin										
Penicillins										
Ampicillin										
Streptogramins										
Quinupristin/ Dalfopristin										

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

Test Method Used

Broth dilution

Standards used for testing

CLSI

Enterococcus, 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										
Tetracyclin										
Amphenicols										
Chloramphenicol										
Fluoroquinolones										
Ciprofloxacin										
Aminoglycosides										
Streptomycin										
Gentamicin										
Macrolides										
Erythromycin										
Glycopeptides (Cyclic peptides, Polypeptides)										
Bacitracin										
Vancomycin										
Nitroimidazoles and Nitrofurans										
Nitrofurantoin										
Orthosomycins										
Avilamycin										
Penicillins										
Ampicillin										
Streptogramins										
Quinupristin/ Dalfopristin										

3.2. ESCHERICHIA COLI, NON-PATHOGENIC

3.2.1. General evaluation of the national situation

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

A. Antimicrobial resistance of E. coli in animal - All animals - farmed - at slaughterhouse - Monitoring - official sampling - objective sampling

Sampling strategy used in monitoring

Frequency of the sampling

A sampling plan was created according to the federal surveillance program: „Überwachung ausgewählter Zoonosen und Antibiotikaresistenzen 2007 (GZ BMGF-74600/ 0421-IV/ 5/ 2006)". The sampling plan for E. coli includes cattle, pigs and poultry.

Type of specimen taken

The intestinal contents of cattle, pigs and poultry are investigated for E. coli and tested for their antimicrobial susceptibility. The cecum is removed from one cow or pig or from ten chickens within a single slaughter batch at each slaughterhouse.

Methods of sampling (description of sampling techniques)

The intestines were cooled down to 4 °C and samples were sent to the Institute of Veterinary Disease Control (IVET) in Graz, where each pathogen was isolated and further characterized. The Institute of Medical Microbiology and Hygiene (IMED) in Graz performed the antimicrobial susceptibility testing for all samples.

Procedures for the selection of isolates for antimicrobial testing

The sampling plan was calculated by experts of the Division for Data, Statistics and Risk Assessment of the AGES based on the expected prevalence of E. coli among the different animal species (cattle, pigs, poultry flocks). All isolated strains of E. coli were sent to the IMED Graz for antimicrobial susceptibility testing.

Methods used for collecting data

All information concerning the tested animals, sampled slaughterhouses and results of the antimicrobial testing were recorded in a questionnaire. In the laboratory, the data were entered into a database and later analysed in a Microsoft® Excel tables.

Laboratory methodology used for identification of the microbial isolates

The intestinal contents are streaked onto the MacConkey- Agar plates (Merck Nr. 1.05465) and incubated for 24 hrs at 37±1 °C. The process is repeated for colonies which are suspected for E. coli. These colonies are streaked onto a blood-agar (Oxoid Nr. CM0055, 5% Sheep blood) and incubated for 24 hrs at 37±1 °C. The confirmation of the identification of E. coli is done with an oxidase- (Merck Nr. 1.13300.0001) and spot indol test (Firma Biomedica, Nr. 1069).

Laboratory used for detection for resistance

Antimicrobials included in monitoring

E. coli samples isolated from cattle, pigs and poultry slaughter batches are tested for antimicrobial susceptibility against gentamicin, kanamycin, streptomycin, ceftotaxim, sulfamethoxazol, trimethoprim, ciprofloxacin, nalidixin acid, ampicillin, chloramphenicol and tetracyclin.

Breakpoints used in testing

See respective tables

Preventive measures in place

None

Control program/ mechanisms

The control program/ strategies in place

None

Recent actions taken to control the zoonoses

None

Suggestions to the Community for the actions to be taken

None

Measures in case of the positive findings or single cases

None

Notification system in place

None

Results of the investigation

See respective tables

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

Not yet available

Additional information

None

Table Antimicrobial susceptibility testing of E. coli in Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling (slaughter batch) - quantitative data [Dilution method]

	E. coli
	Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling (slaughter batch)
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	43

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																						
	Break point	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	2	43	0				7	28	8														
Kanamycin	8	43	3						1	24	14	1			3								
Streptomycin	16	43	9							3	21	7	3	2		4	3						
Amphenicols																							
Chloramphenicol	16	43	2								14	25	2		2								
Cephalosporins																							
Cefotaxim	0.25	43	0		38	5																	
Fluoroquinolones																							
Ciprofloxacin	0.03	43	21	22			7	10	3			1											
Penicillins																							
Ampicillin	8	43	8					1	5	12	17				1	7							
Quinolones																							
Nalidixic acid	16	43	21							20	2					9	2	10					
Sulfonamides																							
Sulfamethoxazol	256	43	12									11	10	8	2				1	11			
Tetracyclines																							
Tetracyclin	8	43	6					1	13	23					3	3							
Trimethoprim	2	43	9				14	15	4	1				9									

Footnote

We would like to emphasize that 21 isolates from Ciprofloxacin are found below the value of 0.03 microg/ ml

Table Antimicrobial susceptibility testing of E. coli in mixed herds - Pigs - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling - quantitative data [Dilution method]

	E. coli Pigs - mixed herds - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	46

Antimicrobials:	**Break point**	**N**	**n**	**Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to**																			
				<=0.03	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	2	46	0				8	23	14	1													
Kanamycin	8	46	4							19	22	1	2		2								
Streptomycin	16	46	20							5	16	2	3	5	8	3	3	1					
Amphenicols																							
Chloramphenicol	16	46	2							1	17	26			1	1							
Cephalosporins																							
Cefotaxim	0.25	46	0		46																		
Fluoroquinolones																							
Ciprofloxacin	0.03	46	2	44		1							1										
Penicillins																							
Ampicillin	8	46	1						4	27	14					1							
Quinolones																							
Nalidixic acid	16	46	2							36	8				1			1					
Sulfonamides																							
Sulfamethoxazol	256	46	11									16	12	6	1					11			
Tetracyclines																							
Tetracyclin	8	46	24						12	10				2	10	12							
Trimethoprim	2	46	2				20	21	3					2									

Footnote

We would like to add that 43 isolates are found under the cut-off point for ciprofloxacin

Table Antimicrobial susceptibility testing of E. coli in Cattle (bovine animals) - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling - quantitative data [Dilution method]

	E. coli Cattle (bovine animals) - unspecified - at slaughterhouse - animal sample - faeces - Monitoring - official sampling - objective sampling
Isolates out of a monitoring programme	yes
Number of isolates available in the laboratory	43

Antimicrobials:	Number of resistant isolates (n) and number of isolates with the concentration (u/ ml) or zone (mm) of inhibition equal to																						
	Break point	**N**	**n**	**<=0.03**	**0.06**	**0.12**	**0.25**	**0.5**	**1**	**2**	**4**	**8**	**16**	**32**	**64**	**128**	**256**	**512**	**1024**	**2048**	**>2048**	**lowest**	**highest**
Aminoglycosides																							
Gentamicin	2	43	0				11	27	4	1													
Kanamycin	8	43	0							31	11	1											
Streptomycin	16	43	3							10	25	4	1	1	2								
Amphenicols																							
Chloramphenicol	16	43	0								19	22	2										
Cephalosporins																							
Cefotaxim	0.25	43	0		40	3																	
Fluoroquinolones																							
Ciprofloxacin	0.03	43	0	43																			
Penicillins																							
Ampicillin	8	43	1						4	16	22					1							
Quinolones																							
Nalidixic acid	16	43	0							36	7												
Sulfonamides																							
Sulfamethoxazol	256	43	4									14	17	7	1				4				
Tetracyclines																							
Tetracyclin	8	43	5						14	23	1		1			4							
Trimethoprim	2	43	1				17	21	4					1									

Table Antimicrobial susceptibility testing of E. coli in animals

n = Number of resistant isolates

E. coli

	Gallus gallus (fowl) - unspecified - at slaughterhouse - Monitoring - official sampling - objective sampling		Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Turkeys	
Isolates out of a monitoring programme	no		no		no					
Number of isolates available in the laboratory	43		43		46					
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides										
Gentamicin	43	0	43	0	46	0				
Kanamycin	43	3	43	0	46	4				
Streptomycin	43	9	43	3	46	20				
Amphenicols										
Chloramphenicol	43	2	43	0	46	2				
Cephalosporins										
Cefotaxim	43	0	43	0	46	0				
Fluoroquinolones										
Ciprofloxacin	43	21	43	0	46	2				
Fully sensitive	43	15	43	37	46	18				
Penicillins										
Ampicillin	43	8	43	1	46	1				
Quinolones										
Nalidixic acid	43	21	43	0	46	2				
Resistant to 1 antimicrobial	43	14	43	2	46	8				
Resistant to 2 antimicrobials	43	3	43	2	46	10				
Resistant to 3 antimicrobials	43	2	43	1	46	7				
Resistant to 4 antimicrobials	43	5	43	0	46	2				
Resistant to >4 antimicrobials	43	4	43	1	46	1				
Sulfonamides										
Sulfamethoxazol	43	12	43	4	46	11				
Tetracyclines										
Tetracyclin	43	6	43	2	46	24				
Trimethoprim	43	9	43	1	46	2				

Table Breakpoints used for antimicrobial susceptibility testing in Animals

Test Method Used

Broth dilution

Standards used for testing

CLSI

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 <=
Amphenicols										
Chloramphenicol	EUCAST			16	2	256				
Florfenicol										
Tetracyclines										
Tetracyclin	EUCAST			8	0.5	64				
Fluoroquinolones										
Ciprofloxacin	EUCAST			0.03	0.008	8				
Enrofloxacin										
Quinolones										
Nalidixic acid	EUCAST			16	2	256				
Trimethoprim	EUCAST			2	0.25	16				
Sulfonamides										
Sulfonamide										
Sulfamethoxazol	EUCAST			256	8	1024				
Aminoglycosides										
Streptomycin	EUCAST			16	2	256				
Gentamicin	EUCAST			2	0.25	32				
Neomycin										
Kanamycin	EUCAST			8	0.25	32				
Trimethoprim + sulfonamides										
Cephalosporins										
Cefotaxim	EUCAST			0.25	0.06	128				
3rd generation cephalosporins										
Penicillins										
Ampicillin	EUCAST			8	0.5	64				

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1. HISTAMINE

4.1.1. General evaluation of the national situation

4.1.2. Histamine in foodstuffs

Table Histamine in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units in non- conformity	<= 100 mg/ kg	>100 - <= 200 mg/ kg	>200 - <= 400 mg/ kg	> 400 mg/ kg
Fish									
Fishery products from fish species associated with a high amount of histidine - not enzyme maturated		single		6	1	1	0	0	1
- at retail		single		4	1	0	1	0	1
Fishery products which have undergone enzyme maturation treatment in brine		single		9	3	1	0	0	3
- at retail		single		169	9	4	1	4	5

Footnote

Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

4.2. ENTEROBACTER SAKAZAKII

4.2.1. General evaluation of the national situation

4.2.2. Enterobacter sakazakii in foodstuffs

Table Enterobacter sakazakii in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Enterobacter sakazakii	E. sakazakii
Infant formula						
dried		single		6	0	
- at retail		single		5	0	
- at retail - Monitoring - official sampling - objective sampling (Campaign A-008-07, dried infant formula, from retail)		single		91	7	7

Footnote

Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

4.3. STAPHYLOCOCCAL ENTEROTOXINS

4.3.1. General evaluation of the national situation

4.3.2. Staphylococcal enterotoxins in foodstuffs

Table Staphylococcal enterotoxins in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Cheeses made from cows' milk					
soft and semi-soft					
made from pasteurised milk		single		16	0
made from raw or low heat-treated milk		single		1	0
unspecified					
made from pasteurised milk		single		1	0
Cheeses made from goats' milk					
soft and semi-soft					
made from raw or low heat-treated milk		single		2	0
Cheeses made from sheep's milk					
hard					
made from raw or low heat-treated milk		single		2	0
Dairy products (excluding cheeses)		single		2	0
ice-cream					
- at retail		single		1	0
Milk, cows'					
raw milk for manufacture					

intended for manufacture of raw or low heat-treated products					
- at retail		single		8	0
Fish				2	0
Juice					
fruit juice		single		2	0
Nuts and nut products					
- at retail		single		3	0
Other food		single		5	0
- at retail		single		2	0
Other processed food products and prepared dishes					
- at retail		single		16	0
Meat from pig					
meat products					
cooked, ready-to-eat		single		2	0
Meat from poultry, unspecified					
fresh		single		2	0
Vegetables					
products					
- at retail		single		2	0

Footnote

Source of information: all Official Food Control Laboratories and Regional Food Laboratories in Austria

5. FOODBORNE OUTBREAKS

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

A. Foodborne outbreaks

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

Presently, the individual district (Austria = 98 + Vienna) is responsible for outbreak investigation. Food borne outbreaks affecting more than one district or even more than one province (Austria = 9 provinces) is regulated by the Federal Zoonoses Act (Zoonosengesetz, BGBl. I, 128/ 2005 entered into force on 1. January 2006, see chapter salmonellosis). According to this Zoonoses Act, to survey and combat the zoonoses in Austria, a Federal Commission for Zoonoses (Zoonoses Commission) had been founded to advise the Federal Minister. One main subject of the law is that food-borne outbreaks receive proper epidemiological investigation. It determines measures in case of Austrian-wide food borne outbreaks (concerning several provinces affected by one outbreak) and forces the Heads of the affected Provincial Governments to provide operative units to investigate suspicious or confirmed food borne outbreaks. Data concerning epidemiological criteria, potential implicated food items and the source of the outbreak must be collected and adequate epidemiological and microbiological examinations must be conducted. Short reports according to the data necessary for this Report summarising each outbreak have to be communicated to the Federal Commission for Zoonoses and to the AGES.

Description of the types of outbreaks covered by the reporting:

Since there is no coordinated approach for outbreak investigation in most provinces, the large majority (355 of 438) of food borne outbreaks are called family outbreaks. A coordinated Austrian wide outbreak investigation - not hampered by district limits - will drastically decrease the total number of outbreaks.

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

In 2007, 438 food borne outbreaks (11 verified and 427 possible) have been reported affecting 1,715 people. 279 persons of the diseased were hospitalized and 1 person deceased following the infection. This reveals that the number of outbreaks declined for 28 % compared to 2006 (n = 609). 11 % (12 % in 2006) of the reported outbreaks were acquired abroad. 25 % of all food borne outbreaks acquired in Austria were caused by Campylobacter spp. (n =108), 70 % by Salmonella spp. (n = 305) and 89 % of those by serotype Enteritidis (n = 272). In 2007, the total number of food borne outbreaks (veriefied and possible) decreased by 28 % compared to the last year. So did the number of diseased persons affected by an outbreak (minus 32 %).

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

category combinations

Salmonella and Campylobacter pose the most important agents causing 95 % of all food borne outbreaks. The data quality does presently not allow conclusions on the relevance of different food categories.

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

The data quality does presently not allow conclusions on the relevance of different food categories.

Evaluation of the severity and clinical picture of the human cases

Neither hospitalization nor lethality is presently ascertained in a valid way: Nevertheless, 16.3 % of patients affected by the reported food borne outbreaks are reported as hospitalized (19.5 % in 2006) and 1 case as lethal (3 cases lethal in 2006).

Descriptions of single outbreaks of special interest

P. Much, J. Pichler, C. Lehner, H. Wildt, C. Kornschober, F. Allerberger.
An Austrian-wide Salmonella Enteritidis PT 1 outbreak in 2007.
Poster at KIT 2007, Innsbruck/ Austria.

Control measures or other actions taken to improve the situation

Improvement due to the implementation of the Federal Zoonoses Act.

Suggestions to the community for the actions to be taken

Nil

Additional information

Nil