ZOONOSES MONITORING

HUNGARY

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: **Hungary**
Reporting Year: **2007**

Institutions and laboratories involved in reporting and monitoring:

Laboratory name	Description	Contribution
Central Agricultural Office		Responsible authority for zoonoses data collection and reporting

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 Hungary 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.

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

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:

Data on susceptible animal populations were taken from official publications of the Hungarian Central Statistical Office unless it is noted that from the Central Agricultural Office who collected data from the registrations of the Directorate of Food Chain Safety and Animal Health of the Agricultural Offices of the 19 counties of Hungary.

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

Most of the population data refer to the actual population as of the 1st of December 2007.

National evaluation of the numbers of susceptible population and trends in these figures:

According to the data of the Hungarian Central Statistical Office, the decreasing tendency in most of the animal populations continued.
On the 1st of December the number of cattle was 3% greater than one year before.
Total pig population was 3.86 million in December; it decreased by 127 thousand over the last year. There was a 260 thousand decrease compared to the survey of August 2007. The number of breeding sows decreased by 30 thousand over the last 12 months; the stock amounted to 260 thousand. There has been a 18 thousand decrease since August 2007.
Number of sheep decreased by 67 thousand over the last year. The number of ewes decreased by 49 thousand compared to 1st of December, 2006 reaching 981 thousand.
Number of horses was 57 thousand, 3 thousand fewer than 1 year before.
Gallinaceous bird stock was below 30 million (29877000); 426 thousand fewer than one year ago.
The number of geese was 1.82 million (decreased by 888 thousand over the last year), while that of ducks was 2.23 million (349 thousand fewer than in December 2006) and the number of turkeys amounted to 4.4 million (increased by 282 thousand over the last 12 months).

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)	dairy cows and heifers (1)					485685			
	in total (2)					693993			
Ducks	in total (3)					2230000			
Gallus gallus (fowl)	laying hens (4)					12639000			
	in total (5)					29877000			
Geese	in total (6)					1820000			
Goats	in total (7)					31630			
Pigs	in total (8)					3860000			
Sheep	milk ewes (9)					1106362			
	animals under 1 year (lambs) (10)					33084			
	in total (11)					1231000		7343	
Solipeds, domestic	horses - in total (12)					57000			
Turkeys	in total (13)					4369000			
Wild boars	farmed - in total (14)					14131		101	

(1): Source of information: Central Agricultural Office Animal Health and Animal Welfare Directorate
(2): Source of information: Central Agricultural Office Animal Health and Animal Welfare Directorate
(3): Source of information: Hungarian Central Statistical Office
(4): Source of information: Hungarian Central Statistical Office
(5): Source of information: Hungarian Central Statistical Office
(6): Source of information: Hungarian Central Statistical Office
(7): Source of information: Central Agricultural Office Animal Health and Animal Welfare Directorate
(8): Source of information: Hungarian Central Statistical Office
(9): Source of information: Central Agricultural Office Animal Health and Animal Welfare Directorate
(10): Source of information: Central Agricultural Office Animal Health and Animal Welfare Directorate
(11): Source of information:
Number of animals: Hungarian Central Statistical Office
Number of holdings: Central Agricultural Office Animal Health and Animal Welfare Directorate
(12): Source of information: Hungarian Central Statistical Office
(13): Source of information: Hungarian Central Statistical Office
(14): Source of information: Central Agricultural Office Animal Health and Animal Welfare Directorate

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

In 1992 the Veterinary Science Committee of the Hungarian Academy of Sciences has established its Salmonella Subcommittee with the main aim to support the work of the Hungarian Ministry of Agriculture and Rural Development in the control of Salmonella with regards to poultry flocks.
This subcommittee has formed a working group with EU experts to prepare the Integrated Quality Chain System for Salmonella Control in the Hungarian Poultry Sector (Edel-Wray-Nagy et al, 1995). This has been issued by the Ministry for use in the poultry sector and distributed to the County Animal Health and Food Control Stations in 1995. In further years the Salmonella Subcommittee has arranged several courses and lectures to distribute the booklet for wider use. The Basic Document of this Guideline contained the adaptation of Council directive 92/ 117/ EEC. The Guidelines contained general and specific instructions for hatcheries, breeding flocks, broilers, layers, egg packaging plants, slaughterhouses and feedmills. A special chapter was devoted to disinfection and cleaning.
Based on the above Guidelines several large Hungarian poultry farming systems (Bábolna, Bóly, Nádudvar) have built up and started their Salmonella Reduction Programs between 1996 and 2002. Besides, the Salmonella subcommittee has agreed with the Ministry of Agriculture and Rural Development to review the situation and to propose a Hungarian Salmonella Reduction Plan for Hungary, which was published by Nagy et al. in 1997.
Directive 92/ 117/ EEC and the basics of the above mentioned Guidelines served the basis for the first ministerial decree [49/ 2002. (V.24) FVM] on the control of salmonellosis in poultry flocks, which referred to Salmonella Enteritidis and S. Typhimurium in Gallus gallus. The amendment to this Directive [97/ 2003. (VIII.19) FVM] made the application of the Order compulsory for breeding flocks and hatcheries, and continued to define the above 2 Salmonella serovars to be regarded as Salmonella for the purposes of that decree. The amendment also made the vaccination of table egg producing laying flocks compulsory.
After the accession the EC regulations became directly applicable in Hungary as well. In 2005 Hungary joined the Community baseline study on the prevalence of salmonella in laying flocks of Gallus gallus and in 2006 the Community baseline survey on the prevalence of Salmonella spp. in broiler flocks of Gallus gallus.

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

Preparations for the introduction of risk assessment in the control of salmonellosis are being made in the framework of the MedVetNet, (EU-FP6 Network of Excellence), through the Hungarian partner institute (VMRI). The general understanding between public health-, veterinary- and food safety officials is that the main source of S. Enteritidis infections in humans could be the S. Enteritidis infection of table egg producing flocks (see Hungarian report on layers), which most likely has its vertical origin in the breeding flocks (see Hungarian report on breeders). Earlier comparative investigations detected essentially the same PT in human as in animal and food isolates (Gadó et al, 1998). S. Typhimurium is much less frequently isolated from breeders than from layers. Phage type DT104 has been detected as an emerging type from 1991 in both human and animal (food) isolates

(Szmollény, et al., 2000, Pászti et al, 2001). Based on studies of the Hungarian National Research and Development Plan (NKFP 4/ 040/ 2001) it can be stated that the majority of isolates of S. Typhimurium in porcine, in poultry as well as in humans belong to the DT104 phage type and are essentially representing one main multiresistant clone with characteristic integron pattern (Gadó et al. 2003, Nógrády et al, 2003).
With regard to other serovars, the increase of S. Infantis in several animal species, especially in broiler flocks (above 80 % of the isolated strains) has to be mentioned (Kostyák 2001). This is also reflected in an increase of S. Infantis in human strains (in 2003 the 2nd most frequent human serovar with 7,5%), (Anon 2004.) which is a matter of increasing concern.

Recent actions taken to control the zoonoses

In 2007, control of Salmonella (S. Enteritidis and S. Typhimurium) was compulsory in breeding flocks of Gallus gallus as well as in hatcheries.
Laying flocks are vaccinated on a compulsory basis.

2.1.2. Salmonellosis in humans

A. Salmonellosis in humans

Case definition

Notification system in place

History of the disease and/ or infection in the country

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

Relevance as zoonotic disease

2.1.3. Salmonella in foodstuffs

A. Salmonella spp. in broiler meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

The sampling strategy in the slaughterhouses is based on the previous years' data on production volume. The monitoring plan prepared by the CAO Food and Feed Safety Directorate determines the number of samples/ county/ month. The monitoring samples are thrown by the regional veterinary authority and are examined in the official control laboratories belonging to the Central Agricultural Office (CAO). It is a permanent monitoring scheme, data are reported by the official laboratories to CAO and the Ministry of Agriculture and Rural Development in the frame of an annual laboratory report. All the Salmonella strains isolated are serotyped by the NRL Salmonella.

At meat processing plant

The sampling strategy in processing plants is randomised based on the previous years' data on production volume. The samles are thrown by the veterinary authority and are examined in the official food control laboratory.It is a permanent monitoring scheme, data are reported by the official laboratories to the Ministry of Agriculture and Rural Development in the frame of an annual laboratory report.

At retail

Retail is also sampled by the authority on a regular basis. The total number of samples is determenid in the annual monitoring plan. About 60 % of the official control samples in a product group are taken at retail.

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Type of specimen taken

At slaughterhouse and cutting plant

Fresh meat

At meat processing plant

Other: minced meat, meat prep., meat products

At retail

Other: minced meat, meat prep., meat products

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

At least 500 grams of meat is sent to the laboratory. The test portion is 25 grams.

At meat processing plant

Batch sampling with 5 subsamples. Test portion is 5 x 10 or 25 grams according to Regulation 2073/ 2005/ EC.

Definition of positive finding

At slaughterhouse and cutting plant

a sample or a batch is positive if salmonella was isolated

At meat processing plant

a sample or a batch is positive if salmonella was isolated

At retail

a sample or a batch is positive if salmonella was isolated

Diagnostic/ analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

Preventive measures in place

According to 2073/ 2005/ EC Reg.

Measures in case of the positive findings or single cases

According to Reg.2073/ 2005/ EC.

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

Based on the monitoring results, salmonella prevalence is high in broiler meat in Hungary. The dominance of Salmonella Infantis strains is well-known in the past years. 90 % of the isolated strains are belonging to this serovar now.
From 1995, the rate of Salmonella Infantis/ Enteritidis is showing a continuous increase for Infantis (1% to 90 %), and a decreasing trend for S. Enteritidis (from 60 % to 5%).
The marked increase of Salmonella Infantis serovar in broiler meat was not caused a significant increase in human Salmonella Infantis incidence. The dominating serovar in human infections is continuously S. Enteritidis wich has been responsible for 70-80 % of the human infections for many years.

B. Salmonella spp. in pig meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

The sampling strategy in the slaughterhouses is based on the previous years' data on production volume. The monitoring plan prepared by the CAO Food and Feed Safety Directorate determines the number of samples/ county/ month. The monitoring samples are thrown by the regional veterinary authority and are examined in the official control laboratories belonging to the Central Agricultural Office (CAO). It is a permanent monitoring scheme, data are reported by the official laboratories to CAO and the Ministry of Agricilture and Regional Development in the frame of an annual laboratory report. All the Salmonella strains isolated are serotyped by the NRL Salmonella.

At meat processing plant

The sampling strategy in processing plants is randomised based on the previous years' data on production volume. The samles are thrown by the veterinary authority and are examined in the official food control laboratory.It is a permanent monitoring scheme, data are reported by the official laboratories to the Ministry of Agricilture and Regional Development in the frame of an annual laboratory report.

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

Type of specimen taken

At slaughterhouse and cutting plant

Fresh meat

At meat processing plant

Surface of carcass

Diagnostic/ analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: NMKL No 71:1999

C. Salmonella spp. in bovine meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

Food business operators perform continuous sampling system determined in their HACCP plans, and nearby there is an official control system of the competent authorities with a randomised sampling as well. The data of self control processes are checked in the frame of official control of course, but are not collected to a database, therefore these are not involved in this report. The test results of samples examined by competent authorities in their own laboratories are reported, but the data collection system do not allow to report the data separately for te different stages of food chain (slaughterhouses, processing plants, retail). Based on the structure of the EU zoonosis report, the data collection system will be resturctured this year. This year all the data on fresh meat are reported in the table of slaughterhouses.

At meat processing plant

The sampling strategy is randomised and continuous, performed by the competent authorities. Food producers operate their own continuous sampling system determined in their HACCP plans as well, with the same remarks as in the case of slaughterhouses.

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

At meat processing plant

Sampling distributed evenly throughout the year

At retail

Sampling distributed evenly throughout the year

Type of specimen taken

At slaughterhouse and cutting plant

Fresh meat

At meat processing plant

Surface of carcass

At retail

Other: fresh meat and all kinds of meat products

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

500 garms of sample is sent to the laboratory, the test portion is 25 grams

At meat processing plant

Batch sampling with 5 subsamples. Test portion is 10 or 25 grams determined by 2073/ 2005/ EC Regulation.

Diagnostic/ analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 6579:2002

At meat processing plant

Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

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

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Anatum	S. Thompson	S. Give	S. Infantis	S. Mbandaka	S. Saintpaul	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Blockley	S. Kottbus	S. Senftenberg	S. Bredeney	S. Hadar	S. Virchow
Meat from broilers (Gallus gallus)																				
fresh																				
- at slaughterhouse	monitori	single	25 grams	232	101	0	0	0	89	1	2	6	2		0	0	1	0	0	
minced meat intended to be eaten cooked																				
- at retail	monitori	batch	5x10 gramms	258	35	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0
meat preparation intended to be eaten cooked																				
- at retail	monitori	batch	5x10 gramms	346	122	0	0	0	112	0	1	1	0	4	0	0	0	0	0	0
meat products raw but intended to be eaten cooked																				
- at retail	monitori	batch	5x10 gramms	193	4	0	0	0	2	0	0	0	0	0	0	1	0	0	0	1

cooked, ready-to-eat																				
- at retail	monitori		5x25 gramms	229	0															
Meat from turkey																				
fresh																				
- at slaughterhouse	monitori	single	25 gramms	166	19	0	0	0	10	0	2	0	1	1	0	0	0	4	1	0
minced meat																				
intended to be eaten cooked																				
- at retail	monitori		5x10 gramms	26	3	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0
Meat from duck																				
- at slaughterhouse	monitori	single	25 gramms	72	23	1	1		2		4	1	11		1	2				
Meat from geese																				
- at slaughterhouse	monitori	single	25 gramms	47	3			1	1				1							
Meat from guinea fowl	official control	single	25 gramms	2	0															
Meat from wild game - birds	official control	single	25 gramms	1	1							1								
Meat from poultry, unspecified																				
meat products																				
- Monitoring	monitori	batch	5x25 gramms	476	1				1											
Other processed food products and prepared dishes																				
unspecified																				
non-ready-to-eat foods																				
frozen																				
- Monitoring	monitori	batch	5x25 gramms	200	12	0	0	0	6	0	0	1	1	0	0	0	0	2	1	1

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

	S. Paratyphi B var. Java	S. Schwarzengrund
Meat from broilers (Gallus gallus)		
fresh		
- at slaughterhouse		
minced meat		
intended to be eaten		
cooked		0
- at retail	0	
meat preparation		
intended to be eaten		
cooked		3
- at retail	1	
meat products		
raw but intended to be eaten cooked		0
- at retail	0	
cooked, ready-to-eat		
- at retail		
Meat from turkey		
fresh		0
- at slaughterhouse	0	
minced meat		

intended to be eaten cooked		
- at retail	0	0
Meat from duck		
- at slaughterhouse		
Meat from geese		
- at slaughterhouse		
Meat from guinea fowl		
Meat from wild game - birds		
Meat from poultry, unspecified		
meat products		
- Monitoring		
Other processed food products and prepared dishes		
unspecified		
non-ready-to-eat foods		
frozen		
- Monitoring	0	

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	monitoring	single	25 ml	203	0			
pasteurised milk								
- at retail	monitoring	batch	5x 25 ml	9	0			
Cheeses made from cows' milk								
- at retail	monitoring	batch	5x 25 gramms	78	0			
soft and semi-soft								
made from raw or low heat-treated milk								
- at retail	monitoring	batch	5x 25 gramms	11	0			
Cheeses made from sheep's milk								
- at retail	monitoring	batch	5x25 gramms	2	0			
Dairy products (excluding cheeses)								
milk powder and whey powder								
- at processing plant	monitoring							
- at retail		batch	5x25 gramms	80	0			
ice-cream								
- at retail	monitoring	batch	5x25 gramms	328	0			
dairy desserts								
chilled								
- Monitoring	monitoring	batch	5x25 gramms	181	0			
fermented dairy products								
- Monitoring	monitoring	batch	5x25 gramms	41	0			

Table Salmonella in red meat and products thereof

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified	S. Derby	S. Choleraesuis	S. Infantis	S. Brandenburg	S. Heidelberg	S. Livingstone
Meat from pig														
fresh														
- at slaughterhouse	monitoring	single	25 gramms	178	6	0	2		1	3				
minced meat														
intended to be eaten cooked														
- at retail	monitoring	batch	5x10gramms	387	5		2				1		2	
meat preparation														
intended to be eaten raw														
- at retail	monitoring	batch	5x10gramms	240	8		4	2	2					
meat products														
raw but intended to be eaten cooked														
- at retail	monitoring	single	25 gramms	147	22	0	9	6	5		2			
cooked, ready-to-eat														
- at retail	monitoring	batch	5x25 gramms	415	1		1							

raw and intended to be eaten raw (sausages and salami)	official control		25 gramms or 5x25 gramms	2610	101	1	42	19	20	1	18			
Meat from bovine animals														
fresh - at slaughterhouse	monitoring	single	25 gramms	144	1		1							
minced meat **intended to be eaten cooked** - at retail	monitoring	batch	5x10 gramms	97	1									1
meat products **raw but intended to be eaten cooked** - at retail	monitoring	single	25 gramms	298	9	1	3		1		2	2		
Meat from sheep														
fresh - at slaughterhouse	official control	single	25 gramms	2	0									
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos)	official control	single	25 gramms	16	1	1								
Meat from wild game - land mammals														
fresh - Monitoring	monitoring	single	25 gramms	43	1	1								
Meat from wild boar														
fresh **frozen** - Monitoring	monitororing	single	25 gramms	74	2					1	1			

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. Litchfield	S. Paratyphi B var. Java	S. Hadar	S. Montevideo	S. Bareilly
Eggs													
table eggs													
- at retail	monitoring	batch	5 x 25 gramms	158	0								
shell													
- Monitoring	monitoring	batch	shell of 10 eggs	73	2	2							
Egg products													
dried													
- Monitoring	monitoring	batch	5x25 gramms	48	0								
liquid													
- Monitoring	monitoring	batch	5x 25 ml	74	2	2							
Fishery products, unspecified													
- at retail	monitoring	batch	5x25 gramms	72	2	0	0	0	2				
ready-to-eat													
- Monitoring	monitoring	batch	5x25 gramms	121	2	0	0			1	1		

Molluscan shellfish														
cooked														
- at retail	monitoring	batch	5x 25 gramms	53	0									
Seeds, sprouted														
ready-to-eat	monitoring	batch	5x25 gramms	101	0									
Fruits and vegetables														
precut	monitoring	batch	5x25 gramms	161	0									
Bakery products														
cakes														
- Monitoring	monitoring	batch	5x25 gramms	304	0									
Coconut														
- Monitoring	monitoring	batch	5x25 gramms	113	0									
Chocolate														
- Monitoring	monitoring	batch	5x25 gramms	304	0									
Cocoa and cocoa preparations, coffee and tea														
- Monitoring	monitoring	batch	5x25 gramms	83	0									
Other products of animal origin														
gelatin and collagen														
- Monitoring	monitoring	batch	5x25 gramms	42	0									
Spices and herbs														
dried														
- Monitoring	monitoring	batch	5x25 gramms	267	1									1
Ready-to-eat salads														
- Monitoring	monitoring	batch	5x25 gramms	503	0									
Other processed food products and prepared dishes														

noodles	monitoring	batch	5x25 grammes	284	4	3	1					
- Monitoring												
unspecified												
non-ready-to-eat foods												
chilled												
- Monitoring	monitoring	batch	5x25 grammes	233	2			2				
ready-to-eat foods												
- Monitoring	monitoring	batch	5x25 grammes	362	0							
Cereals and meals												
- Monitoring	monitoring		5x25 grammes	357	1							1

2.1.4. Salmonella in animals

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

Monitoring system

Frequency of the sampling

Broiler flocks: Rearing period

Sampling distributed evenly throughout the year

Broiler flocks: Before slaughter at farm

maximum 3 weeks weeks prior to slaughter

Type of specimen taken

Broiler flocks: Rearing period

Socks/ boot swabs

Case definition

Broiler flocks: Rearing period

A flock is considered to be positive if Salmonella was isolated of any of the samples.

Diagnostic/ analytical methods used

Broiler flocks: Rearing period

With following modifications: ISO 6579 with the modifications of CRL Salmonella

Vaccination policy

Broiler flocks

Flocks can be vaccinated on a voluntary basis.

Control program/ mechanisms

The control program/ strategies in place

Broiler flocks

Taking part in the control program is voluntary and concentrated only on Salmonella Enteritidis and Typhimurium. Many slaughterhouses require salmonella testing from the producers with S. Enteritidis and Typhimurium negative status.

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

Based on the results of baseline study, salmonella prevalence is high in broiler flocks in Hungary. The dominance of Salmonella Infantis strains is well-known in the past years. 90 % of the isolated strains are belongig to this serovar now as in broiler flocks and in meat thereof. From 1995, the rate of Salmonella Infantis/ Enteritidis is showing a continuous increase for Infantis (1% to 90 %), and a decreasing trend for S. Enteritidis (from 60 % to 5%).
The possibles reasons for this marked change is intensively investigated by the Veterinary Medical Research Institute of the Hungarian Academy of Sciences and National Center for Epidemiolgy. As the Salmonella control program concentrated only for Salmonella Enteritidis and Typhimurium, and the vaccines widely used are also protect from these two serovars, it can be suggested that the dominance of S. Infantis might be - partly -the result of such a selection pressure. The antimicrobioal resistance of S. Infantis strains could also influence this change.

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

The marked increase of Salmonella Infantis serovar in broiler and broiler meat was not caused a significant increase in human Salmonella Infantis incidence. The dominating serovar in human infections is continuously S. Enteritidis wich has been responsible for 70-80 % of the human infections for many years.

Table Salmonella in breeding flocks of Gallus gallus

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	S. Hadar	S. Infantis	S. Virchow	Salmonella spp., unspecified	S. Bredeney	S. Mbandaka
Gallus gallus (fowl)												
parent breeding flocks, unspecified												
day-old chicks	CAO AHAWD	flock	84	1	1	0	0	0	0	0		
during production period (1)	CAO AHAWD	flock	2164	26	9	3	0	8	0	0	1	5

(1) : data of rearing period and data of production period are added

Footnote

CAO AHAWD: Central Agricultural Office Animal Health and Animal Welfare Directorate

Table Salmonella in other poultry

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Gallus gallus (fowl)							
unspecified	CAO VDD	single	68040	2303	150	62	2091
Ducks	CAO VDD	single	117	0			
Geese	CAO VDD	single	229	16	0	0	16
Turkeys	CAO VDD	single	1242	44	0	2	42

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostic Directorate (CAO VDD)

Table Salmonella in other birds

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Pigeons	CAO VDD	animal	13	0			
Guinea fowl	CAO VDD	animal	56	0			
Pheasants	CAO VDD	animal	117	0			
Partridges	CAO VDD	animal	4	0			

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostic Directorate (CAO VDD)

Table Salmonella in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Salmonella spp.	S. Enteritidis	S. Typhimurium	Salmonella spp., unspecified
Cattle (bovine animals)	CAO VDD	animal	2	0			
Sheep	CAO VDD	animal	4	0			

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostc Directorate (CAO VDD)

2.1.5. Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella spp.	S. Typhimurium	S. Enteritidis	Salmonella spp., unspecified	S. Agona	S. Anatum	S. Alachua	S. Bredeney	S. Infantis	S. Kiambu	S. Jerusalem	S. Livingstone	S. Montevideo	S. Mbandaka	S. Schleissheim	S. Tennessee
All feedingstuffs																				
- Monitoring - official sampling	monitor	5x25	grammes	1039	20	0	0													

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 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=	7		3		39		4			
Number of isolates phagetyped	N=	7	0	3	0	38	0	8	0	0	0
Number of isolates per type											
PT 21						4		1			
PT RDNC						1					
6a						1		2			
6						7					
4a						1					
4						13		1			
8		7		3		11		4			
7											

Footnote

(*) M : Monitoring, C : Clinical
The Colindale scheme was used

Table Salmonella Typhimurium phagetypes in animals

Phagetype		Cattle (bovine animals)		Pigs		Gallus gallus (fowl)		Other poultry	
Sources of isolates (*)		M	C	M	C	M	C	M	C
Number of isolates in the laboratory	N=		5		16		0		18
Number of isolates phagetyped	N=	0	1	0	4	0	0	0	14
Number of isolates per type									
DT 8									5
DT 46									3
DT 104			1		1				2
U 302									3
Not typable					3				
RDNC									1

Footnote

(*) M : Monitoring, C : Clinical

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=	5		25		2		19			
Number of isolates phagetyped	N=	1	0	25	0	2	0	12	0	0	0
Number of isolates per type											
DT 8						1		5			
DT 104		1		5		1					
DT 120				1							
DT 208				3							
U 302				3				1			
Not typable				7							
U 310				1							
RDNC				5				6			

Footnote

(*) M : Monitoring, C : Clinical

2.1.7. Antimicrobial resistance in Salmonella isolates

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

A. Antimicrobial resistance in Salmonella in poultry

Sampling strategy used in monitoring

Methods used for collecting data

Testing and data collection was the task of the NRL Salmonella.

Laboratory methodology used for identification of the microbial isolates

ISO 6579 - isolation, biochemical and serological confirmation. ISO 6579 - isolation, biochemical and serological confirmation.

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Disc diffusion method according to NCCLS is used. The inhibitive zone diameters are measured by a computerised system.

Results of the investigation

B. Antimicrobial resistance in Salmonella in foodstuff derived from poultry

Sampling strategy used in monitoring

Frequency of the sampling

Frequency: as described previously in prevalence tables. As only Salmonella Enteritidis and Typhimurium strains are involved in the resistence monitoring program in foodstuff, and the number of isolates belonging to these serovars is very limited because of the 90% dominance of Salmonella Infantis in broiler chicken, only a limited number of isolates are available for the tests.

Type of specimen taken

Fresh meat at slaughterhouses, minced meat, meat preparations, meat products at processing level and at the market. There is no direct sampling program for antimicrobial resistance, it is connected to prevalence monitoring.

Methods of sampling (description of sampling techniques)

As described earlier.

Procedures for the selection of isolates for antimicrobial testing

S. Enteritidis and Salmonella Infantis strains are selected. All the S. Enteritidis strains of broiler origin were tested. As S. Infantis shows a characteristic dominance in Hungary, the number of the strains available is just 2000. Therefore only 10 % of the isolates were selected for testing.

Methods used for collecting data

All the strains isolated from food are serotyped in the NRL Salmonella. Antimicrobial resistence testing is performed in the NRL.

Laboratory methodology used for identification of the microbial isolates

ISO 6579 - isolation, biochemical and serological confirmation.

Laboratory used for detection for resistance

Antimicrobials included in monitoring

Disc diffusion method according to NCCLS is used. The inhibitive zone diameters are measured by a computerised system.

Preventive measures in place

There are no specific preventive measures in place.

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

Because of the very low number of Salmonella Enteritidis isolates the information available is limited. There is no significant change in level of resistance in the past four years.

Table Antimicrobial susceptibility testing in S. Enteritidis

n = Number of resistant isolates	S. Enteritidis									
	Meat from pig		**Meat from other poultry species**		**Meat from broilers (Gallus gallus)**		**Meat from bovine animals**		**All foodstuffs - Monitoring**	
Isolates out of a monitoring programme	yes		yes		yes		yes		yes	
Number of isolates available in the laboratory	2		3		51		2		16	
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides										
Gentamicin	2	0	3	0	51	0	2	0	16	0
Kanamycin	2	0	3	0	51	0	2	0	16	0
Neomycin	2	0	3	0	51	0	2	0	16	0
Streptomycin	2	0	3	0	51	0	2	0	16	0
Amphenicols										
Chloramphenicol	2	1	3	0	51	0	2	0	16	0
Florfenicol	0		0		0		0		0	
Cephalosporins										
3rd generation cephalosporins	2	0	3	0	51	3	2	0	16	1
Ceftiofur	2	0	3	0	51	0	2	0	16	0
Fluoroquinolones										
Ciprofloxacin	2	1	3	3	51	35	2	2	16	13
Enrofloxacin	2	0	3	0	51	0	2	0	16	0
Fully sensitive	2	0	3	0	51	0	2	0	16	0
Penicillins										
Amoxicillin / Clavulanic acid	2	0	3	0	51	0	2	0	16	0
Ampicillin	2	0	3	0	51	1	2	0	16	0
Quinolones										
Nalidixic acid	2	0	3	0	51	8	2	1	16	3
Resistant to 1 antimicrobial	2	1	3	3	51	25	2	1	16	9
Resistant to 2 antimicrobials	2	1	3	0	51	2	2	1	16	3
Resistant to 3 antimicrobials	2	0	3	0	51	2	2	0	16	1
Resistant to 4 antimicrobials	2	0	3	0	51	2	2	0	16	0
Resistant to >4 antimicrobials	2	0	3	0	51	0	2	0	16	0
Tetracyclines										
Tetracyclin	2	1	3	0	51	0	2	0	16	1
Trimethoprim	2	0	3	0	51	0	2	0	16	0
Trimethoprim + sulfonamides	2	0	3	0	51	0	2	0	16	0

Footnote

All foodstuff means every other type of foodstuffs (except meat) the differences between the resistance for enro floxacin and ciprofloxacin is comimg from the different breakpoints (enrofloxacin by NCCLS, ciprofloxacin by EFSA)

Table Antimicrobial susceptibility testing in S. Typhimurium

n = Number of resistant isolates	S. Typhimurium									
	Meat from pig		**Meat from other poultry species**		**Meat from broilers (Gallus gallus)**		**Meat from bovine animals**		**All foodstuffs - Monitoring**	
Isolates out of a monitoring programme	yes		yes		yes		yes		yes	
Number of isolates available in the laboratory	55		60		7		7		6	
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides										
Gentamicin	55	6	60	0	7	0	7	0	6	0
Kanamycin	55	5	60	0	7	0	7	0	6	0
Neomycin	55	3	60	0	7	0	7	0	6	0
Streptomycin	55	49	60	21	7	2	7	5	6	4
Amphenicols										
Chloramphenicol	55	45	60	11	7	1	7	5	6	3
Florfenicol	0		0		0		0		0	
Cephalosporins										
3rd generation cephalosporins	55	7	60	5	7	0	7	0	6	2
Ceftiofur	55	0	60	0	7	0	7	0	6	0
Fluoroquinolones										
Ciprofloxacin	55	29	60	32	7	6	7	4	6	4
Enrofloxacin	55	0	60	0	7	0	7	0	6	0
Fully sensitive	55	1	60	18	7	0	7	1	6	0
Penicillins										
Amoxicillin / Clavulanic acid	55	10	60	1	7	1	7	2	6	1
Ampicillin	55	50	60	3	7	4	7	6	6	4
Quinolones										
Nalidixic acid	55	50	60	4	7	2	7	1	6	0
Resistant to 1 antimicrobial	55	1	60	22	7	2	7	0	6	2
Resistant to 2 antimicrobials	55	1	60	2	7	2	7	1	6	0
Resistant to 3 antimicrobials	55	6	60	4	7	2	7	0	6	0
Resistant to 4 antimicrobials	55	4	60	12	7	0	7	0	6	1
Resistant to >4 antimicrobials	55	42	60	2	7	1	7	5	6	3
Tetracyclines										
Tetracyclin	55	50	60	14	7	2	7	5	6	4
Trimethoprim	55	3	60	0	7	1	7	1	6	1
Trimethoprim + sulfonamides	55	3	60	3	7	2	7	1	6	1

Table Breakpoints for antibiotic resistance testing in Food

Test Method Used

Disc diffusion

Agar dilution

Standards used for testing

NCCLS

EFSA_2007

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	EFSA			16	2	256	30	18		16
Florfenicol										
Tetracyclines										
Tetracyclin	EFSA			8	0.5	256	30			
Fluoroquinolones										
Ciprofloxacin	EFSA			0.06	0.06	4	5			29
Enrofloxacin	NCCLS	1	2	4			5	21		15
Quinolones										
Nalidixic acid	EFSA			16	0.25	512	30			19
Trimethoprim	EFSA			2	0.12	4				
Sulfonamides										
Sulfonamide										
Aminoglycosides										
Streptomycin	EFSA	8		32	2	512	10	15		12
Gentamicin	EFSA			2	0.25	64	10			16
Neomycin	NCCLS	16		64			30	17		12
Kanamycin	NCCLS	16		64			30	18		13
Trimethoprim + sulfonamides	NCCLS							10		16
Cephalosporins										
Ceftiofur	NCCLS	4		8			30	18		14
3rd generation cephalosporins	EFSA			0.5	0.12	8	30			26
Penicillins										
Ampicillin	EFSA			4	0.5	64	10			21

2.2. CAMPYLOBACTERIOSIS

2.2.1. General evaluation of the national situation

A. Thermophilic Campylobacter general evaluation

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

The main source of human campylobacter infections in Hungary is raw meat especially poultry meat. The seasonal prevalence of campylobacters in raw chicken meat shows a strong correlation with the seasonal distribution of human cases. The prevalence in raw milk is low, but it can mean a possible source in some cases. As typing of Campylobacter of food origin is not performed at a large scale, PFGE and other molecular based methods are used mainly for outbreak invetigations and in small scale regional studies, the identification of sources should be improved in the future.

Recent actions taken to control the zoonoses

Actions specifically used for the control of campylobacters are not implemented in Hungary. Hygienic measurements used in the primary production (all in -all out systems, cleaning, desinfection, pest control)HACCP and GHP systems at slaughterhouses, improvement of the packaging of raw meat, labelling the minced meat and meat preparations with the requirement of heat treatment before consumption are the main actions in use.

2.2.2. Campylobacteriosis in humans

A. Thermophilic Campylobacter in humans

Case definition

Notification system in place

History of the disease and/ or infection in the country

Relevance as zoonotic disease

2.2.3. Campylobacter in foodstuffs

A. Thermophilic Campylobacter in Broiler meat and products thereof

Monitoring system

Sampling strategy

At slaughterhouse and cutting plant

There is an annual monitoring program based on the production capacity of the region. The monitoring plan is prepared by the central authority. The samples are taken by the regional authorities. Only one sample unit is taken from a batch, 25 grams are examined in the laboratory. These official samples are examined in the NRL Campylobacter with a presence-absence test followed by species identification and antimicrobial resistance.

At retail

To be reported via ECDC.

Frequency of the sampling

At slaughterhouse and cutting plant

Sampling distributed evenly throughout the year

Type of specimen taken

At slaughterhouse and cutting plant

Fresh meat

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

At least 500 grams of fresh meat is sampled in a sterile plastic bag. The sample is transported to the laboratory in a cool box by courier.

Definition of positive finding

At slaughterhouse and cutting plant

When a strain of thermophilic Campylobacter is isolated from the sample (25g) after enrichment.

Diagnostic/ analytical methods used

At slaughterhouse and cutting plant

Bacteriological method: ISO 10272:1995

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

Thermophilic Campylobacter - as in many countries - shows a high prevalence in broiler meat with a marked sesonal disribution of 30 % in winter to more than 60% in the summer months.

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										
- at slaughterhouse	monitoring	single	25 gramms	232	74	21	0	0	53	0
Meat from turkey										
fresh										
- at slaughterhouse	monitoring	single	25 gramms	166	30	4	2	0	23	1
Meat from duck										
- at slaughterhouse	monitoring	single	25 gramms	72	7	2	1	0	4	0
Meat from geese										
- at slaughterhouse	monitoring	single	25 gramms	47	2	0	1	0	1	0
Meat from guinea fowl	official control	single	25 gramms	2	0					
Meat from wild game - birds	official control	single	25 gramms	1	0					

Table Campylobacter in other food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for thermophilic Campylobacter spp.	C. jejuni	C. coli	C. upsaliensis	C. lari	Thermophilic Campylobacter spp., unspecified
Meat from pig										
fresh										
- at slaughterhouse	monitoring	single	25 gramms	178	5	2	3	0	0	0
Meat from bovine animals										
fresh										
- at slaughterhouse	monitoring	single	25 gramms	144	2	2	0	0	0	0
Meat from sheep	official control	single	25 gramms	2	0					
Milk, cows'										
raw	official control	single	50 ml	31	1	1				
Meat, red meat (meat from bovines, pigs, goats, sheep, horses, donkeys, bison and water buffalos)	official control	single	25 gramms	3	0					
Dairy products (excluding cheeses)	official control	single	25 gramms	2	0					

2.2.4. Campylobacter in animals

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)									
dairy cows	CAO VDD	animal	5011	0	0	0	0	0	0
Buffalos	CAO VDD	animal	6	0	0	0	0	0	0

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostic Directorate (CAO VDD)

2.2.5. Antimicrobial resistance in Campylobacter isolates

A. Antimicrobial resistance in Campylobacter jejuni and coli in foodstuff derived from poultry

Sampling strategy used in monitoring

Frequency of the sampling

Isolates derive from monitoring system performed for measurement of prevalence of campylobacters in fresh poultry meat. The sampling is random , performed by the regional competent authorities. The samples are taken in slaughterhouses, and is a part of a permanent monitoring scheme.

Type of specimen taken

500 grams of fresh poultry meat.

Procedures for the selection of isolates for antimicrobial testing

Almost every isolated strains are tested.

Methods used for collecting data

All the tests are performed by the NRL.

Laboratory methodology used for identification of the microbial isolates

Disc diffusion method on horseblood agar plates. Control strains are used.

Table Antimicrobial susceptibility testing in C. jejuni

n = Number of resistant isolates	C. jejuni							
	Meat from pig		**Meat from other poultry species**		**Meat from broilers (Gallus gallus)**		**Meat from bovine animals**	
Isolates out of a monitoring programme	yes		yes		yes		yes	
Number of isolates available in the laboratory	2		28		53		2	
Antimicrobials:	**N**	**n**	**N**	**n**	**N**	**n**	**N**	**n**
Aminoglycosides								
Gentamicin	2	0	25	0	48	0	2	0
Fluoroquinolones								
Ciprofloxacin	2	0	25	14	48	26	2	1
Fully sensitive	2	1	25	3	48	13	2	1
Macrolides								
Erythromycin	2	1	25	3	48	4	2	0
Penicillins								
Amoxicillin / Clavulanic acid	2	0	25	0	48	4	2	0
Ampicillin	2	1	25	2	48	10	2	0
Quinolones								
Nalidixic acid	2	1	25	19	48	28	2	1
Resistant to 1 antimicrobial	2	0	25	7	48	6	2	0
Resistant to 2 antimicrobials	2	0	25	10	48	12	2	1
Resistant to 3 antimicrobials	2	0	25	3	48	12	2	0
Resistant to 4 antimicrobials	2	1	25	1	48	5	2	0
Resistant to >4 antimicrobials	2	0	25	1	48	0	2	0
Tetracyclines								
Tetracyclin	2	1	25	4	48	16	2	0

Table Breakpoints used for antimicrobial susceptibility testing in Food

Test Method Used

Disc diffusion

Standards used for testing

NCCLS

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 <=
Tetracyclines										
Tetracyclin							30	19	11	10
Fluoroquinolones										
Ciprofloxacin							5	21	16	15
Quinolones										
Nalidixic acid										
Aminoglycosides										
Gentamicin							10	15	13	12
Macrolides										
Erythromycin							15	26	20	19
Penicillins										
Ampicillin							10	22	15	14

2.3. LISTERIOSIS

2.3.1. General evaluation of the national situation

A. Listeriosis general evaluation

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

Testing of ready-to-eat products for the presence/ and/ or the determination of the number of Listeria monocytogenes is obligatory for food business operators based on Reg.2073/ 2005/ EC. The official monitoring program concentrates to take samples from these products on a risk based approach as well. Only the data of official control are presented in this report, because only these data are collected in the database of the authority. The legislative background has changed a lot, because before 2006 only milk and milk products were regularly tested for Listeria monocytogenes and only by presence absence tests. In the frame of USDA-FSIS monitoring obligatory for US exporting establishments raw cured products were tested as well with presence-abscence tests and MPN based method suitable for enumeration of low numbers of the microorganism
From 2006, those RTE products that not support the growth of Listeria, are examined by the enumeration method ISO 11290:2 (e.g.salami, raw smoked ham). If the product is able to support the growth of the pathogen, presence-abscence test is used as a first step (ISO 11290:1), or the two method run paralel (depending on the expiry date, the amount of sample is enough to perform an enumeration test if the first test is positive). The pathogen is enumerated from all the positive samples.

Based on the past decade's USDA Listeria monitoring data, Listeria monocytogenes can be frequently isolated from traditional raw and smoked meat products as salami and sausages, but the highest contamination level was 2.3 cells (MPN method)/ gram. Therefore this product group certainly does not play an important role in human infections.
Listeria monocytogenes can be isolated from mixes salads as well, but because of low pH and preservatives charateristic for this product group generally do not support the growth of the pathogen, and only level of <10 cells per gram was measured from the positive samples.
Milk products are characteristically made of pasteurised milk in Hungary, therefore these types of foodstuff are practically free from Listeria.
Consumers show an increasing interest to by raw milk for consumption in the past few years. Despite of the obligatory labelling to call the consumers' attention for heat treating of raw milk, this product can be considered as a potential source of infection in the future.

Recent actions taken to control the zoonoses

Based on Reg. 2073/ 2005/ EC.

2.3.2. Listeriosis in humans

2.3.3. Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for L.monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g	Units tested with enumeration method	> detection limit but <= 100 cfu/ g	L. monocytogenes > 100 cfu/ g
Milk, cows'	monitoring	single	25 ml	185	3	185	3	0		
pasteurised milk										
- at retail	monitoring	batch	5 x 25 ml	216	0	216	0			
Cheeses made from cows' milk										
soft and semi-soft										
made from raw or low heat-treated milk										
- at processing plant	monitoring	batch	5 x 25 gramms	11	0	11	0			
made from pasteurised milk										
- at processing plant	monitoring	batch	5 x 25 gramms	285	0	285	0			
unspecified										
made from pasteurised milk										
- Monitoring	monitoring	batch	5x25 gramms	275	0	275	0			
Cheeses made from sheep's milk										
soft and semi-soft										
made from pasteurised milk										
- at retail	monitoring	batch	5x25 gramms	114	0	114	0			
Dairy products (excluding cheeses)										
butter										
- at retail	monitoring	batch	5x25 gramms	69	0	69	0			
ice-cream										
made from pasteurised milk	monitoring	batch	5x25 gramms	233	1	233	1			
dairy desserts										

chilled		monitoring	batch	5x25 gramms	104	0	104	0			
dairy products, not specified											
made from pasteurised milk											
- Monitoring - official sampling - objective sampling		monitoring	batch	5x25 gramms	84	0	66	0	18		
fermented dairy products											
- Monitoring - official sampling		monitoring	batch	5x25 gramms	319	0	218	0	101		
milk powder and whey powder											
- Monitoring		monitoring		25 gramms	187	0	162	0	25		

2.3.4. Listeria in animals

Table Listeria in animals

	Source of information	Sampling unit	Units tested	Total units positive for Listeria spp.	L. monocytogenes	Listeria spp., unspecified
Cattle (bovine animals)	CAO VDD	animal	16	1	1	0
Sheep	CAO VDD	animal	5	1	1	0

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostic Directorate (CAO VDD)

2.4. E. COLI INFECTIONS

2.4.1. General evaluation of the national situation

2.4.2. E. Coli Infections in humans

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 O157	Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from bovine animals								
fresh								
- at slaughterhouse	monitoring	single	25 gramms	144		0		
minced meat								
intended to be eaten cooked								
- Monitoring	monitoring	batch	5x25 gramms	97		0		
meat products								
raw but intended to be eaten cooked								
frozen								
- Monitoring	monitoring	batch	5x25 gramms	58		0		

Footnote

Only the presence/ absence of E. coli O157 VTEC was tested according to ISO 16654 Standard.

2.4.4. Escherichia coli, pathogenic in animals

A. Verotoxigenic Escherichia coli in cattle (bovine animals)

Monitoring system

Frequency of the sampling

Animals at slaughter (herd based approach)

Sampling distributed evenly throughout the year

Type of specimen taken

Animals at slaughter (herd based approach)

Other: meat, minced meat

Methods of sampling (description of sampling techniques)

Animals at slaughter (herd based approach)

500 gram meat sample is taken (from one animal), the weight of test portion is 25 grams (cutted from the surface of meat).
The samples are examined by ISO 16654:2001 Standard. Immuno-magnetic concentration is used for the detection of the most important serotype O157. If a strain belongig to the O 157 serotype is isolated, the toxin production is detected by a latex based agglutination test.

Case definition

Animals at slaughter (herd based approach)

The sample is considered to be positive if E. coli O157 was isolated, and the strain produces verotoxin (VT-1, VT-2 or both)

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

In bovine populations, eradication measures for tuberculosis started in 1962. The eradication of bovine tuberculosis was considered to be completed at the end of 1980. Since then, only sporadic cases occur.
As regards of tuberculosis in man, the favourable tendency which could be observed from the 1950s in the epidemiology of tuberculosis seemed to stop and getting worse in 1990. (Incidence raised by 19% between 1990 and 1995.)In order to lower the incidence and improve the situation, a National Tuberculosis Programme was adopted in 1994 which also incorporated a national surveillance programme based on a central, computerised database.

Recent actions taken to control the zoonoses

Regular screening of the human population is provided. All farm workers have to be checked by the competent public health authority for their compliance with the rules set for persons dealing with animals and food intended for human consumption. The documents proving their compliance are subject to on farm checks performed by the veterinary service. Each county veterinary authority has the right to set further health requirements for persons dealing with animals kept on small size farms.

2.5.2. Tuberculosis, Mycobacterial Diseases in humans

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

The nationwide program for eradication of bovine tuberculosis in Hungary has successfully been completed by 31. December 1980 and the tuberculosis free status of the country were declared to the OIE. Since then no evidence of the presence of infection in more than 0,1 % of our herds has been found.

Monitoring system

Sampling strategy

Post mortem inspections
According to the meat inspection rules in force in Hungary, based on a tradition of at least a century, each animal for slaughter is to be checked individually ante and post mortem. Technical methods applied at meat inspection is suitable to detect even the slightest tuberculotic lesions. The legal provisions for tuberculosis require that the organs, together with the lymphnodes belonging to them, shall be sent to the Central Agricultural Office, Veterinary Diagnostic Directorate (former Central Veterinary Institute) for further laboratory examination, if during post mortem inspection of a slaughtered animal the tuberculotic lesions are revealed. In case of animals ordered to be slaughtered for establishing the reason for unclarified positive or inconclusive reactions during intradermal tuberculin testing, a set of lymph nodes belonging to several organs and systems, as listed in the Zoo-Sanitary Code, shall be sent to the Central Agricultural Office, Veterinary Diagnostic Directorate.
Intradermal tuberculin testing
Together with the post mortem control program, the compulsory intradermal tuberculin testing with a yearly interval of the whole Hungarian cattle population (older than six weeks), as well as case by case testing of animals moved from one herd to another, has been maintained and executed.

Frequency of the sampling

See above.

Methods of sampling (description of sampling techniques)

According to the Annex 3 of the Decree No. 65/ 2002. (VIII.9) FVM the rules of taking samples are the followings:
·samples taken from animals with a large body (cattle, swine) must include the organs showing signs of the disease and the adjacent lymphatic glands, in case of birds and smaller animals the sample must be an entire carcass;
·samples used for confirming paraallergic reaction must include the tonsils, pharyngal,

mesenteric and portal lymphatic glands of the slaughtered animal;
·the purpose of detecting the presence of mycobacteria from the feedingstuffs, litter, soil etc. 20-50 gramm samples must be taken, 20 gramm samples from faeces, 50cm3 from urine and 5 litres from drinking water. The samples must be sent to the CVI with a view to carry out tests to detect tuberculosis and confirm the presence of mycobacteria.

Case definition

Suspension or withdrawal of the free status of a herd is based upon the analysis of the results of the intradermal tuberculin tests (if necessary, repeated and completed by simultaneous testing), post mortem examinations and laboratory tests. According to the Annex 1 of the Decree No. 65/ 2002. (VIII.9) the officially tuberculosis -free status of the herd have to be withdrawn if the presence of tuberculosis is confirmed by the isolation of M. bovis on laboratory examination.

Diagnostic/ analytical methods used

The identification of Mycobacterium bovis is carried out only the Central Agricultural Office, Veterinary Diagnostic Directorate(VDD) (Budapest). The VDD works according to the OIE Manual of Standards for Diagnostic tests and Vaccines, Forth Edition, Chapter 2.3.3. (bovine tuberculosis).
Annex 7. of the Decree No. 65/ 2002. (VIII.9) FVM contains the standards for the tuberculin (bovine and avian) to be used during the intradermal tests. These rules are fully compatible with Annex B point 2.1. of Council Directive 64/ 432/ EEC.
Annex 2., which contains the standards for the test procedures is fully compatible with Council Directive 64/ 432/ EEC.

Vaccination policy

Preventive vaccination against M. bovis is prohibited by Decree No. 65/ 2002. (VIII. 9.) FVM.

Control program/ mechanisms

The control program/ strategies in place

The whole cattle population is continuously monitored for bovine tuberculosis on a yearly basis by the intradermal tuberculine tests and by post-mortem inspections.
For measures taken in case of single cases, see "Measures in case of the positive findings or single cases".

Recent actions taken to control the zoonoses

Guidelines have been issued by the Ministry of Agriculture and Rural Development (in 2005 and 2006) about the carrying out the tuberculin test in cattle herds taking into consideration the fals positive or interference reactions as well as the data collection, and reporting by the regional authorities.

Measures in case of the positive findings or single cases

When an animal is considered to be a positive reactor in the intradermal tests, it is removed from the herd and slaughtered. The post-mortem, laboratory and epidemiological examinations shall be carried out. The status of the herd will remain suspended until the all laboratory examinations have been

completed. If the presence of tuberculosis is not confirmed, the suspension of the officially tuberculosis -free status may be lifted following a test of all animals over six weeks of age with negative results at least 42 days after the removal of the reactor animal.
According to the Annex 1 of the Decree No. 65/ 2002. (VIII.9) the officially tuberculosis -free status of the herd have to be withdrawn if the presence of tuberculosis is confirmed by the isolation of M. bovis on laboratory examination.
The district chief veterinarian may initiate a procedure to withdraw the tuberculosis-free status of the herd, and the animal health and food control station may withdraw the status, if
·the conditions for retention of the officially free status are not complied with, or
·classical lesions of tuberculosis are seen at post-mortem examination,
·an epidemiological enquiry establishes the likelihood of infection,
·it is deemed necessary to control of bovine tuberculosis in the herd for any other reason.

Notification system in place

Bovine tuberculosis is compulsory notifiable by virtue of the Veterinary Act No CLXXVI. of 2005, which replaced the Veterinary Act No XCI of 1995. The detailed rules regarding bovine brucellosis are laid down by the Decree No. 65/ 2002. (VIII.9) FVM of the Minister of Agriculture and Rural Development, which texts replaced the relevant parts of the Zoo-Sanitary Code implemented by the Decree No 41/ 1997. (V. 28.) FM of the Minister of Agriculture. As regards keeping and movements of the bovine animals the Zoosanitary Code is applied further. Before the 1st of July of 1997 the Decree No. 28/ 1981. (XII. 30.) MÉM of the Minister of Agriculture and Alimentation contained the rules for the bovine tuberculosis and keeping or movements of the bovine animals. It is very important that the former legislative rules were essentially the same as the current ones.

Results of the investigation

During the past consecutive seven years the rate of herds infected with bovine tuberculosis has never reached 0,1 % and at least 99,9% of herds have achieved officially tuberculosis free status each year during this period.

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

Hungary is free of bovine tuberculosis. However, sporadic cases are reported.

Table Tuberculosis in other animals

	Source of information	Sampling unit	Units tested	Total units positive for Mycobacterium spp.	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified	M. fortuitum	M. avium complex
Pigs	CAO VDD	animal		69	24	0	24	0	21
Wild boars	CAO VDD	animal		33	14	0	15	2	2
Deer	CAO VDD	animal		28	7	0	14	0	7
Foxes	CAO VDD	animal		2	0	0	1	0	1

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostic Directorate (CAO VDD)

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			
MAGYARORSZÁG	21139	693993	21121	99.915	6	0.028	1	669597	28858	778	42
Total	21139	693993	21121	99.915	6	0.028		669597	28858	778	42

Footnote

Beside of the officially free and infected herds there were 12 herds where the officially free status were suspended.
Over the number mentioned in column ten 231 samples were tested from healthy slaughtered cattle without any lesions in the framework of monitoring programme with negative results.

(*) 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

Hungary is practically free of Brucellosis in bovine, ovine and caprine populations. For detailed information, please refer to the specific texts.

2.6.2. Brucellosis in humans

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

The nationwide programme for eradication of bovine brucellosis in Hungary has successfully been completed by the 31st of August 1985. and the brucellosis free status of the country were declared to the OIE. Since then no evidence of the presence of infection in more than 0,2 % of our herds has been found.

Monitoring system

Sampling strategy

Together with the random blood sampling of the Hungarian cattle population, as well as case-by-case testing of animals moved from one herd to another, a system of checking abortions and irregular parturition has been maintained.

Frequency of the sampling

The whole cattle population in Hungary is subject to regular checks. Investigation of abortion and related cases is the key point of the system. Random, yearly serological testing is a complementary element. 10 % of cows in herds containing 50 or more animals shall be tested yearly, after calving. If necessary, the district veterinary officer is entitled to extend the testing to the whole herd.
Small herds are serologically tested every three years, linked to the EBL screening.

Type of specimen taken

Blood

Methods of sampling (description of sampling techniques)

Blood, milk and semen samples are taken at farm. In case of abortion, the aborted fetus, its chorions and a blood sample from the aborted cattle shall be sent to the laboratory.

Case definition

An animal is considered to be infected with B. abortus, when
- it shows clinical signs of the disease and pathological lesions can be detected on its internal organs or on its fetus or on the chorions; or
- bacteria of B. abortus could be isolated from its body fluids, its chorions or from the organs of the fetus, or

- it was suspected to be infected with B. abortus and the serological or bacteriological investigations were positive for that animal.

Diagnostic/ analytical methods used

For the diagnosis of B. abortus the following diagnostic methods are used:
-pathology
-bacteriology
-immunology (CFT, ELISA, SAT)

Vaccination policy

Preventive vaccination against B. abortus is prohibited in the whole territory of Hungary.

Control program/ mechanisms

Recent actions taken to control the zoonoses

Continuous monitoring of bovine herds and investigation of aborted fetuses as well as pre-movement checks are continued.

Measures in case of the positive findings or single cases

Infected male animals are
to be killed as soon as possible but not later than five days or,
to be castrated and placed under movement prohibition until it is slaughtered.
Female animals must be placed under breeding prohibition and movement control. They must be slaughtered within 15 days after the acute period or the recovery after the abortion.

Notification system in place

Bovine brucellosis (B. abortus) is compulsorily notifiable by virtue of the Veterinary Act No CLXXVI of 2005 that is effective since 1 January 2006 (before 1 January 2006 the Act XCI. of 1995 was the relevant) and the Zoo-Sanitary Code implemented by the Decree No 41/ 1997. (V. 28.) FM of the Minister of Agriculture. These legal texts replaced the former regulations, namely Law Decree No 3. of 1981. and Decree No. 28/ 1981. (XII. 30.) MÉM of the Minister of Agriculture and Alimentation, which have contained the same provisions for the diseases mentioned above.
Notification, as well as investigation of cases of abortion is compulsory. In case of abortion or irregular parturition, the veterinarian in charge has to send a set of samples, listed in the Zoo-Sanitary code, for further laboratory examination. Until thorough clarification of the case, the animal is kept separated and, if necessary, repeatedly tested.

Results of the investigation

During the last seven years no infection of B. abortus has been found.

B. Brucella melitensis in sheep

Status as officially free of ovine brucellosis during the reporting year

The entire country free

Ovine and caprine brucellosis (B. melitensis) has been a compulsorily notifiable animal disease in Hungary since 1982. Further to the existing rules laid down in the Zoo-Sanitary Code, the recent legal provisions give the power to the Ministry of Agriculture to introduce any additional measures, should an outbreak of a disease caused by B. melitensis occur in our country.
Neither a single clinical case, nor any positive serological or bacteriological test result for B. melitensis has ever occurred in Hungary.

Monitoring system

Sampling strategy

Given, that B. melitensis is not an agent which can be spread under Hungary's geographical and climatic conditions, furthermore no sign of the disease has ever been revealed, there was no scientifically based reason for an extended serological survey. However, between 1997 and 2000 a limited serological screening was carried out and all results were negative. Since 2001 an extended serological survey has been started to demonstrate the B. melitensis free status of Hungary. During 2001, 2002 and 2003 more than 10% of the ovine animals over six months of age were tested serologically for B. melitensis and all results were negative. In 2007, all ovine animals tested for B. melitensis were negative.

Frequency of the sampling

Approximately 10% of the ovine population were tested.

Type of specimen taken

Blood

Methods of sampling (description of sampling techniques)

Blood samples are taken at farm.

Case definition

An animal is considered to be infected with B. melitensis, when
- it shows clinical signs of the disease and pathological lesions can be detected on its internal organs or on its fetus or on the chorions; or
- bacteria of B. melitensis could be isolated from its body fluids, its chorions or from the organs of the fetus, or
- it was suspected to be infected with B. melitensis and the serological or bacteriological investigations were positive for that animal.

Diagnostic/ analytical methods used

For the diagnostic serological tests of B. melitensis the CFT is used.

Vaccination policy

Vaccines for B. melitensis have never been registered in Hungary and the using of vaccines without the registration is banned in the country. Therefore no vaccination against this disease has ever been practised in the territory of Hungary.

Control program/ mechanisms

The control program/ strategies in place

In 2007, Hungary was free of B. melitensis. However, monitoring of ovine and caprine populations is continuously done.

Measures in case of the positive findings or single cases

In case of positive findings the positive animals have to be killed without delay. The herd containing the positive animal is subject to movement control. The further measures affecting the herd shall be decided following screening of the animals and epidemiological investigation.

Notification system in place

Ovine and caprine brucellosis (B. melitensis) are compulsorily notifiable by virtue of the Veterinary Act No CLXXVI. of 2005 (which replaced the Veterinary Act No XCI of 1995) and the Zoo-Sanitary Code implemented by the Decree No 41/ 1997. (V. 28.) FM of the Minister of Agriculture. These legal texts replaced the former regulations, namely Law Decree No 3. of 1981. and Decree No. 28/ 1981. (XII. 30.) MÉM of the Minister of Agriculture and Alimentation, which have contained the same provisions for the diseases mentioned above. Therefore we can declare that ovine and caprine brucellosis is compulsory since 1 January 1982 on the basis of Decree No. 28/ 1981. (XII. 30.) MÉM of the Minister of Agriculture and Alimentation.

Results of the investigation

No evidence of infection with B. melitensis were found.

C. Brucella melitensis in goats

Status as officially free of caprine brucellosis during the reporting year

The entire country free

Ovine and caprine brucellosis (B. melitensis) has been a compulsorily notifiable animal disease in Hungary since 1982. Further to the existing rules laid down in the Zoo-Sanitary Code, the recent legal provisions give the power to the Ministry of Agriculture to introduce any additional measures, should an outbreak of a disease caused by B. melitensis occur in our country.
Neither a single clinical case, nor any positive serological or bacteriological test result for B. melitensis has ever occurred in Hungary.

Monitoring system

Sampling strategy

Given, that B. melitensis is not an agent which can be spread under Hungary's geographical and climatic conditions, furthermore no sign of the disease has ever been revealed, there was no scientifically based reason for an extended serological survey. In 2007, all caprine animals tested for B. melitensis were negative.

Frequency of the sampling

Approximately 5% of the caprine population is sampled and tested for B. melitensis.

Type of specimen taken

Blood

Methods of sampling (description of sampling techniques)

Blood samples are taken at farm.

Case definition

An animal is considered to be infected with B. melitensis, when
- it shows clinical signs of the disease and pathological lesions can be detected on its internal organs or on its fetus or on the chorions; or
- bacteria of B. melitensis could be isolated from its body fluids, its chorions or from the organs of the fetus, or
- it was suspected to be infected with B. melitensis and the serological or bacteriological investigations were positive for that animal.

Diagnostic/ analytical methods used

For the diagnosis of B. melitensis in goats, the CFT is used.

Vaccination policy

Vaccines for B. melitensis have never been registered in Hungary and the using of vaccines without the registration is banned in the country. Therefore no vaccination against this disease has ever been practised in the territory of Hungary.

Control program/ mechanisms

The control program/ strategies in place

In 2007, Hungary was free of B. melitensis. However, monitoring of ovine and caprine populations is continuously done.

Measures in case of the positive findings or single cases

In case of positive findings the positive animals have to be killed without delay. The herd containing the positive animal is subject to movement control. The further measures affecting the herd shall be decided following screening of the animals and epidemiological investigation.

Notification system in place

Ovine and caprine brucellosis (B. melitensis) are compulsorily notifiable by virtue of the Veterinary Act No CLXXVI. of 2005 (which replaced the Veterinary Act No XCI of 1995) and the Zoo-Sanitary Code implemented by the Decree No 41/ 1997. (V. 28.) FM of the Minister of Agriculture. These legal texts replaced the former regulations, namely Law Decree No 3. of 1981. and Decree No. 28/ 1981. (XII. 30.) MÉM of the Minister of Agriculture and Alimentation, which have contained the same provisions for the diseases mentioned above. Therefore we can declare that ovine and caprine brucellosis is compulsory since 1 January 1982 on the basis of Decree No. 28/ 1981. (XII. 30.) MÉM

of the Minister of Agriculture and Alimentation.

Results of the investigation

No evidence of infection with B. melitensis were found in 2007.

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	CAO VDD	animal	77457	0	0	0	0	0
Buffalos	CAO VDD	animal	106	0	0	0	0	0
Deer	CAO VDD	animal	529	0	0	0	0	0
Dogs	CAO VDD	animal	15	0	0	0	0	0
Wolves	CAO VDD	animal	2	0	0	0	0	0
Mouflons	CAO VDD	animal	10	0	0	0	0	0
Lamas	CAO VDD	animal	2	0	0	0	0	0
Camels	CAO VDD	animal	2	0	0	0	0	0
Wild boars	CAO VDD	animal	290	0	0	0	0	0
Rabbits	CAO VDD	animal	15	0	0	0	0	0
Hares	CAO VDD	animal	1581	0	0	0	0	0
Solipeds, domestic	CAO VDD	animal	68	0	0	0	0	0
Other animals	CAO VDD	animal	10	0	0	0	0	0

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostic Directorate (CAO VDD)

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		
MAGYARORSZÁG	21139	693993	21139	100	0	0	3053	78723	0	40	2562	0	1319	0	0	0	0	0	0	0	0
Total	21139	693993	21139	100	0	0	3053	78723	0	40	2562	0	1319	0	0	0	0	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
MAGYARORSZÁG	7343	1262630	7343	100	0	0	2519	60148	0	0	0	0	0	0
Total	7343	1262630	7343	100	0	0	2519	60148	0	0	0	0	0	0

2.7. YERSINIOSIS

2.7.1. General evaluation of the national situation

2.7.2. Yersiniosis in humans

A. Yersinosis in humans

Notification system in place

2.7.3. Yersinia in foodstuffs

2.7.4. Yersinia in animals

Table Yersinia in animals

	Source of information	Sampling unit	Units tested	Total units positive for Yersinia spp.	Y. enterocolitica	Yersinia spp., unspecified	Y. enterocolitica - O:9	Y. enterocolitica - O:3	Y. enterocolitica - unspecified
Cattle (bovine animals)	CAO VDD	animal	7	0	0	0	0	0	0

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostic Directorate (CAO VDD)

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

In Hungary, mandatory testing for Trichinella spp. is in place since 1960. Between 1960 and 1974, 32 cases were confirmed, while no positive finding were reported between 1975-1999.
In 2000, 4 cases were reported from wild game and 1 case from domestic animal. In 2001, 14 wild game cases and 0 cases from domestic animals were reported. As regards 2002, only 2 cases were reported, both from wild game. In 2003, 3 cases were reported from wild game and 2 cases in domestic animals. Slaughtered susceptible animals intended to be placed on the market or for private consumption, are subject to mandatory testing for Trichinella spp.

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

Trichinellosis was a significant zoonotic disease in Hungary in the 1950's and 1960's. Due to the introduction of control strategies, the average annual incidence of trichinellosis decreased to 0-0.7 cases per 100,000 for the 1980's and early 1990's. In the past 10 years, the annual incidence dropped to 0-0.07 cases per 100,000 and no mortality in men caused by the parasite was observed in the same period. In contrast with some other countries in Central Eastern Europe (e.g. Poland, Slovak Republic), the taxonomic status of the human isolates was not determined in the past years. Therefore, it is unknown, which Trichinella spp. was responsible for human infections. The decrease of incidence observed in men is similar to that of prevalence seen in swine at slaughterhouses. Nevertheless, some increasing trends of incidence might be observed in both men and swine in the past five years. As the taxonomic status of swine and wild boar isolates was not determined in recent years, it was unknown whether Trichinella spiralis still persists in the synanthropic or sylvatic cycle. Typing of isolates began in 2006. Sporadic Trichinella infections (in average few cases per year) were also detected in wild boars and in less than 1% of foxes. In foxes Trichinella britovi was responsible for all infections.

Recent actions taken to control the zoonoses

Mandatory testing during meat inspection in all susceptible cases (swine, horses, nutria, wild boars).

Suggestions to the Community for the actions to be taken

In positive human and animal cases the national reference laboratories and public health and veterinary authorities should be immediately notified.Human and animals isolates should be sent for verification of diagnosis to the national reference laboratories with all background information. All human and animal isolates sent to the national reference laboratories (Johan Béla Epidemiological Center and Central Veterinary Institute) should be forwarded to the CRL (Instituto Superiore di Sanita, Laboratorio di Parasitologia, Rome, Italy) for the determination of the taxonomic status of Trichinella isolates.

2.8.2. Trichinellosis in humans

A. Trichinellosis in humans

History of the disease and/ or infection in the country

2.8.3. Trichinella in animals

A. Trichinella in pigs

Monitoring system

Sampling strategy

Trichinella sampling and testing is mandatory for all slaughtered pig.

Frequency of the sampling

Every slaughtered animal is sampled

Type of specimen taken

Diaphragm muscle

Methods of sampling (description of sampling techniques)

Methods specified in Regulation 2075/ 2005/ EC

Case definition

Animal with one or more Trichinella larva in the official examination.

Diagnostic/ analytical methods used

Artificial digestion method of collective samples

Vaccination policy

None.

Control program/ mechanisms

The control program/ strategies in place

See above.

Measures in case of the positive findings or single cases

Positive cases are considered not to be eligible for human consumption.

Notification system in place

Measures specified in National Regulation 69/ 2002 (VIII. 15.) FVM based on Dir. 77/ 96/ EEC, Dir. 84/ 319/ EEC, Dir. 94/ 59/ EEC, Dir. 89/ 321/ EEC and Dir. 92/ 45/ EEC.

Results of the investigation

All slaughtered swine and wild boars (as well as horses and other susceptible animals) were investigated in 2007.

B. Trichinella in horses

Monitoring system

Sampling strategy

Meat inspection is mandatory, all animal is sampled.

Frequency of the sampling

Every slaughtered animal is sampled

Type of specimen taken

Diaphragm muscle

Methods of sampling (description of sampling techniques)

2075/ 2005/ EC regulation

Case definition

Animal with one or more Trichinella larva in the official examination

Diagnostic/ analytical methods used

Artificial digestion method of collective samples

Vaccination policy

None.

Measures in case of the positive findings or single cases

Positive cases are considered not to be eligible for human consumption.

Results of the investigation

All slaughtered horses (as all other susceptible animals) were investigated in 2007.

Table Trichinella in animals

	Source of information	Sampling unit	Units tested	Total units positive for Trichinella spp.	T. spiralis	Trichinella spp., unspecified
Pigs	official control	animal	4745000	0		
Solipeds, domestic						
horses	official sampling	single	28	0		

2.9. ECHINOCOCCOSIS

2.9.1. General evaluation of the national situation

2.9.2. Echinococcosis in humans

A. Echinococcus spp. in humans

Diagnostic/ analytical methods used

2.9.3. Echinococcus in animals

2.10. TOXOPLASMOSIS

2.10.1. General evaluation of the national situation

2.10.2. Toxoplasmosis in humans

2.10.3. Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii
Sheep	CAO VDD	animal	8	0	0
Dogs	CAO VDD	animal	2	0	0
Cats	CAO VDD	animal	14	0	0

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostic Directorate (CAO VDD)

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

At the beginning of the twentieth century, rabies predominantly occurred in Hungary in its urban form and was transmitted to humans mainly by dogs. Therefore, in the 1930's strict animal health regulations were introduced, the main elements of these remained unchanged till recent days. These measures included nationwide mandatory regular vaccination of dogs over three months of age.
During World War II, epidemiological actions were hindered, which resulted in a re-emergence of urban rabies in 1946-47.
The re-introduction of regulatory measures as well as mandatory preventive vaccination, urban rabies seems to be sporadic in Hungary. The register of the annual vaccination of dogs show that around 1.5 Million of dogs are vaccinated every year.
In recent days, together with the disappearing of rabies from dogs, rabies in cats is considered to be of high importance. Preventive vaccination of cats against rabies is recommended but not mandatory and special epidemiological aspects are to be considered. (The movement of animals is hard to control and there is a relative large number of semi-wild living animals of this species.)
Sylvatic rabies reached the North-Eastern part of Hungary in the year 1954. Until 1966 cases remained sporadic (a total of 97 foxes, 16 badgers and wild cats confirmed positive for rabies). In the same timeframe, 35 dogs and 96 domestic cats were confirmed positive for the disease.
In 1967, sylvatic rabies crossed the Danube and by 1971 the whole country was infected. At this time, intensive attempts were executed in order to lower the number of foxes, with minimum results. These actions were suspended in 1987.
Between 1988 and 1996 around 1000 rabies cases in foxes were diagnosed per year. Oral vaccination of foxes was introduced in Hungary in 1997. From that year, the rabies cases in foxes decreased year by year, as the vaccination zone was extended from the western part of the country to the whole territory of Hungary. From 1988, rabies cases in foxes decreased by 90%.

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

It is of high importance that the countrywide oral vaccination of foxes is continued. This practice should be extended to neighbouring countries which do not apply such measures.

Recent actions taken to control the zoonoses

In order to eradicate rabies from Hungary and to protect public health, regulatory measures on domestic animals are in place. Regular preventive vaccination of dogs is mandatory from 3 months of age. Unattended dogs are removed from public areas and are vaccinated against the disease.
Oral vaccination of foxes is done on the whole territory of Hungary.

2.11.2. Lyssavirus (rabies) in animals

Table Rabies in animals

	Source of information	Sampling unit	Units tested	Total units positive for Lyssavirus (rabies)	Unspecified Lyssavirus	European Bat Lyssavirus - unspecified	Classical rabies virus (genotype 1)
Cattle (bovine animals)	CAO VDD	animal	27	0	0	0	0
Sheep	CAO VDD	animal	19	0	0	0	0
Goats	CAO VDD	animal	11	0	0	0	0
Pigs	CAO VDD	animal	5	0	0	0	0
Solipeds, domestic	CAO VDD	animal	14	0	0	0	0
Dogs	CAO VDD	animal	259	0	0	0	0
Cats	CAO VDD	animal	375	1	1	0	0
Bats							
wild	CAO VDD	animal	4	0	0	0	0
Foxes							
wild	CAO VDD	animal	4496	3	3	0	0
Wolves							
wild	CAO VDD	animal	4	0	0	0	0
Badgers							
wild	CAO VDD	animal	103	0	0	0	0
Marten							
wild	CAO VDD	animal	12	0	0	0	0
Wild boars							
wild	CAO VDD	animal	11	0	0	0	0
Deer (1)	CAO VDD	animal	2	0	0	0	0
wild							
roe deer	CAO VDD	animal	36	0	0	0	0
red deer	CAO VDD	animal	5	0	0	0	0
fallow deer	CAO VDD	animal	1	0	0	0	0
Other animals	CAO VDD	animal	84	0	0	0	0

(1) : Other than: Roe deer, Red deer and Fallow deer

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostic Directorate (CAO VDD)

2.12. Q-FEVER

2.12.1. General evaluation of the national situation

2.12.2. Coxiella (Q-fever) in animals

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii
Cattle (bovine animals)	CAO VDD	animal	536	40	40
Sheep	CAO VDD	animal	27	2	2
Goats	CAO VDD	animal	76	0	0
Cats	CAO VDD	animal	2	0	0

Footnote

Source of information: Central Agricultural Office Veterinary Diagnostic Directorate (CAO VDD)

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

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

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	monitoring	batch	5.00 gramms	20	0	20	0	0	0

4.2. ENTEROBACTER SAKAZAKII

4.2.1. General evaluation of the national situation

4.2.2. Enterobacter sakazakii in foodstuffs

4.3. STAPHYLOCOCCAL ENTEROTOXINS

4.3.1. General evaluation of the national situation

4.3.2. Staphylococcal enterotoxins in foodstuffs

A. Staphylococcal enterotoxins in foodstuffs

Monitoring system

Sampling strategy

There is no direct sampling strategy, samples containing more than 100.000 coagulase positive staphyloccocci/ gram are tested for the presence of enterotoxin.
Only those product groups are routinely tested for coagulase positive staphyloccocci, for which there is a criterion in 2073/ 2005/ EC.

Type of specimen taken

Other: milk products

Definition of positive finding

If ELFA test shows a positive result,the product is considered to be positive.

Diagnostic/ analytical methods used

Validated detection method of the CRL based on VIDAS enterotoxin test is used.

Table Staphylococcal enterotoxins in food

	Source of information	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
Cheeses made from sheep's milk	foodborne outbreak investigation	single	10 gramms	2	0
Meat from pig					
meat products	tested because of the high koag. pos. staphylococcus count	single	10 gramms	5	0

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

Data on food-borne outbreaks are collected in Hungary since 1931 by legal background. There are three surveillance systems for identifying/ recognition of food-borne outbreaks (the obligatory report of a physician / a food vendor / a drinking water supplier / a representative of an institution about an outbreak; the increasing number of cases in the communicable disease reporting system/ the increasing number of laboratory confirmed cases). The reporting systems belong to the National Public Health and Medical Officer's Service. The animal health authorities are involved in the investigation, if data indicate that the suspected food had been made by the food industry.
The physician reports data about the event by telephone to the municipal institute of NPHMOS. The specialist of the institute enter the data immediately in to the electronic system of the NPHMOS. A laboratory based surveillance system also exists in Hungary. The database on food-borne outbreaks is in the National Centre for Epidemiology and in the National Institute for Food Safety and Nutrition.

Description of the types of outbreaks covered by the reporting:

Outbreak: At least two cases of the disease with epidemiological link (exposed by the same food)/ The number of cases are higher than expected (surveillance data). It is not necessary to identify the agent in the food sample.
Family outbreak: At least two cases of a foodborne disease in the same household, exposed by the same food.
Institutional outbreak: At least two cases of a foodborne disease in the same institute (school, kindergarten, hospital etc.) exposed by the same food.
Community outbreak: At least two cases of a foodborne disease in the community exposed by the same food.

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

Food-borne outbreaks in Hungary, 2007
National evaluation of the recent situation, the trends and sources of infection
In 2007 there were 269 verified or possible food-borne outbreaks (outbreak=two or more linked cases) registered by National Epidemiological Centre (NCE) and National Institute for Food Safety and Nutrition (NIFSN) in Hungary, and those represented altogether 1843 cases (ill persons or carriers without symptoms). Out of these 1843 cases 23% (426 people) were hospitalised. There was no lethal case.
In 19% of the outbreaks (51 outbreaks: 36 mushroom toxins, 10 salmonellosis, 1 tick-borne

encephalitis virus, 1 Clostridium perfringens, 1 Staphylocuccus aureus and 2 outbreaks of unknown etiology) there was laboratory or analytical epidemiological evidence for the food origin.
Out of the 269 registered outbreaks 67.3% were caused by Salmonella (181 outbreaks), 14.5% by mushroom toxins (39 outbreaks) and 12.3 % by Campylobacter (33 outbreaks). The rest of the outbreaks were caused by C. perfringens (0.4%, 1 outbreak), S. aureus (0.4 %, 1 outbreak), Bacillus cereus (0.7%, 2 outbreaks), norovirus (1.1%, 3 outbreaks), tick-encephalitis virus (0.7%, 2 outbreaks) or unknown agents (2.6%, 7 outbreaks).
Out of the 1843 reported cases 62% (1158 people) have suffered from salmonellosis and 6% (111 people) from campylobacteriosis. Seven percent (127 people) have suffered from poisoning caused by mushroom toxins, 6.5% (120) from poisoning caused by S. aureus enterotoxins and 4.5% (83) from gastroenteritis caused by norovirus infection.
Salmonellosis
In 2007 there were 6891 cases and 233 outbreaks of salmonellosis confirmed by laboratory and epidemiological investigation based on the register of the NCE. The most frequent serotypes of human isolets were: S. Enteritidis (76.3%), S. Typhimurium (7.9%) and S. Infantis (5.1%). The number of salmonellosis cases dropped by one third compared to the data of 2006 year mostly because of the decreasing of S.Enteritidis cases (-36%). The number of S.Typhimurium and S.Infantis cases also decreased from 2006 to 2007 (-10% and -20%). The number of general outbreak decreased from 64 (2006.) to 34 (2007) and was similar to the data of 2005, the decreasing of the number of household outbreaks began in 1995 and continued also in 2007 and dropped form 250 (2006) to 200 (2007).
Campylobacteriosis
On the basis of the laboratory or epidemiological data altogether 5856 campylobacteriosis cases and 71 outbreaks were registered in the database of NCE in 2007. The dropping of the number of campylobacteriosis cases which began in 2004 continued also in 2007 with -14%. Whereas the number of outbreaks began to increase from 60 (2006) to 71 (2007).

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

Salmonellosis
As of the database of NCE and NIFSN out of the 6891 registered cases 1158 cases (16%) belonged to the 181 outbreaks that had food-borne origin (either verified or possible). Two hundred twenty cases (19%) required hospitalization.
In ten general outbreaks the food-borne origin has been confirmed by either the identification of the outbreak strain in the processed food or in the raw material or by statistical analysis. In the rest 47 general and 124 houshold outbreaks data obtained by descriptive epidemiological methods were suggestive for the food-borne origin.
Out of the 181 food-borne salmonellosis outbreaks 78% was caused by S. Enteritidis and 2.8% by S. Typhimurium. About two-third part of the outbreaks was caused by foods that were made by the use of inadequately heat-treated egg.
About one-fifth part of the isolated S. Enteritidis strains (altogether 1368 strains) was subjected to phage typing (according to the Ward's scheme). In 2007 the most frequent phage type for S. Enteritidis was the PT8 (34.6%), which was followed by PT4 (25.4%). Out of the 258 phage typed S. Typhimurium strains 41.5% belonged to the pandemic DT104 and 12.4% to the PT193 phage types (according to the Anderson's scheme).
Campylobacteriosis

On the basis of the laboratory or epidemiological data altogether 5856 campylobacteriosis cases and 71 outbreaks were registered in the database of NCE in 2007. The dropping of the number of campylobacteriosis cases which began in 2004 continued also in 2007 with -14%. Whereas the number of outbreaks began to increase from 60 (2006) to 71 (2007).

As of the database of NCE and NIFSN food-borne origin of 33 outbreaks (2 general and 31 houshold outbreaks) had possible evidences. This represented 1.9% (111) of the total cases. Twenty diseased people required hospitalization. In two-third part of these 33 probably food-borne campylobacteriosis outbreaks the vehicle of the infection was most probably meals made of infected poultry. In two outbreaks un-pasteurised, home prepared cow milk was the source of the infection. The rest 8 outbreaks were caused by other foods or were of unknown origin.

The two largest campylobacteriosis outbreaks happened in a kindergarten and in a day care, both were most probably caused by not properly heat-treated or subsequently contaminated poultry meat.

Viral foodborne diseases

There were 4190 norovirus/ calicivirus gastroenteritis reported in 2007 linked to 157 general outbreaks registered by NCE. In the case of three outbreaks the role of subsequently contaminated food was possible.

There were 69 tick-born encephalitis cases in 2007 registered by NCE out of which 32 belonged to two outbreaks. In both cases the vehicle of the infection was un-pasteurized goat milk.

Foodborne diseases caused by mushroom toxins

Altogether 149 poisoning cases caused by consumption of mushroom toxins were registered by NIFSN out of which 127 cases required hospitalization. From the 149 cases 127 belong to 39 outbreaks. In 36 out of the 39 outbreaks the investigation of the food samples has also confirmed the food-borne origin.

Foodborne Outbreaks: summarized data

	Total number of outbreaks	Number of possible outbreaks	Number of verified outbreaks
Bacillus	2	0	2
Campylobacter	33	0	33
Clostridium	1	0	1
Escherichia coli, pathogenic	0	0	0
Foodborne viruses	5	0	5
Listeria	0	0	0
Other agents	39	0	39
Parasites	0	0	0
Salmonella	181	0	181
Staphylococcus	1	0	1
Unknown	7	0	7
Yersinia	0	0	0

Verified Foodborne Outbreaks: detailed data

B. cereus

	Value
Code	HU_2007_52
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	0
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	
Outbreaks	2
Comment	possible food-borne outbreaks

Campylobacter spp., unspecified

	Value
Code	HU_2007_56
Subagent Choice	
Outbreak type	Unknown
Human cases	111
Hospitalized	20
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	raw milk - 2 outberaks - 5 cases poultry meal - 23 outbreaks - 88 cases other/unknown - 8 outbreaks - 18 cases all together: 2 general and 31 houshold outbreaks
Type of evidence	Laboratory detection in human cases
Setting	Unknown
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	
Outbreaks	33
Comment	possible food-borne outbreaks

C. perfringens

	Value
Code	HU_2007_12
Subagent Choice	Clostridium; C. perfringens
Outbreak type	General
Human cases	24
Hospitalized	0
Deaths	0
Foodstuff implicated	Turkey meat and products thereof
More Foodstuff	steamed turkey meat
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases
Setting	Residential institution (nursing home, prison, boarding school)
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Domestic
Contributory factors	Storage time/temperature abuse, Cross-contamination
Outbreaks	1
Comment	

Flavivirus

	Value
Code	HU_2007_11
Subagent Choice	Food borne viruses; flavivirus, Tick borne encephalitis virus (TBE)
Outbreak type	General
Human cases	27
Hospitalized	23
Deaths	0
Foodstuff implicated	Dairy products (other than cheeses)
More Foodstuff	raw goat milk
Type of evidence	Laboratory detection in human cases
Setting	Mobile retailer, market/street vendor
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unprocessed contaminated ingredient
Outbreaks	1
Comment	one goat actually suffered in acut tick-borne vírus infection confirmed by laboratory test (70 goat tested)

Flavivirus

	Value
Code	HU_2007_54
Subagent Choice	
Outbreak type	General
Human cases	5
Hospitalized	5
Deaths	0
Foodstuff implicated	Milk
More Foodstuff	raw goat milk
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unprocessed contaminated ingredient
Outbreaks	1
Comment	possible food-borne outbreak

norovirus (Norwalk-like virus)

	Value
Code	HU_2007_53
Subagent Choice	
Outbreak type	General
Human cases	83
Hospitalized	9
Deaths	0
Foodstuff implicated	Unknown
More Foodstuff	
Type of evidence	Laboratory detection in human cases
Setting	Unknown
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	
Outbreaks	3
Comment	possible food-borne outbreaks

Mushroom toxins

	Value
Code	HU_2007_16
Subagent Choice	
Outbreak type	General
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	raw mushroom - Boletus calopus
Type of evidence	Laboratory detection in human cases
Setting	School, kindergarten
Place of origin of problem	Other place of origin
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_20
Subagent Choice	
Outbreak type	Household
Human cases	6
Hospitalized	6
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom toxin
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_21
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	1
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Omphalotus olearius
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_22
Subagent Choice	
Outbreak type	General
Human cases	6
Hospitalized	6
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Omphalotus olearius
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_23
Subagent Choice	
Outbreak type	General
Human cases	4
Hospitalized	4
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Omphalotus olearius
Type of evidence	Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_24
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom stew- containing amanitin
Type of evidence	Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_25
Subagent Choice	
Outbreak type	Household
Human cases	4
Hospitalized	4
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_27
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Amanita pantheina
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_17
Subagent Choice	
Outbreak type	Household
Human cases	3
Hospitalized	3
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Omphalotus olearius
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_18
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Amanita pantheina
Type of evidence	Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_19
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom- Entomola sinatum
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_26
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Entoloma sinulatum
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_28
Subagent Choice	
Outbreak type	General
Human cases	6
Hospitalized	6
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Entomola sinuatum
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_29
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	1
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom stew
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_30
Subagent Choice	
Outbreak type	Household
Human cases	3
Hospitalized	3
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom stew
Type of evidence	Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_31
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Amanita phalloides (stew)
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases
Setting	Other setting
Place of origin of problem	Other place of origin
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_32
Subagent Choice	
Outbreak type	Household
Human cases	6
Hospitalized	6
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom
Type of evidence	Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_33
Subagent Choice	
Outbreak type	General
Human cases	9
Hospitalized	9
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Entomola sinuatum
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_34
Subagent Choice	
Outbreak type	General
Human cases	3
Hospitalized	3
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Amanita muscaria
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_35
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	Mushroom strew - Entoloma sinulatum
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_36
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Entoloma sinulatum
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_40
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom (Entoloma sinulatum) strew
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_41
Subagent Choice	
Outbreak type	Household
Human cases	6
Hospitalized	6
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Entoloma sinulatum
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_43
Subagent Choice	
Outbreak type	Household
Human cases	3
Hospitalized	3
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Omphalotus olearius
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_44
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Entoloma sinulatum
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_46
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom (Entoloma sinulatum) fried in breadcrumbs
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_48
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Amanita muscarina
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_51
Subagent Choice	
Outbreak type	General
Human cases	8
Hospitalized	8
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Armillairella mellea
Type of evidence	Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_37
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Entoloma sinulatum
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_38
Subagent Choice	
Outbreak type	Household
Human cases	7
Hospitalized	7
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Entoloma sinulatum
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_39
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom (Entoloma sinulatum) fried in breadcrumbs
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_42
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushorom (Entoloma sinulatum) with minced meat
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_45
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	musgroom (Entoloma sinulatum) fried in breadcrumbs
Type of evidence	
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_47
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	roasted mushroom
Type of evidence	Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_49
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	2
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom (Omphalotus olearius) strew
Type of evidence	Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_50
Subagent Choice	
Outbreak type	Household
Human cases	3
Hospitalized	3
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	mushroom - Armillairella mellea
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Mushroom toxins

	Value
Code	HU_2007_55
Subagent Choice	
Outbreak type	Household
Human cases	9
Hospitalized	8
Deaths	0
Foodstuff implicated	Other foods
More Foodstuff	different mushrooms
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Household, domestic kitchen
Origin of foodstuff	Domestic
Contributory factors	
Outbreaks	3
Comment	possible food-borne outbreaks

PT 2

	Value
Code	HU_2007_10
Subagent Choice	
Outbreak type	General
Human cases	125
Hospitalized	0
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff	
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases, Laboratory characterization of isolates
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	Inadequate heat treatment, Cross-contamination, Inadequate chilling
Outbreaks	1
Comment	

PT 2

	Value
Code	HU_2007_03
Subagent Choice	
Outbreak type	General
Human cases	46
Hospitalized	2
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff	
Type of evidence	Laboratory characterization of isolates, Laboratory detection in human cases, Analytical epidemiological evidence
Setting	Temporary mass catering (fairs, festivals)
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Unknown
Contributory factors	Cross-contamination, Inadequate chilling, Unprocessed contaminated ingredient
Outbreaks	1
Comment	

PT 2

	Value
Code	HU_2007_09
Subagent Choice	
Outbreak type	General
Human cases	2
Hospitalized	0
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff	roasted eggs and steamed rice
Type of evidence	Laboratory detection in implicated food, Laboratory characterization of isolates, Laboratory detection in human cases
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	Inadequate heat treatment, Cross-contamination
Outbreaks	1
Comment	

PT 4

	Value
Code	HU_2007_05
Subagent Choice	
Outbreak type	General
Human cases	17
Hospitalized	4
Deaths	0
Foodstuff implicated	Bakery products
More Foodstuff	desserts with eggs
Type of evidence	Laboratory detection in human cases, Laboratory characterization of isolates, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	Unprocessed contaminated ingredient, Inadequate heat treatment, Cross-contamination
Outbreaks	1
Comment	

PT 43

	Value
Code	HU_2007_01
Subagent Choice	
Outbreak type	General
Human cases	54
Hospitalized	7
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff	roasted lamb and potato
Type of evidence	Laboratory detection in human cases, Laboratory characterization of isolates, Laboratory detection in implicated food
Setting	Other setting
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Unknown
Contributory factors	Cross-contamination
Outbreaks	1
Comment	

PT 8

	Value
Code	HU_2007_06
Subagent Choice	
Outbreak type	General
Human cases	43
Hospitalized	22
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff	rice with eggs and chicken
Type of evidence	Laboratory detection in human cases, Laboratory characterization of isolates
Setting	Temporary mass catering (fairs, festivals)
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	Inadequate heat treatment, Cross-contamination
Outbreaks	1
Comment	

PT 8

	Value
Code	HU_2007_07
Subagent Choice	
Outbreak type	General
Human cases	39
Hospitalized	19
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff	pasta with semolina, rive with sweet corn, chicken ragout
Type of evidence	Laboratory detection in human cases, Laboratory characterization of isolates, Laboratory detection in implicated food
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	Cross-contamination
Outbreaks	1
Comment	

PT 8

	Value
Code	HU_2007_08
Subagent Choice	
Outbreak type	General
Human cases	32
Hospitalized	6
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff	dumpling (with eggs) and chicken stew
Type of evidence	Laboratory detection in implicated food, Laboratory detection in human cases, Laboratory characterization of isolates
Setting	Residential institution (nursing home, prison, boarding school)
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	Cross-contamination, Inadequate heat treatment
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	HU_2007_02
Subagent Choice	
Outbreak type	General
Human cases	33
Hospitalized	0
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff	
Type of evidence	Laboratory detection in implicated food
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Unknown
Contributory factors	Unprocessed contaminated ingredient, Cross-contamination, Inadequate heat treatment, Inadequate chilling
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	HU_2007_04
Subagent Choice	
Outbreak type	General
Human cases	7
Hospitalized	0
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff	pasta, beef stew, soup
Type of evidence	Laboratory detection in human cases, Laboratory detection in implicated food
Setting	Household
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	Unknown
Outbreaks	1
Comment	

S. Enteritidis

	Value
Code	HU_2007_57
Subagent Choice	
Outbreak type	Unknown
Human cases	659
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Unknown
More Foodstuff	poultry meals - 18 outbreaks, 75 cases eggs in meals (mostly inadequately heat treated desserts) - 96 outbreaks, 477 cases other meals - 13 outbreaks, 55 cases unknown meals - 4 outbreaks, 52 cases 27 general and 104 houshold outbreaks
Type of evidence	Laboratory detection in human cases
Setting	Unknown
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	
Outbreaks	131
Comment	possible food-borne outbreaks

S. Newport

	Value
Code	HU_2007_59
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Pig meat and products thereof
More Foodstuff	roasted pig meat
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	
Outbreaks	1
Comment	possible food-borne outbreak

S. Thompson

	Value
Code	HU_2007_60
Subagent Choice	
Outbreak type	Household
Human cases	2
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Eggs and egg products
More Foodstuff	fried eggs
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	
Outbreaks	1
Comment	

S. Typhimurium

	Value
Code	HU_2007_58
Subagent Choice	
Outbreak type	Household
Human cases	15
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Unknown
More Foodstuff	poultry meals - 3 outbreaks, 9 cases other meals - 2 outbreaks, 6 cases
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	
Outbreaks	5
Comment	possible food-borne outbreaks

Salmonella spp.

	Value
Code	HU_2007_61
Subagent Choice	
Outbreak type	Unknown
Human cases	86
Hospitalized	unknown
Deaths	0
Foodstuff implicated	Unknown
More Foodstuff	poultry meals - 12 outbreaks, 26 cases, eggs in meals (mostly desserts inadequately heat treated) - 15 outbreaks, 43 cases, other meals - 5 outbreaks, 15 cases unknown meals - 1 outbreak, 2 cases all of them houshold outbreaks
Type of evidence	Laboratory detection in human cases
Setting	Household
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	
Outbreaks	33
Comment	possible food-borne outbreaks

S. enterotoxins

	Value
Code	HU_2007_13
Subagent Choice	
Outbreak type	General
Human cases	120
Hospitalized	8
Deaths	1
Foodstuff implicated	Cereal products including rice and seeds/pulses (nuts, almonds)
More Foodstuff	pasta with semolina
Type of evidence	Laboratory detection in human cases, Laboratory characterization of isolates, Laboratory detection in implicated food
Setting	Take-away or fast-food outlet
Place of origin of problem	Catering services, restaurant
Origin of foodstuff	Domestic
Contributory factors	Storage time/temperature abuse, Infected food handler
Outbreaks	1
Comment	

Unknown

	Value
Code	HU_2007_15
Outbreak type	General
Human cases	31
Hospitalized	7
Deaths	0
Foodstuff implicated	Mixed or buffet meals
More Foodstuff	spagetti bolognese
Type of evidence	Analytical epidemiological evidence
Setting	Temporary mass catering (fairs, festivals)
Place of origin of problem	Unknown
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Unknown

	Value
Code	HU_2007_14
Outbreak type	General
Human cases	44
Hospitalized	0
Deaths	0
Foodstuff implicated	Other or unspecified poultry meat and products thereof
More Foodstuff	
Type of evidence	Analytical epidemiological evidence
Setting	Canteen or workplace catering
Place of origin of problem	Unknown
Origin of foodstuff	Domestic
Contributory factors	Unknown
Outbreaks	1
Comment	

Unknown

	Value
Code	HU_2007_62
Outbreak type	General
Human cases	109
Hospitalized	10
Deaths	0
Foodstuff implicated	Unknown
More Foodstuff	
Type of evidence	
Setting	Unknown
Place of origin of problem	Unknown
Origin of foodstuff	Unknown
Contributory factors	
Outbreaks	5
Comment	possible food-borne outbreaks