

HUNGARY

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

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

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

IN 2012

INFORMATION ON THE REPORTING AND MONITORING SYSTEM

Country: Hungary

Reporting Year: 2012

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*. 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 2012 .

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.

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

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1. ANIMAL POPULATIONS

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

A. Information on susceptible animal population

Sources of information

Data on susceptible animal populations were taken from official publications of the Hungarian Central Statistical Office unless it was collected by the Directorate of Food Chain Safety and Animal Health of the National Food Chain Safety Office.

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

Data of December 2012 show that the number of cattle continued to grow. The pig stock – after 3 years of decrease – slightly rose in the past six months. The number of sheep was 1.1 million on 1 December, showing a decline after the increase in June. The stock of poultry decreased compared to December of the previous year.

Additional information

Table Susceptible animal populations

* Only if different than current reporting year

Animal species	Category of animals	Number of herds or flocks		Number of slaughtered animals		Livestock numbers (live animals)		Number of holdings	
		Data	Year*	Data	Year*	Data	Year*	Data	Year*
Cattle (bovine animals)	- in total	16645				815141			
Ducks	- in total					4242300			
Gallus gallus (fowl)	- in total					30074700			
Geese	- in total					1082200			
Goats	- in total	661				14645			
Pigs	- in total					2955600			
Sheep	- in total	6574				871438			
Solipeds, domestic	horses - in total					76300			
Turkeys	- in total					2799400			

2. INFORMATION ON SPECIFIC ZOOSES 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 (Babolna, Boly, Nadudvar) 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. From that time EC regulations are followed. The implementation of these regulations is regulated by Decree 180/2009. (XII.29.) of Ministry of Agriculture.

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

Significant decrease could be seen as in the prevalence of salmonella in all types of flocks under scope of national control plans as in meat, meat products, table eggs and egg products of Gallus gallus.

Recent actions taken to control the zoonoses

Vaccination is not compulsory in flocks of Gallus gallus and Meleagris gallopavo. The rules of using vaccination and treatment are laid down in Commission Regulation (EC) No 200/2010 of implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards requirements for the use of specific control methods in the framework of the national programmes for the control of salmonella in poultry.

2.1.2 Salmonellosis in humans

A. Salmonellosis in humans

Reporting system in place for the human cases

There are around 80 communicable diseases notifiable in Hungary based on legal background. The physician (in primary health care, specialist care, inpatient medical institution or pathology) who first diagnoses a case of a notifiable communicable disease (even the suspicion of the disease!) immediately reports data of case to the first level of the epidemiological network (municipal institute) of National Public Health and Medical Officer's Service (NPHMOS). Data must be reported both at the beginning and at end of the illness (recovery/death, result of laboratory test). The NPHMOS has a nationwide electronic system for registering and analysing data of communicable diseases in a combined national database, so the system provides online connection amid the three levels (municipal, county and national level – National Centre of Epidemiology - NCE) of the organization. The NCE prepares reports regularly (weekly, monthly, yearly) to the Chief Medical Officer, the MoH and the Hungarian Central Statistical Office.

Case definition

Confirmed case: a clinically compatible case when the salmonella infection is laboratory confirmed.

Probable case: a clinically compatible case that is not confirmed by laboratory investigation, but it has an epidemiological link to a confirmed salmonellosis outbreak.

Diagnostic/analytical methods used

Salmonella isolates are obtained by culturing the faeces samples of the patients on selective-differentiating media, followed by biochemical testing and serotyping. Since 2003 the Hungarian and the Colindale sets of phages have been parallel used for phage typing of the human *S. Enteritidis* isolates received by the Phage-typing and Molecular Epidemiology Department of the 'Johan Bela' National Centre for Epidemiology. For *S. Typhimurium* isolates the schemes of Felix and Callow as well as Anderson et al. are also in use.

Notification system in place

Human cases have been notifiable since 1959. The physician reports data of case on a "case report form" by mail to the municipal institute of NPHMOS. The specialist of the institute records data immediately in the electronic system of the NPHMOS. Hungary has also a laboratory based surveillance system, and the NPHMOS has representative dataset from most of the microbiological laboratories about the laboratory investigated cases (since 2003 antibiotic resistances have also been reported from 5 regional laboratory of NPHMOS and from a number of laboratories from universities or hospitals).

The illness is reported first as enteritis infectiosa syndrome on the basis of the symptoms. Having the results of the laboratory tests this syndrome-based diagnose is modified to etiology-based diagnose. In some cases reporting follows only the available laboratory test results.

History of the disease and/or infection in the country

Human cases have been notifiable since 1959. The isolated strains have been phage-typed since the 1960s. The number of the recorded cases has continuously increased from 1959 to 1996 (with a maximum of 28 046 reported case/year, incidence: 274,6/100 000 inhabitant/year). The number of the recorded outbreaks has also increased in a similar way (outbreak = two epidemiologically linked cases of salmonellosis, maximum number of reported outbreaks: 3450 outbreaks in 1995). Since 1996 both the number of the recorded cases and the outbreaks has continuously decreased. The mortality has

increased only in the period of 1972-1994 (10-20 death/year, case fatality rate: 0.1-0.4%). In the other years the mortality was 5-10 death cases per year (case fatality rate: 0.03-0.09%). The age-specific incidence was the highest for the infants in all periods, and it declined with the progressing of the age. The investigation of the outbreaks mostly demonstrated a food-borne origin. The ratio of the person-to-person transmission is insignificant. In the history of human salmonellosis in Hungary there were less than 10 outbreaks caused by contaminated water.

Up to 1980 the serotype *S. Typhimurium* predominated, and pork was identified as the main source of infection. At that time the infection has spread by homemade foods and also by the products of food-industry. Since 1980 the serotype *S. Enteritidis* has become predominant and poultry has been identified as the main source of the infection. Since then the prevalence of this serotype has remained about 70-80%. Between 1975 and 1980 the *S. Enteritidis* phage type 7 (according to the Hungarian scheme) has predominated. In the period of 1980-1990 strains characterized with phage type 1, from 1990 to 1996 strains characterized with phage type 1, 6 and 6b (according to the Hungarian scheme) were most frequently identified. After 1997 the phage type 6 (acc. to the Hungarian scheme) has become the most frequently occurring phage type.

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

The epidemiological situation of the salmonellosis in Hungary has continuously improved till 2004. The number of cases has decreased from 11 507 to 7557 since 2000 (incidence ranged between 114,3 – 74,7/100 000 inhabitants/year), the case fatality ratio changed between 0,01 – 0,08%. The decrease in the number of salmonellosis cases was mainly due to the decrease in the number of cases caused by *S. Enteritidis*. Eighty percent of the cases were sporadic. There were 6 – 700 community/institutional and family acquired outbreaks recorded. The number of the outbreaks declined more significantly than that of the sporadic cases. The investigation of the outbreaks has showed that in most cases the source of the infection was poultry. Mainly poultry eggs, and foods that contained eggs used without adequate heat-treatment and that were prepared at private home or at canteen/catering trade caused outbreaks. There were only very few outbreaks caused by foods of industrial origin in the past ten years and there were no outbreaks caused by contaminated water.

Relevance as zoonotic disease

In the outbreaks a person-to-person transmission has been detected only in very few cases (in specific communities). In most case the outbreaks were suspectedly or conformedly caused by strains originated from poultry, via contaminated food.

Additional information

At the Phage-typing and Molecular Epidemiology Department of the 'Johan Bela' National Center for Epidemiology, the phage typing reactions for *S. Enteritidis* and *S. Typhimurium* are prepared parallel both with a Hungarian and the international (Ward et al., Colindale) and the Felix-Callow as well as Anderson et al. sets of phages, respectively.

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 samples 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 determined 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

minced meat, meat prep., meat products

At retail

minced meat, meat prep., meat products

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

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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 which 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 Agriculture 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 samples 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 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 the different stages of food chain (slaughterhouses, processing plants, retail). Based on the structure of the EU zoonosis report, the data collection system will be restructured 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

fresh meat and all kinds of meat products

Methods of sampling (description of sampling techniques)

At slaughterhouse and cutting plant

500 grams 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

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Bacteriological method: ISO 6579:2002

At retail

Bacteriological method: ISO 6579:2002

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from broilers (Gallus gallus) - carcase - at slaughterhouse - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > neck skin	Unknown	Batch	25 g	166	25	0	0
Meat from broilers (Gallus gallus) - fresh - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	218	55	0	0
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	328	96	0	0
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	72	27	0	0
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	82	29	0	0
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	85	0	0	0
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	132	0	0	0
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	13	0	0	0
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	72	5	0	0

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	6	2	0	0
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	6	3	0	0
Meat from turkey - carcase - at slaughterhouse - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > neck skin	Unknown	Single	25 g	192	22	0	0
Meat from turkey - fresh - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	281	13	0	0
Meat from turkey - fresh - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	102	13	0	0
Meat from turkey - meat products - cooked, ready-to-eat - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	92	0	0	0
Meat from turkey - meat products - cooked, ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	220	0	0	0
Meat from turkey - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	19	1	0	0
Meat from turkey - meat products - raw but intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	65	4	0	0
Meat from duck - carcase - at slaughterhouse - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	89	7	0	0
Meat from geese - carcase - at slaughterhouse - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	60	2	0	2

Table Salmonella in poultry meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from duck - fresh - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	73	5	0	3
Meat from geese - fresh - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	12	0	0	0
Meat from turkey - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	27	0	0	0
Meat from turkey - meat preparation - intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g or 5x25g	15	3	0	0
Meat from turkey - minced meat - intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	44	5	1	0
Meat from turkey - minced meat - intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	104	22	0	0
Meat from wild game - birds - fresh - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	24	0	0	0
Meat from wild game - birds - fresh - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	21	1	0	0
	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars								
Meat from broilers (Gallus gallus) - carcase - at slaughterhouse - Surveillance	0		25								

Table Salmonella in poultry meat and products thereof

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars
Meat from broilers (Gallus gallus) - fresh - at processing plant - Surveillance	0		55
Meat from broilers (Gallus gallus) - fresh - at retail - Surveillance	0		96
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	0		27
Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - at retail - Surveillance	0		29
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at processing plant - Surveillance	0		0
Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - at retail - Surveillance	0		0
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	0		0
Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - at retail - Surveillance	0		5
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at processing plant - Surveillance	0		2
Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - at retail - Surveillance	0		3

Table Salmonella in poultry meat and products thereof

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars
Meat from turkey - carcass - at slaughterhouse - Surveillance	0		22
Meat from turkey - fresh - at processing plant - Surveillance	0		13
Meat from turkey - fresh - at retail - Surveillance	0		13
Meat from turkey - meat products - cooked, ready-to-eat - at processing plant - Surveillance	0		0
Meat from turkey - meat products - cooked, ready-to-eat - at retail - Surveillance	0		0
Meat from turkey - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	0		1
Meat from turkey - meat products - raw but intended to be eaten cooked - at retail - Surveillance	0		4
Meat from duck - carcass - at slaughterhouse - Surveillance	0		7
Meat from geese - carcass - at slaughterhouse - Surveillance	0		0
Meat from duck - fresh - at retail - Surveillance	0		2
Meat from geese - fresh - at retail - Surveillance	0		0
Meat from turkey - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	0		0

Table Salmonella in poultry meat and products thereof

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars
Meat from turkey - meat preparation - intended to be eaten cooked - at retail - Surveillance	0		3
Meat from turkey - minced meat - intended to be eaten cooked - at processing plant - Surveillance	0		4
Meat from turkey - minced meat - intended to be eaten cooked - at retail - Surveillance	0		22
Meat from wild game - birds - fresh - at processing plant - Surveillance	0		0
Meat from wild game - birds - fresh - at retail - Surveillance	0		1

Table Salmonella in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Milk, cows' - raw milk - intended for direct human consumption - at farm - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > milk	Domestic	Single	25 ml	179	0	0	0
Dairy products (excluding cheeses) - milk powder and whey powder - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	9	0	0	0
Dairy products (excluding cheeses) - milk powder and whey powder - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	92	0	0	0
Cheeses made from cows' milk - curd - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	49	0	0	0
Cheeses made from cows' milk - curd - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	47	0	0	0
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	11	0	0	0
Cheeses made from cows' milk - fresh - made from pasteurised milk - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	3	0	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	40	0	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	43	0	0	0
Cheeses made from goats' milk - unspecified - unspecified - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	13	0	0	0

Table Salmonella in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	19	0	0	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	23	0	0	0
Dairy products (excluding cheeses) - butter - made from pasteurised milk - unspecified - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	13	0	0	0
Dairy products (excluding cheeses) - dairy desserts - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	32	0	0	0
Dairy products (excluding cheeses) - dairy desserts - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	54	0	0	0
Dairy products (excluding cheeses) - fermented dairy products - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	11	0	0	0
Dairy products (excluding cheeses) - fermented dairy products - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	38	0	0	0
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at catering - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	103	0	0	0
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	150	0	0	0
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	224	0	0	0

Table Salmonella in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Dairy products (excluding cheeses) - milk based drinks - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 ml	6	0	0	0
Dairy products (excluding cheeses) - milk based drinks - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 ml	8	0	0	0

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Milk, cows' - raw milk - intended for direct human consumption - at farm - Surveillance	0	
Dairy products (excluding cheeses) - milk powder and whey powder - at processing plant - Surveillance	0	
Dairy products (excluding cheeses) - milk powder and whey powder - at retail - Surveillance	0	
Cheeses made from cows' milk - curd - at processing plant - Surveillance	0	
Cheeses made from cows' milk - curd - at retail - Surveillance	0	
Cheeses made from cows' milk - fresh - made from pasteurised milk - at processing plant - Surveillance	0	
Cheeses made from cows' milk - fresh - made from pasteurised milk - at retail - Surveillance	0	

Table Salmonella in milk and dairy products

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	0	
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	0	
Cheeses made from goats' milk - unspecified - unspecified - Surveillance	0	
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant - Surveillance	0	
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at retail - Surveillance	0	
Dairy products (excluding cheeses) - butter - made from pasteurised milk - unspecified - Surveillance	0	
Dairy products (excluding cheeses) - dairy desserts - at processing plant - Surveillance	0	
Dairy products (excluding cheeses) - dairy desserts - at retail - Surveillance	0	
Dairy products (excluding cheeses) - fermented dairy products - at processing plant - Surveillance	0	
Dairy products (excluding cheeses) - fermented dairy products - at retail - Surveillance	0	

Table Salmonella in milk and dairy products

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at catering - Surveillance	0	
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at processing plant - Surveillance	0	
Dairy products (excluding cheeses) - ice-cream - made from pasteurised milk - at retail - Surveillance	0	
Dairy products (excluding cheeses) - milk based drinks - at processing plant - Surveillance	0	
Dairy products (excluding cheeses) - milk based drinks - at retail - Surveillance	0	

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Eggs - table eggs - at packing centre - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	10 eggs	24	0	0	0
Eggs - table eggs - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	10 eggs	655	0	0	0
Egg products - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	72	0	0	0
Fishery products, unspecified - cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	74	0	0	0
Fish - smoked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	63	0	0	0
Molluscan shellfish - raw - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	3	0	0	0
Molluscan shellfish - cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	62	0	0	0
Seeds, sprouted - ready-to-eat - at processing plant - Surveillance	National Food Chain Sa	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	1	0	0	0
Seeds, sprouted - ready-to-eat - at retail - Surveillance	National Food Chain Sa	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	56	0	0	0
Vegetables - pre-cut - ready-to-eat - at retail - Surveillance	National Food Chain Sa	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	133	1	0	0
Infant formula - dried - intended for infants below 6 months - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	77	0	0	0

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Bakery products - cakes - at catering - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	129	1	0	0
Bakery products - cakes - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	161	0	0	0
Cereals and meals - flakes - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	99	0	0	0
Chocolate - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	33	0	0	0
Chocolate - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	186	0	0	0
Cocoa and cocoa preparations, coffee and tea - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	13	0	0	0
Cocoa and cocoa preparations, coffee and tea - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	282	0	0	0
Coconut - coconut products - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	73	0	0	0
Egg products - dried - unspecified - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	27	1	1	0
Egg products - liquid - unspecified - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 ml	66	0	0	0
Fish - raw - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	45	0	0	0
Fish - raw - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	63	0	0	0

Table Salmonella in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Fishery products, unspecified - non-ready-to-eat - frozen - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	24	0	0	0
Follow-on formulae - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	102	0	0	0
Foodstuffs intended for special nutritional uses - processed cereal-based food for infants and young children - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	37	0	0	0
Nuts and nut products - dried - unspecified - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	85	0	0	0
Other processed food products and prepared dishes - noodles - unspecified - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	111	1	1	0
Other processed food products and prepared dishes - sandwiches - unspecified - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	165	1	0	0
Ready-to-eat salads - at catering - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	64	0	0	0
Ready-to-eat salads - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	256	1	0	0
Soups - dehydrated - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	72	0	0	0
Spices and herbs - dried - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	222	0	0	0
Vegetables - pre-cut - ready-to-eat - at catering - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	85	1	0	0

Table Salmonella in other food

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars
Eggs - table eggs - at packing centre - Surveillance	0		0
Eggs - table eggs - at retail - Surveillance	0		0
Egg products - at processing plant - Surveillance	0		0
Fishery products, unspecified - cooked - at retail - Surveillance	0		
Fish - smoked - at retail - Surveillance	0		0
Molluscan shellfish - raw - at retail - Surveillance	0		0
Molluscan shellfish - cooked - at retail - Surveillance	0		0
Seeds, sprouted - ready-to-eat - at processing plant - Surveillance	0		0
Seeds, sprouted - ready-to-eat - at retail - Surveillance	0		0
Vegetables - pre-cut - ready-to-eat - at retail - Surveillance	0		1
Infant formula - dried - intended for infants below 6 months - at retail - Surveillance	0		0
Bakery products - cakes - at catering - Surveillance	0		1
Bakery products - cakes - at retail - Surveillance	0		0
Cereals and meals - flakes - at retail - Surveillance	0		

Table Salmonella in other food

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars
Chocolate - at processing plant - Surveillance	0		0
Chocolate - at retail - Surveillance	0		0
Cocoa and cocoa preparations, coffee and tea - at processing plant - Surveillance	0		0
Cocoa and cocoa preparations, coffee and tea - at retail - Surveillance	0		0
Coconut - coconut products - at retail - Surveillance	0		0
Egg products - dried - unspecified - Surveillance	0		0
Egg products - liquid - unspecified - Surveillance	0		0
Fish - raw - at processing plant - Surveillance	0		0
Fish - raw - at retail - Surveillance	0		0
Fishery products, unspecified - non-ready-to-eat - frozen - at retail - Surveillance	0		0
Follow-on formulae - at retail - Surveillance	0		0
Foodstuffs intended for special nutritional uses - processed cereal-based food for infants and young children - at retail - Surveillance	0		0
Nuts and nut products - dried - unspecified - Surveillance	0		0
Other processed food products and prepared dishes - noodles - unspecified - Surveillance	0		0

Table Salmonella in other food

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars
Other processed food products and prepared dishes - sandwiches - unspecified - Surveillance	0		1
Ready-to-eat salads - at catering - Surveillance	0		0
Ready-to-eat salads - at retail - Surveillance	0		1
Soups - dehydrated - at retail - Surveillance	0		0
Spices and herbs - dried - at retail - Surveillance	0		0
Vegetables - pre-cut - ready-to-eat - at catering - Surveillance	0		1

Table Salmonella in red meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from pig - carcase - at slaughterhouse - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > carcase swabs	Unknown	Batch	400 cm2	268	0	0	0
Meat from pig - fresh - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	249	2	0	0
Meat from pig - fresh - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Batch	25 g	146	2	0	0
Meat from pig - minced meat - intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	10 g	63	1	0	0
Meat from pig - minced meat - intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	10 g	178	3	0	1
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	10 g	141	9	0	4
Meat from pig - meat preparation - intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	10 g	94	2	0	0
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	3	0	0	0
Meat from pig - meat products - raw but intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	14	0	0	0
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	101	0	0	0
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	128	1	0	1

Table Salmonella in red meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Meat from bovine animals - carcase - at slaughterhouse - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > carcase swabs	Unknown	Batch	400 cm2	259	1	0	0
Meat from bovine animals - fresh - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	103	1	0	0
Meat from bovine animals - fresh - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	177	2	1	0
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	10 g	17	0	0	0
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	10 g	155	2	0	0
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	10 g	3	0	0	0
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	14	0	0	0
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	72	0	0	0
Meat from bovine animals - meat products - cooked, ready-to-eat - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	3	0	0	0
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	37	0	0	0

Table Salmonella in red meat and products thereof

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Other products of animal origin - gelatin and collagen - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	85	0	0	0
Meat from horse - meat products - fermented sausages - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	7	0	0	0
Meat from pig - meat products - fermented sausages - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	529	2	0	0
Meat from pig - meat products - fermented sausages - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	571	1	0	0
Meat from pig - meat products - raw ham - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	174	1	0	0
Meat from pig - meat products - raw ham - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	132	0	0	0
Meat from wild game - land mammals - fresh - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	48	1	0	0
Meat from wild game - land mammals - fresh - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > meat	Unknown	Single	25 g	35	0	0	0
	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars								
Meat from pig - carcass - at slaughterhouse - Surveillance	0		0								
Meat from pig - fresh - at processing plant - Surveillance	0		2								

Table Salmonella in red meat and products thereof

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars
Meat from pig - fresh - at retail - Surveillance	0		2
Meat from pig - minced meat - intended to be eaten cooked - at processing plant - Surveillance	0		1
Meat from pig - minced meat - intended to be eaten cooked - at retail - Surveillance	1		1
Meat from pig - meat preparation - intended to be eaten cooked - at processing plant - Surveillance	1		4
Meat from pig - meat preparation - intended to be eaten cooked - at retail - Surveillance	1		1
Meat from pig - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	0		0
Meat from pig - meat products - raw but intended to be eaten cooked - at retail - Surveillance	0		0
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance	0		0
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance	0		0
Meat from bovine animals - carcase - at slaughterhouse - Surveillance	0		1
Meat from bovine animals - fresh - at processing plant - Surveillance	0		1
Meat from bovine animals - fresh - at retail - Surveillance	0		1

Table Salmonella in red meat and products thereof

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant - Surveillance	0		0
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail - Surveillance	0		2
Meat from bovine animals - meat preparation - intended to be eaten cooked - at retail - Surveillance	0		0
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at processing plant - Surveillance	0		0
Meat from bovine animals - meat products - raw but intended to be eaten cooked - at retail - Surveillance	0		0
Meat from bovine animals - meat products - cooked, ready-to-eat - at processing plant - Surveillance	0		0
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail - Surveillance	0		0
Other products of animal origin - gelatin and collagen - at retail - Surveillance	0		0
Meat from horse - meat products - fermented sausages - at retail - Surveillance	0		0
Meat from pig - meat products - fermented sausages - at processing plant - Surveillance	0		2

Table Salmonella in red meat and products thereof

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	Other serovars
Meat from pig - meat products - fermented sausages - at retail - Surveillance	0		1
Meat from pig - meat products - raw ham - at processing plant - Surveillance	0		1
Meat from pig - meat products - raw ham - at retail - Surveillance	0		0
Meat from wild game - land mammals - fresh - at processing plant - Surveillance	0		1
Meat from wild game - land mammals - fresh - at retail - Surveillance	0		0

2.1.4 Salmonella in animals

Table Salmonella in breeding flocks of Gallus gallus

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes			Census	Official and industry sampling			yes				
Gallus gallus (fowl) - parent breeding flocks, unspecified - adult - Control and eradication programmes	671	county report	Objective sampling	Official and industry sampling	environmental sample > boot swabs and dust	Domestic	yes	Flock	671	28	2
Gallus gallus (fowl) - breeding flocks, unspecified - day-old chicks - at farm - Control and eradication programmes	20	county report	Objective sampling	Industry sampling	environmental sample > boot swabs and dust	Domestic	yes	Flock	20	1	0
Gallus gallus (fowl) - breeding flocks, unspecified - during rearing period - at farm - Control and eradication programmes	540	county report	Objective sampling	Official and industry sampling	environmental sample > boot swabs and dust	Domestic	yes	Flock	540	0	0
	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-	Salmonella spp., unspecified					
Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes											
Gallus gallus (fowl) - parent breeding flocks, unspecified - adult - Control and eradication programmes	0	7	0	0	0	19					

Table Salmonella in breeding flocks of Gallus gallus

	S. Hadar	S. Infantis	S. Typhimurium	S. Virchow	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Gallus gallus (fowl) - breeding flocks, unspecified - day-old chicks - at farm - Control and eradication programmes	0	0	1	0	0	0
Gallus gallus (fowl) - breeding flocks, unspecified - during rearing period - at farm - Control and eradication programmes	0	0	0	0	0	0

Table Salmonella in other birds

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-
Partridges - in total - Unspecified	NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	Animal	15	0			
Pheasants - in total - Unspecified	NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	Animal	161	34			
Pigeons - in total - Unspecified	NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	Animal	28	7		4	
	Salmonella spp., unspecified										
Partridges - in total - Unspecified											
Pheasants - in total - Unspecified	34										
Pigeons - in total - Unspecified	3										

Table Salmonella in other animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium	S. 1,4,[5],12:i:-
Cattle (bovine animals) - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Animal	111	11	1	1	
Pigs - unspecified - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Animal	249	54	1	10	
Sheep - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Animal	5	1			
Wild boars - wild - from hunting - Unspecified	NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	Animal	12	12			

	Salmonella spp., unspecified
Cattle (bovine animals) - at farm - Clinical investigations	9
Pigs - unspecified - at farm - Clinical investigations	43
Sheep - at farm - Clinical investigations	1
Wild boars - wild - from hunting - Unspecified	12

Table Salmonella in other poultry

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes	23	county report	Objective sampling	Industry sampling	environmental sample > delivery box liner	Domestic	yes	Flock	23	1	0
Gallus gallus (fowl) - laying hens - during rearing period - Control and eradication programmes	82	county report	Objective sampling	Official and industry sampling	environmental sample > boot swabs and dust	Domestic	yes	Flock	82	0	0
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	1134	county report	Objective sampling	Official and industry sampling	environmental sample > boot swabs and dust	Domestic	yes	Flock	1134	60	18
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes				Official sampling			yes				
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	7433	county report	Census	Industry sampling	environmental sample > boot swabs and dust	Domestic	yes	Flock	7433	1527	16
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes			Census	Official and industry sampling			yes				
Turkeys - breeding flocks, unspecified - day-old chicks - at farm - Control and eradication programmes	0										
Turkeys - breeding flocks, unspecified - during rearing period - at farm - Control and eradication programmes	19	county report	Objective sampling	Official and industry sampling	environmental sample > boot swabs and dust	Domestic	yes	Flock	19	0	0
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	124	county report	Objective sampling	Official and industry sampling	environmental sample > boot swabs and dust	Domestic	yes	Flock	124	16	0

Table Salmonella in other poultry

	No of flocks under control programme	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Target Verification	Sampling unit	Units tested	Total units positive for Salmonella	S. Enteritidis
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes	3189	county report	Objective sampling	Official and industry sampling	environmental sample > boot swabs and dust	Domestic	yes		3189	1409	5
Ducks - in total - Unspecified		NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	no	Animal	522	147	7
Geese - in total - Unspecified		NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic		Animal	1600	620	

	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes	1	0	0
Gallus gallus (fowl) - laying hens - during rearing period - Control and eradication programmes	0	0	0
Gallus gallus (fowl) - laying hens - adult - at farm - Control and eradication programmes	0	0	42
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes			
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes	12	0	1499
Gallus gallus (fowl) - broilers - before slaughter - at farm - Control and eradication programmes			
Turkeys - breeding flocks, unspecified - day-old chicks - at farm - Control and eradication programmes			

Table Salmonella in other poultry

	S. Typhimurium	S. 1,4,[5],12:i:-	Salmonella spp., unspecified
Turkeys - breeding flocks, unspecified - during rearing period - at farm - Control and eradication programmes	0	0	0
Turkeys - breeding flocks, unspecified - adult - at farm - Control and eradication programmes	0	0	16
Turkeys - fattening flocks - before slaughter - at farm - Control and eradication programmes	3	0	1401
Ducks - in total - Unspecified	42		98
Geese - in total - Unspecified	150		470

2.1.5 Salmonella in feedingstuffs

Table Salmonella in compound feedingstuffs

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Compound feedingstuffs for cattle - final product - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	43			
Compound feedingstuffs for pigs - final product - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	175	1		
Compound feedingstuffs for poultry (non specified) - final product - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	125			
Compound feedingstuffs for poultry - breeders - final product - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	10	1		
Compound feedingstuffs for poultry - laying hens - final product - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	52	2		
Compound feedingstuffs for poultry - broilers - final product - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	74			
	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Derby	S. Livingstone	S. Senftenberg	S. Tennessee					
Compound feedingstuffs for cattle - final product - at feed mill - Surveillance											
Compound feedingstuffs for pigs - final product - at feed mill - Surveillance			1								

Table Salmonella in compound feedingstuffs

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Derby	S. Livingstone	S. Senftenberg	S. Tennessee
Compound feedingstuffs for poultry (non specified) - final product - at feed mill - Surveillance						
Compound feedingstuffs for poultry - breeders - final product - at feed mill - Surveillance				1		
Compound feedingstuffs for poultry - laying hens - final product - at feed mill - Surveillance					1	1
Compound feedingstuffs for poultry - broilers - final product - at feed mill - Surveillance						

Table Salmonella in feed material of animal origin

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of land animal origin - meat meal - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	5	1		
Feed material of land animal origin - animal fat - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	1			
Feed material of marine animal origin - fish meal - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	3			
	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. London								
Feed material of land animal origin - meat meal - at feed mill - Surveillance			1								
Feed material of land animal origin - animal fat - at feed mill - Surveillance											
Feed material of marine animal origin - fish meal - at feed mill - Surveillance											

Table Salmonella in other feed matter

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Salmonella	S. Enteritidis	S. Typhimurium
Feed material of cereal grain origin - barley derived - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	2			
Feed material of cereal grain origin - wheat derived - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	18			
Feed material of cereal grain origin - other cereal grain derived - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	1			
Feed material of cereal grain origin - maize derived - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	13	1		
Feed material of oil seed or fruit origin - rape seed derived - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	3			
Feed material of oil seed or fruit origin - soya (bean) derived - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	13			
Feed material of oil seed or fruit origin - sunflower seed derived - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	6			
Feed material of oil seed or fruit origin - other oil seeds derived - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	1	1		
Other feed material - other plants - at feed mill - Surveillance	NFCSD FFSD	Objective sampling	Official sampling	feed sample	Unknown	Batch	1 kg	2			

Table Salmonella in other feed matter

	S. 1,4,[5],12:i:-	Salmonella spp., unspecified	S. Agona	S. Mbandaka
Feed material of cereal grain origin - barley derived - at feed mill - Surveillance				
Feed material of cereal grain origin - wheat derived - at feed mill - Surveillance				
Feed material of cereal grain origin - other cereal grain derived - at feed mill - Surveillance				
Feed material of cereal grain origin - maize derived - at feed mill - Surveillance				1
Feed material of oil seed or fruit origin - rape seed derived - at feed mill - Surveillance				
Feed material of oil seed or fruit origin - soya (bean) derived - at feed mill - Surveillance				
Feed material of oil seed or fruit origin - sunflower seed derived - at feed mill - Surveillance				
Feed material of oil seed or fruit origin - other oil seeds derived - at feed mill - Surveillance			1	
Other feed material - other plants - at feed mill - Surveillance				

2.1.6 Salmonella serovars and phagetype distribution

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

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory			5			52	10						
Number of isolates serotyped			5			52	10						
Number of isolates per serovar													
S. Abony													
S. Agona													
S. Anatum													
S. Blockley													
S. Bovismorbificans						3							
S. Bredeney						2							

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory			5			52	10						
Number of isolates serotyped			5			52	10						
Number of isolates per serovar													
S. Cerro													
S. Choleraesuis var. Kunzendorf							3						
S. Derby						9							
S. Enteritidis			1			1							
S. Hadar													
S. Indiana													
S. Infantis						8							
S. Kentucky													
S. Kottbus													
S. Liverpool													
S. Livingstone													

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory			5			52	10						
Number of isolates serotyped			5			52	10						
Number of isolates per serovar													
S. Mbandaka													
S. Montevideo													
S. Muenster													
S. Newport													
S. Saintpaul													
S. Schwarzengrund													
S. Senftenberg													
S. Stanley							1						
S. Tennessee													
S. Thompson													
S. Typhimurium			4			12	4						

Table Salmonella serovars in animals

Serovar	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory			5			52	10						
Number of isolates serotyped			5			52	10						
Number of isolates per serovar													
S. Typhimurium, monophasic						16	2						
S. Virchow													
S. Welikade													
S. enterica subsp. enterica, rough						1							
S. group O:4													
S. group O:7													
S. group O:8													

Table Salmonella serovars in animals

Serovar	Other poultry			Ducks - unspecified - Clinical investigations				Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes				Gallus gallus (fowl) - breeding flocks, unspecified - day-old chicks - Control and eradication programmes	
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Sources of isolates													
Number of isolates in the laboratory						55		40				7	
Number of isolates serotyped						55		40				7	
Number of isolates per serovar													
S. Abony													
S. Agona													
S. Anatum													
S. Blockley								1					
S. Bovismorbificans								2					
S. Bredeney													
S. Cerro													
S. Choleraesuis var. Kunzendorf													
S. Derby													
S. Enteritidis						5		8				2	

Table Salmonella serovars in animals

Serovar	Other poultry			Ducks - unspecified - Clinical investigations				Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes				Gallus gallus (fowl) - breeding flocks, unspecified - day-old chicks - Control and eradication programmes	
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Sources of isolates													
Number of isolates in the laboratory						55		40				7	
Number of isolates serotyped						55		40				7	
Number of isolates per serovar													
S. Hadar													
S. Indiana													
S. Infantis								17				1	
S. Kentucky													
S. Kottbus						2		1					
S. Liverpool													
S. Livingstone						38		2				1	
S. Mbandaka													
S. Montevideo								1					
S. Muenster													

Table Salmonella serovars in animals

Serovar	Other poultry			Ducks - unspecified - Clinical investigations				Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes				Gallus gallus (fowl) - breeding flocks, unspecified - day-old chicks - Control and eradication programmes	
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Sources of isolates													
Number of isolates in the laboratory						55		40				7	
Number of isolates serotyped						55		40				7	
Number of isolates per serovar													
S. Newport													
S. Saintpaul													
S. Schwarzengrund								1					
S. Senftenberg								5					
S. Stanley								1					
S. Tennessee								1					
S. Thompson													
S. Typhimurium						10							
S. Typhimurium, monophasic													
S. Virchow													

Table Salmonella serovars in animals

Serovar	Other poultry			Ducks - unspecified - Clinical investigations				Gallus gallus (fowl) - breeding flocks, unspecified - adult - Control and eradication programmes				Gallus gallus (fowl) - breeding flocks, unspecified - day-old chicks - Control and eradication programmes	
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Sources of isolates													
Number of isolates in the laboratory						55		40				7	
Number of isolates serotyped						55		40				7	
Number of isolates per serovar													
S. Welikade												3	
S. enterica subsp. enterica, rough													
S. group O:4													
S. group O:7													
S. group O:8													

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - breeding flocks, unspecified - day-old chicks - Control and eradication programmes		Gallus gallus (fowl) - broilers - before slaughter - Control and eradication programmes				Gallus gallus (fowl) - broilers - day-old chicks - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - Control and eradication programmes		
	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical
Sources of isolates													
Number of isolates in the laboratory			1794				76				79		
Number of isolates serotyped			1794				76				79		
Number of isolates per serovar													
S. Abony											4		
S. Agona											6		
S. Anatum							1						
S. Blockley													
S. Bovismorbificans			14				1				2		
S. Bredeney			1								2		
S. Cerro			1								2		
S. Choleraesuis var. Kunzendorf													
S. Derby													
S. Enteritidis			16				4				25		

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - breeding flocks, unspecified - day-old chicks - Control and eradication programmes		Gallus gallus (fowl) - broilers - before slaughter - Control and eradication programmes				Gallus gallus (fowl) - broilers - day-old chicks - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - Control and eradication programmes		
	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical
Sources of isolates													
Number of isolates in the laboratory			1794				76				79		
Number of isolates serotyped			1794				76				79		
Number of isolates per serovar													
S. Hadar													
S. Indiana			1								1		
S. Infantis			1650				29				14		
S. Kentucky			2								2		
S. Kottbus			5				7				1		
S. Liverpool													
S. Livingstone			1								2		
S. Mbandaka			1								1		
S. Montevideo			2				16				1		
S. Muenster			2										

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - breeding flocks, unspecified - day-old chicks - Control and eradication programmes		Gallus gallus (fowl) - broilers - before slaughter - Control and eradication programmes				Gallus gallus (fowl) - broilers - day-old chicks - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - Control and eradication programmes		
	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical
Sources of isolates													
Number of isolates in the laboratory			1794				76				79		
Number of isolates serotyped			1794				76				79		
Number of isolates per serovar													
S. Newport			11				1				1		
S. Saintpaul			1								2		
S. Schwarzengrund													
S. Senftenberg			12				8						
S. Stanley			7				1						
S. Tennessee			1								5		
S. Thompson			42				1				5		
S. Typhimurium			13				7				3		
S. Typhimurium, monophasic													
S. Virchow													

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - breeding flocks, unspecified - day-old chicks - Control and eradication programmes		Gallus gallus (fowl) - broilers - before slaughter - Control and eradication programmes				Gallus gallus (fowl) - broilers - day-old chicks - Control and eradication programmes				Gallus gallus (fowl) - laying hens - adult - Control and eradication programmes		
	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical
Number of isolates in the laboratory			1794				76				79		
Number of isolates serotyped			1794				76				79		
Number of isolates per serovar													
S. Welikade			1										
S. enterica subsp. enterica, rough			10										
S. group O:4													
S. group O:7													
S. group O:8													

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - Control and eradication programme s	Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes				Geese - unspecified - Clinical investigations				Turkeys - breeding flocks, unspecified - adult - Control and eradication programmes			
	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory		9						101		49			
Number of isolates serotyped		9						101		49			
Number of isolates per serovar													
S. Abony													
S. Agona													
S. Anatum													
S. Blockley										2			
S. Bovismorbificans													
S. Bredeney										19			
S. Cerro													
S. Choleraesuis var. Kunzendorf													

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - Control and eradication programme s	Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes				Geese - unspecified - Clinical investigations				Turkeys - breeding flocks, unspecified - adult - Control and eradication programmes			
	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory		9						101		49			
Number of isolates serotyped		9						101		49			
Number of isolates per serovar													
S. Derby													
S. Enteritidis													
S. Hadar													
S. Indiana													
S. Infantis		1								1			
S. Kentucky										8			
S. Kottbus		2						12		1			
S. Liverpool													

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - Control and eradication programme s	Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes				Geese - unspecified - Clinical investigations				Turkeys - breeding flocks, unspecified - adult - Control and eradication programmes			
	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory		9						101		49			
Number of isolates serotyped		9						101		49			
Number of isolates per serovar													
S. Livingstone													
S. Mbandaka													
S. Montevideo													
S. Muenster													
S. Newport										14			
S. Saintpaul								1					
S. Schwarzengrund													
S. Senftenberg													

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - Control and eradication programme s	Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes				Geese - unspecified - Clinical investigations				Turkeys - breeding flocks, unspecified - adult - Control and eradication programmes			
	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory		9						101		49			
Number of isolates serotyped		9						101		49			
Number of isolates per serovar													
S. Stanley										1			
S. Tennessee										3			
S. Thompson								25					
S. Typhimurium		6						60					
S. Typhimurium, monophasic								1					
S. Virchow													
S. Welikade													
S. enterica subsp. enterica, rough								1					

Table Salmonella serovars in animals

Serovar	Gallus gallus (fowl) - laying hens - adult - Control and eradication programme s	Gallus gallus (fowl) - laying hens - day-old chicks - Control and eradication programmes				Geese - unspecified - Clinical investigations				Turkeys - breeding flocks, unspecified - adult - Control and eradication programmes			
	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Number of isolates in the laboratory		9						101		49			
Number of isolates serotyped		9						101		49			
Number of isolates per serovar													
S. group O:4								1					
S. group O:7													
S. group O:8													

Table Salmonella serovars in animals

Serovar	Turkeys - breeding flocks, unspecified - day-old chicks - Control and eradication programmes				Turkeys - meat production flocks - before slaughter - Control and eradication programmes				Turkeys - meat production flocks - day-old chicks - Control and eradication programmes				Turkeys - unspecified - Clinical investigations
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory	2				1739				29				
Number of isolates serotyped	2				1739				29				
Number of isolates per serovar													
S. Abony													
S. Agona					19								
S. Anatum													
S. Blockley					1								
S. Bovismorbificans					28				5				
S. Bredeney					258				2				
S. Cerro													
S. Choleraesuis var. Kunzendorf													
S. Derby					1								
S. Enteritidis	1				8				1				

Table Salmonella serovars in animals

Serovar	Turkeys - breeding flocks, unspecified - day-old chicks - Control and eradication programmes				Turkeys - meat production flocks - before slaughter - Control and eradication programmes				Turkeys - meat production flocks - day-old chicks - Control and eradication programmes				Turkeys - unspecified - Clinical investigations
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory	2				1739				29				
Number of isolates serotyped	2				1739				29				
Number of isolates per serovar													
S. Hadar					5								
S. Indiana													
S. Infantis					131				5				
S. Kentucky					312								
S. Kottbus					58				8				
S. Liverpool	1												
S. Livingstone													
S. Mbandaka					1								
S. Montevideo													
S. Muenster													

Table Salmonella serovars in animals

Serovar	Turkeys - breeding flocks, unspecified - day-old chicks - Control and eradication programmes				Turkeys - meat production flocks - before slaughter - Control and eradication programmes				Turkeys - meat production flocks - day-old chicks - Control and eradication programmes				Turkeys - unspecified - Clinical investigations
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory	2				1739				29				
Number of isolates serotyped	2				1739				29				
Number of isolates per serovar													
S. Newport					136				4				
S. Saintpaul					66								
S. Schwarzengrund													
S. Senftenberg					5								
S. Stanley					673				3				
S. Tennessee					10								
S. Thompson					7								
S. Typhimurium					2				1				
S. Typhimurium, monophasic													
S. Virchow					6								

Table Salmonella serovars in animals

Serovar	Turkeys - breeding flocks, unspecified - day-old chicks - Control and eradication programmes				Turkeys - meat production flocks - before slaughter - Control and eradication programmes				Turkeys - meat production flocks - day-old chicks - Control and eradication programmes				Turkeys - unspecified - Clinical investigations
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	
Sources of isolates													
Number of isolates in the laboratory	2				1739				29				
Number of isolates serotyped	2				1739				29				
Number of isolates per serovar													
S. Welikade													
S. enterica subsp. enterica, rough					1								
S. group O:4					8								
S. group O:7					2								
S. group O:8					1								

Serovar	Turkeys - unspecified - Clinical investigations		
	Monitoring	Clinical	Surveillance
Sources of isolates			
Number of isolates in the laboratory		19	
Number of isolates serotyped		19	
Number of isolates per serovar			
S. Abony			

Table Salmonella serovars in animals

Serovar	Turkeys - unspecified - Clinical investigations		
	Monitoring	Clinical	Surveillance
Sources of isolates			
Number of isolates in the laboratory		19	
Number of isolates serotyped		19	
Number of isolates per serovar			
S. Agona			
S. Anatum			
S. Blockley			
S. Bovismorbificans			
S. Bredeney			
S. Cerro			
S. Choleraesuis var. Kunzendorf			
S. Derby			
S. Enteritidis			
S. Hadar			
S. Indiana			

Table Salmonella serovars in animals

Serovar	Turkeys - unspecified - Clinical investigations		
	Monitoring	Clinical	Surveillance
Sources of isolates			
Number of isolates in the laboratory		19	
Number of isolates serotyped		19	
Number of isolates per serovar			
S. Infantis		4	
S. Kentucky		2	
S. Kottbus			
S. Liverpool			
S. Livingstone			
S. Mbandaka			
S. Montevideo			
S. Muenster			
S. Newport			
S. Saintpaul			
S. Schwarzengrund			

Table Salmonella serovars in animals

Serovar	Turkeys - unspecified - Clinical investigations		
	Monitoring	Clinical	Surveillance
Sources of isolates			
Number of isolates in the laboratory		19	
Number of isolates serotyped		19	
Number of isolates per serovar			
S. Senftenberg			
S. Stanley		12	
S. Tennessee			
S. Thompson			
S. Typhimurium		1	
S. Typhimurium, monophasic			
S. Virchow			
S. Welikade			
S. enterica subsp. enterica, rough			
S. group O:4			
S. group O:7			

Table Salmonella serovars in animals

Serovar	Turkeys - unspecified - Clinical investigations		
	Monitoring	Clinical	Surveillance
Sources of isolates			
Number of isolates in the laboratory		19	
Number of isolates serotyped		19	
Number of isolates per serovar			
S. group O:8			

Table Salmonella serovars in feed

Serovar	Compound feedingstuffs for pigs		All feedingstuffs - Monitoring	
	Monitoring	Clinical	Monitoring	Clinical
Sources of isolates				
Number of isolates in the laboratory			19	
Number of isolates serotyped			19	
Number of isolates per serovar				
S. Agona			5	
S. Banana			1	
S. Derby			1	
S. Infantis			1	
S. Livingstone			3	
S. London			1	
S. Mbandaka			1	
S. Senftenberg			1	
S. Tennessee			1	
S. Thompson			1	
S. Typhimurium			2	

Table Salmonella serovars in feed

Serovar	Compound feedingstuffs for pigs		All feedingstuffs - Monitoring	
	Monitoring	Clinical	Monitoring	Clinical
Sources of isolates				
Number of isolates in the laboratory			19	
Number of isolates serotyped			19	
Number of isolates per serovar				
S. Typhimurium, monophasic			1	

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Meat from bovine animals - fresh - Monitoring		Meat from bovine animals - minced meat - intended to be eaten cooked - Monitoring
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory											3		2
Number of isolates serotyped											3		2
Number of isolates per serovar													
S. Bovismorbificans											1		
S. Brandenburg													
S. Bredeney													
S. Choleraesuis var. Kunzendorf													
S. Derby													
S. Enteritidis											1		
S. Give													
S. Indiana													

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Meat from bovine animals - fresh - Monitoring		Meat from bovine animals - minced meat - intended to be eaten cooked - Monitoring
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory											3		2
Number of isolates serotyped											3		2
Number of isolates per serovar													
S. Infantis													1
S. Kentucky											1		
S. Kottbus													
S. Livingstone													
S. Mbandaka													
S. Newport													
S. Ohio													
S. Rissen													
S. Saintpaul													

Table Salmonella serovars in food

Serovar	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Meat from bovine animals - fresh - Monitoring		Meat from bovine animals - minced meat - intended to be eaten cooked - Monitoring
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory											3		2
Number of isolates serotyped											3		2
Number of isolates per serovar													
S. Stanley													
S. Tennessee													1
S. Thompson													
S. Typhimurium													
S. Typhimurium, monophasic													
S. Virchow													
S. enterica subsp. enterica, rough													
S. group O:7													

Table Salmonella serovars in food

Serovar	Meat from bovine animals - minced meat - intended to be eaten cooked - Monitoring	Meat from broilers (Gallus gallus) - fresh - Monitoring		Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - Monitoring		Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Monitoring		Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - Monitoring		Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - Monitoring		Meat from duck - fresh - Monitoring	
	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
	Sources of isolates												
	Number of isolates in the laboratory	367		52		2		6		3		12	
Number of isolates serotyped		367		52		2		6		3		12	
Number of isolates per serovar													
S. Bovismorbificans													
S. Brandenburg													
S. Bredeney													
S. Choleraesuis var. Kunzendorf													
S. Derby													
S. Enteritidis													
S. Give													
S. Indiana				1									
S. Infantis		342		46		2		6		3			

Table Salmonella serovars in food

Serovar	Meat from bovine animals - minced meat - intended to be eaten cooked - Monitoring	Meat from broilers (Gallus gallus) - fresh - Monitoring		Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - Monitoring		Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Monitoring		Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - Monitoring		Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - Monitoring		Meat from duck - fresh - Monitoring	
	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
	Sources of isolates												
	Number of isolates in the laboratory	367		52		2		6		3		12	
Number of isolates serotyped		367		52		2		6		3		12	
Number of isolates per serovar													
S. Kentucky		1		1									
S. Kottbus		2										4	
S. Livingstone												3	
S. Mbandaka												1	
S. Newport		7		3									
S. Ohio													
S. Rissen													
S. Saintpaul		1											
S. Stanley		5		1									

Table Salmonella serovars in food

Serovar	Meat from bovine animals - minced meat - intended to be eaten cooked - Monitoring	Meat from broilers (Gallus gallus) - fresh - Monitoring		Meat from broilers (Gallus gallus) - meat preparation - intended to be eaten cooked - Monitoring		Meat from broilers (Gallus gallus) - meat products - cooked, ready-to-eat - Monitoring		Meat from broilers (Gallus gallus) - meat products - raw but intended to be eaten cooked - Monitoring		Meat from broilers (Gallus gallus) - minced meat - intended to be eaten cooked - Monitoring		Meat from duck - fresh - Monitoring	
	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
Sources of isolates													
Number of isolates in the laboratory		367		52		2		6		3		12	
Number of isolates serotyped		367		52		2		6		3		12	
Number of isolates per serovar													
S. Tennessee													
S. Thompson		2											
S. Typhimurium												3	
S. Typhimurium, monophasic													
S. Virchow												1	
S. enterica subsp. enterica, rough		7											
S. group O:7													

Table Salmonella serovars in food

Serovar	Meat from geese - fresh - Monitoring		Meat from pig - fresh - Monitoring		Meat from pig - meat products - cooked, ready-to-eat - Monitoring		Meat from pig - meat products - fermented sausages - Monitoring		Meat from pig - meat products - fresh raw sausages - Monitoring		Meat from pig - minced meat - intended to be eaten cooked - Monitoring		Meat from turkey - fresh - Monitoring
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory	2		7		2		3		12		5		52
Number of isolates serotyped	2		7		2		3		12		5		52
Number of isolates per serovar													
S. Bovismorbificans			1				1						1
S. Brandenburg									1				
S. Bredeney													4
S. Choleraesuis var. Kunzendorf			1										
S. Derby			1								1		
S. Enteritidis													
S. Give									1				
S. Indiana													
S. Infantis			2						2		2		8
S. Kentucky													11
S. Kottbus													2

Table Salmonella serovars in food

Serovar	Meat from geese - fresh - Monitoring		Meat from pig - fresh - Monitoring		Meat from pig - meat products - cooked, ready-to-eat - Monitoring		Meat from pig - meat products - fermented sausages - Monitoring		Meat from pig - meat products - fresh raw sausages - Monitoring		Meat from pig - minced meat - intended to be eaten cooked - Monitoring		Meat from turkey - fresh - Monitoring
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory	2		7		2		3		12		5		52
Number of isolates serotyped	2		7		2		3		12		5		52
Number of isolates per serovar													
S. Livingstone													
S. Mbandaka													
S. Newport													8
S. Ohio									1				
S. Rissen			1						1				
S. Saintpaul													2
S. Stanley													14
S. Tennessee													
S. Thompson													
S. Typhimurium	2		1		1		1		4		1		
S. Typhimurium, monophasic									2		1		

Table Salmonella serovars in food

Serovar	Meat from geese - fresh - Monitoring		Meat from pig - fresh - Monitoring		Meat from pig - meat products - cooked, ready-to-eat - Monitoring		Meat from pig - meat products - fermented sausages - Monitoring		Meat from pig - meat products - fresh raw sausages - Monitoring		Meat from pig - minced meat - intended to be eaten cooked - Monitoring		Meat from turkey - fresh - Monitoring
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory	2		7		2		3		12		5		52
Number of isolates serotyped	2		7		2		3		12		5		52
Number of isolates per serovar													
S. Virchow													
S. enterica subsp. enterica, rough							1						1
S. group O:7					1								1

Serovar	Meat from turkey - fresh - Monitoring	Meat from turkey - meat preparation - intended to be eaten cooked - Monitoring		Meat from turkey - meat products - raw but intended to be eaten cooked - Monitoring		Meat from turkey - minced meat - intended to be eaten cooked - Monitoring	
	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
Sources of isolates							
Number of isolates in the laboratory		4		4		27	
Number of isolates serotyped		4		4		27	
Number of isolates per serovar							
S. Bovismorbificans						1	
S. Brandenburg							

Table Salmonella serovars in food

Serovar	Meat from turkey - fresh - Monitoring	Meat from turkey - meat preparation - intended to be eaten cooked - Monitoring		Meat from turkey - meat products - raw but intended to be eaten cooked - Monitoring		Meat from turkey - minced meat - intended to be eaten cooked - Monitoring	
	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
Sources of isolates							
Number of isolates in the laboratory		4		4		27	
Number of isolates serotyped		4		4		27	
Number of isolates per serovar							
S. Bredeney		1				3	
S. Choleraesuis var. Kunzendorf							
S. Derby							
S. Enteritidis						1	
S. Give							
S. Indiana							
S. Infantis				3		5	
S. Kentucky						3	
S. Kottbus							
S. Livingstone							

Table Salmonella serovars in food

Serovar	Meat from turkey - fresh - Monitoring	Meat from turkey - meat preparation - intended to be eaten cooked - Monitoring		Meat from turkey - meat products - raw but intended to be eaten cooked - Monitoring		Meat from turkey - minced meat - intended to be eaten cooked - Monitoring	
	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
Sources of isolates							
Number of isolates in the laboratory		4		4		27	
Number of isolates serotyped		4		4		27	
Number of isolates per serovar							
S. Mbandaka							
S. Newport		1		1		7	
S. Ohio							
S. Rissen							
S. Saintpaul		1				1	
S. Stanley						4	
S. Tennessee		1					
S. Thompson							
S. Typhimurium							
S. Typhimurium, monophasic							

Table Salmonella serovars in food

Serovar	Meat from turkey - fresh - Monitoring	Meat from turkey - meat preparation - intended to be eaten cooked - Monitoring		Meat from turkey - meat products - raw but intended to be eaten cooked - Monitoring		Meat from turkey - minced meat - intended to be eaten cooked - Monitoring	
	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance
Sources of isolates							
Number of isolates in the laboratory		4		4		27	
Number of isolates serotyped		4		4		27	
Number of isolates per serovar							
S. Virchow							
S. enterica subsp. enterica, rough							
S. group O:7						2	

Table Salmonella Enteritidis phage types in animals

Phagetype	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory			1				1		51		1		
Number of isolates phagetyped	0	0	1	0	0	0	1	0	49	0	1	0	0
Number of isolates per phagetype													
DT RDNC									1				
Not typeable									2				
PT 1													
PT 13									1				
PT 13a									3				
PT 1b									3				
PT 2									3				
PT 21									1				
PT 21c									1				
PT 35													
PT 4									1		1		

Table Salmonella Enteritidis phagetypes in animals

Phagetype	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory			1				1		51		1		
Number of isolates phagetyped	0	0	1	0	0	0	1	0	49	0	1	0	0
Number of isolates per phagetype													
PT 5									15				
PT 6c			1						1				
PT 8							1		17				

Phagetype	Other poultry			Ducks - Clinical investigations				Turkeys - unspecified - Control and eradication programmes			
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Sources of isolates											
Number of isolates in the laboratory						5		10			
Number of isolates phagetyped	0	0	0			5		10			
Number of isolates per phagetype											
DT RDNC											
Not typeable											
PT 1						2		1			

Table Salmonella Enteritidis phagetypes in animals

Phagetype	Other poultry			Ducks - Clinical investigations				Turkeys - unspecified - Control and eradication programmes			
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance
Sources of isolates											
Number of isolates in the laboratory						5		10			
Number of isolates phagetyped	0	0	0			5		10			
Number of isolates per phagetype											
PT 13											
PT 13a								9			
PT 1b						1					
PT 2											
PT 21											
PT 21c											
PT 35						2					
PT 4											
PT 5											
PT 6c											
PT 8											

Table Salmonella Enteritidis phagetypes in animals

Table Salmonella Enteritidis phagetypes in food

Phagetype	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Egg products - dried - Monitoring		Meat from turkey - Monitoring
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory	1										1		1
Number of isolates phagetyped	1	0	0	0	0	0	0	0	0	0	1		1
Number of isolates per phagetype													
PT 4													1
PT 6c	1												
PT 8											1		

Phagetype	Meat from turkey - Monitoring	Other processed food products and prepared dishes - pasta - simple pasta - Monitoring	
	Surveillance	Monitoring	Surveillance
Sources of isolates			
Number of isolates in the laboratory		2	
Number of isolates phagetyped		2	
Number of isolates per phagetype			
PT 4			
PT 6c			

Table Salmonella Enteritidis phagetypes in food

Phagetype	Meat from turkey - Monitoring	Other processed food products and prepared dishes - pasta - simple pasta - Monitoring	
	Surveillance	Monitoring	Surveillance
Sources of isolates			
Number of isolates in the laboratory		2	
Number of isolates phagetyped		2	
Number of isolates per phagetype			
PT 8		2	

Table Salmonella Typhimurium phagetypes in animals

Phagetype	Cattle (bovine animals)				Pigs				Gallus gallus (fowl)				Other poultry
	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program
Sources of isolates													
Number of isolates in the laboratory			4			12	4		32				
Number of isolates phagetyped	0	0	4	0	0	12	4	0	32	0	0	0	0
Number of isolates per phagetype													
DT 1							1		3				
DT 104			2			2							
DT 104b						3			3				
DT 193						1			2				
DT 30													
DT 46a			1						5				
DT 8									1				
Not typeable			1			4	1						
RDNC						1	1		18				
U 302						1	1						

Table Salmonella Typhimurium phagetypes in animals

Phagetype	Other poultry			Ducks - Clinical investigations				Geese - Clinical investigations				Turkeys - Control and eradication programmes	
	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring	Clinical	Surveillance	Control program	Monitoring
Sources of isolates													
Number of isolates in the laboratory						10				60		3	
Number of isolates phagetyped	0	0	0			9				60		3	
Number of isolates per phagetype													
DT 1													
DT 104										3			
DT 104b													
DT 193										1			
DT 30						1							
DT 46a										11		1	
DT 8						1				4			
Not typeable												1	
RDNC						7				41		1	
U 302													

Table Salmonella Typhimurium phagetypes in animals

Phagetype	Turkeys - Control and eradication programmes	
	Clinical	Surveillance
Sources of isolates		
Number of isolates in the laboratory	1	
Number of isolates phagetyped	1	
Number of isolates per phagetype		
DT 1		
DT 104		
DT 104b		
DT 193		
DT 30		
DT 46a	1	
DT 8		
Not typeable		
RDNC		
U 302		

Table Salmonella Typhimurium phagetypes in animals

Table Salmonella Typhimurium phagetypes in food

Phagetype	Meat from bovine animals		Meat from pig		Meat from broilers (Gallus gallus)		Meat from other poultry species		Other products of animal origin		Meat from duck - Monitoring		Meat from geese - Monitoring
	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring	Surveillance	Monitoring
Sources of isolates													
Number of isolates in the laboratory			10								3		2
Number of isolates phagetyped	0	0	10	0	0	0	0	0	0	0	3		2
Number of isolates per phagetype													
DT 104			1										
DT 104b			4										
DT 8											2		
Not typeable			1										
RDNC											1		2
U 302			4										

Table Salmonella Typhimurium phagetypes in food

Phagetype	Meat from geese - Monitoring	Meat from turkey - Monitoring	
	Surveillance	Monitoring	Surveillance
Sources of isolates			
Number of isolates in the laboratory		1	
Number of isolates phagetyped		1	
Number of isolates per phagetype			
DT 104			
DT 104b		1	
DT 8			
Not typeable			
RDNC			
U 302			

2.1.7 Antimicrobial resistance in Salmonella isolates

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 resistance 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 resistance 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 of *S. Typhimurium* in Meat from other poultry species - fresh - Official sampling - quantitative data
[Dilution method]

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

S. Typhimurium	Meat from other poultry species - fresh																										
	yes																										
	6																										
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	6	0								2	2	2														
Aminoglycosides - Streptomycin	32	6	0													3	3										
Amphenicols - Chloramphenicol	16	6	0											4	2												
Cephalosporins - Cefotaxime	0.5	6	0						2	4																	
Fluoroquinolones - Ciprofloxacin	0.06	6	0						6																		
Penicillins - Ampicillin	4	6	0									3	2	1													
Quinolones - Nalidixic acid	16	6	0												6												
Sulfonamides	256	6	2															1		1	2	1	1				
Tetracyclines - Tetracycline	8	6	0										5	1													
Trimethoprim	2	6	0									4	2														
Fully sensitive		4	4	4																							
Resistant to 1 antimicrobial		2	2	2																							

S. Typhimurium Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from other poultry species - fresh	
	yes	
	6	
	lowest	highest
Aminoglycosides - Gentamicin	0.25	32

Table Antimicrobial susceptibility testing of *S. Typhimurium* in Meat from other poultry species - fresh - Official sampling - quantitative data
[Dilution method]

S. Typhimurium Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from other poultry species - fresh	
	yes	
	6	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Fully sensitive		
Resistant to 1 antimicrobial		

Table Antimicrobial susceptibility testing of S. Typhimurium in Meat from turkey - Official sampling - quantitative data [Dilution method]

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

S. Typhimurium	Meat from turkey																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	1																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	1	0										1															
Aminoglycosides - Streptomycin	32	1	1																		1							
Amphenicols - Chloramphenicol	16	1	0													1												
Cephalosporins - Cefotaxime	0.5	1	0								1																	
Fluoroquinolones - Ciprofloxacin	0.06	1	0						1																			
Penicillins - Ampicillin	4	1	1																	1								
Quinolones - Nalidixic acid	16	1	0													1												
Sulfonamides	256	1	1																						1			
Tetracyclines - Tetracycline	8	1	1																		1							
Trimethoprim	2	1	1															1										

S. Typhimurium	Meat from turkey	
	yes	
	1	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64

Table Antimicrobial susceptibility testing of *S. Typhimurium* in Meat from turkey - Official sampling - quantitative data [Dilution method]

S. Typhimurium Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from turkey	
	yes	
	1	
	lowest	highest
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8

Table Antimicrobial susceptibility testing of *S. Typhimurium* in Meat from pig - Official sampling - quantitative data [Dilution method]

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

S. Typhimurium Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory		Meat from pig																										
		yes																										
		10																										
		Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Antimicrobials:																												
Aminoglycosides - Gentamicin	2	10	0								3	4	2	1														
Aminoglycosides - Streptomycin	32	10	6														1	3	1	2	3							
Amphenicols - Chloramphenicol	16	10	4												5	1			3	1								
Cephalosporins - Cefotaxime	0.5	10	0								9	1																
Fluoroquinolones - Ciprofloxacin	0.06	10	1						8	1	1																	
Penicillins - Ampicillin	4	10	8										2						4	4								
Quinolones - Nalidixic acid	16	10	1											1	5	3				1								
Sulfonamides	256	10	6															1			3			1	5			
Tetracyclines - Tetracycline	8	10	10															4	2	2	2							
Trimethoprim	2	10	2								2	4	2				2											
Resistant to 1 antimicrobial		2	2	2																								
Resistant to 3 antimicrobials		1	1	1																								
Resistant to 4 antimicrobials		5	5	5																								
Resistant to >4 antimicrobials		2	2	2																								

Table Antimicrobial susceptibility testing of *S. Typhimurium* in Meat from pig - Official sampling - quantitative data [Dilution method]

S. Typhimurium Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from pig	
	yes	
	10	
	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Resistant to 1 antimicrobial		
Resistant to 3 antimicrobials		
Resistant to 4 antimicrobials		
Resistant to >4 antimicrobials		

Table Antimicrobial susceptibility testing of S. Typhimurium, monophasic in Meat from pig - Official sampling - quantitative data [Dilution method]

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

S. Typhimurium, monophasic	Meat from pig																											
	yes																											
	3																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	3	0									1	2															
Aminoglycosides - Streptomycin	32	3	3																		1	2						
Amphenicols - Chloramphenicol	16	3	1													1	1				1							
Cephalosporins - Cefotaxime	0.5	3	0								2	1																
Fluoroquinolones - Ciprofloxacin	0.06	3	1						1	1				1														
Penicillins - Ampicillin	4	3	3																		2	1						
Quinolones - Nalidixic acid	16	3	1														2					1						
Sulfonamides	256	3	2																		1					2		
Tetracyclines - Tetracycline	8	3	3																		3							
Trimethoprim	2	3	1									2						1										
Resistant to 4 antimicrobials		1	1	1																								
Resistant to >4 antimicrobials		2	2	2																								

S. Typhimurium, monophasic	Meat from pig	
	yes	
	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32

Table Antimicrobial susceptibility testing of *S. Typhimurium*, monophasic in Meat from pig - Official sampling - quantitative data [Dilution method]

S. Typhimurium, monophasic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from pig	
	yes	
	3	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Resistant to 4 antimicrobials		
Resistant to >4 antimicrobials		

Table Antimicrobial susceptibility testing of S. Kentucky in Meat from broilers (Gallus gallus) - Official sampling - quantitative data [Dilution method]

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

S. Kentucky	Meat from broilers (Gallus gallus)																											
	yes																											
	2																											
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Antimicrobials:																												
Aminoglycosides - Gentamicin	2	2	2														2											
Aminoglycosides - Streptomycin	32	2	1																1	1								
Amphenicols - Chloramphenicol	16	2	0													1	1											
Cephalosporins - Cefotaxime	0.5	2	0								1	1																
Fluoroquinolones - Ciprofloxacin	0.06	2	2														2											
Penicillins - Ampicillin	4	2	2																		2							
Quinolones - Nalidixic acid	16	2	2																		2							
Sulfonamides	256	2	2																								2	
Tetracyclines - Tetracycline	8	2	2																	1	1							
Trimethoprim	2	2	0									1		1														
Resistant to >4 antimicrobials		2	2	2																								

S. Kentucky	Meat from broilers (Gallus gallus)	
	yes	
	2	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128

Table Antimicrobial susceptibility testing of *S. Kentucky* in Meat from broilers (*Gallus gallus*) - Official sampling - quantitative data [Dilution method]

S. Kentucky Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from broilers (<i>Gallus gallus</i>)	
	yes	
	2	
	lowest	highest
Antimicrobials:		
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Resistant to >4 antimicrobials		

Table Antimicrobial susceptibility testing of S. Infantis in Meat from broilers (Gallus gallus) - Official sampling - quantitative data [Dilution method]

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

S. Infantis	Meat from broilers (Gallus gallus)																											
	yes																											
	149																											
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Antimicrobials:																												
Aminoglycosides - Gentamicin	2	149	0									94	40	15														
Aminoglycosides - Streptomycin	32	149	51												1	6	16	31	44	30	18	3						
Amphenicols - Chloramphenicol	16	149	3											2	10	49	74	11	3									
Cephalosporins - Cefotaxime	0.5	149	1								53	67	28	1														
Fluoroquinolones - Ciprofloxacin	0.06	149	148						1			18	58	58	14													
Penicillins - Ampicillin	4	149	5										2	38	60	44	2				3							
Quinolones - Nalidixic acid	16	149	148													1			1	1	5	141						
Sulfonamides	256	149	128															4	7	5	3	2	1	1	126			
Tetracyclines - Tetracycline	8	149	121											15	9	3	1	5	8	33	53	22						
Trimethoprim	2	149	2								11	46	49	35	6	2												
Fully sensitive		1	1	1																								
Resistant to 2 antimicrobials		11	11	11																								
Resistant to 3 antimicrobials		17	17	17																								
Resistant to 4 antimicrobials		68	68	68																								
Resistant to >4 antimicrobials		52	52	52																								

Table Antimicrobial susceptibility testing of *S. Infantis* in Meat from broilers (*Gallus gallus*) - Official sampling - quantitative data [Dilution method]

S. Infantis	Meat from broilers (<i>Gallus gallus</i>)	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Fully sensitive		
Resistant to 2 antimicrobials		
Resistant to 3 antimicrobials		
Resistant to 4 antimicrobials		
Resistant to >4 antimicrobials		

Footnote:

Cefotaxime =1 strain, Ampicilline =4

Table Antimicrobial susceptibility testing of Salmonella spp. in Meat from broilers (Gallus gallus) - Official sampling - quantitative data [Dilution method]

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

Salmonella spp.	Meat from broilers (Gallus gallus)																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	17	0									14	1	2														
Aminoglycosides - Streptomycin	32	17	0													6	6	2	3									
Amphenicols - Chloramphenicol	16	17	0												7	9	1											
Cephalosporins - Cefotaxime	0.5	17	0								17																	
Fluoroquinolones - Ciprofloxacin	0.06	17	14						3		5	6	3															
Penicillins - Ampicillin	4	13	0										5	6	2													
Quinolones - Nalidixic acid	16	17	11												1	2	1	2	1			10						
Sulfonamides	256	17	4														1	2	3	5	2						4	
Tetracyclines - Tetracycline	8	17	6											9	2					3	3							
Trimethoprim	2	17	1								1	2	11	2				1										
Fully sensitive		3	3	3																								
Resistant to 1 antimicrobial		1	1	1																								
Resistant to 2 antimicrobials		5	5	5																								
Resistant to 3 antimicrobials		3	3	3																								
Resistant to 4 antimicrobials		5	5	5																								

Table Antimicrobial susceptibility testing of *Salmonella* spp. in Meat from broilers (*Gallus gallus*) - Official sampling - quantitative data [Dilution method]

Salmonella spp. Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from broilers (<i>Gallus gallus</i>)	
	yes	
	17	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Fully sensitive		
Resistant to 1 antimicrobial		
Resistant to 2 antimicrobials		
Resistant to 3 antimicrobials		
Resistant to 4 antimicrobials		

Table Antimicrobial susceptibility testing of S. Derby in Meat from pig - Official sampling - quantitative data [Dilution method]

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

S. Derby	Meat from pig																										
	yes																										
	3																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	3	0									3															
Aminoglycosides - Streptomycin	32	3	0														1	1	1								
Amphenicols - Chloramphenicol	16	3	0												2		1										
Cephalosporins - Cefotaxime	0.5	3	0								3																
Fluoroquinolones - Ciprofloxacin	0.06	3	0						3																		
Penicillins - Ampicillin	4	3	0										2		1												
Quinolones - Nalidixic acid	16	3	0														3										
Sulfonamides	256	3	1															1		1						1	
Tetracyclines - Tetracycline	8	3	2											1					1		1						
Trimethoprim	2	3	0								1		1	1													
Fully sensitive		1	1	1																							
Resistant to 1 antimicrobial		1	1	1																							
Resistant to 2 antimicrobials		1	1	1																							

Table Antimicrobial susceptibility testing of *S. Derby* in Meat from pig - Official sampling - quantitative data [Dilution method]

S. Derby Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from pig	
	yes	
	3	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Fully sensitive		
Resistant to 1 antimicrobial		
Resistant to 2 antimicrobials		

Table Antimicrobial susceptibility testing of S. Infantis in Meat from bovine animals - Official sampling - quantitative data [Dilution method]

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

S. Infantis	Meat from bovine animals																											
	yes																											
	1																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	1	0									1																
Aminoglycosides - Streptomycin	32	1	0													1												
Amphenicols - Chloramphenicol	16	1	0													1												
Cephalosporins - Cefotaxime	0.5	1	0								1																	
Fluoroquinolones - Ciprofloxacin	0.06	1	1									1																
Penicillins - Ampicillin	4	1	0												1													
Quinolones - Nalidixic acid	16	1	1																		1							
Sulfonamides	256	1	0																1									
Tetracyclines - Tetracycline	8	1	1																1									
Trimethoprim	2	1	0									1																
Resistant to 2 antimicrobials		1	1	1																								

S. Infantis	Meat from bovine animals	
	yes	
	1	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128

Table Antimicrobial susceptibility testing of *S. Infantis* in Meat from bovine animals - Official sampling - quantitative data [Dilution method]

S. Infantis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from bovine animals	
	yes	
	1	
	lowest	highest
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Resistant to 2 antimicrobials		

Table Antimicrobial susceptibility testing of *Salmonella* spp. in Meat from bovine animals and pig - Official sampling - quantitative data
 [Dilution method]

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

Salmonella spp.	Meat from bovine animals and pig																										
	yes																										
	19																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	19	0								13	3	3														
Aminoglycosides - Streptomycin	32	19	2													1	6	6	4	2							
Amphenicols - Chloramphenicol	16	19	0												5	9	4	1									
Cephalosporins - Cefotaxime	0.5	19	0								14	4	1														
Fluoroquinolones - Ciprofloxacin	0.06	19	7				1		10	1		2	3	2													
Penicillins - Ampicillin	4	19	1										7	5	6		1										
Quinolones - Nalidixic acid	16	19	7												5	7						7					
Sulfonamides	256	19	7														1	3	2	2	3	1	1			6	
Tetracyclines - Tetracycline	8	19	7											6	5	1			2	1	2	2					
Trimethoprim	2	19	0									6	7	4	2												
Fully sensitive		9	9	9																							
Resistant to 1 antimicrobial		3	3	3																							
Resistant to 3 antimicrobials		1	1	1																							
Resistant to 4 antimicrobials		4	4	4																							
Resistant to >4 antimicrobials		2	2	2																							

Table Antimicrobial susceptibility testing of *Salmonella* spp. in Meat from bovine animals and pig - Official sampling - quantitative data
[Dilution method]

Salmonella spp. Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from bovine animals and pig	
	yes	
	19	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Fully sensitive		
Resistant to 1 antimicrobial		
Resistant to 3 antimicrobials		
Resistant to 4 antimicrobials		
Resistant to >4 antimicrobials		

Table Antimicrobial susceptibility testing of S. Newport in Meat from turkey - Official sampling - quantitative data [Dilution method]

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

S. Newport	Meat from turkey																										
	yes																										
	20																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	20	0									10	5	5													
Aminoglycosides - Streptomycin	32	20	0											1		3	10	5	1								
Amphenicols - Chloramphenicol	16	20	0												3	15	2										
Cephalosporins - Cefotaxime	0.5	20	0							1	17	2															
Fluoroquinolones - Ciprofloxacin	0.06	20	19							1		11	7	1													
Penicillins - Ampicillin	4	20	19												1					1	18						
Quinolones - Nalidixic acid	16	20	7														1	12	6			1					
Sulfonamides	256	20	1															2	11	4	1	1				1	
Tetracyclines - Tetracycline	8	20	19											1						4	9	6					
Trimethoprim	2	20	0									6	6	7	1												
Resistant to 1 antimicrobial		1	1	1																							
Resistant to 2 antimicrobials		1	1	1																							
Resistant to 3 antimicrobials		10	10	10																							
Resistant to 4 antimicrobials		8	8	8																							

Table Antimicrobial susceptibility testing of *S. Newport* in Meat from turkey - Official sampling - quantitative data [Dilution method]

S. Newport Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from turkey	
	yes	
	20	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Resistant to 1 antimicrobial		
Resistant to 2 antimicrobials		
Resistant to 3 antimicrobials		
Resistant to 4 antimicrobials		

Table Antimicrobial susceptibility testing of S. Kentucky in Meat from turkey - Official sampling - quantitative data [Dilution method]

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

S. Kentucky	Meat from turkey																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	15																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	15	15														3	9	3									
Aminoglycosides - Streptomycin	32	15	6															1	8	4	2							
Amphenicols - Chloramphenicol	16	15	0												1	12	2											
Cephalosporins - Cefotaxime	0.5	15	0								4	11																
Fluoroquinolones - Ciprofloxacin	0.06	15	15														6	9										
Penicillins - Ampicillin	4	15	15																	2	13							
Quinolones - Nalidixic acid	16	15	15																		2	13						
Sulfonamides	256	15	15																							15		
Tetracyclines - Tetracycline	8	15	15															1	3	10	1							
Trimethoprim	2	15	0									8	7															
Resistant to >4 antimicrobials		15	15	15																								

S. Kentucky	Meat from turkey	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128

Table Antimicrobial susceptibility testing of *S. Kentucky* in Meat from turkey - Official sampling - quantitative data [Dilution method]

S. Kentucky Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from turkey	
	yes	
	15	
	lowest	highest
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Resistant to >4 antimicrobials		

Table Antimicrobial susceptibility testing of S. Saintpaul in Meat from turkey - Official sampling - quantitative data [Dilution method]

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

S. Saintpaul	Meat from turkey																											
	yes																											
	5																											
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Antimicrobials:																												
Aminoglycosides - Gentamicin	2	5	0									3	1	1														
Aminoglycosides - Streptomycin	32	5	0													1	2	2										
Amphenicols - Chloramphenicol	16	5	0												2	3												
Cephalosporins - Cefotaxime	0.5	5	0								5																	
Fluoroquinolones - Ciprofloxacin	0.06	5	5								1	4																
Penicillins - Ampicillin	4	5	2										3								2							
Quinolones - Nalidixic acid	16	5	5																		3	2						
Sulfonamides	256	5	0															1	2		2							
Tetracyclines - Tetracycline	8	5	1											2	2					1								
Trimethoprim	2	5	0										3	2														
Resistant to 2 antimicrobials		3	3	3																								
Resistant to 3 antimicrobials		1	1	1																								
Resistant to 4 antimicrobials		1	1	1																								

Table Antimicrobial susceptibility testing of *S. Saintpaul* in Meat from turkey - Official sampling - quantitative data [Dilution method]

S. Saintpaul Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from turkey	
	yes	
	5	
	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Resistant to 2 antimicrobials		
Resistant to 3 antimicrobials		
Resistant to 4 antimicrobials		

Table Antimicrobial susceptibility testing of S. Enteritidis in Meat from turkey - Official sampling - quantitative data [Dilution method]

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

S. Enteritidis	Meat from turkey																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	1																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	1	0										1															
Aminoglycosides - Streptomycin	32	1	0												1													
Amphenicols - Chloramphenicol	16	1	0												1													
Cephalosporins - Cefotaxime	0.5	1	0								1																	
Fluoroquinolones - Ciprofloxacin	0.06	1	0						1																			
Penicillins - Ampicillin	4	1	0										1															
Quinolones - Nalidixic acid	16	1	0													1												
Sulfonamides	256	1	0																	1								
Tetracyclines - Tetracycline	8	1	0												1													
Trimethoprim	2	1	0										1															

S. Enteritidis	Meat from turkey	
	yes	
	1	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64

Table Antimicrobial susceptibility testing of *S. Enteritidis* in Meat from turkey - Official sampling - quantitative data [Dilution method]

S. Enteritidis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from turkey	
	yes	
	1	
	lowest	highest
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8

Table Antimicrobial susceptibility testing of Salmonella spp. in Meat from turkey - Official sampling - quantitative data [Dilution method]

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

Salmonella spp.	Meat from turkey																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	51																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	51	0									28	15	8														
Aminoglycosides - Streptomycin	32	51	6													8	12	19	6	4	1	1						
Amphenicols - Chloramphenicol	16	51	1												13	24	12	1			1							
Cephalosporins - Cefotaxime	0.5	51	0							2	40	8	1															
Fluoroquinolones - Ciprofloxacin	0.06	51	45						5	1	18	8	14	4	1													
Penicillins - Ampicillin	4	51	11										17	13	7	3					11							
Quinolones - Nalidixic acid	16	51	46											2	2	1				2	7	37						
Sulfonamides	256	51	17															6	11	9	3	5	1			16		
Tetracyclines - Tetracycline	8	51	24											18	9				1	10	9	4						
Trimethoprim	2	51	0								1	12	27	10	1													
Fully sensitive		5	5	5																								
Resistant to 2 antimicrobials		22	22	22																								
Resistant to 3 antimicrobials		2	2	2																								
Resistant to 4 antimicrobials		14	14	14																								
Resistant to >4 antimicrobials		8	8	8																								

Table Antimicrobial susceptibility testing of *Salmonella* spp. in Meat from turkey - Official sampling - quantitative data [Dilution method]

Salmonella spp.	Meat from turkey	
Isolates out of a monitoring program (yes/no)	yes	
Number of isolates available in the laboratory	51	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Fully sensitive		
Resistant to 2 antimicrobials		
Resistant to 3 antimicrobials		
Resistant to 4 antimicrobials		
Resistant to >4 antimicrobials		

Table Antimicrobial susceptibility testing of S. Agona in Meat from turkey - fresh - Official sampling - quantitative data [Dilution method]

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

S. Agona	Meat from turkey - fresh																											
	yes																											
	2																											
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Antimicrobials:																												
Aminoglycosides - Gentamicin	2	2	0									1	1															
Aminoglycosides - Streptomycin	32	2	0															1	1									
Amphenicols - Chloramphenicol	16	2	0													2												
Cephalosporins - Cefotaxime	0.5	2	0								2																	
Fluoroquinolones - Ciprofloxacin	0.06	2	1				1						1															
Penicillins - Ampicillin	4	2	1											1							1							
Quinolones - Nalidixic acid	16	2	0												1			1										
Sulfonamides	256	2	0															1	1									
Tetracyclines - Tetracycline	8	2	0											2														
Trimethoprim	2	2	0										1	1														
Fully sensitive		1	1	1																								
Resistant to 2 antimicrobials		1	1	1																								

S. Agona	Meat from turkey - fresh	
	yes	
	2	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.25	32

Table Antimicrobial susceptibility testing of *S. Agona* in Meat from turkey - fresh - Official sampling - quantitative data [Dilution method]

S. Agona Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from turkey - fresh	
	yes	
	2	
	lowest	highest
Aminoglycosides - Streptomycin	1	128
Amphenicols - Chloramphenicol	0.5	64
Cephalosporins - Cefotaxime	0.12	8
Fluoroquinolones - Ciprofloxacin	0.015	16
Penicillins - Ampicillin	0.5	64
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	8
Fully sensitive		
Resistant to 2 antimicrobials		

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

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

S. Livingstone	Gallus gallus (fowl) - laying hens																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	2																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	2	0										2														
Aminoglycosides - Streptomycin	16	2	0													1		1									
Amphenicols - Chloramphenicol	16	2	0													1	1										
Cephalosporins - Cefotaxime	0	2	2							1	1																
Fluoroquinolones - Ciprofloxacin	0	2	2				1		1																		
Penicillins - Ampicillin	8	2	0											2													
Quinolones - Nalidixic acid	16	2	0													2											
Tetracyclines - Tetracycline	8	2	1												1					1							
Trimethoprim	2	2	0										2														
Sulfonamides - Sulfamethoxazole	256	2	0																1	1							

S. Livingstone	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Livingstone Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	2	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Kentucky in Gallus gallus (fowl) - broilers - quantitative data [Dilution method]

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

S. Kentucky	Gallus gallus (fowl) - broilers																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	38																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	1															1									
Aminoglycosides - Streptomycin	16	1	1																1								
Amphenicols - Chloramphenicol	16	1	0													1											
Cephalosporins - Cefotaxime	0	1	1								1																
Fluoroquinolones - Ciprofloxacin	0	1	1														1										
Penicillins - Ampicillin	8	1	1																1								
Quinolones - Nalidixic acid	16	1	1																	1							
Tetracyclines - Tetracycline	8	1	1																	1							
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	1																						1		

S. Kentucky	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Kentucky* in *Gallus gallus* (fowl) - broilers - quantitative data [Dilution method]

S. Kentucky Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - broilers	
	38	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Bovismorbificans in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Bovismorbificans	Gallus gallus (fowl) - laying hens																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	14																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	2	0										2															
Aminoglycosides - Streptomycin	16	2	0														1	1										
Amphenicols - Chloramphenicol	16	2	0													2												
Cephalosporins - Cefotaxime	0	2	2							1	1																	
Fluoroquinolones - Ciprofloxacin	0	2	2				2																					
Penicillins - Ampicillin	8	2	0											2														
Quinolones - Nalidixic acid	16	2	0													2												
Tetracyclines - Tetracycline	8	2	0											2														
Trimethoprim	2	2	0										2															
Sulfonamides - Sulfamethoxazole	256	2	0																	1	1							

S. Bovismorbificans	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
	14	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Bovismorbificans* in *Gallus gallus* (fowl) - laying hens - quantitative data [Dilution method]

S. Bovismorbificans Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Gallus gallus (fowl) - laying hens	
	14	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Newport	Gallus gallus (fowl) - broilers																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	19																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	0										1														
Aminoglycosides - Streptomycin	16	1	0														1										
Amphenicols - Chloramphenicol	16	1	0													1											
Cephalosporins - Cefotaxime	0	1	1							1																	
Fluoroquinolones - Ciprofloxacin	0	1	1										1														
Penicillins - Ampicillin	8	1	1																1								
Quinolones - Nalidixic acid	16	1	0															1									
Tetracyclines - Tetracycline	8	1	1																	1							
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	0																	1							

S. Newport	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Newport Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - broilers	
	19	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. group O:4 in Pigs - fattening pigs - quantitative data [Dilution method]

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

S. group O:4	Pigs - fattening pigs																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	12	0									1	8	3												
Aminoglycosides - Streptomycin	16	12	10															2			10					
Amphenicols - Chloramphenicol	16	12	0													6	6									
Cephalosporins - Cefotaxime	0	12	12							4	7	1														
Fluoroquinolones - Ciprofloxacin	0	12	12						12																	
Penicillins - Ampicillin	8	12	10											1	1				10							
Quinolones - Nalidixic acid	16	12	0													12										
Tetracyclines - Tetracycline	8	12	6												5	1				6						
Trimethoprim	2	12	2										10						2							
Sulfonamides - Sulfamethoxazole	256	12	10																1	1					10	

S. group O:4	Pigs - fattening pigs	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. group O:4* in Pigs - fattening pigs - quantitative data [Dilution method]

S. group O:4 Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Pigs - fattening pigs	
	12	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Stanley in Gallus gallus (fowl) - broilers - quantitative data [Dilution method]

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

S. Stanley	Gallus gallus (fowl) - broilers																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	55																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	2	0										1		1												
Aminoglycosides - Streptomycin	16	2	0														1	1									
Amphenicols - Chloramphenicol	16	2	0												1		1										
Cephalosporins - Cefotaxime	0	2	2							1		1															
Fluoroquinolones - Ciprofloxacin	0	2	2								1	1															
Penicillins - Ampicillin	8	2	0											1		1											
Quinolones - Nalidixic acid	16	2	2																	2							
Tetracyclines - Tetracycline	8	2	0											1	1												
Trimethoprim	2	2	0										2														
Sulfonamides - Sulfamethoxazole	256	2	0																2								

S. Stanley	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Stanley* in *Gallus gallus* (fowl) - broilers - quantitative data [Dilution method]

S. Stanley Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - broilers	
	55	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Derby in Pigs - fattening pigs - quantitative data [Dilution method]

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

S. Derby	Pigs - fattening pigs																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	4																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	4	0										4														
Aminoglycosides - Streptomycin	16	4	0															4									
Amphenicols - Chloramphenicol	16	4	0														2	2									
Cephalosporins - Cefotaxime	0	4	4								2	2															
Fluoroquinolones - Ciprofloxacin	0	4	4				4																				
Penicillins - Ampicillin	8	4	2												1	1			2								
Quinolones - Nalidixic acid	16	4	0													3	1										
Tetracyclines - Tetracycline	8	4	2													2				2							
Trimethoprim	2	4	1										3						1								
Sulfonamides - Sulfamethoxazole	256	4	1																1		2				1		

S. Derby	Pigs - fattening pigs	
	4	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Derby* in Pigs - fattening pigs - quantitative data [Dilution method]

S. Derby Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Pigs - fattening pigs	
	4	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Infantis	Gallus gallus (fowl) - broilers																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	157	1									64	83	8	1				1							
Aminoglycosides - Streptomycin	16	157	123													2	20	12	91	25	7					
Amphenicols - Chloramphenicol	16	157	2												6	36	76	37	2							
Cephalosporins - Cefotaxime	0	157	157							28	76	48	4			1										
Fluoroquinolones - Ciprofloxacin	0	157	157				2		2	1	2	55	72	19	1	2	1									
Penicillins - Ampicillin	8	157	8										8	48	67	26			8							
Quinolones - Nalidixic acid	16	157	154													2		1	2	152						
Tetracyclines - Tetracycline	8	157	127											4	18	8		1	3	123						
Trimethoprim	2	157	0										155	2												
Sulfonamides - Sulfamethoxazole	256	157	135															2	8	10		2			135	

S. Infantis	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Infantis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - broilers	
	201	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Typhimurium	Gallus gallus (fowl) - broilers																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	18																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	2	0										2														
Aminoglycosides - Streptomycin	16	2	0														2										
Amphenicols - Chloramphenicol	16	2	0													1	1										
Cephalosporins - Cefotaxime	0	2	2							2																	
Fluoroquinolones - Ciprofloxacin	0	2	2				2																				
Penicillins - Ampicillin	8	2	0											2													
Quinolones - Nalidixic acid	16	2	0													2											
Tetracyclines - Tetracycline	8	2	0											1	1												
Trimethoprim	2	2	0										2														
Sulfonamides - Sulfamethoxazole	256	2	0																2								

S. Typhimurium	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Typhimurium Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Gallus gallus (fowl) - broilers	
	18	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Enteritidis in Pigs - fattening pigs - quantitative data [Dilution method]

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

S. Enteritidis	Pigs - fattening pigs																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	28																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	0										1														
Aminoglycosides - Streptomycin	16	1	0													1											
Amphenicols - Chloramphenicol	16	1	0														1										
Cephalosporins - Cefotaxime	0	1	1							1																	
Fluoroquinolones - Ciprofloxacin	0	1	1				1																				
Penicillins - Ampicillin	8	1	0												1												
Quinolones - Nalidixic acid	16	1	0													1											
Tetracyclines - Tetracycline	8	1	0											1													
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	0																	1							

S. Enteritidis	Pigs - fattening pigs	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Enteritidis* in Pigs - fattening pigs - quantitative data [Dilution method]

S. Enteritidis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Pigs - fattening pigs	
	28	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Mbandaka	Gallus gallus (fowl) - laying hens																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	1																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	0										1														
Aminoglycosides - Streptomycin	16	1	0														1										
Amphenicols - Chloramphenicol	16	1	0														1										
Cephalosporins - Cefotaxime	0	1	1								1																
Fluoroquinolones - Ciprofloxacin	0	1	1				1																				
Penicillins - Ampicillin	8	1	0											1													
Quinolones - Nalidixic acid	16	1	0													1											
Tetracyclines - Tetracycline	8	1	0												1												
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	0																1								

S. Mbandaka	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Mbandaka Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	1	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Kentucky in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Kentucky	Gallus gallus (fowl) - laying hens																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	2	2															1	1							
Aminoglycosides - Streptomycin	16	2	2																	2						
Amphenicols - Chloramphenicol	16	2	0													1	1									
Cephalosporins - Cefotaxime	0	2	2								2															
Fluoroquinolones - Ciprofloxacin	0	2	2														2									
Penicillins - Ampicillin	8	2	2																2							
Quinolones - Nalidixic acid	16	2	2																	2						
Tetracyclines - Tetracycline	8	2	2																	2						
Trimethoprim	2	2	0										2													
Sulfonamides - Sulfamethoxazole	256	2	2																						2	

S. Kentucky	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Kentucky* in *Gallus gallus* (fowl) - laying hens - quantitative data [Dilution method]

S. Kentucky Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	38	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Bredeney in Pigs - fattening pigs - quantitative data [Dilution method]

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

S. Bredeney	Pigs - fattening pigs																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	0										1														
Aminoglycosides - Streptomycin	16	1	0														1										
Amphenicols - Chloramphenicol	16	1	0													1											
Cephalosporins - Cefotaxime	0	1	1								1																
Fluoroquinolones - Ciprofloxacin	0	1	1									1															
Penicillins - Ampicillin	8	1	1																1								
Quinolones - Nalidixic acid	16	1	1																	1							
Tetracyclines - Tetracycline	8	1	1																	1							
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	0																1								

S. Bredeney	Pigs - fattening pigs	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Bredeney* in Pigs - fattening pigs - quantitative data [Dilution method]

S. Bredeney Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Pigs - fattening pigs	
	27	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Newport	Gallus gallus (fowl) - laying hens																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	19																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	0										1														
Aminoglycosides - Streptomycin	16	1	0														1										
Amphenicols - Chloramphenicol	16	1	0													1											
Cephalosporins - Cefotaxime	0	1	1								1																
Fluoroquinolones - Ciprofloxacin	0	1	1										1														
Penicillins - Ampicillin	8	1	1																1								
Quinolones - Nalidixic acid	16	1	0															1									
Tetracyclines - Tetracycline	8	1	1																	1							
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	0																1								

S. Newport	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Newport Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	19	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of Not typeable in Pigs - fattening pigs - quantitative data [Dilution method]

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

Not typeable	Pigs - fattening pigs																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
Antimicrobials:	1																										
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	0										1														
Aminoglycosides - Streptomycin	16	1	1																	1							
Amphenicols - Chloramphenicol	16	1	1																	1							
Cephalosporins - Cefotaxime	0	1	1								1																
Fluoroquinolones - Ciprofloxacin	0	1	1						1																		
Penicillins - Ampicillin	8	1	1																1								
Quinolones - Nalidixic acid	16	1	0													1											
Tetracyclines - Tetracycline	8	1	1																1								
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	1																						1		

Not typeable	Pigs - fattening pigs	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of Not typeable in Pigs - fattening pigs - quantitative data [Dilution method]

Not typeable Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Pigs - fattening pigs	
	1	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Thompson in Gallus gallus (fowl) - broilers - quantitative data [Dilution method]

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

S. Thompson	Gallus gallus (fowl) - broilers																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	11																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	6	0									1	5														
Aminoglycosides - Streptomycin	16	6	0														4	2									
Amphenicols - Chloramphenicol	16	6	0													3	2	1									
Cephalosporins - Cefotaxime	0	6	6							3	2	1															
Fluoroquinolones - Ciprofloxacin	0	6	6				3			1		1	1														
Penicillins - Ampicillin	8	6	2											2	1	1			2								
Quinolones - Nalidixic acid	16	6	1													4	1			1							
Tetracyclines - Tetracycline	8	6	0											1	3	1	1										
Trimethoprim	2	6	0										6														
Sulfonamides - Sulfamethoxazole	256	6	0																2	3	1						

S. Thompson	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Thompson* in *Gallus gallus* (fowl) - broilers - quantitative data [Dilution method]

S. Thompson Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - broilers	
	11	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Saintpaul in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Saintpaul	Gallus gallus (fowl) - laying hens																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	1	0											1												
Aminoglycosides - Streptomycin	16	1	1																	1						
Amphenicols - Chloramphenicol	16	1	0														1									
Cephalosporins - Cefotaxime	0	1	1								1															
Fluoroquinolones - Ciprofloxacin	0	1	1														1									
Penicillins - Ampicillin	8	1	1																1							
Quinolones - Nalidixic acid	16	1	1																	1						
Tetracyclines - Tetracycline	8	1	1																	1						
Trimethoprim	2	1	1																1							
Sulfonamides - Sulfamethoxazole	256	1	1																						1	

S. Saintpaul	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Saintpaul* in *Gallus gallus* (fowl) - laying hens - quantitative data [Dilution method]

S. Saintpaul Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	7	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Infantis	Gallus gallus (fowl) - laying hens																									
	201																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	15	0									9	6													
Aminoglycosides - Streptomycin	16	15	8													1	5	1	7	1						
Amphenicols - Chloramphenicol	16	15	0												1	2	10	2								
Cephalosporins - Cefotaxime	0	15	15							2	8	5														
Fluoroquinolones - Ciprofloxacin	0	15	15				3		2		1	3	5	1												
Penicillins - Ampicillin	8	15	0										1	6	6	2										
Quinolones - Nalidixic acid	16	15	10													5				10						
Tetracyclines - Tetracycline	8	15	9											1	4		1			9						
Trimethoprim	2	15	0										15													
Sulfonamides - Sulfamethoxazole	256	15	9																	6					9	

S. Infantis	Gallus gallus (fowl) - laying hens	
	201	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Infantis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	201	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Enteritidis	Gallus gallus (fowl) - broilers																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	28																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	0										1														
Aminoglycosides - Streptomycin	16	1	0													1											
Amphenicols - Chloramphenicol	16	1	0														1										
Cephalosporins - Cefotaxime	0	1	1							1																	
Fluoroquinolones - Ciprofloxacin	0	1	1						1																		
Penicillins - Ampicillin	8	1	0												1												
Quinolones - Nalidixic acid	16	1	0													1											
Tetracyclines - Tetracycline	8	1	0											1													
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	0																1								

S. Enteritidis	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Enteritidis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - broilers	
	28	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Abony in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Abony	Gallus gallus (fowl) - laying hens																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	4																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	4	0										4														
Aminoglycosides - Streptomycin	16	4	0														3	1									
Amphenicols - Chloramphenicol	16	4	0													1	3										
Cephalosporins - Cefotaxime	0	4	4							1	3																
Fluoroquinolones - Ciprofloxacin	0	4	4						4																		
Penicillins - Ampicillin	8	4	0											1	3												
Quinolones - Nalidixic acid	16	4	0													4											
Tetracyclines - Tetracycline	8	4	0												4												
Trimethoprim	2	4	0										4														
Sulfonamides - Sulfamethoxazole	256	4	0																2	1	1						

S. Abony	Gallus gallus (fowl) - laying hens	
	4	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Abony* in *Gallus gallus* (fowl) - laying hens - quantitative data [Dilution method]

S. Abony Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	4	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Bovismorbificans in Pigs - fattening pigs - quantitative data [Dilution method]

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

S. Bovismorbificans	Pigs - fattening pigs																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	14																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	3	0										3														
Aminoglycosides - Streptomycin	16	3	0														3										
Amphenicols - Chloramphenicol	16	3	0													3											
Cephalosporins - Cefotaxime	0	3	3							3																	
Fluoroquinolones - Ciprofloxacin	0	3	3				3																				
Penicillins - Ampicillin	8	3	1											1	1				1								
Quinolones - Nalidixic acid	16	3	0													3											
Tetracyclines - Tetracycline	8	3	0											3													
Trimethoprim	2	3	0										3														
Sulfonamides - Sulfamethoxazole	256	3	0																	2		1					

S. Bovismorbificans	Pigs - fattening pigs	
	14	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Bovismorbificans* in Pigs - fattening pigs - quantitative data [Dilution method]

S. Bovismorbificans Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Pigs - fattening pigs	
	14	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Bredeney	Gallus gallus (fowl) - laying hens																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
Antimicrobials:	27																										
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	2	0										2														
Aminoglycosides - Streptomycin	16	2	0														1	1									
Amphenicols - Chloramphenicol	16	2	0														2										
Cephalosporins - Cefotaxime	0	2	2							2																	
Fluoroquinolones - Ciprofloxacin	0	2	2								1	1															
Penicillins - Ampicillin	8	2	2																2								
Quinolones - Nalidixic acid	16	2	2																	2							
Tetracyclines - Tetracycline	8	2	2																	2							
Trimethoprim	2	2	0										2														
Sulfonamides - Sulfamethoxazole	256	2	0															2									

S. Bredeney	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Bredeney Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	27	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Agona	Gallus gallus (fowl) - laying hens																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	6	0									2	3		1											
Aminoglycosides - Streptomycin	16	6	1														5		1							
Amphenicols - Chloramphenicol	16	6	0												1	1	4									
Cephalosporins - Cefotaxime	0	6	6								5		1													
Fluoroquinolones - Ciprofloxacin	0	6	6				2		1				3													
Penicillins - Ampicillin	8	6	3												2	1			3							
Quinolones - Nalidixic acid	16	6	0													3		3								
Tetracyclines - Tetracycline	8	6	0												6											
Trimethoprim	2	6	0										6													
Sulfonamides - Sulfamethoxazole	256	6	0																	6						

S. Agona	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Agona Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Gallus gallus (fowl) - laying hens	
	8	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Thompson in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Thompson	Gallus gallus (fowl) - laying hens																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	11																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	5	0										5														
Aminoglycosides - Streptomycin	16	5	0														5										
Amphenicols - Chloramphenicol	16	5	0													5											
Cephalosporins - Cefotaxime	0	5	5							4	1																
Fluoroquinolones - Ciprofloxacin	0	5	5				5																				
Penicillins - Ampicillin	8	5	0											5													
Quinolones - Nalidixic acid	16	5	0													5											
Tetracyclines - Tetracycline	8	5	0												5												
Trimethoprim	2	5	0										5														
Sulfonamides - Sulfamethoxazole	256	5	0																2	3							

S. Thompson	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Thompson* in *Gallus gallus* (fowl) - laying hens - quantitative data [Dilution method]

S. Thompson Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	11	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Tennessee	Gallus gallus (fowl) - laying hens																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	5	0										5													
Aminoglycosides - Streptomycin	16	5	0														5									
Amphenicols - Chloramphenicol	16	5	0														5									
Cephalosporins - Cefotaxime	0	5	5							1	4															
Fluoroquinolones - Ciprofloxacin	0	5	5				3		1	1																
Penicillins - Ampicillin	8	5	0											2	3											
Quinolones - Nalidixic acid	16	5	0													5										
Tetracyclines - Tetracycline	8	5	0												5											
Trimethoprim	2	5	0										5													
Sulfonamides - Sulfamethoxazole	256	5	0																	5						

S. Tennessee	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Tennessee Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	6	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Montevideo in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Montevideo	Gallus gallus (fowl) - laying hens																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	≤0.002	≤0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	1	0											1												
Aminoglycosides - Streptomycin	16	1	0														1									
Amphenicols - Chloramphenicol	16	1	0														1									
Cephalosporins - Cefotaxime	0	1	1							1																
Fluoroquinolones - Ciprofloxacin	0	1	1				1																			
Penicillins - Ampicillin	8	1	0											1												
Quinolones - Nalidixic acid	16	1	0													1										
Tetracyclines - Tetracycline	8	1	0												1											
Trimethoprim	2	1	0										1													
Sulfonamides - Sulfamethoxazole	256	1	0																	1						

S. Montevideo	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Montevideo* in *Gallus gallus* (fowl) - laying hens - quantitative data [Dilution method]

S. Montevideo Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	1	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Enteritidis	Gallus gallus (fowl) - laying hens																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	28																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	25	1									13	11			1											
Aminoglycosides - Streptomycin	16	25	0												4	20		1									
Amphenicols - Chloramphenicol	16	25	0												1	18	6										
Cephalosporins - Cefotaxime	0	25	25							13	12																
Fluoroquinolones - Ciprofloxacin	0	25	25				7		18																		
Penicillins - Ampicillin	8	25	1										1	2	21				1								
Quinolones - Nalidixic acid	16	25	0													25											
Tetracyclines - Tetracycline	8	25	0											13	12												
Trimethoprim	2	25	0										25														
Sulfonamides - Sulfamethoxazole	256	25	1														1	1	6	12	4				1		

S. Enteritidis	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Enteritidis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	28	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Indiana in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Indiana	Gallus gallus (fowl) - laying hens																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	1																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	0										1														
Aminoglycosides - Streptomycin	16	1	0														1										
Amphenicols - Chloramphenicol	16	1	0													1											
Cephalosporins - Cefotaxime	0	1	1							1																	
Fluoroquinolones - Ciprofloxacin	0	1	1				1																				
Penicillins - Ampicillin	8	1	0										1														
Quinolones - Nalidixic acid	16	1	0													1											
Tetracyclines - Tetracycline	8	1	0											1													
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	0															1									

S. Indiana	Gallus gallus (fowl) - laying hens	
	1	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Indiana* in *Gallus gallus* (fowl) - laying hens - quantitative data [Dilution method]

S. Indiana Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Gallus gallus (fowl) - laying hens	
	1	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Bovismorbificans in Gallus gallus (fowl) - broilers - quantitative data [Dilution method]

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

S. Bovismorbificans	Gallus gallus (fowl) - broilers																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	14																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	4	0									1	2	1														
Aminoglycosides - Streptomycin	16	4	0														2	2										
Amphenicols - Chloramphenicol	16	4	0													4												
Cephalosporins - Cefotaxime	0	4	4							4																		
Fluoroquinolones - Ciprofloxacin	0	4	4				4																					
Penicillins - Ampicillin	8	4	0											4														
Quinolones - Nalidixic acid	16	4	0													4												
Tetracyclines - Tetracycline	8	4	0											4														
Trimethoprim	2	4	0										4															
Sulfonamides - Sulfamethoxazole	256	4	0																4									

S. Bovismorbificans	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
	14	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Bovismorbificans* in *Gallus gallus* (fowl) - broilers - quantitative data [Dilution method]

S. Bovismorbificans Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Gallus gallus (fowl) - broilers	
	14	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Cerro	Gallus gallus (fowl) - laying hens																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	2																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	2	0										2														
Aminoglycosides - Streptomycin	16	2	0														2										
Amphenicols - Chloramphenicol	16	2	0													1	1										
Cephalosporins - Cefotaxime	0	2	2								2																
Fluoroquinolones - Ciprofloxacin	0	2	2						2																		
Penicillins - Ampicillin	8	2	1											1					1								
Quinolones - Nalidixic acid	16	2	0													2											
Tetracyclines - Tetracycline	8	2	0												2												
Trimethoprim	2	2	0										2														
Sulfonamides - Sulfamethoxazole	256	2	0															1		1							

S. Cerro	Gallus gallus (fowl) - laying hens	
	2	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Cerro Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	2	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Kottbus in Gallus gallus (fowl) - laying hens - quantitative data [Dilution method]

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

S. Kottbus	Gallus gallus (fowl) - laying hens																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	11																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	3	0										3														
Aminoglycosides - Streptomycin	16	3	0														2	1									
Amphenicols - Chloramphenicol	16	3	0												1	2											
Cephalosporins - Cefotaxime	0	3	3							3																	
Fluoroquinolones - Ciprofloxacin	0	3	3									2	1														
Penicillins - Ampicillin	8	3	0											3													
Quinolones - Nalidixic acid	16	3	3																	3							
Tetracyclines - Tetracycline	8	3	0											2	1												
Trimethoprim	2	3	0										3														
Sulfonamides - Sulfamethoxazole	256	3	0																2	1							

S. Kottbus	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Kottbus* in *Gallus gallus* (fowl) - laying hens - quantitative data [Dilution method]

S. Kottbus Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - laying hens	
	11	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Senftenberg in Gallus gallus (fowl) - broilers - quantitative data [Dilution method]

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

S. Senftenberg	Gallus gallus (fowl) - broilers																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	1	0										1													
Aminoglycosides - Streptomycin	16	1	0														1									
Amphenicols - Chloramphenicol	16	1	0															1								
Cephalosporins - Cefotaxime	0	1	1									1														
Fluoroquinolones - Ciprofloxacin	0	1	1							1																
Penicillins - Ampicillin	8	1	0													1										
Quinolones - Nalidixic acid	16	1	0														1									
Tetracyclines - Tetracycline	8	1	0														1									
Trimethoprim	2	1	0										1													
Sulfonamides - Sulfamethoxazole	256	1	0																1							

S. Senftenberg	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Senftenberg* in *Gallus gallus* (fowl) - broilers - quantitative data [Dilution method]

S. Senftenberg Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Gallus gallus (fowl) - broilers	
	2	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Infantis in Pigs - fattening pigs - quantitative data [Dilution method]

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

S. Infantis	Pigs - fattening pigs																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	201																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	8	0										8														
Aminoglycosides - Streptomycin	16	8	7														1		6	1							
Amphenicols - Chloramphenicol	16	8	0													5	3										
Cephalosporins - Cefotaxime	0	8	8								7	1															
Fluoroquinolones - Ciprofloxacin	0	8	8				1					6	1														
Penicillins - Ampicillin	8	8	0											4	4												
Quinolones - Nalidixic acid	16	8	7													1				7							
Tetracyclines - Tetracycline	8	8	7												1					7							
Trimethoprim	2	8	0										8														
Sulfonamides - Sulfamethoxazole	256	8	7																	1					7		

S. Infantis	Pigs - fattening pigs	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Infantis* in Pigs - fattening pigs - quantitative data [Dilution method]

S. Infantis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Pigs - fattening pigs	
	201	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Typhimurium in Pigs - fattening pigs - quantitative data [Dilution method]

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

S. Typhimurium	Pigs - fattening pigs																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	8	0										3	5												
Aminoglycosides - Streptomycin	16	8	7														1			1	6					
Amphenicols - Chloramphenicol	16	8	3													2	2	1		3						
Cephalosporins - Cefotaxime	0	8	8							6	1	1														
Fluoroquinolones - Ciprofloxacin	0	8	8				1		5	1		1														
Penicillins - Ampicillin	8	8	7												1				7							
Quinolones - Nalidixic acid	16	8	1													6	1			1						
Tetracyclines - Tetracycline	8	8	6												2				2	4						
Trimethoprim	2	8	0										8													
Sulfonamides - Sulfamethoxazole	256	8	7															1							7	

S. Typhimurium	Pigs - fattening pigs	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Typhimurium* in Pigs - fattening pigs - quantitative data [Dilution method]

S. Typhimurium Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Pigs - fattening pigs	
	18	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

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

S. Typhimurium	Gallus gallus (fowl) - laying hens																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	18																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	8	0										8															
Aminoglycosides - Streptomycin	16	8	1														5	2		1								
Amphenicols - Chloramphenicol	16	8	1													6	1			1								
Cephalosporins - Cefotaxime	0	8	8							8																		
Fluoroquinolones - Ciprofloxacin	0	8	8				4		4																			
Penicillins - Ampicillin	8	8	1											4	3				1									
Quinolones - Nalidixic acid	16	8	0													8												
Tetracyclines - Tetracycline	8	8	1											2	5				1									
Trimethoprim	2	8	0										8															
Sulfonamides - Sulfamethoxazole	256	8	1															4	2	1						1		

S. Typhimurium	Gallus gallus (fowl) - laying hens	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
	18	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

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

S. Typhimurium Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Gallus gallus (fowl) - laying hens	
	18	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Bredeney in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Bredeney	Turkeys - fattening flocks																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	≤0.002	≤0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	24	0									1	21		2											
Aminoglycosides - Streptomycin	16	24	2													1	20	1	2							
Amphenicols - Chloramphenicol	16	24	0												2	10	1	11								
Cephalosporins - Cefotaxime	0	24	24							10	8	5	1													
Fluoroquinolones - Ciprofloxacin	0	24	24						1		9	4	10													
Penicillins - Ampicillin	8	24	24																24							
Quinolones - Nalidixic acid	16	24	23															1	1	22						
Tetracyclines - Tetracycline	8	24	24																1	23						
Trimethoprim	2	24	0										23	1												
Sulfonamides - Sulfamethoxazole	256	24	1															9	13	1					1	

S. Bredeney	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Bredeney* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Bredeney Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Turkeys - fattening flocks	
	27	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Newport in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Newport	Turkeys - fattening flocks																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	19																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	17	0									7	10														
Aminoglycosides - Streptomycin	16	17	0													4	11	2									
Amphenicols - Chloramphenicol	16	17	0												4	13											
Cephalosporins - Cefotaxime	0	17	17							13	3	1															
Fluoroquinolones - Ciprofloxacin	0	17	17								3	3	11														
Penicillins - Ampicillin	8	17	15											2					15								
Quinolones - Nalidixic acid	16	17	2													3		12	1	1							
Tetracyclines - Tetracycline	8	17	15											2					3	12							
Trimethoprim	2	17	0										17														
Sulfonamides - Sulfamethoxazole	256	17	0																3	14							

S. Newport	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Newport* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Newport Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Turkeys - fattening flocks	
	19	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Kottbus in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Kottbus	Turkeys - fattening flocks																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	11																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	8	0										7	1													
Aminoglycosides - Streptomycin	16	8	1														4	3			1						
Amphenicols - Chloramphenicol	16	8	0												1	6	1										
Cephalosporins - Cefotaxime	0	8	8							8																	
Fluoroquinolones - Ciprofloxacin	0	8	8								1	6			1												
Penicillins - Ampicillin	8	8	0										1	5	1		1										
Quinolones - Nalidixic acid	16	8	8																	8							
Tetracyclines - Tetracycline	8	8	0											5	1	2											
Trimethoprim	2	8	0										8														
Sulfonamides - Sulfamethoxazole	256	8	0																8								

S. Kottbus	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Kottbus* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Kottbus Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Turkeys - fattening flocks	
	11	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Kentucky in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Kentucky	Turkeys - fattening flocks																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	35	34											1				28	6							
Aminoglycosides - Streptomycin	16	35	32														1	2	12	19	1					
Amphenicols - Chloramphenicol	16	35	0												4	28	3									
Cephalosporins - Cefotaxime	0	35	35							4	30	1														
Fluoroquinolones - Ciprofloxacin	0	35	35													2	33									
Penicillins - Ampicillin	8	35	35																35							
Quinolones - Nalidixic acid	16	35	35																	35						
Tetracyclines - Tetracycline	8	35	34												1				1	33						
Trimethoprim	2	35	0										35													
Sulfonamides - Sulfamethoxazole	256	35	34																1						34	

S. Kentucky	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Kentucky* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Kentucky Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Turkeys - fattening flocks	
	38	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Bovismorbificans in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Bovismorbificans	Turkeys - fattening flocks																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
Antimicrobials:	14																										
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	5	0									4	1														
Aminoglycosides - Streptomycin	16	5	0													1	3	1									
Amphenicols - Chloramphenicol	16	5	0												2	2	1										
Cephalosporins - Cefotaxime	0	5	5							4	1																
Fluoroquinolones - Ciprofloxacin	0	5	5			2	2			1																	
Penicillins - Ampicillin	8	5	0										2	2	1												
Quinolones - Nalidixic acid	16	5	0													4	1										
Tetracyclines - Tetracycline	8	5	0											3	2												
Trimethoprim	2	5	0										4	1													
Sulfonamides - Sulfamethoxazole	256	5	0																1	2	2						

S. Bovismorbificans	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Bovismorbificans* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Bovismorbificans Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Turkeys - fattening flocks	
	14	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Saintpaul in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Saintpaul	Turkeys - fattening flocks																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	6	0									1	5													
Aminoglycosides - Streptomycin	16	6	2														3	1		1	1					
Amphenicols - Chloramphenicol	16	6	0													3	1	2								
Cephalosporins - Cefotaxime	0	6	6							4	1	1														
Fluoroquinolones - Ciprofloxacin	0	6	6								4	1		1												
Penicillins - Ampicillin	8	6	0											4	1		1									
Quinolones - Nalidixic acid	16	6	6																	6						
Tetracyclines - Tetracycline	8	6	2											3	1					2						
Trimethoprim	2	6	1										5						1							
Sulfonamides - Sulfamethoxazole	256	6	2																1	3					2	

S. Saintpaul	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Saintpaul* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Saintpaul Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Turkeys - fattening flocks	
	7	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Enteritidis in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Enteritidis	Turkeys - fattening flocks																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	28																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	0									1															
Aminoglycosides - Streptomycin	16	1	0													1											
Amphenicols - Chloramphenicol	16	1	0													1											
Cephalosporins - Cefotaxime	0	1	1							1																	
Fluoroquinolones - Ciprofloxacin	0	1	1				1																				
Penicillins - Ampicillin	8	1	0												1												
Quinolones - Nalidixic acid	16	1	0													1											
Tetracyclines - Tetracycline	8	1	0											1													
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	0																1								

S. Enteritidis	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Enteritidis* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Enteritidis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Turkeys - fattening flocks	
	28	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Agona in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Agona	Turkeys - fattening flocks																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	8																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	2	0										2														
Aminoglycosides - Streptomycin	16	2	0														2										
Amphenicols - Chloramphenicol	16	2	0														2										
Cephalosporins - Cefotaxime	0	2	2								2																
Fluoroquinolones - Ciprofloxacin	0	2	2				1		1																		
Penicillins - Ampicillin	8	2	0											1	1												
Quinolones - Nalidixic acid	16	2	0													2											
Tetracyclines - Tetracycline	8	2	0												2												
Trimethoprim	2	2	0										2														
Sulfonamides - Sulfamethoxazole	256	2	0																	1	1						

S. Agona	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Agona* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Agona Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Turkeys - fattening flocks	
	8	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Stanley in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Stanley	Turkeys - fattening flocks																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	53	2									3	41	6	1			2								
Aminoglycosides - Streptomycin	16	53	2														37	14	1	1						
Amphenicols - Chloramphenicol	16	53	1												3	45	2	2	1							
Cephalosporins - Cefotaxime	0	53	53							45	7		1													
Fluoroquinolones - Ciprofloxacin	0	53	53						2		32	14	2	1			2									
Penicillins - Ampicillin	8	53	12										1	34	4	2			12							
Quinolones - Nalidixic acid	16	53	53															2	51							
Tetracyclines - Tetracycline	8	53	2											38	9	3	1	1		1						
Trimethoprim	2	53	1										52						1							
Sulfonamides - Sulfamethoxazole	256	53	3															2	27	19	2				3	

S. Stanley	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Stanley* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Stanley Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Turkeys - fattening flocks	
	55	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Senftenberg in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Senftenberg	Turkeys - fattening flocks																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	2																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	1	0										1														
Aminoglycosides - Streptomycin	16	1	0															1									
Amphenicols - Chloramphenicol	16	1	0														1										
Cephalosporins - Cefotaxime	0	1	1								1																
Fluoroquinolones - Ciprofloxacin	0	1	1				1																				
Penicillins - Ampicillin	8	1	0											1													
Quinolones - Nalidixic acid	16	1	0													1											
Tetracyclines - Tetracycline	8	1	0											1													
Trimethoprim	2	1	0										1														
Sulfonamides - Sulfamethoxazole	256	1	0																		1						

S. Senftenberg	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Senftenberg* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Senftenberg Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Turkeys - fattening flocks	
	2	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Tennessee in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Tennessee	Turkeys - fattening flocks																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
	6																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Aminoglycosides - Gentamicin	2	1	0											1												
Aminoglycosides - Streptomycin	16	1	1																1							
Amphenicols - Chloramphenicol	16	1	0														1									
Cephalosporins - Cefotaxime	0	1	1								1															
Fluoroquinolones - Ciprofloxacin	0	1	1						1																	
Penicillins - Ampicillin	8	1	0												1											
Quinolones - Nalidixic acid	16	1	0													1										
Tetracyclines - Tetracycline	8	1	0												1											
Trimethoprim	2	1	0										1													
Sulfonamides - Sulfamethoxazole	256	1	0																	1						

S. Tennessee	Turkeys - fattening flocks	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
	Antimicrobials:	lowest highest
Aminoglycosides - Gentamicin		0.25 32
Aminoglycosides - Streptomycin		2 128
Amphenicols - Chloramphenicol		2 64

Table Antimicrobial susceptibility testing of *S. Tennessee* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Tennessee Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Turkeys - fattening flocks	
	6	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of S. Infantis in Turkeys - fattening flocks - quantitative data [Dilution method]

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

S. Infantis	Turkeys - fattening flocks																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	201																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	21	0									12	9														
Aminoglycosides - Streptomycin	16	21	18												1	1	1		15	3							
Amphenicols - Chloramphenicol	16	21	0												3	5	9	4									
Cephalosporins - Cefotaxime	0	21	21							5	8	8															
Fluoroquinolones - Ciprofloxacin	0	21	21							2		8	10	1													
Penicillins - Ampicillin	8	21	1										4	6	9	1			1								
Quinolones - Nalidixic acid	16	21	20															1	1	19							
Tetracyclines - Tetracycline	8	21	19											2					1	18							
Trimethoprim	2	21	0										21														
Sulfonamides - Sulfamethoxazole	256	21	19																2						19		

S. Infantis	Turkeys - fattening flocks	
	201	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of *S. Infantis* in Turkeys - fattening flocks - quantitative data [Dilution method]

S. Infantis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Turkeys - fattening flocks	
	201	
	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin	EFSA	2	
	Streptomycin	EFSA	32	
Amphenicols	Chloramphenicol	EFSA	16	
Cephalosporins	Cefotaxime	EFSA	0.5	
Fluoroquinolones	Ciprofloxacin	EFSA	0.06	
Penicillins	Ampicillin	EFSA	4	
Quinolones	Nalidixic acid	EFSA	16	
Sulfonamides	Sulfonamides	EFSA	256	
Tetracyclines	Tetracycline	EFSA	8	
Trimethoprim	Trimethoprim	EFSA	2	

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

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		32	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.5	
Fluoroquinolones	Ciprofloxacin		0.06	
Penicillins	Ampicillin		4	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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

Test Method Used		Standard methods used for testing		
Broth dilution		EFSA 2007		

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

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 investigations 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, disinfection, 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

Reporting system in place for the human cases

There are around 80 communicable diseases notifiable in Hungary based on legal background. The physician (in primary health care, specialist care, inpatient medical institution or pathology) who first diagnoses a case of a notifiable communicable disease (even the suspicion of the disease!) immediately reports data of case to the first level of the epidemiological network (municipal institute) of National Public Health and Medical Officer's Service (NPHMOS). Data must be reported both at the beginning and at end of the illness (recovery/death, result of laboratory test). The NPHMOS has a nationwide electronic system for registering and analysing data of communicable diseases in a combined national database, so the system provides online connection between the three levels (municipal, regional and national level – National Centre of Epidemiology - NCE) of the organization. The NCE prepares reports regularly (weekly, monthly, yearly) to the Chief Medical Officer, the MoH and the Hungarian Central Statistical Office.

Case definition

Confirmed case: a clinically compatible case when the campylobacter infection is laboratory confirmed.

Probable case: a clinically compatible case that is not confirmed by laboratory investigation, but it has an epidemiological link to a confirmed campylobacter outbreak.

Diagnostic/analytical methods used

Campylobacter isolates are obtained by culturing the faeces samples of the patients on selective-differentiating media, using reduced oxygen tension and special incubation temperature, followed by biochemical tests.

Notification system in place

The laboratories of NPHMOS have been able to identify campylobacters since 1987. Human cases have been notifiable since 1998. The physician reports data of case on a "case report form" by mail to the municipal institute of NPHMOS. The specialist of the institute records data immediately in the electronic system of the NPHMOS. Hungary has also a laboratory based surveillance system, and the NPHMOS has representative dataset from most of the microbiological laboratories about the laboratory investigated cases (since 2003 antibiotic resistances have also been reported from 5 regional laboratories of NPHMOS and from a number of laboratories of universities or hospitals).

The illness is reported first as enteritis infectiosa syndrome on the basis of the symptoms. Having the results of the laboratory tests this syndrome-based diagnose is modified to etiology-based diagnose. In some cases the reporting follows only the available laboratory test results.

History of the disease and/or infection in the country

The laboratories of NPHMOS have been able to identify campylobacters since 1987. In 1990 the National Centre for Epidemiology prepared a guideline on campylobacter enteritis, and then the collection of data on campylobacteriosis was started on this basis. The number of isolates increased from 5 500/year in 1990 to 12 000/year in 1996. Since 1998 this number has varied between 9 500 – 11 500 /year. Human cases have been notifiable since 1998, so the laboratory and clinical surveillance have been linked in this year.

The number of registered cases remained around 8 300-9 200 between 1998 and 2004 (incidence: 81,6 –

91,0 /100 000 inhabitants/year).

Altogether four death cases were registered between 1998 and 2004 (case fatality rate ranged between 0,0 – 0,02%/year). The highest age-specific incidence was observed among children under five years in all periods, and the incidence has declined with the progressing of the age.

The 95% of cases were sporadic, widespread outbreaks were observed very rarely; outbreaks mostly appeared in families (200 – 300/year). The most of the outbreaks were caused by poultry prepared with inadequate heat treatment or additionally contaminated food. There has not been any evidence in Hungary for outbreaks caused by ready-to-eat foods of industrial origin.

[In 1998 a single outbreak was investigated that occurred among consumers exposed to non-pasteurised milk (cow) consumed on a livestock market and exhibition (51 cases)]

75-80% of isolated strains were *C.jejuni*, around 10% were *C.coli*, 4-5% were *C.lari*, the distribution of campylobacter specieses did not changed significantly during the last five years.

Relevance as zoonotic disease

It is supposed that person-to-person transmission of campylobacter occur only in very few cases (infants, etc). Most of the outbreaks originated from poultry, via contaminated food. However, this facts have not based on statistical or laboratory evidences in Hungary.

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 seasonal distribution of 30 % in winter to more than 60% in the summer months.

Table Campylobacter in other food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni
Meat from pig - fresh - at slaughterhouse				food sample > meat							
Meat from pig - fresh - at processing plant		Objective sampling	Official sampling	food sample > meat		Single	25 grams	219	11	5	
Meat from pig - fresh - at retail		Objective sampling	Official sampling	food sample > meat		Single	25 grams	64	1	1	
Meat from bovine animals - fresh - at processing plant		Objective sampling	Official sampling	food sample > meat		Single	25 grams	77	5	2	3
Meat from bovine animals - fresh - at retail		Objective sampling	Official sampling	food sample > meat		Single	25 grams	4	0		
Milk, cows' - raw milk - at farm		Objective sampling	Official sampling	food sample > milk	Domestic	Batch	50 ml	160	1		

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from pig - fresh - at slaughterhouse			
Meat from pig - fresh - at processing plant			6
Meat from pig - fresh - at retail			
Meat from bovine animals - fresh - at processing plant			
Meat from bovine animals - fresh - at retail			
Milk, cows' - raw milk - at farm			1

Table Campylobacter in other food

Table Campylobacter in poultry meat

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni
Meat from broilers (Gallus gallus) - carcase - at slaughterhouse		Objective sampling	Official sampling	food sample > meat		Single	25 grams	70	32	17	7
Meat from broilers (Gallus gallus) - fresh - at processing plant		Objective sampling	Official sampling	food sample > meat		Single	25 grams	140	42	25	6
Meat from broilers (Gallus gallus) - fresh - at retail		Objective sampling	Official sampling	food sample > meat		Single	25 grams	276	104	39	22
Meat from geese - fresh - at retail		Objective sampling	Official sampling	food sample > meat		Single	25 grams	1	0		
Meat from duck - fresh - at processing plant		Objective sampling	Official sampling	food sample > meat		Single	25 grams	67	10		5
Meat from duck - fresh - at retail		Objective sampling	Official sampling	food sample > meat		Single	25 grams	4	0		
Meat from geese - fresh - at processing plant		Objective sampling	Official sampling	food sample > meat		Single	25 grams	45	7	2	4
Meat from turkey - fresh - at processing plant - Surveillance		Objective sampling	Official sampling	food sample > meat		Single	25 grams	271	42	20	9
Meat from turkey - fresh - at retail		Objective sampling	Official sampling	food sample > meat		Single	25 grams	16	3	2	

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus) - carcase - at slaughterhouse			8
Meat from broilers (Gallus gallus) - fresh - at processing plant			11

Table Campylobacter in poultry meat

	C. lari	C. upsaliensis	Thermophilic Campylobacter spp., unspecified
Meat from broilers (Gallus gallus) - fresh - at retail	1		42
Meat from geese - fresh - at retail			
Meat from duck - fresh - at processing plant			5
Meat from duck - fresh - at retail			
Meat from geese - fresh - at processing plant			1
Meat from turkey - fresh - at processing plant - Surveillance			13
Meat from turkey - fresh - at retail			1

2.2.4 Campylobacter in animals

Table Campylobacter in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Campylobacter	C. coli	C. jejuni	C. lari
Pigs - fattening pigs - at slaughterhouse - Monitoring	NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	Holding	153	79	62	2	
Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring	NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	Flock	165	138	74	63	
	C. upsaliensis	Thermophilic Campylobacter spp., unspecified									
Pigs - fattening pigs - at slaughterhouse - Monitoring		15									
Gallus gallus (fowl) - broilers - at slaughterhouse - Monitoring		1									

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 of C. jejuni in Meat from broilers (Gallus gallus) - fresh - Official sampling - food sample - meat - quantitative data [Dilution method]

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

C. jejuni	Meat from broilers (Gallus gallus) - fresh																											
	yes																											
	22																											
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Antimicrobials:																												
Aminoglycosides - Gentamicin	1	22	1								1	13	4	3	1													
Aminoglycosides - Streptomycin	2	22	4											13	5	2	2											
Fluoroquinolones - Ciprofloxacin	1	22	18							1	3				3	9	6											
Tetracyclines - Tetracycline	2	22	12									2	4	3	1			6	6									
Fully sensitive		3	3	3																								
Macrolides - Erythromycin	4	22	0										15	4	2	1												
Resistant to 1 antimicrobial		7	7	7																								
Resistant to 2 antimicrobials		9	9	9																								
Resistant to 3 antimicrobials		2	2	2																								
Resistant to 4 antimicrobials		1	1	1																								

C. jejuni	Meat from broilers (Gallus gallus) - fresh	
	yes	
	22	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.12	4
Aminoglycosides - Streptomycin	0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	8

Table Antimicrobial susceptibility testing of *C. jejuni* in Meat from broilers (*Gallus gallus*) - fresh - Official sampling - food sample - meat - quantitative data [Dilution method]

<i>C. jejuni</i> Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from broilers (<i>Gallus gallus</i>) - fresh	
	yes	
	22	
	lowest	highest
Tetracyclines - Tetracycline	0.25	32
Fully sensitive		
Macrolides - Erythromycin	0.12	64
Resistant to 1 antimicrobial		
Resistant to 2 antimicrobials		
Resistant to 3 antimicrobials		
Resistant to 4 antimicrobials		

Table Antimicrobial susceptibility testing of *C. jejuni* in Meat from turkey - fresh - Official sampling - food sample - meat - quantitative data
 [Dilution method]

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

C. jejuni	Meat from turkey - fresh																											
	Isolates out of a monitoring program (yes/no) yes																											
	Number of isolates available in the laboratory 9																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	1	9	0								3	1	4	1														
Aminoglycosides - Streptomycin	2	9	0										1	3	5													
Fluoroquinolones - Ciprofloxacin	1	9	5							2	2					3	2											
Tetracyclines - Tetracycline	2	9	2									2	5						2									
Fully sensitive		4	4	4																								
Macrolides - Erythromycin	4	9	0										7	2														
Resistant to 1 antimicrobial		3	3	3																								
Resistant to 2 antimicrobials		2	2	2																								

C. jejuni Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from turkey - fresh	
	yes	
	9	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.12	4
Aminoglycosides - Streptomycin	0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	8
Tetracyclines - Tetracycline	0.25	32
Fully sensitive		

Table Antimicrobial susceptibility testing of C. jejuni in Meat from turkey - fresh - Official sampling - food sample - meat - quantitative data
[Dilution method]

C. jejuni Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from turkey - fresh	
	yes	
	9	
	lowest	highest
Antimicrobials:		
Macrolides - Erythromycin	0.12	64
Resistant to 1 antimicrobial		
Resistant to 2 antimicrobials		

Table Antimicrobial susceptibility testing of C. coli in Meat from broilers (Gallus gallus) - fresh - Official sampling - food sample - meat - quantitative data [Dilution method]

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

C. coli	Meat from broilers (Gallus gallus) - fresh																											
	yes																											
	47																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	47	0								5	14	19	6	3													
Aminoglycosides - Streptomycin	4	47	6											25	11	5	2	3		1								
Fluoroquinolones - Ciprofloxacin	1	47	41								4	2				31	9	1										
Tetracyclines - Tetracycline	2	47	16								1	3	18	8	1			10	6									
Fully sensitive		3	3	3																								
Macrolides - Erythromycin	16	47	1								1	6	26	7	3	3			1									
Resistant to 1 antimicrobial		26	26	26																								
Resistant to 2 antimicrobials		16	16	16																								
Resistant to 3 antimicrobials		2	2	2																								

C. coli	Meat from broilers (Gallus gallus) - fresh	
	yes	
	47	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.12	4
Aminoglycosides - Streptomycin	0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	8
Tetracyclines - Tetracycline	0.12	32

Table Antimicrobial susceptibility testing of C. coli in Meat from broilers (Gallus gallus) - fresh - Official sampling - food sample - meat - quantitative data [Dilution method]

C. coli Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from broilers (Gallus gallus) - fresh	
	yes	
	47	
Antimicrobials:	lowest	highest
Fully sensitive		
Macrolides - Erythromycin	0.12	64
Resistant to 1 antimicrobial		
Resistant to 2 antimicrobials		
Resistant to 3 antimicrobials		

Table Antimicrobial susceptibility testing of C. coli in Meat from turkey - fresh - Official sampling - food sample - meat - quantitative data
[Dilution method]

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

C. coli	Meat from turkey - fresh																											
	yes																											
	11																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	11	0									2	4	5														
Aminoglycosides - Streptomycin	4	11	0											3	4	4												
Fluoroquinolones - Ciprofloxacin	1	11	10								1					5	5											
Tetracyclines - Tetracycline	2	11	5										1	5				4	1									
Fully sensitive		1	1	1																								
Macrolides - Erythromycin	16	11	0									1	3	3	4													
Resistant to 1 antimicrobial		5	5	5																								
Resistant to 2 antimicrobials		5	5	5																								

C. coli	Meat from turkey - fresh	
	yes	
	11	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.12	4
Aminoglycosides - Streptomycin	0.5	64
Fluoroquinolones - Ciprofloxacin	0.06	8
Tetracyclines - Tetracycline	0.25	32
Fully sensitive		

Table Antimicrobial susceptibility testing of C. coli in Meat from turkey - fresh - Official sampling - food sample - meat - quantitative data
[Dilution method]

C. coli Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from turkey - fresh	
	yes	
	11	
	lowest	highest
Antimicrobials:		
Macrolides - Erythromycin	0.12	64
Resistant to 1 antimicrobial		
Resistant to 2 antimicrobials		

Table Antimicrobial susceptibility testing of C. jejuni in Pigs - fattening pigs - quantitative data [Dilution method]

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

C. jejuni	Pigs - fattening pigs																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	49																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	3	0									1	1	1													
Aminoglycosides - Streptomycin	4	3	2											1				2									
Amphenicols - Chloramphenicol	16	3	0												2	1											
Fluoroquinolones - Ciprofloxacin	0	3	3								1					2											
Quinolones - Nalidixic acid	16	3	2														1			2							
Tetracyclines - Tetracycline	1	3	2									1						2									
Macrolides - Erythromycin	4	3	0										1	1		1											

C. jejuni	Pigs - fattening pigs	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.12	16
Aminoglycosides - Streptomycin	1	16
Amphenicols - Chloramphenicol	2	32
Fluoroquinolones - Ciprofloxacin	0.06	4
Quinolones - Nalidixic acid	2	64
Tetracyclines - Tetracycline	0.25	16

Table Antimicrobial susceptibility testing of C. jejuni in Pigs - fattening pigs - quantitative data [Dilution method]

C. jejuni Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Pigs - fattening pigs	
	49	
Antimicrobials:	lowest	highest
Macrolides - Erythromycin	0.5	32

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

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

C. jejuni	Gallus gallus (fowl) - broilers																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	49																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	46	0								12	23	11														
Aminoglycosides - Streptomycin	4	46	0											43	3												
Amphenicols - Chloramphenicol	16	46	0												43	3											
Fluoroquinolones - Ciprofloxacin	0	46	46							4	2					40											
Quinolones - Nalidixic acid	16	46	39												1	3	3		2	37							
Tetracyclines - Tetracycline	1	46	20									20	5	1		1		19									
Macrolides - Erythromycin	4	46	0										40	6													

C. jejuni	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.12	16
Aminoglycosides - Streptomycin	1	16
Amphenicols - Chloramphenicol	2	32
Fluoroquinolones - Ciprofloxacin	0.06	4
Quinolones - Nalidixic acid	2	64
Tetracyclines - Tetracycline	0.25	16

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

C. jejuni Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - broilers	
	49	
Antimicrobials:	lowest	highest
Macrolides - Erythromycin	0.5	32

Table Antimicrobial susceptibility testing of C. coli in Pigs - fattening pigs - quantitative data [Dilution method]

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

C. coli	Pigs - fattening pigs																									
	Isolates out of a monitoring program (yes/no)																									
	Number of isolates available in the laboratory																									
Antimicrobials:	Cut-off value	N	n	≤0.002	≤0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	≥4096	1024	2048
Aminoglycosides - Gentamicin	2	53	2								2		19	30				2								
Aminoglycosides - Streptomycin	4	53	46											1	3	3	2	44								
Amphenicols - Chloramphenicol	16	53	0												29	18	6									
Fluoroquinolones - Ciprofloxacin	0	53	53							11	7	7	1			27										
Quinolones - Nalidixic acid	16	53	27													7	16	3		27						
Tetracyclines - Tetracycline	2	53	47									2	1	2	1		1	46								
Macrolides - Erythromycin	8	53	8										16	17	10	2		1	7							

C. coli	Pigs - fattening pigs	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.12	16
Aminoglycosides - Streptomycin	1	16
Amphenicols - Chloramphenicol	2	32
Fluoroquinolones - Ciprofloxacin	0.06	4
Quinolones - Nalidixic acid	2	64
Tetracyclines - Tetracycline	0.25	16

Table Antimicrobial susceptibility testing of C. coli in Pigs - fattening pigs - quantitative data [Dilution method]

C. coli Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Pigs - fattening pigs	
	116	
Antimicrobials:	lowest	highest
Macrolides - Erythromycin	0.5	32

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

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

C. coli	Gallus gallus (fowl) - broilers																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
	116																										
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	63	0								11	9	35	7	1												
Aminoglycosides - Streptomycin	4	63	4											20	30	9		4									
Amphenicols - Chloramphenicol	16	63	0												51	11	1										
Fluoroquinolones - Ciprofloxacin	0	63	63							6	4	2		1	1	49											
Quinolones - Nalidixic acid	16	63	52													7	2	2	1	51							
Tetracyclines - Tetracycline	2	63	33									20	6	2	2		1	32									
Macrolides - Erythromycin	8	63	1										53	5	4				1								

C. coli	Gallus gallus (fowl) - broilers	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.12	16
Aminoglycosides - Streptomycin	1	16
Amphenicols - Chloramphenicol	2	32
Fluoroquinolones - Ciprofloxacin	0.06	4
Quinolones - Nalidixic acid	2	64
Tetracyclines - Tetracycline	0.25	16

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

C. coli Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Gallus gallus (fowl) - broilers	
	116	
	lowest	highest
Macrolides - Erythromycin	0.5	32

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used		Standard methods used for testing		
Broth dilution		EFSA 2007		

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

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

Test Method Used	Standard methods used for testing

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

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

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		1	
	Streptomycin		2	
Fluoroquinolones	Ciprofloxacin		1	
Macrolides	Erythromycin		4	
Tetracyclines	Tetracycline		2	

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

Test Method Used		Standard methods used for testing		
Broth dilution		EFSA 2007		

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

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-absence 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-absence 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 characteristic 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

A. Listeriosis in humans

Reporting system in place for the human cases

There are around 80 communicable diseases notifiable in Hungary based on legal background. The physician (in primary health care, specialist care, inpatient medical institution or pathology) who first diagnoses a case of a notifiable communicable disease (even the suspicion of the disease!) immediately reports data of case to the first level of the epidemiological network (municipal institute) of National Public Health and Medical Officer's Service (NPHMOS). Data must be reported both at the beginning and at end of the illness (recovery/death, result of laboratory test). The NPHMOS has a nationwide electronic reporting system for registering and analysing data of communicable diseases in a combined national database, so the system provides online connection amid the three levels (municipal, regional and national level – National Centre of Epidemiology - NCE) of the organization. The NCE prepares reports regularly (weekly, monthly, yearly) to the Chief Medical Officer, the MoH and the Hungarian Central Statistical Office.

Case definition

Confirmed case: Clinical picture of an invasive illness (meningitis purulenta, sepsis, stillbirth etc.), and *L.monocytogenes* has been isolated from invasive sample (liquor, blood, amniotic fluid etc.)

Diagnostic/analytical methods used

The samples are cultivated on enriched medium. The isolation is followed by the biochemical tests, and antimicrobial susceptibility testing.

Notification system in place

Listeriosis has been notifiable since 1998 in Hungary. The physician reports data of case on a "case report form" by mail to the municipal institute of NPHMOS. The specialist of the institute records data immediately in the electronic system of the NPHMOS. Hungary also has a laboratory based surveillance system, and the NPHMOS has representative dataset from most of the microbiological laboratories about the investigated cases (since 2003 antibiotic resistances has also been reported from 20 county institutes and 12 laboratories from universities or hospitals).

The illness is reported first as meningitis purulenta syndrome on the basis of the symptoms. Having the results of the laboratory tests this syndrome-based diagnose is modified to etiology-based diagnose (listeriosis).

History of the disease and/or infection in the country

Listeriosis has been notifiable since 1998 in Hungary, there have been 91 cases registered since then. The number of yearly registered cases ranged between 4 – 25 (incidence 0,04 – 0,2/100 000 inhabitants/year; median: 14 cases), the case fatality rate ranged between 0 – 50% (median 22,2%). The age-distribution of cases: 12% infants, 1 – 14 year 3,4%, 15 – 19 year 0%, 20 – 49 year 20%, 50 – 59 year 20%, > 60 year 43%. Most of the cases are meningitis, less of them are sepsis.

Relevance as zoonotic disease

Listeriosis is underreported in Hungary. No evidence has been found for a food-borne case based on laboratory tests in Hungary.

2.3.3 Listeria in foodstuffs

Table Listeria monocytogenes in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for L. monocytogenes	Units tested with detection method	Listeria monocytogenes presence in x g
Milk, cows' - raw milk - intended for direct human consumption - at farm - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > milk	Domestic	Single	25 ml or 10 ml	112	6	95	6
Milk, cows' - pasteurised milk - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > milk	Domestic	Single	25 ml	116	0	0	0
Milk, cows' - pasteurised milk - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > milk	Unknown	Single	25 ml	10	0	0	0
Milk, goats' - raw milk - intended for direct human consumption - at farm - Surveillance	National Food Chain Safety Office	Unspecified	Official sampling	food sample > milk	Domestic	Single	25 ml	1	0	1	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	63	0	50	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	83	0	53	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	7	0	6	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	3	0	2	0
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	7	0	7	0

Table *Listeria monocytogenes* in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for <i>L. monocytogenes</i>	Units tested with detection method	<i>Listeria monocytogenes</i> presence in x g
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	2	0	1	0
Dairy products (excluding cheeses) - butter - made from pasteurised milk - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	26	0	22	0
Dairy products (excluding cheeses) - butter - made from pasteurised milk - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	37	0	25	0
Cheeses made from cows' milk - curd - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	40	0	33	0
Cheeses made from cows' milk - curd - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	33	0	21	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	2	0	2	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	13	0	10	0
Dairy products (excluding cheeses) - dairy desserts - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	29	0	22	0
Dairy products (excluding cheeses) - dairy desserts - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	42	0	28	0
Dairy products (excluding cheeses) - fermented dairy products - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	65	0	58	0

Table *Listeria monocytogenes* in milk and dairy products

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for <i>L. monocytogenes</i>	Units tested with detection method	<i>Listeria monocytogenes</i> presence in x g
Dairy products (excluding cheeses) - fermented dairy products - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	86	0	78	0
Dairy products (excluding cheeses) - ice-cream - at catering - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	112	0	91	0
Dairy products (excluding cheeses) - ice-cream - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	104	0	102	0
Dairy products (excluding cheeses) - ice-cream - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	174	1	117	1
Dairy products (excluding cheeses) - milk powder and whey powder - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	20	0	17	0
Dairy products (excluding cheeses) - milk powder and whey powder - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	68	0	40	0

	Units tested with enumeration method	> detection limit but ≤ 100 cfu/g	<i>L. monocytogenes</i> > 100 cfu/g
Milk, cows' - raw milk - intended for direct human consumption - at farm - Surveillance	17	0	0
Milk, cows' - pasteurised milk - at processing plant - Surveillance	116	0	0
Milk, cows' - pasteurised milk - at retail - Surveillance	10	0	0

Table *Listeria monocytogenes* in milk and dairy products

	Units tested with enumeration method	> detection limit but ≤ 100 cfu/g	L. monocytogen es > 100 cfu/g
Milk, goats' - raw milk - intended for direct human consumption - at farm - Surveillance	0	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	13	0	0
Cheeses made from cows' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	30	0	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	1	0	0
Cheeses made from goats' milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	1	0	0
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at processing plant - Surveillance	0	0	0
Cheeses made from sheep's milk - soft and semi-soft - made from pasteurised milk - at retail - Surveillance	1	0	0
Dairy products (excluding cheeses) - butter - made from pasteurised milk - at processing plant - Surveillance	4	0	0
Dairy products (excluding cheeses) - butter - made from pasteurised milk - at retail - Surveillance	12	0	0
Cheeses made from cows' milk - curd - at processing plant - Surveillance	7	0	0

Table *Listeria monocytogenes* in milk and dairy products

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cheeses made from cows' milk - curd - at retail - Surveillance	12	0	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at processing plant - Surveillance	0	0	0
Cheeses made from sheep's milk - fresh - made from pasteurised milk - at retail - Surveillance	3	0	0
Dairy products (excluding cheeses) - dairy desserts - at processing plant - Surveillance	7	0	0
Dairy products (excluding cheeses) - dairy desserts - at retail - Surveillance	14	0	0
Dairy products (excluding cheeses) - fermented dairy products - at processing plant - Surveillance	7	0	0
Dairy products (excluding cheeses) - fermented dairy products - at retail - Surveillance	8	0	0
Dairy products (excluding cheeses) - ice-cream - at catering - Surveillance	21	0	0
Dairy products (excluding cheeses) - ice-cream - at processing plant - Surveillance	2	0	0
Dairy products (excluding cheeses) - ice-cream - at retail - Surveillance	57	0	0
Dairy products (excluding cheeses) - milk powder and whey powder - at processing plant - Surveillance	3	0	0

Table Listeria monocytogenes in milk and dairy products

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogen es > 100 cfu/g
Dairy products (excluding cheeses) - milk powder and whey powder - at retail - Surveillance	28	0	0

Table *Listeria monocytogenes* in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for <i>L. monocytogenes</i>	Units tested with detection method	<i>Listeria monocytogenes</i> presence in x g
Meat from broilers (<i>Gallus gallus</i>) - meat products - cooked, ready-to-eat - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	26	0	20	0
Meat from broilers (<i>Gallus gallus</i>) - meat products - cooked, ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	84	0	65	0
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	20	0	15	0
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	81	3	59	2
Meat from bovine animals - meat products - cooked, ready-to-eat - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	3	0	2	0
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	31	1	21	1
Fish - smoked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	57	2	39	2
Molluscan shellfish - cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	40	0	25	0
Infant formula - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	53	0	53	0
Other processed food products and prepared dishes - sandwiches - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	50	2	34	1

Table *Listeria monocytogenes* in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for <i>L. monocytogenes</i>	Units tested with detection method	<i>Listeria monocytogenes</i> presence in x g
Vegetables - pre-cut - ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	14	0	12	0
Ready-to-eat salads	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	405	13	275	13
Bakery products - cakes - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	282	1	193	1
Cereals and meals - flakes - unspecified - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	107	0	65	0
Chocolate - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	18	0	12	0
Chocolate - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	93	0	36	0
Cocoa and cocoa preparations, coffee and tea - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	3	0	1	0
Cocoa and cocoa preparations, coffee and tea - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	104	0	60	0
Follow-on formulae - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	65	0	65	0
Meat from pig - meat products - fermented sausages - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	317	14	185	12
Meat from pig - meat products - fermented sausages - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	399	2	255	2
Meat from pig - meat products - raw ham - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	142	7	122	5

Table *Listeria monocytogenes* in other foods

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for <i>L. monocytogenes</i>	Units tested with detection method	<i>Listeria monocytogenes</i> presence in x g
Meat from pig - meat products - raw ham - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	99	5	65	3
Meat from turkey - meat products - cooked, ready-to-eat - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	Single	25 g	56	0	45	0
Meat from turkey - meat products - cooked, ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	150	0	105	0
Nuts and nut products - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	23	0	14	0
Other processed food products and prepared dishes - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	727	5	550	4
Seeds, sprouted - ready-to-eat - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	25 g	34	1	28	1

	Units tested with enumeration method	> detection limit but ≤ 100 cfu/g	<i>L. monocytogenes</i> > 100 cfu/g
Meat from broilers (<i>Gallus gallus</i>) - meat products - cooked, ready-to-eat - at processing plant - Surveillance	6	0	0
Meat from broilers (<i>Gallus gallus</i>) - meat products - cooked, ready-to-eat - at retail - Surveillance	19	0	0
Meat from pig - meat products - cooked, ready-to-eat - at processing plant - Surveillance	5	0	0

Table Listeria monocytogenes in other foods

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Meat from pig - meat products - cooked, ready-to-eat - at retail - Surveillance	22	1	0
Meat from bovine animals - meat products - cooked, ready-to-eat - at processing plant - Surveillance	1	0	0
Meat from bovine animals - meat products - cooked, ready-to-eat - at retail - Surveillance	10	0	0
Fish - smoked - at retail - Surveillance	18	0	0
Molluscan shellfish - cooked - at retail - Surveillance	15	0	0
Infant formula - at retail - Surveillance	0	0	0
Other processed food products and prepared dishes - sandwiches - at retail - Surveillance	16	0	1
Vegetables - pre-cut - ready-to-eat - at retail - Surveillance	2	0	0
Ready-to-eat salads	130	0	0
Bakery products - cakes - Surveillance	89	0	0
Cereals and meals - flakes - unspecified - Surveillance	42	0	0
Chocolate - at processing plant - Surveillance	6	0	0
Chocolate - at retail - Surveillance	57	0	0
Cocoa and cocoa preparations, coffee and tea - at processing plant - Surveillance	2	0	0

Table Listeria monocytogenes in other foods

	Units tested with enumeration method	> detection limit but <= 100 cfu/g	L. monocytogenes > 100 cfu/g
Cocoa and cocoa preparations, coffee and tea - at retail - Surveillance	44	0	0
Follow-on formulae - at retail - Surveillance	0	0	0
Meat from pig - meat products - fermented sausages - at processing plant - Surveillance	132	2	0
Meat from pig - meat products - fermented sausages - at retail - Surveillance	144	0	0
Meat from pig - meat products - raw ham - at processing plant - Surveillance	20	2	0
Meat from pig - meat products - raw ham - at retail - Surveillance	34	2	0
Meat from turkey - meat products - cooked, ready-to-eat - at processing plant - Surveillance	11	0	0
Meat from turkey - meat products - cooked, ready-to-eat - at retail - Surveillance	45	0	0
Nuts and nut products - Surveillance	9	0	0
Other processed food products and prepared dishes - Surveillance	177	0	1
Seeds, sprouted - ready-to-eat - Surveillance	6	0	0

2.3.4 Listeria in animals

Table Listeria in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Listeria	L. monocytogenes	Listeria spp., unspecified
Gallus gallus (fowl) - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Animal	1	1	1	0
Sheep - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Animal	9	9	0	9

2.4 E. COLI INFECTIONS

2.4.1 General evaluation of the national situation

A. Verotoxigenic Escherichia coli infections general evaluation

Additional information

E. coli- microbiological examination of food according to ISO 16654 (E. coli O157)
identification by antisera

2.4.2 Escherichia coli, pathogenic in foodstuffs

Table VT E. coli in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Analytical Method	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157
Meat from bovine animals - fresh - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	ISO 16654:2001	Single	25 g	77		0
Meat from bovine animals - fresh - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	ISO 16654:2001	Single	25 g	4		0
Milk, cows' - raw milk - intended for direct human consumption - at farm - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample > milk	Domestic	ISO 16654:2001	Single	25 ml	113		0
Milk, goats' - raw milk - intended for direct human consumption - at farm - Surveillance	National Food Chain Safety Office	Unspecified	Official sampling	food sample > milk	Domestic	ISO 16654:2001	Single	25 ml	1		0
Vegetables - pre-cut - ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	ISO 16654:2001	Single	25 g	90		0
Seeds, sprouted - ready-to-eat - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	ISO 16654:2001	Single	25 g	5		0
Seeds, sprouted - ready-to-eat - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	ISO 16654:2001	Single	25 g	44		0
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Domestic	ISO 16654:2001	Single	25 g	23		0
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	ISO 16654:2001	Single	25 g	8		0

Table VT E. coli in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Analytical Method	Sampling unit	Sample weight	Units tested	Total units positive for Verotoxigenic E. coli (VTEC)	Verotoxigenic E. coli (VTEC) - VTEC O157
Seeds, sprouted - ready-to-eat - unspecified - Clinical investigations	National Food Chain Safety Office	Suspect sampling	Official sampling	food sample	Domestic	ISO/PRF TS 13136	Single	25 g	1	0	
		Verotoxigenic E. coli (VTEC) - VTEC non-O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified								
Meat from bovine animals - fresh - at processing plant - Surveillance											
Meat from bovine animals - fresh - at retail - Surveillance											
Milk, cows' - raw milk - intended for direct human consumption - at farm - Surveillance											
Milk, goats' - raw milk - intended for direct human consumption - at farm - Surveillance											
Vegetables - pre-cut - ready-to-eat - at retail - Surveillance											
Seeds, sprouted - ready-to-eat - at processing plant - Surveillance											
Seeds, sprouted - ready-to-eat - at retail - Surveillance											
Meat from bovine animals - minced meat - intended to be eaten cooked - at processing plant - Surveillance											

Table VT E. coli in food

	Verotoxigenic E. coli (VTEC) - VTEC non- O157	Verotoxigenic E. coli (VTEC) - VTEC, unspecified
Meat from bovine animals - minced meat - intended to be eaten cooked - at retail - Surveillance		
Seeds, sprouted - ready-to-eat - unspecified - Clinical investigations		

2.4.3 Escherichia coli, pathogenic in animals

A. Verotoxigenic Escherichia coli in cattle (bovine animals)

Monitoring system

Sampling strategy

Monitoring, Official sampling, objective sampling

Frequency of the sampling

Animals at farm

Sampling distributed evenly throughout the year

Animals at slaughter (herd based approach)

Sampling distributed evenly throughout the year

Type of specimen taken

Animals at slaughter (herd based approach)

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 belonging 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)

Diagnostic/analytical methods used

Animals at slaughter (herd based approach)

Bacteriological method: ISO 16654:2001

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 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 tuberculous lesions. The legal provisions for tuberculosis require that the organs, together with the lymphnodes belonging to them, shall be sent to the National Food Chain Safety Office, Veterinary Diagnostic Directorate (former Central Veterinary Institute) for further laboratory examination, if during post mortem inspection of a slaughtered animal the tuberculous 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 Annex 3 of the Decree No. 65/2002. (VIII. 9.) FVM and in the Technical Guideline, shall be sent to the National Food Chain Safety 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:

All-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;

All-samples used for confirming paraallergic reaction must include the tonsils, pharyngeal, mesenteric and portal lymphatic glands of the slaughtered animal;

All-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

An animal is considered a positive case, if the presence of tuberculosis is confirmed by the isolation of *M. bovis* from its lymph node(s) or parenchymatous organs on laboratory examination.

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 National Food Chain Safety 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 tuberculin 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 first by the Ministry of Agriculture and Rural Development and later by the Central Agricultural Office (the currently valid guideline was issued in March 2010) about the carrying out the tuberculin test in cattle herds taking into consideration the false 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

- Â·the conditions for retention of the officially free status are not complied with, or
- Â·classical lesions of tuberculosis are seen at post-mortem examination,
- Â·an epidemiological enquiry establishes the likelihood of infection,
- Â·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, from 1 September 2008 by the Decree No 113/2008 (VIII. 30.) of the Ministry of Agriculture and Rural Development (MARD) on notification of animal diseases. The detailed rules regarding bovine tuberculosis 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.) MEM 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 strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Mycobacterium	M. bovis	M. tuberculosis	Mycobacterium spp., unspecified
Sheep	NFC SO - VDD	Suspect sampling	Official sampling	animal sample > lymph nodes	Domestic	Animal	2	0			
Goats	NFC SO - VDD	Suspect sampling	Official sampling	animal sample > lymph nodes	Domestic	Animal	5	0			
Pigs	NFC SO - VDD	Suspect sampling	Official sampling	animal sample > lymph nodes	Domestic	Animal	1	0			
Badgers	NFC SO - VDD	Suspect sampling	Official sampling	animal sample > lymph nodes	Domestic	Animal	1	0			
Deer - wild - red deer - in total - Monitoring - active	NFC SO - VDD	Convenience sampling	Official sampling	animal sample > lymph nodes	Domestic	Animal	41	9	0	0	9
Wild boars - wild - in total - Monitoring - active	NFC SO - VDD	Convenience sampling	Official sampling	animal sample > lymph nodes	Domestic	Animal	507	143	32	0	124

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

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

Region	Total number of existing bovine		Officially free herds		Infected herds		Routine tuberculin testing		Number of tuberculin tests carried out before the introduction into the herds (Annex A(I)(2)(c) third indent (1) of Directive 64/432/EEC)	Number of animals with suspicious lesions of tuberculosis examined and submitted to histopathological and bacteriological	Number of animals detected positive in bacteriological examination
	Herds	Animals	Number of herds	%	Number of herds	%	Interval between routine tuberculin tests	Number of animals tested			
Baranya	406	29786	405	99.75	1	.25	once a year	24311	752	39	6
Borsod-Abaúj-Zemplén	928	46155	926	99.78	0	0	once a year	39606	2372	30	0
Budapest	33	1091	33	100	0	0	once a year	1043	0	0	0
Bács-Kiskun	2055	71101	2055	100	0	0	once a year	56144	1975	19	0
Békés	1525	66380	1525	100	0	0	once a year	49356	3118	11	0
Csongrád	1444	42473	1443	99.93	0	0	once a year	32713	1366	13	0
Fejér	531	47286	531	100	0	0	once a year	42216	3683	19	0
Győr-Moson-Sopron	856	54719	856	100	0	0	once a year	51258	5159	6	0
Hajdú-Bihar	2235	99091	2235	100	0	0	once a year	84325	1987	19	0
Heves	332	15079	332	100	0	0	once a year	12636	635	7	0
Jász-Nagykun-Szolnok	1103	58203	1103	100	0	0	once a year	43181	917	42	0
Komárom-Esztergom	238	14884	238	100	0	0	once a year	13110	1358	22	0

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

Nógrád	310	15492	309	99.68	0	0	once a year	12915	1095	7	0
Pest	1288	53305	1287	99.92	0	0	once a year	45629	7713	16	0
Somogy	506	36156	502	99.21	0	0	once a year	47265	20397	13	0
Szabolcs-Szatmár-Bereg	949	41865	947	99.79	0	0	once a year	35244	4676	1	0
Tolna	432	24565	431	99.77	0	0	once a year	24277	3726	33	0
Vas	589	30211	589	100	0	0	once a year	27290	1879	0	0
Veszprém	409	41640	409	100	0	0	once a year	36349	4614	12	0
Zala	476	25659	476	100	0	0	once a year	18667	18579	6	0
Total : ¹⁾	16645	815141	16632	99.92	1	.01	N.A.	697535	86001	315	6

Comments:

¹⁾ N.A.

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

A. Brucellosis in humans

Reporting system in place for the human cases

1. Reporting system in place for the human cases:

There are around 80 communicable diseases notifiable in Hungary based on legal background. The physician (in primary health care, specialist care, inpatient medical institution or pathology) who first diagnoses a case of a notifiable communicable disease (even the suspicion of the disease!) immediately reports data of case to the first level of the epidemiological network (municipal institute) of National Public Health and Medical Officer's Service (NPHMOS). Data must be reported both at the beginning and at end of the illness (recovery/death, result of laboratory test). The NPHMOS has a nationwide electronic system for registering and analysing data of communicable diseases in a combined national database, so the system makes online connection amid the three levels (municipal, county and national level – National Centre of Epidemiology - NCE) of the organization. The NCE prepares reports regularly (weekly, monthly, yearly) to the Chief Medical Officer, the MoH and the Hungarian Central Statistical Office.

Case definition

Confirmed case: a clinically compatible case and the infection is laboratory confirmed.

Diagnostic/analytical methods used

A serological test (Widal type tube agglutination) is used to confirm the brucellosis diagnose in Hungary. The test preparation is a TTC stained *B. melitensis* biovar. abortus HNCMB 93007 strain (internationally used diagnostic strain). Result is positive: titre 1:80; uncertain: titre 1:40; negative titre between 1:20 - 1:10. The acute illness is confirmed by the increasing titre of paired sera.

Notification system in place

The disease has been notifiable since 1950 in Hungary. The physician reports data of case on a "case report form" by mail to the municipal institute of NPHMOS. The specialist of the institute records data immediately in the electronic system of the NPHMOS. Hungary has also a laboratory based surveillance system, and the NPHMOS has representative dataset from most of the microbiological laboratories about the cases investigated by the laboratory

History of the disease and/or infection in the country

The disease has been notifiable since 1950 in Hungary. The annual number of reported cases ranged between 0 – 132 (incidence: 0 – 1.3/100 000 inhabitants/year, median 21 case/year – 0.2/100 000 inhabitant/year). In the 1950s and 1960s the number of registered cases was about 40 – 60/year. The most cases were registered between 1970 and 1975 (110 – 135 cases/year – incidence: 1.1 – 1.3/100 000 inhabitant/year). Between 1976 and 1986 the number of registered cases decreased to 10 cases/year. 11 death cases occurred between 1950 and 1978. The case fatality rate ranged between 0 – 6.5% (median 0%).

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

There were five cases registered in 2000 - 2001 (2000: 1, 2001: 4 cases), no case was reported between 2002 and 2004, in 2006 and 2008, and only 1-1 case was identified in 2005 and 2007 in Hungary. (The data of laboratory surveillance: 2000 – 4 800 tests, 23 positive; 2001 - 4 900 tests, 30 positive; between 2002 and 2003: about 3 900 tests/year, 6 – 9 /year positive.) No death was registered in this period. One case in 2001 was imported from abroad, in the four other cases between 2000-2001 the place and source of infection could not be identified. Cases registered in 2005 and 2007 were imported cases. No domestic

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case was reported since then.

2.6.3 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 Act on Food Chain Safety and its official control No XLVI of 2008 that is effective since 1 September 2008 and the Decree of the Minister of Agriculture No 12/2008 (II. 14.) on detailed rules of the protection regarding certain *Brucella* species.

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 decree mentioned above, for further laboratory examination. Until thorough clarification of the case, the animal is kept separated and, if necessary, repeatedly tested.

Results of the investigation

Since 1985 no infection of *B. abortus* has been found.

B. 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. Since 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

Hungary is 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.) MEM 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.) MEM of the Minister of Agriculture and Alimentation.

Results of the investigation

No evidence of infection with *B. melitensis* was ever found.

C. 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. 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

Hungary is 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.) MEM 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.) MEM of the Minister of Agriculture and Alimentation.

Results of the investigation

No evidence of infection with *B. melitensis* were found.

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

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

Region	Total number of existing		Officially free herds		Infected herds		Surveillance			Investigations of suspect cases				
	Herds	Animals	Number of herds	%	Number of herds	%	Number of herds tested	Number of animals tested	Number of infected herds	Number of animals tested with serological blood tests	Number of animals positive serologically	Number of animals examined microbiologically	Number of animals positive microbiologically	Number of suspended herds
Magyarország	7235	886083	7235	100	0	0	2373	45351	0	0	0	0	0	0
Total : ¹⁾	7235	886083	7235	100	0	0	2373	45351	0	0	0	0	0	0

Comments:

¹⁾ N.A.

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

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

Region	Total number of existing bovine		Officially free herds		Infected herds		Surveillance						Investigations of suspect cases								
							Serological tests			Examination of bulk milk			Information about			Epidemiological investigation					
	Herds	Animals	Number of herds	%	Number of herds	%	Number of bovine herds tested	Number of animals tested	Number of infected herds	Number of bovine herds tested	Number of animals or pools tested	Number of infected herds	Number of notified abortions whatever cause	Number of isolations of Brucella infection	Number of abortions due to Brucella abortus	Number of animals tested with serological blood tests	Number of suspended herds	Number of positive animals		Number of animals examined microbiologically	Number of animals positive microbiologically
																		Sero logically	BST		
Baranya	406	29786	406	100	0	0	272	9870	0	0	0	0	58	0	0	0	0	0	0	0	0
Borsod-Abaúj-Zemplén	928	46155	928	100	0	0	726	19376	0	0	0	0	67	0	0	0	0	0	0	0	0
Budapest	33	1091	33	100	0	0	23	547	0	0	0	0	2	0	0	0	0	0	0	0	0
Bács-Kiskun	2055	71101	2055	100	0	0	1855	35555	0	17	1015	0	42	0	0	0	0	0	0	0	0
Békés	1525	66380	1525	100	0	0	1525	26372	0	0	0	0	219	0	0	0	0	0	0	0	0
Csongrád	1444	42473	1444	100	0	0	1242	19786	0	1	27	0	81	0	0	0	0	0	0	0	0
Fejér	531	47286	531	100	0	0	531	22410	0	8	2231	0	54	0	0	0	0	0	0	0	0
Győr-Moson-Sopron	856	54719	856	100	0	0	464	28266	0	9	2572	0	136	0	0	0	0	0	0	0	0
Hajdú-Bihar	2235	99091	2235	100	0	0	1868	47410	0	0	0	0	110	0	0	0	0	0	0	0	0
Heves	332	15079	332	100	0	0	332	9281	0	1	354	0	25	0	0	0	0	0	0	0	0
Jász-Nagykun-Szolnok	1103	58203	1103	100	0	0	690	23365	0	0	0	0	23	0	0	0	0	0	0	0	0
Komárom-Esztergom	238	14884	238	100	0	0	202	6692	0	0	0	0	36	0	0	0	0	0	0	0	0

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

Nógrád	310	15492	310	100	0	0	293	8807	0	0	0	0	12	0	0	0	0	0	0	0
Pest	1288	53305	1288	100	0	0	1181	31457	0	6	3342	0	21	0	0	0	0	0	0	0
Somogy	506	36156	506	100	0	0	504	19291	0	0	0	0	12	0	0	0	0	0	0	0
Szabolcs-Szatmár-Bereg	949	41865	949	100	0	0	949	21269	0	0	0	0	16	0	0	0	0	0	0	0
Tolna	432	24565	432	100	0	0	241	8844	0	20	1310	0	20	0	0	0	0	0	0	0
Vas	589	30211	589	100	0	0	485	16442	0	0	0	0	46	0	0	0	0	0	0	0
Veszprém	409	41640	409	100	0	0	409	20323	0	0	0	0	54	0	0	0	0	0	0	0
Zala	476	25659	476	100	0	0	384	9910	0	0	0	0	14	0	0	0	0	0	0	0
Total : ¹⁾	16645	815141	16645	100	0	0	14176	385273	0	62	10851	0	1048	0	0	0	0	0	0	0

Comments:

¹⁾ N.A.

2.7 YERSINIOSIS

2.7.1 General evaluation of the national situation

A. Yersinia enterocolitica general evaluation

Additional information

diagnostic methods: bacteriological examination and
PCR

2.7.2 Yersiniosis in humans

A. Yersiniosis in humans

Reporting system in place for the human cases

There are around 80 communicable diseases notifiable in Hungary based on legal background. The physician (in primary health care, specialist care, inpatient medical institution or pathology) who first diagnoses a case of a notifiable communicable disease (even the suspicion of the disease!) immediately reports data of case to the first level of the epidemiological network (municipal institute) of National Public Health and Medical Officer's Service (NPHMOS). Data must be reported both at the beginning and at end of the illness (recovery/death, result of laboratory test). The NPHMOS has a nationwide electronic system for registering and analysing data of communicable diseases in a combined national database, so the system makes online connection between the three levels (municipal, regional and national level – National Centre of Epidemiology - NCE) of the organization. The NCE prepares reports regularly (weekly, monthly, yearly) to the Chief Medical Officer, the MoH and the Hungarian Central Statistical Office.

Case definition

Confirmed case: a clinically compatible case when the *Yersinia* infection is laboratory confirmed.

Diagnostic/analytical methods used

Yersinia isolates are obtained by culturing the faeces samples of the patients on selective-differentiating media, which is followed by biochemical tests and serotyping. Earlier the sera of the patient was tested by Widal-typed method, beside this test the ELISA method has been also in use since 2003.

Notification system in place

Human cases have been notifiable since 1998. The physician reports data of case on a "case report form" by mail to the municipal institute of NPHMOS. The specialist of the institute records data immediately in the electronic system of the NPHMOS. Hungary has also a laboratory based surveillance system, and the NPHMOS has representative dataset from most of the microbiological laboratories about the laboratory investigated cases (since 2003 antibiotic resistances has also been reported from 20 county institutes and 12 laboratories from universities or hospitals).

The illness is reported firstly as enteritis infectiosa syndrome on the basis of the symptoms. Having the results of the laboratory tests this syndrome-based diagnose is modified to etiology-based diagnose. There is a part of the cases which are reported only subsequently when the result of the laboratory test is available.

History of the disease and/or infection in the country

The human cases have been notifiable since 1998. The number of cases varied between 68 – 176/year (incidence: 0,7 – 1,7/100 000 inhabitant/year, median 125 cases/year - 1,3/100 000 inhabitant/year). There was no death registered. A few number of family outbreaks were investigated, community or institutional outbreaks did not occur. Laboratory or epidemiological evidences are not available to assess the source of infection.

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

Yersiniosis do not influence significantly the epidemiological situation of the human acut gastroenteritis caused by zoonotic agents. Between 2000 -2004 the dominant serotype is *Y.enterocolitica* O3. It is confirmed also by the results of culture and serologic methods.

2.7.3 Yersinia in animals

Table Yersinia in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Yersinia	Y. enterocolitica	Y. pseudotuberculosis	Yersinia spp., unspecified
Pigs - breeding animals - at farm - Unspecified	NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	Animal	18	2	2	0	0
Wild animals - in total - Unspecified ¹⁾	NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	Animal	1	1	0	1	0

	Y. enterocolitica - O:3	Y. enterocolitica - O:9	Y. enterocolitica - unspecified
Pigs - breeding animals - at farm - Unspecified	0	0	2
Wild animals - in total - Unspecified ¹⁾	0	0	0

Comments:

¹⁾ Swallow

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. Slaughtered susceptible animals intended to be placed on the market 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 1950s and 1960s. Due to the introduction of control strategies, the average annual incidence of trichinellosis decreased to 0-0.7 cases per 100,000 for the early 1990s. In the past 15 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. 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 years. *Trichinella spiralis* still persists in the southern and eastern border region of the country. Sporadic *Trichinella* infections (in average few cases per year) were also detected in wild boars and in less than 1.8% of red foxes. In wild boars, both *T. spiralis* and *Trichinella britovi* were detected. In foxes, *T. britovi* is the dominant species; nevertheless, *T. spiralis* and *Trichinella pseudospiralis* were also reported from this species.

Recent actions taken to control the zoonoses

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

2.8.2 Trichinellosis in humans

A. Trichinellosis in humans

Reporting system in place for the human cases

There are about 80 communicable diseases notifiable in Hungary based on legal background. The physician (in primary health care, specialist care, inpatient medical institution or pathology) who first diagnoses a case of a notifiable communicable disease (even the suspicion of the disease!) immediately reports data of case to the first level of the epidemiological network (municipal institute) of National Public Health and Medical Officer's Service (NPHMOS). Data must be reported both at the beginning and at end of the illness (recovery/death, result of laboratory test). The NPHMOS has a nationwide electronic system for registering and analysing data of communicable diseases in a combined national database, so the system provides online connection between the three levels (municipal, regional and national level – National Centre of Epidemiology - NCE) of the organization. The NCE prepares reports regularly (weekly, monthly, yearly) to the Chief Medical Officer, the MoH and the Hungarian Central Statistical Office.

Case definition

Confirmed case: a clinically compatible case when the *Trichinella* infection is laboratory confirmed.

Probable case: a clinically compatible case that is not confirmed by laboratory investigation, but it has an epidemiological link to a confirmed trichinellosis outbreak.

Diagnostic/analytical methods used

Microprecipitic test on live larvae as diagnostic method has been used since 1983 in the Helminthozoonotic Reference Laboratory of the National Centre of Epidemiology. Parallel with this test an ELISA test (NOVATEC TRICHINELLA SPIRALIS IgG-ELISA, NovaTec Immundiagnostica, Germany) was introduced in 2002. The positive results of the previously mentioned tests have been confirmed by WB (TRICHINELLA WESTERN BLOT IgG, Ldbio Diagnostics, France) since 2004.

Notification system in place

Human cases have been notifiable since 1960. The physician reports data of case on a "case report form" by mail to the municipal institute of NPHMOS. The specialist of the institute records data immediately in the electronic system of the NPHMOS.

History of the disease and/or infection in the country

Human cases have been notifiable since 1960. The number of cases varied between 0 – 121 (incidence 0 – 1,2/100 000 inhabitants/year – the highest one was registered in 1964). Between 1960 and 2004 the 85% of cases had epidemiological link to an outbreak. Only one death case has been registered during the Hungarian history of trichinellosis.

Between 1960 and 1975 the swine were the source of infection in 18 outbreaks (83% of all outbreaks) and wild boar in 17% of outbreaks. The significance of swine as the source of infection decreased between 1976 and 1995: 3 outbreaks (23%) were caused by swine, and 10 outbreaks (77%) were associated with consumption of wild boar meat. (Indigenous swine were the source of two outbreaks in 1978 and 1990, and swine imported from Romania and processed at home were the source of one outbreak in 1995).

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

In the last ten years the number of reported cases ranged between 0 – 7/year (incidence 0 – 0,07/100 000 inhabitants/year), there was no death in this period. All cases linked to family outbreaks and most of sporadic cases were imported from the neighbouring counties. The indigenous cases were linked to the

consumption of indigenous wild boar meat. All human cases were caused by *T.spiralis*.

2.8.3 Trichinella in animals

A. Trichinella in pigs

Monitoring system

Sampling strategy

Trichinella sampling and testing is mandatory for all pigs intended to be placed on the market.

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.

Results of the investigation

All slaughtered swine are investigated. There was no positive finding for Trichinella.

B. Trichinella in horses

Monitoring system

Sampling strategy

Trichinella testing 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 the slaughtered horses (as all other susceptible animals) are investigated. There was no positive finding for trichinella.

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

Trichinella infection has never been detected in horses in Hungary.

Table Trichinella in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Units tested	Total units positive for Trichinella	T. spiralis	Trichinella spp., unspecified	T. britovi
Pigs - fattening pigs	National Food Chain Safety Office	Census	Official sampling	animal sample > organ/tissue	Domestic	Animal	4058146	0	0	0	0
Wild boars - wild - Surveillance	National Food Chain Safety Office	Census	Official sampling	animal sample > organ/tissue	Domestic	Animal	69171	16	3	1	12
Foxes - Monitoring	National Food Chain Safety Office	Objective sampling	Official sampling	animal sample > organ/tissue	Domestic	Animal	615	12	0	0	12

2.9 ECHINOCOCCOSIS

2.9.1 General evaluation of the national situation

A. Echinococcus spp. general evaluation

History of the disease and/or infection in the country

Echinococcus granulosus

Cystic echinococcosis caused by *E. granulosus* was a significant zoonosis in Hungary in the 1960s and 1970s. Due to the introduction of integrated control strategies, the average annual incidence of human cystic echinococcosis decreased to 0.08-0.2 case per 100,000 population for the early 1990s. The decrease of incidence observed in man is almost parallel with that of overall prevalence seen in swine, sheep and cattle at slaughterhouses.

Echinococcus multilocularis was not detected in man or animals in Hungary until 2002.

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

Echinococcus granulosus

In the past decade, the annual incidence was 0.05-0.1 case per 100,000 human population. The prevalence was under 0.2% in sheep, cattle and swine at slaughterhouses. Genotype identification of slaughterhouse isolates was initiated in 2010.

Echinococcus multilocularis

E. multilocularis was first detected in red foxes (*Vulpes vulpes*) in Hungary in the northern border area in 2002. Between 2002 and 2004, the parasite was described in 7 northern counties with low overall prevalence (8.7%) in foxes. In the study carried out in 2009, *E. multilocularis* was detected in foxes of 16 out of the 19 Hungarian counties and in the suburban areas of the capital, Budapest. The prevalence of infection was significantly higher in the north-western half (16.2%) than in the south-eastern half (4.2%) of the country. The multi-locus microsatellite analysis of the isolates indicate that Hungary should be considered as a peripheral area of a single European focus, where the dispersal movement of foxes resulted in the spreading of *E. multilocularis* within a time period short enough to avoid a substantial genetic drift.

2.9.2 Echinococcosis in humans

A. Echinococcus spp. in humans

Reporting system in place for the human cases

There are about 80 communicable diseases notifiable in Hungary based on legal background. The physician (in primary health care, specialist care, inpatient medical institution or pathology) who first diagnoses a case of a notifiable communicable disease (even the suspicion of the disease!) immediately reports data of case to the first level of the epidemiological network (municipal institute) of National Public Health and Medical Officer's Service (NPHMOS). Data must be reported both at the beginning and at end of the illness (recovery/death, result of laboratory test). The NPHMOS has a nationwide electronic system for registering and analysing data of communicable diseases in a combined national database, so the system provides online connection amid the three levels (municipal, regional and national level – National Centre of Epidemiology - NCE) of the organization. The NCE prepares reports regularly (weekly, monthly, yearly) to the Chief Medical Officer, the MoH and the Hungarian Central Statistical Office.

Case definition

Confirmed case: a clinically compatible case when the Echinococcus infection is laboratory confirmed

Diagnostic/analytical methods used

The punctatum originated from cyst or sample from extracted cyst is investigated by microscopic methods. IHA (CELLOGNOST ECHINOCOCCOSIS for IHA, Dade Behring, Germany) and ELISA (HYDATIDOSIS ELISA IgG, Vircell, Spain) screening methods have been used parallel since 2002 in the Helminthozoonoses Reference Laboratory in 'Johan Béla' National Centre for Epidemiology. The positive results are confirmed by Western blot method (WB) (ECHINOCOCCUS WESTERN BLOT IgG, Ldbio Diagnostics, France).

Notification system in place

The disease has been notifiable since 1950 in Hungary. The physician reports data of case on a "case report form" by mail to the municipal institute of NPHMOS. The specialist of the institute records data immediately in the electronic system of the NPHMOS.

History of the disease and/or infection in the country

Complement-fixed test has been used since 1934 in Hungary to identify the presence of anti-Echinococcus antibody titre. The human cases have been notifiable since 1960. The „home made” indirect hemagglutination (IHA) was introduced in 1985, and the „home made” ELISA method in 1987. The number of registered cases ranged between 0 – 18 /year (more than 10 cases registered in the 1980s only), the incidence varied between 0 – 0.2 cases/100 000 inhabitants/year. There were 0 – 4 death cases reported yearly (the median of case fatality rate: 20%). Since 1991 there has not been any death case with this diagnosis.

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

The number of annually reported cases varied between 5 and 13 in the last five years, there was no death registered. All the reported cases were caused by *E. granulosus* confirmed in the reference laboratory by Western immunoblot method. In Hungary, autochthonous human case has not been identified as *E. multilocularis* infection.

2.9.3 Echinococcus in animals

Table Echinococcus in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Region	Units tested	Total units positive for Echinococcus	E. granulosus	E. multilocularis
Sheep - at slaughterhouse - Surveillance	National Food Chain Safety Office	Unspecified	Official sampling	animal sample > organ/tissue	Domestic	Animal	Magyarország	258	10	10	0
Pigs - at slaughterhouse - Surveillance	Nationa Food Chain Safety Office	Unspecified	Official sampling	animal sample > organ/tissue	Domestic	Animal	Magyarország	1148	1	1	0
Foxes - Monitoring	National Food Chain Safety Office	Census	Official sampling	animal sample > organ/tissue	Domestic	Animal	Magyarország	722	62		62
	Echinococcus spp., unspecified										
Sheep - at slaughterhouse - Surveillance	0										
Pigs - at slaughterhouse - Surveillance	0										
Foxes - Monitoring											

2.10 TOXOPLASMOSIS

2.10.1 General evaluation of the national situation

2.10.2 Toxoplasmosis in humans

A. Toxoplasmosis in humans

Reporting system in place for the human cases

There are around 80 communicable diseases notifiable in Hungary based on legal background. The physician (in primary health care, specialist care, inpatient medical institution or pathology) who first diagnoses a case of a notifiable communicable disease (even the suspicion of the disease!) immediately reports data of case to the first level of the epidemiological network (municipal institute) of National Public Health and Medical Officer's Service (NPHMOS). Data must be reported both at the beginning and at end of the illness (recovery/death, result of laboratory test). The NPHMOS has a nationwide electronic system for registering and analysing data of communicable diseases in a combined national database, so the system makes online connection amid the three levels (municipal, regional and national level – National Centre of Epidemiology - NCE) of the organization. The NCE prepares reports regularly (weekly, monthly, yearly) to the Chief Medical Officer, the MoH and the Hungarian Central Statistical Office.

Case definition

Confirmed case: a clinically compatible case when the Toxoplasma infection is laboratory confirmed.

Diagnostic/analytical methods used

The anti-Toxoplasma ELISA IgG and IgM methods (TOXONOSTIKA IgG, TOXONOSTIKA IgM, Organon Teknika, Hollandia) are used in the everyday diagnostic work since 1986 in Hungary. Today the specific anti-Toxoplasma IgG (PLATELIA® Toxo IgG, Bio-Rad, France), IgM (PLATELIA® Toxo IgM, Bio-Rad, France), IgA ELISA-t (PLATELIA® Toxo IgA, Bio-Rad, France), IgG avidity identification (VIDAS, BioMérieux S/A, France) is used to test for the anti-Toxoplasma serologic profile.

The PCR method (classical: PRODECT TOXO B1, Bioanalisi Centro Sud s.n.c., Italy; and the light cyclers method: LIGHTCYCLER FASTSTART DNA MASTERPLUS HYBRIDIZATION PROBES, Roche (Hungary) Ltd.), further the IgG/IgM Western blot test comparing the immunoprofile of mother and child (TOXOPLASMA WESTERN BLOT IgG/IgM, Ldbio Diagnostics, France) are applied. For quality assurance purposes the Toxoplasma Reference Laboratory participate twice in a year in proficiency test, and the Reference Laboratory also organise proficiency tests for laboratory of NPHMOS.

History of the disease and/or infection in the country

Anti-Toxoplasma antibody assay (Sabin-Feldman dye test) has been in use since 1958 in Hungary. The human cases have been notifiable since 1967. The „home made” complement-fixed assay and indirect hemagglutination methods (IHA) were introduced in 1969.

The annual number of registered cases ranged between 0 – 333 (median: 136 case/year), so the incidence varied 0 – 3.1/100 000 inhabitants/year (median 1.3/100 000/year). Between 1970 and 1985 the highest number of death cases reported was 1 – 5 deaths/year (max. case fatality rate 10%). Only two death cases occurred between 1985 and 2004.

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

The number of annually registered cases ranged between 292 - 107 /year (incidence 2,9 – 1,1/100 000 inhabitant/year – median 1,8/100 000 inhabitant/year), the trend of the incidence is decreasing. There was no death registered in this period. It was a seroprevalence survey performed by Helminthozoonotic Reference Laboratory of National Centre for Epidemiology in 2001. 6 985 persons without signs or symptoms were tested by serologic method for the presence of Toxoplasma antibodies. The proportion of positive persons ranged between 22,8% - 41,3% by county. The proportion of positive persons was 75% among pupils aged more than 60 years.

2.10.3 Toxoplasma in animals

Table Toxoplasma in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Analytical Method	Sampling unit	Units tested	Total units positive for Toxoplasma	T. gondii	Toxoplasma spp., unspecified
Sheep - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Immuno Histo Chemistry (IHC)	Animal	1	0	0	0
Cats - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Immuno Histo Chemistry (IHC)	Animal	1	0	0	0
Shrews - wild - in total - Unspecified	NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	Immuno Histo Chemistry (IHC)	Animal	1	0	0	0
Zoo animals, all - at zoo - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Immuno Histo Chemistry (IHC)	Animal	1	0	0	0

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 1992. 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%.

The efficacy of the oral immunization of foxes can be demonstrated by the considerable decrease of rabies cases in the country. During the recent years the number of the detected positive cases remained under ten cases. In the calendar years 2005 only 9, in 2006 only 3, in 2007 only 4, in 2008 only 7 and in 2009 only 2 positive cases could be detected for the whole territory of the country. In 2010 fox rabies cases happened in Hungary: from this 6 cases in county Csongrád (close to the border of the country) and 1 dog in the same county, 1 case in county Hajdú-Bihar, 2 cases in county Szabolcs-Szatmár-Bereg. In 2011 two(2) rabies cases in bats were proved. In 2012 one (1) rabies case was confirmed in bat.

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

Although Hungary seems to be free from rabies it is of high importance that the countrywide oral vaccination of foxes is continued.

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 two times between 3 months of age and under 1 year of age with monovalent vaccine. Stray 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 Rabies in humans

A. Rabies in humans

Reporting system in place for the human cases

There are around 80 communicable diseases notifiable in Hungary based on legal background. The physician (in primary health care, specialist care, inpatient medical institution or pathology) who first diagnoses a case of a notifiable communicable disease (even the suspicion of the disease!) immediately reports data of case to the first level of the epidemiological network (municipal institute) of National Public Health and Medical Officer's Service (NPHMOS). The suspicion of the human lyssa is obligatory to be reported immediately also by telephone. Data must be reported both at the beginning and at end of the illness (recovery/death, result of laboratory test). The NPHMOS has a nationwide electronic system for registering and analysing data of communicable diseases in a combined national database, so the system provides online connection between the three levels (municipal, regional and national level – National Centre of Epidemiology - NCE) of the organization. The NCE prepares reports regularly (weekly, monthly, yearly) to the Chief Medical Officer, the MoH and the Hungarian Central Statistical Office.

Case definition

Confirmed case: Clinical picture compatible with human lyssa and the antigen/genetic material/specific antibodies are identified or viruses have been isolated from appropriate sample.

Suspected case: Clinical picture compatible with human lyssa and the patient has anamnestic data about exposure by a rabies suspected animal

Diagnostic/analytical methods used

The identification of the virus in vivo from cornea imprint of the patient by immunofluorescence method, or to determine the specific antibody titre of the blood or liquor by immunofluorescence method during the second week of the illness. Post mortem: detection of the Negri-body in the brain tissue, or the antigen by immunofluorescence method, or identification of the viral genetic material by PCR, or isolation of the virus in mouse.

Notification system in place

Human cases have been notifiable since 1950 in Hungary, injury suspected to lyssa-infection has been notifiable since 1964. The physician reports data of case on a "case report form" by mail to the municipal institute of NPHMOS. The suspicion of the human lyssa is obligatory to be reported immediately also by telephone. The specialist of the institute records data immediately in the electronic system of the NPHMOS.

History of the disease and/or infection in the country

Human cases have been notifiable since 1950 in Hungary, injury suspect to human lyssa-infection has been notifiable since 1964. 8 human lyssa cases have been reported since 1950 in Hungary. Seven cases were indigenous; only one case was presumably imported from Africa. Cat was the source of infection in four of the cases, fox in two cases, and one case was caused by a dog. The origin of the imported case remained unknown. The vaccine based on brain-extract was used for post exposure prophylaxis in Hungary until 1989. Since then the cell cultured vaccine has been used. The change in the vaccine used and not in the epidemiological situation of lyssa is reflected in the statistics of vaccinated persons (1985 – 1988.: 2000 – 3000 person vaccinated/year, 1994 – 1998. 8000 – 10 500/year, 1999 - 2003.: 9 500 – 11 000/year).

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

No human lyssa case has been registered since 1994 in Hungary.

2.11.3 Lyssavirus (rabies) in animals

A. Rabies in dogs

Measures in case of the positive findings or single cases

There were no positive domestic cases since 2010.

Table Rabies in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Region	Units tested	Total units positive for Lyssavirus (rabies)	Rabies virus (RABV)	EBLV-1
Cattle (bovine animals)	NFC SO	Unspecified	Official sampling	animal sample	Domestic	Animal	Magyarország	29	0		
Sheep	NFC SO	Unspecified	Official sampling	animal sample	Domestic	Animal	Magyarország	10	0		
Goats	NFC SO	Unspecified	Official sampling	animal sample	Domestic	Animal	Magyarország	6	0		
Dogs - stray dogs	NFC SO	Unspecified	Official sampling	animal sample	Domestic	Animal	Magyarország	285	0		
Cats - stray cats	NFC SO	Unspecified	Official sampling	animal sample	Domestic	Animal	Magyarország	347	0		
Bats - wild - Monitoring	NFC SO	Unspecified	Not applicable	animal sample	Domestic	Animal	Budapest	15	1	0	1
Foxes - wild - Monitoring	NFC SO	Objective sampling	Official sampling	animal sample	Domestic	Animal	Magyarország	4136	0		
Jackals - wild - in total - Monitoring	NFC SO	Objective sampling	Official sampling	animal sample	Domestic	Animal	Magyarország	28	0		
Rats - wild - in total - Unspecified	NFC SO	Objective sampling	Official sampling	animal sample	Domestic	Animal	Magyarország	13	0		

	EBLV-2	Lyssavirus (unspecified virus)
Cattle (bovine animals)		
Sheep		
Goats		
Dogs - stray dogs		
Cats - stray cats		

Table Rabies in animals

	EBLV-2	Lyssavirus (unspecified virus)
Bats - wild - Monitoring	0	0
Foxes - wild - Monitoring		
Jackals - wild - in total - Monitoring		
Rats - wild - in total - Unspecified		

2.12 STAPHYLOCOCCUS INFECTION

2.12.1 General evaluation of the national situation

2.12.2 Staphylococcus in animals

Table Staphylococcus in Animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcus	S. aureus, meticillin resistant (MRSA)	S. aureus, meticillin resistant (MRSA) - spa-type t011
Cattle (bovine animals) - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Herd		39		0	0
Gallus gallus (fowl) - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Flock		24		0	0
Geese - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Flock		13		0	0
Goats - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Herd		2		0	0
Pigs - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Holding		11		0	0
Sheep - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Herd		2		0	0
Turkeys - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Flock		7		0	0

Table Staphylococcus in Animals

	S. aureus, meticillin resistant (MRSA) - spa -type t108	S. aureus, meticillin resistant (MRSA) - spa -type t034	S. aureus, meticillin resistant (MRSA) - MRSA, unspecified
Cattle (bovine animals) - at farm - Clinical investigations	0	0	0
Gallus gallus (fowl) - at farm - Clinical investigations	0	0	0
Geese - at farm - Clinical investigations	0	0	0
Goats - at farm - Clinical investigations	0	0	0
Pigs - at farm - Clinical investigations	0	0	0
Sheep - at farm - Clinical investigations	0	0	0
Turkeys - at farm - Clinical investigations	0	0	0

Footnote:

Out of the 39 cattle units 37 was S. spp. positive. None of them was MRSA.
 Out of the 2 sheep units 2 was S. spp. positive. None of them was MRSA.
 Out of the 2 goat units 2 was S. spp. positive. None of them was MRSA.
 Out of the 11 pig units 11 was S. spp. positive. None of them was MRSA.
 Out of the 24 gallus gallus units 24 was S. spp. positive. None of them was MRSA.
 Out of the 7 turkey units 7 was S. spp. positive. None of them was MRSA.
 Out of the 13 geese units 13 was S. spp. positive. None of them was MRSA.

2.13 Q-FEVER

2.13.1 General evaluation of the national situation

A. *Coxiella burnetii* (Q-fever) general evaluation

Additional information

Diagnostic methods : Complement fixation test (CFT) and
immunohistochemical test

2.13.2 Coxiella (Q-fever) in animals

Table Coxiella burnetii (Q fever) in animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Analytical Method	Sampling unit	Units tested	Total units positive for Coxiella (Q-fever)	C. burnetii	No of clinically affected herds
Cattle (bovine animals) - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Immuno Histo Chemistry (IHC)	Animal	15	1	1	1
Sheep - at farm - Clinical investigations	NFC SO - VDD	Suspect sampling	Not applicable	animal sample	Domestic	Immuno Histo Chemistry (IHC)	Animal	2	0	0	0

2.14 WEST NILE VIRUS INFECTIONS

2.14.1 General evaluation of the national situation

2.14.2 West Nile Virus in animals

A. West Nile Virus in Animals

Vaccination policy

In case of equine animals vaccination for West Nile Virus is on a voluntary basis.

Notification system in place

In case of animals West Nile Virus is not a notifiable disease.

Additional information

In 2004 goshawks in Hungary (*Accipiter gentilis*) showed symptoms of lethal encephalitis. West Nile virus nucleic acid and antigens were detected in the brain of the animals. The complete genome analysis indicated that the strain belonged to the lineage 2 of WNV. The same lineage was detected in 2005 in four goshawks and one sparrowhawk. Furthermore in 2007 the virus was detected in geese and in red-footed falcons as well. The first human case was confirmed in 2008.

Table West Nile Virus in Animals

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Vaccination status	Analytical Method	Sampling unit	Region	Units tested	Total units positive for West Nile Virus
Wild animals - in total - Unspecified ¹⁾	NFC SO - VDD	Unspecified	Not applicable	animal sample	Domestic	no	Immuno Histo Chemistry (IHC)	Animal	Magyarország	15	1

Comments:

¹⁾ goshawk

3. INFORMATION ON SPECIFIC INDICATORS OF ANTIMICROBIAL RESISTANCE

3.1 ESCHERICHIA COLI, NON-PATHOGENIC

3.1.1 General evaluation of the national situation

3.1.2 Antimicrobial resistance in Escherichia coli, non-pathogenic

Table Antimicrobial susceptibility testing of E. coli in Meat from bovine animals

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	31	
Antimicrobials:	N	n
Aminoglycosides - Gentamicin	31	0
Aminoglycosides - Kanamycin	0	0
Aminoglycosides - Neomycin	0	0
Aminoglycosides - Streptomycin	31	2
Amphenicols - Chloramphenicol	31	0
Amphenicols - Florfenicol	0	0
Cephalosporins - 3rd generation cephalosporins	31	1
Fluoroquinolones - Ciprofloxacin	31	1
Fluoroquinolones - Enrofloxacin	0	0
Penicillins - Ampicillin	31	3
Quinolones - Nalidixic acid	31	1
Sulfonamides	31	0
Tetracyclines - Tetracycline	31	4

Table Antimicrobial susceptibility testing of E. coli in Meat from bovine animals

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	31	
Antimicrobials:	N	n
Trimethoprim	31	1
Fully sensitive	31	21
Resistant to 1 antimicrobial	31	7
Resistant to 2 antimicrobials	31	2
Resistant to 3 antimicrobials	31	0
Resistant to 4 antimicrobials	31	0
Resistant to >4 antimicrobials	31	0

Footnote:

1 ESBL strain.

Table Antimicrobial susceptibility testing of E. coli in Meat from pig

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	14	
	N	n
Antimicrobials:		
Aminoglycosides - Gentamicin	14	0
Aminoglycosides - Kanamycin	0	0
Aminoglycosides - Neomycin	0	0
Aminoglycosides - Streptomycin	14	3
Amphenicols - Chloramphenicol	14	1
Amphenicols - Florfenicol	0	0
Cephalosporins - 3rd generation cephalosporins	14	0
Fluoroquinolones - Ciprofloxacin	14	4
Fluoroquinolones - Enrofloxacin	0	0
Penicillins - Ampicillin	14	4
Quinolones - Nalidixic acid	14	4
Sulfonamides	14	3
Tetracyclines - Tetracycline	14	5
Trimethoprim	14	3
Fully sensitive	14	7
Resistant to 1 antimicrobial	14	1
Resistant to 2 antimicrobials	14	2
Resistant to 3 antimicrobials	14	1
Resistant to 4 antimicrobials	14	1

Table Antimicrobial susceptibility testing of E. coli in Meat from pig

Escherichia coli, non-pathogenic	E.coli, non-pathogenic, unspecified	
	yes	
	14	
	N	n
Antimicrobials:		
Resistant to >4 antimicrobials	14	2

Table Antimicrobial susceptibility testing of E. coli in Meat from broilers (Gallus gallus)

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	64	
Antimicrobials:	N	n
Aminoglycosides - Gentamicin	64	2
Aminoglycosides - Kanamycin	0	0
Aminoglycosides - Neomycin	0	0
Aminoglycosides - Streptomycin	64	9
Amphenicols - Chloramphenicol	64	8
Amphenicols - Florfenicol	0	0
Cephalosporins - 3rd generation cephalosporins	64	0
Fluoroquinolones - Ciprofloxacin	64	48
Fluoroquinolones - Enrofloxacin	0	0
Penicillins - Ampicillin	64	17
Quinolones - Nalidixic acid	64	48
Sulfonamides	64	19
Tetracyclines - Tetracycline	64	21
Trimethoprim	64	12
Fully sensitive	64	12
Resistant to 1 antimicrobial	64	2
Resistant to 2 antimicrobials	64	18
Resistant to 3 antimicrobials	64	12
Resistant to 4 antimicrobials	64	5

Table Antimicrobial susceptibility testing of E. coli in Meat from broilers (Gallus gallus)

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	E.coli, non-pathogenic, unspecified	
	yes	
	64	
	N	n
Resistant to >4 antimicrobials	64	15

Table Antimicrobial susceptibility testing of E. coli in Meat from other poultry species

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	E.coli, non-pathogenic, unspecified	
	yes	
	10	
	N	n
Antimicrobials:		
Aminoglycosides - Gentamicin	10	0
Aminoglycosides - Kanamycin	0	0
Aminoglycosides - Neomycin	0	0
Aminoglycosides - Streptomycin	10	1
Amphenicols - Chloramphenicol	10	0
Amphenicols - Florfenicol	0	0
Cephalosporins - 3rd generation cephalosporins	10	0
Fluoroquinolones - Ciprofloxacin	10	3
Fluoroquinolones - Enrofloxacin	0	0
Penicillins - Ampicillin	10	6
Quinolones - Nalidixic acid	10	1
Sulfonamides	10	1
Tetracyclines - Tetracycline	10	4
Trimethoprim	10	1
Fully sensitive	10	2
Resistant to 1 antimicrobial	10	2
Resistant to 2 antimicrobials	10	4
Resistant to 3 antimicrobials	10	2
Resistant to 4 antimicrobials	10	0

Table Antimicrobial susceptibility testing of E. coli in Meat from other poultry species

Escherichia coli, non-pathogenic Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	E.coli, non-pathogenic, unspecified	
	yes	
	10	
	N	n
Resistant to >4 antimicrobials	10	0

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Meat from bovine animals - fresh - Official sampling - food sample - meat - quantitative data [Dilution method]

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

E.coli, non-pathogenic, unspecified	Meat from bovine animals - fresh																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	31																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	31	0										9	17	5													
Aminoglycosides - Streptomycin	16	31	2												9	14	5	1		1		1						
Amphenicols - Chloramphenicol	16	31	0												10	15	6											
Cephalosporins - Cefotaxime	0.25	31	1								30					1												
Fluoroquinolones - Ciprofloxacin	0.03	31	1						30			1																
Penicillins - Ampicillin	8	31	3											1	9	15	3	1			1	1						
Quinolones - Nalidixic acid	16	31	1											6	10	14				1								
Sulfonamides	256	31	0														1	10	15	3	1	1						
Tetracyclines - Tetracycline	8	31	4											20	7				1	1	2							
Trimethoprim	2	31	1								6	7	11	5	1			1										

E.coli, non-pathogenic, unspecified	Meat from bovine animals - fresh	
	Isolates out of a monitoring program (yes/no)	
	yes	
	Number of isolates available in the laboratory	
Antimicrobials:	31	
	lowest	highest
Aminoglycosides - Gentamicin	0.12	16
Aminoglycosides - Streptomycin	2	256
Amphenicols - Chloramphenicol	1	128

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Meat from bovine animals - fresh - Official sampling - food sample - meat - quantitative data [Dilution method]

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from bovine animals - fresh	
	yes	
	31	
	lowest	highest
Antimicrobials:		
Cephalosporins - Cefotaxime	0.015	8
Fluoroquinolones - Ciprofloxacin	0.015	8
Penicillins - Ampicillin	1	128
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	16

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Meat from pig - fresh - food sample - meat - quantitative data
[Dilution method]

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

E.coli, non-pathogenic, unspecified	Meat from pig - fresh																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	14																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	14	0									6	7	1														
Aminoglycosides - Streptomycin	16	14	3												5	5	1			1	2							
Amphenicols - Chloramphenicol	16	14	1												9	3	1			1								
Cephalosporins - Cefotaxime	0.25	14	0								13	1																
Fluoroquinolones - Ciprofloxacin	0.03	14	4						10		1	2					1											
Penicillins - Ampicillin	8	14	4											1	3	6				1		3						
Quinolones - Nalidixic acid	16	14	4											4	3	2	1			1	2	1						
Sulfonamides	256	14	3															2	4	3	2					3		
Tetracyclines - Tetracycline	8	14	5											8	1					3	2							
Trimethoprim	2	14	3								3	5	1	2				3										

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from pig - fresh	
	yes	
	14	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.12	16
Aminoglycosides - Streptomycin	2	256
Amphenicols - Chloramphenicol	1	128

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Meat from pig - fresh - food sample - meat - quantitative data
[Dilution method]

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from pig - fresh	
	yes	
	14	
	lowest	highest
Antimicrobials:		
Cephalosporins - Cefotaxime	0.015	8
Fluoroquinolones - Ciprofloxacin	0.015	8
Penicillins - Ampicillin	1	128
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	16

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - fresh - Official sampling - quantitative data [Dilution method]

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

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from broilers (Gallus gallus) - fresh																											
	yes																											
	64																											
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	64	2								16	39	7		2													
Aminoglycosides - Streptomycin	16	64	9											12	23	15	5	1	5	3								
Amphenicols - Chloramphenicol	16	64	8											18	32	6		3	5									
Cephalosporins - Cefotaxime	0.25	64	0							56	8																	
Fluoroquinolones - Ciprofloxacin	0.03	64	48					16		6	14	4	2	4	6	12												
Penicillins - Ampicillin	8	64	17										2	15	19	11	2				15							
Quinolones - Nalidixic acid	16	64	48									3	3	6	3	1			9	6	33							
Sulfonamides	256	64	19													2	12	19	8	3	1	1		18				
Tetracyclines - Tetracycline	8	64	21										33	10			1	4	5	9	2							
Trimethoprim	2	64	12							8	14	16	13	1		1	11											

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from broilers (Gallus gallus) - fresh	
	yes	
	64	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.12	16
Aminoglycosides - Streptomycin	2	256
Amphenicols - Chloramphenicol	1	128

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Meat from broilers (Gallus gallus) - fresh - Official sampling - quantitative data [Dilution method]

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from broilers (Gallus gallus) - fresh	
	yes	
	64	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.015	8
Fluoroquinolones - Ciprofloxacin	0.015	8
Penicillins - Ampicillin	1	128
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	16

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Meat from turkey - fresh - Official sampling - quantitative data [Dilution method]

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

E.coli, non-pathogenic, unspecified	Meat from turkey - fresh																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	10																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	10	0									1	6	2	1													
Aminoglycosides - Streptomycin	16	10	1												1	3	4	1		1								
Amphenicols - Chloramphenicol	16	10	0												1	5	4											
Cephalosporins - Cefotaxime	0.25	10	0								9	1																
Fluoroquinolones - Ciprofloxacin	0.03	10	3					3	4			3																
Penicillins - Ampicillin	8	10	6												3	1				2	1	3						
Quinolones - Nalidixic acid	16	10	1												1	6	1	1			1							
Sulfonamides	256	10	1														3	1	4	1					1			
Tetracyclines - Tetracycline	8	10	4											3	3				1	1	1	1						
Trimethoprim	2	10	1								1	5	3							1								

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from turkey - fresh	
	yes	
	10	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.12	16
Aminoglycosides - Streptomycin	2	256
Amphenicols - Chloramphenicol	2	256

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Meat from turkey - fresh - Official sampling - quantitative data [Dilution method]

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from turkey - fresh	
	yes	
	10	
	lowest	highest
Antimicrobials:		
Cephalosporins - Cefotaxime	0.015	8
Fluoroquinolones - Ciprofloxacin	0.015	8
Penicillins - Ampicillin	1	128
Quinolones - Nalidixic acid	1	128
Sulfonamides	8	1024
Tetracyclines - Tetracycline	1	128
Trimethoprim	0.12	16

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Pigs - fattening pigs - quantitative data [Dilution method]

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

E.coli, non-pathogenic, unspecified	Pigs - fattening pigs																											
	Isolates out of a monitoring program (yes/no)																											
	Number of isolates available in the laboratory																											
	172																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	2	68	2									1	21	41	3		1		1									
Aminoglycosides - Streptomycin	8	68	31													9	28	6	3	8	14							
Amphenicols - Chloramphenicol	16	68	10												3	19	33	3	2	8								
Cephalosporins - Cefotaxime	0	68	68							61	6					1												
Fluoroquinolones - Ciprofloxacin	0	68	68			7	45		7			7					2											
Penicillins - Ampicillin	8	68	33												14	18	3	1	32									
Quinolones - Nalidixic acid	16	68	7													60	1			7								
Tetracyclines - Tetracycline	8	68	47											1	19	1		1	2	44								
Trimethoprim	2	68	16										51	1					16									
Sulfonamides - Sulfamethoxazole	64	68	24														13	20	11							24		

E.coli, non-pathogenic, unspecified	Pigs - fattening pigs	
	Isolates out of a monitoring program (yes/no)	
	Number of isolates available in the laboratory	
	172	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Pigs - fattening pigs - quantitative data [Dilution method]

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Pigs - fattening pigs	
	172	
	lowest	highest
Antimicrobials:		
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Gallus gallus (fowl) - broilers - quantitative data [Dilution method]

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

E.coli, non-pathogenic, unspecified	Gallus gallus (fowl) - broilers																										
	Isolates out of a monitoring program (yes/no)																										
	Number of isolates available in the laboratory																										
Antimicrobials:	172																										
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	2	104	2										32	69	1			1	1								
Aminoglycosides - Streptomycin	8	104	35													12	57	8	3	4	20						
Amphenicols - Chloramphenicol	16	104	10												3	39	45	7	1	9							
Cephalosporins - Cefotaxime	0	105	105							83	13	1		1	2	5											
Fluoroquinolones - Ciprofloxacin	0	104	104				22		5	1	3	21	5	12	7	4	24										
Penicillins - Ampicillin	8	105	55											2	16	28	4		55								
Quinolones - Nalidixic acid	16	104	74													27	3		1	73							
Tetracyclines - Tetracycline	8	104	38											10	51	4	1		2	36							
Trimethoprim	2	104	29										72	3		1	1		27								
Sulfonamides - Sulfamethoxazole	64	104	34														19	32	17	2	1				33		

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - broilers	
	172	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.25	32
Aminoglycosides - Streptomycin	2	128
Amphenicols - Chloramphenicol	2	64

Table Antimicrobial susceptibility testing of E.coli, non-pathogenic, unspecified in Gallus gallus (fowl) - broilers - quantitative data [Dilution method]

E.coli, non-pathogenic, unspecified Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Gallus gallus (fowl) - broilers	
	172	
Antimicrobials:	lowest	highest
Cephalosporins - Cefotaxime	0.06	4
Fluoroquinolones - Ciprofloxacin	0.008	8
Penicillins - Ampicillin	0.5	32
Quinolones - Nalidixic acid	4	64
Tetracyclines - Tetracycline	1	64
Trimethoprim	0.5	32
Sulfonamides - Sulfamethoxazole	8	1024

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

Test Method Used		Standard methods used for testing		
			Concentration (microg/ml)	Zone diameter (mm)
		Standard	Resistant >	Resistant <=
Aminoglycosides	Gentamicin		2	
	Streptomycin		16	
Amphenicols	Chloramphenicol		16	
Cephalosporins	Cefotaxime		0.25	
Fluoroquinolones	Ciprofloxacin		0.03	
Penicillins	Ampicillin		8	
Quinolones	Nalidixic acid		16	
Sulfonamides	Sulfonamides		256	
Tetracyclines	Tetracycline		8	
Trimethoprim	Trimethoprim		2	

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Test Method Used		Standard methods used for testing		

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

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

Test Method Used		Standard methods used for testing		
Broth dilution		EFSA 2008		

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

3.2 ENTEROCOCCUS, NON-PATHOGENIC

3.2.1 General evaluation of the national situation

3.2.2 Antimicrobial resistance in Enterococcus, non-pathogenic isolates

Table Antimicrobial susceptibility testing of E. faecalis in Meat from broilers (Gallus gallus) - fresh - Official sampling - quantitative data
[Dilution method]

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

E. faecalis	Meat from broilers (Gallus gallus) - fresh																									
	yes																									
	52																									
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048
Antimicrobials:																										
Aminoglycosides - Gentamicin	32	52	3										1	1	2	4	12	24	5		3					
Aminoglycosides - Streptomycin	512	52	18																1	2	2	8	21		5	13
Amphenicols - Chloramphenicol	32	52	2										1	1	2	21	21		4	2						
Penicillins - Ampicillin	4	52	0									3	30	19												
Tetracyclines - Tetracycline	2	52	43										9						11	9	23					
Fully sensitive		7	7	7																						
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	52	3	0										25	20	4	3									
Macrolides - Erythromycin	4	52	27										23	2					1	2	24					
Oxazolidines - Linezolid	4	52	0											2	26	24										
Resistant to 1 antimicrobial		13	13	13																						
Resistant to 2 antimicrobials		16	16	16																						
Resistant to 3 antimicrobials		13	13	13																						
Streptogramins - Pristinamycin	32	52	0									3	4	3	8	16	17	1								

Table Antimicrobial susceptibility testing of *E. faecalis* in Meat from broilers (*Gallus gallus*) - fresh - Official sampling - quantitative data
[Dilution method]

E. faecalis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from broilers (<i>Gallus gallus</i>) - fresh	
	yes	
	52	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.5	128
Aminoglycosides - Streptomycin	8	1024
Amphenicols - Chloramphenicol	0.5	128
Penicillins - Ampicillin	0.25	32
Tetracyclines - Tetracycline	0.5	64
Fully sensitive		
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	1	128
Macrolides - Erythromycin	0.5	64
Oxazolidines - Linezolid	0.12	16
Resistant to 1 antimicrobial		
Resistant to 2 antimicrobials		
Resistant to 3 antimicrobials		
Streptogramins - Pristinamycin	0.12	16

Table Antimicrobial susceptibility testing of E. faecalis in Meat from turkey - fresh - Official sampling - quantitative data [Dilution method]

E. faecalis		Concentration (µg/ml), number of isolates with a concentration of inhibition equal to																									
		Meat from turkey - fresh																									
		yes																									
		22																									
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048	
Aminoglycosides - Gentamicin	32	22	1													1	12	4	4		1						
Aminoglycosides - Streptomycin	512	22	5																			2	15		2	3	
Amphenicols - Chloramphenicol	32	22	0												1	6	15										
Penicillins - Ampicillin	4	22	0										21	1													
Tetracyclines - Tetracycline	2	22	20									2						2	12	1	5						
Fully sensitive		1	1	1																							
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	22	0											14	8												
Macrolides - Erythromycin	4	22	5										15		1	1				1	4						
Oxazolidines - Linezolid	4	22	0												5	17											
Resistant to 1 antimicrobial		13	13	13																							
Resistant to 2 antimicrobials		5	5	5																							
Resistant to 3 antimicrobials		3	3	3																							
Resistant to 4 antimicrobials		0	0	0																							
Streptogramins - Pristinamycin	32	22	0									1				15	6										

Table Antimicrobial susceptibility testing of *E. faecalis* in Meat from turkey - fresh - Official sampling - quantitative data [Dilution method]

E. faecalis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from turkey - fresh	
	yes	
	22	
	lowest	highest
Aminoglycosides - Gentamicin	0.5	128
Aminoglycosides - Streptomycin	8	1024
Amphenicols - Chloramphenicol	0.5	128
Penicillins - Ampicillin	0.25	32
Tetracyclines - Tetracycline	0.5	64
Fully sensitive		
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	1	128
Macrolides - Erythromycin	0.5	64
Oxazolidines - Linezolid	0.12	16
Resistant to 1 antimicrobial		
Resistant to 2 antimicrobials		
Resistant to 3 antimicrobials		
Resistant to 4 antimicrobials		
Streptogramins - Pristinamycin	0.12	16

Table Antimicrobial susceptibility testing of E. faecalis in Meat from bovine animals - fresh - Official sampling - quantitative data [Dilution method]

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

E. faecalis	Meat from bovine animals - fresh																											
	yes																											
	16																											
Antimicrobials:	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Aminoglycosides - Gentamicin	32	16	0											1	1		2	8	4									
Aminoglycosides - Streptomycin	512	16	2																2	1	3	8	2					
Amphenicols - Chloramphenicol	32	16	0													12	3		1									
Penicillins - Ampicillin	4	16	0										8	7	1													
Tetracyclines - Tetracycline	2	16	4										12						3	1								
Fully sensitive		10	10	10																								
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	16	0											9	6	1												
Macrolides - Erythromycin	4	16	0										12	3	1													
Oxazolidines - Linezolid	4	16	0												7	9												
Resistant to 1 antimicrobial		6	6	6																								
Streptogramins - Pristinamycin	32	16	0								1	1		3	4	6	1											

E. faecalis	Meat from bovine animals - fresh	
	yes	
	16	
Antimicrobials:	lowest	highest
Aminoglycosides - Gentamicin	0.5	128
Aminoglycosides - Streptomycin	8	1024

Table Antimicrobial susceptibility testing of *E. faecalis* in Meat from bovine animals - fresh - Official sampling - quantitative data [Dilution method]

E. faecalis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory	Meat from bovine animals - fresh	
	yes	
	16	
Antimicrobials:	lowest	highest
Amphenicols - Chloramphenicol	0.5	128
Penicillins - Ampicillin	0.25	32
Tetracyclines - Tetracycline	0.5	64
Fully sensitive		
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	1	128
Macrolides - Erythromycin	0.5	64
Oxazolidines - Linezolid	0.12	16
Resistant to 1 antimicrobial		
Streptogramins - Pristinamycin	0.12	16

Table Antimicrobial susceptibility testing of E. faecalis in Meat from pig - fresh - Official sampling - quantitative data [Dilution method]

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

E. faecalis	Meat from pig - fresh																											
	yes																											
	18																											
	Cut-off value	N	n	<=0.002	<=0.004	0.008	0.015	0.016	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	>4096	1024	2048		
Antimicrobials:																												
Aminoglycosides - Gentamicin	32	18	1										2			2	5	7	1		1							
Aminoglycosides - Streptomycin	512	18	0																2			7	9					
Amphenicols - Chloramphenicol	32	18	0												2	9	6		1									
Penicillins - Ampicillin	4	18	0										14	4														
Tetracyclines - Tetracycline	2	18	6										9	3					4	2								
Fully sensitive		12	12	12																								
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	4	18	0											12	5	1												
Macrolides - Erythromycin	4	18	1										16	1							1							
Oxazolidines - Linezolid	4	18	0								1			1	5	11												
Resistant to 1 antimicrobial		4	4	4																								
Resistant to 2 antimicrobials		2	2	2																								
Streptogramins - Pristinamycin	32	18	0								1	2	3	1	1	7	3											

E. faecalis	Meat from pig - fresh	
	yes	
	18	
	lowest	highest
Antimicrobials:		
Aminoglycosides - Gentamicin	0.5	128

Table Antimicrobial susceptibility testing of *E. faecalis* in Meat from pig - fresh - Official sampling - quantitative data [Dilution method]

E. faecalis Isolates out of a monitoring program (yes/no) Number of isolates available in the laboratory Antimicrobials:	Meat from pig - fresh	
	yes	
	18	
	lowest	highest
Aminoglycosides - Streptomycin	8	1024
Amphenicols - Chloramphenicol	0.5	128
Penicillins - Ampicillin	0.25	32
Tetracyclines - Tetracycline	0.5	128
Fully sensitive		
Glycopeptides (Cyclic peptides, Polypeptides) - Vancomycin	1	128
Macrolides - Erythromycin	0.5	64
Oxazolidines - Linezolid	0.12	16
Resistant to 1 antimicrobial		
Resistant to 2 antimicrobials		
Streptogramins - Pristinamycin	0.12	16

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

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

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

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

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

Test Method Used		Standard methods used for testing		
Broth dilution		EFSA 2008		

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

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

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

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

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

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

Test Method Used		Standard methods used for testing		
Broth dilution		EFSA Journal (2008) 141:17		

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

4. INFORMATION ON SPECIFIC MICROBIOLOGICAL AGENTS

4.1 CRONOBACTER

4.1.1 General evaluation of the national situation

4.1.2 Cronobacter in foodstuffs

Table Cronobacter in food

	Source of information	Sampling strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Cronobacter	Cronobacter sakazakii	Cronobacter spp. unspecified
Infant formula - dried - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	10 g	60	0	0	0
Follow-on formulae - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	10 g	16	0	0	0
Foodstuffs intended for special nutritional uses - processed cereal-based food for infants and young children - at retail - Surveillance	National Food Chain Safety Office	Objective sampling	Official sampling	food sample	Unknown	Single	10 g	24	0	0	0

4.2 HISTAMINE

4.2.1 General evaluation of the national situation

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 staphylococci/gram are tested for the presence of enterotoxin.

Only those product groups are routinely tested for coagulase positive staphylococci, for which there is a criterion in 2073/2005/EC.

Type of specimen taken

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 strategy	Sampler	Sample type	Sample origin	Sampling unit	Sample weight	Units tested	Total units positive for Staphylococcal enterotoxins
All foodstuffs - unspecified - Clinical investigations	National Food Chain Safety Office	Suspect sampling	Official sampling	food sample	Unknown	Single	25 g	13	0

5. FOODBORNE

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

A. Foodborne outbreaks

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

Data on foodborne outbreaks have been collected in Hungary by legal background at the Public Health Authority since 1931. There are two surveillance systems in Hungary since 1st January 2007. One of them is for collection of communicable diseases included the human data of foodborne outbreaks (based on the obligatory reports of a physician and microbiological laboratories). The reporting system of human cases belongs to the institutes of the National Public Health and Medical Officers' Service (National Center for Epidemiologie = NCE and National Institute for Food and Nutrition Science = NIFNS). The other surveillance system is operated by the Central Agricultural Office, (since 15 March 2012 it's name is National Food Chain Safety Office = NFCSO), which is working under the supervision of Ministry of Agriculture. This system based on the reports of the food business operators, the drinking water suppliers and the data of the communicable disease reporting system. The role of the NFCSO is in this topic to investigate which food was the source of the outbreaks, collection and analysis of obtained data – in all events if the outbreak was general or the supposed product is produced by the food industry and/or catering, and not located to a household. The household outbreaks are investigated by the Public Health Authority. The investigation of an outbreak is usually initiated with the information about the human cases provided by the public health service. The two authorities cooperate in the whole process of investigation.

Description of the types of outbreaks covered by the reporting:

Outbreak: At least two cases with epidemiological link (exposed by the same food).

Household outbreak: At least two related cases in the same household.

General outbreak: At least two related cases in a community (school, kindergarten, hospital, events etc.).

National evaluation of the reported outbreaks in the country:

Trends in numbers of outbreaks and numbers of human cases involved

Altogether there were 114 general and household outbreaks verified as foodborne in 2012 (2011:174) in Hungary. 1414 cases (2011: 1631) were linked to the outbreaks, among them 206 (14,6%) hospitalised cases (2011: 111 (10,7%). Nobody died. Although the number of the outbreaks decreased significantly (65,5%) and cases decreased also (86,7%), the rate of hospitalisation increased.

There were 9 outbreaks with strong and 105 with weak evidence based on the data of enteric surveillance in Hungary. The surveillance based on results of laboratories and the reports of physicians. The epidemiological investigation was carried out by Public Health Services. If it has been suspected the outbreak was foodborne, the investigation at the food chain was conducted by National Food Chain Safety Office.

The number of foodborne outbreaks registered by National Food Chain Safety Office was less than in 2011, and the number of cases decreased compared to the previous year.

51,6 % (16) of the outbreaks was caused by *Salmonella* spp., 16,1 % (5) Norovirus, 3,2 % (1) *Clostridium perfringens*, 6,5 % (2) high microbial count and 22,6 % (7) outbreaks had unknown etiology. The proportion of *Salmonella* etiology increased compared to 2011 (2012: 42,9 %, 2011: 37%).

There was no major change in the type of food vehicles. The most foodborne outbreaks (58 %) were caused by mixed foods. The number of cases caused by broiler meats and products thereof increased, there were not any egg and egg product-mediated diseases.

The most food borne events occurred in public canteens and the number of events decreased compared to 2011 (2012: 58,1 %, 2011: 63,3 %). 41,9 % of the outbreaks occurred in catering services (restaurant, bar, cafe, etc.), the number of cases increased compared to the previous year.

Salmonellosis

NCE registered 6250 sporadic salmonellosis cases or linked to outbreaks, it is a slightly increase (+3,2%) compared to 2010 (6250). The number of outbreaks were 171 (2010: 170, 2009: 178). The most frequent serotypes were: S.Enteritidis (60,7%, 2010: 55,6%, 2009: 60,1%); S.Typhimurium (10,5%, 2010: 16,8%, 2009: 16,9%); monophasic S.Typhimurium 1.4.[5].12:i:- (3,5%, 2010: 3,1%), S.Infantis (7,2%, 2010: 6,9%, 2009: 7,3%,).

1530 (39,1%) S.Enteritidis strains from human origin were phage typed, the most frequent phage type was PT2 (44,2%, 2010: 36,4%), followed by PT8 (18,0%, 2010: 14,8%), PT21 (10,8%, 2010: 15,3%), PT51 (8,0%, 2010: 6,9%) and PT4 (7,0%, 2010: 9,6%).

308 (45,6%) S.Typhimurium strains were phage typed, 22,1% were PT104b, 22,1% PT 193, 13,3% were PT195, 10,4% PT 104.

Campylobacteriosis

The campylobacteriosis was the second most frequent zoonosis in 2011 in Hungary. NCE registered 6135 (2010: 7201) cases and 43 (2010:55) outbreaks. 19,4% (2010: 17,5%) of strains were C.jejuni, 4,5% (2010: 2,9%) were C.coli, 0,3% (2010: 1%) were C.lari, and 75,8% (2010:78,6%) were not typed.

Table Foodborne Outbreaks: summarised data

	Weak evidence or no vehicle outbreaks				Strong evidence Number of Outbreaks	Total number of outbreaks
	Number of outbreaks	Human cases	Hospitalized	Deaths		
Salmonella - S. Typhimurium	4	17	4	0	3	7
Salmonella - S. Enteritidis	61	340	33	0	5	66
Salmonella - Other serovars	6	16	6	0	1	7
Campylobacter	16	40	2	0	0	16
Listeria - Listeria monocytogenes	0	0	0	0	0	0
Listeria - Other Listeria	0	0	0	0	0	0
Yersinia	0	0	0	0	0	0
Escherichia coli, pathogenic - Verotoxigenic E. coli (VTEC)	0	0	0	0	0	0
Bacillus - B. cereus	1	13	0	0	0	1
Bacillus - Other Bacillus	0	0	0	0	0	0
Staphylococcal enterotoxins	0	0	0	0	0	0
Clostridium - Cl. botulinum	0	0	0	0	0	0
Clostridium - Cl. perfringens	1	13	0	0	0	1

	Weak evidence or no vehicle outbreaks				Strong evidence Number of Outbreaks	Total number of outbreaks
	Number of outbreaks	Human cases	Hospitalized	Deaths		
Clostridium - Other Clostridia	0	0	0	0	0	0
Other Bacterial agents - Brucella	0	0	0	0	0	0
Other Bacterial agents - Shigella	0	0	0	0	0	0
Other Bacterial agents - Other Bacterial agents	2	46	7	0	0	2
Parasites - Trichinella	0	0	0	0	0	0
Parasites - Giardia	0	0	0	0	0	0
Parasites - Cryptosporidium	0	0	0	0	0	0
Parasites - Anisakis	0	0	0	0	0	0
Parasites - Other Parasites	0	0	0	0	0	0
Viruses - Norovirus	8	336	21	0	0	8
Viruses - Hepatitis viruses	0	0	0	0	0	0
Viruses - Other Viruses	0	0	0	0	0	0
Other agents - Histamine	0	0	0	0	0	0
Other agents - Marine biotoxins	0	0	0	0	0	0
Other agents - Other Agents	0	0	0	0	0	0

Unknown agent	Weak evidence or no vehicle outbreaks				Strong evidence Number of Outbreaks	Total number of outbreaks
	Number of outbreaks	Human cases	Hospitalized	Deaths		
	6	76	0	0		

Table Foodborne Outbreaks: detailed data for Salmonella

Please use CTRL for multiple selection fields

S. Typhimurium - 1b

Value

FBO Code	36/2_NCE
Number of outbreaks	1
Number of human cases	25
Number of hospitalisations	3
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	
Nature of evidence	Detection of causative agent in food vehicle or its component - Detection of indistinguishable causative agent in humans
Outbreak type	Household / domestic kitchen
Setting	Household / domestic kitchen
Place of origin of problem	Household / domestic kitchen
Origin of food vehicle	Domestic
Contributory factors	Storage time/temperature abuse
Mixed Outbreaks (Other Agent)	
Additional information	Next day after wedding at the "after-wedding party" was served for guests the same bouillon.

S. Typhimurium

Value

FBO Code	25_ETBI, 39/4_NCE
Number of outbreaks	1
Number of human cases	7
Number of hospitalisations	0
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	
Nature of evidence	Analytical epidemiological evidence
Outbreak type	General
Setting	Residential institution (nursing home, prison, boarding school)
Place of origin of problem	Canteen or workplace catering
Origin of food vehicle	Domestic
Contributory factors	Unknown
Mixed Outbreaks (Other Agent)	
Additional information	

S. Enteritidis - PT 8

Value

FBO Code	19_ETBI, 33/5_NCE
Number of outbreaks	1
Number of human cases	43
Number of hospitalisations	37
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	
Nature of evidence	Detection of causative agent in food chain or its environment - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	General
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Restaurant/Café/Pub/Bar/Hotel/Catering service
Origin of food vehicle	Domestic
Contributory factors	Unknown
Mixed Outbreaks (Other Agent)	
Additional information	

S. Typhimurium

Value

FBO Code	23_ETBI, 38/2_NCE
Number of outbreaks	1
Number of human cases	42
Number of hospitalisations	7
Number of deaths	0
Food vehicle	Pig meat and products thereof
More food vehicle information	
Nature of evidence	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	General
Setting	School, kindergarten
Place of origin of problem	Canteen or workplace catering
Origin of food vehicle	Domestic
Contributory factors	Unprocessed contaminated ingredient
Mixed Outbreaks (Other Agent)	
Additional information	

S. Stanley

Value

FBO Code	14_ETBI, O2_NCE
Number of outbreaks	1
Number of human cases	204
Number of hospitalisations	69
Number of deaths	0
Food vehicle	Turkey meat and products thereof
More food vehicle information	
Nature of evidence	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	General
Setting	Other setting
Place of origin of problem	Canteen or workplace catering
Origin of food vehicle	Domestic
Contributory factors	Inadequate heat treatment
Mixed Outbreaks (Other Agent)	
Additional information	This outbreake is part of the EU-known S.Stanley outbreake. We have found in Hungary 2 cases in a camp for children, the other cases have detected in households, sporadic.

S. Enteritidis

Value

FBO Code	4_ETBI, 16/5_NCE
Number of outbreaks	1
Number of human cases	54
Number of hospitalisations	2
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	
Nature of evidence	Analytical epidemiological evidence
Outbreak type	General
Setting	School, kindergarten
Place of origin of problem	Canteen or workplace catering
Origin of food vehicle	Domestic
Contributory factors	Cross-contamination
Mixed Outbreaks (Other Agent)	
Additional information	

S. Enteritidis - PT 8

Value

FBO Code	11_ETBI, 25/2_NCE
Number of outbreaks	1
Number of human cases	97
Number of hospitalisations	6
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	
Nature of evidence	Analytical epidemiological evidence
Outbreak type	General
Setting	School, kindergarten
Place of origin of problem	Canteen or workplace catering
Origin of food vehicle	Domestic
Contributory factors	Cross-contamination
Mixed Outbreaks (Other Agent)	
Additional information	

S. Enteritidis

Value

FBO Code	14/3_NCE
Number of outbreaks	1
Number of human cases	41
Number of hospitalisations	6
Number of deaths	0
Food vehicle	Herbs and spices
More food vehicle information	
Nature of evidence	Analytical epidemiological evidence
Outbreak type	General
Setting	School, kindergarten
Place of origin of problem	Restaurant/Café/Pub/Bar/Hotel/Catering service
Origin of food vehicle	Domestic
Contributory factors	Unknown
Mixed Outbreaks (Other Agent)	
Additional information	

S. Enteritidis - PT 8

Value

FBO Code	15_ETBI, 31/1_NCE
Number of outbreaks	1
Number of human cases	4
Number of hospitalisations	3
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	
Nature of evidence	Detection of causative agent in food vehicle or its component - Symptoms and onset of illness pathognomonic to causative agent
Outbreak type	General
Setting	Restaurant, Cafe, Pub, Bar, Hotel
Place of origin of problem	Restaurant/Café/Pub/Bar/Hotel/Catering service
Origin of food vehicle	Domestic
Contributory factors	Infected food handler
Mixed Outbreaks (Other Agent)	
Additional information	

Table Foodborne Outbreaks: detailed data for Unknown agent

Please use CTRL for multiple selection fields

Unknown

Value

FBO Code	28_ETBI
Number of outbreaks	1
Number of human cases	27
Number of hospitalisations	0
Number of deaths	0
Food vehicle	Other foods
More food vehicle information	
Nature of evidence	Analytical epidemiological evidence
Outbreak type	General
Setting	School, kindergarten
Place of origin of problem	Canteen or workplace catering
Origin of food vehicle	Domestic
Contributory factors	Unknown
Mixed Outbreaks (Other Agent)	
Additional information	