

SCIENTIFIC REPORT OF EFSA AND ECDC

The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2010¹

European Food Safety Authority^{2, 3}

European Centre for Disease Prevention and Control^{2, 3}

This scientific output, published 11 May 2012, replaces the earlier version published on 8 March 2012⁴.

ABSTRACT

The European Food Safety Authority and the European Centre for Disease Prevention and Control analysed the information on the occurrence of zoonoses and food-borne outbreaks in 2010 submitted by 27 European Union Member States. In 2010, 99,020 salmonellosis cases in humans were reported and the decreasing trend in case numbers continued. Most Member States met their *Salmonella* reduction targets for poultry, and *Salmonella* is declining in these populations. In foodstuffs, *Salmonella* was most often detected in fresh broiler and turkey meat. Campylobacteriosis was the most commonly reported zoonosis with 212,064 human cases. *Campylobacter* was most often detected in fresh broiler meat. The number of human listeriosis cases decreased slightly to 1,601. *Listeria* was seldom detected above the legal safety limit from ready-to-eat foods at retail. A total of 4,000 confirmed verotoxigenic *Escherichia coli* (VTEC) infections were reported and this number has been increasing since 2008. VTEC was also observed in food and animals. The numbers of human yersiniosis cases have been decreasing in recent years and, 6,776 cases were reported in 2010. *Yersinia enterocolitica* was isolated also from pig meat and pigs; 133 cases of *Mycobacterium bovis* and 356 cases of brucellosis in humans were also reported. The prevalence of bovine tuberculosis in cattle increased, and the prevalence of brucellosis decreased in cattle, sheep and goat populations. Trichinellosis and echinococcosis caused 223 and 750 confirmed human cases, respectively. These parasites were mainly detected in wildlife. The number of Q fever cases in humans decreased to 1,414. In animals Q fever was found in domestic ruminants. There were two human cases of rabies in 2010 and the number of rabies cases in animals slightly increased. Most of the 5,262 reported food-borne outbreaks were caused by *Salmonella*, viruses, *Campylobacter* and bacterial toxins and the main food sources were eggs, mixed or buffet meals and vegetables.

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KEY WORDS

Zoonoses, surveillance, monitoring, *Salmonella*, *Campylobacter*, parasites, food-borne outbreaks, food-borne diseases, rabies, Q fever, *Listeria*

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2 Correspondence: in EFSA zoonoses@efsa.europa.eu; in ECDC FWD@ecdc.europa.eu

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4 The acknowledgement was changed on page 1 and 3. On page 290 figure RA6 was replaced. '*C. parvum*' was replaced with '*C. hominis*' on pages 20, 358 (second paragraph), 361 and 362. On page 342 the Table OUT11 was replaced. On page 388, the EU totals were amended from 4,951,058 to 4,950,903 for 2007 and from 4,976,834 to 4,976,770 for 2008 and 2010 data were added for Switzerland. Abbreviations in the Appendices were updated.

THE EUROPEAN UNION SUMMARY REPORT

Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2010

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3. INFORMATION ON SPECIFIC ZOOSES AND ZONOTIC AGENTS

3.3 *Listeria*

The bacterial genus *Listeria* currently comprises eight species, but human cases of listeriosis are almost exclusively caused by the species *Listeria monocytogenes*. *Listeria* species are ubiquitous organisms that are widely distributed in the environment, especially in plant matter and soil. The principal reservoirs of *Listeria* are soil, forage and water. Other reservoirs include infected domestic and wild animals. The main route of transmission to both humans and animals is believed to be through consumption of contaminated food or feed. Although rare, infection can also be transmitted directly from infected animals to humans as well as between humans. Cooking at temperatures higher than 65°C destroys *Listeria*, but the bacteria are known to multiply at temperatures down to +2/+4°C, which makes the occurrence in RTE foods with a relatively long shelf life of particular concern.

In humans severe illness mainly occurs in the unborn child, infants, the elderly and those with compromised immune systems. Symptoms vary, ranging from mild flu-like symptoms and diarrhoea to life threatening infections characterised by septicaemia and meningoencephalitis. In pregnant women the infection can spread to the foetus, which may either be born severely ill or die in the uterus, resulting in abortion. Illness is often severe and mortality is high. Human infections are rare yet important given the associated high mortality rate. These organisms are among the most important causes of death from food-borne infections in industrialised countries.

In domestic animals (especially sheep and goats) clinical symptoms of listeriosis include encephalitis, abortion, mastitis or septicaemia. However, animals may also commonly be asymptomatic intestinal carriers and shed the organism in significant numbers, contaminating the environment.

Table LI1 presents the countries that have reported data on *L. monocytogenes* for 2010.

Table LI1. Overview of countries reporting *L. monocytogenes* data, 2010

Data	Total number of MSs reporting	Countries
Human	26	All MSs except PT Non-MSs: CH, IS, NO
Food	27	All MSs Non-MSs: CH, NO
Animals	16	MSs: AT, BG, DE, EE, ES, GR, HU, IE, IT, LT, LV, NL, PL, PT, RO, SK Non MSs: CH, NO

Note: The overview table includes all data reported by MSs. However, in the following chapter, data reported as HACCP or own control are not included in the detailed tables, and, unless stated, data from import, suspect sampling and outbreak or clinical investigations are also excluded. Also, only countries reporting 25 samples or more have been included for analysis.

3.3.1 Listeriosis in humans

In 2010, 26 MSs reported 1,601 confirmed human cases of listeriosis (Table LI2). This represented a 3.2 % decrease compared with 2009 (1,654). The overall EU notification rate was 0.35 cases per 100,000 population, with the highest country-specific notification rates observed in (Finland 1.33 cases per 100,000 population) followed by Denmark and Spain (1.12 cases per 100,000 population).

Table LI2. Reported listeriosis cases in humans, 2006-2010, and notification rate for confirmed cases, 2010

Country	2010				2009	2008	2007	2006
	Report Type ¹	Cases	Confirmed cases	Confirmed cases/100,000	Confirmed cases			
Austria	C	34	34	0.41	46	31	20	10
Belgium	C	40	40	0.37	58	64	57	67
Bulgaria	A	4	4	0.05	5	5	11	6
Cyprus	C	1	1	0.12	0	0	0	1
Czech Republic	C	26	26	0.25	32	37	51	78
Denmark	C	62	62	1.12	97	51	58	56
Estonia	C	5	5	0.37	3	8	3	1
Finland	C	71	71	1.33	34	40	40	46
France	C	312	312	0.48	328	276	319	290
Germany	C	390	377	0.46	394	306	356	508
Greece	C	10	10	0.09	4	1	10	7
Hungary	C	20	20	0.20	16	19	9	14
Ireland	C	10	10	0.22	10	13	21	7
Italy	C	95	95	0.16	88	118	89	51
Latvia	C	7	7	0.31	4	5	5	2
Lithuania	A	5	5	0.15	5	7	4	4
Luxembourg	U	0	0	0	3	1	6	4
Malta	C	1	1	0.24	0	0	0	0
Netherlands	C	72	72	0.43	44	45	68	64
Poland	C	59	59	0.15	32	33	43	28
Portugal	- ²	-	-	-	-	-	-	-
Romania	C	6	6	0.03	6	0	0	-
Slovakia	C	5	5	0.09	10	8	9	12
Slovenia	C	11	11	0.54	6	3	4	7
Spain ³	C	129	129	1.12	121	88	82	78
Sweden	C	63	63	0.67	73	60	56	42
United Kingdom	C	176	176	0.28	235	206	260	208
EU Total		1,614	1,601	0.35	1,654	1,425	1,581	1,591
Iceland	C	1	1	0.31	0	0	4	0
Liechtenstein	-	-	-	-	-	0	0	0
Norway	C	23	23	0.47	31	34	49	27
Switzerland ⁴	C	67	67	0.90	41	43	51	73

1. A: aggregated data report; C: case-based report; -: no report; U: unspecified.

2. No surveillance system exists.

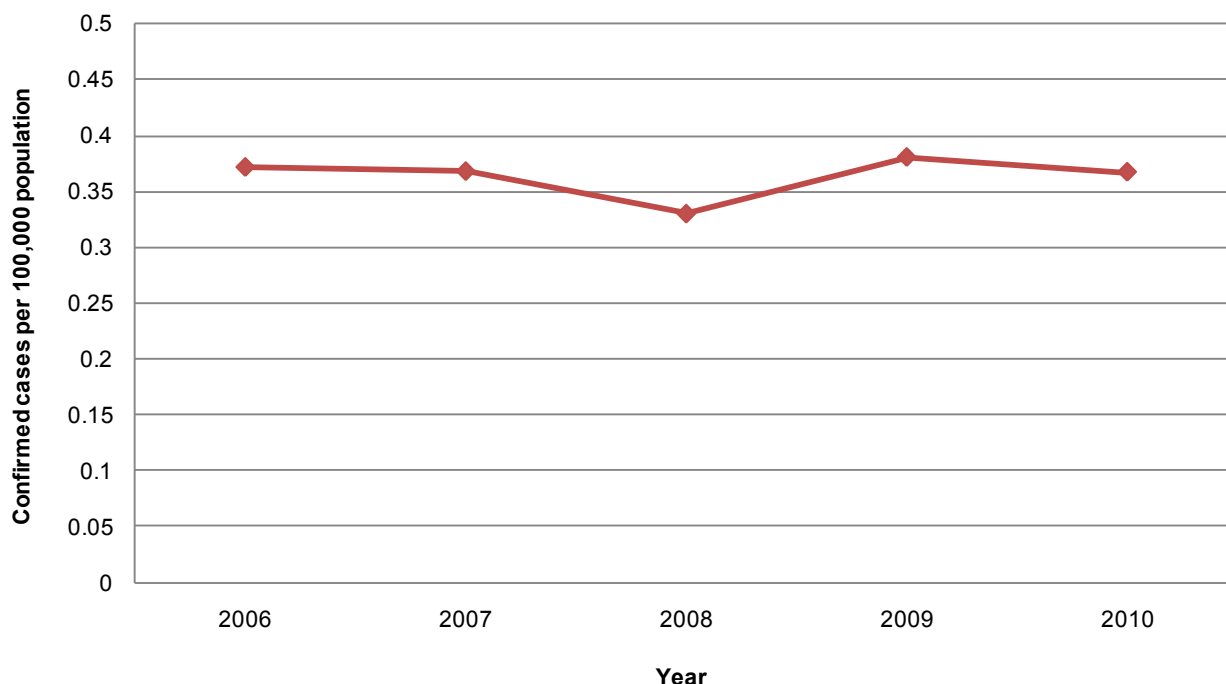
3. Sistema de Informacion Microbiologica (SIM), notification rates calculated on estimated coverage, 25 %.

4. Switzerland provided data directly to EFSA.

The EU notification rate of confirmed cases of listeriosis was slightly fluctuating in the 2006-2010 period (based on countries reporting data for five consecutive years) (Figure LI1).

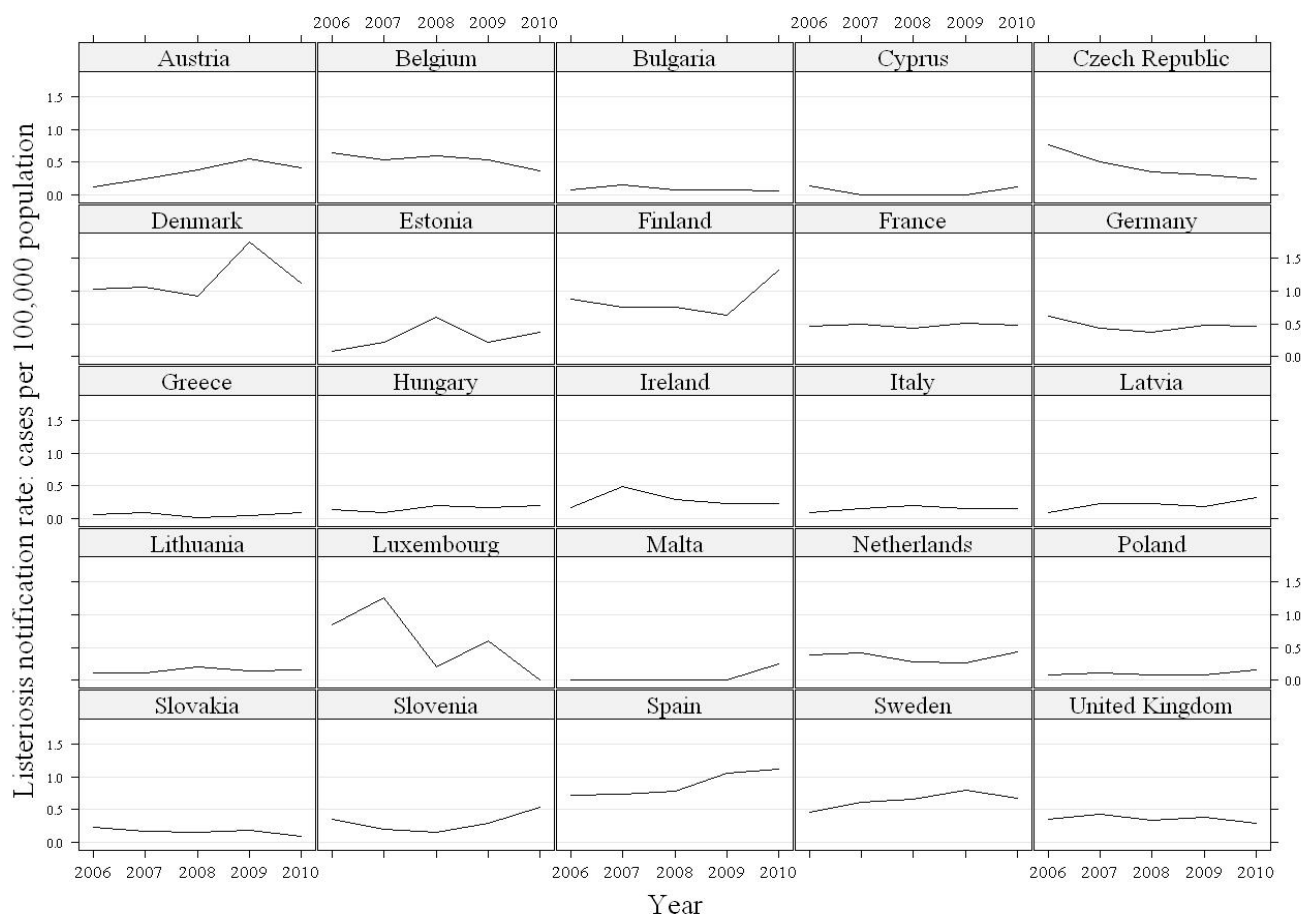
Within each reporting MS, statistically significant increasing trends in listeriosis notification rates from 2006 to 2010 were noted in Austria, Latvia and Spain, while statistically significant decreasing trends were noted in Belgium, the Czech Republic, Luxembourg, and Slovakia (Figure LI2).

Figure LI1. Notification rates of reported confirmed cases of human listeriosis in 25 Member States¹, 2006-2010



1. Includes only MSs with data from five consecutive years: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Figure LI2. Notification rates of reported confirmed cases of listeriosis in humans per Member State¹, (2006-2010)



1. Spanish surveillance system covers only 25 % of the total population.

The age distribution of listeriosis cases in 2010 was similar to that observed in previous years. The notification rate was highest in those aged over 65 years (1.21 cases per 100,000 population), covering 60.2 % of all reported cases. Out of 1,595 confirmed reported cases, the age group over 65 years old accounted for most of the cases (60.3 %), while 6.7 % of cases were detected in the age group 0-4 years and the majority of these cases (96.3 %, N=108) were in infants (age <1 year).

The transmission route was stated for 132 (8.26 %) confirmed cases. Of those, 87 cases were infected with *L. monocytogenes* via suspected food, and 43 cases were pregnancy-associated. One case was reported as transmission by contact with animals and one as other (not specified) transmission. Of the cases infected via consumption of contaminated food, cheese was mentioned as the suspected vehicle for 13 cases, milk and fish for one case, while for the remaining cases no information on the food source was provided.

The outcome of the disease was known for 1,063 confirmed cases (66.3 %). Of these, 181 cases were reported as deceased due to *Listeria* spp. infection (17.0 %), with the highest case fatality reported in the age groups 0-5 years (22.9 %, 19 deaths in 83 cases) followed by 45-64 years (19.1 %, 44 deaths in 230 cases) and 65 plus years (17.3 %, 110 deaths in 637 cases).

In total, 98 % of confirmed *L. monocytogenes* cases with known importation status (reported for 83 % of cases) were of domestic origin.

3.3.2 *Listeria* in food

EU legislation (Regulation (EC) No 2073/2005) lays down food safety criteria for *L. monocytogenes* in RTE foods. This regulation came into force in January 2006, and criteria laid down by it are described below. Data reported reflect the Regulation and investigations have therefore focused on testing RTE foods for compliance with these limits.

In 2010, data on *L. monocytogenes*, in 25 or more samples of food, were reported by 19 MSs and one non-MS. These data cover a substantial number of food samples and food categories. The data presented in the following section focus on RTE foods, where *L. monocytogenes* was detected either by qualitative (absence or presence) or quantitative (enumeration) investigations (findings of *L. monocytogenes* with more than 100 cfu/g) or both.

Compliance with microbiological criteria

The *L. monocytogenes* criteria laid down by Regulation No (EC) 2073/2005 cover primarily RTE food products, and require that:

- In RTE products intended for infants and for special medical purposes *L. monocytogenes* must not be present in 25 g;
- *L. monocytogenes* must not be present in levels above 100 cfu/g during the shelf life of other RTE products;
- In RTE foods that support the growth of the bacterium, *L. monocytogenes* may not be present in 25 g at the time of leaving the production plant; however, if the producer can demonstrate, to the satisfaction of the competent authority, that the product will not exceed the limit of 100 cfu/g throughout shelf life this criterion does not apply; and
- In the case of RTE foods that support the growth of *L. monocytogenes*, the microbiological criterion to be applied depends on the stage in the food chain and whether the producer has demonstrated that *L. monocytogenes* will not multiply to levels of 100 cfu/g, or above, during shelf life.

For many of the reported data, it was not evident whether the RTE food tested was able to support the growth of *L. monocytogenes* or not. This information is difficult to collect as the ability of a product to support growth is dependent on various factors such as the pH, water activity and composition of the specific product, which can vary even within the same food category. Also, information from studies, carried out by the producers, on the growth capacity of *L. monocytogenes* in individual products was not available. Furthermore, in some cases, it was not possible to establish at which stage in the production chain samples were collected.

For the reasons described above, the following assumptions were applied to the analyses:

- for samples reported to be taken at processing, a criterion of absence in 25 g was applied. Samples from hard cheeses and fermented sausages are an exception, as these categories are assumed not to be able to support the growth of *L. monocytogenes*. For these samples the limit ≤ 100 cfu/g was applied at processing;
- for all investigations, where the sampling stage was not reported, it was assumed that samples were collected from products placed on the market, and the criterion ≤ 100 cfu/g was applied; and
- for food intended for infants and special medical purposes the criterion absence in 25 g was applied throughout the food chain.

Only investigations including 25 tested units or more were included in analyses. Samples reported as HACCP or own controls were not included for analysis and, unless stated, data from import, suspect sampling and outbreak or clinical investigations are also excluded. The results from qualitative examinations have been used to analyse the compliance with the criterion 'absence in 25 g' (unless stated otherwise), and the results from quantitative analyses have been used to analyse compliance with the limit 100 cfu/g.

The number of samples in non-compliance with the *L. monocytogenes* criteria is shown in Table LI3. For RTE products on the market, very low proportions of samples were generally found to be non-compliant with the criterion of ≤ 100 cfu/g. However, higher levels of non-compliant samples were reported in samples analysed using the detection method (absence in 25 g) for RTE products at the processing stage. There were no major developments in the levels of non-compliant RTE food units in 2010.

RTE products at processing level

The highest level of non-compliance in single samples was observed in RTE fishery products (9.6 %). The category 'other RTE products' was also among the categories with the highest levels of non-compliance (4.9 %). In samples from RTE products of meat origin other than fermented sausage or from cheeses and other dairy products, non-compliance ranged from 0 % to 2.3 %. For batch-based sampling, collected at processing, the highest level of non-compliance was reported in RTE fishery products (4.5 %). Non-compliance is also reported in RTE milk (2.7 %), with 32 positive samples from raw milk intended for human consumption in the Czech Republic and three from pasteurised milk in Ireland. Some non-compliance was also detected from RTE products of meat origin other than fermented sausages, soft and semi-soft cheeses, other RTE dairy products and, other RTE products at processing.

RTE products at retail level

In 2010, the highest levels of non-compliance with the criterion ≤ 100 cfu/g among single samples collected at retail, were observed in RTE fishery products (1 %) and RTE meat products other than fermented sausage (0.4 %). This is similar to the levels reported in 2009. Non-compliance was also detected in soft and semi-soft cheese (0.2 %), in other dairy products (0.2 %) and in other RTE products (0.1 %) (Table LI3). For the batch-based sampling at retail the highest non-compliance was reported for soft and semi-soft cheeses (0.8 %) followed by RTE products of meat origin other than fermented sausage (0.6 %), as well as other RTE products (0.2 %). All other single samples and batches tested at retail were in compliance with the *L. monocytogenes* criteria.

RTE products at farm level

Sampling done at farm level was reported by two MSs for RTE milk, for soft and semi-soft cheeses made from milk of cows and for other RTE dairy products. Estonia reported the highest level of non-compliance in single sampling in RTE milk (11.5 %) due to three positive samples (out of 26) in raw milk intended for human consumption. Belgium reported non-compliance, at farm-level, in 6.2 % of 65 batches of butter and cream as well as in 8.8 % of 34 batches of soft and semi-soft cheeses made from milk of cows.

Non-compliance in the last five years

Figure LI3 presents the proportions of non-compliance of single samples of selected RTE foods in 2006-2010. At processing, the proportion of samples of fishery products in non-compliance with the criteria was highest in 2006 compared with the following years, although the reported level increased consistently from 2007 to 9.6 % in 2010. At retail, the same observations can be made. The level of non-compliance for fishery products was highest in 2006 (and in 2007) compared with the following years, although the reported level increased consistently from 2008 to 1 % in 2010. The low level in 2008 was probably due to large surveys carried out in the United Kingdom with very few samples exceeding the limit.

At the processing stage, the level of non-compliance among single samples increased in 2010 in three categories (fishery products, other RTE food and soft and semi-soft cheeses) compared with previous years. In RTE products of meat origin, the prevalence was three times lower in 2010, and in RTE hard cheese, it remained stable. At retail, no trends were observed between 2006 and 2009, but compared with 2009 the level of non-compliance in 2010 decreased in soft and semi-soft cheese and increased in RTE products of meat origin.

However, it is good to note that these results over the years are influenced by the MSs reporting and the sample sizes in their investigations, both of which vary between the years.

Table LI3. Compliance with the *L. monocytogenes* criteria laid down by Regulation (EC) No 2073/2005 in food categories in the EU, 2010

Food category ¹	Sampling unit	Absence in 25 g		≤100 cfu/g	
		Units tested	% in non-compliance	Units tested	% in non-compliance
RTE food intended for infants and for medical purposes					
Processing plant	Batch	70	0	-	-
Retail	Single	746	0	41	0
Retail	Batch	446	0	-	-
RTE products of meat origin other than fermented sausage					
Processing plant	Single ²	5,221	2.3	-	-
	Batch ²	12,684	1.7	-	-
Retail	Single ¹	-	-	12,474	0.4
	Batch	-	-	3,577	0.6
RTE products of meat origin, fermented sausage					
Processing plant	Batch	-	-	36	0
Retail	Single	-	-	102	0
	Batch	-	-	33	0
Milk, RTE					
At farm	Single	26	11.5	-	-
Processing plant	Single	401	0	-	-
	Batch	1,312	2.7	-	-
Retail	Single ¹	-	-	238	0
	Batch	-	-	2,528	0
Soft and semi-soft cheeses, RTE					
At farm	Batch	34	8.8	-	-
Processing plant	Single	1,046	0.9	-	-
	Batch	2,910	1.5	-	-
Retail	Single ¹	-	-	3,358	0.2
	Batch	-	-	3,783	0.8
Hard cheeses, RTE					
Processing plant	Single	-	-	366	0.3
	Batch	-	-	422	0
Retail	Single	-	-	1,375	0
	Batch	-	-	6,254	0
Other Dairy products, RTE					
At farm	Batch	65	6.2	-	-
Processing plant	Single ²	1,418	0	-	-
	Batch	1,378	0.8	-	-
Retail	Single ¹	-	-	615	0.2
	Batch	-	-	978	0

Table continued overleaf.

Table LI3 (continued). Compliance with the *L. monocytogenes* criteria laid down by Regulation (EC) No 2073/2005 in food categories in the EU, 2010

Food category ¹	Sampling unit	Absence in 25 g		≤100 cfu/g	
		Units tested	% in non-compliance	Units tested	% in non-compliance
Fishery products, RTE					
Processing plant	Single	612	9.6	-	-
	Batch	330	4.5	-	-
Retail	Single ¹	-	-	3,442	1.0
	Batch	-	-	476	0
Other RTE products					
Processing plant	Single	243	4.9	-	-
	Batch	727	2.2	-	-
Retail	Single ¹	-	-	9,786	0.1
	Batch	-	-	1,707	0.2

Note: RTE: ready-to-eat products. Data are presented only for MS investigations with ≥25 sample units.

1. Retail include data with unspecified sampling stage.

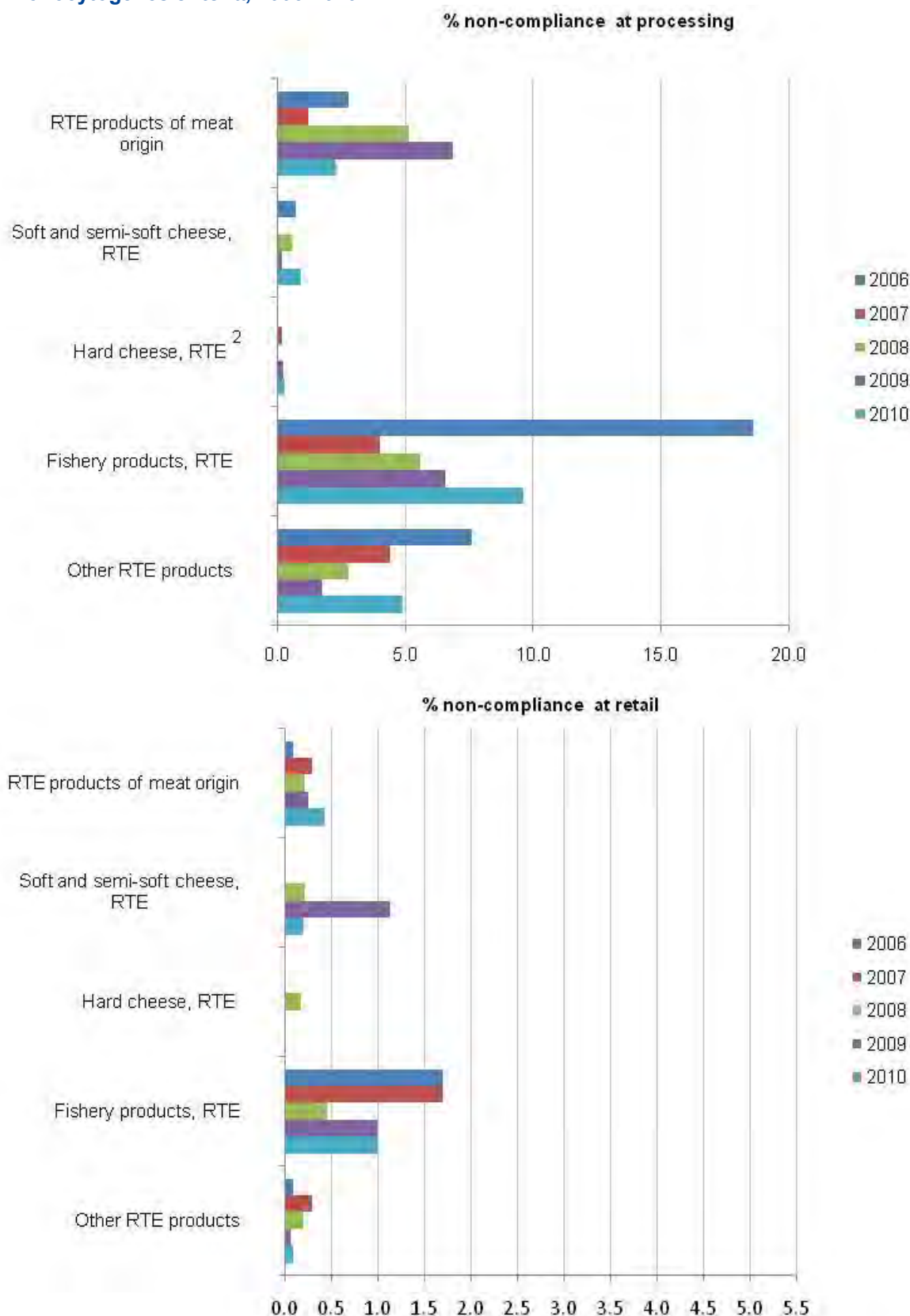
2. Includes samples from official-industry sampling from Poland: 83 single samples (0 positives) of other dairy products and 1,205 single samples (1 positive) and 491 batch samples (0 positive) of products of meat origin.

Soft and semi-soft cheeses at farm include data on fresh cheeses: 11 batches of fresh cheeses were tested for detection and 1 was positive (data from Belgium).

Soft and semi-soft cheeses at processing plant include data on fresh cheeses: 149 single samples of fresh cheeses were tested for detection and 3 samples of fresh cheese made from pasteurised sheep milk tested positive (data from Austria, Cyprus and Portugal). Thirty-one batches of fresh cheeses were tested for detection and none were positive (data from Belgium).

Soft and semi-soft cheeses at retail include data on fresh cheeses: 18 single samples of fresh cheeses were tested for enumeration and no samples had levels >100 cfu/g (data from Austria). Eighty-eight batches of fresh cheeses were tested for enumeration and no batches had levels >100 cfu/g (data from Belgium).

Figure LI3. Proportion of single samples at processing and retail¹ in non-compliance with EU *L. monocytogenes* criteria, 2006-2010



Note: RTE: ready-to-eat products. Data are presented only for MS investigations with ≥ 25 sample units.

1. Retail include data with unspecified sampling stage.

2. In 2006, there were no investigations with 25 samples or more reporting results for evaluation of non-compliance in hard cheese.

In 2010 and 2011, an EU-wide baseline survey on *L. monocytogenes* in RTE food was carried out, targeting smoked and gravad fish, soft and semi-soft cheeses, and heat-treated meat products that have been handled between the heat treatment and packaging. The results of this survey will provide further valuable information on the occurrence of *L. monocytogenes* in these RTE food categories perceived as being at high risk regarding *Listeria* contamination. EFSA will publish the results in 2013.

Ready-to-eat meat products, meat preparations and minced meat

Data on examinations for *L. monocytogenes* in RTE meat products were available from 17 MSs. Data categorised according to the origin of the meat are presented in Tables LI4, LI5 and LI6.

Bovine meat

Data on RTE products of bovine meat are reported by six MSs and summarised in Table LI4. The number of units qualitatively tested (1,450 units) was somewhat lower than in 2009 (1,808 samples) and 2008 (7,510 samples). Overall, *L. monocytogenes* was detected in 25 g from 1.5 % of these units. The highest occurrence of *L. monocytogenes* at processing was recorded in single samples of meat products from Poland (2.9 %). A large investigation was reported by the Czech Republic in which 0.1 % of the 814 tested batches of meat products contained *L. monocytogenes* at processing. In total, 2,168 units of RTE meat products were analysed quantitatively at processing or at retail. None of the RTE products of bovine meat contained levels of *L. monocytogenes* above 100 cfu/g, and only 0.1 % of the units had counts over the detection level.

Pig meat

Data on RTE products of pig meat were provided by 16 MSs (Table LI5). Qualitative investigations were performed on 22,158 units, and *L. monocytogenes* was detected in 25 g from 2.0 % of samples. The proportion of units positive for *L. monocytogenes* varied between 0 % and 31.3 %. The highest occurrences at processing were reported by Poland (31.3 %), Hungary (13.1 %) and Portugal (9.0 %). At retail, the Netherlands (10.5 % and 11.4 %) and Denmark (5.0 %) reported the highest proportion of units in which *L. monocytogenes* was detected. Slight increases in the proportion of samples positive for *L. monocytogenes* from processing to retail were observed in the Czech Republic, Denmark and Ireland, while decreases were observed in Germany, Hungary and Romania.

Quantitative investigations of RTE products of pig meat generally revealed a low to very low occurrence of units exceeding 100 cfu/g; however, 9.5 % of samples from Spain (sampling stage not specified) and 3.0 % of samples from Hungary contained more than 100 cfu/g of the bacterium (Table LI5). In France, only samples positive with the detection method were tested for enumeration, of which three (8.3 % of positive samples) were found to contain *L. monocytogenes* at a level above 100 cfu/g. The overall proportion of observations with counts above 100 cfu/g was 0.5 %, which is higher than the proportions reported for 2009 (0.2 %) and 2008 (0.3 %).

Poultry meat

Thirteen MSs reported results concerning *L. monocytogenes* in RTE products of broiler meat in 2010, four of which also reported on RTE products of turkey meat and one from unspecified poultry meat. Overall, *L. monocytogenes* was found by detection method in 1.5 % of the 3,636 units of poultry meat products tested, ranging from 0 % to 7.5 % positive units for broiler meat and from 0 % to 11.8 % for turkey meat (Table LI6). In Germany, an increase in *L. monocytogenes* was observed in broiler meat products along the food chain; this was also the case for turkey meat products from Ireland. Hungary reported a decrease in *L. monocytogenes* in both broiler meat and turkey meat from processing to retail.

Quantitative investigations were carried out on 2,444 units of RTE products from poultry meat, and 0.2 % of these were found to contain levels of *L. monocytogenes* above 100 cfu/g. Only three MSs reported samples with levels above 100 cfu/g, and all of these were taken at retail. The occurrence ranged from 0.1 % to 3.0 %, with the highest proportion reported by Hungary. In turkey meat, none of the samples taken contained levels above 100 cfu/g.

A summary of the proportions of units positive for RTE products of meat origin is presented in Figure LI4. As in 2009, *L. monocytogenes* was most often found in RTE products from pig meat but with an overall lower prevalence. For further information on reported data, refer to the level 3 tables.

Table LI4. *L. monocytogenes* in ready-to-eat products of bovine meat, 2010

Country	Sampling unit	Description	Units tested presence	L. m. presence in 25 g	Units tested enumeration	> detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
At processing/cutting plant							
Czech Republic	Batch	Meat products	814	0.1	185	0	0
Ireland	Single	Meat products	52	0	-	-	-
Poland ¹	Batch	intended to be eaten raw	40	0	-	-	-
	Single	Meat products	105	2.9	40	-	-
At retail							
Austria	Single	Meat products	256	5.9	255	0	0
Bulgaria	Batch	Meat products	-	-	93	0	0
Ireland ²	Single	Meat products	183	1.6	355	0	0
Netherlands	Single	Meat products	-	-	31	0	0
	Single	intended to be eaten raw	-	-	1,209	0.2	0
Total (6 MSs)			1,450	1.5	2,168	0.1	0

Note: Data are presented only for sample sizes ≥25.

1. Data were not available on the number of units that tested positive for single meat product samples analysed by the enumeration method.
2. Sample weight is 'various'.

Table LI5. *L. monocytogenes* in ready-to-eat products of pig meat, 2010

Country	Sampling unit	Description	Units tested presence	L. m. presence in 25 g	Units tested enumeration	> detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
At processing/cutting plant							
Czech Republic	Batch	-	6,461	1.2	1,445	0	0
Denmark ¹	Batch	-	44	4.5	110	0	0
Estonia	Single	-	114	7.0	-	-	-
Germany	Single	Heat treated meat products	86	3.5	64	0	0
Hungary	Single	-	107	13.1	43	16.3	0
Ireland	Single	-	131	0	-	-	-
Poland ³	Batch	-	2,913	2.3	806	0	0.6
	Batch ⁵	Intended to be eaten raw	115	31.3	70	0	0
	Single ⁶	-	3,100	1.9	1,040	0.2	0.5
Portugal	Single	-	122	9.0	122	7.4	1.6
Romania	Batch	-	26	7.7	-	-	-
Slovakia ²	Batch	-	243	0.8	-	-	-
At retail							
Austria	Single	-	348	2.0	347	0	0
Bulgaria	Batch	-	231	0	551	0	0
Czech Republic	Single	-	71	1.4	71	1.4	0
	Batch	-	-	-	180	0	0
Denmark ¹	Single	-	40	5.0	76	0	0
Estonia	Single	-	-	-	36	0	0
France	Single	RTE Cooked, chilled	5,827	0.6	5,827	<0.1	<0.1
Germany	Single	Heat treated meat products	903	3.3	727	1.4	0.1
Greece	Single	-	36	0	-	-	-
Hungary ¹	Single	-	125	3.2	33	0	3.0
Ireland ⁴	Single	-	213	1.4	718	0	0
Netherlands	Single	-	105	10.5	106	0	0
	Single	Intended to be eaten raw	219	11.4	-	-	-
Portugal	Batch	-	-	-	1,345	0	1.1
Romania	Batch	-	91	1.1	-	-	-
Sampling level not specified							
Spain	Single	Unspecified RTE	487	9.7	455	1.5	9.5
Total (16 MSs)			22,158	2.0	14,172	0.3	0.5

Note: Data are presented only for sample sizes ≥25.

Note: Poland additionally tested 33 single samples by the enumeration method where the sampling level was not specified; no data were available on the number of units that tested positive.

Note: In France, at retail, the enumeration analysis was carried out on samples positive with the detection method only. Of these 36 positive samples, 3 (8.3 %) were also positive with more than 100 cfu/g of *L. monocytogenes*.

1. Sampling weight 1 g or 25 g.

2. Sampling weight 10 g or 25 g.

3. Sampling weight 1 g, 25 g, 250 g.

4. Sampling weight: various.

5. Official and industry sampling.

6. 1,205 samples from the detection method and 752 samples from the enumeration method are from official and industry sampling.

Table LI6. *L. monocytogenes* in ready-to-eat products of poultry meat, 2010

Country	Sampling unit	Description	Units tested presence	L. m. presence in 25 g	Units tested enumeration	> detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
At processing/cutting plant							
Belgium ¹	Batch	Broiler meat products	106	3.8	59	3.4	0
Czech Republic	Batch	Broiler meat products	542	0.6	226	0	0
Germany	Single	Broiler meat products	56	0	25	0	0
Hungary	Single	Broiler meat products	80	7.5	33	9.1	0
	Single	Turkey meat products	77	2.6	-	-	-
Ireland	Single	Broiler meat products	460	0	-	-	-
	Single	Turkey meat products	30	0	-	-	-
	Single	Poultry meat, unspecified	30	3.3	-	-	-
Poland	Batch ²	Broiler meat products	306	0	-	-	-
	Single ⁴	Broiler meat products	405	-	361	0.6	0
	Batch ³	Turkey meat products	70	0	-	-	-
Portugal	Single	Broiler meat products	36	2.8	36	2.8	0
	Single	Turkey meat products	34	11.8	34	11.8	0
Romania	Batch	Broiler meat products	235	0	-	-	-
Slovakia	Batch	Broiler meat products	40	0	-	-	-
At retail							
Bulgaria	Batch	Broiler meat products	89	0	310	0	0
Estonia	Single	Broiler meat products	-	-	42	0	0
Germany	Single	Broiler meat products	270	4.1	194	1.5	1.0
Hungary	Single	Broiler meat products	188	5.9	33	0	3.0
	Single	Turkey meat products	218	1.8	-	-	-
Ireland ⁵	Single	Broiler meat products	220	1.4	886	0.5	0.1
	Single	Turkey meat products	42	2.4	156	0	0
Netherlands	Single	Broiler meat products	45	4.4	49	0	0
Not specified							
Spain	Single	Broiler meat products	57	0	-	-	-
Total (13 MSs)			3,636	1.5	2,444	0.8	0.2

Note: Data are presented only for sample sizes ≥25.

1. Sampling weight 1 g or 25 g.

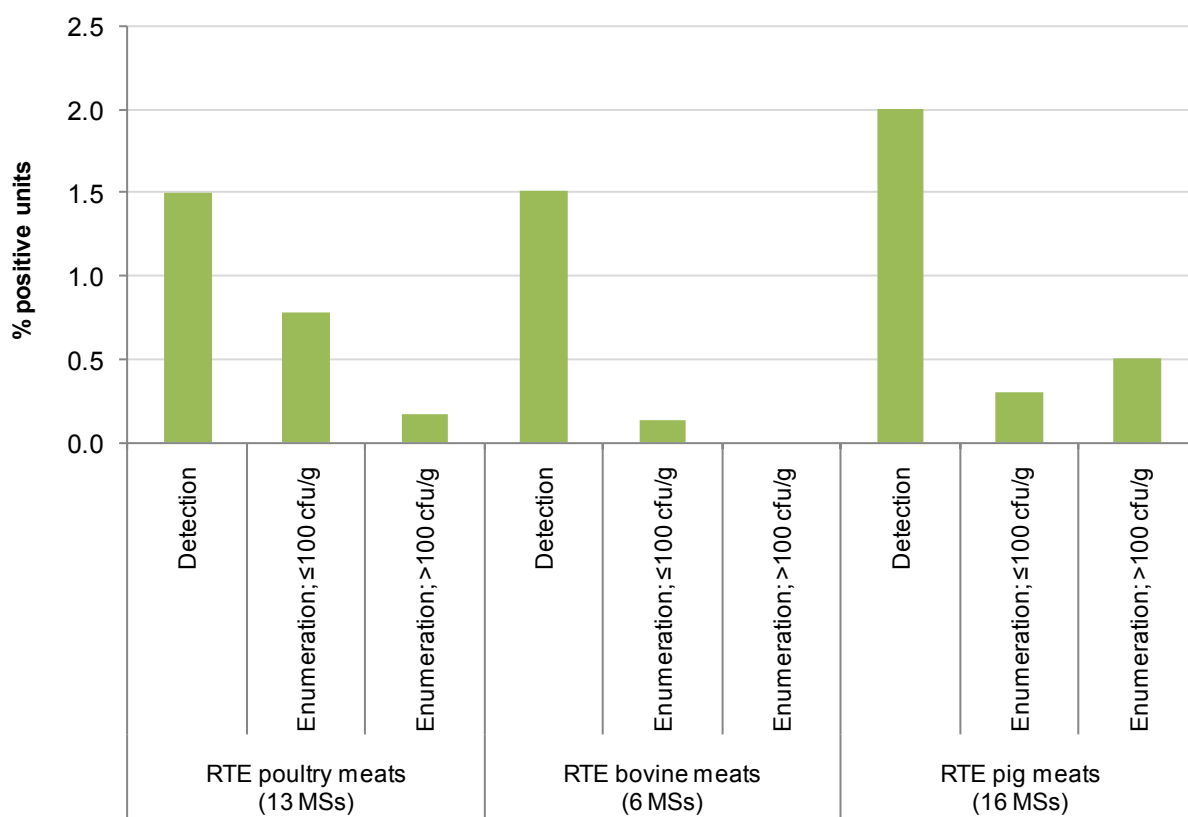
2. Sampling weight 250 g.

3. Turkey meat: sample weight 1 g, 25 g; official and industry sampling.

4. Data was not available on the number of units that tested positive for single broiler meat samples analysed by the detection method.

5. Sampling weight: various.

Figure LI4. Proportion of *L. monocytogenes*-positive units in ready-to-eat meat categories in the EU, 2010¹



Note: Test results obtained by detection and enumeration methods are presented separately.

RTE poultry meats include data from Belgium, Bulgaria, the Czech Republic, Estonia, Germany, Hungary, Ireland, the Netherlands, Poland, Portugal, Romania, Slovakia and Spain (Detection: 12 MSs, Enumeration: 10 MSs).

RTE bovine meats include data from Austria, Bulgaria, the Czech Republic, Ireland, the Netherlands and Poland (Detection: 4 MSs, Enumeration: 6 MSs).

RTE pig meats include data from Austria, Bulgaria, the Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, the Netherlands, Poland, Portugal, Romania, Slovakia and Spain (Detection: 16 MSs, Enumeration: 13 MSs).

1. Data pooled for all sampling stages for all reporting MSs (single and batch). Only investigations covering 25 or more samples are included.

Cheeses

In 2010, 15 MSs and one non-MS provided a large quantity of data on *L. monocytogenes* in cheeses (Tables LI7-LI10) and 19 MSs in other RTE dairy products.

Soft and semi-soft cheeses

The presence of *L. monocytogenes* in soft and semi-soft cheeses made from raw or low heat-treated milk from cows, sheep and goats was detected in 5 out of 15 qualitative investigations (Table LI7). Portugal reported the highest level of *L. monocytogenes* at processing, with 7.5 % of single samples of cheese made from sheep's milk testing positive. Belgium reported 2.2 % of batches of cheese made from cow's milk as positive at processing. In 2010, two countries, in contrast to none in 2009, reported units with levels above 100 cfu/g: Austria (0.8 % in cheese made from cow's milk at retail) and Portugal (4.5 % in cheese made from sheep's milk at processing).

Over 6,000 samples were reported from soft and semi-soft cheeses made from pasteurised milk of cows, sheep and goats (Table LI8). A total of 5,548 samples of cheeses made with milk from cows were analysed qualitatively by MSs, and 0.9 % were found to be contaminated with *L. monocytogenes*. The proportion of positive findings ranged from 0 % to 2.9 %, the highest being reported by Slovakia at processing. The apparent prevalence of *L. monocytogenes* in cheeses made with milk from cows was higher in 2009 than in 2010 (1.3 % versus 0.9 % respectively), and a higher proportion of samples containing levels above 100 cfu/g was reported in 2009 (0.3 % versus 0.1 % in 2010). A total of 458 samples of soft and semi-soft cheeses, made from pasteurised milk from sheep and goats, were investigated qualitatively. In contrast to 2009, when no samples containing *L. monocytogenes* at a level over the detection limit were identified, such samples were reported in 2010 by Hungary at retail (3.2 %), and levels above 100 cfu/g were also reported by Portugal (25.8 % of the 31 samples of cheeses from goats' milk and 4.6 % of the 452 samples of cheeses from sheep's milk).

Hard cheeses

The results regarding hard cheeses made from raw or low heat-treated milk are shown in Table LI9, and the results for hard cheese made from pasteurised milk are shown in Table LI10. As reported in 2009, it appears that these cheeses may occasionally harbour *L. monocytogenes*; however, levels above 100 cfu/g were not reported in either of these two categories in 2010.

In 2010, both Germany (7.1 % at processing) and Austria (1.9 % at retail) reported *L. monocytogenes* positive samples in hard cheeses made from unpasteurised milk from cows whereas Poland (0.9 %) reported positive samples in hard cheeses made from pasteurised milk from cows at the processing plant. Germany also reported investigations of hard cheeses made from pasteurised cow's milk, with findings of 0.5 % of samples positive at processing plants and 0.7 % positive at retail and in hard cheeses made from goat's milk at retail (3.1 %).

In 2007-2009, it was observed that *L. monocytogenes* was more often detected over the 100 cfu/g limit in soft and semi-soft cheeses made from pasteurised milk compared with cheeses made from unpasteurised milk. However, in 2010, almost the same proportion of units exceeded this limit for both soft and semi-soft cheeses made from pasteurised milk and from unpasteurised milk.

A summary of tested units and the proportion of units positive for cheeses is presented in Figure LI5. For further information on reported data, refer to the level 3 tables.

Table LI7. *L. monocytogenes* in soft and semi-soft cheeses made from raw or low heat-treated milk, 2010

Country	Sampling unit	Description	Units tested presence	L. m.presence in 25 g	Units tested enumeration	> detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
Cheeses made from milk from cows							
Austria	Single	At retail	407	0.7	386	0	0.8
Belgium ¹	Batch	At farm	-	-	32	9.4	0
	Batch	At processing plant	46	2.2	30	20.0	0
Bulgaria	Batch	At retail	101	0	352	0	0
Germany	Single	At processing plant	27	0	-	-	-
	Single	At retail	152	0.7	141	0	0
Poland	Batch	At processing plant	43	0	-	-	-
Romania	Batch	At processing plant	197	0	-	-	-
	Batch	At retail	701	0	-	-	-
Total cheeses made from milk from cows (6 MSs)			1,674	0.3	941	1.0	0.3
Switzerland	Single	At processing plant	70	0	-	-	-
Cheeses made from milk from sheep and goats							
Portugal	Single	Sheep's milk, at processing plant	67	7.5	67	3.0	4.5
Romania	Batch	Sheep's milk, at processing plant	37	0	-	-	-
	Batch	Sheep's milk, at retail	585	0	-	-	-
Slovakia	Batch	Sheep's milk, at processing plant	176	1.1	-	-	-
Total cheeses made from milk from sheep and goats (3 MSs)			865	0.8	67	3.0	4.5
Switzerland	Single	Goat's milk, at processing plant	26	0	-	-	-
Cheeses made from mixed milk from cows, sheep and/or goats							
Slovakia ²	Batch	Mixed from cows, sheep and/or goats, at retail	64	0	-	-	-
Total cheeses made from mixed milk (1 MS)			64	0	-	-	-

Note: Data are presented only for sample sizes ≥25.

1. Sampling weight 1 g or 25 g.

2. Sampling weight 10 g or 25 g.

Table LI8. *L. monocytogenes* in soft and semi-soft cheeses made from pasteurised milk, 2010

Country	Sampling unit	Description	Units tested presence	L. m. presence in 25 g	Units tested enumeration	> detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
Cheeses made from milk from cows							
Austria	Single	At processing plant	102	1.0	44	0	0
	Single	At retail	73	0	43	0	0
Belgium ¹	Batch	At processing plant	72	1.4	38	0	0
Bulgaria	Batch	At retail	398	0	1,856	0	0
Czech Republic	Batch	At processing plant	1,589	2.3	1,144	0	0
	Batch	At retail	-	-	105	0	0
France	Single	At retail	1,453	0.4	1,453	0	0
Germany	Single	At processing plant	79	0	41	0	0
	Single	At retail	797	0.5	645	2.8	0.6
Hungary ^{2,3}	Unknown	At processing plant	76	0	36	-	-
	Unknown	At retail	32	0	72	-	-
Netherlands	Single	At retail	374	0	382	0	0
Poland	Batch	At processing plant	155	0	-	-	-
	Single	At processing plant	62	0	-	-	-
Portugal	Batch	At retail	-	-	50	0	0
Romania	Batch	At retail	218	0	-	-	-
Slovakia ⁴	Batch	At processing plant	68	2.9	-	-	-
	Batch	At retail	-	-	101	0	1.0
Total cheeses made from milk from cows (12 MSs)			5,548	0.9	6,010	0.3	0.1
Switzerland	Single	At processing plant	38	0	-	-	-
Cheeses made from milk from sheep and goats							
Bulgaria	Batch	Goat's milk, at retail	34	0	221	0	0
	Batch	Sheep's milk, at retail	65	0	292	0	0
Czech Republic	Batch	Goat's milk, at processing	203	0	-	-	-
Germany	Single	Goat's milk, at retail	26	0	-	-	-
Greece	Single	Sheep's milk, at retail	33	0	-	-	-
Hungary	Unknown	Sheep's milk, at processing	31	0	-	-	-
	Unknown	Sheep's milk, at retail	31	3.2	-	-	-
Netherlands	Single	Goat's milk, at retail	35	0	35	0	0
Portugal	Batch	Goat's milk, at retail	-	-	31	0	25.8
	Batch	Sheep's milk, at retail	-	-	452	0	4.6
Total cheeses made from milk from sheep and goats (7 MSs)			458	0.2	1,031	0	2.8
Switzerland	Single	Goat's milk, at processing	28	0	-	-	-

Table continued overleaf.

Table LI8 (continued) *L. monocytogenes* in soft and semi-soft cheeses made from pasteurised milk, 2010

Country	Sampling unit	Description	Units tested presence	L. m. presence in 25 g	Units tested enumeration	> detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
Cheeses made from unspecified milk or mixed milk from cows, sheep and/or goats							
Cyprus	Single	Mixed from cows, sheep and/or goats, at processing plant	175	0	-	-	-
Greece	Single	Mixed from cows, sheep and/or goats, at retail	40	0	-	-	-
Ireland	Batch	Unspecified, at processing plant	25	0	-	-	-
Total cheeses made from mixed or unspecified milk (3 MSs)			240	0	-	-	

Note: Data are presented only for sample sizes ≥25.

1. Samples weight 1 g, 25 g.

2. Batch samples weight not known.

3. Data were not available on the number of units that tested positive for samples analysed by the enumeration method.

4. Samples weight 10 g, 25 g.

Table LI9. *L. monocytogenes* in hard cheeses made from raw or low heat-treated milk, 2010

Country	Sampling unit	Description	Units tested presence	L. m. presence in 25 g	Units tested enumeration	> detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
Cheeses made from milk from cows							
Austria	Single	At retail	53	1.9	46	0	0
Bulgaria ¹	Batch	At retail	123	0	497	0	-
Germany	Single	At processing plant	42	7.1	29	3.4	0
	Single	At retail	326	0	110	0	0
Poland	Batch	At processing plant	45	0	-	-	-
Romania	Batch	At processing plant	310	0	-	-	-
	Batch	At retail	125	0	-	-	-
Total hard cheeses made from milk from cows (5 MSs)			1,024	0.4	682	0.1	0
Switzerland	Single	At processing plant	393	0	-	-	-
Cheeses made from milk from sheep and goats							
Bulgaria	Batch	Goats' milk, at retail	-	-	36	0	0
	Batch	Sheep's milk, at retail	-	-	75	0	0
Portugal	Batch	Goats' milk, at retail	-	-	80	0	0
Romania	Batch	Sheep's milk, at processing plant	49	0	-	-	-
	Batch	Sheep's milk, at retail	254	0	-	-	-
Total hard cheeses made from milk from sheep and goats (3 MSs)			303	0	191	0	0
Switzerland	Single	Goats' milk, at processing plant	46	0	-	-	-

Note: Data are presented only for sample sizes ≥25.

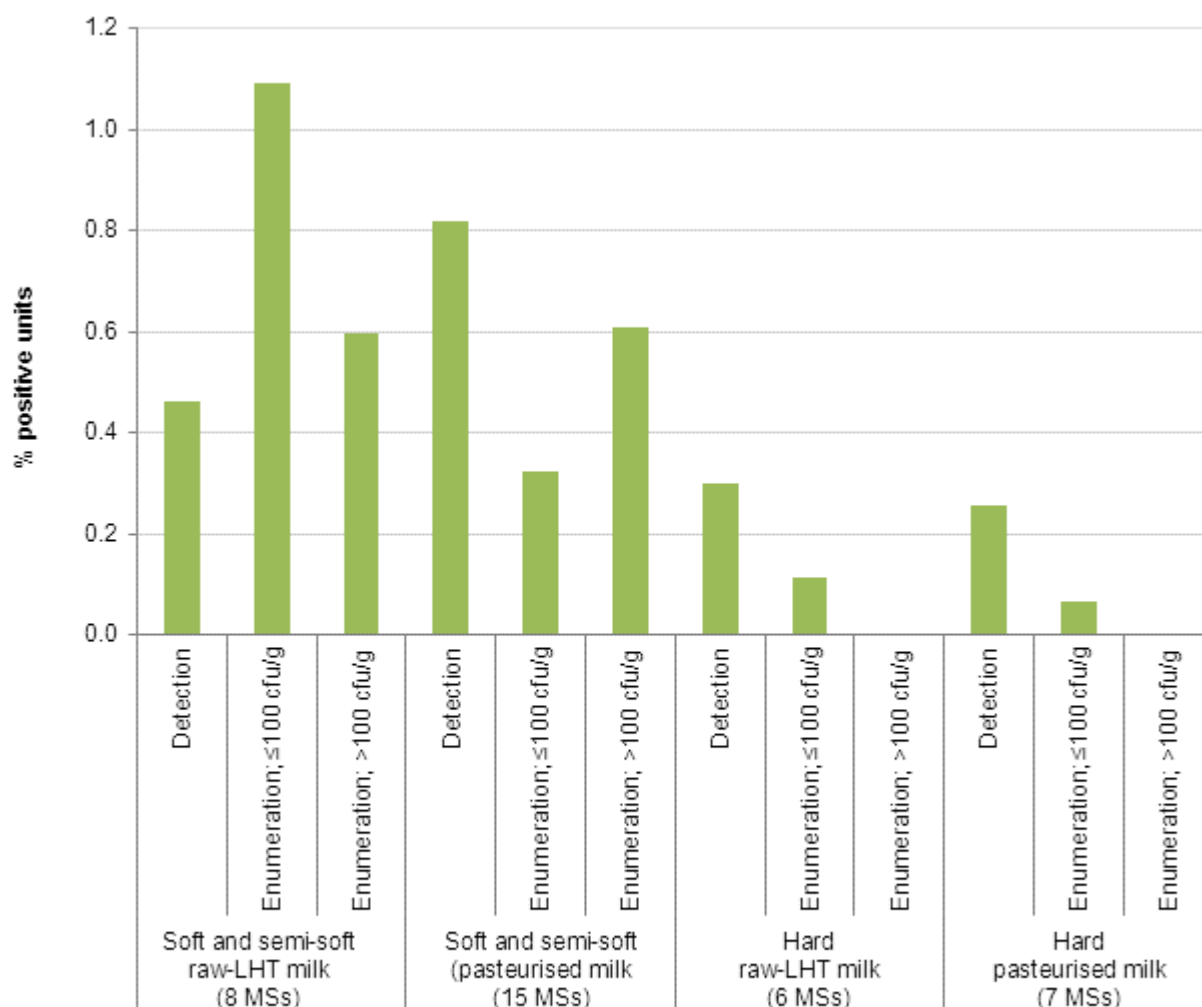
1. Data were not available on the number of units that tested positive for *L. monocytogenes* >100 cfu/g, in samples analysed by the enumeration method.

Table LI10. *L. monocytogenes* in hard cheeses made from pasteurised milk, 2010

Country	Sampling unit	Description	Units tested presence	L.m.presencein25g	Units tested enumeration	>detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
Cheeses made from milk from cows							
Bulgaria	Batch	At retail	1,289	0	3,945	0	0
Czech Republic	Batch	At processing plant	3,405	0	406	0	0
Germany	Single	At processing plant	639	0.5	252	0	0
	Single	At retail	2,444	0.7	1,106	0.5	0
Poland	Batch	At processing plant	108	0.9	-	-	-
	Single	At processing plant	61	0	-	-	-
Romania	Batch	At processing plant	83	0	-	-	-
Total hard cheeses made from milk from cows (5 MSs)			8,029	0.3	5,709	0.1	0
Switzerland	Single	At processing plant	57	0	-	-	-
Cheeses made from milk from sheep and goats							
Bulgaria	Batch	Goat's milk, at retail	-	-	38	0	0
	Batch	Sheep's milk, at retail	235	0	1,568	0	0
Germany	Single	Goat's milk, at processing plant	59	0	45	0	0
	Single	Goat's milk, at retail	98	3.1	63	0	0
	Single	Sheep's milk, at processing plant	34	0	-	-	-
	Single	Sheep's milk, at retail	64	0	33	0	0
Greece	Single	Sheep's milk, at retail	95	0	-	-	-
Total hard cheeses made from milk from sheep and goats (3 MSs)			585	0.5	1,747	0	0
Cheeses made from milk mixed from cows, sheep and goats							
Cyprus	Single	Mixed from cows, sheep and/or goats, at processing plant	770	0	-	-	-
Total hard cheeses made from mixed milk (1 MS)			770	0	-	-	-

Note: Data are presented only for sample sizes ≥ 25.

Figure LI5. Proportion of *L. monocytogenes*-positive units in soft and semi-soft cheeses, and in hard cheeses made from raw or low heat-treated milk and pasteurised milk, 2010¹



Note:

Soft and semi-soft cheeses, made from raw-LHT milk, include data from Austria, Belgium, Bulgaria, Germany, Poland, Portugal, Romania and Slovakia (Detection: 8 MSs, Enumeration: 5 MSs).

Soft and semi-soft cheeses, made from pasteurised milk, include data from Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, France, Germany, Greece, Hungary, Ireland, the Netherlands, Poland, Portugal, Romania and Slovakia. (Detection: 14 MSs, Enumeration: 9 MSs).

Hard cheeses, made from raw-LHT milk, include data from Austria, Bulgaria, Germany, Poland, Portugal and Romania (Detection: 5 MSs, Enumeration: 4 MSs).

Hard cheeses, made from pasteurised milk, include data from Bulgaria, the Czech Republic, Cyprus, Germany, Greece, Poland and Romania (Detection: 7 MSs, Enumeration: 3 MSs).

1. Data pooled for all sampling stages for all reporting MSs (single and batch). Only investigations covering 25 or more samples are included.

Fishery products

In 2010, 11 MSs reported data on findings of *L. monocytogenes* in RTE fish (Table LI11). The products tested were mainly smoked fish except in Romania (cooked fish).

The presence of *L. monocytogenes* in fish was detected in 8 out of 14 qualitative investigations. A total of 2,938 samples were tested by detection method. However, the Netherlands submitted nearly one-third of these investigations (1,001 samples) from various types of fish (trout, mackerel, salmon, herring and eel), with detection levels of 6.1 % compared with 7.0 % in 2009. High proportions of *L. monocytogenes* positive samples were reported at the processing plant by Ireland (28.3 %) and Denmark (22.2 %).

Seven out of 11 quantitative investigations reported levels of *L. monocytogenes* above 100 cfu/g. Overall, 1.3 % of 2,607 samples tested quantitatively were found to exceed the limit of 100 cfu/g, compared with 0.6 % in 2009 and 0.5 % in 2008. The proportion of samples containing the bacteria at levels above the limit of 100 cfu/g ranged from 0.1 % to 18.8 %, with the highest level in samples of smoked fish at retail in Denmark.

Five MSs reported investigations in other fishery products. *L. monocytogenes* was detected in 5.7 % of the 1092 samples taken under qualitative investigations. Estonia submitted the highest level of positive findings with 18.9 % positive samples taken at the processing plant. Three of the five MSs that tested more than 25 samples with the enumeration method also found *L. monocytogenes* above 100 cfu/g, with levels ranging between 0.6 % and 7.1 %.

L. monocytogenes was detected during qualitative testing in crustaceans, molluscan shellfish and in other fishery products. Germany reported cases of *L. monocytogenes* in 2.0 % and 3.1 % of crustaceans at retail and processing plant level, respectively, and Hungary reported cases in 1.2 % of molluscan shellfish tested qualitatively at retail.

A summary of tested units and the proportion of units tested for different types of fishery products are set out in Figure LI6. Interestingly, the highest proportion of units exceeding the 100 cfu/g limit was observed in other RTE fishery products and not in RTE fish as in previous years. For further information on reported data, refer to the level 3 tables.

Table L111. *L. monocytogenes* in ready-to-eat fish and other fishery products, 2010

Country	Sampling unit	Description	Units tested presence	L. m. presence in 25 g	Units tested enumeration	> detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
Ready-to-eat fish							
Bulgaria	Batch	Smoked, at retail	39	0	257	0	0
Czech Republic	Batch	Smoked, at processing plant	69	0	26	0	7.7
	Batch	Smoked, at retail	-	-	44	0	0
Denmark ¹	Batch	Smoked, at processing plant	45	22.2	65	0	6.2
	Single	Smoked, at retail	-	-	32	0	18.8
France	Single	Smoked, at retail	297	7.1	297	7.1	0
Germany	Single	Smoked, at processing plant	203	2.5	172	1.2	1.2
	Single	Smoked, at retail	784	4.0	635	0.5	1.9
Hungary	Single	Smoked, at retail	62	9.7	-	-	-
Ireland	Single	Smoked, at processing plant	53	28.3	35	11.4	17.1
Latvia	Single	Smoked, at processing plant	32	0	-	-	-
Netherlands	Single	Smoked, at retail	1,001	6.1	1,014	0.4	0.1
Poland	Batch ²	Smoked, at processing plant	30	0	-	-	-
	Single ³	Smoked, at processing plant	224	12.1	30	0	0
Romania	Batch	Cooked, at processing plant	48	0	-	-	-
	Batch	Cooked, at retail	51	0	-	-	-
Total Fish (11 MSs)			2,938	6.0	2,607	1.3	1.3
Other RTE fishery products							
Belgium	Batch	Cooked at processing plant	117	3.4	41	0	2.4
	Batch	Cooked at retail	-	-	148	0	0
Estonia	Single	At processing plant	37	18.9	-	-	-
France	Single	At retail	213	2.8	213	2.8	0
	Single	Raw, at retail	145	2.1	145	2.1	0
Ireland	Single	Cooked at retail	132	1.5	174	0.6	0.6
Spain	Single	-	406	9.1	260	6.9	3.5
	Single	Smoked at retail	42	7.1	42	0	7.1
Total other (5 MSs)			1,092	5.7	1,023	2.7	1.4
Crustaceans							
Germany	Single	Cooked at processing plant	32	3.1	29	0	0
Germany	Single	Cooked, at retail	352	2.0	322	0	0
Total crustaceans (1 MS)			384	2.1	351	0	0
Molluscan shellfish							
Hungary	Single	Cooked at retail	81	1.2	25	0	0
Total molluscan shellfish (1 MS)			81	1.2	25	0	0

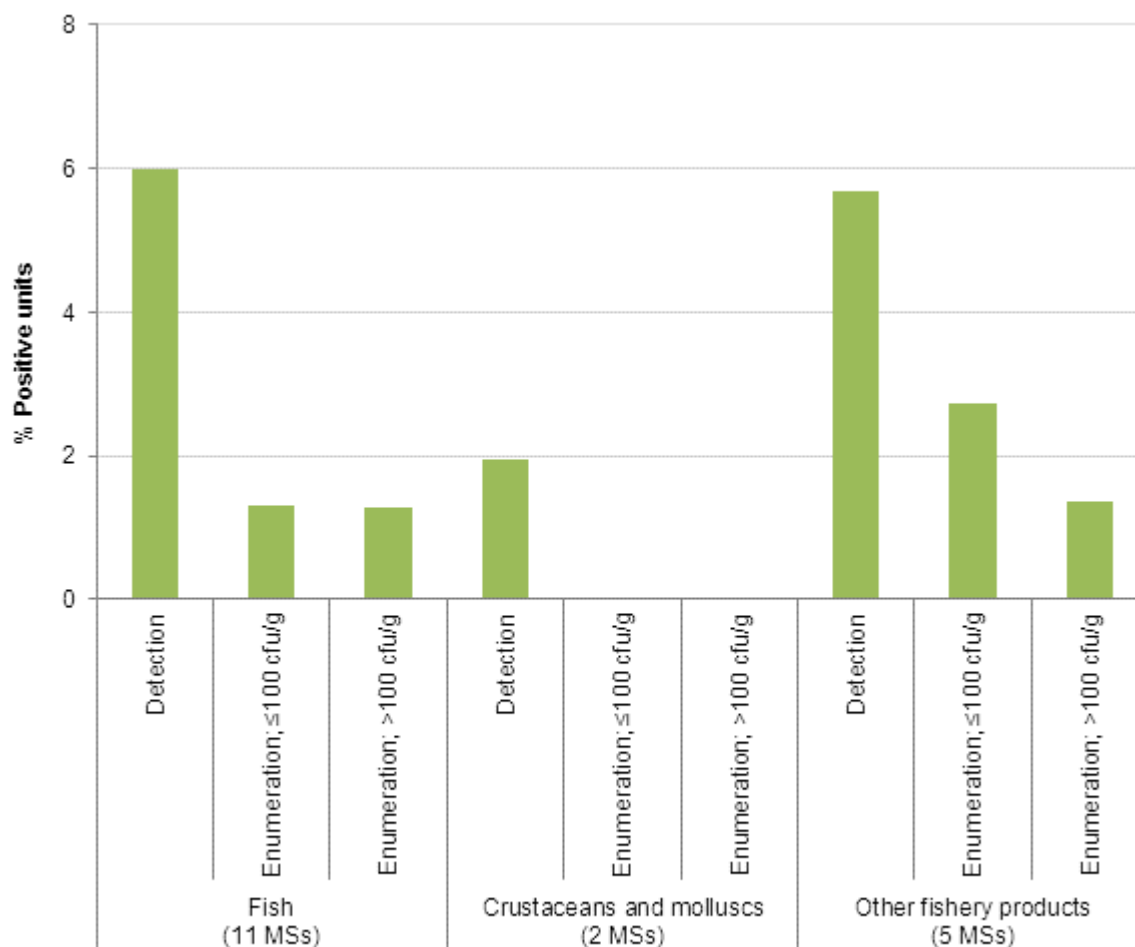
Note: Data are presented only for sample sizes ≥25.

1. Sampling weight 1 g or 25 g.

2. Sampling weight 25 g or 250 g.

3. Sampling weight 10 g or 25 g.

Figure LI6. Proportion of *L. monocytogenes*-positive units in ready-to-eat fishery products categories in the EU, 2010¹



Note: Test results obtained by detection and enumeration methods are presented separately.

Fish include data from Bulgaria, the Czech Republic, Denmark, France, Germany, Hungary, Ireland, Latvia, the Netherlands, Poland and Romania (Detection: 11 MSs, Enumeration: 7 MSs).

Crustaceans and molluscs include data from Germany and Hungary (Detection: 2 MSs, Enumeration: 2 MSs).

Other fishery products include data from Belgium, Estonia, France, Ireland and Spain (Detection: 5 MSs, Enumeration: 4 MSs).

1. Data pooled for all sampling stages for all reporting MSs (single and batch). Only investigations covering 25 or more samples are included.

Other ready-to-eat products

A substantial number of investigations were reported on *L. monocytogenes* in other RTE products, such as bakery products, sandwiches and prepared dishes, and salads. In the categories 'RTE salads' (811 samples) and 'other RTE foods' (2,892 samples) *L. monocytogenes* was reported quite commonly in most investigations using qualitative analyses (4.2 % in RTE salads and 1.2 % in other RTE foods), and findings of levels above 100 cfu/g were also reported by a few MSs (the Czech Republic, Estonia, Hungary in RTE salads and the Czech Republic in 'other RTE foods'). The highest prevalence of *L. monocytogenes* observed in qualitative investigations was in 'sweets' from the Czech Republic (16.7 %). Hungary reported the highest level of non-compliance with the criterion ≤100 cfu/g in 'confectionary products and pastes' (2.7 %) but also in RTE salad (1.9 %). *L. monocytogenes* was also detected in bakery products in qualitative investigations by two MSs (Austria and Ireland) and in vegetables in qualitative and quantitative investigations (Hungary and Spain, respectively). No positive findings were found out of 657 infant formula samples reported by five MSs. Table LI12 shows results for other RTE products in more detail.

Seventeen MSs reported data with more than 25 samples on other dairy products (excluding cheeses) such as butter, cream, ice cream, yoghurt and dairy desserts (data not shown in table). Data on butter were reported by 10 MSs submitting more than 25 samples, and it was the most monitored product. *L. monocytogenes* was detected mostly in butter (Belgium (8.7 %), Germany (0.3 %), Hungary (2.6 %) and Ireland (2.3 %)), but also in ice cream from Poland (4.7 %) and Spain (0.6 %). Belgium also reported positive samples in cream (5.0 %) and yoghurt (3.2 %) but at levels lower than 100 cfu/g. Among all dairy products specified, no samples were reported with *L. monocytogenes* above 100 cfu/g.

For further information on reported data refer to the level 3 tables.

Table LI12. *L. monocytogenes* in other ready-to-eat products, 2010

Country	Sampling unit	Description	Units tested presence	L. m. presence in 25 g	Units tested enumeration	> detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
Bakery products							
Austria	Single	Cakes, deserts, pastry	164	0.6	127	0	0
Ireland	Single	Unspecified	108	0.9	331	0	0
Portugal	Batch	Cakes	-	-	335	0	0
Slovenia	Single	Cakes	100	0	100	0	0
Total (4 MSs)			372	0.5	893	0	0
Confectionery products and pastes							
Hungary	Single	-	283	1.4	37	0	2.7
Ireland	Single	-	7	0	37	0	0
Romania	Single	-	44	0	-	-	-
Total (3 MSs)			334	1.2	74	0	1.4
Infant formula							
Belgium	Single	-	300	0	-	-	-
Czech Republic	Single	-	70	0	-	-	-
Germany	Batch	-	69	0	-	-	-
Greece	Single	-	65	0	-	-	-
Hungary	Single	-	153	0	26	0	0
Total (5 MSs)			657	0	26	0	0
Ready-to-eat salads							
Austria	Single	-	40	0	26	0	0
Czech Republic	Batch	-	185	4.3	287	0	0.7
Estonia	Single	-	28	7.1	134	0	0.7
Hungary	Single	-	336	5.7	107	1.9	1.9
Slovakia	Batch	-	95	2.1	65	0	0
Slovenia	Single	-	127	2.4	127	2.4	0
Total (6 MSs)			811	4.2	746	0.7	0.7
Sweets							
Czech Republic	Batch	-	-	-	230	0	0
	Single	-	36	16.7	36	16.7	0
Total (1 MS)			36	16.7	266	2.3	0

Table continued overleaf.

Table LI12 (continued). *L. monocytogenes* in other ready-to-eat products, 2010

Country	Sampling unit	Description	Units tested presence	L. m. presence in 25 g	Units tested enumeration	> detection but ≤100 cfu/g	L. m. >100 cfu/g
			N	% pos	N	% pos	% pos
Vegetables							
Hungary	Single	Pre-cut	141	1.4	35	0	0
Spain	Single	Pre-cut	245	0	516	1.0	0.6
Total (2 MSs)			386	0.5	551	0.9	0.5
Other RTE foods							
Austria	Single	Ices and similar frozen desserts, sushi, noodles, pasta and unspecified	61	0	26	0	0
Belgium	Batch	Foodstuffs intended for special nutritional uses	146	0	-	-	-
Czech Republic	Batch	Sandwiches and unspecified	300	1.3	250	0	0.8
	Single	Pasta/rice salad and unspecified	48	4.2	48	4.2	0
Denmark	Single	Pasta/rice salad and unspecified	112	3.6	234	0	0
Greece	Single	Sandwiches	36	0	-	-	-
Hungary	Single	Sandwiches with meat	230	1.7	53	0	0
	Single	Seeds, sprouted	74	0	-	-	-
Ireland	Single	Sandwiches and unspecified	415	1.9	1,515	0	0
	Single	Cereals and meals	86	0	155	0	0
	Single	Sauce and dressings	68	0	233	0	0
	Single	Soups	-	-	67	0	0
Slovakia	Batch	Sandwiches and unspecified	1,316	1.0	526	0.4	0
Total (8 MSs)			2,892	1.2	3,107	0.1	<0.1
Overall total (14 MSs)			5,488	1.5	5,663	0.4	0.2

Note: Data are presented only for sample sizes ≥25 after categories were merged. Only vegetables specifically recorded as RTE have been included.

3.3.3 *Listeria* in animals

In 2010, nine MSs reported qualitative data on *Listeria* in animals. *L. monocytogenes* was detected by several MSs from different animal species with the exception of pigs. The main *Listeria* species was *L. monocytogenes*, but most isolates were of unspecified species. Two additional *Listeria* species, *L. ivanovii* and *L. innocua*, were identified by two MSs (Estonia and Italy). As observed in 2009, the highest proportions of positive findings were found in decreasing order in goats, sheep and cattle. Germany reported data from all these species. The highest levels of *Listeria* detected were in cattle from Latvia (27.6 %) and sheep from Estonia (20.7 %), although both MSs only tested 29 samples each.

A summary of tested units and proportion of tested units for different animal species are set out in table LI13. For further information on reported data, refer to the level 3 tables.

Table LI13. *L. monocytogenes* and other species in animals, 2010

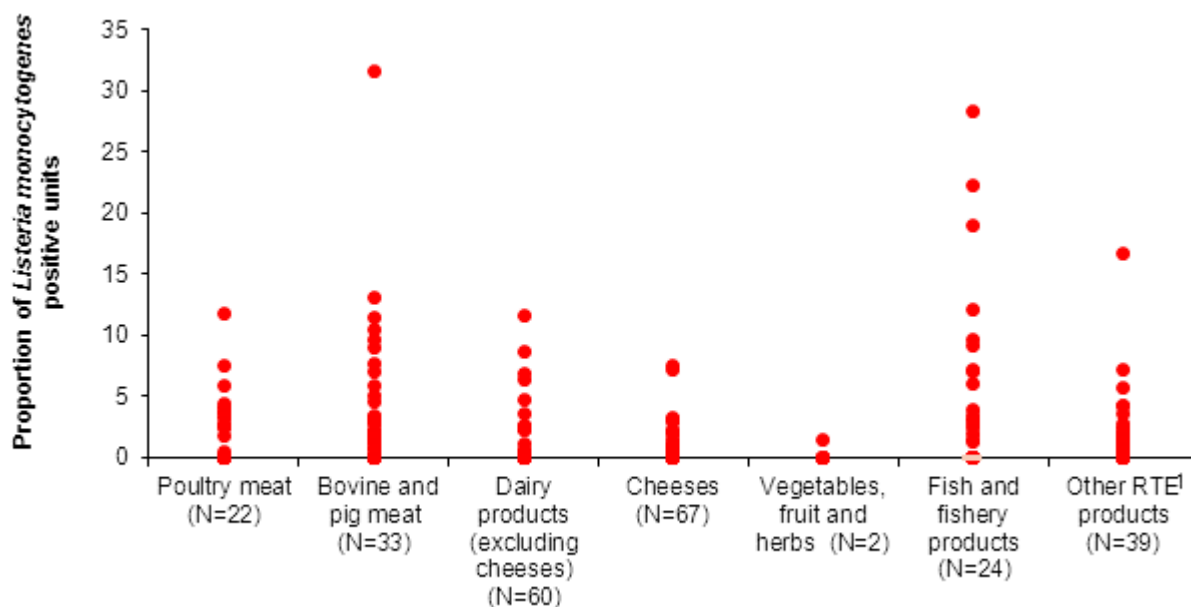
Country	Sampling unit	Description	Units tested presence	Listeria presence in 25 g	Listeria species			
			N	% pos	L. ivanovii	L. monocytogenes	L. innocua	L. unspecified
Cattle								
Estonia	Animal	-	44	6.8	1	2	0	0
Italy	Animal	-	752	6.6	0	4	5	41
Latvia	Animal	Dairy cows	29	27.6	0	8	0	0
Slovakia	Animal	At farm	428	4.2	0	14	0	4
Spain	Animal	-	783	2.2	0	0	0	17
Germany	Herd	Cattle and dairy cows	588	8.2	0	48	0	0
Total cattle (6 MSs)			2,624	5.5	1	76	5	62
Fowl (Gallus gallus)								
Bulgaria	Animal	-	55	0	0	0	0	0
Germany	Animal	-	1,329	0.5	0	6	0	0
Poland	Animal	-	28	0	0	0	0	0
Total fowl (3 MSs)			1,412	0.4	0	6	0	0
Goats								
Bulgaria	Animal	-	32	0	0	0	0	0
Germany	Herd	-	111	13.5	0	15	0	0
Total goats (2 MSs)			143	10.5	0	15	0	0
Pigs								
Bulgaria	Animal	-	45	0	0	0	0	0
Germany	Herd	-	309	0	0	0	0	0
Total pigs (2 MSs)			354	0	0	0	0	0
Sheep								
Estonia	Animal	-	29	20.7	2	4	0	0
Lithuania	Animal	-	166	0	0	0	0	0
Slovakia	Animal	At farm	129	3.1	0	3	0	1
Germany	Herd	-	280	11.4	0	32	0	0
Total sheep (4 MSs)			604	7.0	2	39	0	1
Sheep and Goats								
Italy	Animal	At farm	111	8.1	0	3	0	6
Total sheep and goats (1 MS)			111	8.1	0	3	0	6
Other animals								
Italy	Water buffalo	At farm	54	3.7	0	0	1	1
Spain	Rodent	Wild	40	7.5	0	0	0	3
Total other animals (2 MSs)			94	5.3	0	0	1	4

Note: Data are presented only for sample sizes ≥ 25 .

3.3.4 Overview of *Listeria* in food products

Figure LI7 provides an overview of the proportions of positive samples from the qualitative investigations of different food categories. The majority of samples were collected from meat products, cheeses and dairy products.

Figure LI7. Proportion of *L. monocytogenes*-positive samples by ready-to-eat food category, 2010



Note: Data are based on results obtained by detection method (qualitative). Data are presented only for sample sizes ≥ 25 .

Each point represents a MS investigation.

1. Other RTE products include bakery products, cocoa and cocoa preparations, coffee and tea, confectionery products and pastes, cereals and meals, egg products, infant formula, other food, RTE salads, sweets, sauces and dressings, sprouted seeds, soups, other products of animal origin, other processed food and other RTE foods.

Note: In bovine and pig meat, the spot shown at 31 % is from a batch of samples from Poland from raw pig meat intended to be eaten raw (official and industry sampling).

3.3.5 Discussion

Human listeriosis is a relatively rare but serious zoonotic disease, transmitted mainly via food, with high morbidity and mortality in vulnerable populations. In 2010, 1,602 confirmed human cases were reported in the EU, a 3.1 % decrease compared with 2009 (1,654). The reported case-fatality rate was high, 17.0 %, for those confirmed cases where this information was available.

Identified food-borne outbreaks due to *Listeria* are relatively rare, but in 2010 three strong evidence *Listeria* outbreaks were reported by two MSs. The identified food vehicles were fish, mixed meat and an unspecified source. A wide range of different foodstuffs can be contaminated with *L. monocytogenes*. For a healthy human population, foods that contain less than 100 cfu/g are considered to pose a negligible risk, and therefore the EU microbiological criterion for *L. monocytogenes* in RTE food is set as ≤ 100 cfu/g for RTE products on the market.

In 2010, as in previous years, MSs reported substantial numbers of food samples tested for *L. monocytogenes*. No major changes compared with previous years were detected in the proportions of RTE foods not in compliance with the EU microbiological criteria. Once again the highest proportions of units exceeding the limit of 100 cfu/g were observed in RTE fishery products and RTE meat products, at levels of 1.3 % and 0.4 %, respectively. Interestingly, though, among fishery products, the highest proportion of units exceeding the legal safety limit was observed in other RTE fishery products and not in RTE fish as in previous years. It is also worth noting that 0.7 % of the tested RTE salads contained *L. monocytogenes* at a level above the 100 cfu/g limit.

L. monocytogenes was also reported from various animal species in 2010, demonstrating the zoonotic nature of the bacterium. In addition to infected animals that may serve as a *L. monocytogenes* source, the bacteria are widely distributed in nature and can be found in water, soil and decaying vegetation.