

Fish Products Standards and Methods Manual

Status / Date
 New / 24/06/05

**APPENDIX 2
 BACTERIOLOGICAL GUIDELINES FOR FISH AND FISH PRODUCTS**

Test Organism *	Product Type **	Number of sample units	Acceptance number (c)	m/g	M/g	Criteria for action
<i>Escherichia coli</i>	Cooked or ready-to-eat products	5	1	4	40	Reject if c=2 or more, or if any one sample exceeds M
	Raw molluscan shellfish	5	1	230/100 g	330/100 g	Reject if c=2 or more or if any one sample exceeds M
	All other types	5	2	4	40	Reject if c=3 or more, or if any one sample exceeds M
Coagulase-Positive <i>Staphylococci</i>	All types	5	1	1000	10000	Reject if c=2 or more, or if any one sample exceeds M
<i>Salmonella</i>	All types	5	Absent in each 25 g sample or in pooled samples of 125 g.			Reject if <i>Salmonella</i> is detected
<i>Vibrio cholerae</i>	Cooked or ready-to-eat products	5	Absent in each 25 g sample or in pooled samples of 125 g			Reject if <i>Vibrio cholerae</i> is detected.
<i>Listeria monocytogenes</i> (See Table 1 below)						

* The analysis of all fish or fishery products shall be conducted in accordance with approved methods

** Raw shucked or in the shell oysters, clams, mussels or other molluscs and whole scallops which comply with section 6(1)(b) of the Fish Inspection Regulations are considered satisfactory when *Escherichia coli* MPN per 100 g of shellfish meat does not exceed a MPN of 230 or if one of the five samples exceeds a MPN of 230 but is less than or equal to a MPN of 330, based on a 5-tube decimal dilution test.

The pH and a_w determination should be done on 3 of 5 analytical units. None of the analysed units can fall into the range of pH and a_w supporting the growth of *L. monocytogenes*.

The designated analytical unit is taken from each sample unit.

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Processed products which require cooking and which are clearly labelled with adequate cooking instructions are excluded from testing for *L. monocytogenes*.

NOTE: m - number of bacteria per gram separating acceptable from marginally acceptable samples
 c - number of samples that may exceed this number of bacteria per gram
 M - no sample can exceed this number of bacteria per gram

TABLE I: Compliance criteria for *L. monocytogenes* (Lm) in ready-to-eat (RTE) foods

Category	Action Level for Lm	GMPs Status	Nature of Concern
1. The list presently includes ^a : soft cheese, liver pâté, unacidified jellied pork tongue ^b , hot dogs/wieners, cold smoked rainbow trout ^c and processed deli turkey meat.	Detected in 50 g ^f	n/a ^h	Health Risk 1 ^j
2. All other RTE foods supporting growth of Lm ^d with refrigerated shelf life >10 days (e.g., vacuum-packaged meats, modified atmosphere packaged sandwiches, refrigerated sauces).	Detected in 25 g ^f	n/a ^h	Health Risk 2 ^j , ^k
3. RTE foods supporting growth of Lm with refrigerated shelf life ≤10 days (e.g., packaged salads) and all RTE foods not supporting growth ^e (e.g., ice cream, hard cheese, dry salami, salted fish, breakfast and other cereal products).	≤ 100 cfu/g ^g	Adequate GMPs	Health Risk 3 ^j , ^l
	≤ 100 cfu/g ^g	Inadequate, absent or no information on GMPs ⁱ	Health Risk 2 ^j , ^k
	> 100 cfu/g ^g	n/a ^h	Health Risk 2 ^j , ^k

^a In establishing the Category 1 food list, considerations were given to RTE foods causally linked to documented outbreaks of listeriosis and/or to RTE foods that rated as "high risk" in the recent HHS/USDA risk assessment entitled "Quantitative Assessment of the Relative Risks to Public Health from Foodborne *L. monocytogenes* Among Selected Categories of Ready-to-Eat Foods (2003)".

^b At present, this product is not commonly found in the Canadian marketplace.

^c Synonymous names for rainbow trout (species *Oncorhynchus mykiss*) include: deep sea trout, steelhead trout and steelhead salmon.

^d For a definition of RTE foods supporting growth of *L. monocytogenes* see Appendix II.



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^e A refrigerated RTE food not supporting the growth of *L. monocytogenes* includes the following:

- a) pH 5.0 - 5.5 and $a_w < 0.95$
- b) pH < 5.0 regardless of a_w
- c) $a_w \leq 0.92$ regardless of pH; or
- d) frozen foods

The pH and a_w determinations should be done on at least 3 out of 5 analytical units. The food is presumed to support the growth of *L. monocytogenes*, if any one of the analytical units fall into the range of pH and a_w values which support the growth of the organism.

^f MFHPB-30 or equivalent; presence or absence by enrichment only (Pagotto *et al.*, 2001; Compendium of Analytical Methods).

^g MFLP-74 or equivalent; enumeration done by direct plating onto selective agar (Pagotto *et al.*, 2002; Compendium of Analytical Methods).

^h n/a - not applicable; independent of GMP status.

ⁱ No information on GMPs is considered as no GMPs. Burden of proof remains with the firm. Persistent presence of *Listeria spp.* in the plant environment and/or persistent low levels (≤ 100 cfu/g) of *L. monocytogenes* product contamination is an indication of inadequate GMPs.

^j For a definition of health risk categories, see Appendix II.

^k This becomes a Health Risk 1 concern if targeted or distributed to a sensitive population such as neonates, the elderly, pregnant women or immunocompromised individuals (AIDS patients, transplant recipients, cancer patients, etc.).

^l This could become a Health Risk 2 or Health Risk 1 concern if specifically produced for susceptible populations.

(The complete text of the "Policy on *Listeria monocytogenes* in Ready-to-Eat Foods" is available on the Health Canada web site at: http://www.hc-sc.gc.ca/food-aliment/mh-dm/mhe-dme/e_policy_listeria_monocytogenes_ready-to-eat_foods_toc.html)