

Listeria Testing in Foods

There is some confusion regarding the use of the following analyses

- Listeria monocytogenes presence/absence in 25g
- Listeria monocytogenes count (range of reporting from 10 cfu/g or mL to an upper limit of 3,000 cfu/g or cfu/mL or 100 cfu/g or mL to an upper limit of 30,000 cfu/g or cfu/mL)
- Listeria species presence/absence in 25g
- Listeria species count (range of reporting from 10 cfu/g or mL to an upper limit of 3,000 cfu/g or cfu/mL or 100 cfu/g or mL to an upper limit of 30,000 cfu/g or cfu/mL)

Listeria monocytogenes testing

The detection of Listeria monocytogenes in a food other than raw meat and raw poultry is required to be notified to the Health Department in many Australian States and Territories. This notification is compulsory and is to be performed by the first point of notification. If the laboratory resides in a state or territory which requires notification, they will notify the Health Department. If a business that sends food outside the State or Territory for testing it must notify the Health Department. In Queensland, under the Food Act 2006 (Sections 269 - 270), Food Regulation 2006 (Sections 5 - 6) a business has 24 hours to notify after receiving advice of the isolation of a prescribed contaminant on this [form](#).

When a food is being evaluated as per Australia New Zealand Food Standards Code – Standard 1.6.1 – Microbiological limits in food - Schedule 27 Microbiological limits in food, five samples are to be evaluated. In this document the only food listed that requires Listeria monocytogenes testing is ready-to-eat food. There are two classifications:

- Ready-to-eat food in which growth of Listeria monocytogenes can occur
This category covers most ready-to eat foods and five separate samples of 25 grams/mL are to be analysed for the presence/absence of Listeria monocytogenes.
The five samples can be composited into a 125 gram or mL sample.
A satisfactory result occurs when the composite sample or all five separate samples has Listeria monocytogenes not detected in 25 grams or mL.
An unacceptable result occurs if one of the five separate samples or the composited sample has Listeria monocytogenes detected.
- Ready-to-eat food in which growth of Listeria monocytogenes will not occur
This category of food must be validated as not being able to support the growth of Listeria monocytogenes if:
 - the food has a pH less than 4.4 regardless of water activity; or
 - the food has a water activity less than 0.92 regardless of pH; or
 - the food has a pH less than 5.0 in combination with a water activity of less than 0.94;
or
 - the food has a refrigerated shelf life no greater than 5 days; or



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- the food is frozen (including foods consumed frozen and those intended to be thawed immediately before consumption); or
- it can be validated that the level of *Listeria monocytogenes* will not increase by greater than 0.5 log cfu/g over the food's stated shelf life.

Also a ready-to-eat food that does not receive a listericidal process during manufacture is taken to be a food in which growth of *Listeria monocytogenes* will not occur if the level of *Listeria monocytogenes* will not exceed 100 cfu/g within the food's expected shelf life. Examples where this may be applicable are ready-to-eat processed finfish; and fresh cut and packaged horticultural produce.

In this case 5 subsamples are to be analysed for a *Listeria monocytogenes* count. Compositing of samples cannot be performed. An unacceptable result occurs if one of the five samples is has *Listeria monocytogenes* detected at a level greater than 100 cfu/gram or cfu/mL.

When a food is being evaluated as per Food Standards Australia New Zealand document, 'Compendium of Microbiological Criteria for Food' no sampling criteria are provided. This allows assessment of single or multiple samples. The guideline states:

- Ready-to-eat food in which growth of *Listeria monocytogenes* can occur
A satisfactory result occurs when the sample has *Listeria monocytogenes* not detected in 25 grams or mL.
A potentially hazardous result occurs when the sample has *Listeria monocytogenes* detected in 25 grams or mL.
- Ready-to-eat food in which growth of *Listeria monocytogenes* will not occur
A satisfactory result occurs when the sample has *Listeria monocytogenes* not detected in 25 grams or mL or at a level less than or equal to 100 cfu/gram or cfu/mL if a listericidal process has not been applied.
A marginal result occurs when the sample has *Listeria monocytogenes* detected at a level less than or equal to 100 cfu/gram or cfu/mL if a listericidal process has been applied.
A potentially hazardous result occurs when the sample has *Listeria monocytogenes* detected at a level greater than 100 cfu/gram or cfu/mL.

Listeria species testing

The category Listeria species includes both pathogenic species such as *L. monocytogenes* and non-pathogenic species. When Listeria species analyses result in a positive detection in either a presence/absence or a count analysis results are not notified to Health Departments. It is only results of specifically *Listeria monocytogenes* that require notification in selected Australian States and Territories.

When a food is being evaluated as per Australia New Zealand Food Standards Code – Standard 1.6.1 – Microbiological limits in food - Schedule 27 Microbiological limits in food, a non-detection in 25 grams, 25 mL, 125 grams or 125 mL or a count of less than 100 cfu/gram or less than 100 cfu/mL means that all species of the Genus *Listeria* were not detected, including *Listeria monocytogenes*. It is therefore acceptable to use this analysis to meet the various *Listeria monocytogenes* requirements.

However, if a positive detection or count is obtained it is unknown whether this is due to *Listeria monocytogenes* or another species of *Listeria*. It is important in these cases to treat the result seriously and investigate the isolation and determine remedial action.

When a food is being evaluated as per Food Standards Australia New Zealand document, 'Compendium of Microbiological Criteria for Food' no sampling criteria are provided. This allows assessment of single or multiple samples. The guideline state refers to *Listeria monocytogenes* and therefore positive detection for *Listeria* species cannot be interpreted. Negative detections of *Listeria* species can be interpreted as follows:

- Ready-to-eat food in which growth of *Listeria monocytogenes* can occur
An acceptable result occurs if the sample has *Listeria* species not detected in 25 grams or mL.
- Ready-to-eat food in which growth of *Listeria monocytogenes* will not occur
An acceptable result occurs if the sample has *Listeria* species detected at a level greater than 100 cfu/gram or cfu/mL.

State and Territory Health Departments in Australia

It is important to remember that the various State Health departments have environmental health officers who are experts in these investigations and their aim is not to close down businesses but to assist them in investigating contamination causes and assist with advice on the necessary remedial action. This is done to keep the business operating and producing safe food to ensure longevity and growth.