

Labstract – February 2018

Food screening methodology - *Listeria monocytogenes* RT-PCR

Audience:

Public health inspectors and public health unit professionals who submit food and environmental swab samples for *Listeria monocytogenes* testing.

Overview:

Effective February 5, 2018:

- Public Health Ontario (PHO) Laboratory will implement a real time polymerase chain reaction (RT-PCR) test as a screening method for the detection of *Listeria monocytogenes* in vegetable based products, seafood, dairy products, and environmental swab samples.
- *Listeria monocytogenes* culture will be used to confirm RT-PCR positive and questionable test results, to determine the viability of the organism, and to perform molecular typing on isolates for epidemiological purposes (see *Interpretation of results* below).

Background information:

Sensitivity and Specificity

The RT-PCR test (MicroSEQ *Listeria monocytogenes* Detection Kit, AOAC RI 011002) has been verified by PHO Laboratory for the detection of *Listeria monocytogenes* in vegetable based products, seafood, dairy products, and environmental swab samples. The RT-PCR methodology for these commodities is as sensitive as the routine culture method for screening. All other commodities will be analyzed using the routine culture method.

Sample collection requirements and test ordering

There are no changes to food sample collection. Food samples are to be collected in a sterile sampling bag, and submitted using the [Food Bacteriology Requisition](#) form. Refer to the [Public Health Inspector's Guide to Environmental Microbiology Laboratory Testing, 5th edition](#) for additional information. The RT-PCR test for *Listeria monocytogenes* will be performed when *Listeria monocytogenes* is documented on the [Food Bacteriology Requisition](#) as the confirmed etiological agent, and the food commodity has been verified for testing on RT-PCR.

Turn-around-time

The RT-PCR methodology for *Listeria monocytogenes* provides a shorter turn-around-time for negative results than the culture method. The RT-PCR results are available within 2 working days and culture results, when performed, are available within 4-8 days. The final report will be provided once all required analyses are completed.

Interpretation of results

For *Listeria monocytogenes*, the RT-PCR results will be reported as **Not Detected**, **Detected** or **Refer to Culture** – see table below. Confirmation of the viability of the organism will be determined by culture for RT-PCR positive (reported as ‘Detected’) or questionable (reported as ‘Refer to Culture’) test results, as well as all other commodities not verified using the RT-PCR method. Culture confirmation will be reported as **Not Detected** or **Detected**.

Screening Test (RT-PCR)	Confirmatory Test (Culture Confirmation)	Interpretation
Not Detected	Not performed	<i>Listeria monocytogenes</i> DNA was not detected.
Detected	Not Detected	<i>Listeria monocytogenes</i> DNA was detected by RT-PCR. DNA from non-viable and/or non-culturable bacteria may have been detected by RT-PCR. The sample is negative by culture for <i>Listeria monocytogenes</i> .
Detected	Detected	<i>Listeria monocytogenes</i> DNA was detected by RT-PCR. The sample is positive by culture for <i>Listeria monocytogenes</i> .
Refer to Culture	Not Detected	Unable to report the <i>Listeria monocytogenes</i> RT-PCR test result (no internal positive control detected and no target-specific signal detected). The sample is negative by culture for <i>Listeria monocytogenes</i> .
Refer to Culture	Detected	Unable to report the <i>Listeria monocytogenes</i> RT-PCR test result (no internal positive control and target-specific signal detected). The sample is positive by culture for <i>Listeria monocytogenes</i> .
Not performed*	Not Detected	The sample is negative by culture for <i>Listeria monocytogenes</i> .
Not performed*	Detected	The sample is positive by culture for <i>Listeria monocytogenes</i> .

*RT-PCR testing will not be performed on all commodities

For further information:

- Contact the PHOL Customer Service Centre at 416-235-6556 or 1-877-604-4567 (toll-free), or by email at CustomerServiceCentre@oahpp.ca
- For PHOL specimen collection information and previous Lababstracts, refer to <http://www.publichealthontario.ca/Labs>
- The current version of the PHOL General Test Requisition and other forms are available at <http://www.publichealthontario.ca/Requisitions>
- To subscribe to future Lababstracts, email lababstracts@oahpp.ca
- To register for Autofax and receive laboratory reports by fax directly from our laboratory information system as soon as they are released, contact the PHOL Customer Service Centre.