CompactDry™ LM Interpretation Guide

CompactDry™ International Certifications Approved



CompactDry LM
LM : *Listeria monocytogenes*
Certification : MicroVal

[Features]
Applicable for the detection and enumeration of *Listeria monocytogenes*.
Red colonies with a blue halo or red colonies are interpreted as presumptive positive for *L. monocytogenes*.
Listeria spp. other than Listeria monocytogenes form pale blue colonies.
Microorganisms other than Listeria spp. are inhibited or, if they grow, do not produce color.

[Incubation]
37 ± 1°C, 24 ± 2 hours
(extend incubation to 48 ± 4 hours when no colonies are observed)

Proceure

*CD: CompactDry

	Enumeration method	Detection method
Day0	Sample＋**BPW**(ISO) Inoculate 1 mL of the sample onto one CompactDry LM plate 37℃ 24±2hr	Sample 25 g＋Half Fraser broth 225 mL 30℃ 24±2hr
Day1	Enumeration of typical colonies*1 Pure Culture on TSA*	if no typical colonies are observed, additional 24±2hr Saline 1 mL+0.1 mL one **CDLM plate** Streaking *2 37℃ 24±2hr
Day2	Confirmation Test Hemolysis test Carbohydrate utilization test CAMP test (optional)	Observation of typical colonies*1 Pure culture on TSA*
Day3	Follow ISO 11290 or other appropriate standard methods.	Confirmation test if no typical colonies are observed, additional 24±2hr
Day4		Confirmation test

* TSA: Tryptic Soy Agar (SCD Agar) [Product Code: 05516] or equivalent

Enumeration of typical colonies*1

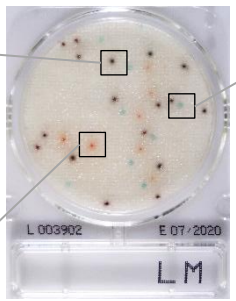
Listeria monocytogenes



Red (with a blue halo)

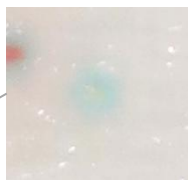


Red



Enumeration of typical colonies

Listeria spp. other than *L. monocytogenes*

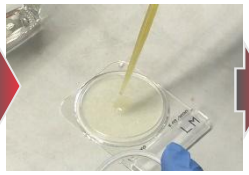


Light blue

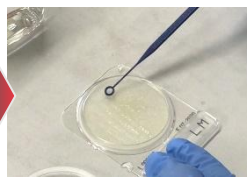
Streaking *2



Drop 1mL of sterile saline

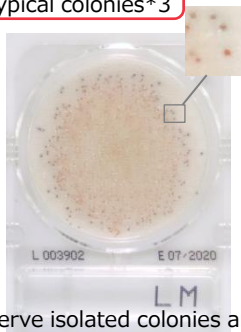


Inoculate 0.1 mL of the pre-enrichment culture.



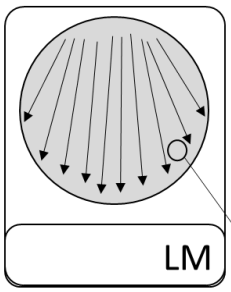
Streaking

Enumeration of typical colonies*3



Observe isolated colonies and determine the presence or absence of *L. monocytogenes*

Incubation 37℃ 24±2hr



Using a large loop, gently streak the surface by sliding the loop from top to bottom

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Growth Test Results of Various Stored Strains

37℃、48hours

Test strain	Growth		Organism, colony color
Listeria monocytogenes Total 12 strains	Growth	12 strains	*Listeria monocytogenes* ATCC 13932 Red (with a blue halo) *Listeria monocytogenes* ATCC 15313 Red (with a blue halo) *Listeria monocytogenes* JCM7671 Red (with a blue halo)
	No growth	0 strains	–
Listeria spp. other than *L. monocytogenes* Total 5 strains	Growth	5 strains	*Listeria ivanovii* JCM 7681 Red *Listeria ivanovii* ATCC49954 Red (with a blue halo) *Listeria innocua* ATCC33090 Blue *Listeria grayi* ATCC19120 Blue *Listeria welshimeri* ATCC35897 Blue
	No growth	0 strains	–
Other Bacteria / Yeasts Total 78 strains	Growth	6 strains	*Bacillus cereus* ATCC19637 Light red *Enterococcus faecalis* ATCC29212 Light blue *Candida albicans* ATCC10231 blue
	No growth	72 strains	–

Precautions for Interpretation

- *Listeria monocytogenes* colonies may appear not only red, but also orange, reddish-brown, or reddish-purple.
- *Listeria ivanovii* may also form red colonies with a blue halo or red colonies, similar to *L, monocytogenes* (see Identification Method →).
- Some *Bacillus* spp. may form relatively large, flat orange colonies.



Listeria monocytogenes



Listeria monocytogenes

In addition to red colonies with a blue halo, red, orange, reddish-brown, and reddish-purple colonies should also be interpreted as *Listeria* monocytogenes.

Differentiation Method

According to ISO 11290-2

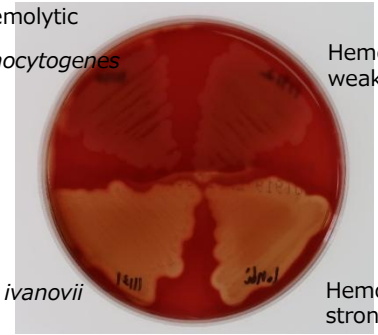
	β-Hemolytic	Acid production from carbohydrates	
		L-Rhamnose	D-Xylose
L. monocytogenes	+(weak)	+	–
L. ivanovii	+(strong)	–	+

Excluded



Bacillus cereus ATCC 19637

Relatively large, flat colonies should be excluded as Bacillus spp.



Swab test



For environmental monitoring of *Listeria*, Easy Wiping Kit (BPW) Ⅱ Gamma sterilization is recommended for swab sampling.

Easy Wiping Kit (BPW) Ⅱ Gamma sterilization
Internal solution: Buffered peptone water (BPW ISO)
Packaging: 1mL x 200 Storage: Room temperature, 2 years



Acid production from carbohydrates

Products and Related Products

Application	Product name	Code	Packaging
Detection and enumeration of *Listeria monocytogenes*	CompactDry™ LM	06531	40 plates
		06532	240 plates
Preparation of Sample Suspensions for enumeration test	Accudia™ Buffered Peptone Water (BPW ISO)	05121	300 g
	EasyMedium Buffered Peptone Water (BPW ISO)	56220	450 mLx110
Sample collection for swab testing	Easy Wiping Kit (BPW) Ⅱ Gamma sterilization	06544	1 mLx200

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Shimadzu Diagnostics Corporation Technical product information

Comparison of Procedures

Detection method

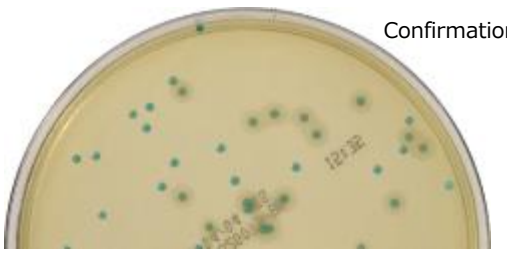
	ISO 11290-1:2017 method	Method using CompactDry LM
Day0	Sample 25 g + Half Fraser broth 225 mL 30℃ 25±1hr	Sample 25 g + Half Fraser broth 225 mL 30℃ 25±1hr
Day1	0.1 mL + 10 mL Frase broth Secondary enrichment Streak onto ALOA Agar + PALCAM Agar or Oxford Agar 37°C, 24 to 48 ± 2 hr	0.1 mL culture + 1 mL saline Streak onto one CDLM 37℃±1℃ 24±2hr
Day2	Streak onto ALOA Agar + PALCAM Agar or Oxford Agar 37°C, 24 to 48 ± 2 hr Observation of typical colonies Pure culture on TSA 37℃ 18-24hr if no typical colonies are observed, additional 24±2hr	Observation of typical colonies Pure culture on TSA 37℃ 18-24hr if no typical colonies are observed, additional 24±2hr
Day3	Observation of typical colonies Pure culture on TSA 37℃ 18-24hr if no typical colonies are observed, additional 24±2hr	Confirmation test
Day4	Confirmation test	Confirmation test
Day5	Confirmation test	

Q: Why is only one CompactDry LM plate required, whereas the ISO11290-1 method uses a primary selective medium (ALOA Agar) and a secondary selective medium (PALCAM Agar or Oxford Agar)?

A : In the MicroVal validation study, one CompactDry LM plate was evaluated against the combined results obtained from both the primary selective medium and the secondary selective medium. The study demonstrated equivalent qualitative detection performance for *L. monocytogenes*. Therefore, the use of a single CompactDry LM plate, as specified in the certified method, is considered appropriate.

Enumeration method

	ISO 11290-2 method	Method using CompactDry LM
Day0	Sample+BPW(ISO)etc. Inoculate 1 mL onto three ALOA Agar plates (0.3 mL spread on each plate) 37℃ 24±2hr	Sample+BPW(ISO) Inoculate 1 mL onto one CDLM 37±1℃ 24±2hr
Day1	Enumeration of typical colonies Pure culture on TSA* 37℃ 18-24hr if no typical colonies are observed, additional 24±2hr	Enumeration of typical colonies Pure culture on TSA* 37℃ 18-24hr *Blood Agar or Standard Nutrient Agar may also be used. if no typical colonies are observed, additional 24±2hr
Day2	Confirmation test Hemolysis test Carbohydrate utilization test CAMP test (Optional)	Confirmation test Hemolysis test Carbohydrate utilization test CAMP test (Optional)
Day3	Confirmation test	Confirmation test
Day4		
Day5		



ALOA medium: Blue colonies with a halo



CD LM :
Red colonies with a blue halo, or red colonies

*For detailed test procedures, refer to ISO 11290-1:2017, ISO 11290-2:2017, or equivalent methods.

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CD is MicroVal-certified for environmental samples as well as food samples

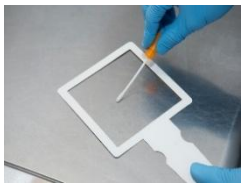
〔Certification Scope〕

・meat and poultry products (Ready-to-eat/Ready-to-Reheat) ・dairy products (raw and heat treated)
・fresh produce and fruit ・seafood & fishery products ・multicomponent foods
・environmental samples(swab samples from surfaces of food production equipment, floors, and walls, as well as water and food residues)

Swab test



Easy Wiping Kit (BPW) Ⅱ(06544) is used



Remove the cap from the wiping kit and swab the test area
Use the 100 cm² Wiping Frame [06598]



Return the swab to the kit and securely tighten the cap. Mix thoroughly by inversion to prepare the sample suspension.

Enumeration /Detection method

Enumeration method



Remove the tip cap and inoculate 1 mL of the sample suspension onto a CompactDry LM plate
Dilute the sample suspension as necessary

Incubate at 37°C for 24 ± 2 hours and interpret the result

As described in the streaking procedure (*2) on p.1, add 1 mL of sterile saline and 0.1 mL of the pre-enrichment culture and streak the plate

Incubate for enrichment at 30 ± 1°C for 25 ± 1 hours

Detection method

Add the entire 1 mL sample to 9 mL of Half Fraser broth

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