

# Listeria Fraser Broth Base ISO

Cat. 1182

Enrichment medium for the detection and enumeration of *Listeria* in food and environmental samples

## Practical information

Applications	Categories
Selective enrichment	Listeria

Industry: Clinical / Food

Regulations: ISO 11133 / ISO 11290



## Principles and uses

Listeria Fraser Broth Base is used for the rapid detection of *Listeria* from food and environmental samples. The antibiotics are already included in the formula so it is only necessary to add the Ferric Ammonium Citrate Supplement (Cat. 6050).

*Listeria* spp. may be present in small numbers and are often accompanied by considerably larger numbers of other microorganisms, therefore selective enrichment is necessary. Listeria Fraser broth is used in this selective enrichment of *Listeria monocytogenes* and other *Listeria* species in all food types, including milk and dairy products, and environmental samples. This formula is described according to the ISO 11290.

Enzymatic digest of casein, enzymatic digest of animal tissues and meat extract provide nitrogen, vitamins, minerals and amino acids essential for growth. Yeast extract is the source of vitamins, particularly of the B-group. Potassium phosphates act as a buffer system. All *Listeria* species hydrolyze esculin, which reacts with ferric ions producing a blackening of the medium. The addition of ferric ammonium citrate improves the growth of *Listeria monocytogenes*. Lithium chloride inhibits the growth of enterococci that can hydrolyze the esculin.

## Formula in g/L

Enzymatic digest of casein	5	Acriflavine	0,025
Esculin	1	Beef extract	5
Nalidixic acid	0,02	Potassium dihydrogenphosphate	1,35
Sodium chloride	20	Yeast extract	5
Enzymatic digest of animal tissues	5	Lithium chloride	3
Disodium hydrogen phosphate dihydrate	12		

## Preparation

Suspend 28,7 grams of the medium in 500 ml. of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Sterilize in autoclave at 121 °C for 15 minutes. Cool to 45-50 °C and aseptically add one vial of Ferric Ammonium Citrate Supplement (Cat. 6050). Homogenize gently and dispense into sterile containers.

## Instructions for use

For clinical diagnosis, the type of sample is amniotic fluid.

- Inoculate the tubes of Fraser Broth.
- Incubate at 37 °C for 24±2 hours under aerobic conditions.

For other uses not covered by the CE marking:

Detection of *Listeria monocytogenes* and *Listeria* spp. according to ISO 11290:

- Primary enrichment: Weigh 25 g (or 25 ml) of the sample and add 225 ml of Listeria Half Fraser Broth (Cat. 1183). Homogenize and incubate at 30 °C for 25±1 hours.

- Secondary enrichment: Inoculate 0,1 ml of incubated Listeria Half Fraser Broth culture (regardless of its colour) into 10 ml of Listeria Fraser Broth Base (Cat. 1182) with the Ferric Ammonium Citrate Supplement (Cat. 6050) added. Incubate at 37 °C for 24±2 hours in aerobic conditions.

- Plating out and identification: From the primary enrichment culture inoculate the surface of the Agar Listeria according to Ottaviani and Agosti (Cat. 1345) and the other selective medium at the choice of the laboratory, to obtain well-separated colonies.

From the secondary enrichment culture, repeat the procedure, inoculate the surface of the Agar Listeria according to Ottaviani and Agosti and the other selective medium.

For Agar Listeria according to Ottaviani and Agosti incubate for a total of 48±2 h.

- Confirmation: Select the presumptive colonies and carry out the confirmation tests for *L. monocytogenes* or *Listeria* spp.

## Quality control

Solubility	Appearance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25°C)
w/o rests	Fine powder	Beige	Amber	7,2±0,2

## Microbiological test

According ISO 11133:

Incubation conditions: Productivity and Selectivity (30±1 °C / 24±2 h).

Inoculation conditions: Target microorganisms (<100 CFU) / Non-target microorganism (>1000 CFU) / Selectivity (10<sup>4</sup>-10<sup>6</sup> CFU).

Microorganisms	Specification	Characteristic reaction
<i>Escherichia coli</i> ATCC 25922	Total inhibition on TSA	
<i>Enterococcus faecalis</i> ATCC 29212	<100 colonies on TSA	
<i>Listeria monocytogenes</i> ATCC 13932 + <i>Escherichia coli</i> ATCC 25922 + <i>Enterococcus faecalis</i> ATCC 29212	>10 colonies on Agar Listeria according to Ottaviani and Agosti	Blue green colonies with opaque halo
<i>Listeria monocytogenes</i> ATCC 35152 + <i>Escherichia coli</i> ATCC 25922 + <i>Enterococcus faecalis</i> ATCC 29212	>10 colonies on Agar Listeria according to Ottaviani and Agosti	Blue green colonies with opaque halo

## Storage

Temp. Min.: 2 °C

Temp. Max.: 25 °C

## Bibliography

Fraser. J.A and Sperber W.H (1988) McClain D. and Lee W.H (1988)

ISO 11290 Horizontal method for the detection and enumeration of *Listeria monocytogenes*.