

Listeria Half-Fraser Broth Base ISO

Cat. 1183

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 Half-Fraser Broth Base is a modification of Listeria Fraser Broth Base (Cat. 1182) in which the nalidixic acid and acriflavine concentrations have been reduced to 10 mg/L and 12.5 mg/L respectively. The antibiotics are already included in the formula so it is only necessary to add the Ferric Ammonium Citrate Supplement.

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 Half-Fraser broth is used in this selective enrichment and enumeration of *Listeria* monocytogenes and other *Listeria* species in all food types, including milk and dairy products, and environmental samples. This formula adheres to 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	Esculin	1
Beef extract	5	Nalidixic acid	0,01
Potassium dihydrogen phosphate	1,35	Sodium chloride	20
Yeast extract	5	Enzymatic digest of animal tissues	5
Lithium chloride	3	Disodium hydrogen phosphate dihydrate	12
Acriflavine hydrochloride	0,0125		

Typical formula g/L * Adjusted and/or supplemented as required to meet performance criteria.

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 1/2 Fraser Broth.
- Incubate at 30 °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* ½ Fraser Broth Base (Cat. 1183) with the Ferroamonic Citrate Supplement (Cat. 6050) added. Homogenize and incubate at 30 °C for 25±1 hours.

- Secondary enrichment: Inoculate 0,1 ml of the incubated previous medium (regardless of its color) in 10 ml of Fraser Broth (Cat. 1182). Incubate at 37 °C for 24±2 hours under aerobic conditions.

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

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

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

- Confirmation: Select the presumptive colonies and carry out confirmatory 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 to ISO 11133:

Incubation conditions: Productivity and Selectivity (30±1 °C / 25±1 h)

Inoculation conditions: Target microorganisms (<100 CFU) / Non-target microorganism (>1000 CFU) / Selectivity (10⁴-10⁶ 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 <i>Listeria</i> 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 <i>Listeria</i> 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*.