Fraser Broth (NCM0050)

Intended Use
Fraser Broth is used with ferric ammonium citrate for the selective enrichment of *Listeria* species and is not intended for use in the diagnosis of disease or other conditions in humans.

Description
Fraser Broth is a secondary enrichment broth for the isolation of *Listeria* spp. formulated according to ISO 11290. The selective components acriflavine and nalidixic acid are blended into the base powder and the ferric ammonium citrate (X211 or 7984) is added to the tempered broth after sterilization.

Typical Formulation

Peptone	15.0 g/L
Yeast Extract	5.0 g/L
Esculin	1.0 g/L
Disodium Hydrogen Phosphate	9.6 g/L*
Potassium Dihydrogen Phosphate	1.35 g/L
Sodium Chloride	20.0 g/L
Lithium Chloride	3.0 g/L
Acriflavine	0.025 g/L
Nalidixic Acid	0.02 g/L

pH: 7.2 ± 0.2 at 25°C
*equivalent to Disodium Hydrogen Phosphate Dihydrate 12.0 g/l
Formula may be adjusted and/or supplemented as required to meet performance specifications.
Ferric Ammonium Citrate Supplement (X211) or Fraser broth base supplement (7984) may be used

Precaution
Refer to SDS

Preparation
1. Dissolve 55 grams of the medium in 1 liter of purified water.
2. Mix thoroughly
3. Autoclave at 121°C for 15 minutes.
4. Cool to 45-50°C.
5. Aseptically add 2 vials of Ferric Ammonium Citrate Supplement (X211) or 2 vials of Fraser Broth Base Supplement (7984) and mix thoroughly before dispensing.

Test Procedure
To isolate *Listeria monocytogene*s and other Listeria spp., refer to appropriate references

Quality Control Specifications
Dehydrated Appearance: Powder is homogeneous, free flowing and beige.

Prepared Appearance: Prepared medium is yellow, clear, with none to slight precipitate.

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Expected Cultural Response:
(Fertility and Selectivity Testing)
The medium was prepared according to label directions and 10mL volumes inoculated with the organisms listed below. Cultures were incubated aerobically at 37 ± 1˚C and examined for growth at 22 to 26 hours. Following incubation, 10µL of *E. faecalis* and *E. coli* cultures were subcultured onto Tryptone Soy Agar (NCM0020) at 37 ± 1ºC and examined for growth at 22 to 26 hours

MICROORGANISM	APPROX. INOCULUM (CFU)	Expected Results		
		Growth in FB	Reaction in FB	Recovery on TSA
Enterococcus faecalis ATCC® 19433	> 10^3	Partial to Complete Inhibition	---	< 100 cfu
Enterococcus faecalis ATCC® 29212	> 10^3	Partial to Complete Inhibition	---	< 100 cfu
Escherichia coli ATCC® 25922	> 10^3	Complete Inhibition	---	< 10 cfu
Escherichia coli ATCC® 8739	> 10^3	Complete Inhibition	---	< 10 cfu
Listeria innocua ATCC® 33090	> 10^3	Growth	Blackening	NA
Listeria monocytogenes ATCC® 35152	10-100	Growth	Blackening	NA
Listeria monocytogenes ATCC® 13932	10-100	Growth	Blackening	NA
Staphylococcus aureus ATCC® 25923	> 10^4	Inhibited	---	NA

(Productivity Testing)
The medium was prepared according to label directions and 10mL volumes inoculated as a mixed culture using the organisms listed below. Cultures were incubated aerobically at 37 ± 1˚C, examined for growth at 22 to 26 hours and subcultured onto Harlequin™ Listeria Chromogenic Agar according to Ottaviani and Agosti (NCM1004) at 37 ± 1ºC and plates examined for growth at 22-48 hours

Mixed Culture Testing	ATCC	APPROX. INOCULUM (CFU)	EXPECTED RESULTS	
			Recovery on Listeria Agar*	Reaction on Listeria Agar*
Enterococcus faecalis +	29212	> 10^3	Inhibited	---
Escherichia coli +	25922	>10^3	Inhibited	---
Listeria monocytogenes	35152	10-100	>10 cfu	Blue colonies with opaque halo
Enterococcus faecalis +	19433	> 10^3	Inhibited	---
Escherichia coli +	8739	>10^3	Inhibited	---
Listeria monocytogenes	13932	10-100	>10 cfu	Blue colonies with opaque halo

The organism listed are minimum that should be used for quality control testing.

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Results
For further identification and confirmation of *Listeria* species, consult appropriate references. Rapid slide and macroscopic tube tests can be used for definitive serological identification.

Expiration
Refer to expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure
Due to nutritional variation, some strains may grow poorly or fail to grow on this medium.

Storage
Store dehydrated culture media at 2 – 30°C away from direct sunlight. Once opened and recapped, place the container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

References
1. Fraser J.A. and Sperber W.H. (1988). Rapid detection of Listeria spp in food and environmental samples by esculin hydrolysis. *J. Food Protect*. 51, No.10, 762-765.
2. McClain D. and Lee W.H. (1989). FSIS method for isolation of L. monocytogenes from processed meat and poultry products. Lab.Comm.No.57, Revised May 24, (1989). US Dept of Agric.FSIS, Microbiol. Div.
3. ISO 11290-1:2017 (Microbiology of food and animal feeding stuffs - Horizontal method for the detection and enumeration of *Listeria monocytogenes* and of Listeria spp. -- Part 1: Detection method

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