Fraser Secondary Enrichment Broth Base, Granulated® GM1083

Intended Use:

Recommended for the isolation, cultivation and enrichment of *Listeria monocytogenes* from food and environmental specimens.

Composition**

Ingredients	g / L
Proteose peptone	5.000
Tryptone	5.000
Yeast extract	5.000
HM peptone B #	5.000
Sodium chloride	20.000
Lithium chloride	3.000
Disodium hydrogen phosphate	12.000
Potassium dihydrogen phosphate	1.350
Esculin	1.000
Ferric ammonium citrate	0.500
Final pH (at 25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters
Equivalent to Beef extract

Directions

Suspend 57.85 grams in 990 ml purified / distilled water. Heat if necessary to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45 - 50°C and aseptically add rehydrated contents of 1 vial of Fraser Enrichment Supplement (FD065) or one vial of Fraser Selective Supplement (FD125). Mix thoroughly and dispense as desired.

Principle And Interpretation

Fraser Secondary Enrichment Broth is a modification of United States Department of Agriculture-Food Safety Inspection Service (USDA-FSIS) UVM Secondary Enrichment Broth. It is based on the formulation of Fraser and Sperber (1) and found to be remarkably accurate in detecting *Listeria* species in food and environmental samples (2). Fraser Secondary Enrichment Broth is recommended by APHA (3). Fraser Secondary Enrichment Broth Base is formulated so as to provide optimum conditions for the growth of *Listeria.*

Proteose peptone, Tryptone, yeast extract, and HM peptone B make the media highly nutritive by providing essential nutrients including carbonaceous and nitrogenous substances. Phosphates maintain the buffering capacity of the medium.

All *Listeria* species exhibit ß-glucosidase activity which is evident by the blackening of the media. *Listeria* species hydrolyze esculin (substituted glucoside) to glucose and esculetin. The latter combines with ferric ions of ferric ammonium citrate, resulting in the formation of 6-7 dihydroxycoumarin, a black brown complex. Ferric ammonium citrate also enhances the growth of *L. monocytogenes* (4). The high salt tolerance (of sodium chloride) of *Listeria* is used as means to inhibit the growth of Enterococci. Lithium chloride is also used to inhibit Enterococci, which also possess the ability to hydrolyze esculin. Growth of accompanying bacteria is largely inhibited by the addition of Nalidixic acid and Acriflavin hydrochloride (FD).

Type of specimen

Food samples and Environmental samples

Specimen Collection and Handling:

For food samples follow appropriate techniques for handling specimens as per established guidelines (3). For environmental samples, follow appropriate techniques for sample collection and processing as per guidelines (5,6). After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions :

Read the label before opening the container. Wear protective gloves/protective clothing/ eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations :

1. Further biochemical and serological tests must be carried out for further identification.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance

Cream to yellow coloured granular medium

Colour and Clarity of prepared medium

Basal medium :Yellow coloured, clear solution with slight precipitate. After addition of FD065 or FD125: Fluorescent yellow coloured, clear solution with slight precipitate forms in tubes.

Reaction

Reaction of 5.78% w/v aqueous solution at 25°C. pH : 7.2±0.2

pH

7.00-7.40

Cultural Response

Cultural characteristics observed with added Fraser enrichment supplement (FD065) or Fraser Selective Supplement (FD125) after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth	Esculin hydrolysis
Escherichia coli ATCC 25922 (00013*)	>=10^4	inhibited	
Enterococcus faecalis ATCC 29212 (00087*)	>=10^4	inhibited	
Listeria monocytogenes ATCC 19111 (00020*)	50-100	good-luxuriant	positive reaction, blackening of medium
Listeria monocytogenes ATCC 19112	50-100	good-luxuriant	positive reaction, blackening of medium
Listeria monocytogenes ATCC 19117	50-100	good-luxuriant	positive reaction, blackening of medium
Listeria monocytogenes ATCC 19118	50-100	good-luxuriant	positive reaction, blackening of medium
Staphylococcus aureus subsp. *aureus* ATCC 25923 (00034*)	>=10^4	inhibited	

Key : *Corresponding WDCM numbers.

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (5,6).

Reference

1.Fraser J.A. and Sperber W.H., 1988, Food Protect., 51(10):762.
2.McClain D. and Lee W.H., 1988, J. Assoc. Off. Anal. Chem., 71(3):660.
3.Salfinger Y., and Tortorello M.L. Fifth (Ed.), 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.
4.Cowart R. E. and Foster B. G., 1985, J. Infect. Dis.; 151:172.
5.Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
6.Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

Revision :02/2025