

TM 2094 – FRASER BROTH W/ SUPPLEMENTS

INTENDED USE

For the selective enrichment of *Listeria* species from food samples.

PRODUCT SUMMARY AND EXPLANATION

Listeria species are widely distributed and are isolated from soil, decaying vegetable matter, sewage, water, animal feed, fresh and frozen poultry, meats, raw milk, cheese and asymptomatic human and animal carriers. Only *Listeria monocytogenes* from the genus *Listeria*; causes infections in humans. *L. monocytogenes* primarily causes meningitis, encephalitis or septicemia in humans. In pregnant women, *Listeria monocytogenes* often causes an influenza like bacteremic illness that, if untreated, may lead to amnionitis and infection of the fetus, resulting in abortion, still birth or premature birth. Contaminated foods are the primary vehicles of transmission. Fraser Broth w/ supplement is based on the formulation by Fraser and Sperber. It is used for selective enrichment of *Listeria* species from foods.

COMPOSITION

Ingredients	Gms / Ltr
Yeast extract	5.000
Sodium chloride	20.000
Disodium hydrogen phosphate	9.600
Peptone	5.000
Tryptone	5.000
Yeast extract	5.000
Beef extract	5.000
Lithium chloride	3.000
Potassium dihydrogen phosphate	1.350
Esculin	1.000
Ferric ammonium citrate	0.500
Nalidixic acid	0.010
Acriflavin	0.0125

PRINCIPLE

This medium contains peptone, beef extract, yeast extract and tryptone which provide essential nutrients like carbon and nitrogenous compounds including vitamins, amino acids and trace ingredients. Phosphates buffer the medium while sodium chloride maintains osmotic equilibrium. Nalidixic acid and Acriflavin inhibits the growth of gram-negative and gram-positive organisms respectively except *Listeria* species. *Listeria* species hydrolyze esculin to glucose and esculetin. Then it combines with ferric ions of ferric ammonium citrate, resulting in the formation of 6-7 dihydroxycoumarin, Ferric

ammonium citrate also promotes the growth of *L. monocytogenes*. High salt tolerance due to 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.

INSTRUCTION FOR USE

- Dissolve 55.47 grams of dehydrated medium in 1000 ml distilled water.
- Heat to boiling to dissolve the medium completely. DO NOT AUTOCLAVE.
- Cool to 45-50°C.
- Mix well and dispense as desired in sterile tubes or flasks.

QUALITY CONTROL SPECIFICATIONS

Appearance of Powder : Cream to yellow homogeneous free flowing powder

Appearance of prepared medium : Fluorescent yellow colored clear solution.

pH (at 25°C) : 7.2 ± 0.2

INTERPRETATION

Cultural characteristics observed after incubation.

Microorganism	ATCC	Inoculum (CFU/ml)	Growth	Esculin Hydrolysis	Incubation Temperature	Incubation Period
<i>Enterococcus faecalis</i>	29212	50-100	None-poor	-	35-37°C	24-48 Hours
<i>Listeria monocytogenes</i>	19112	50-100	Good-luxuriant	Positive, reaction, blackening of medium	35-37°C	24-48 Hours
<i>Staphylococcus aureus subsp. aureus</i>	25923	50-100	None-poor	-	35-37°C	24-48 Hours
<i>Escherichia coli</i>	25922	≥10 ⁴	Inhibited	-	35-37°C	24-48 Hours
<i>Listeria monocytogenes subsp. serovar 1</i>	19111	50-100	Good-luxuriant	Positive reaction, blackening of medium	35-37°C	24-48 Hours
<i>Listeria monocytogenes</i>	19118	50-100	Good-luxuriant	Positive reaction, blackening of medium	35-37°C	24-48 Hours

PACKAGING:

In pack size of 500 gm bottles.

STORAGE

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers between 25-30°C and protect from direct sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.










Product Deterioration: Do not use if they show evidence of microbial contamination, discoloration, drying or any other signs of deterioration.

DISPOSAL

After use, prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

REFERENCES

1. Cowart R. E. and Foster B. G., 1985, J. Infect. Dis.; 151:172.
2. Fraser, J., and W. Sperber. 1988. Rapid detection of Listeria in food and environmental samples by esculin hydrolysis. Journal of Food Protection 51: 762-765.
3. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition
4. 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

 GMP Good Manufacturing Practices Certified	 Best Before	 QTY. Quantity	 REF Catalogue Number	 Manufacturer
 Temperature Unit	 LOT/ B. NO. Lot / Batch Number	 Consults Instructions for Use	 QR Code	

NOTE: Please consult the Material Safety Data Sheet for information regarding hazards and safe handling Practices.

***For Lab Use Only**
Revision: 08 Nov., 2019