Eq`rdq Rdbnmc`qx Dmqhbg l dms Aqnsg A`rd

M1083

Hmsdmcdc Trd9

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

Composition**

Ingredients	Gms / Litre
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.

Warning : Lithium chloride is harmful. Avoid bodily contact and inhalation of vapours. On contact with skin, wash with plenty of water immediately.

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, casein enzymic hydrolysate, yeast extract, and beef extract 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 beta-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).

Sxod ne rodbh l dm

Food samples and environmental samples

Quality Control

Appearance
Cream to yellow homogeneous free flowing powder

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	>=10^4	inhibited	
Enterococcus faecalis ATCC 29212	>=10^4	inhibited	
Listeria monocytogenes ATCC 19111	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 ATCC 25923	>=10^4	inhibited	

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.Downes F. P. and Ito K., (Eds.), 2001, Compendium of Methods for the Microbiological Examination of Foods, 4th Ed., APHA, Washington, D.C.
4.Cowart R. E. and Foster B. G., 1985, J. Infect. Dis.; 151:172.

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