Fraser Broth w/Supplement, Granulated

GM2002

It is recommended for the selective enrichment of *Listeria* species from foods.

Composition**

Ingredients	Gms / Litre
Peptone	5.000
Casein enzymic hydrolysate	5.000
Yeast extract	5.000
Meat extract B #	5.000
Sodium chloride	20.000
Lithium chloride	3.000
Disodium phosphate	9.600
Monopotassium phosphate	1.350
Esculin	1.000
Nalidixic acid	0.010
Acriflavin	0.0125
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 55.47 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. DO NOT AUTOCLAVE. Mix well and dispense in sterile tubes or flasks 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

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 (1). Only *Listeria monocytogenes* from the genus *Listeria*; causes infections in humans. *L.monocytogenes* primarily causes meningitis, encephalitis or septicemia in humans (2, 3). In pregnant women, *Listeria monocytogenes* often causes an influenza like bacteremic illness that, if untreated, may lead to ammionitis and infection of the fetus, resulting in abortion, still birth or premature birth. Contaminated foods are the primary vehicles of transmission (4).

Fraser Broth w/ supplement,Granulated is based on the formulation by Fraser and Sperber (9). It is recommended for selective enrichment of *Listeria* species from foods.

This medium contains peptone, casein enzymic hydrolysate, yeast extract and meat extract B 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 (5,6,7) except *Listeria* species (5,6,7). *Listeria* species hydrolyze esculin 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* (8). 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.

Quality Control

Appearance

Cream to yellow homogeneous granular powder

Colour and Clarity of prepared medium
Fluorescent yellow coloured clear solution.

Reaction
Reaction of 5.55% w/v aqueous solution at 25°C. pH : 7.2±0.2

pH
7.00-7.40

Cultural response
Cultural characteristics observed after an incubation at 35 - 37°C for 24-48 hours.

Cultural Response

Organism	Inoculum (CFU)	Growth	Esculin Hydrolysis
Cultural response			
Escherichia coli ATCC 25922	>=10^3	inhibited	
Enterococcus faecalis ATCC 29212	50-100	none-poor	
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	50-100	none-poor	

Storage and Shelf Life
Store dehydrated powder in tightly closed container and prepared medium at 2-8°C. Use before expiry date on the label.

Reference
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