Listeria Identification Broth Base (PALCAM), Granulated GM1090

Listeria Identification Broth Base (PALCAM), granulated with added supplement is recommended for selective enrichment and identification of *Listeria* species.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	23.000
Yeast extract	5.000
Lithium chloride	10.000
Esculin	0.800
Ammonium ferric citrate	0.500
D-Mannitol	5.000
Soya lecithin	1.000
Polysorbate 80	2.000
Phenol red	0.080
Final pH (at 25°C)	7.4±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 23.69 grams in 500 ml 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 sterile reconstituted contents of 1 vial of Listeria Selective Supplement (PALCAM) (FD061). Mix well before dispensing into sterile test 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

The heightened awareness and concern surrounding the presence of *Listeria monocytogenes* in food has resulted in the development of many media for its isolation (3). Listeria Identification Broth also known as Polymyxin-Acriflavin-Lithium chloride-Ceftazidime-Aesculin-Mannitol (PALCAM) Broth is prepared as described by van Netten et al (1) for selective enrichment of *Listeria* species.

Peptic digest of animal tissue and yeast extract provide growth nutrients. High amount of lithium chloride and added selective supplement (FD061) (2) containing polymyxin B, acriflavin hydrochloride and ceftazidime inhibit accompanying microflora and allow the growth of *Listeria* species. Soya lecithin has similar properties as that of egg yolk; hence additional supplementation of egg yolk emulsion is not required.

After incubation at 30°C for 24-48 hours, approximately 0.1 ml of the broth is streaked on Listeria selective agars such as Listeria Identification Agar (PALCAM) (GM1064/M1064) or Listeria Oxford Agar (GM1145/M1145). The combination of mannitol and phenol red helps the detection of mannitol fermentation while esculin and ammonium ferric citrate together help in detection of esculin hydrolysis.

L. monocytogenes hydrolyses esculin resulting in the formation of black coloured medium.

L. monocytogenes does not ferment mannitol, therfore its differentiation from contaminants such as Enterococci and Staphylococci can be made as the later will ferment mannitol and produce a colour change from red to yellow. Incubation under microaerophilic conditions serves to inhibit strict aerobes such as *Bacillus* and *Pseudomonas* species. Techniques for the isolation of *L. monocytogenes* will depend on the material under test. It is usual for the test sample to be first inoculated into an enrichment broth to allow multiplication before isolation and identification. Depending on the types of samples used, the appropriate method and selective enrichment broth should be used.

Quality Control

Appearance
Light yellow to pink coloured granular medium

Colour and Clarity of prepared medium
Red coloured, clear solution without any precipitate

Reaction
Reaction of 4.74% w/v aqueous solution at 25°C. pH : 7.4±0.2

pH
7.20-7.60

Cultural Response
Cultural characteristics observed with added Listeria Selective Supplement (PALCAM) (FD061), after an incubation at 30°C for 24-48 hours.

Cultural Response

Organism	Inoculum (CFU)	Growth	Colour of medium
Enterococcus faecalis ATCC 29212	>=10^3	inhibited	
Listeria monocytogenes ATCC 19118	50-100	good	black
Micrococcus luteus ATCC 10240	>=10^3	inhibited	
Staphylococcus aureus ATCC 25923	>=10^3	inhibited	

Storage and Shelf Life

Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label.

Reference

1. Van Netten P. et al, 1989, Int. J. Food Microbiol., 8:299.
2. Lund A. M., 1991, J. Food Prot., 54:602.
3. Farber J. M. and Peterkin P., 1991, Microbiol. Rev. 55: 476-511

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