

## Technical Information

### Listeria Identification Broth Base (PALCAM)

#### Product Code: DM 2090

**Application:** - Listeria Identification Broth Base (PALCAM) with added supplement is used 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

#### Principle & 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 supply growth nutrients. High amount of lithium chloride and added selective supplement (MS 2061) (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) (DM 2064) or *Listeria* Oxford Agar (DM 2145). The combination of mannitol and phenol red helps to 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, therefore 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 enhance 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.

## Methodology

Suspend 23.69 grams of dehydrated powder media in 500 ml distilled water. Mix thoroughly & 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) (MS 2061). Shake well before dispensing.

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

## Quality Control

### Appearance

Light yellow to pink homogeneous free flowing powder

### Colour and Clarity

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 Range

7.20-7.60

### Cultural Response

DM 2090: Cultural characteristics observed with added Listeria Selective Supplement (PALCAM) (MS 2061), after an incubation at 30°C for 24-48 hours.

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

## Storage and Shelf Life

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

**Prepared Media:** 2-8° in sealable plastic bags for 2-5 days.

## Further Reading

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

## Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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