

PALCAM agar base

Code 84625.0500

Also known as

Polymyxin-Acriflavin-Lithium chloride-Ceftazidime-Aesculin-Mannitol (PALCAM) Agar

Intended use

Selective and differential medium for the detection and isolation of *Listeria monocytogenes*.

Formula * - Composition in g/L

Peptones.....	23.00
Yeast extract.....	3.00
Starch	1.00
Sodium chloride.....	5.00
D-Glucose	0.50
D-Mannitol	10.00
Aesculin	0.80
Ammonium iron(III) citrate	0.50
Phenol red	0.08
Lithium chloride	15.00
Agar.....	12.00

* Adjusted and/or supplemented as required to meet performance criteria

Final pH 7.2 ± 0.2 at 25 °C.

Instructions for preparation

Dissolve 35.4 g in 500 ml of purified water by bringing to the boil with frequent shaking. Sterilise in the autoclave at 121 °C for 15 minutes and cool to 45-50 °C. Dissolve the contents of one vial of PALCAM supplement (art. N° 84724.0001) with 5 ml of sterile purified water and add to the cooled medium. Mix well and pour into sterile Petri dishes.

Principle of the method and general information

PALCAM agar base is based on the formulation described by Van Netten et al. for the selective isolation and enumeration of *Listeria monocytogenes* in foodstuffs. The peptones favour the excellent growth of *Listeria*, glucose and starch are energy sources; esculin is hydrolysed by *Listeria* strains to glucose and esculetin, the latter compound forming a black complex with ferric ions. The competitive flora is inhibited by lithium chloride and by the antimicrobials of the selective supplement: ceftazidime, polymyxin B, acriflavine. The fermentation of mannitol by contaminating bacteria that may grow causes phenol red to turn yellow.

Instruction for use

For laboratory use only.

- Streak a loopful of the suitable enrichment broth, incubated according to the directions onto the surface of PALCAM agar plate to obtain well isolated colonies.
- Incubate at 37°C for 48 hours
- Observe after 24 and 48 hours for the presence of typical *Listeria* colonies: after 24 hours *Listeria* spp. grow with small greyish green or olive green colonies, sometimes with black centres, but always with black halo. After 48 hours *Listeria* spp. appear in the form of green colonies, about 1.5 – 2 mm in diameter with a central depression and surrounded by a black halo.
- From each plate select at least 3 colonies and streak onto Tryptic soy yeast extract agar. With this growth carry out the identification tests.

Limitations

- It is recommended that biochemical and/or serological tests be performed on colonies from pure culture for complete identification.
- Poor growth and a weak esculin reaction may occur after 40-48 hours incubation for some enterococci strains.

Quality Control

Physical characteristics:

Appearance of powder	Light pink, fine, homogeneous, hygroscopic powder
Appearance of prepared medium	Dark red, slightly opalescent
pH (25°C)	7.2 +/- 0.2

Microbiological characteristics:

Test strains	Incubation T° / t / At.	Inoculation method	Growth characteristics
<i>L. monocytogenes</i> ATCC 19111	37 °C / 48h / AE	QT / 80-120 CFU	Black colonies with black halo
<i>L. monocytogenes</i> ATCC 13932	37 °C / 48h / AE	QT / 80-120 CFU	Black colonies with black halo
<i>L. innocua</i> ATCC 33090	37 °C / 48h / AE	EC	Black colonies with black halo
<i>L. ivanovii</i> ATCC 19119	37 °C / 48h / AE	EC	Black colonies with black halo
<i>E. coli</i> ATCC 25922	37 °C / 48h / AE	MM / $\geq 10^4$ CFU	Total inhibition
<i>E. faecalis</i> ATCC 19433	37 °C / 48h / AE	MM / $\geq 10^4$ CFU	Total inhibition
<i>C. albicans</i> ATCC 10231	37 °C / 48h / AE	MM / $\geq 10^4$ CFU	Total inhibition

Notes

Medium supplementation: PALCAM supplement (REF 84724.0001)

PR (Productivity Ratio): CFU obtained on the culture medium under test / CFU obtained on the Reference Batch

Incubation atmosphere AE: aerobic incubation

Inoculation method QT : quantitative surface plating method; EC: semi-quantitative, ecometric technique; MM: modified Miles-Misra surface drop method

Microbiological characteristics tested in accordance to ISO/TS 11133-2

ATCC is a registered trade mark of American Type Culture Collection

References

- ISO 11290-1/2 Microbiology of food and animal feeding stuffs-Horizontal method for the detection and enumeration of *Listeria monocytogenes*; Part 1 Detection method - Part 2: enumeration method
- Van Netten, P. et al. 1989. Int. J. Food Microbiol. 8, 299-316

Storage conditions

For laboratory use only. Keep tightly closed, away from bright light, in a cool dry place (+10 °C to 30 °C and <60% RH).

Ordering information

Dehydrated medium:

84625.0500 PALCAM agar base (ISO) Bottle of 500 g

Supplement:

84724.0001 PALCAM supplement 10 vials, each for 500 ml of complete medium