# PALCAM Broth (NCM0049)

## Intended Use
PALCAM Broth is used with supplements for the selective enrichment of *Listeria spp*. from foods and environmental samples in a laboratory setting. PALCAM Broth is not intended for use in the diagnosis of disease or other conditions in humans.

## Description
Listeria monocytogenes, described in 1926 by Murray, Webb, and Swann, is a widespread problem in food industries. Evidence from outbreaks of listeriosis indicate the principle route of transmission is via the consumption of foodstuffs contaminated with *Listeria monocytogenes*. Implicated vehicles of transmission include turkey frankfurters, coleslaw, pasteurized milk, Mexican style cheese, and pate.

PALCAM Broth is based on the formulation of Van Netten et al. while he was investigating the isolation of *Listeria spp*. from food samples. PALCAM Broth has been used for testing *Listeria* from raw milk.

## Typical Formulation

| | |
|---|---|
| Peptone | 23.0 g/L |
| Yeast Extract | 5.0 g/L |
| Lithium Chloride | 10.0 g/L |
| Esculin | 0.8 g/L |
| Ferric Ammonium Citrate | 0.5 g/L |
| Mannitol | 5.0 g/L |
| Phenol Red | 0.08 g/L |
| Lecithin | 1.0 g/L |
| Polysorbate 80 | 2.0 g/L |

Final pH: 7.4 ± 0.2 at 25°C
Formula may be adjusted and/or supplemented as required to meet performance specifications.

## Supplement
PALCAM Supplement #7987 – 1 vial per 500mL of PALCAM Broth

## Precaution
Refer to SDS

## Preparation
1. Dissolve 47 g of the medium in one liter of purified water.
2. Mix thoroughly.
3. Autoclave at 121°C for 15 minutes. Cool to 45 - 50° C.
4. Aseptically add 10 mL of PALCAM Supplement (# 7987).
5. Dispense into sterile tubes.

## Test Procedure
To isolate Listeria from food and environmental samples using PALCAM Broth, the following procedure is recommended by the Canadian Health Protection Branch and FDA/BAM Method.
1. On PALCAM Agar Base, Listeria spp form grey-green colonies with a black halo. Some Enterococcus and Staphylococcus strains form grey colonies with a brown-green halo or yellow colonies with a yellow halo.
2. Confirm the identity of each presumptive *Listeria spp*. through biochemical and / or serological testing.

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## Quality Control Specifications

**Dehydrated Appearance:** Powder is homogeneous, soft lumpy, and beige to tan with a faint pink to orange tint.

**Prepared Appearance:** Prepared medium contains a slight haze to haze and red.

**Expected Cultural Response:** Cultural response in PALCAM Broth prepared with PALCAM Supplement incubated aerobically at 30 ± 2°C and examined for growth after 24 - 48 hours.

| Microorganism | Approx. Inoculum (CFU) | Expected Results |
|---|---|---|
| *Escherichia coli* ATCC® 25922 | > $10^3$ | Inhibited |
| *Enterococcus faecalis* ATCC® 29212 | > $10^3$ | Marked to complete inhibition |
| *Staphylococcus aureus* ATCC® 25923 | > $10^3$ | Marked to complete inhibition |
| *Listeria monocytogenes* ATCC® 13932 | 10 - 100 | Brown-black |
| *Listeria monocytogenes* ATCC® 19119 | 10 - 100 | Brown-black |
| *Listeria monocytogenes* ATCC® 15313 | 10 - 100 | Brown-black |
| *Listeria innocua* ATCC® 33090 | ~$10^3$ | Brown-black |
| *Listeria ivanovii* ATCC® 19119 | ~$10^3$ | Brown-black |
| *Listeria seeligeri* ATCC® 35967 | ~$10^3$ | Brown-black |

The organisms listed are the minimum that should be used for quality control testing.

## Results

Refer to appropriate references for test results.

## Expiration

Refer to expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if appearance has changed from the original color. Expiry applies to medium in its intact container.

## Limitation of the Procedure

Due to nutritional variation, some strains may grow poorly or fail to grow on this medium.

## Storage

Store dehydrated culture media at 2 – 30°C away from direct sunlight. Once opened and recapped, place the container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

## References


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3. Bremer, P. J., and C. M. Osborne. 1995. Thermal-death times of Listeria monocytogenes in green shell mussels prepared for hot smoking. J. Food Prot. 58:604-608.
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7. Canadian Food Directorate. 2001. The Compendium of analytical methods. Polyscience Publications, Laval, Quebec, Canada.
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