

Lysine Decarboxylase Broth (i23367)

Lysine Decarboxylase Broth is used for differentiating microorganisms based on lysine decarboxylation.

Industry: Water / Food

Principles & Uses

Lysine Decarboxylase Broth, originally devised by Falkow and recommended by APHA and other standard methods, is instrumental in detecting and distinguishing *Enterobacteria* through lysine decarboxylation. The medium comprises peptone and yeast extract, providing essential nutrients and acting as a source of vitamins, especially of the B-group. Dextrose serves as the fermentable carbohydrate, while bromocresol purple functions as the pH indicator. Lysine is included to detect the specific enzyme's production and plays a crucial role as a substrate for lysine decarboxylase.

Following inoculation, dextrose fermentation causes acid production, turning the indicator yellow. This acidic condition stimulates decarboxylase activity. Bacteria capable of decarboxylating L-Lysine to cadaverine are identified by a purple-red color, elevating the medium's pH. A yellow color after 24 hours indicates a negative result.

Falkow further developed this medium for the identification and differentiation of *Salmonella* and *Shigella*. The medium is especially suited for studying decarboxylase reactions in *Enterobacteriaceae*, excluding *Klebsiella* and *Enterobacter*. It's notable that some organisms may require up to 4 days for the lysine decarboxylase reaction.

Composition (gr/L)

Peptone 5 g, Yeast Extract 3 g, Dextrose 1 g, L-Lysine 5 g, Bromocresol Purple 0.02 g.

Final pH at 25°C 6.8 ± 0.2

Preparation from dehydrated Powder

Suspend 14 g of the powder in one liter of purified water. Mix thoroughly. Autoclave at 121°C for 15 minutes.

Quality Control

Dehydrated Appearance: Light beige, free-flowing, homogeneous.

Prepared Appearance: Purple, clear.

Reaction of 1.4% Solution at 25°C: pH 6.8 ± 0.2

Cultural Response

tubes, overlaying with sterile mineral oil were inoculated. Cultural response observed after 18 - 48 hours of incubation at 35 ± 2°C.

| Organism (ATCC*) | Recovery | Reaction |
|---------------------------------|----------|----------|
| <i>Escherichia coli</i> (25922) | Good | + |
| <i>Proteus vulgaris</i> (13315) | Good | - |

*ATCC is a registered trade mark of the American Type Culture Collection.



Proteus vulgaris (left). *Escherichia coli* (middle). Prepared Culture Media (right).

Storage

Keep the container at 15-30 °C. Store prepared medium at 2-8 °C.