

Lysine Iron Agar, LIA (i23368)

For the simultaneous detection of lysine decarboxylase (LDC) and hydrogen sulfide (H₂S) production for the identification of *Enterobacteriaceae*, especially for *Salmonella* and *Arizona*.

Industry: Food

Principles & Uses

Lysine Iron Agar, designed by Edwards and Fife, is a sensitive medium for detecting lactose-fermenting and non-fermenting *Salmonella* species, preventing oversight of strains common in food poisoning outbreaks. Peptone and yeast extract offer essential nutrients, while glucose serves as a fermentable carbohydrate. Ferric ammonium citrate and sodium thiosulphate act as indicators for H₂S formation, causing blackening of the medium in the presence of hydrogen sulfide. Lysine decarboxylation triggers an alkaline reaction (purple color) or an acid butt (yellow color). This medium aids discrimination between *coliform* organisms, like *Escherichia* and *Shigella*.

It's especially useful for rapidly differentiating *Salmonella arizonae* from *Citrobacter* and *Proteus* spp. In Lysine Iron Agar, LDC-positive microorganisms decarboxylate lysine, changing the indicator to violet, while glucose-fermenting LDC-negative microorganisms turn the medium yellow. *Proteus-Providencia* group species, with the exception of a few strains like *Proteus morganii*, deaminate lysine, producing reddish-brown compounds under the influence of oxygen.

Composition (gr/L)

peptone from meat 5 g, Yeast extract 3 g, Glucose 1 g, L-Lysine 10 g, Sodium Thiosulphate 0.04 g, Ferric Ammonium Citrate 0.5 g, Bromocresol Purple 0.02 g, Agar 12.5 g.

Final pH at 25°C 6.7 ± 0.2

Preparation from dehydrated Powder

Suspend 32 g of the powder in 1 L of purified water. Dispense in tubes and sterilize by autoclaving at 121°C for 15 minutes. Cool tubes in a slanted position to form slants with deep butts.

Quality Control

Dehydrated Appearance: Beige to greenish beige, free flowing, homogeneous.

Prepared Appearance: Purple, slightly opalescent.

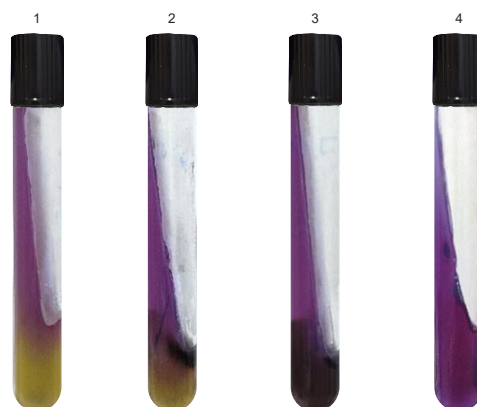
Reaction of 3.2% Solution at 25°C: pH 6.7 ± 0.2

Cultural Response

Inoculate with fresh cultures and incubate at 35 ± 2°C for 18 - 48 hours.

Organism (ATCC*)	Growth	Butt	Slant
<i>Escherichia coli</i> (25922)	Good/ Very Good	Yellow	Violet
<i>Salmonella typhimurium</i> (14028)	Good/ Very Good	Violet and Black	Violet
<i>Citrobacter freundii</i> (8090)	Good/ Very Good	Yellow and Black	Violet
<i>Proteus mirabilis</i> (29906)	Good/ Very Good	Yellow and Black	Reddish-Brown

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



1: *Escherichia coli*. 2: *Citrobacter freundii*. 3: *Salmonella typhimurium*. 4: Prepared Culture Media.

Storage

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