LYSINE IRON AGAR

CAT Nº: 1044

For studies of the decarboxylation of lysine for the rapid differentiation of *Salmonella arizonae*

FORMULA IN g/l

L-Lysine	10.00	Ferric Ammonium Citrate	0.50
Gelatin Peptone	5.00	Sodium Thiosulfate	0.04
Yeast Extract	3.00	Bromocresol Purple	0.02
Dextrose	1.00	Bacteriological Agar	13.50

Final pH 6.7 ± 0.2 at25ºC

PREPARATION

Suspend 33 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Dispense into tubes and sterilize in autoclave at 121ºC for 12 minutes. Allow to cool in a slanted position. The prepared medium should be stored at 8-15°C. The color is purple.

The dehydrated medium should be homogeneous, free-flowing and beige in color. If there are any physical changes, discard the medium.

USES

LYSINE IRON AGAR is used for the rapid differentiation of *Enterobacteriaceae*, especially *Salmonella arizonae*, on the basis of lysine decarboxylation and deamination, and H_2S production. This medium is very useful for the rapid differentiation of *Salmonella arizonae* from *Citrobacter* and *Proteus* spp.

The strains that rapidly ferment the lactose produce a large quantity of acid, changing the original purple color of the medium to yellow. Some strains of *S. arizonae* can rapidly ferment lactose and form colonies that are colorless or pink to red on media such as MacConkey Agar (Cat. 1052) or Desoxycholate Agar (Cat. 1020). Lysine Iron Agar is especially formulated to avoid this confusion.

Gelatin peptone and Yeast extract provide the nutrient sources for growth: nitrogen, vitamins, minerals and amino acids. One reaction is the degradation of the fermentable carbohydrate Dextrose, with the production of acid, manifested in the color change from red to yellow. Sodium thiosulfate provides Sulphur and Ferric ammonium citrate is the indicator for H_2S production under alkaline conditions. The bacteria that decarboxylate the L-Lysine to cadaverine, such as *Salmonella arizonae,* are identified by the presence of a purple-red color due to the elevation of the pH. Bromocresol purple is the pH indicator. Bacteriological agar is the solidifying agent.

Cultures rapidly producing lysine decarboxylase cause an alkaline reaction (purple colour) throughout the medium. Those organisms that do not decarboxylate lysine produce an alkaline slant and an acid butt (yellow colour). *Proteus* and *Providencia* produce a characteristic orange-red color on the slant while the butt is yellow from the production of acid from the deamination of lysine.

Inoculate and incubate at 35 ± 2ºC for 18 – 48 hours.

MICROBIOLOGICAL TEST

The following results were obtained in the performance of the medium from type cultures after incubation at a temperature of 35 ± 2°C and observed after 18 – 48 hours.

Microorganisms	Growth	Slant Lysine deamination	Butt Lysine decarboxylation	H_2S Production
Salmonella arizonae ATCC 13314	Good	Red-purple	Red-purple	+
Salmonella typhimurium ATCC 14028	Good	Red-purple	Red-purple	+
Escherichia coli ATCC 25922	Good	Red-purple	Red-purple	-
Citrobacter freundii ATCC 8090	Good	Red-purple	Yellow	+
Proteus mirabilis ATCC 25933	Good	Deep red	Yellow	-
Shigella flexneri ATCC 12022	Good	Red-purple	Yellow	-

BIBLIOGRAPHY

Edwards and Fite Applied Microbiol. 9:478, 1961. Edwards and Ewing. Identification of Enterobacteriaceae. Burgess Publishing Co. Minneapolis, Minn., 1962.

STORAGE

Once opened keep powdered medium closed to avoid hydration.