LYSINE IRON AGAR TM 171

INTENDED USE
For differentiation of enteric organisms especially Salmonella species based on their ability to decarboxylate or deaminate lysine and production of H_2S

COMPOSITION

Ingredients	Gms/Ltr.
Agar	15.000
L-Lysine	10.000
Peptone	5.000
Yeast extract	3.000
Dextrose (Glucose)	1.000
Ferric ammonium citrate	0.500
Sodium thiosulphate	0.040
Bromocresol purple	0.020

PRODUCT SUMMARY AND EXPLANATION
Lysine Iron Agar was developed by Edwards and Fife to detect lactose fermenting Salmonellae. Salmonellae are known to decarboxylate lysine rapidly and produce large amounts of hydrogen sulphide. This medium is a sensitive medium for the detection of lactose fermenting and lactose non-fermenting *Salmonella* species. Many strains of this group ferment lactose very rapidly thus suppressing H_2S production on Triple Sugar Iron Agar. HENNER et al. (1982) reported that Lysine Iron Agar is superior to other comparable culture media for differentiating between *Proteus* and *Salmonella*.

PRINCIPLE
Peptone and yeast extract provide essential nutrients. Dextrose is a source of fermentable carbohydrate. Ferric ammonium citrate and sodium thiosulphate are indicators of H_2S formation. Lysine is decarboxylated by Lysine Decarboxylase positive microorganisms to give the amine cadaverine which causes the pH indicator bromocresol purple to change its colour to violet. As decarboxylation only occurs in an acidic medium (below pH 6.0), the culture medium must first be acidified by glucose fermentation. This medium can therefore only be used for the differentiation of glucose-fermenting microorganisms.
LDC-negative, glucose-fermenting microorganisms cause the entire culture medium to turn yellow. On prolonged incubation alkalinisation of the culture medium surface may occur, resulting in a

colour change to violet. H_2S production causes a blackening of the culture medium due to the formation of iron sulfide.
Species of the Proteus-Providencia group, with the exception of a few *Proteus morganii* strains, deaminate lysine to give a-ketocarboxylic acid; this compound reacts with the iron salt near the surface of the medium, under the influence of oxygen, to form reddish-brown compounds
The medium is stabbed to the base of the butt and streaked on slant.

INSTRUCTION FOR USE

1. Dissolve 34.56 grams in 1000 ml distilled water.
2. Gently heat to boiling to dissolve the medium completely.
3. Dispense into tubes and sterilize by autoclaving at 15 psi (121°C) for 15 minutes.
4. Cool the tubes in slanted position to form slants with deep butts.

QUALITY CONTROL SPECIFICATIONS

Appearance of Powder: Light yellow to greyish yellow colour, homogeneous free flowing powder

Appearance of prepared medium: Purple colour, clear to slightly opalescent gel

pH (at 25°C): 6.7 ± 0.2

INTERPRETATION:

Culture characteristics observed incubation period of 18 - 24 hours at 35 ± 2°C.

Microorganisms	ATCC	Inoculum (CFU)	Growth	Slant (Lysine deamination)	Butt (Lysine decarboxylation)	H_2S
Proteus mirabilis	25923	50-100	Luxuriant	Deep red, Lysine deamination	Acidic, Yellow	Positive
Escherichia coli	25922	50-100	Luxuriant	Alkaline, Purple	Alkaline, Purple	Positive
Salmonella enteritidis	13076	50-100	Luxuriant	Alkaline, Purple	Alkaline, Purple	Positive
Salmonella typhimurium	14028	50-100	Luxuriant	Alkaline, Purple	Alkaline, Purple	Positive
Shigella flexneri	12022	50-100	Luxuriant	Alkaline, Purple	Acidic, Yellow	Positive

STORAGE & STABILITY

Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers below 25°C and protect from direct Sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.

REFERENCES

1. F.R. Edward, M.A. Fife, Lysine iron agar in the detection of Arizona cultures, AppI. Microbiol., 9, 478 (1961)
2. Moeller V., 1954, Acta Pathol. Microbiol. Scand., 355:25
3. W.H. Ewing, B.R. Davis, F.R.Edward, The decarboxylase reactions of Enterobacteriaceae and their value in taxonomy, Pub. Hlth. Labs., 18, 77 (1960)
4. S. Henner, W. Kleih, M. Schneiderhan, H. Burow, H. Friess, C. Grandjean, Reihenuntersuchungen an Rind- und Schweinefleisch auf Salmonellen, Fleischwirtsch., 62, 322 (1982)

NOTE: Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.