LYSINE IRON AGAR

LIAG-0HI-500

- **Principle**

Lysine Iron Agar is a differential medium used for the identification and differentiation of enteric bacteria, particularly for the detection of lysine decarboxylation, lysine deamination and hydrogen sulphide production. It is commonly applied in the confirmation of Salmonella and other Enterobacterales isolated from clinical, food and environmental samples, as part of routine biochemical characterisation.

The medium contains peptone as a source of nitrogen and amino acids, while yeast extract supplies additional carbon, vitamins and growth factors required for good bacterial development. Dextrose is included as a fermentable carbohydrate and provides an early energy source to initiate growth and acid production in the butt of the medium. L-lysine hydrochloride is the key substrate used to evaluate the presence of lysine decarboxylase and lysine deaminase activity, which are important biochemical markers for differentiating members of the Enterobacterales.

Bromocresol purple is incorporated as the pH indicator, appearing yellow under acidic conditions and purple under alkaline conditions. Following initial dextrose fermentation, organisms capable of producing lysine decarboxylase convert lysine into cadaverine, generating an alkaline reaction and resulting in a purple or neutral butt. In contrast, organisms that do not decarboxylate lysine remain acidic in the butt and therefore show a yellow reaction. Lysine deamination occurs aerobically on the slant and leads to the formation of a red slant over an acid butt, a characteristic reaction observed in certain organisms such as Proteus, Providencia and Morganella.

Sodium thiosulphate serves as a sulphur source and, together with ferric ammonium citrate, allows the detection of hydrogen sulphide production. Organisms producing hydrogen sulphide generate blackening of the medium due to the formation of ferrous sulphide precipitate. Agar is included as the solidifying agent and provides the slant-and-butt format required for interpretation of the different metabolic reactions.

- **Regulatory compliance**

This product is manufactured under a quality management system in accordance with ISO 9001 and ISO 13485, and its formulation and quality control comply with applicable international standards, such as ISO 11133, where relevant.

- **Composition**

Ingredients	**g/L**
Peptone	5.00
Yeast extract	3.00
Dextrose	1.00
L-Lysine Hydrochloride	10.00
Ferric Ammonium citrate	0.50
Sodium thiosulfate	0.04
Bromocresol purple	0.02

- **Preparation**

Dissolve 34.56 grams in 1,000 ml distilled water. Boil to dissolve the medium completely sterilize by autoclaving at 15 lbs. pressure (121°C) for 15 min, cool it to 42-45 °C and distribute aseptically in sterile test tubes. Kept in slight slanting position to form small slant with large butt. Ensure complete solidification and inoculate test sample aseptically.

- **Applications and use**

Recommended for the differentiation of enteric organisms based on their ability to decarboxylate or deaminate lysine and formation of hydrogen sulphide.

- **Quality control**

Solubility	w/o rests
Appearance	Fine powder
Colour of the dehydrated medium	Beige
Colour of the prepared medium	Purple
Final pH (25 °C)	6.7 ± 0.2

- **Microbiological test**

Cultural characteristics observed after an incubation at 35±2°C for 18-24 hours. Inoculum 50-100 CFU.

Microorganism	ATCC	Growth	Lysine decarboxylation (Butt)	Lysine deamination (Slant)	H_2S production
Salmonella typhimurium	14.028	Luxuriant	Purple (Alkaline)	Purple (Alkaline)	Positive (blackening)
Escherichia coli	8.739	Luxuriant	Purple (Alkaline)	Purple (Alkaline)	Negative
Proteus mirabilis	12.453	Luxuriant	Yellow (Acidic)	Deep red	Positive (blackening)
Shigella flexneri	9199	Luxuriant	Yellow (Acidic)	Purple (Alkaline)	Negative

- **Storage**

The product is highly hygroscopic; keep the container always closed and store it properly as per the conditions mentioned on the label. The declared expiry is valid only when stored as per the conditions mentioned on the label. Temp. Min.:2 °C Temp. Max.:25 °C.

Note: Sterilize media immediately after reconstitution.

- **Bibliography**

Atlas, R. M. (2005). Handbook of media for environmental microbiology. CRC press.

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Rand, M. C., Arnold E. Greenberg, and Michael J. Taras, (1976), Standard methods for the examination of water and wastewater. Prepared and published jointly by American Public Health Association, American Water Works Association, and Water Pollution Control Federation.

Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock. D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

- **Product use limitation**

This product is developed, designed and supplied exclusively for research use only. It is not intended for diagnostic applications or drug development, and it is not suitable for administration to humans or animals.