

TECHNICAL DATA SHEET

Lysine Iron Agar

Principle

Lysine iron agar is composed of peptone, yeast extract, dextrose, L-lysine hydrochloride, ferric ammonium citrate, sodium thiosulphate, bromocresol purple and agar. Peptone provides nitrogen and amino acids and yeast extract serves as source of carbon, nitrogen, vitamins and other growth factors required for the growth of microorganisms. Dextrose is carbon and energy source. L-lysine hydrochloride is substrate use for lysine decarboxylase and deaminase detection. Sodium thiosulfate and ferric ammonium citrate are indicators for hydrogen sulfide production. Bromocresol purple is a pH indicator, gives yellow color below pH 5.2 and purple color above pH 6.8. Agar is a solidifying agent. The bacteria particularly enteric bacilli that produce hydrogen sulfide cause blackening of the medium due to the production of ferrous sulfides. The microorganisms that synthesize lysine decarboxylase produce an alkaline reaction (purple color) or neutral reaction in the butt of the medium. Organisms that deaminate the lysine cause the development of a red slant over an acid butt.

Use: For the differentiation of enteric organisms, especially Salmonella, based upon lysine decarboxylation/ deamination and H₂S production.

Contents*

Ingredients	Gram/Litre
Peptone	5.000
Yeast extract	3.000
Dextrose	1.000
L-Lysine Hydrochloride	10.000
Ferric Ammonium citrate	0.500
Sodium thiosulfate	0.040
Bromocresol purple	0.020
Agar	15.000
pH at 25°C	6.7 ±0.2

* Formula adjusted for optimum performance and parameters

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Directions: Dissolve 34.56 grams in 1000 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.

Specimens' types analyzed

Pharmaceutical samples, clinical and non-clinical samples etc.

Precautions to be taken

These microbial media are intended for the in-vitro use only. All the handling, experiments, storage, and discarding should be performed with the help of skilled and knowledgeable technicians and as per the established guidelines. The material should be disposed only after proper sterilization by autoclaving. Please go through the MSDS of the media to avoid any accidents or in emergency.

Performance and Evaluation

The expected performance of the medium is liable to use as per the direction on the label when stored at optimum conditions and within expiry date.

Quality Control

Appearance	Beige colored free flowing, homogeneous powder
Reaction of 3.45% solution	6.7 ±0.2 at 25 °C
pH	6.50- 6.90
Gelling	Firm comparable with 1.5% agar gel
Color and clarity of ready medium	Purple colored opalescent gel
Growth Promotion properties	Best at ≤ 100 CFU at 32-37 °C for 18-72 h
Indicative properties	Optimum at ≤ 100 CFU at 32-37 °C for 18-48 h
Negative control	Performed using sterile distilled water

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

Organism	ATCC	Growth	Lysine decarboxylation (Butt)	Lysine deamination (Slant)	H ₂ S production
<i>Salmonella typhimurium</i>	14028	Luxuriant	Purple (Alkaline)	Purple (Alkaline)	Positive (blackening)
<i>Escherichia coli</i>	8739	Luxuriant	Purple (Alkaline)	Purple (Alkaline)	Negative
<i>Proteus mirabilis</i>	12453	Luxuriant	Yellow (Acidic)	Deep red	Positive (blackening)
<i>Shigella flexneri</i>	9199	Luxuriant	Yellow (Acidic)	Purple (Alkaline)	Negative

Storage and Shelf Life: The product is highly hygroscopic; keep the container tightly closed at all times 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. Note: Sterilize media immediately after reconstitution.

Disposal: To avoid the contamination or propagation of any hazardous microbes the used, unusable or modified preparation of this product must be disposed after autoclaving after completion of task.

Reference

1. Atlas, R. M. (2005). Handbook of media for environmental microbiology. CRC press.
2. Difco Manual (1998). 11th Edition. Difco Laboratories., Division of Becton Dickinson and Company, Sparks, Maryland, USA.
3. 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.
4. 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.

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