

Lysine Iron Agar

Lysine Iron Agar is recommended for the differentiation of enteric organisms especially Salmonella Arizonae based on their ability to decarboxylate or deaminate lysine and to form hydrogen sulphide (H₂S).

REF: BS.1/LI01.100.0100 100 Gram
 REF: BS.1/LI01.250.0250 250 Gram

REF: BS.1/LI01.500.0500 500 Gram

CLINICAL SIGNIFICANCE

Lysine Iron Agar was developed by Edwards and Fife (1) to detect lactose fermenting Salmonellae. Salmonellae are known to decarboxylate lysine rapidly and produce large amounts of hydrogen sulphide (2, 3). 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 H₂S production on Triple Sugar Iron Agar (M021). So there is a possibility that the organisms frequently found in food poisoning outbreaks could be overlooked. Thatcher and Clark (4) described the isolation of Salmonella species from foods from selective agar and to inoculate it on Lysine Iron Agar and Triple Sugar Iron (M021) together. Using these two media greater discrimination can be made between coliform organisms e.g. Escherichia and Shigella (5, 6).

METHOD PRINCIPLE

Peptone and yeast extract provide essential nutrients. Dextrose is a source of fermentable carbohydrate. Ferric ammonium citrate and sodium thiosulphate are indicators of H₂S formation. Cultures that produce hydrogen sulphide cause blackening of the medium due to ferrous sulphide production. Lysine decarboxylation causes an alkaline reaction (purple colour) to give the amine cadaverine and the organisms which do not decarboxylate lysine, produce acid butt (yellow colour). Organisms that deaminate lysine, form alpha - ketocarboxylic acid, which reacts with iron salt near the surface of the medium under the influence of oxygen to form reddish-brown compound. The medium is stabbed to the base of the butt and streaked on slant.

MEDIA COMPOSITION

Item	Formula gram per liter of medium
Peptone Yeast extract Dextrose	5
L-lysine	3
Dextrose	1
Ferric ammonium citrate	10
Sodium thiosulphate	0.5
Bromocresol purple	0.04
Agar	0.02
	15

PRECAUTIONS AND WARNINGS

Media to be handled by entitled and professionally educated person. Do not ingest or inhale.

Good Laboratories practices using appropriate precautions should be followed in:

- Wearing personnel protective equipment (overall, gloves, glasses,).
- Do not pipette by mouth.
- In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries; seek medical advice

immediately.

- Respect country requirement for waste disposal.
S56: dispose of this material and its container at hazardous or special waste collection point.
S57: use appropriate container to avoid environmental contamination.
S61: avoid release in environment.

For further information, refer to the Lysine Iron Agar material safety data sheet.

STORAGE AND STABILITY

BioScien Lysine Iron Agar should be stored between 10-30°C in a firmly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to avoid lump development due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in a dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

Final pH after sterilization 6.7 ± 0.2 at 25°C

Preparation

Suspend 34.56 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Dispense into tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool the tubes in slanted position to form slants with deep butts

Deterioration

The color of **BioScien** Lysine Iron Agar is Light yellow to greyish yellow homogeneous free flowing powder prepared medium is Purple coloured, clear to slightly opalescent gel forms in tubes as slants. If there are any physical changes or signs of deterioration (shrinking, cracking, or discoloration), and contaminations for media, discard the medium.

SPECIMEN

Pure isolate

EQUIPMENT REQUIRED NOT PROVIDED

- Sterile loop
- Incubator

Fits your perfection

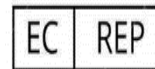
PERFORMANCE CHARACTERISTICS

Cultural characteristics observed after 48-72 hours at 28-30 °C.

Microorganism	Growth	Slant	Butt	H ₂ S
<i>Citrobacter freundii</i> ATCC 8090	luxuriant	alkaline reaction, purple or no colour change	acidic reaction, yellowing of the medium	positive reaction, blackening of medium
<i>Escherichia coli</i> ATCC 25922	luxuriant	alkaline reaction, purple or no colour change	alkaline reaction, purple or no colour change	negative reaction
<i>Proteus vulgaris</i> ATCC 13315	luxuriant	deep red, lysine deamination	acidic reaction, yellowing of the medium	positive reaction, blackening of medium
<i>Salmonella Arizonae</i> ATCC 13314	luxuriant	alkaline reaction, purple or no colour	alkaline reaction, purple or no colour change	positive reaction, blackening of medium
<i>Salmonella Enteritidis</i> ATCC 13076	luxuriant	alkaline reaction, purple or no colour	alkaline reaction, purple or no colour change	positive reaction, blackening of medium
<i>Salmonella Typhimurium</i> ATCC 14028	luxuriant	alkaline reaction, purple or no colour change	alkaline reaction, purple or no colour change	positive reaction, blackening of medium
<i>Shigella flexneri</i> ATCC 12022	luxuriant	alkaline reaction, purple or no colour change	acidic reaction, yellowing of the medium	negative reaction

SYMBOLS IN PRODUCT LABELLING

IVD	For in-vitro diagnostic use		Number of <n> test in the pack
LOT	Batch Code/Lot number		Caution
REF	Catalogue Number		Do not use if package is damaged
	Temperature Limitation		Consult Instruction for use
	Expiration Date		
	Manufactured by		



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QUALITY CONTROL

To ensure adequate quality control, it is recommended that positive and negative control included in each run. If control still out of range please contact **BioScien** technical support.

REFERENCES

1. Baird R.B., Eaton A.D., and Rice E.W., (Eds.), 2015, Standard Methods for the Examination of Water and Wastewater, 23rd ed., APHA, Washington, D.C.
2. Finegold S. M. and Baron E. J., 1986, Bailey and Scotts Diagnostic Microbiology, 7th Ed., The C.V. Mosby Co., St. Louis.
3. Hajna A.A., 1945, J. Bacteriol, 49:516.
4. MacFaddin J., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore.
5. Salfinger Y., and Tortorello M.L., 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.
6. Sulkin E.S. and Willett J.C., 1940, J. Lab. Clin. Med., 25:649
7. International Organization for Standardization (ISO) 2017, Draft ISO/DIS 6579.

