Technical Information

Lysine Arginine Iron (LAI) Agar

Product Code: DM 2230

Application: - Lysine Arginine Iron Agar is used for the isolation and presumptive identification of *Yersinia* species from milk and milk products.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	5.000
Yeast extract	3.000
L-Arginine	10.000
L-Lysine	10.000
Glucose	1.000
Ferric ammonium citrate	0.500
Sodium thiosulphate	0.040
Bromocresol purple	0.020
Agar	15.000
Final pH (at 25°C)	6.8±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Yersinia enterocolitica has been isolated from many kinds of clinical and non-clinical specimens and is also reported to be a significant enteric pathogen. The organism is transmitted by ingestion of contaminated food (often milk and pork) and water, probably by the fecal-oral route, and perhaps by contact with infected animals [(1)]. *Yersinia* species are responsible for disease syndromes ranging from gastroenteritis to plague. Some *Yersinia* species have been responsible for human disease with different type of clinical syndromes [(2)]. Lysine Arginine Iron Agar is formulated and recommended by APHA [(3)] for isolation and identification of *Yersinia* from milk and milk products. Lysine Arginine Iron Agar Medium is based on the ability of bacteria to decarboxylate lysine, arginine and produce H_2S [(4)]. Peptic digest of animal tissue and yeast extract provide the necessary nitrogenous nutrients and vitamin B complex to the organisms. Ferric ammonium citrate and sodium thiosulphate are the indicators for H_2S production. This medium contains two amino acids L-arginine and L-lysine. The organisms which do not decarboxylate L-lysine but ferment glucose, gives an alkaline slant and an acid butt (yellow colour, as bromocresol purple is the pH indicator).

The sample suspected to contain *Yersinia* can be inoculated on MacConkey Agar (DM2081) rather than directly streaking on Lysine Arginine Iron Agar. Inoculate the suspected *Yersinia* colony from MacConkey Agar (DM2081) on Lysine Arginine Iron Agar and incubate at 22-26°C for upto 48 hours. Organisms that give an alkaline slant, acidic butt, no gas and no hydrogen sulphide (H_2S) production on Lysine Arginine Iron Agar and are urease positive, are considered to be presumptive *Yersinia* [(3)].

Methodology

Suspend 44.56 grams of powder media in 1000 ml distilled water. Shake well & heat to dissolve the medium completely. Dispense in 5 ml amount into screw-capped test tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool the tubed medium to give slants and butts

Quality Control

Physical Appearance
Cream to yellow homogeneous free flowing powder

Gelling
Firm, comparable with 1.5% Agar gel

Colour and Clarity of prepared medium
Purple coloured, clear to slightly opalescent gel forms in tubes as slants with a butt

Reaction
Reaction of 4.45% w/v aqueous solution at 25°C. pH : 6.8±0.2

pH Range 6.60-7.00

Cultural Response/Characteristics
DM 2230: Cultural characteristics observed after an incubation at 25-30°C for 24- 48 hours.

Organism	Inoculum (CFU)	Growth	Slant	Butt	H_2S	Gas
Klebsiella pneumoniae ATCC 13883	50-100	Luxuriant	alkaline reaction, purple colour	Acidic reaction yellow colour	Negative reaction	Positive reaction
Yersinia enterocolitica ATCC 27729	50-100	Luxuriant	alkaline reaction, purple colour	Acidic reaction yellow colour	Negative reaction	Positive reaction

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.
Prepared Media: 2-8^0 in sealable plastic bags for 2-5 days.

Further Reading

1. Murray P. R., Baron J. H., Pfaller M. A., Jorgensen J. H. and Yolken R. H., (Eds.), 2003, Manual of Clinical Microbiology, 8th Ed., American Society for Microbiology, Washington, D.C.
2. Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.
3. FDA Bacteriological Analytical Manual, 2005, 18th Ed., AOAC, Washington, D. C.
4. Atlas R. M., 2004, Handbook of Microbiological Media, Lawrence C. Parks (Ed.), 3rd Edition, CRC Press.

Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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