Double Modified Lysine Iron Agar Base

M1909

Recommended for selective and differential cultivation of *Salmonella* species.

Composition**

Ingredients	Gms / Litre
Peptic digest of animal tissue	5.000
Yeast extract	3.000
Dextrose	1.000
L-Lysine	10.000
Ferric ammonium citrate	0.800
Sodium thiosulphate	6.800
Bile salt	1.500
Lactose	10.000
Sucrose	10.000
Bromocresol purple	0.020
Agar	15.000
Final pH (at 25°C)	6.7±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 63.12 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. DO NOT AUTOCLAVE.

Cool to 45-50°C and aseptically add rehydrated contents of 1 vial of Novobiocin supplement (FD101). Mix well

and dispense into sterile Petri plates.

Principle And Interpretation

Salmonella is the main agent of foodborne diseases in several parts of the world, belonging to the family

Enterobacteriaceae .Most serovars, however, have a wide spectrum of hosts and typically cause gastroenteritis .Double Modified Lysine Iron Agar is used to for isolation and identification of *Salmonella* from food (1) . Salmonellae are known to decarboxylate lysine rapidly and produce large amounts of hydrogen sulphide (2, 3). 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).

Peptic digest of animal tissue 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 a - ketocarboxylic acid, which reacts with iron salt near the surface of the medium under the influence of oxygen to form reddish-brown compound.

Quality Control

Appearance

Light yellow to greyish 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 Petri plates.

Reaction
Reaction of 3.45% w/v aqueous solution at 25°C. pH : 6.7±0.2

pH
6.50-6.90

Cultural Response
Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours .

Cultural Response

Organism	Inoculum (CFU)	Growth	Colour of colony
Cultural Response			
Citrobacter freundii ATCC 8090	50-100	luxuriant	yellow
Escherichia coli ATCC 25922	50-100	luxuriant	yellow
Proteus mirabilis ATCC 25933	50-100	luxuriant	red with black center
Salmonella Arizonae ATCC 13314	50-100	luxuriant	purple with black center
Salmonella Enteritidis ATCC 13076	50-100	luxuriant	purple with black center
Salmonella Typhimurium ATCC 14028	50-100	luxuriant	purple with black center
Shigella flexneri ATCC 12022	50-100	luxuriant	colourless

Storage and Shelf Life
Store below 30°C and the prepared medium at 2 - 8°C. Use before expiry date on the label.

Reference
1.Microbiology Laboratory guidebook,MLG/FSIS/USDA (2011),Washington,Food Safety and Inspection Service.
2. Moeller V., 1954, Acta Pathol. Microbiol. Scand., 355:259.
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4. ,,Thatcher F.S. and Clark D.S., 1968, University of Toronto Press, p. 100.
5. Johnson J.G., Kunz L.J., Barron W. and Ewing W.H., 1966, Appl. Microbiol., 14:212.
6. Finegold S.M. and Martin W.J., 1982, Bailey and Scotts Diagnostic Microbiology, 6th ed., The C.V. Mosby Co., St. Louis.

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