Lysine Iron HiVeg™ Agar MV377

Lysine Iron HiVeg Agar is recommended for the differentiation of enteric organisms especially *Salmonella* serotype Arizonae based on their ability to decarboxylate or deaminate lysine and to form hydrogen sulphide (H_2S).

Composition ** :

Ingredients	Grams/Litre
HiVeg peptone	5.0
Yeast extract	3.0
Dextrose	1.0
L-Lysine	10.0
Ferric ammonium citrate	0.5
Sodium thiosulphate	0.04
Bromo cresol purple	0.02
Agar	15.0

Final pH (at 25°C) 6.7 ± 0.2
** Formula adjusted, standardized to suit performance parameters.

Directions :

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.

Principle and Interpretation :

This medium is prepared by replacing Peptic digest of animal tissue with HiVeg peptone which makes the medium free of BSE/TSE risks. Lysine Iron HiVeg Agar is modification of Lysine Iron Agar which 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 hydrogen sulphide (H_2S) production on Triple Sugar Iron HiVeg Agar (MV021). 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 HiVeg Agar and Triple Sugar Iron HiVeg Agar (MV021) together. Using these two media greater discrimination can be made between coliform organisms e.g. *Escherichia* and *Shigella* (5, 6). HiVeg peptone and yeast extract provide essential nutrients. Dextrose is a source of fermentable carbohydrate. Ferric ammonium citrate and sodium thiosulphate are indicators of hydrogen sulphide (H_2S) 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.

Product Profile :		
Vegetable based (Code MV)◉		**Animal based** (Code M)
MV377 HiVeg peptone		**M377** Peptic digest of animal tissue
Recommended for	:	Differentiation of enteric organisms especially *Salmonella* serotype Arizonae based on their ability to decarboxylate or deaminate lysine and to form hydrogen sulphide (H_2S).
Reconstitution	:	34.56 g/l
Quantity on preparation (500g)	:	14.46 L
(100g)	:	2.89 L
pH (25°C)	:	6.7 ± 0.2
Supplement	:	None
Sterilization	:	121°C / 15 minutes.
Storage : Dry Medium - Below 30°C, Prepared Medium 2 - 8°C.		

Quality Control :

Appearance of powder
Light yellow coloured, may have slightly greenish tinge, homogeneous, free flowing powder.

Gelling
Firm, comparable with 1.5% Agar gel.

Colour and Clarity
Purple coloured, clear to slightly opalescent gel forms in tubes as slants.

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Reaction

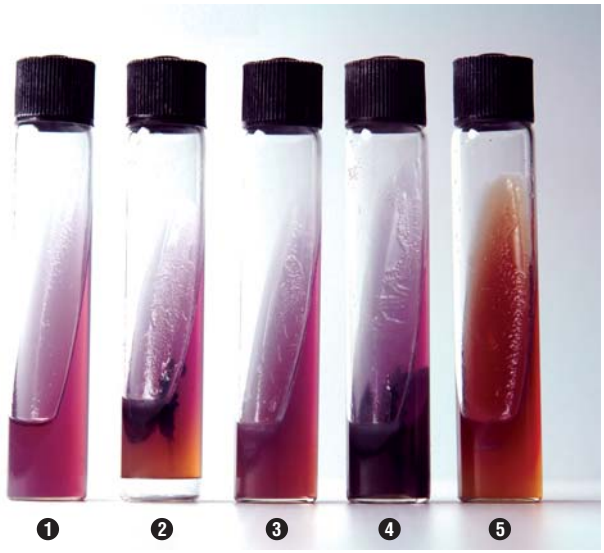
Reaction of 3.45% w/v aqueous solution is pH 6.7 ± 0.2 at 25°C.

Cultural Response

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

Organisms (ATCC)	Inoculum (CFU)	Growth	Recovery	Butt	Slant	H_2S
Citrobacter freundii (8090)	10^2-10^3	luxuriant	>70%	A	K	+
Escherichia coli (25922)	10^2-10^3	luxuriant	>70%	K	K	-
Proteus mirabilis (25933)	10^2-10^3	luxuriant	>70%	A	R	+
Salmonella serotype Arizonae (13314)	10^2-10^3	luxuriant	>70%	K	K	+
Salmonella serotype Typhimurium (14028)	10^2-10^3	luxuriant	>70%	K	K	+
Shigella flexneri (12022)	10^2-10^3	luxuriant	>70%	A	K	-

Key : + = blackening of medium
- = no blackening of medium
R = deep red, lysine deamination
A = acidic reaction, yellow colour
K = alkaline reaction, purple colour, (no colour change)



MV377 Lysine Iron HiVeg Agar

1. Control
2. *Citrobacter freundii*
3. *Escherichia coli*
4. *Salmonella* serotype Typhimurium
5. *Proteus mirabilis*

References :

1. Edward P.R. and Fife M.A., 1961, Appl. Microbiol., 9:478.
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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 Scott's Diagnostic Microbiology, 6th ed., The C.V. Mosby Co., St. Louis.