

**Motility-Indole-Lysine HiVeg™ Medium (MIL HiVeg™ Medium)****MV847**

Motility - Indole - Lysine HiVeg Medium is used as an aid for the identification of members of *Enterobacteriaceae* on the basis of motility, lysine decarboxylase, lysine deaminase and indole production.

**Composition \*\* :**

Ingredients	Grams/Litre
HiVeg peptone	10.0
HiVeg hydrolysate	10.0
Yeast extract	3.0
L-Lysine hydrochloride	10.0
Dextrose	1.0
Ferric ammonium citrate	0.5
Bromo cresol purple	0.02
Agar	2.0

Final pH (at 25°C) 6.6 ± 0.2

\*\* Formula adjusted, standardized to suit performance parameters.

**Directions :**

Suspend 36.52 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Dispense into tubes in 5 ml amounts. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool the tubes in an upright position.

**Principle and Interpretation :**

This medium is prepared by completely replacing animal based peptone with vegetable peptones making the medium free of BSE/TSE risks. MIL HiVeg Medium is the modification of MIL Medium which is formulated according to Reller and Merrett (1). It provides 4 differential reactions in a single culture tube. It is recommended to use along with Triple Sugar Iron (TSI) HiVeg Agar (MV021) and Urea HiVeg Agar Base (MV112) so as to enable initial identification of members of *Enterobacteriaceae*.

HiVeg peptone, HiVeg hydrolysate provides amino acids and other complex nitrogenous substances. Yeast extract is added to supply the B-complex vitamins. Dextrose is a source of energy. Bromocresol purple is a pH indicator which facilitate detection of decarboxylase activity. Due to dextrose fermentation the colour of the medium changes from purple to yellow. The acidic pH also stimulates enzyme activity. The production of amines due to degradation of amino acid elevates the pH and turns the medium at the bottom of the tube to purple. Due to the higher oxygen tension, the upper portion of the tube remains acidic (yellow). Oxidative deamination of lysine yields a compound which reacts with ferric ammonium citrate, giving reddish colour at the top of the medium (2).

Cultures are stab-inoculated and incubated at 37°C for 18-24 hours. Motility, lysine deamination and lysine decarboxylation reactions are read before testing indole reaction. Motility is indicated by diffused growth. Non-motile cultures grow along with stab line. Lysine deamination is observed as red or red-brown colour at the top of the medium while decarboxylation shows a purple colour throughout the medium. This colour may vary in intensity, may be a light colour due to reduction of indicator. For testing indole production add 3-4 drops of Kovac's reagent (R008) to the medium. A pink to red coloured ring indicates a positive reaction.

**Product Profile :**

Vegetable based (Code MV) ©	Animal based (Code M)
<b>MV847</b> HiVeg peptone HiVeg hydrolysate	<b>M847</b> Peptic digest of animal tissue Casein enzymic hydrolysate

**Recommended for** : Identification of members of *Enterobacteriaceae* on the basis of motility, lysine decarboxylase, lysine deaminase and indole production.

**Reconstitution** : 36.52 g/l

**Quantity on preparation (500g)** : 13.69 L  
**(100g)** : 2.73 L

**pH (25°C)** : 6.6 ± 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**

Yellow coloured, may have slightly greenish tinge, homogeneous, free flowing powder.

**Gelling**

Semisolid, comparable with 0.2% Agar gel.

**Colour and Clarity**

Reddish purple coloured, clear gel forms in tubes as butts.

**Reaction**

Reaction of 3.65% w/v aqueous solution is pH 6.6 ± 0.2 at 25°C.

**Cultural Response**

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

Organisms (ATCC)	Inoculum	Motility	Indole production	Lysine Deaminase	Lysine decarboxylase
<i>Enterobacter aerogenes</i> (13048)	10 <sup>2</sup> -10 <sup>3</sup>	+	-	-	+
<i>Escherichia coli</i> (25922)	10 <sup>2</sup> -10 <sup>3</sup>	+	+	-	+
<i>Klebsiella pneumoniae</i> (13883)	10 <sup>2</sup> -10 <sup>3</sup>	-	-(+)	-	+
<i>Proteus mirabilis</i> (25933)	10 <sup>2</sup> -10 <sup>3</sup>	+	-	+	-
<i>Proteus vulgaris</i> (13315)	10 <sup>2</sup> -10 <sup>3</sup>	+	+	+	-
<i>Salmonella</i> serotype Enteritidis (13076)	10 <sup>2</sup> -10 <sup>3</sup>	+	-	-	+
<i>Shigella flexneri</i> (12022)	10 <sup>2</sup> -10 <sup>3</sup>	-	-or +	-	-

Key:	Motility : +	= positive reaction, growth away from stabline
	-	= negative reaction, growth along the stabline
	Indole : +	= pink-red ring on addition of Kovacs Reagent
	-	= no pink or red coloured ring on addition of Kovacs Reagent
	Lysine Deaminase : +	= red-brown colour reaction at the top
	Lysine decarboxylase : +	= purple colour
	(+)	= Occasional reaction

**References :**

- Reller and Merrett, 1975, J. Clin. Microbiol., 2:247.
- Forbes, Salin and Weissfeld, 1998, Bailey and Scott's, Diagnostic Microbiology, 10<sup>th</sup> ed., Mosby, Inc, St. Louis, MO.