Technical Information

MIU Medium Base

Product Code: DM 2076

Application: - MIU Medium Base is recommended for detection of motility, urease and indole production.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	10.000
Dextrose	1.000
Sodium chloride	5.000
Phenol red	0.010
Agar	2.000
Final pH (at 25°C)	6.8±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

MIU Medium Base is used to detect motility, urease and indole production in single tube.

Casein enzymic hydrolysate provides amino acids and other nitrogenous substances. Sodium chloride maintains osmotic equilibrium. Dextrose is fermentable carbohydrate. Phenol red is the pH indicator which turns pink- red in alkaline conditions. The test cultures are stab-inoculated. Motility and urease reactions are read before testing Indole production. Motile organisms show either diffused growth or turbidity extending away from line of inoculation while nonmotile organisms grow along the stabline. Organisms that utilize urea, produce ammonia which makes the medium alkaline, showing pink-red colour by change in the phenol red indicator [1]. Indole is produced from tryptophan present in casein enzymic hydrolysate [2, 3]. The indole produced combines with the aldehyde present in the Kovac's reagent to form a red complex.

Methodology

Suspend 18 grams of powder media in 950 ml distilled water. Shake well & heat to dissolve the medium completely. Dispense in 95 ml amounts into flasks and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to about 50-55°C and add aseptically 5 ml sterile 40% Urea solution (MS2048) per 95 ml basal medium. Mix well and dispense into sterile test tubes. Allow to cool in an upright position.

Quality Control

Physical Appearance
Light orange to light pink coloured homogeneous free flowing powder

Gelling
Semisolid, comparable with 0.2% Agar gel.

Colour and Clarity of prepared medium
Yellowish orange coloured clear to slightly opalescent gel is obtained in tubes as butts afteraddition of urea solution.

Reaction
Reaction of basal medium (1.8 gm suspended in 95 ml distilled water) at 25°C. pH : 6.8±0.2
pH range
6.60-7.00

Cultural Response/Characteristics
DM2076: Cultural characteristics observed after an incubation at 35 - 37°C for 18 - 24 hours.

Organism	**Growth**	**Indole**	Motility	**Urease activity**
Escherichia coli ATCC 25922	luxuriant	Positive reaction,red ring at the interface of the medium	Positive growth away from stabline causing turbidity	Negative reaction, no change
Klebsiella pneumoniae ATCC 13883	luxuriant	Negative reaction no colour development cloudy ring	Negative growth alone the stabline, surrounding medium remains clear	Weakly positive
Proteus mirabilis ATCC 25933	luxuriant	Negative reaction no colour development cloudy ring	Positive growth away from stabline causing turbidity	Positive reaction cerise colour
Proteus vulgaris ATCC 13315	luxuriant	Positive reaction, red ring at the interface of the medium	Positive growth away from stabline causing turbidity	Positive reaction cerise colour
Salmonella typhimurium ATCC 14028	luxuriant	Negative reaction no colour development cloudy ring	Positive growth away from stabline causing turbidity	Negative reaction,no change

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. Rustigian and Stuart (1941) Proc. Soc. Exp. Biol. Med., 47:108.
2. McFaddin J.F. (1985) Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore
3. Ewing (1986) Edwards and Ewings 'Identification of Enterobacteriaceae', 4th ed. Elsevier Science Publishing Co., Inc., New York.

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