

PRODUCT SPECIFICATION SHEET

MIU Medium Base (DM169)

Intended Use

MIU Medium Base (DM169) is recommended for detection of motility, urease and indole production.

Product Summary and Explanation

MIU Medium Base is a semisolid medium designed for detection of *Enterobacteriaceae* of urease activity, motility, and indole production in single tube. It was also used in combination with Kligler Iron Agar (DM127) for the recognition and differentiation of *Salmonella* and *Shigella* species from colonies picked from plating media in fecal cultures.⁽¹⁾

Principles of the Procedure

MIU Medium Base contains casein enzymic hydrolysate are sources of amino acids and other nitrogenous substances. Sodium chloride helps to maintain osmotic equilibrium. Dextrose is fermentable carbohydrate and energy source. Phenol red is the pH indicator which turns pink-red in alkaline conditions. Organisms that utilize urea, produce ammonia which makes the medium alkaline, showing pink-red colour by change in the phenol red which is the pH indicator.⁽²⁾ Indole is produced from tryptophan present in casein enzymic hydrolysate.^(3,4) The indole produced combines with the aldehyde present in the Kovac's reagent to form a red complex.

Formula / Liter

Ingredients	Gms / Liter
Casein enzymic hydrolysate	10.00
Dextrose	1.00
Sodium chloride	5.00
Phenol red	0.01
Agar	2.00
Final pH: 6.8 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions

1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions

1. Suspend 18 grams of the medium in 950 ml of distilled water.
2. Heat to boiling, to dissolve the medium completely.
3. Dispense in 95 ml amounts into flasks and autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.
4. Cool to about 50-55°C and add aseptically 5 ml sterile 40% Urea solution (MS031) per 95 ml basal medium.
5. Mix well and dispense into sterile test tubes. Allow to cool in an upright position.

Quality Control Specifications

Dehydrated Appearance	Light orange to light pink coloured homogeneous free flowing powder
Prepared Medium	Yellowish orange coloured clear to slightly opalescent gel is obtained in tubes as butts after addition of urea solution.
Reaction of basal medium (1.8 gm suspended in 95 ml distilled water)	pH : 6.8 ± 0.2 at 25°C
Gel Strength	Semisolid, comparable with 0.2% Agar gel.

Expected Cultural Response : Cultural characteristics observed with added 40% Urea solution (MS031) after an incubation at 35-37°C for 18 - 24 hours.

Sr. No.	Organisms	Results to be achieved			
		Growth	Indole	Motility	Urease activity
1.	<i>Escherichia coli</i> ATCC 25922	good-luxuriant	positive reaction, red ring at the interface	positive, growth away from stabline	negative reaction,

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			of the medium	causing turbidity	no change
2.	<i>Klebsiella pneumoniae</i> ATCC 13883	good-luxuriant	negative reaction no colour development/ cloudy ring	negative, growth along the stabline, surrounding medium remains clear	weakly positive
3.	<i>Proteus mirabilis</i> ATCC 25933	good-luxuriant	negative reaction no colour development/ cloudy ring	positive, growth away from stabline causing turbidity	positive reaction, cerise colour
4.	<i>Proteus vulgaris</i> ATCC 13315	good-luxuriant	positive reaction, red ring at the interface of the medium	positive, growth away from stabline causing turbidity	positive reaction, cerise colour
5.	<i>Salmonella typhimurium</i> ATCC 14028	good-luxuriant	negative reaction no colour development/ cloudy ring	positive, growth away from stabline causing turbidity	negative reaction, no change

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

1. Inoculate tubes with a pure culture by stabbing the center of the column of medium to greater than half the depth.
2. Incubate tubes for 18-48 hours at 35 ± 2 °C in aerobic atmosphere.
3. Refer appropriate references for specific test procedures.

Results

1. Motility and urease reactions are read before testing Indole production. Motile organisms show either diffused growth or turbidity extending away from stab inoculation line while non-motile organisms grow along the stabline.
2. Urease activity was observed by a change of color to red.
3. Indole production is indicated by the formation of a pink to red color after the addition of three or four drops of Kovac's reagent (IR002) to the surface of the medium. A negative reaction is indicated by the development of a yellow color.
4. Refer appropriate references and test procedures for interpretation of results.

Storage

Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure

1. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.
2. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : MIU Medium Base

Product Code : DM 169

Available Pack sizes : 500gm

References

1. Rosa Fraile, Vega and Gutierrez. (1980). Evaluation of Urea-Motility-Indole Medium for Recognition and Differentiation of Salmonella and Shigella Species in Stool Cultures.
2. Rustigian and Stuart (1941) Proc. Soc. Exp. Biol. Med., 47:108.
3. McFaddin J.F. (1985) Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore



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- Ewing (1986) Edwards and Ewings 'Identification of Enterobacteriaceae, 4th ed. Elsevier Science Publishing Co., Inc., New York.

Further Information

For further information please contact your local MICROMASTER Representative.



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