PRODUCT SPECIFICATION SHEET

MacConkey Agar, Modified (DM1097)

Intended Use
MacConkey Agar, Modified (DM1097) is recommended for isolation of *Klebsiella* species from water samples.

Product Summary and Explanation
MacConkey Agar is based on the bile salt-neutral red-lactose agar of MacConkey.[1] The original MacConkey medium contains protein, bile salts, sodium chloride and two dyes and was used to differentiate strains of *Salmonella typhosa* from members of the coliform group. The formula improvements gave improved differential reactions between these enteric pathogens and the coliform group. MacConkey Agar is the earliest selective and differential medium for cultivation of enteric microorganisms from a variety of clinical specimens.[1, 2] *Klebsiella* species are often associated with coliforms in water supply distribution systems and are present as a major component in industrial wastes of paper mill, textile and other industries. On the basis of MacConkey Agar, in 1970 Thom[3] developed a medium in which lactose is replaced by inositol with the addition of 100µg of carbenicillin per ml. Bagley and Seidler in1978[4] devised a similar medium with only 50µg of carbenicillin per ml. In the modified MacConkey agar medium (DM1097), inositol is incorporated in place of lactose while added carbenicillin makes the medium selective for *Klebsiella* species. Further, this method reduces the necessity for biochemical testing of pure strains; however, preliminary verification of differentiated colonies is recommended.

Principles of the Procedure
MacConkey Agar, Modified contains peptic digest of animal tissue and proteose peptone which provides nitrogen and other growth nutrients. Inositol is the fermentable source of carbohydrate. Bile salts and crystal violet attributes to the selective action of this medium, which is inhibitory to most species of gram-positive bacteria. Gram-negative bacteria usually grow well on the medium and are differentiated by their ability to ferment inositol. Neutral red is the indicator dye. The pink colour is due to production of acid from inositol, absorption of neutral red and a subsequent colour change of the dye when the pH of medium falls below 6.8. Sodium chloride in the medium helps to maintain osmotic balance of the cells.

Formula / Liter

Ingredients	Gms / Liter
Peptic digest of animal tissue	17.00
Proteose peptone	3.00
Bile salts	1.50
Inositol	10.00
Sodium chloride	5.00
Crystal violet	0.001
Neutral red	0.03
Agar	13.50
Final pH: 7.1 ± 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 50 grams of the medium in one liter of distilled water.
2. Heat to boiling, to dissolve the medium completely.
3. DO NOT AUTOCLAVE. OR OVERHEAT.
4. Cool to 50°C and aseptically add 50 mg Carbenicillin.
5. Mix well before pouring into sterile Petri plates.

Quality Control Specifications

Dehydrated Appearance	Light yellow to pink homogeneous free flowing powder
Prepared Medium	Purplish red coloured clear to slightly opalescent gel forms in Petri plates
Reaction of 5.0% Solution	pH : 7.1 ± 0.2 at 25°C
Gel Strength	Firm, comparable with 1.35% Agar gel

Expected Cultural Response: Cultural characteristics, after addition of 50mg Carbenicillin, observed after an incubation at 35-37°C for 18-24 hours.

Sr. No.	Organisms	Results to be achieved			
		Inoculum (CFU)	Growth	Recovery	Colour of Colony
1.	*Enterobacter aerogenes ATCC 13048*	>=10^3	inhibited	0%	--
2.	*Escherichia coli ATCC 25922*	>=10^3	inhibited	0%	--
3.	*Klebsiella pneumonia ATCC 13883*	50 - 100	good-luxuriant	>=50%	pink
4.	*Salmonella Typhi ATCC 6539*	>=10^3	inhibited	0%	--
5.	*Serratia marcescens ATCC 8100*	>=10^3	inhibited	0%	--

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

Test Procedure

Refer to appropriate references and standard test procedures.

Results

Inositol fermenting strains grow as pink colonies. Refer appropriate references and 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. Although, MacConkey media are selective primarily for gram-negative enteric bacilli, for complete identification, biochemical and, if indicated, serological testing using pure cultures are recommended. Consult appropriate texts for detailed information and recommended procedures.
2. Incubation of MacConkey Agar plates under increased CO_2 has been reported to reduce the growth and recovery of a number of strains of gram-negative bacilli.

Packaging

Product Name : MAcConkey Agar, Modified
Product Code : DM1097
Available Pack sizes : 500gm

References

1. MacConkey, 1905, J. Hyg., 5:333.
2. MacConkey, 1900, The Lancet, ii:20.
3. Thom B. T., 1970, Lancet 2:1033
4. Bagley S. T. , Seidler R. J. , Tablbot H. W. and Morrow J. C., 1978, Appl. Environ. Microbiol., 36:178-185

Further Information

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DM1097PSS, QAD/FR/024,Rev.00

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