PRODUCT SPECIFICATION SHEET

MacConkey Broth Purple w/BCP (DM152)

Intended Use

MacConkey Broth Purple w/ BCP (DM152) is recommended for the presumptive identification of coliforms from variety of specimens such as water, milk and food etc.

Product Summary and Explanation

MacConkey Broth is a modification of the original bile salt broth recommended by MacConkey, containing 0.5% sodium taurocholate and litmus as an indicator.[1] MacConkey further suggested variations of this formula using neutral red indicator instead of litmus.[2, 3] MacConkey Broth is used for cultivating gram-negative, lactose-fermenting bacilli and as a presumptive test for coliform organisms. It has been used to analyze food,[4] milk[5, 6] and water samples[6-9] for coliforms. In addition, this medium has also been used in the rapid detection of shiga-toxin producing *E. coli* in fecal samples. MacConkey Broth is recommended in the USP as a test medium for *E. coli* in the microbiological examination of nonsterile products.[10]

MacConkey Broth Purple w/ BCP is a modification of MacConkey Medium, by Childs and Allen.[11] In this medium neutral red due to its inhibitory effect, is substituted by the less inhibitory bromocresol purple dye. BCP is more sensitive in recording pH variation in the medium.

Principles of the Procedure

Peptic digest of animal tissue provides necessary nitrogen and vitamin source. Lactose serves as the fermentable carbohydrate source. Sodium chloride maintains the osmotic balance of the cells. Sodium taurocholate inhibits gram-positive organisms. Bromocresol purple serves as the pH indicator which turns yellow under acidic condition. Lactose fermentation turns the medium yellow due to the acid production. The colour change of the dye is observed when the pH of the medium falls below 6.8. Lactose non-fermenting organisms like Salmonella and Shigella do not alter the appearance of the medium. Solid specimens have to be homogenized in appropriate diluents such as physiological saline, phosphate buffers, etc., while liquid specimens are directly inoculated. The inoculation must be effected at 10% v/v in Durhams tubes. It is necessary to use the medium at double strength, inoculating equal volumes of specimen and medium, if the inoculum is greater than 1 ml.

Formula / Liter

Ingredients	Gms / Liter
Peptic digest of animal tissue	20.00
Lactose	10.00
Sodium taurocholate (Bile Salts as on label)	5.00
Sodium chloride	5.00
Bromocresol purple	0.01
Final pH: 7.4 ± 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 40.01 grams of the medium in one liter of distilled water.
2. Heat if necessary, to dissolve the medium completely.
3. Mix well and distribute into test tubes with inverted Durham tubes.
4. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.
5. Cool the tubes before inoculation.

Quality Control Specifications

Dehydrated Appearance	Cream to yellow homogeneous free flowing powder

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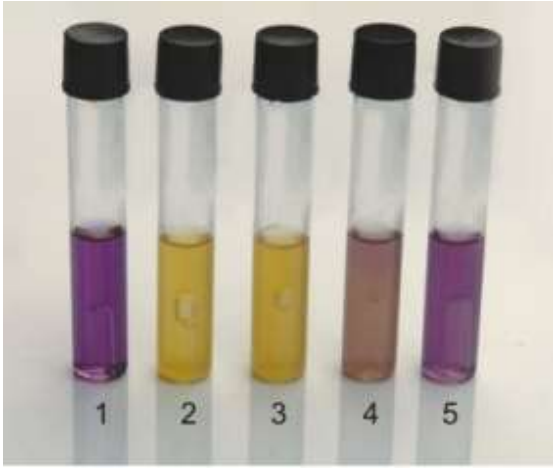
Prepared Medium	Purple coloured clear to slightly opalescent solution in tubes
Reaction of 4.0% Solution	pH : 7.4 ± 0.2 at 25°C
Gel Strength	Not Applicable

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

Sr. No.	Organisms	Results to be achieved			
		Inoculum (CFU)	Growth	Acid Production	Gas Production
1.	*Enterobacter aerogenes ATCC 13048*	50 -100	good-luxuriant	positive reaction yellow color	positive reaction
2.	*Escherichia coli ATCC 25922*	50 -100	good-luxuriant	positive reaction yellow color	positive reaction
3.	*Salmonella Choleraesuis ATCC 12011*	50-100	fair – good	negative reaction	negative reaction
4.	*Staphylococcus aureus ATCC 25923*	>=10^3	inhibited	--	--
5.	*Escherichia coli ATCC 8739*	50 -100	good-luxuriant	positive reaction yellow color	positive reaction
6.	*Escherichia coli NCTC 9002*	50 -100	good-luxuriant	positive reaction yellow color	positive reaction
7.	*Staphylococcus aureus ATCC 6538*	>=10^3	inhibited	--	--

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



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1. Control
2. *Escherichia coli ATCC 25922*
3. *Enterobacter aerogenes ATCC 13048*
4. *Salmonella Choleraesuis ATCC 12011*
5. *Staphylococcus aureus ATCC 25923*

Test Procedure

Refer to appropriate references for specific procedures isolation of coliforms from large samples such as water or waste water.

Results

1. Lactose-fermenting organisms grow well in MacConkey Broth and produce acid, causing the medium to turn yellow. Gas production is also observed, which collects in the inverted Durham tube.
2. Non-fermenting organisms produce good growth, but will not produce acid or gas.

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 : MacConkey Broth Purple w/BCP.
Product Code : DM152
Available Pack sizes : 100gm / 500gm

References

1. MacConkey, A. 1901. Centr. Bakt. 29:740.
2. MacConkey, A. 1905. Lactose-fermenting bacteria in faeces. J. Hyg. 5:333-379.
3. MacConkey, A. 1908. Bile salt media and their advantage in some bacteriological examinations. J. Hyg. 8:322 *Streptocccus faecalis*. J. Hyg. Camb. 51:468-477.
4. Qadri, Buckle and Edwards. 1974. J. Appl. Bact. 37:7-14.
5. Adeleke, Adeniyi and Akinrinmisi. 2000. Afr. J. Biomed. Res. 3:89-92.
6. Hsu and Tsen. 2001. Int. J. Food Microbiol. 64:1-11.
7. World Health Organization. 4 Sept 2008. European standards for drinking water, 2nd ed., online. <www.who.int/water_sanitation_health/dwq/europstand2/en/index.html>.
8. Alivisatos and Papadakis. 1975. J. Appl. Bact. *39*:287-293.
9. International Organization for Standardization. 1990. Water quality – Detection and enumeration of coliform organisms, thermotolerant coliform organisms and presumptive *Escherichia coli* – Part2: Multiple tube (most probable number) method. ISO 9308-2, First ed., 1990-10-01. International Organization for Standardization, Geneva, Switzerland.
10. United States Pharmacopeial Convention, Inc. 2008. The United States pharmacopeia 31/The national formulary 26, Supp. 1, 8-1-08, online. United States Pharmacopeial Convention, Inc., Rockville, Md.
11. Childs E. and Allen, 1953, J. Hyg: Camb. 51:468-477.

Further Information

For further information please contact your local MICROMASTER Representative.

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