MacCONKEY AGAR, CS (7391)

Intended Use

MacConkey Agar, CS is used for the isolation and differentiation of Gram-negative enteric bacilli from specimens containing swarming strains of *Proteus* spp.

Product Summary and Explanation

MacConkey Agar is based on the bile salt-neutral red-lactose agar of MacConkey.[1] The original MacConkey medium was used to differentiate strains of *Salmonella typhosa* from members of the coliform group. Formula modifications improved growth of *Shigella* and *Salmonella* strains. These modifications include the addition of 0.5% sodium chloride, decreased agar content, altered bile salts, and neutral red concentrations. The formula modifications improved differential reactions between enteric pathogens and coliforms.

MacConkey Agar, CS ("Controlled Swarming") contains carefully selected raw materials to reduce swarming of *Proteus* spp., which could cause difficulty in isolating and enumerating other Gram-negative bacilli.

Principles of the Procedure

Enzymatic Digest of Gelatin, Enzymatic Digest of Casein, and Enzymatic Digest of Animal Tissue are the nitrogen and vitamin sources in MacConkey Agar, CS. Lactose is the fermentable carbohydrate. During Lactose fermentation a local pH drop around the colony causes a color change in the pH indicator, Neutral Red, and bile precipitation. Bile Salts and Crystal Violet are the selective agents, inhibiting Gram-positive cocci and allowing Gram-negative organisms to grow. Sodium Chloride maintains the osmotic environment. Agar is the solidifying agent.

Formula / Liter

Enzymatic Digest of Gelatin	17 g
Enzymatic Digest of Casein	1.5 g
Enzymatic Digest of Animal Tissue	1.5 g
Lactose	10 g
Bile Salts	1.5 g
Sodium Chloride	5 g
Neutral Red	0.03 g
Crystal Violet	0.001 g
Agar	13.5 g

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.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions

1. Suspend 50 g of the medium in one liter of purified water.
2. Heat with frequent agitation and boil for one minute to completely dissolve the medium.
3. Autoclave at 121°C for 15 minutes.

Quality Control Specifications

Dehydrated Appearance: Powder is homogeneous, free flowing, and pinkish-beige.

Prepared Appearance: Prepared medium is medium to dark pink-purple, and trace to slightly hazy.

Expected Cultural Response: Cultural response on MacConkey Agar, CS incubated aerobically at 35 ± 2°C and examined for growth after 18 - 24 hours.

Microorganism	Approx. Inoculum (CFU)	Expected Reaction	
		Growth	Reaction
Escherichia coli ATCC® 25922	10 - 300	Good to excellent	Pink colonies w/ or w/o bile precipitate
Proteus mirabilis ATCC® 12453	10 - 300	Good to excellent	Swarming is inhibited, colorless colonies
Salmonella typhimurium ATCC® 14028	10 - 300	Good to excellent	Colorless colonies
Staphylococcus aureus ATCC® 25923	300 - 1000	Inhibited	---

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

Test Procedure

Refer to appropriate references using MacConkey Agar, CS for the isolation and identification of enteric organisms.[2]

Results

Lactose-fermenting organisms grow as pink to brick red colonies with or without a zone of precipitated bile. Non-lactose fermenting organisms grow as colorless or clear colonies. Swarming by *Proteus* spp. is reduced on MacConkey Agar, CS.

Storage

Store dehydrated medium at 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

Expiration

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

Limitations of the Procedure

1. Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.
2. Although MacConkey Agar, CS is a selective medium primarily for Gram-negative enteric bacilli, biochemical and serological testing using pure cultures are recommended for complete identification.
3. Incubation of MacConkey Agar, CS under increased CO_2 has been reported to reduce the growth and recovery of certain strains of Gram-negative bacilli.[3]

Packaging

MacConkey Agar, CS	**Code No.**	**7391A**	**500 g**
		7391B	**2 kg**
		7391C	**10 kg**

References

1. **MacConkey, A.** 1905. Lactose-fermenting bacteria in feces. J. Hyg. **5**:333-379.
2. **Murray, P. R., E. J. Baron, M. A. Pfaller, F. C. Tenover, and R. H. Yolken (eds.).** Manual of clinical microbiology, 6th ed. American Society for Microbiology, Washington, D.C.
3. **Mazura-Reetz, G. T. Neblett, and J. M. Galperin.** 1979. MacConkey Agar: CO_2 vs. ambient incubation. Abst. Ann. Mtg. American Society for Microbiology. C179.

Technical Information

Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (517)372-9200 or fax us at (517)372-2006.

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