

## MacCONKEY AGAR W/O CRYSTAL VIOLET & SALT (7378)

### Intended Use

**MacConkey Agar W/O Crystal Violet & Salt** 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.<sup>1</sup> 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 W/O Crystal Violet & Salt is a differential medium that restricts swarming of *Proteus* spp., aiding in the detection and isolation of enteric microorganisms. Sodium Chloride is deleted from the medium to provide an electrolyte deficient medium preventing *Proteus* spp. from spreading. In addition, this medium does not contain crystal violet allowing *Staphylococcus*, *Enterococcus*, and *Mycobacterium* spp. to grow.

### Principles of the Procedure

Enzymatic Digest of Casein and Enzymatic Digest of Animal Tissue are the nitrogen and vitamin sources in MacConkey Agar W/O Crystal Violet & Salt. 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 develops. Bile Salts Mixture is a selective agent. Agar is the solidifying agent.

### Formula / Liter

Enzymatic Digest of Casein .....	18.5 g
Enzymatic Digest of Animal Tissue.....	1.5 g
Lactose .....	10 g
Bile Salts Mixture .....	5 g
Neutral Red.....	0.04 g
Agar .....	12 g

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

### Directions

1. Suspend 47 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 trace to light pink-beige.

**Prepared Appearance:** Prepared medium is trace to slightly hazy, and pink to rose-orange.

**Expected Cultural Response:** Cultural response on MacConkey Agar W/O Crystal Violet & Salt incubated at the appropriate atmosphere and temperature, and examined for growth after 18 - 24 hours.

Microorganism	Approx. Inoculum (CFU)	Expected Results	
		Growth	Reaction
<i>Enterococcus faecalis</i> ATCC® 29212	10 - 300	Partial inhibition	Pink colonies
<i>Escherichia coli</i> ATCC® 25922	10 - 300	Growth	Bright pink colonies
<i>Proteus mirabilis</i> ATCC® 12453	10 - 300	Growth	Colorless colonies, no swarming
<i>Proteus mirabilis</i> ATCC® 43071	10 - 300	Growth	Colorless colonies, swarming
<i>Salmonella typhimurium</i> ATCC® 14028	10 - 300	Growth	Colorless colonies
<i>Shigella sonnei</i> ATCC® 25931	10 - 300	Growth	Colorless colonies
<i>Staphylococcus aureus</i> ATCC® 25923	10 - 300	Growth; suppressed size	Colorless to pink colonies
<i>Streptococcus pneumoniae</i> ATCC® 6305	10 - 300	Inhibited	----
<i>Streptococcus pyogenes</i> ATCC® 19615	10 - 300	Inhibited	----

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

### **Test Procedure**

Refer to appropriate references using MacConkey Agar W/O Crystal Violet & Salt for the isolation and identification of enteric organisms.<sup>2</sup>

### **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.

### **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 the 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 W/O Crystal Violet & Salt is a selective medium, it is less inhibitory than MacConkey Agar, allowing gram-positive organisms to grow. Biochemical and serological testing using pure cultures are recommended for complete identification.
3. Incubation of MacConkey Agar W/O Crystal Violet & Salt under increased CO<sub>2</sub> has been reported to reduce growth and recovery of certain Gram-negative bacilli.<sup>3</sup>

### **Packaging**

<b>MacConkey Agar W/O Crystal Violet &amp; Salt</b>	<b>Code No.</b>	<b>7378A</b>	<b>500 g</b>
		<b>7378B</b>	<b>2 kg</b>
		<b>7378C</b>	<b>10 kg</b>

### **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. Tenover (eds.).** Manual of clinical microbiology, 6<sup>th</sup> ed. American Society for Microbiology, Washington, D.C.
3. **Mazura-Reetz, G. T. Neblett, and J. M. Galperin.** 1979. MacConkey Agar: CO<sub>2</sub> 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.