

# Instructions for Use

## CRITERION™ MACCONKEY BROTH

<a href="#">Cat. no. C6140</a>	CRITERION™ MacConkey Broth	69.8gm
<a href="#">Cat. no. C6141</a>	CRITERION™ MacConkey Broth	500gm
<a href="#">Cat. no. C6142</a>	CRITERION™ MacConkey Broth	2kg
<a href="#">Cat. no. C6143</a>	CRITERION™ MacConkey Broth	10kg
Cat. no. C6144	CRITERION™ MacConkey Broth	50kg

## INTENDED USE

Hardy Diagnostics CRITERION™ MacConkey Broth is recommended for cultivating gram-negative, lactose-fermenting bacilli from water and foods as a presumptive test for coliforms. MacConkey Broth can also be used pre-enrichment of *E. coli* O157 for toxin testing.

This dehydrated culture medium is a raw material intended to be used in the making of prepared media products, which will require further processing, additional ingredients, or supplements.

## SUMMARY

Hardy Diagnostics CRITERION™ MacConkey Broth is a modification of the original bile salt broth recommended by MacConkey, which contained 0.5% sodium taurocholate and litmus as an indicator.<sup>(1)</sup> MacConkey later suggested variations of this formulation using neutral red as an indicator instead of litmus.<sup>(2,3)</sup> Consequently, Childs and Allen demonstrated the inhibitory effect of neutral red and further revised the formula to include the less inhibitory bromcresol purple.<sup>(4)</sup> Bile salts in the growth medium replaced the original sodium taurocholate.

Gelatin peptone provides CRITERION™ MacConkey Broth with nitrogen and vitamins to promote growth. Lactose is utilized by lactose-fermenting bacilli. Bile salts inhibit the growth of gram-positive microorganisms, and bromcresol purple acts as the pH indicator.

## FORMULA\*

Gram weight per liter:	35.0gm/L
Gelatin Peptone	20.0gm
Lactose	10.0gm
Bile Salts	5.0gm
Bromcresol Purple	0.01gm

Final pH 7.3 +/- 0.2 at 25°C.

\* Adjusted and/or supplemented as required to meet performance criteria.

## STORAGE AND SHELF LIFE

Store the sealed bottle(s) containing dehydrated culture medium at 2-30°C. Dehydrated culture medium is very hygroscopic. Keep lid tightly sealed. Protect dehydrated culture media from moisture and light. The dehydrated culture media should be discarded if it is not free-flowing or if the color has changed from its original light beige.

Store the prepared culture media at 2-8°C.

The expiration date on the product label applies to the product in its intact packaging when stored as directed. The product may be used and tested up to the expiration date on the product label and incubated for the recommended incubation times as stated below.

Refer to the document "[Storage](#)" for more information.

## PRECAUTIONS

### METHOD OF PREPARATION FOR DEHYDRATED CULTURE MEDIA

1. Suspend 34.9gm of the dehydrated culture medium in one liter of distilled or deionized water. Stir to mix thoroughly.
2. Heat as necessary to dissolve completely.
3. Dispense as desired into tubes containing inverted Durham tubes. Loosen caps prior to autoclaving.
4. Sterilize in the autoclave at 121°C. for 15 minutes.
5. Cool to 45-50°C. Tighten caps and store appropriately until use.

## PROCEDURE AND INTERPRETATION OF RESULTS

For information on procedures and interpretation of results, consult listed references or refer to the prepared media Instructions for Use (IFU) for Cat. No. K194 or U125.

## LIMITATIONS

It is recommended that biochemical, immunological, molecular, or mass spectrometry testing be performed on colonies from pure culture for complete identification.

Some formulations may require a settling period before pH testing of the prepared medium. If the pH is tested immediately after preparation and is out of specification, retest the medium after 24 hours to obtain final pH results. Always take pH reading at room temperature.

Due to nutritional variation, some strains encountered may grow poorly or fail to grow on this medium.

Refer to the document "[Limitations of Procedures and Warranty](#)" for more information.

## MATERIALS REQUIRED BUT NOT PROVIDED

Standard microbiological supplies and equipment such as loops, tubes, autoclaves, incinerators, and incubators, etc., are not provided.

## QUALITY CONTROL

Hardy Diagnostics tests each lot of commercially manufactured media using appropriate quality control microorganisms and quality specifications as outlined on the Certificate of Analysis (CofA) and the CLSI document M22-A3 *Quality Assurance for Commercially Prepared Microbiological Culture Media*. The following microorganisms are routinely used for testing at Hardy Diagnostics:

Test Organisms	Inoculation Method*	Incubation			Results
		Time	Temperature	Atmosphere	
<i>Escherichia coli</i> ATCC® 8739**	J	18-24hrs	35°C	Aerobic	Growth; media turns yellow, gas production
<i>Staphylococcus aureus</i> ATCC® 6538**	B	18-24hrs	35°C	Aerobic	Partial to complete inhibition; no color change in media, no gas production

\* Refer to the document "[Inoculation Procedures for Media QC](#)" for more information.

\*\* Recommended QC strains for User Quality Control according to the CLSI document M22 when applicable.

Tested in accordance with USP <61> and <62>. <sup>(13,14)</sup>

## USER QUALITY CONTROL

Users of dehydrated culture media should perform QC testing in accordance with applicable government regulatory agencies, and in compliance with accreditation requirements. Hardy Diagnostics recommends end users check for signs of contamination and deterioration and, if dictated by laboratory quality control procedures or regulation, perform quality control testing to demonstrate growth or a positive reaction and to demonstrate inhibition or a negative reaction, if applicable. Hardy Diagnostics quality control testing is documented on the certificate of analysis (CofA) available from Hardy Diagnostics [Certificate of Analysis](#) website. In addition, refer to the following document "[Finished Product Quality Control Procedures](#)," for more information on QC or see the reference(s) for more specific information.

## PHYSICAL APPEARANCE

CRITERION™ MacConkey Broth powder should appear homogeneous, free-flowing, and light beige in color. The prepared medium should appear clear and reddish-purple in color.

## REFERENCES

1. MacConkey. 1901. *Zentralbl. Bakteriol.*; 29:740.
2. MacConkey, A.T. 1905. Lactose-fermenting bacteria in faeces. *J. Hyg.*; 5:333-379.
3. MacConkey. 1908. *J. Hyg.*; 8:322.
4. Childs, Eileen and Allen, L.A. 1953. Improved methods for determining the most probable number of *Bacterium coli* and of *Streptococcus faecalis*. *J. Hyg.*; 51:468-477.
5. Anderson, N.L., et al. *Cumitech 3B; Quality Systems in the Clinical Microbiology Laboratory*, Coordinating ed., A.S. Weissfeld. American Society for Microbiology, Washington, D.C.
6. Jorgensen., et al. *Manual of Clinical Microbiology*, American Society for Microbiology, Washington, D.C.
7. Tille, P., et al. *Bailey and Scott's Diagnostic Microbiology*, C.V. Mosby Company, St. Louis, MO.
8. Isenberg, H.D. *Clinical Microbiology Procedures Handbook*, Vol. I, II & III. American Society for Microbiology, Washington, D.C.
9. MacFaddin, J.F. 1985. *Media for Isolation, Cultivation, Identification, Maintenance of Bacteria*, Vol. I. Williams &

Wilkins, Baltimore, MD.

10. *Quality Assurance for Commercially Prepared Microbiological Culture Media*, M22. Clinical and Laboratory Standards Institute (CLSI - formerly NCCLS), Wayne, PA.

11. American Public Health Association. *Standard Methods for the Examination of Dairy Products*, APHA, Washington, D.C.

12. Greenberg, A.E., et al. (ed.). 1992. *Standard Methods for the Examination of Water and Wastewater*, 18th ed. APHA, Washington, D.C.

13. The Official Compendia of Standards. USP General Chapter <61> Microbiological Examination of Nonsterile Products: Microbial Enumeration Tests. *USP-NF*. United States Pharmacopeial Convention Inc., Rockville, MD.

14. The Official Compendia of Standards. USP General Chapter <62> Microbiological Examination of Nonsterile Products: Tests for Specified Microorganisms. *USP-NF*. United States Pharmacopeial Convention Inc., Rockville, MD.

ATCC is a registered trademark of the American Type Culture Collection.

IFU-10197[B]



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[Ordering Information](#)

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