Cellobiose Arginine Lysine HiVeg™ Broth (CAL HiVeg™ Broth)

MV894

Intended Use:

Recommended for selective isolation and biochemical characterization of *Yersinia enterocolitica.*

Composition**

Ingredients	g / L
Yeast extract	3.000
Sodium chloride	5.000
Cellobiose	3.500
L-Arginine	6.500
L-Lysine hydrochloride	6.500
Synthetic detergent No. III	1.500
Neutral red	0.030
Final pH (at 25°C)	7.1±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 26.03 grams in 1000 ml purified/distilled water. Heat if necessary to dissolve the medium completely. **DO NOT OVERHEAT OR AUTOCLAVE**. Mix well and dispense into sterile test tubes or flasks as desired.

Principle And Interpretation

Yersinia enterocolitica is a significant invasive enteric pathogen belonging to the family *Enterobacteriaceae*, which causes several well-recognized diseases especially in younger persons and several uncommon post-infection syndrome. Enterocolitis caused by *Y.enterocolitica* is characterized by diarrhea, low fever and abdominal pain. CAL Broth used for selective isolation of *Y.enterocolitica* was originally formulated by Dudley and Shotts (1). CAL Broth is a differential medium as it differentiates *Yersinia* on the basis of cellobiose fermentation and lysine or arginine decarboxylation. As the organism is biochemically similar to other *Enterobacteriaceae.* CAL Broth is used for the enumeration of *Y.enterocolitica* from water and other liquid specimens (2). Yeast extract provides essential nutrients to the organisms. Cellobiose is the fermentable carbohydrate. Sodium chloride maintains the osmotic equilibrium. Cellobiose Arginine Lysine HiVeg™ Broth (CAL HiVeg™ Broth) is prepared by using vegetable peptones in place of animal based peptones which make the media free of BSE/TSE risks. Synthetic detergent No. III makes the medium selective by inhibiting the accompanying gram-positive bacteria, which may cause contamination during cultivation. L-arginine and L-lysine are the amino acids, decarboxylation of which makes the medium differential. Neutral red is the indicator, which turns red under acidic conditions.s (3).

Type of specimen

Food and dairy samples

Specimen Collection and Handling:

For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (4,5). After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions :

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations :

1. Individual organisms differ in their growth requirement and may show variable growth patterns on the medium.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance

Light yellow to pink homogeneous free flowing powder

Colour and Clarity of prepared medium

Red coloured, clear solution in tubes

Reaction

Reaction of 2.6% w/v aqueous solution at 25°C. pH : 7.1±0.2

pH

6.90-7.30

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth	Cellobiose	Arginine decarboxylation	Lysine decarboxylation
Escherichia coli ATCC 25922 (00013*)	50-100	good	negative reaction	variable reaction	variable reaction
Proteus mirabilis ATCC 25933	50-100	good	negative reaction	negative reaction	negative reaction
Pseudomonas aeruginosa ATCC 27853 (00025*)	50-100	good	negative reaction	negative reaction	positive reaction
Yersinia enterocolitica ATCC 27729	50-100	good-luxuriant	positive reaction	negative reaction	negative reaction

Key : *Corresponding WDCM numbers.

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 15-25°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with clinical sample must be decontaminated and disposed of in accordance with current laboratory techniques (6,7).

Reference

1. Dudley M.V. and Shotts E.B., 1979, J. Clin. Microbiol., 10(2):180.
2. MacFaddin J.F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore.
3. Cover T.L., and Aber R.C., 1989 Yersinia Enterocolitica, N. Engl. J. Med., 32:16-24
4. Salfinger Y., and Tortorello M.L., 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.
5. 5Wehr H. M. and Frank J. H., 2004, Standard Methods for the Microbiological Examination of Dairy Products, 17th Ed., APHA Inc., Washington, D.C.
6. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
7. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

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