CAL Agar (Cellobiose Arginine Lysine Agar)

M893

CAL (Cellobiose Arginine Lysine) Agar is used for selective isolation and biochemical characterization of *Yersinia enterocolitica* .

Composition**

Ingredients	Gms / Litre
Yeast extract	3.000
Sodium chloride	5.000
Cellobiose	3.500
L-Arginine	6.500
L-Lysine hydrochloride	6.500
Sodium deoxycholate	1.500
Neutral red	0.030
Agar	20.000
Final pH (at 25°C)	7.1±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 46.03 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. DO NOT OVERHEAT OR AUTOCLAVE. Mix well and pour into sterile Petri plates.

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 syndromes (1). Enterocolitis caused by *Y.enterocolitica* is characterized by diarrhoea, low fever and abdominal pain. CAL Agar used for selective isolation of *Y.enterocolitica* was originally formulated by Dudley and Shotts (2). CAL Agar is a differential medium as it differentiates *Yersinia* on the basis of cellobiose fermentation and lysine or arginine decarboxylation. CAL Agar is generally used for the isolation and characterization of *Y.enterocolitica* from faecal specimens (2) as the organism is biochemically similar to other *Enterobacteriaceae* (3). CAL Broth is used for the enumeration of *Y.enterocolitica* from water and other liquid specimens (3).

Yeast extract provides essential nutrients to the organisms. Cellobiose is the fermentable carbohydrate. Sodium chloride maintains the osmotic equilibrium. Sodium deoxycholate 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.

Quality Control

Appearance
Light yellow to pink homogeneous free flowing powder

Gelling
Firm, comparable with 2.0% Agar gel.

Colour and Clarity of prepared medium
Red coloured, clear to slightly opalescent gel forms in Petri plates.

Reaction
Reaction of 4.6% w/v aqueous solution at 25°C. pH : 7.1±0.2

pH
6.90-7.30

Cultural Response
M893: 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	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	50-100	good	negative reaction	negative reaction	positive reaction
Yersinia enterocolitica ATCC 27729	50-100	good-luxuriant	positive reaction	negative reaction	negative reaction

Storage and Shelf Life

Store below 30°Cin tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

Reference

1. Cover T.L., and Aber R.C., 1989 Yersinia Enterocolitica, N. Engl. J. Med., 32:16-24
2. 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.

Revision : 2 / 2015