Technical Information

CAL Agar (Cellobiose Arginine Lysine Agar)

Product Code: DM 1893

Application: - 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

Principle & 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 in infected population[(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 from member of enterobacteriaceae 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 and 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.

Methodology

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

Quality Control

Physical 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 range 6.90-7.30

Cultural Response/ characteristices

DM 1893: 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 A TCC 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	Negative reaction	Negative reaction	Negative reaction

Storage and Shelf Life

Dried Media : Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.
Prepared Media : 2-8^{o} in sealable plastic bags for 2-5 days.

Further Reading

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.

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