Arginine-Glucose Yeast Extract Agar

M1869

Arginine-Glucose Yeast Extract Agar is used for the screening and confirmation of *Vibrio* species in accordance with FDA BAM, 1998.

Composition**

Ingredients	Gms / Litre
Peptone	5.000
Yeast Extract	3.000
Tryptone	10.000
Sodium Chloride	20.000
Glucose	1.000
L-Arginine hydrochloride	5.000
Ferric ammonium citrate	0.500
Sodium thiosulphate	0.300
Bromocresol purple	0.020
Agar	13.500
Final pH (at 25°C)	6.9±0.1

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 58.32 grams in 1000 ml distilled water. Heat to boiling to dissolve the medium completely. Dispense in 5 ml amount into test tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 10-12 minutes. Cool the medium to give slants and/or butts.

Principle And Interpretation

Vibrio species are asporogenus, motile rods with polar flagella. Amongst the different species *V.cholerae, V. parahaemolyticus , V.vulnificus* and *V. mimicus* are well-documented human pathogens especially in intestinal diseases such as cholera, whereas *V.alginolyticus , V.fluvialis V.furnissii , V.metschnikovii* and *V.hollisae* are reported to be opportunistic pathogens. Arginine-Glucose Yeast Extract Agar is used for the screening and confirmation of Vibrio species from food specimens in accordance with FDA BAM (1).

Peptone, Tryptone and yeast extract provide the necessary nitrogenous nutrients and vitamin B complex to the organisms. Glucose acts as the fermentable carbon source. Ferric ammonium citrate and sodium thiosulphate are the indicators for H2S production and bromocresol purple acts as the pH indicator. This medium contains L- Arginine HCl. The organisms which do not decarboxylate L- Arginine HCl but ferment glucose, gives an alkaline slant and an acid butt (2).

Inoculate the suspect culture identified through presumptive method to the Arginine-Glusose Yeast Extract Agar slants by streaking and stabbing the butt. Incubate it with loose cap overnight at 35° ±2°C. Organisms that ferment glucose produce a variety of acids, turning the colour of the medium from purple to yellow. More amounts of acids are liberated in butt (fermentation) than in the slant (respiration). Growing bacteria that can hydrolyse Arginine give more alkaline products that neutralize the acid present in the butt making the medium purple. *V. cholera , V. mimicus , V. parahaemolyticus* and *V. vulnificus* cultures will have an alkaline (purple) slant and an acid (yellow) butt, as arginine is not hydrolyzed. Whereas *V. fluvialis , V. furnissii* and *V. hollisae* show positive arginine hydrolysis indicated by the purple slants and butt. No gas or H2S is produced by any of the organisms.

Quality Control

Appearance

Light yellow to greenish yellow homogeneous free flowing powder

Gelling

Firm, comparable with 1.35% Agar gel.

Colour and Clarity of prepared medium
Purple coloured clear to slightly opalescent gel forms in tubes as slants with a butt.

Reaction
Reaction of 5.83 % w/v aqueous solution at 25°C. pH : 6.9±0.1

pH
6.80-7.00

Cultural Response
Cultural characteristics observed after an incubation at 33-37°C for 18-24 hours.

Cultural Response

Organism	Inoculum (CFU)	Growth	Slant	Butt	Gas	H2S
Cultural Response						
Vibrio cholerae ATCC 15748	50-100	luxuriant	Alkaline reaction, Purplish colour	acidic reaction, yellowing of the medium	negative reaction	negative reaction, no blackening of the medium
Vibrio parahaemolyticus ATCC 17802	50-100	luxuriant	Alkaline reaction, Purplish colour	acidic reaction, yellowing of the medium	positive reaction	negative, no blackening of medium
Vibrio vulnificus ATCC 29306	50-100	luxuriant	Alkaline reaction, Purplish colour	acidic reaction, yellowing of the medium	positive reaction	negative, no blackening of medium
Vibrio fluvialis ATCC 33809	50-100	luxuriant	Alkaline reaction, purplish colour	acidic reaction, yellowing of the medium	positive reaction	negative, no blackening of medium

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

Reference
1.USFDA. Bacteriological Analytical Manual. 18 ed. Washington, DC: AOAC; 2005.
2.Murray PR, Baron EJ, Jorgensen JH, Pfaller MA, Yolken RH. Manual of Clinical Microbiology. 8 ed. Washington, D.C: ASM; 2003.

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