Technical Information

Deoxycholate Citrate Agar (Agar Medium J)

Product Code: DM 1065B

Application: - Deoxycholate Citrate Agar is a selective medium recommended for the isolation of enteric pathogens particularly *Salmonella* species as per British Pharmacopoeia.

Composition**

Ingredients	Gms / Litre
Meat peptone	10.000
Beef extract	10.000
Lactose monohydrate	10.000
Sodium citrate	20.000
Ferric citrate	1.000
Sodium deoxycholate	5.000
Neutral red	0.020
Agar	13.500
Final pH (at 25°C)	7.3±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Deoxycholate Citrate Agar Medium is prepared as per the methodology of Leifson [(1)] It is also recommended by British Pharmacopoeia and is also designated as Agar medium J [(2)]. This medium is used for the isolation and maximum recovery of intestinal pathogens belonging to *Salmonella* and *Shigella* groups from foods and pharmaceutical products [(3)]. However, it is recommended to use less inhibitory medium when Shigellae have to be isolated [(4)]. *Salmonella* major causative agent of enteric disease especially food borne toxic infection and typhoid was first observed by Eberth in 1880. This medium is routinely used to check the presence of Salmonella contamination in food and pharmaceutical products as per BP.

Sodium deoxycholate at pH 7.3 to 7.5 is inhibitory for gram-positive bacteria. Proteus and other Gram positive organisms are also inhibited due to higher concentration of both citrate and deoxycholate salts in this medium. The reduction of ferric citrate to iron sulphide by H_2S gives the indicative appearance of colonies with black center. Combination of beef extract and meat peptone supplies nitrogen, mineral, vitamin factors required for enhanced growth. Lactose monohydrate supplies fermentable carbohydrate source in this medium. Neutral red acts as indicators, in presence of which lactose fermenters like coliform bacteria give pink colonies while lactose non-fermenters give colourless colonies.

Salmonella gives well-developed colourless colonies. Precipitation of deoxycholate by acid produced by lactose fermenters may give a zone of precipitation around the colony. This medium provides essential growth factors for growth of several auxotrophic strains of Paratyphi and Typhi. The selectivity of this medium permits the use of fairly heavy inocula without danger of overgrowth of *Shigella* and *Salmonella* by other microflora.

Methodology

Suspend 69.02 grams of dehydrated powder in 1000 ml of purified/distilled water. Shake well & heat gently to dissolve the medium completely. DO NOT AUTOCLAVE. Avoid excessive heating as it is detrimental to the medium. Mix well before pouring into steril e Petri plates.

Quality Control

Physical Appearance
Light yellow to pinkish beige homogeneous free flowing powder

Gelling
Firm, comparable with 1.35% Agar gel.

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

pH range 7.10-7.50

Growth Promotion Test
Growth Promotion is carried out in accordance with BP.

Cultural Response/ characteristics
DM1065B: Cultural response was observed after an incubation at 35-37°C for 18-72 hours. Recovery rate is considered as 100% for bacteria growth on Soyabean Casein Digest Agar.

Organism	Inoculum (CFU)	Growth	Observed Lot value (CFU)	Recovery	Colour of Colony
Salmonella Typhimurium ATCC 14028	50-100	luxuriant	25-100	>=50%	colourless colonies
Salmonella A bony NCTC 6017	50-100	luxuriant	>=50%	>=50%	colourless colonies
Additional Microbiological testing					
Salmonella Enteritidis ATCC 13076	50-100	luxuriant	25-50	>=50%	colourless colonies
Enterococcus faecalis ATCC 29212	10^3	Inhibited	0-0	0%	
Escherichia coli ATCC 8739	50-100	poor	15-30	20-30%	Pink with bile precipitate

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. Leifson, 1935, J. Path. Bact., 40:58 1.
2. British Pharmacopoeia, 2009, The Stationery office British Pharmacopoeia.
3. Speck M. (Eds.), 1984, Compendium of Methods for the Microbiological Examination of Foods, 2nd ed., APHA, Washington, D.C.
4. Frieker C.R., 1987, J. Appl. Bact., 63:99.

Disclaimer :

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Replace Date 18-Jan-2020