

PRODUCT SPECIFICATION SHEET



Agar Medium J (Deoxycholate-Citrate Agar) (DM577B)

Intended Use

Agar Medium J (Deoxycholate-Citrate Agar) (DM577B) is recommended for selective isolation of enteric pathogens in compliance with BP

Product Summary and Explanation

Deoxycholate Citrate Agar Medium is a modification of Desoxycholate Agar formulated by Leifson.⁽¹⁾ The original medium of Leifson demonstrated improved recovery of intestinal pathogens from specimens containing normal intestinal flora by using citrates and sodium desoxycholate in specified amounts as inhibitors to gram-positive bacteria. Leifson modified his original medium by increasing the concentration of sodium citrate and sodium desoxycholate and found Deoxycholate Citrate Agar reliable for isolating many *Salmonella* and *Shigella* species. This medium is recommended by British Pharmacopoeia and is also designated as Agar medium J.⁽²⁾ Desoxycholate Citrate Agar effectively isolates intestinal pathogens *Salmonella* and *Shigella* species from foods and pharmaceutical products by inhibiting coliforms and many *Proteus* species.⁽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. As per BP this medium is routinely used to check the presence of *Salmonella* contamination in food and pharmaceutical products.

Principles of the Procedure

Agar Medium J (Deoxycholate-Citrate Agar) contains beef extract and meat peptone which provides nitrogen, mineral, vitamin factors required for enhanced growth of organisms. Lactose monohydrate is a fermentable carbohydrate source. Neutral red acts as indicators, in presence of which lactose fermenters like coliform bacteria give pink colonies while lactose non-fermenters give colourless colonies. Sodium deoxycholate is inhibitory for gram-positive bacteria at pH 7.3 to 7.5. Higher concentration of both citrate and deoxycholate salts in this medium inhibits *Proteus* and other gram-positive organisms. The reduction of ferric citrate to iron sulphide gives the indicative appearance of colonies with black center. Citrate salt, in the concentration included in the formulation, are inhibitory to gram-positive bacteria and most other normal intestinal organisms.

Formula / Liter

Ingredients	Gms / Liter
Meat peptone	10.00
Beef extract	10.00
Lactose monohydrate	10.00
Sodium citrate	20.00
Neutral red	0.02
Sodium deoxycholate	5.00
Ferric citrate	1.00
Agar	13.50
Final pH: 7.3 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions

1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.
3. DO NOT REMELT. This medium is heat sensitive. Avoid excessive or prolonged heating during reconstitution.

Directions

1. Suspend 69.02 grams (the equivalent weight of dehydrated medium per litre) in one litre of purified/distilled water.
2. Heat to boiling to dissolve the medium completely.
3. DO NOT AUTOCLAVE. Avoid excessive heating, as it is detrimental to the medium.

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Quality Control Specifications

Dehydrated Appearance	Light yellow to pinkish beige, homogeneous free flowing powder
Prepared Medium	Reddish-orange colored, clear to slightly opalescent gel forms in Petri plates.
Reaction of % solution	Not Applicable
Gel Strength	Firm, comparable with 1.35% Agar gel

Growth Promotion Test

Growth Promotion is carried out in accordance with BP.

Expected Cultural Response: 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.

Sr. No.	Organisms	Inoculum (CFU)	Results to be achieved			
			Growth	Observed Lot Value (CFU)	Recovery	Color of colony
Test for Salmonella						
1.	<i>Salmonella Typhimurium</i> ATCC 14028	50-100	good-luxuriant	25 -50	≥50%	colourless colonies
2.	<i>Salmonella Abony</i> NCTC 6017	50-100	good-luxuriant	25 -50	≥50%	colourless colonies
Additional Microbiological testing						
3.	<i>Salmonella Enteritidis</i> ATCC 13076	50-100	good-luxuriant	25 -50	≥50%	colourless colonies
4.	<i>Enterococcus faecalis</i> ATCC 29212	≥10 ³	inhibited	0	0%	--
5.	<i>Escherichia coli</i> ATCC 8739	50-100	poor	15 -30	20 -30 %	pink with bile precipitate

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

- Inoculate specimen directly onto surface of medium.
- Incubate plates at 35 -37°C for 18-24 hours. Plates can be incubated for an additional 24 hours if no lactose fermenters are observed.

Results

- Lactose fermenters produce a red colony with or without a bile precipitate.
- Lactose non-fermenters produce transparent, colourless to light pink or tan coloured colonies with or without black centres.
- Salmonella* gives well-developed colourless colonies, while *Shigella* gives colourless colonies without black center indicating absence of H₂S production.
- Precipitation of deoxycholate by acid produced by lactose fermenters may give a zone of precipitation around the colony.

Storage

Store the sealed bottle containing the dehydrated medium at 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

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Limitations of the Procedure

1. Coliform strains may be encountered that will grow on this medium, making it difficult to detect pathogens.
2. This medium provides essential growth factors for growth of several auxotrophic strains of Paratyphi and Typhi.
3. The selectivity of this medium permits the use of fairly heavy inocula without danger of overgrowth of *Shigella* and *Salmonella* by other microflora.
4. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : Agar Medium J (Deoxycholate-Citrate Agar)

Product Code : DM577B

Available Pack sizes : 100gm / 500gm

References

1. Leifson, 1935, J. Path. Bact., 40:581.
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.

Further Information

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DM577BPI, Rev.0, 01.08.2008

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