

PRODUCT SPECIFICATION SHEET



Deoxycholate Citrate Agar, Modified (Hynes) (DM396)

Intended Use

Deoxycholate Citrate Agar, Modified (Hynes) (DM396) is recommended for selective isolation of *Salmonella* and *Shigella* species.

Product Summary and Explanation

Deoxycholate Citrate Agar, Modified (Hynes) is a modification of Desoxycholate Agar formulated by Leifson⁽¹⁾ which demonstrated improved recovery of intestinal pathogens from specimens containing normal intestinal flora. Deoxycholate Agar is an improvement over other media of the time because the chemicals, citrates and sodium desoxycholate, in specified amounts, worked well as inhibitors. Deoxycholate Citrate Agar, Modified (Hynes) was modified by Hynes⁽²⁾ by adding more concentrations of inhibitors and is used in food microbiology.⁽³⁾ It is a selective and differential medium used for isolation and identification of *Salmonellae* and *Shigallae*.

Principles of the Procedure

Deoxycholate Citrate Agar, Modified (Hynes) contains peptic digest of animal tissue and beef extract which provides carbon, nitrogen, vitamins and minerals required for the growth of organisms. Sodium deoxycholate, sodium citrate and ferric citrate inhibit or suppress the coliform bacteria and gram-positive bacteria. Lactose is a fermentable carbohydrate and helps in differentiating enteric bacilli, as lactose fermenters produce red colonies while lactose non-fermenters produce colourless colonies. Coliform bacteria, if present form pink colonies on this medium. Lactose degradation causes acidification of the medium surrounding the relevant colonies causing the pH indicator neutral red to change its colour to red. These colonies usually are also surrounded by a turbid zone of precipitated deoxycholic acid due to acidification of the medium. In an acidic environment sodium deoxycholate combines with neutral red causing the dye to go out of the solution with the subsequent precipitation of deoxycholate. (1) Reduction of sodium thiosulphate to sulfide is indicated by the formation of black iron sulfide.

Formula / Liter

Ingredients	Gms / Liter
Peptic digest of animal tissue	5.00
Beef extract	5.00
Lactose	10.00
Sodium citrate	8.50
Ferric citrate	1.00
Sodium deoxycholate	5.00
Sodium thiosulphate	5.40
Neutral red	0.02
Agar	12.00
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.

Directions

1. Suspend 51.92 grams of the medium in one liter of distilled water.
2. Heat to boiling, to dissolve the medium completely.
3. DO NOT AUTOCLAVE OR OVERHEAT.
4. Excessive heating is detrimental.

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Quality Control Specifications

Dehydrated Appearance	Light yellow to pinkish beige homogeneous free flowing powder
Prepared Medium	Reddish orange coloured, clear to slightly opalescent gel forms in Petri plates
Reaction of 5.19% Solution	pH : 7.3 ± 0.2 at 25°C
Gel Strength	Firm, comparable with 1.2% Agar gel

Expected Cultural Response: Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours.

Sr. No.	Organisms	Results to be achieved				
		Inoculum (CFU)	Growth	Recovery	Colour of Colony	H ₂ S
1.	<i>Bacillus cereus</i> ATCC 10876	≥10 ³	inhibited	0%	--	--
2.	<i>Escherichia coli</i> ATCC 25922	50 -100	poor-fair	20-30%	red	negative reaction
3.	<i>Salmonella Enteritidis</i> ATCC 13076	50 -100	good-luxuriant	≥50%	colourless	positive reaction, black centered colonies
4.	<i>Salmonella Typhimurium</i> ATCC 14028	50 -100	good-luxuriant	≥50%	colourless	positive reaction, black centered colonies
5.	<i>Shigella flexneri</i> ATCC 12022	50 -100	good-luxuriant	≥50%	colourless	negative reaction
6.	<i>Klebsiella pneumoniae</i> ATCC 13883	50 -100	good-luxuriant	≥50%	light pink	negative reaction
7.	<i>Shigella sonnei</i> ATCC 25931	50 -100	good-luxuriant	≥50%	pink with bile precipitate	negative reaction
8.	<i>Staphylococcus aureus</i> ATCC 25923	≥10 ³	inhibited	0%	--	--

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

Test Procedure

Refer to appropriate references for standard test procedures.

Results

Refer to appropriate references and test procedures for interpretation of results.

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.

Limitations of the Procedure

1. Citrate and iron (Fe) combination has a strong hydrolyzing effect on agar when the medium is heated, producing a soft and unelastic agar. If autoclaved the agar becomes soft and almost impossible to streak.⁽¹⁾
2. Surface colonies of non-lactose fermenters often absorb a little colour (pinkish) from the medium and organisms may be mistaken for coliforms.⁽¹⁾
3. For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification.

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4. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : Deoxycholate Citrate Agar, Modified (Hynes)

Product Code : DM396

Available Pack sizes : 500gm

References

1. Leifson, 1935, J. Pathol. Bacteriol., 40:581.
2. Hynes M., 1942, J. Path. Bacteriol., 54, 193-207.
3. Speck M. (Ed.), 1984, Compendium of Methods for the Microbiological Examination of Foods, 2nd ed., APHA, Washington, D.C.

Further Information

For further information please contact your local MICROMASTER Representative.



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