Desoxycholate Citrate Agar

Intended Use

Desoxycholate Citrate Agar is a moderately selective and differential plating medium used for isolating enteric bacilli, particularly *Salmonella* and many *Shigella* species.

Summary and Explanation

Desoxycholate Citrate Agar is a modification of Desoxycholate Agar formulated by Leifson.[1] His original medium 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 Desoxycholate Citrate Agar reliable for isolating many *Salmonella* and *Shigella* species.[1]

Desoxycholate Citrate Agar effectively isolates intestinal pathogens (*Salmonella* and *Shigella* species) by inhibiting coliforms and many *Proteus* species.

Principles of the Procedure

Infusion from meat is a source of carbon and nitrogen. This ingredient is used because the inhibition of coliforms produced is greater than when an extract or simple peptone is used.[1] Peptone provides carbon, nitrogen, vitamins and minerals. Lactose is the fermentable carbohydrate. Sodium citrate and sodium desoxycholate inhibit gram-positive bacteria, coliforms and *Proteus* species. Ferric ammonium citrate aids in the detection of H_2S-producing bacteria. Neutral red is a pH indicator. Agar is the solidifying agent.

In the presence of neutral red, bacteria that ferment lactose produce acid and form red colonies. Bacteria that do not ferment lactose form colorless colonies. If the bacteria produce H_2S, the colonies will have black centers. The majority of normal intestinal bacteria ferment lactose and do not produce H_2S (red colonies without black centers). *Salmonella* and *Shigella* spp. do not ferment lactose but *Salmonella* may produce H_2S (colorless colonies with or without black centers). Lactose-fermenting colonies may have a zone of precipitation around them caused by the precipitation of desoxycholate in the presence of acid.

Formula

Difco™ Desoxycholate Citrate Agar

Approximate Formula* Per Liter		
Meat, Infusion from 330 g	9.5	g
Proteose Peptone No. 3	10.0	g
Lactose	10.0	g
Sodium Citrate	20.0	g
Ferric Ammonium Citrate	2.0	g
Sodium Desoxycholate	5.0	g
Agar	13.5	g
Neutral Red	0.02	g

**Adjusted and/or supplemented as required to meet performance criteria.*

User Quality Control

Identity Specifications

Difco™ Desoxycholate Citrate Agar

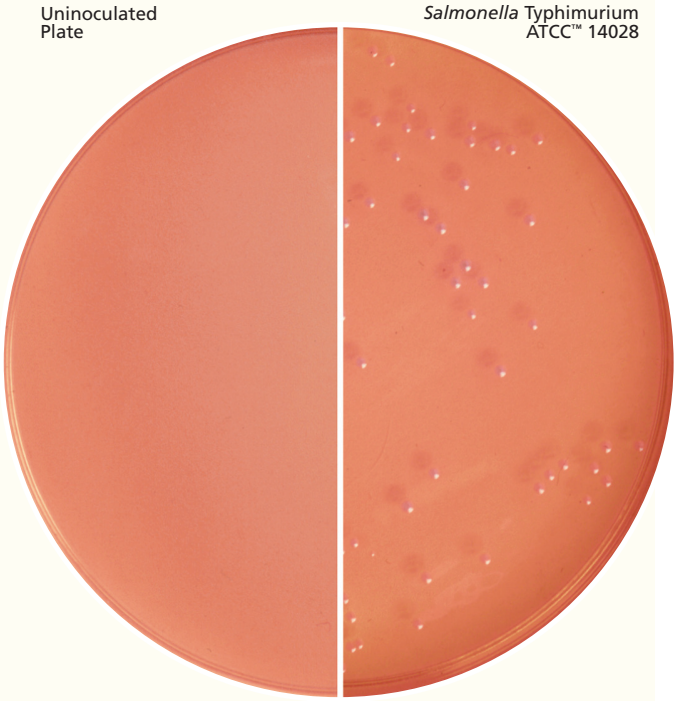
Dehydrated Appearance:	Pinkish-beige, free-flowing, homogeneous.
Solution:	7.0% solution, soluble in purified water upon boiling. Solution is orange-red, very slightly to slightly opalescent.
Prepared Appearance:	Orange-red, slightly opalescent.
Reaction of 7.0% Solution at 25°C:	pH 7.5 ± 0.2

Cultural Response

Difco™ Desoxycholate Citrate Agar

Prepare the medium per label directions. Inoculate and incubate at 35 ± 2°C for 18-24 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY	COLONY COLOR	H_2S
Enterococcus faecalis	29212	10^3-2×10^3	Marked to complete inhibition	–	–
Escherichia coli	25922	10^2-10^3	Partial to complete inhibition	Pink with bile precipitate	–
Salmonella enterica subsp. *enterica* serotype Typhimurium	14028	10^2-10^3	Fair to good	Colorless	+
Shigella flexneri	12022	10^2-10^3	Fair	Colorless	–



Directions for Preparation from Dehydrated Product

1. Suspend 70 g of the powder in 1 L of purified water. Mix thoroughly.
2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder. Avoid overheating. DO NOT AUTOCLAVE.
3. Test samples of the finished product for performance using stable, typical control cultures.

Procedure

1. Inoculate specimen directly onto surface of medium.
2. Incubate plates at 35 ± 2°C for 18-24 hours. Plates can be incubated for an additional 24 hours if no lactose fermenters are observed.

Expected Results

Lactose nonfermenters produce transparent, colorless to light pink or tan colored colonies with or without black centers. Lactose fermenters produce a red colony with or without a bile precipitate.

Limitations of the Procedure

1. Coliform strains may be encountered that will grow on this medium, making it difficult to detect pathogens.
2. Heavy inocula should be distributed over the entire surface of the medium to prevent complete masking of pathogens by coliform organisms.

Reference

1. Leifson. 1935. J. Pathol. Bacteriol. *40*:581.

Availability

Difco™ Desoxycholate Citrate Agar

EP

Cat. No. 227410 Dehydrated – 500 g