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Desoxycholate citrate agar

Recommended for the selective isolation of enteric pathogens, particularly Salmonella and Shigella species, from clinical specimens.

REF: BS.1/DO01.100.0100	100 Gram	REF: BS.1/DO01.250.0250	250 Gram
REF: BS.1/DO01.500.0500	500 Gram		

CLINICAL SIGNIFICANCE

Deoxycholate Citrate Agar is prepared as per the modified formula of Leifson (1). This medium is used for the isolation and maximum recovery of intestinal pathogens belonging to Salmonella and Shigella groups from foods (2). However, it is recommended to use less inhibitory medium when Shigella have to be isolated (3). This medium is similar to deoxycholate agar in comparison but is moderately more selective for enteric pathogens owing to increased concentrations of both citrate and deoxycholate salts. Sodium deoxycholate at pH 7.3 to 7.5 is inhibitory for gram-positive bacteria. Citrate salts, in the concentration included in the formulation, are inhibitory to gram-positive bacteria and most other normal intestinal organisms.HI solids is a source of carbon and nitrogen and this ingredient is used because the inhibition of coliforms produced is greater than when an extract or simple peptone is used. Proteose peptone provides carbon, nitrogen, vitamins and minerals. Coliform bacteria and gram-positive bacteria are inhibited or greatly suppressed due to sodium deoxycholate, sodium citrate and ferric ammonium citrate. Lactose 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. The degradation of lactose causes acidification of the medium surrounding the relevant colonies and the pH indicator neutral red changes its colour to red. These colonies usually are also surrounded by a turbid zone of precipitated deoxycholic acid due to acidification of the medium. Sodium deoxycholate combines with neutral red in an acidic environment, causing the dye to go out of the solution with the subsequent precipitation of deoxycholate (1). The reduction of ferric ammonium citrate to iron sulfide is indicated by the formation of black iron sulfide. Salmonella and Shigella species do not ferment lactose but Salmonella may produce H2S, forming colorless colonies with or without black centers. 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.

MEDIA COMPOSITION

Item	Formula per liter of medium
- Heart Infusion solids	10.00 gm.
- Proteose Peptone	10.00 gm.
- Lactose	10.00 gm.
- Sodium Citrate	20.00 gm.
- Ferric Ammonium Citrate	2.000 gm.
- Sodium Desoxycholate	5.000 gm.
- Agar	13.50 gm.
- Neutral Red	0.020 gm.

Final pH (at 25°C) 7.5±0.2

PRECAUTIONS AND WARNINGS

Media to be handled by entitled and professionally educated person.

Do not ingest or inhale.

Good Laboratories practices using appropriate precautions should be followed in:

- Wearing personnel protective equipment (overall, gloves, glasses,).
- Do not pipette by mouth.
- In case of contact with eyes or skin; rinse immediately with plenty of soap and water. In case of severe injuries; seek medical advice immediately.
- Respect country requirement for waste disposal.

S56: dispose of this material and its container at hazardous or special waste collection point.
S57: use appropriate container to avoid environmental contamination.
S61: avoid release in environment.
For further information, refer to the desoxycholate citrate agar material safety data sheet.

STORAGE AND STABILITY (2)

BioScien desoxycholate citrate agar dehydrated media are stable until expiration date stated on label when properly stored 10-30°C. The prepared medium should be stored at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to avoid lump development due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in a dry ventilated area protected from extremes of temperature and sources of ignition. Seal the container tightly after use. Product performance is best if used within stated expiry period.

MEDIA PREPARATION

1. Suspend 70.52 g of the powder in 1 L of purified water.
2. Mix thoroughly. And adjust pH to *7.5 ± 0.2 at 25°C*
3. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
4. Pour into sterile perti plates

Avoid overheating. **DO NOT AUTOCLAVE.**

Deterioration

The color of ***BioScien*** desoxycholate citrate is Light yellow to Pinkish-beige, free-flowing, homogeneous powder. If there are any physical changes, discard the medium. The hydrated medium is Orange-red, slightly opalescent gel forms in Petri plates, media should not be used if there are any signs of deterioration (shrinking, cracking, or discoloration), and contaminations.

SPECIMEN COLLECTION AND PRESERVATION (1-3)

Clinical- stool samples, urine samples; Food samples.

EQUIPMENT REQUIRED NOT PROVIDED

- Sterile cups
- Sterile petri-dishes
- Incubator

PERFORMANCE CHARACTERISTICS

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Test Organisms	Growth	Colour of Colony
Enterococcus faecalis 29212	inhibition	-
Escherichia coli ATCC 25922	Poor	Pink with bile precipitate
Salmonella Enteritidis ATCC 13076	*good-luxuriant*	Colorless
Shigella flexneri 12022	Good	Colorless
Salmonella Typhimurium AT CC 14028	*good-luxuriant*	Colorless
Staphylococcus aureus subsp. aureus ATCC 25923	Inhibition	-

Quality control

To ensure adequate quality control, it is recommended that positive and negative control included in each run. If control values are found outside the defined range, check the system performance. If control still out of range please contact BioScien technical support.

SYMBOLS IN PRODUCT LABELLING

IVD	For in-vitro diagnostic use	Σ	Number of <n> test in the pack
LOT	Batch Code/Lot number	⚠	Caution
REF	Catalogue Number		Do not use if package is damaged
	Temperature Limitation		Consult Instruction for use
	Expiration Date		
	Manufactured by		

REFERENCES

1. Leifson, 1935, J. Path. Bact., 40:581.
2. Salfinger Y., and Tortorello M.L., 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed., American Public Health Association, Washington, D.C.
3. Frieker C.R., 1987, J. Appl. Bact., 63:99.
4. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
5. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1