BD™ Drigalski Lactose Agar

INTENDED USE

BD Drigalski Lactose Agar is a selective and differential medium for the isolation of *Enterobacteriaceae* and certain nonfermenters from clinical specimens.

PRINCIPLES AND EXPLANATION OF THE PROCEDURE

Microbiological method.

BD Drigalski Lactose Agar is a selective differential medium similar to MacConkey Agar and Desoxycholate based media. It is used as a selective differential medium for Gram negative rods (*Enterobacteriaceae* and certain non-fermenters) and is inhibitory to Gram positive bacteria. It is recommended for use with clinical specimens likely to contain mixed microbial flora, such as urine, respiratory and wound, because it allows a preliminary grouping of enteric and other gram-negative bacteria.[1] The medium has also been used for the isolation of *Salmonella* and *Shigella* from stool specimens as a medium with low selectivity although XLD was shown to be superior for this purpose.[2]

In **BD Drigalski Lactose Agar**, peptone, meat extract, and yeast extract provide nutrients. Sodium deoxycholate, crystal violet and thiosulfate are inhibitors of Gram positive bacteria. Differentiation of Gram negative enteric micro-organisms into lactose fermenters (yellow) and lactose nonfermenters (blue) is achieved by the combination of lactose and the bromthymol blue indicator.

REAGENTS

Formula* Per Liter Purified Water

BD Drigalski Lactose Agar

Peptone	15.0 g
Meat Extract	3.0
Yeast Extract	3.0
Sodium Deoxycholate	1.0
Sodium Thiosulfate	1.0
Lactose	15.0
Crystal Violet	0.005
Bromothymol Blue	0.08
Agar	11.0

pH 7.3 +/- 0.2

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

PRECAUTIONS

IVD . For professional use only.

Do not use plates if they show evidence of microbial contamination, discoloration, drying, cracking or other signs of deterioration.

Consult **GENERAL INSTRUCTIONS FOR USE** document for aseptic handling procedures, biohazards, and disposal of used product.

STORAGE AND SHELF LIFE

On receipt, store plates in the dark at 2 to 8° C, in their original sleeve wrapping until just prior to use. Avoid freezing and overheating. The plates may be inoculated up to the expiration date (see package label) and incubated for the recommended incubation times.

Plates from opened stacks of 10 plates can be used for one week when stored in a clean area at 2 to 8° C.

USER QUALITY CONTROL

Inoculate representative samples with the following strains (for details, see **GENERAL INSTRUCTIONS FOR USE** document). Incubate plates at 35 ± 2°C in an aerobic atmosphere. Examine plates after 18 to 24 h for amount of growth, colony size, pigmentation and selectivity.

Strains	Growth Results
Escherichia coli ATCC 25922	Growth good to excellent; yellow colonies surrounded by yellow medium
Proteus mirabilis ATCC 12453	Growth good to excellent; blue-grey colonies with greenish center, blue medium
Salmonella Typhimurium ATCC 14028	Growth good to excellent; blue-grey colonies with greenish center; blue medium
Shigella flexneri ATCC 12022	Growth fair to excellent; blue-grey colonies; blue medium
Enterococcus faecalis ATCC 29212	Inhibition partial to complete
Staphylococcus aureus ATCC 25923	Inhibition complete
Uninoculated	Blue, clear

PROCEDURE

Materials Provided

BD Drigalski Lactose Agar (90 mm **Stacker™** plates). Microbiologically controlled.

Materials Not Provided

Ancillary culture media, reagents and laboratory equipment as required.

Specimen Types

This is a selective differential medium for the isolation of *Enterobacteriaceae* and several other Gram negative rods that can be used for all types of specimens (see also **PERFORMANCE CHARACTERISTICS AND LIMITATIONS OF THE PROCEDURE**).

Test Procedure

Streak the specimen as soon as possible after it is received in the laboratory. The streak plate is used primarily to isolate pure cultures from specimens containing mixed flora.
Alternatively, if material is being cultured directly from a swab, roll the swab over a small area of the surface at the edge; then streak from this inoculated area. In order to isolate the complete range of pathogens present in the specimen, include **BD Columbia Agar with 5% Sheep Blood**. Incubate for 18 to 24 hours at 35 to 37° C in an aerobic atmosphere.

Results

On **BD Drigalski Lactose Agar**, the typical appearance will be as follows:

E. coli, Klebsiella, Enterobacter	Yellow colonies, medium surrounding colonies yellow
Proteus, Providencia, Hafnia, Salmonella, Serratia, Alcaligenes, Pseudomonas	Colonies blue-grey to blue-green, medium blue to blue-green
Enterococci, staphylococci	Inhibited

Further biochemical tests are necessary for complete identification of the organisms isolated on this medium.[3]

PERFORMANCE CHARACTERISTICS AND LIMITATIONS OF THE PROCEDURE

BD Drigalski Lactose Agar is a selective and differential medium for the isolation of *Enterobacteriaceae* and certain nonfermenters from clinical specimens.[1,2] It allows their differentiation into lactose fermenters and nonfermenters.
Swarming of *Proteus* is not completely inhibited on this medium because the desoxycholate concentration is comparably low.
Further biochemical tests are necessary to identify the organisms isolated on this medium.[3]

Performance Results
In an internal evaluation (see Table 1), thirty-three strains of *Enterobacteriaceae, Enterococcus* spp., and *Staphylococcus aureus*, including ten *Salmonella* strains of various serotypes, were tested on **BD Drigalski Lactose Agar**.[4] Plates were incubated in ambient air for 20 hours at 35 to 37° C. All Gram negative species included showed the expected reactions and produced good to excellent growth, as compared to **BD Columbia Agar with 5% Sheep Blood**. Enterococci and *Staphylococcus aureus* were completely inhibited on the test medium but grew well on the blood agar plate.

Table 1: Performance Results

Species (No. of strains)	Growth Results on BD Drigalski Lactose Agar
Enterococcus faecalis (2)	Completely inhibited
Enterococcus faecium (1)	Completely inhibited
Escherichia coli, lactose positive (4)	Large yellow colonies; medium surrounding growth is yellow
Escherichia coli, lactose negative (1)	Large greenish colonies; medium surrounding growth is blue
Morganella morganii (1)	Large greenish colonies; medium surrounding growth is blue
Proteus mirabilis (2)	Greenish swarming colonies; medium surrounding growth is blue
Proteus penneri (1)	
Proteus vulgaris (1)	Colorless swarming colonies; medium surrounding growth is blue
Providencia alcalifaciens (1)	Large greenish colonies; medium surrounding growth is blue
Providencia rettgeri (1)	Medium-sized to large greenish colonies; medium surrounding growth is blue
Providencia stuartii (1)	Large greenish colonies; medium surrounding growth is blue
Salmonella Abony (1)	Medium-sized to large greenish colonies; medium is blue
Salmonella Augustenborg (1)	
Salmonella Bovismorbificans (1)	
Salmonella Enteritidis (1)	
Salmonella Gallinarum (1)	Small to medium-sized colonies; medium is blue
Salmonella Hadar (1)	Medium-sized to large greenish colonies; medium surrounding growth is blue
Salmonella Saintpaul (1)	
Salmonella Senftenberg (1)	
Salmonella Typhimurium (1)	
Salmonella Typhimurium (1)	
Shigella boydii (1)	Medium-sized to large greenish colonies; medium surrounding growth is blue
Shigella flexneri (2)	
Shigella sonnei (1)	
Staphylococcus aureus (3)	Completely inhibited

REFERENCES

1. Dupeyron, C.M, G.A. Guillemin, and G.J. Leluan. 1986. Rapid diagnosis of gram negative urinary infections: identification and antimicrobial susceptibility testing in 24 hours. J. Clin. Pathol. 39: 208-11.
2. Zajc-Satler J., and A.Z. Gragas. 1977. Xylose lysine deoxycholate agar for the isolation of *Salmonella* and *Shigella* from clinical specimens. Zentralbl. Bakteriol. Orig A 237: 196-200.
3. Farmer III, JJ. 2003. *Enterobacteriaceae:* introduction and identification. *In:* Murray, P. R., E. J. Baron, J.H. Jorgensen, M. A. Pfaller, and R. H. Yolken (ed.). Manual of clinical microbiology, 8th ed. American Society for Microbiology, Washington, D.C.
4. Data on file. BD Diagnostic Systems Europe. Heidelberg, Germany

PACKAGING/AVAILABILITY

BD Drigalski Lactose Agar
Cat. No. 256500 Ready-to-use Plated Media, cpu 20

FURTHER INFORMATION

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