 Recommended for detection of motility, urease and indole production

**XLD Agar**

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| REF: LV.1/XA01.100.0100 100 gram REF: LV.1/XA01.250.0250 250 gram |  REF: LV.1/XA01.500.0500 500 gram  |

# CLINICAL SIGNIFICANCE

# Xylose Lysine Deoxycholate (XLD) Agar is a selective growth medium used for the isolation of *Salmonella* and *Shigella* Species from clinical specimens and non-clinical specimens. The pathogens are differentiated not only from the non-pathogenic lactose fermenters but also from many non-pathogens which do not ferment lactose or sucrose. Additionally, the medium was formulated to increase the frequency of growth of the more fastidious pathogens, which in other formulations have often failed to grow due to the inclusion of excessively toxic inhibitors. XLD Agar is included in the USP microbial limit test for screening specimens for the presence or absence of *Salmonella* and is recommended for the testing of foods, dairy products, and water.

# METHOD PRINCIPLE

# XLD contains yeast extract, which provides nitrogen, and vitamins for growth. It utilizes sodium deoxycholate as the selective agent and, therefore, is inhibitory to gram-positive microorganisms. The sugars xylose, lactose and sucrose provide sources of fermentable carbohydrates, xylose is added to the medium since it is not fermented by *Shigella* but practically by all enteric microorganisms. This helps in the differentiation of *Shigella* species. Sodium chloride maintains the osmotic balance of the medium. Lysine is included to differentiate the Salmonella group from the non-pathogens. *Salmonella* rapidly ferment xylose and exhaust the supply. Subsequently lysine is decarboxylated by the enzyme lysine decarboxylase to form amines with reversion to an alkaline pH that mimics the *Shigella* reaction. However, to prevent this reaction by lysine-positive coliforms, lactose and sucrose are added to produce acid in excess. Degradation of xylose, lactose, and sucrose to acid causes phenol red indicator to change to yellow. Bacteria that decarboxylate lysine to cadaverine can be recognized by the appearance of a red coloration around the colonies due to an increase in pH. These reactions can proceed successively, and this may cause the pH indicator to exhibit various changes of color, or it may change its color from yellow to red on prolonged incubation. To add to the differentiating ability of the formulation, an H2S indicator system, consisting of sodium thiosulphate and ferric ammonium citrate, is included for the visualization of H2S produced, forming colonies with black centers. The non-pathogenic H2S producers do not decarboxylase lysine; therefore, the acid reaction produced prevents the blackening of the colonies.

# MEDIA COMPOSITION

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| **Item**  | **Formula in g/L**  |
| Yeast extractXyloseL-LysineLactose SucroseSodium deoxycholateFerric ammonium citrateSodium thiosulphateSodium chloridePhenol red Agar  | 33.7557.57.510.86.850.0815 |

##

## Final pH 7.4 ± 0.2 at 25°C

# PRECAUTIONS AND WARNINGS

Media to be handled by entitled and professionally educated person.

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.
* Handle specimens and inoculated culture bottles as though capable of transmitting infectious agents. All inoculated culture bottles, specimen collection needles, and blood drawing devices should be decontaminated according to 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 XLD Agar material safety data sheet.

# MEDIA STORAGE AND STABILITY

**Lab.Vie**. XLD Agar should be stored between 10-30°C in a firmly closed container and the prepared medium 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.

##  PROCEDURE

## Dissolve 55.43 grams in 1 liter of distilled water.

## Adjust pH to 6.8 ± 0.2 at 25°C

## Heat with frequent stirring and boil for one minute.

## Cool to 45-50oC. Mix gently and pour into sterile petri dishes. DO NOT AUTOCLAVE OR OVERHEAT.

## Deterioration

**Lab.Vie**. XLD Agar is light yellow to pink homogeneous free flowing powder. Prepared Media is red in color. If there are any physical changes for powder or signs of deterioration (shrinking, cracking, or discoloration), and contaminations for hydrated media, discard the medium.

**SPECIMEN COLLECTION AND PRESERVATION**

# For clinical samples follow appropriate techniques for handling specimens as per established guidelines (11,12). For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (9,10,13). After use, contaminated materials must be sterilized by autoclaving before discarding.

# TYPE OF SPECIMEN

# Food and meat samples. milk and milk products, animal feed, animal faeces, environmental samples

# EQUIPMENT REQUIRED NOT PROVIDED

# Sterile cups

# Sterile Plates

# Incubator

# Autoclave

# 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 the technical support.

# PERFORMANCE CHARACTERISTICS

The following organisms are used by us as part of the quality assurance of the product. The total inoculum challenge for each test organism per bottle is 10 to 50 colony forming units (CFU’s).

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| **Microorganism**  | **Result**  | **Colony Color**  |
| *Salmonella Typhi* ATCC 6539  | Luxuriant growth  | Red with black centers  |
| *Salmonella Typhimurium* ATCC 14028  | Luxuriant growth  | Red with black centers  |
| *Salmonella Abony* NCTC 6017  | Luxuriant growth  | Red with black centers  |
| *Salmonella Enteritidis* ATCC 13076 | Luxuriant growth  | Red with black centers  |
| *Salmonella Paratyphi A* ATCC 9150 | Luxuriant growth  | Red  |
| *Salmonella Paratyphi B* ATCC 8759 | Luxuriant growth  | Red with black centers  |
| *Shigella sonnei* ATCC 25931  | Good growth  | Red  |
| *Shigella dysenteriae* ATCC 13313 | Luxuriant growth  | Red  |
| *Shigella flexneri* ATCC *12022*  | Good growth  | Red  |
| *Proteus vulgaris* ATCC 13315  | Luxuriant growth  | Grey with black centers  |
| *Escherichia coli* ATCC 25922  | Fair growth  | Yellow  |
| *Klebsiella aerogenes* ATCC 13048 | Fair growth  | Yellow  |
| *Enterobacter cloacae* ATCC 13047 | Fair growth  | Yellow  |
| *Enterococcus faecalis* ATCC 29212 | Inhibited  | -  |
| *Staphylococcus aureus* ATCC 25923 | Inhibited  | -  |

# REFERENCES

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2. Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition.
3. Isenberg H. D., Kominos S., and Sigeal M., 1969, Appl Microbiol., 18, 656-659.
4. 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.
5. Salfinger Y., and Tortorello M.L. Fifth (Ed.), 2015, Compendium of Methods for the Microbiological Examination of Foods, 5th Ed.,

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1. MacFaddin J. F., 1985, Media for Isolation-Cultivation-IdentificationMaintenance of Medical Bacteria, Vol. 1, Williams and Wilkins, Baltimore.
2. Taylor, W. I. (1965). Isolation of shigellae. I. Xylose lysine agars; new media for isolation of enteric pathogens. Am J Clin Pathol, 44(4), 471475.

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| **SYMBOLS IN PRODUCT LABELLING**  |
|   IVD For in-vitro diagnostic use  |   Number of <n> test in the pack  |
|  LOT Batch Code/Lot number  | A black and white triangle with a exclamation mark  Description automatically generated Caution  |
|  REF Catalogue Number  | Do not use if package is damaged   |
|   Temperature Limitation   Expiration Date   Manufactured by  |  Consult Instruction for use      |

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**Post code-41511**

 **E-mail :** **admin@labvielab.com**

 **Website:** [**www.labvielab.com**](http://www.labvielab.com)