Biomed Global

Rev: 0

XLD Agar | Ready-to-use Media

a product by **Biomed MDX**

Effective Date: 15/11/2024

REF FP90X1001

IVD

Intended Use:

For moderately selective and differential solid medium for the isolation of gram-negative enteric pathogens.

Principle of the Procedure:

XLD (Xylose Lysine Deoxycholate) agar is used to isolate and identify enteric gram-negative bacteria like *Salmonella spp. and Shigella spp*. It contains selective agents (like deoxycholate) that inhibit gram-positive bacteria, allowing gram-negative bacteria to grow. Xylose is fermented by most enteric bacteria, producing acid that lowers the pH of the medium. Lysine helps detect bacterial decarboxylation, which causes an alkaline reaction. The pH indicator phenol red turns yellow in acidic conditions (from xylose fermentation) and red in alkaline conditions (from lysine decarboxylation). The agar also contains iron salts that react with hydrogen sulfide (H_2S) from some bacteria (like *Salmonella spp.*), forming a black precipitate. Yeast extract provides nutrients to promote growth, and sodium chloride maintains osmotic balance.

Product Summary:

Xylose lysine deoxycholate (XLD) agar detects gastrointestinal pathogens, including *Salmonella spp*. and *Shigella spp*. by inhibiting gram-positive bacteria, allowing gram-negative bacteria to grow[1]. Xylose is fermented by most enteric bacteria, producing acid that turns the medium yellow. Bacteria that decarboxylate lysine create an alkaline environment, resulting in red colonies. *Salmonella spp.* produces hydrogen sulfide (H_2S), forming black colonies when it reacts with iron salts in the medium[2]. XLD agar is used mainly to isolate *Salmonella spp.* and *Shigella spp*. from clinical and environmental samples, including stool[3]. Yellow colonies indicate xylose fermentation (e.g., *E. coli*), red colonies show lysine decarboxylation without xylose fermentation, and black colonies suggest H_2S production, typical of *Salmonella spp*[4]. Further microbiological identification tests are necessary to confirm and diagnose the presence of microorganisms.

Formulation (Approximately *per Liter):

Xylose	3.5g	**Sodium Chloride**	5.0g
L-Lysine	5.0g	**Phenol Red**	0.08g
Lactose	7.5g	**Sodium Desoxycholate**	2.5g
Saccharose	7.5g	**Agar**	13.5g
Yeast Extract	3.0g	**Sodium Thiosulfate**	6.8g
Ferric Ammonium Citrate	0.8g		

pH 7.4 +/- 0.2

**Adjust and/or supplemental as required to meet performance criteria*

Procedure

Materials Provided

90mm XLD Agar.

Materials Required but Not Provided

Ancillary culture media, reagents, and laboratory equipment as required.

Test Procedure

1. Streak the specimen as soon as possible after it is received in the laboratory with an aseptic technique.
2. Incubate plates at 35°C ± 2°C for 18 to 24 hours.
3. Observe the result according to user requirements.
4. Dispose of all used reagents and contaminated materials as infectious waste. Laboratories must handle and dispose of all waste safely according to regulations.

Results

After incubation, most plates will show an area of confluent growth. Because the streaking procedure is, in effect, a dilution technique, diminishing numbers of micro-organisms are deposited on the streaked areas.

Quality Control

Inoculate representative samples with the following strains. Incubate the inoculated plates at 35 ± 2°C for 18 to 24 hrs. to allow colonies to develop on the medium.

Strains	ATCC®	Growth Results
Escherichia coli	25922	Yellow
Shigella flexneri	12022	Red
Salmonella enterica subsp. enterica serotype Typhimurium	14028	Red with black centers
Enterococcus faecalis	29212	No growth
Uninoculated plate	-	No growth

Transportation:

Temperature fluctuations may occur during transportation. However, these fluctuations do not affect the performance, quality, or safety of the media.

Storage and Shelf Life:

Upon receipt, store plates at 2 to 8°C, in their original sleeve wrapping until just before 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.

Warning and Precautions:

For in vitro diagnostic use. For Professional Use Only. Do Not Reuse.

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

Limitations of the Procedure

For identification, organisms must be in pure culture. Morphological, biochemical and/or serological tests should be performed for final identification[1-4].

Reference

1. Evans, T. J., & Riley, P. A. (2021). Principles of microscopy, culture and serology-based diagnostics. *Medicine*, *49*(10), 648-653.
2. Hess, C., Drauch, V., Spergser, J., Kornschober, C., & Hess, M. (2023). Detection of atypical Salmonella Infantis phenotypes in broiler environmental samples. *Microbiology Spectrum*, *11*(3), e00106-23.
3. Eslami, N., Anzabi, Y., & NourAzar, M. A. (2023). Comparison of the Effect of Temperature and Different Culture Media on the Possibility of Growth of Salmonella Typhimurium (ATCC: 14028). *International Journal of Medical Laboratory*.
4. Ali, N. S., Abdulkareem, R. A., & Ali, R. S. (2022, January). Study of diarrheagenic E. coli in Iraqi children. In *AIP Conference Proceedings* (Vol. 2386, No. 1). AIP Publishing.

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Packaging Symbol

Symbol	Definition
REF	Catalogue number
IVD	In Vitro Diagnostic Medical Device
LOT	Batch code
	Date of manufacture
	Temperature limit
	Use-by date
	Keep away from sunlight
	Do not re-use
	Fragile, handle with care
	Consult instructions for use or consult electronic instructions for use
	Do not use if packaging damaged and consult instructions for use
	Manufacturer

Further Information:

For further information please contact your Biomed MDX representative.

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