

TECHNICAL DATA SHEET

XLD Agar (Xylose Lysine Deoxycholate agar) (Harmonized)

Principle

Xylose lysine deoxycholate agar is a differential medium, slightly selective for the detection of pathogenic enterobacteria, especially *Salmonella* and *Shigella*. Media composed of xylose, lysine, lactose monohydrate, sucrose, sodium chloride, yeast extract, phenol red, sodium deoxycholate, sodium thiosulphate, ferric ammonium citrate and agar. Yeast extract provides sources of nitrogen and carbon, as well as vitamins and cofactors required for growth. Xylose, lactose and sucrose are the carbon source. Xylose is fermented by most enteric organisms except *Shigella* and *Providencia*. Sucrose and lactose provide sources of fermentable carbohydrate. Lysine is also added to differentiate *Salmonella*, which undergoes decarboxylation to cadaverine. Phenol red is pH indicator. Sodium deoxycholate inhibits growth of gram-positive organisms, but *Shigella* grows at this concentration. Sodium chloride maintains osmotic balance in the medium. Agar is a solidifying agent. In medium as the concentration of xylose is declined, the *Salmonella* organism's decarboxylate lysine causing is version to alkaline conditions. The resulted alkaline reversion by lysine-positive organisms is prevented by acid produced by the fermentation of lactose and sucrose. Simultaneously, the sodium thiosulfate is metabolized to hydrogen sulfide and reacts with ferric ammonium citrate which acts as indicator of hydrogen sulfide production under alkaline conditions. The hydrogen sulfide producers are detected by darker colonies, due to the ferric sulfate precipitate. Due to xylose, lactose or sucrose fermentation produce the acidification and lysine decarboxylation to cadaverine causes alkalization and consequently the phenol red indicator turns to red. This color disappears after 24 hours, so observations must be carried out between 18 and 20 hours. The *Shigella* and *Salmonella* are differentiated on basis of ferrous sulfur precipitation. The *Salmonella* colonies show red colored with black centers and *Shigella* are red colored without black center.

Use: For cultivation and isolation of *Salmonella* species in pharmaceutical testing according to harmonized methods

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Contents*

Ingredients	Gram/Litre
Xylose	3.500
L-Lysine	5.000
Lactose Monohydrate	7.500
Sucrose	7.500
Sodium Chloride	5.000
Yeast Extract	3.000
Phenol Red	0.080
Sodium Deoxycholate	2.500
Sodium Thiosulphate	6.800
Ferric Ammonium Citrate	0.800
Agar	13.500
pH at 25°C	7.4 ±0.2

* Formula adjusted for optimum performance and parameters

Directions: Dissolve 55.18 grams in 1000 ml purified/ distilled water. Heat until the medium boils with frequent agitation. Do Not Autoclave or Overheat. Transfer immediately to a water bath at 50°C. After cooling, pour into sterile petri plates and allow to solidify. Ensure complete solidification and inoculate test sample aseptically.

Specimens types analyzed

Pharmaceutical samples, clinical and non-clinical samples etc.

Precautions to be taken

These microbial media are intended for the in-vitro use only. All the handling, experiments, storage, and discarding should be performed with the help of skilled and knowledgeable technicians and as per the established guidelines. The material should be disposed only after proper sterilization by autoclaving. Please go through the MSDS of the media to avoid any accidents or in emergency.

Performance and Evaluation

The expected performance of the medium is liable to use as per the direction on the label when stored at optimum conditions and within expiry date.

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Quality Control

Appearance	Light beige to pink colored homogeneous free flowing powder.
Reaction of 5.51% solution	7.4±0.2 at 25 °C.
pH	7.20- 7.60.
Gelling	Firm comparable with 1.35% agar gel.
Color and clarity of ready medium	Red colored clear to slightly opalescent gel.
Growth Promotion properties	Best at ≤ 100 CFU at 32-37 °C for 18-72 h.
Indicative properties	Optimum at ≤ 100 CFU at 32-37 °C for 18-48 h.
Negative control	Performed using sterile distilled water.

Different Microbial Response: Cultural characteristics observed after incubation at 33-37°C for 18-48 hours. Inoculum 50-100 CFU.

Organism	ATCC	Growth	Recovery	Colony color
<i>Salmonella typhimurium</i>	14028	Luxuriant	≥ 70%	Red with black centers
<i>Salmonella abony</i>	NCTC-6017	Luxuriant	≥ 70%	Red with black centers
<i>Salmonella enteritidis</i>	13076	Luxuriant	≥ 70%	Red with black centers
<i>Salmonella enterica</i>	9150	Luxuriant	≥ 70%	Pinkish
<i>Escherichia coli</i>	8739	Poor	≥ 30%	Yellow
<i>Staphylococcus aureus</i>	6538	Inhibited	--	--
<i>Staphylococcus aureus</i>	25923	Inhibited	--	--

Storage and Shelf Life: The product is highly hygroscopic; keep the container tightly closed at all times and store it properly as per the conditions mentioned on the label. The declared expiry is valid only when stored as per the conditions mentioned on the label. Note: Sterilize media immediately after reconstitution.

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Disposal: To avoid the contamination or propagation of any hazardous microbes the used, unusable or modified preparation of this product must be disposed after autoclaving after completion of task.

Reference

1. Atlas, R. M. (2005). *Handbook of media for environmental microbiology*. CRC press.
2. Difco Manual (1998). 11th Edition. Difco Laboratories., Division of Becton Dickinson and Company, Sparks, Maryland, USA.
3. *European Pharmacopoeia*, (2011), European Dept. for the quality of Medicines.
4. *Indian Pharmacopoeia*, (2018), Govt. of India, the Controller of Publication, New Delhi.
5. Rand, M. C., Arnold E. Greenberg, and Michael J. Taras, (1976), *Standard methods for the examination of water and wastewater*. Prepared and published jointly by American Public Health Association, American Water Works Association, and Water Pollution Control Federation.
6. *The Japanese Pharmacopoeia*, 17th Ed. (2016), The Ministry of Health, Labour and Welfare.
7. *The United States Pharmacopoeia*, (2014), The United States Pharmacopeial Convention. 12601 Twinbrook Parkway, Rockville, MD 20852.

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