Xylose Lysine Deoxycholate Agar (Eur. Pharm.)

Art. No. 01-211

Also known as

XLD Agar

Specification

Solid medium for the isolation of enteropathogenic species, especially *Salmonella* according to Pharmacopeial Harmonised Method and ISO Standard 6340.

Formula* in g/L

Xylose	3,50
L-Lysine	5,00
Lactose	7,50
Sucrose	7,50
Sodium chloride	5,00
Yeast extract	3,00
Phenol red	0,08
Sodium deoxycholate	2,50
Sodium thiosulfate	6,80
Ammonium ferric citrate	0,80
Agar	15,00

Final pH 7,4 ± 0,2 at 25°C

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

Directions

Suspend 56,68 g of powder in 1 L of distilled water. Heat with constant stirring until boiling. Pour immediately into plates. **Do not autoclave and avoid remelting**.

Description

Xylose Lysine Deoxycholate Agar is a selective differential medium, suitable for the detection of pathogenic enterobacteria, especially *Shigella*. Gram negative microbiota are inhibited by the low amount of deoxycholate, whilst *Shigella* grows.

Xylose, lactose or sucrose fermentation produces the acidification of the medium, and this is seen by the indicator turning yellow, surrounding the colonies. This colour disappears after 24 hours, so observations must be carried out between 18 and 24 hours.

Hydrogen sulfide production from thiosulfate is easily detected because colonies become darker, due to the ferric sulfide precipitate. Lysine decarboxylation to cadaverine may also be observed in the medium, since it produces alkalinization and consequently the indicator turns to red.

All these reactions allow a good differentiation of *Shigella*. *Edwardsiella* and *Proteus inconstans* are the only enterobacteria other than *Shigella* which do not ferment xylose and therefore show negative fermentation reaction. *Salmonella* ferment xylose, but it is consumed quickly and alkalinization of the medium due to lysine decarboxylation, may mask the reaction. *Salmonella* colonies become darker due to ferrous sulfide precipitates, which is also a common property with *Edwardsiella*.

Other types of enterobacteria do not suffer this phenomenon, since acid accumulation due to lactose and sucrose fermentation is so high that it avoids pH reversion by decarboxylation and even ferrous sulfide precipitate in the first 24 hours.

In the table on the next page, typical colonial appearances on XLD medium after 24-36 hours of incubation at 37°C are described.

References

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- USP 33 - NF 28 (2011) <62> Microbiological examination of non-sterile products: Test for specified microorganisms. Harmonised Method. USP Corp. Inc. Rockville. MD. USA.

Storage

For laboratory use only. Keep tightly closed, away from bright light, in a cool dry place (+4°C to 30°C and <60% RH).

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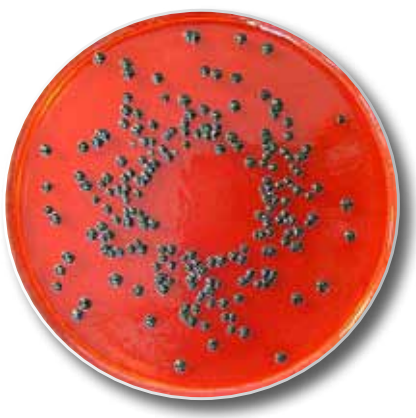
COLONIAL APPEARANCE	MICROORGANISM
Transparent red colonies	*Shigella sp., Proteus incontans, Salmonella paratyphi A.*, sometimes *S.cholerasuis* and *S. pullorum*
Transparent red colonies with black nucleus	*Edwarsiella* and most species of *Salmonella*
Orange and slightly opaque colonies	*Salmonella typhi*
Colonies red, translucent without zone	Pseudomonas, *Proteus rettgeri*
Yellow opaque colonies	*Escherichia* (when growth) *Enterobacter,* Aeromonas, *Citrobacter*.
Yellow, mucous, opaque and black-nucleated colonies.	*Klebsiella, Citrobacter intermedius* (when growth)
Yellow, transparent colonies with black nucleus	Most strains of *Proteus mirabilis, P. vulgaris*.
Yellow opaque colonies without zone	*Serratia, Hafnia*.

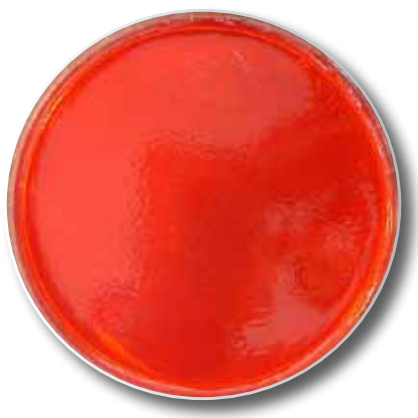
Quality control

Incubation temperature: 35°C ± 2,0
Incubation time: 24 - 48 h
Inoculum: 10-100 CFU (Productivity) // 1.000-10.000 CFU (Selectivity). Spiral Plate Method (ISO/TS 11133-1/2)

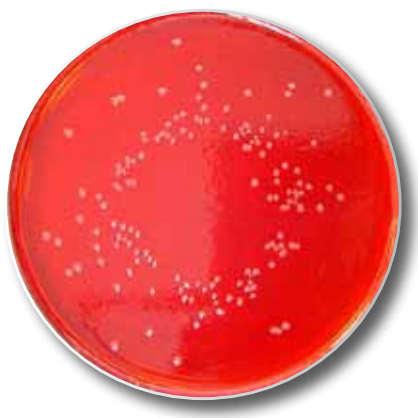
Microorganism	Growth	Remarks
Enterococcus faecalis ATCC 29212	Inhibited	Selectivity
Escherichia coli ATCC 8739	Partial Inhibition	Selectivity
Proteus mirabilis ATCC 43071	Productivity > 0.50	Colourless colonies w. black centre (H_2S +)
Salmonella abony NCTC6017	Productivity > 0.50	Colourless colonies w. black centre (H_2S +)
Salmonella typhimurium ATCC 14028	Productivity > 0.50	Colourless colonies w. black centre (H_2S +)
Salmonella enteritidis ATCC 13076	Productivity > 0.50	Colourless colonies w. black centre (H_2S +)
Shigella flexneri ATCC 12022	Productivity > 0.50	Colourless colonies w. transparent centre (H_2S -)



Salmonella typhimurium ATCC 14028



Uninoculate plate (Control)



Shigella flexneri ATCC 12022