

## Xylose lysine deoxycholate modified agar (ISO)

DEHYDRATED MEDIUM

Art. 84667.0500

### Formula \* - Composition in g/L

Xylose .....	3.750	Sodium deoxycholate .....	1.000
L-Lysine HCl.....	5.000	Sodium thiosulphate .....	6.800
Lactose .....	7.500	Ammonium iron(III) citrate .....	0.800
Sucrose .....	7.500	Agar .....	15.000
Sodium chloride .....	5.000		
Yeast extract .....	3.000	Final pH 7.4 ±0.2 at 25 °C	
Phenol red .....	0.080		

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

### Instructions for preparation

Suspend 55,43 g of powder in 1 L of distilled water. Heat with constant stirring until boiling (90-100°C). Pour immediately into plates. Do not sterilize and avoid remelting.

### Principle of the method and general information

Xylose Lysine Deoxycholate Agar is a selective differential medium, suitable for the detection of pathogenic enterobacteria in food, especially *Shigella*. A modification in the original formulation of Taylor allows the medium to perform to the specifications of the ISO standards. Gram positive microbiota are inhibited by the low amount of deoxycholate, whilst *Shigella* grows. Xylose, lactose or sucrose fermentation produce acidification of the medium which is shown by the indicator surrounding the colonies turning yellow. This colour disappears after 24 hours, so readings must be carried out between 18 and 24 hours.

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

All these reactions allow a good differentiation of *Shigella*, which other than *Edwarsiella* and *Proteus* inconstans are the only enterobacteria that do not ferment xylose and therefore show a negative fermentation reaction. *Salmonella* does ferment xylose, but it is consumed quickly and the medium becomes alkaline due to lysine decarboxylation, which may hide the reaction. The difference between *Shigella* and *Salmonella* is that the latter colonies become darker due to ferrous sulphide precipitates, which is also a common characteristic of *Edwarsiella*. Other types of enterobacteria do not suffer this phenomenon, since acid accumulation due to lactose and sucrose fermentation is so great that it avoids pH reversion by decarboxylation and even ferrous sulphide precipitate in the first 24 hours.

### Quality control

**Incubation temperature:** 37 °C ± 1.0

**Incubation time:** 24 ± 3 h

**Inoculum:** Practical range 100 ±20 CFU. min. 50 CFU (productivity)/10<sup>4</sup>-10<sup>6</sup> CFU (selectivity), according to ISO 11133:2014/Amd 1:2018 .

Microorganism	Growth	Remarks
<i>Enterococcus faecalis</i> ATCC® 29212	Total inhibition	-
<i>Escherichia coli</i> ATCC® 25922	Partial inhibition	-
<i>Salmonella abony</i> NCTC® 6017 (H <sub>2</sub> S +)	Productivity > 0.50	Colonies & cult. medium red / Black center
<i>Salmonella typhimurium</i> ATCC® 14028 (H <sub>2</sub> S +)	Productivity > 0.50	Colonies & cult. medium red / Black center
<i>Salmonella enteritidis</i> ATCC® 13076 (H <sub>2</sub> S +)	Productivity > 0.50	Colonies & cult. medium red / Black center
<i>Shigella flexneri</i> ATCC® 12022 (H <sub>2</sub> S -)	Productivity > 0.30	Colonies & cult. medium red / Black center

### References

- ATLAS, R.M., L.C. PARK (1993) Handbook of Microbiological Media for the examination of Food. CRC Press Inc. Boca Raton.
- DOWNES, F.P. & K. ITO (2001) Compendium of Methods for the Microbiological Examination of Foods. 4th ed. APHA. Washington. DC. USA.
- HORWITZ, W. (2000) Official Methods of Analysis of the AOAC International. 17th ed. Gaithersburg. MD. USA.
- ICMSF (1978) Microorganisms in Foods 1. University of Toronto Press.
- ISO Standard 6579-1 (2017) Microbiology of food chain - Horizontal method for the detection, enumeration and serotyping of Salmonella - Part 1 : Detection of Salmonella spp.
- ISO 19250 Standard (2010) Microbiology of food and animal feeding stuffs.- Horizontal method for the detection of *Shigella* spp.
- ISO 11133:2014/ Adm 1:2018. Microbiology of food, animal feed and water. Preparation, production, storage and performance testing of culture media.
- ISO 21567 Standard (2004) Microbiology of food and animal feeding stuffs.- Horizontal method for the detection of *Shigella* spp.
- PASCUAL ANDERSON, M<sup>o</sup>R. (1992) Microbiología Alimentaria. Díaz de Santos, S.A. Madrid.
- TAYLOR, W.J. (1965) Isolation of Shigella. I. Xylose Lysine Agars: New media for isolation of enteric pathogens. Am. J. Clin. Path 44:471-475.
- US FDA (Food and Drug Administration) (1998) Bacteriological Analytical Manual 8th ed. AOAC International. Gaithersburg. MD. USA.

### Storage conditions

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

### Ordering information

84667.0500 Xylose lysine deoxycholate  
modified agar (ISO) Bulk of 500 g.

Note: For supplements see the section - Instructions for preparation.