

## LYSINE DECARBOXYLASE MEDIUM

LDBR-00I-500

- **Principle**

Lysine Decarboxylase Medium is recommended by ISO 6579 and ISO 19250 for the biochemical confirmation of Salmonella based on lysine decarboxylation. It is also recommended by ISO 10273 for the biochemical confirmation of Yersinia.

When the medium is inoculated with a bacterium that can ferment dextrose, the acid produced lowers the pH of the medium and changes the colour of the indicator from purple to yellow. The acidic condition also stimulates decarboxylase activity. The bacteria that decarboxylate the L-Lysine to cadaverine are identified by the presence of a purple-red colour. The production of these amines elevates the pH of the medium. A yellow colour after 24 hours indicates a negative result. A yellow colour after 24 hours indicates a negative result, such as Yersinia.

Yeast extract is the source of vitamins, of particularly the B-group, essential for growth. Dextrose is the fermentable carbohydrate. Bromocresol purple is the pH indicator. Lysine is added to detect the production of the specific enzyme.

- **Regulatory compliance**

This product is manufactured under a quality management system in accordance with ISO 9001 and ISO 13485, and its formulation and quality control comply with applicable international standards, such as ISO 11133, where relevant.

For this specific medium, compliance is also established with the relevant requirements of ISO 10273, ISO 19250 and ISO 6579.

- **Composition**

Ingredients	g/L
Dextrose	1.00
Yeast extract	3.00
Bromocresol purple	0.015
Lysine Monohydrate	5.00

- **Preparation**

Suspend 9 grams of the medium in one litre of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Dispense quantities of 5 ml into screw-capped tubes. Sterilize in autoclave at 121 °C for 15 minutes.

- **Applications and use**

According to ISO 6579 for the confirmation of Salmonella spp. in food, animal feed, animal faeces and environmental samples:

- Obtain presumptive colonies after inoculating the sample in selective isolation media such as XLD Agar (AGXL-00I-500) or other complementary ones (Brilliant Green Agar (BGAG-00I-500), Enteric Hektoen Agar (HEAG-00P-500), Salmonella Shigella Agar (SSAG-IEP-500)).
- To confirm *Salmonella* spp. Inoculate the presumptive colonies at least in the Iron and Triple Sugar Agar (AGTS-00I-500), Urea Agar and the Lysine Decarboxylation Medium (LDBR-00I-500).
- Inoculate the Lysine Decarboxylase Medium just below the surface of the liquid medium.
- Incubate at 37 °C for 24±3 h.
- The turbidity and a colour purple of the medium after incubation indicate a positive reaction. A yellow colour indicates a negative reaction.

According to ISO 19250 for the confirmation of *Salmonella* spp. in water samples:

- Obtain presumptive colonies after inoculating the sample in selective isolation media such as XLD Agar (AGXL-00I-500) or other complementary ones (Brilliant Green Agar (BGAG-00I-500)).
- To confirm *Salmonella* spp. Inoculate the presumptive colonies at least in the Iron and Triple Sugar Agar (AGTS-00I-500), Urea Agar and the Lysine Decarboxylation Medium (LDBR-00I-500).
- Inoculate the Lysine Decarboxylase Medium well below the surface of the liquid medium and incubate at 36±2 °C for 24±3 h.
- Typical Salmonella cultures show a purple colour after incubation.

According to ISO 10273 for the confirmation of *Yersinia enterocolitica*:

- Obtain presumptive colonies after inoculating the sample in a selective isolation media such as the Selective Agar Base for Yersinia CIN.
- Inoculate the colonies in the Lysine Decarboxylation Medium (LDBR-00I-500) just below its surface.
- Incubate at a temperature of 30 °C for 24±2 hours.
- The appearance of a violet colour after incubation indicates that the reaction is positive. If the colour is yellow the reaction will be negative.

- **Quality control**

<b>Solubility</b>	w/o rests
<b>Appearance</b>	Fine powder
<b>Colour of the dehydrated medium</b>	Light beige
<b>Colour of the prepared medium</b>	Violet
<b>Final pH (25 °C)</b>	6.8 ± 0.2

- **Microbiological test**

Incubation conditions: 37±1 °C / 24±3 h.

Microorganisms	ATCC	Specification
<i>Escherichia coli</i>	11775	(-) Medium changes from purple to yellow
<i>Klebsiella aerogenes</i>	13048	(+) Medium remains purple after incubation and is turbid
<i>Salmonella enteritidis</i>	13076	(+) Medium remains purple after incubation and is turbid
<i>Salmonella typhimurium</i>	14028	(+) Medium remains purple after incubation and is turbid
<i>Escherichia coli</i>	25922	(+/-) Medium be either yellow or purple (slight decarboxylation)
<i>Cronobacter sakazakii</i>	29544	(-) Medium changes from purple to yellow
<i>Proteus mirabilis</i>	29906	(-) Medium changes from purple to yellow
<i>Citrobacter freundii</i>	43864	(-) Medium changes from purple to yellow
<i>Cronobacter muytjensii</i>	51329	(-) Medium changes from purple to yellow
<i>Escherichia coli</i>	8296 (CECT)	(-) Medium changes from purple to yellow
<i>Escherichia coli</i>	8739	(-) Medium changes from purple to yellow
<i>Vibrio parahaemolyticus</i>	9114 (CECT)	(+) Medium remains purple after incubation and is turbid

- **Storage**

The product is highly hygroscopic; keep the container always closed 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. Temp. Min.:2 °C Temp. Max.:25 °C.

Note: Sterilize media immediately after reconstitution.

- **Bibliography**

ISO 6579 Microbiology of food and animal feeding stuffs – Horizontal method for the detection of Salmonella spp.

ISO 10273: Microbiology of food and animal feeding stuffs – Horizontal method for the detection of presumptive pathogenic Yersinia enterocolitica.

Falkow A. S. Clin. Path. 28:598, 1958.

Ewing Davis and Deaves, Studies in the Serratia Group. U.S. Dept. H.E.W.C.D.C. Atlanta, 1972.

Edwards and Ewing. Identification of Enterobacteriaceae, Burgess Publ. Co. Minneapolis, Minn., 1961.

ISO 19250 water quality-detection of Salmonella spp.

- **Product use limitation**

This product is developed, designed and supplied exclusively for research use only. It is not intended for diagnostic applications or drug development, and it is not suitable for administration to humans or animals.