



L-Ornithine Decarboxylase Broth

M1223I

Intended use

Recommended for detection of the ability of microorganisms to decarboxylate ornithine. The composition and performance of this media are as per specifications laid down in ISO /TS 22964: 2017 and ISO 21567:2004(E)

Composition**

ISO /TS 22964: 2017 and ISO 21567:2004(E) Specification- L-Ornithine Decarboxylase Broth

Ingredients	g / L
L-Ornithine monohydrochloride	10.000
Yeast extract	3.000
Glucose(Dextrose)	1.000
Bromo cresol purple	0.015
Final pH (at 25°C)	6.8±0.2

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**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 14.02 grams in 1000 ml purified / distilled water. Heat if necessary to dissolve the medium completely. Dispense in test tubes and sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. After inoculation overlay the tubes with 2-3 ml mineral oil.

Principle And Interpretation

Decarboxylation is the process in which bacteria that possess specific decarboxylase enzyme attack amino acids at their carboxyl end (-COOH) to yield an amine or a diamine and carbon dioxide (1). The amino acid L-ornithine is decarboxylated by the enzyme ornithine decarboxylase to yield the diamine putrescine and carbon dioxide (2,3).

Ornithine Decarboxylase Broth is based on the Taylors modification (4). It is recommended by the ISO Committee (5,6) for the detection of ornithine decarboxylation by *Cronobacter sakazakii* (5).

Yeast extract in the medium provides nitrogen and other nutrients necessary to support bacterial growth. The amino acid L-ornithine is added to detect the production of ornithine decarboxylase. Glucose is the fermentable carbohydrate, which during the initial stages of incubation, is fermented by the organisms with acid production, which results in colour change of the pH indicator (BCP) to yellow. The acidic condition also stimulates decarboxylase activity. If the organism produces the appropriate enzyme, i.e. decarboxylase, the amino acid (ornithine) in the medium is degraded, yielding a corresponding amine. Decarboxylation of ornithine yields putrescine. The production of this amine elevates the pH of the medium towards alkalinity, changing the color of the indicator from yellow to purple or violet. If the organism does not produce the appropriate enzyme, the medium remains acidic or yellow in colour.

Type of specimen

Food and dairy samples

Specimen Collection and Handling:

For food and dairy samples, follow appropriate techniques for sample collection and processing as per guidelines (7,8,9). After use, contaminated materials must be sterilized by autoclaving before discarding.

Warning and Precautions :

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

Limitations :

1.Overlaying the medium with mineral oil is essential to avoid erroneous results.

Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

Quality Control

Appearance

Light yellow to light green homogeneous free flowing powder

Colour and Clarity of prepared medium

Dark purple coloured clear solution without any precipitate

Reaction

Reaction of 1.4% aqueous solution at 25°C. pH : 6.8±0.2

pH

6.60-7.00

Cultural Response

Cultural characteristics observed after an incubation at 35-37°C for 18-24 hours. Inoculated tubes are overlaid with mineral oil.

Organism

Ornithine

Decarboxylation

Cronobacter sakazakii
ATCC 29544 (00214*)

positive reaction,
purple colour

Cronobacter muytjensii
ATCC 51329 (00213*)

positive reaction, purple
colour

Proteus mirabilis ATCC
29906 (00023*)

positive reaction,
purple colour

Klebsiella aerogenes
ATCC 13048 (00175*)

positive reaction, purple
colour

Shigella sonnei ATCC
29930 (00127*)

positive reaction, purple
colour

^*Pseudomonas paraaeruginosa*
ATCC 9027 (00026*)

negative reaction,
yellow colour

Pseudomonas aeruginosa
ATCC 27853 (00025*)

negative reaction,
yellow colour

Pseudomonas aeruginosa
ATCC 10145 (00024*)

negative reaction,
yellow colour

Citrobacter freundii
ATCC 43864 (00006*)

negative reaction,
yellow colour

Pseudomonas fluorescens
ATCC 13525 (00115*)

negative reaction,
yellow colour

Key: *: Corresponding WDCM numbers

Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition Seal the container tightly after use. Product performance is best if used within stated expiry period.

Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (10,11).

Reference

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4. Taylor W.I., 1961, Appl. Microbiol., 9:487.
5. International Organization for Standardization. Microbiology of the food chain- Horizontal method for the detection of *Cronobacter* spp. Draft ISO/ TS 22964, 2017 (E).
6. International Organization for Standardization. Microbiology of food and animal feeding stuffs — Horizontal method for the detection of *Shigella* spp. ISO 21567:2004(E)
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10. Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition.
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