

Vibrio Chromogenic Agar

Cat. 2054

For isolation and detection of *Vibrio cholerae*, *Vibrio parahaemolyticus* and *Vibrio vulnificus*.

Practical information

Applications	Categories
Selective isolation	Vibrio

Industry: Water / Food



Principles and uses

Vibrio Chromogenic Agar is recommended for the selective isolation and differentiation of *Vibrio* species based on colony colors, due to the enzymatic activities of β -galactosidase and β -glucosidase.

The *Vibrio* genus consists of micro-organisms whose natural habitat is marine and fluvial ecosystems. They are frequently isolated from marine water, especially in warmer months and when the water temperature is higher than 17 °C. *Vibrio* species are mainly responsible for causing cholera and food poisoning in humans.

The medium contains yeast extract and peptones which are the source of nitrogen, vitamins (particularly the B-group essential for bacterial growth), minerals and amino acids. Special Bilis inhibits Gram-positive organisms. Sucrose, glucose and lactose are the fermentable carbohydrates, which provide carbon and energy. Sodium chloride supplies essential electrolytes for transport and osmotic balance. Sodium citrate, sodium thiosulfate and sodium cholate are the selective agents, inhibiting the Gram-positive bacteria. Chromogenic substrate is added to detect *Vibrio* species by means of a color change in the colonies.

This medium is designed for the development and differentiation of 3 types of *Vibrio* depending on the enzyme activity of each strain. β -glucosidase activity will appear as blue-green colonies, as in the case of *V. parahaemolyticus*. The activity of β -galactosidase enzyme will show red or pink colonies in the case of *V. cholerae*. And finally, the yellowish-white colonies will be *V. alginolyticus*, which has β -galactosidase, but is not expressed due to the high concentration of sugars. The alkaline pH of the medium enhances the recovery of *V. cholerae*.

ISO 21872: Microbiology of the food chain - Horizontal method for the detection of potentially enteropathogenic species *Vibrio* spp. Detection of *Vibrio parahaemolyticus*, *Vibrio cholerae* and *Vibrio vulnificus* (ISO 21872-1: 2017), recommends an alternative selective medium to TCBS for the detection of *Vibrio* enteropathogenic species.

Formula in g/L

Glucose	1	Bacteriological agar	15
Chromogenic mixture	2,49	Lactose	0,1
Peptone	10	Sodium chloride	10
Sodium cholate	3	Sodium citrate	10
Sodium thiosulfate	10	Sucrose	20
Yeast extract	3	Special bilis	5

Preparation

Suspend 90 grams of the medium in one liter of distilled water. Mix well and dissolve by heating with frequent agitation. Boil for one minute until complete dissolution. Avoid overheating. DO NOT AUTOCLAVE. Dispense into appropriate containers.

Instructions for use

Detection of potentially enteropathogenic *Vibrio parahaemolyticus*, *Vibrio cholerae* and *Vibrio vulnificus* according to ISO 21872:

- Take test portions (25 g or 25 ml) and homogenize in 225 ml of enrichment medium ASPW. In the case of large quantities of test portion, the ASPW should be warmed to 37±1 °C / 41,5±1 °C before inoculation.
- Incubate the initial suspension at 41,5±1 °C / 37±1 °C for 6±1 hours.
- Transfer 1 ml from the surface into a tube with 10 ml of ASPW.
- Incubate the ASPW at 41,5±1 °C / 37±1 °C for 18±1 hours.
- From the culture obtained in the ASPW, inoculate 1 µl in TCBS Agar. Incubate a second selective isolation medium (*Vibrio* Chromogenic Agar).
- Incubate at 37±1 °C for 24±3 hours.
- Confirmation.

Quality control

Solubility	Appearance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25°C)
w/o rests	Fine powder	Beige	Amber	8,6 ± 0,2

Microbiological test

Incubation conditions: (35±2 °C / 24-48 h)

Microorganisms	Specification	Characteristic reaction
<i>Vibrio cholerae</i> ATCC 14034	Good growth	Pink-rose colony
<i>Vibrio alginolyticus</i> ATCC 17749	Good growth	Colorless colony
<i>Vibrio parahaemolyticus</i> ATCC 17802	Good growth	Green-blue colony
<i>Vibrio vulnificus</i> ATCC 27562	Good growth	Pink-rose colony
<i>Pseudomonas aeruginosa</i> ATCC 27853	Inhibited growth	

Storage

Temp. Min.: 2 °C
Temp. Max.: 25 °C

Bibliography

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PTechnical Specification ISO/TS 21872-1:2007(E) Microbiology of food and animal feeding stuffs-Horizontal method for the detection of potentially enteropathogenic *Vibrio* spp. Part 1: Detection of *Vibrio parahaemolyticus* and *Vibrio cholerae*. Technical Specification ISO/TS 21872-2:2007(E) Microbiology of food and animal feeding stuffs-Horizontal method for the detection of potentially enteropathogenic *Vibrio* spp. Part 2: Detection of species other than *Vibrio parahaemolyticus* and *Vibrio cholerae*.