

# Thiosulfate Citrate Bile Salts Sucrose (TCBS) Agar

## Intended Use

Thiosulfate Citrate Bile Salts Sucrose (TCBS) agar is a selective and differential medium specifically designed for the isolation and cultivation of *Vibrio* species, including *Vibrio cholerae* and *Vibrio parahaemolyticus*, from clinical, food, and environmental samples. The medium contains high concentrations of thiosulfate, citrate, and bile salts, which inhibit the growth of most Gram-positive and many Gram-negative bacteria other than *Vibrio*. Sucrose serves as a fermentable carbohydrate, allowing differentiation of *Vibrio* species based on their ability to ferment sucrose, resulting in distinct colony colors—yellow for sucrose fermenters like *V. cholerae* and green or blue-green for non-fermenters such as *V. parahaemolyticus*. TCBS agar is widely used in diagnostic and public health laboratories for the rapid detection and isolation of pathogenic *Vibrio* strains in samples such as stool, seafood, and water.

## Principle

Peptones supply nitrogen, vitamins, minerals, and amino acids essential for microbial growth. Yeast extract serves as a rich source of vitamins, especially those in the B-group. The selective agents—sodium citrate, sodium thiosulfate, and ox bile—work to inhibit the growth of Gram-positive bacteria. Sodium thiosulfate also provides sulfur, while ferric citrate acts as an indicator for hydrogen sulfide (H<sub>2</sub>S) production. Sucrose serves as the carbohydrate energy source, and bromothymol blue along with thymol blue function as pH indicators. Sodium chloride supports bacterial growth, as *Vibrio* species thrive in saline environments. Bacteriological agar acts as the solidifying agent, and the alkaline pH of the medium aids in the effective recovery of *Vibrio cholerae*.

## Storage

Recommended storage conditions: 2 to 25 °C. Avoid direct sunlight.  
 Recommended shipping conditions: 2 to 25 °C.

## Production Standard

The formulation is prepared according to the recommendations of the current European, United States, and China Pharmacopoeia.

## Precautions

1. The product may secrete water when exposed to temperature changes between low and room temperature, which is normal. Allow it to reach room temperature before use and, if possible, pre-dry it in a sterile drying oven.
2. Handle the plates with sterile gloves to prevent contamination during use.
3. Store the plates in a cool, dry place away from direct sunlight to maintain their integrity.
4. Avoid opening the plates until they are ready to be used in the sampling area to prevent airborne contamination.
5. Ensure the plates are used within their expiration date to guarantee accurate results.
6. Dispose of used plates according to biohazard waste protocols to prevent contamination and ensure safety.

## Quality Control

The following were incubated at 37 ± 1°C for 24 ± 3 hours. The results are as follows:

Test Strains	Expected Results	Characteristic Reaction
<i>Staphylococcus aureus</i> ATCC 6538	Total inhibition (0)	NA
<i>Vibrio parahaemolyticus</i> ATCC 17802	Good growth	Green colonies (sucrose negative)

## Product Content

Product Content	Cat No.	Size
Thiosulfate Citrate Bile Salts Sucrose (TCBS) Agar	111001	10 plates/bag; 200 plates/case

## Composition

Peptone	10.0 g
Yeast extract	5.0 g
Sodium citrate	10.0 g
Sodium thiosulfate	10.0 g
Sodium chloride	10.0 g
Bovine bile	5.0 g
Ferric citrate	1.0 g
Sodium cholate	3.0 g
Sucrose	20.0 g
Bromthymol blue	0.04 g
Thymol blue	0.04 g
Bacteriological agar	15.0 g
Water	1000 mL
Final pH (at 25°C)	8.6 ± 0.2

## Shelf Life

Shelf life: 6 months from date of manufacture

## Packaging

90mm x 10 plates per bag; 200 plates/case

Each plate filled with 20mL ± 2mL

## Disposal

Please adhere to the respective regulations for the disposal of used culture medium (e.g., autoclave for 30 minutes at 121 °C)

## References

1. ISO 21872-1 Technical Specification (2017) Microbiology of Food chain- Horizontal method for the detection of potentially enteropathogenic *Vibrio* spp. - Part 1: Detection of *Vibrio parahaemolyticus* and *Vibrio cholerae* and *Vibrio vulnificus*.
2. ISO 11133:2014/ Adm 1:2018. Microbiology of food, animal feed and water. Preparation, production, storage and performance testing of culture media.