

Selenite Cystine Broth ISO

Cat. 1220

For the selective enrichment of *Salmonella* spp and some strains of *Shigella* in feces, urine (from clinical samples) and other materials of sanitary importance

Practical information

Applications	Categories
Selective enrichment	Salmonella
Selective enrichment	Shigella

Industry: Clinical / Food

Regulations: ISO 19250 / ISO 6579



Principles and uses

Selenite Cystine Broth is used for the selective enrichment of *Salmonella* spp, and is a modified enriched medium by the addition of the amino acid cystine. This amino acid establishes a redox potential that seems to be very good for the enrichment and recovery of *Salmonella* and some strains of *Shigella*, present in limited numbers in feces, diverse foods and other products of sanitary concern.

Selenite Cystine Broth is used particularly to limit the loss of sensitivity that affects other enrichment media especially in food products with a high content of organic material, for example, foods containing egg or egg powder.

Selenite Cystine Broth is recommended for the detection of *Salmonella* in the non-acute stages of illness when the organisms occur in low numbers in the feces, and for epidemiological studies to encourage the detection of low numbers of organisms from asymptomatic or convalescent patients.

Selenite Cystine Broth inhibits the early multiplication of bacteria such as Coliforms, but allows the *Salmonellae* to grow with ease. Peptone mixture is a source of nitrogen, vitamins and amino acids essential for growth. Lactose is the carbohydrate energy source; Sodium selenite inhibits Gram-positive bacteria and most enteric Gram-negative bacteria, except *Salmonella*. L-Cystine lowers the toxicity of Sodium selenite and adds an additional organic sulphur.

If the broth is to be used immediately, sterilization is unnecessary. Broth which has been tubed and steamed may be kept for months under refrigeration.

After a long storage period of the dehydrated medium, the colour of the prepared broth might change to reddish/red. The microbiological performance, however, is not affected.

Formula in g/L

Lactose	4	L-Cystine	0,01
Peptone mixture	5	Sodium phosphate	10
Sodium biselenite	4		

Preparation

Suspend 23 grams of the medium in one liter of distilled water. Mix well and heat gently until dissolved. Dispense and sterilize by exposing the medium to flowing steam for 5 minutes. Excessive heating is detrimental. Do not sterilize in autoclave.

Instructions for use

» For clinical diagnosis, the type of sample is feces.

- Suspend 1-2 g of sample in 10-15 ml of Selenite Cystine Broth and mix well until a homogeneous solution is obtained.
- Inoculate and incubate in aerobic conditions at 35±2 °C for 18-24 hours.
- Subculture on plates of MacConkey Agar (Cat. 1052), SS Agar (Cat. 1064), XLD Agar (Cat. 1080) or Chromogenic *Salmonella* Agar (Cat.1122).
- Incubate at 35±2 °C for 18-24 h.

» For other uses not covered by the CE marking:

Microbiological analysis of food. Follow the usual methods.

- Inoculate the tubes of Selenite Cystine Broth.

- Subcultivate into differential solid media, such as SS Agar (Cat. 1064), MacConkey Agar (Cat. 1052), XLD Agar (Cat. 1080) and Chromogenic Salmonella Agar (Cat. 1122) and observe after 6-8 hours of incubation and again, after 12-24 hours.

- After 18 hours of incubation, the commensal microorganisms rapidly increase and begin to impede the isolation of Salmonellae, so it is necessary to subculture before the elapse of this critical time.

Quality control

Solubility	Appearance	Color of the dehydrated medium	Color of the prepared medium	Final pH (25°C)
w/o rests	Fine powder	Beige	Clear to dark amber. Red after long storage time	7,0±0,2

Microbiological test

According to ISO 11133:

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

Inoculation conditions: Productivity qualitative (<100 CFU) / Selectivity (10⁴-10⁶ CFU).

Microorganisms	Specification
Salmonella typhimurium ATCC 14028 +Escherichia coli ATCC 8739 +Pseudomonas aeruginosa ATCC 27853	>10 characteristic colonies on XLD Agar or other medium of choice
Salmonella enteritidis ATCC 13076 +Escherichia coli ATCC 8739 +Pseudomonas aeruginosa ATCC 27853	>10 characteristic colonies on XLD Agar or other medium of choice
Enterococcus faecalis ATCC 19433	<10 colonies on TSA
Escherichia coli ATCC 8739	Partial inhibition, ≤100 colonies on TSA

Storage

Temp. Min.:2 °C

Temp. Max.:8 °C

Bibliography

Leifson E. (1936) Am. J. Hyg 24: 423-432

American Public Health Association (1976) Compendium of Methods for the Microbiological Examination of Foods. Fricker CR. (1987) J. Appl. Bact. 63: 99-116.