SELENITE CYSTINE BROTH (7283)

Intended Use
Selenite Cystine Broth is used for the selective enrichment of *Salmonella* species.

Product Summary and Explanation
The growth and isolation of *Salmonella* in food and other samples can be suppressed from food-processing procedures including exposure to low and or high temperatures, drying, radiation, preservatives, and sanitizers.[1] Along with the harsh processing procedures, *Salmonella* organisms may be competing with other bacteria in the same sample. Primary and secondary (selective) enrichment media are used to nurture any injured or stressed cells, along with inhibiting nuisance organisms. *Salmonella* spp. cause many types of infections, from mild self-limiting gastroenteritis to life-threatening typhid fever.[2]

Selenite Cystine Broth is based upon the formula of Selenite Broth described by Leifson, with the addition of cystine.[3] The Food and Drug Administration proposed Selenite Cystine Broth as an enrichment medium for detecting *Salmonella* in food materials.[4] Selenite Cystine Broth is recommended by AOAC, USP, and APHA as a selective enrichment medium for *Salmonella* spp., while inhibiting the growth of other Gram-negative bacilli.[5-7]

Principles of the Procedure
Enzymatic Digest of Casein and Enzymatic Digest of Animal Tissue are used as nitrogen and vitamin sources in Selenite Cystine Broth. Lactose is the carbohydrate and Disodium Phosphate is the buffer. Sodium Selenite is the selective agent against Gram-positive bacteria and most enteric Gram-negative bacilli. L-Cystine is a reducing agent.

Formula/Liter
Enzymatic Digest of Casein..... 2.5 g
Enzymatic Digest of Animal Tissue ..... 2.5 g
Lactose ..... 4 g
Sodium Phosphate ..... 10 g
Sodium Selenite..... 4 g
L-Cystine..... 0.01 g
Final pH: 7.0 ± 0.2 at 25°C
Formula may be adjusted and/or supplemented as required to meet performance specifications.

Precautions
1. For Laboratory Use.
2. Toxic. Harmful by inhalation and if swallowed. Irritating to eyes, respiratory system, and skin.

Directions
1. Dissolve 23 g of the medium in one liter of purified water.
2. Heat to boiling to completely dissolve the medium.
3. **DO NOT AUTOCLAVE**. Use immediately.

Quality Control Specifications
Dehydrated Appearance: Powder is homogeneous, free flowing, and off-white.

Prepared Appearance: Prepared medium is clear, very pale yellow with no or very slight precipitate.

Expected Cultural Response: Cultural response is exhibited on MacConkey Agar after enrichment in Selenite Cystine Broth at 35°C for 24 - 48 hours.

Microorganism	Response	Reactions
Escherichia coli ATCC® 11775	partial to complete inhibition	pink with bile precipitate (if recovered)
Escherichia coli ATCC® 25922	partial to complete inhibition	pink with bile precipitate (if recovered)
Salmonella typhi ATCC® 19430	good growth	colorless colony
Salmonella typhimurium ATCC® 14028	good growth	colorless colony
Shigella sonnei ATCC® 25931	fair to good growth	colorless colony

The organisms listed are the minimum that should be performed for quality control testing.

Test Procedure [4,5]

1. Prepare food sample following the recommended procedure.
2. Inoculate into recommended pre-enrichment broth.
3. Transfer 1 mL of mixture to 10 mL Selenite Cystine Broth and to 10 mL Tetrathionate Broth.
3. Incubate at 35°C for 24 ± 2 hours.
4. Mix and streak 3 mm loopful (10 µL) of sample from both broths onto Bismuth Sulfite Agar, Xylose Lysine Desoxycholate Agar, Hektoen Enteric Agar or MacConkey Agar.
5. Examine plates for the presence of colonies that are typical for *Salmonella* spp.

Results

Refer to references for the characteristic growth of *Salmonella* spp. on appropriate media formulations.

Storage

Store sealed container 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light by keeping container tightly closed.

Expiration

Refer to expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color.

Limitation of the Procedure

Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.

Packaging

Selenite Cystine Broth	**Code No.**	**7283A**	**500 g**
		7283B	**2 kg**
		7283C	**10 kg**

References

1. **Hartman, P. A., and S. A. Minnich.** 1981. Automation for rapid identification of salmonellae in foods. J. Food Prot. **44:**385-386.
2. **Murray, P. R., E. J. Baron, M. A. Pfaller, F. C. Tenover, and R. H. Yolken (eds.).** 1995. Manual of clinical microbiology, 6th ed. American Society for Microbiology, Washington, D.C.
3. **Leifson, E.** 1939. New selenite selective enrichment medium for the isolation of typhoid and paratyphoid bacilli. Am. J. Hyg. **24:**423-432.
4. **U.S. Food and Drug Administration.** 1995. Bacteriological analytical manual. 8th ed. AOAC International, Gaithersburg, MD.
5. **Andrews, W.** 1995. Microbial methods, p. 1-119. *In* Official methods of analysis of AOAC International, 16th ed. AOAC International. Arlington, VA.
6. **United States Pharmacopeial Convention**. 1995. The United States pharmacopeia, 23rd. The United States Pharmacopeial Convention. Rockville, MD.
7. **Vanderzant, C. and D. F. Splittstoesser (eds.).** 1992. Compendium of methods for the microbiological examination of foods, 3rd ed. American Public Health Association, Washington, D.C.

Technical Information

Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (410)780-5120 or fax us at (410)780-5470.