

PRODUCT SPECIFICATION SHEET



Selenite F Broth (DM241BS) Twin Pack

Intended Use

Selenite F Broth (DM241BS) is recommended for two-step enrichment of sublethally injured *Salmonellae* from food and feed.

Product Summary and Explanation

Selenite Broth was devised by Leifson⁽¹⁾ who demonstrated that selenite was inhibitory for coliforms and certain other microbial species, such as fecal streptococci, present in fecal specimens and, thus, was beneficial in the recovery of *Salmonella* species. He found that the inhibited strains would eventually break through, but if subcultures were made from the enrichment broth after 8-12 hours of incubation, the isolation of *Salmonella* was possible without overwhelming growth of many members of the intestinal flora. Enrichment media are routinely employed for detection of pathogens in fecal specimens since the pathogens usually represent only a small percentage of the intestinal flora. Selenite Broth and the related medium, Selenite Cystine Broth, are recommended for use in the recovery of *Salmonella* with subcultures being made after 12-18 hours of incubation. *Salmonella* organisms are also injured in food-processing procedures, including exposure to low temperatures, sub-marginal heat, drying, radiation, preservatives or sanitizers.⁽²⁾ Although injured cells may not form colonies on selective media, they cause infection if ingested.⁽³⁾ *Salmonella* spp. cause many types of infections, from mild self-limiting gastroenteritis to life-threatening typhoid fever.⁽⁴⁾ Selenite Broth conforms with the American Public Health Association (APHA),⁽⁵⁾ and is specified for clinical applications.^(4,6) Many modifications of Selenite Broth exist, including Selenite Cystine Broth, from the original formula described as Selenite F Broth by Leifson. Enrichment media are routinely employed for detection of pathogens in faecal specimens as the pathogens are present in a very small number in the intestinal flora. Selenite Broth is useful for detecting *Salmonella* in the nonacute stages of illness when organisms occur in the faeces in low numbers and for epidemiological studies to enhance the detection of low number of organisms from asymptomatic or convalescent patients.

Principles of the Procedure

Casein enzymic hydrolysate provides nitrogenous substances. Lactose maintains the pH of medium. Selenite is reduced by bacterial growth and alkali is produced. An increase in pH lessens the toxicity of the selenite and results in overgrowth of other bacteria. The acid produced by bacteria due to lactose fermentation serves to maintain a neutral pH. Sodium phosphate maintains a stable pH and also lessens the toxicity of selenite. Enriched broth is subcultured on differential plating media such as Bismuth Sulphite Agar (DM039), Brilliant Green Agar (DM044), XLD Agar (DM297) etc. Do not incubate the broth longer than 24 hours as inhibitory effect of selenite decreases after 6 - 12 hours of incubation.

Formula / Liter

Ingredients	Gms / Liter
Part A	--
Casein enzymic hydrolysate	5.00
Lactose	4.00
Sodium phosphate	10.00
Part B	--
Sodium hydrogen selenite	4.00
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 only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.

Directions

1. Suspend 23 grams of the medium in one liter of distilled water.
2. Heat if necessary, to dissolve the medium completely.
3. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.
4. Mix well and pour into sterile Petri plates.

PRODUCT SPECIFICATION SHEET



Quality Control Specifications

Dehydrated Appearance	Part A : White to light yellow homogeneous free flowing powder Part B : White to cream crystalline powder.
Prepared Medium	Cream to yellow coloured clear solution without any precipitate
Reaction of solution (Mixture of 1.9% w/v Part A and 0.4% Part B)	pH : 7.0 ± 0.2 at 25°C
Gel Strength	Not Applicable

Expected Cultural Response: Cultural characteristics observed when subcultured on MacConkey Agar(M081) after an incubation at 35-37°C for 18-24 hours.

Sr. No.	Organisms	Results to be achieved		
		Inoculum (CFU)	Recovery	Colour of colony
1.	<i>Escherichia coli</i> ATCC25922	50-100	None to poor (no increase in numbers)	Pink with bile Precipitate
2.	<i>Salmonella choleraesuis</i> ATCC 12011	50-100	Good-luxuriant	Colourless
3.	<i>Salmonella typhi</i> ATCC6539	50-100	Good-luxuriant	Colourless
4.	<i>Salmonella typhimurium</i> ATCC 14028	50-100	Good-luxuriant	Colourless
5.	<i>Escherichia coli</i> ATCC 8739	50-100	None to poor (no increase in numbers)	Pink with bile Precipitate
6.	<i>Escherichia coli</i> NCTC 9002	50-100	None to poor (no increase in numbers)	Pink with bile Precipitate

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



Selenite F Broth (DM241B5)

1. Control
2. *Salmonella typhi* ATCC 6539
3. *Salmonella typhimurium* ATCC 14028

Test Procedure

1. For faeces and other solid materials, suspend 1-2 g of the specimen in the broth (approximately 10-15% by volume) and emulsify with an inoculating needle, if necessary.
2. Incubate tubes with loosened caps at 35 ± 2°C for up to 24 hours.
3. Subcultures should be made after 12-18 hours of incubation, if possible.
4. Coliforms will tend to overgrow the pathogens if incubated longer than 24 hours.

PRODUCT SPECIFICATION SHEET



Results

After incubation, there should be an increase in the number of pathogens that the medium is designed to select for and enrich. Subculture onto appropriate selective and differential media (e.g., MacConkey Agar, Hektoen Enteric Agar, XLD Agar, XLT4 Agar) to isolate pathogens for identification.

Storage

Store the sealed bottle containing the dehydrated medium at 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the 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. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure

Enrichment broths should not be used as the sole isolation medium. They are to be used in conjunction with selective and nonselective plating media to increase the probability of isolating pathogens, especially when they may be present in small numbers. Consult references for detailed information and recommended procedures.

Packaging

Product Name : Selenite F Broth

Product Code : DM241

Available Pack sizes : 100gm / 500gm

References

1. Leifson. 1936. Am. J. Hyg. 24:423.
2. Hartman, P. A., and S. A. Minnich. 1981. Automation for rapid identification of salmonellae in foods. J. Food Prot. 44:385-386.
3. Sorrells, K. M., M. L. Speck, and J. A. Warren. 1970. Pathogenicity of *Salmonella gallinarum* after metabolic injury by freezing. Appl. Microbiol. 19:39-43.
4. Murray, P. R. Baron, M. A. Pfaller, F. C. Tenover, and R. H. Tenover (eds.). 1995. Manual of clinical microbiology, 6th ed. American Society for Microbiology, Washington, D.C.
5. Vanderzant, C., and D.F. Splittstoesser (eds.). Compendium of methods for the microbiological examination of foods, 3rd ed. American Public Health Association, Washington, D.C.
6. Isenberg, H. (ed.). 1992. Clinical microbiology procedures handbook, vol. 1. American Society for Microbiology, Washington, D.C.

Further Information

For further information please contact your local MICROMASTER Representative.



MICROMASTER LABORATORIES PRIVATE LIMITED

Unit 38/39, Kalpataru Industrial Estate,
Off G.B. Road, Near 'R-Mall', Thane (W) - 400607. M.S. INDIA.
Ph: +91-22-25895505, 4760, 4681. Cell: 9320126789.
Email: micromaster@micromasterlab.com

DM167PI, Rev.0, 01.08.2008

Disclaimer :

All Products conform exclusively to the information contained in this and other related Micromaster Publications. Users must ensure that the product(s) is appropriate for their application, prior to use. The information published in this publication is based on research and development work carried out in our laboratory and is to the best of our knowledge true and accurate. Micromaster Laboratories Pvt Ltd reserves the right to make changes to specifications and information related to the products at any time. Products are intended for laboratory, diagnostic, research or further manufacturing use only and not for human or animal or therapeutic use, unless otherwise specified. Statements included herein should not be considered as a warranty of any kind, expressed or implied, and no liability is accepted for infringement of any patents.