SELENITE-F BROTH

INTENDED USE

Selenite Broth (Selenite-F Broth) is used as an enrichment medium for the isolation of *Salmonella* from feces, urine, water, foods and other materials of sanitary importance.

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. For detection of *Shigella*, GN Broth is a satisfactory enrichment medium.[2] Campylobacter Thioglycollate Medium with 5 Antimicrobics is recommended for specimens suspected to contain *Campylobacter jejuni*.[3]

PRINCIPLE

The peptone provides essential nitrogenous and carbon compounds. The lactose in the medium serves to maintain a uniform pH. When selenite is reduced by the growth of bacteria, alkali is produced, and such increase in pH would lessen the toxicity of the selenite and result in overgrowth of extraneous bacteria. The acid produced by lactose fermentation serves to maintain a neutral or slightly decreased pH. The function of the phosphate is two-fold; it serves to maintain a stable pH and lessens the toxicity of the selenite, thus increasing the capacity of the medium. Sodium selenite inhibits many species of gram positive and gram-negative bacteria including enterococci and coliforms.

REAGENTS (FORMULA)

Pancreatic Digest of Casein	5.0	g
Lactose	4.0	g
Sodium Selenite	4.0	g
Sodium Phosphate	10.0	g
Deionized Water	1000.0	ml

PROCEDURE

For feces 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.

Incubate tubes with loosened caps at 35 ± 2°C for up to 24 hours. Subcultures should be made after 12-18 hours of incubation, if possible. Coliforms will tend to overgrow the pathogens if incubated longer than 24 hours.

EXPECTED 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, CHROMagar™ Salmonella) to isolate pathogens for identification.

QUALITY CONTROL

All lot numbers have been tested and have been found to be acceptable. Customers can test products using the following quality control organisms. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, sample results should not be reported.

Organisms	Incubation	Results
Escherichia coli ATCC 25922	35 ± 2°C for 24 hours	Growth
Salmonella enterica ATCC 14028	35 ± 2°C for 24 hours	Growth

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BIBLIOGRAPHY

1. Leifson. 1936. Am. J. Hyg. 24:423.

2. Taylor and Harris. 1965. Am. J. Clin. Pathol. 44:476.

3. Murray, Baron, Jorgensen, Landry and Pfaller (ed.). 2007. Manual of clinical microbiology, 9th ed. American Society for Microbiology, Washington, D.C.

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