

Thiol Broth

Intended Use

Thiol Broth is used for cultivating organisms from body fluids and other materials containing penicillin, streptomycin or sulfonamides.

Summary and Explanation

Szawatkowski¹ and Shanson and Barnicoat² reported Thiol Broth to be superior in supporting the growth of *Bacteroides* species in blood cultures. Thiol Broth was used to study the optimum incubation period of blood culture broths.³ Media containing thiol and thioglycollate are recommended for recovery of nutritionally variant streptococci (NVS).⁴

Thiol Broth is cited in the first edition of *Clinical Microbiology Procedures Handbook*⁵ as a medium specific for anaerobic bacteria in blood cultures.

Principles of the Procedure

Peptones and yeast extract provide nitrogen, vitamins and amino acids in Thiol Broth. Dextrose is a carbon source. Sodium chloride maintains osmotic balance. Para-aminobenzoic acid is a preservative. Sodium thioglycollate and L-cystine are rich in sulfhydryl (-SH) groups, which neutralize the bacteriostatic and bactericidal effects of penicillin, streptomycin and sulfonamides.

Formula

Difco™ Thiol Broth

Approximate Formula* Per Liter

Proteose Peptone No.3.....	10.0	g
Pancreatic Digest of Casein	4.35	g
Gelatin.....	1.0	g
Yeast Extract	5.0	g
Dextrose	0.2	g
Sodium Chloride	5.0	g
L-Cystine, Disodium	2.4	g
Sodium Thioglycollate	1.0	g
p-Aminobenzoic Acid.....	0.05	g

*Adjusted and/or supplemented as required to meet performance criteria.

Directions for Preparation from Dehydrated Product

1. Suspend 29 g of the powder in 1 L of purified water. Mix thoroughly.
2. Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
3. Autoclave at 121°C for 15 minutes.
4. Test samples of the finished product for performance using stable, typical control cultures.

Procedure

For a complete discussion on processing and interpretation of blood cultures and other specimens, refer to appropriate references.^{5,6}

User Quality Control

Identity Specifications

Difco™ Thiol Broth

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	2.9% solution, soluble in purified water upon boiling. Solution is very light to light amber, clear to slightly opalescent.
Prepared Appearance:	Very light amber, clear to slightly opalescent.
Reaction of 2.9% Solution at 25°C:	pH 7.1 ± 0.2

Cultural Response

Difco™ Thiol Broth

Prepare the medium per label directions. Test without and with concentrations of 5, 100 and 1,000 units of penicillin and 100, 1,000 and 10,000 µg of streptomycin per 10 mL tube. Inoculate and incubate at 35 ± 2°C for 18-48 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY w/o ANTIBIOTICS	RECOVERY w/ANTIBIOTICS
<i>Staphylococcus aureus</i>	25923	10 ² -10 ³	Good	Good†
<i>Streptococcus pyogenes</i>	19615	10 ² -10 ³	Good	Good†

†Antibiotic concentrations up to 100 units of penicillin or 1,000 µg of streptomycin.

Expected Results

Refer to appropriate references and procedures for results.

Limitation of the Procedure

Strict reliance on blood culture bottles containing Thiol Broth is not recommended for aerobic microorganisms. Always use an aerobic medium for optimum isolation of the broad spectrum of microorganisms that can cause bacteremia or septicemia.

References

1. Szawatkowski. 1976. Med. Lab. Sci. 33:5.
2. Shanson and Barnicoat. 1975. J. Clin. Pathol. 28:407.
3. Murray. 1985. J. Clin. Microbiol. 21:481.
4. Donnelly. 1994. Infect. Dis. Alert 6:109.
5. Isenberg (ed.). 1992. Clinical microbiology procedures handbook, vol. 1. American Society for Microbiology, Washington, D.C.
6. Murray, Baron, Jorgensen, Landry and Pfaller (ed.). 2007. Manual of clinical microbiology, 9th ed. American Society for Microbiology, Washington, D.C.

Availability

Difco™ Thiol Broth

Cat. No. 243420 Dehydrated – 500 g