

Difco™ Thioglycollate Medium without Dextrose or Indicator

Cat. No. 243210 Dehydrated – 500 g

BBL™ Thioglycollate Medium, Fluid, without Dextrose or Eh IndicatorCat. No. 211727 Dehydrated – 500 g
221398 Prepared Tubes (K Tubes) – Ctn. of 100***Difco™ Thioglycollate Medium without Indicator**

Cat. No. 243010 Dehydrated – 500 g

BBL™ Thioglycollate Medium without Indicator – 135C

| | | |
|-------------|-------------|--|
| BS10 | CMPH | |
| Cat. No. | 211720 | Dehydrated – 500 g |
| | 211723 | Dehydrated – 5 lb (2.3 kg) |
| | 221199 | Prepared Tubes, 8 mL (K Tubes) – Pkg. of 10* |
| | 221200 | Prepared Tubes, 8 mL (K Tubes) – Ctn. of 100* |
| | 221797 | Prepared Tubes, 10 mL (D Tubes) – Pkg. of 10* |
| | 221798 | Prepared Tubes, 10 mL (D Tubes) – Ctn. of 100* |
| | 221047 | Prepared Tubes, 20 mL (A Tubes) – Ctn. of 100* |

BBL™ Fluid Thioglycollate Medium, Enriched

Cat. No. 297642 Prepared Tubes (K Tubes) – Ctn. of 100*

BBL™ Enriched Thioglycollate Medium

| | | | |
|-------------|-------------|--|--------------|
| BS10 | CMPH | MCM7 | NCCLS |
| Cat. No. | 221741 | Prepared Tubes, 5 mL (K Tubes) – Pkg. of 10* | |
| | 221742 | Prepared Tubes, 5 mL (K Tubes) – Ctn. of 100* | |
| | 221787 | Prepared Tubes, 8 mL (K Tubes) – Pkg. of 10* | |
| | 221788 | Prepared Tubes, 8 mL (K Tubes) – Ctn. of 100* | |
| | 297289 | Prepared Tubes, 10 mL (D Tubes) – Pkg. of 10* | |
| | 297292 | Prepared Tubes, 10 mL (D Tubes) – Ctn. of 100* | |

BBL™ Thioglycollate Medium with Calcium Carbonate Chip

Cat. No. 298518 Prepared Tubes (K Tubes) – Ctn. of 100

BBL™ Enriched Thioglycollate Medium with Calcium Carbonate

Cat. No. 297264 Prepared Tubes, 10 mL (D Tubes) – Ctn. of 100*

*Store at 2-8°C.

Thiol Medium • Thiol Broth

Intended Use

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

Summary and Explanation

While studying *Vibrio fetus* cultivation, Huddleson¹ found that vibrios remained viable in Thiol Medium at room temperature for at least 150 days without transfer. Christensen² tested Thiol Medium for the ability to neutralize penicillin and streptomycin. Ten milliliters (10 mL) of Thiol Medium can inactivate up to 100 units of penicillin and up to 1,000 micrograms of streptomycin, producing luxuriant growth of staphylococci and other organisms from dilute inocula in 24 hours.

Szawatkowski³ and Shanson and Barnicoat⁴ 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.⁵ Media containing thiol and thioglycollate are recommended for recovery of nutritionally variant streptococci (NVS).⁶

Thiol Broth has the same formulation as Thiol Medium, omitting the agar. Thiol (Broth) is cited in *Clinical Microbiology Procedures Handbook*⁷ 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 media. 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. Thiol Medium contains 0.1% agar to maintain an Eh potential that facilitates anaerobic growth and

aids in dispersion of reducing substances and CO₂ formed in the environment.⁸

Formulae

Difco™ Thiol Medium

| 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 |
| Agar | 1.0 | g |
| p-Aminobenzoic Acid | 0.05 | g |

Difco™ Thiol Broth

Consists of the same ingredients without the agar.

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

Directions for Preparation from Dehydrated Product

- Suspend the powder in 1 L of purified water:
Difco™ Thiol Medium - 30 g;
Difco™ Thiol Broth - 29 g.
Mix thoroughly.
- Heat with frequent agitation and boil for 1 minute to completely dissolve the powder.
- Autoclave at 121°C for 15 minutes.
- 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.^{7,9}

User Quality Control

Identity Specifications

Difco™ Thiol Medium

Dehydrated Appearance: Light beige, free-flowing, homogeneous.

Solution: 3% solution, soluble in purified water upon boiling. Solution is very light to light amber, clear to very slightly opalescent when hot.

Prepared Appearance: Very light amber, opalescent after cooling.

Reaction of 3% Solution at 25°C: pH 7.1 ± 0.2

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 Medium or 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

- Huddleson. 1948. J. Bacteriol. 56:508.
- Christensen. 1947. Presented at the Michigan Branch, Society of American Bacteriologists, Detroit, Mich., December 12, 1947.
- Szawatkowski. 1976. Med. Lab. Sci. 33:5.
- Shanson and Barnicoat. 1975. J. Clin. Pathol. 28:407.
- Murray. 1985. J. Clin. Microbiol. 21:481.
- Donnelly. 1994. Infect. Dis. Alert 6:109.
- Isenberg (ed.). 1992. Clinical microbiology procedures handbook, vol. 1. American Society for Microbiology, Washington, D.C.
- MacFaddin. 1985. Media for isolation-cultivation-identification-maintenance medical bacteria, vol. 1. Williams & Wilkins, Baltimore, Md.
- Murray, Baron, Pfaller, Tenover and Tenover (ed.). 1999. Manual of clinical microbiology, 7th ed. American Society for Microbiology, Washington, D.C.

Availability

Difco™ Thiol Medium

Cat. No. 230710 Dehydrated – 500 g

Difco™ Thiol Broth

Cat. No. 243420 Dehydrated – 500 g
243410 Dehydrated – 10 kg

Thiotone™ E Peptone

Intended Use

Thiotone E Peptone is used as a component in microbiological culture media.

Summary and Explanation

Thiotone E Peptone has been recommended for use in blood agar formulae for hemolysis studies with pneumococci and streptococci. Thiotone E Peptone is high in sulfur amino acids and can be used in media to detect hydrogen sulfide production. Tortora¹ utilized Thiotone E Peptone as the nitrogen source in a medium promoting sporulation of *Clostridium perfringens* strains. Thiotone E Peptone is recommended for use in media for testing water samples for coliforms.² Kwinn³ utilized Thiotone E Peptone as a supplement to her medium for *Corynebacterium glutamicum* to make the cells electrocompetent for transformations. Thiotone E Peptone has also been cited as an ingredient in media for nonbacterial

organisms. Thiotone E Peptone is used in Modified HL5 Medium, one of the main media used for culturing the cellular slime mold *Dictyostelium discoideum*.

Media formulations containing Thiotone E Peptone are specified in standard methods for various applications.^{2,4,5}

Principles of the Procedure

Thiotone E Peptone is an enzymatic digest of animal tissue. Thiotone E Peptone contains a wide range of peptide sizes, including the large molecular weight peptides, which support fastidious organisms. This ingredient provides nitrogen, amino acids and vitamins in microbiological culture media.

Typical Analysis

Refer to Product Tables in the Reference Guide section of this manual.