

Tech Agar

(See *Pseudomonas* Agars)

Tellurite Glycine Agar Tellurite Solution 1%

Intended Use

Tellurite Glycine Agar is used with Tellurite Solution 1% for isolating coagulase-positive staphylococci.

Summary and Explanation

Coagulase-positive *Staphylococcus aureus* is well documented as a human opportunistic pathogen.¹ Foods are examined for the presence of *S. aureus* and/or its enterotoxins to confirm that *S. aureus* is the causative agent of foodborne illness, to determine whether a food is the source of “staph” food poisoning and to determine post-processing contamination.²

Ludlam³ described a selective medium for the isolation of staphylococci. This medium was alkaline in reaction, contained mannitol, and lithium chloride with potassium tellurite as the selective agents. Zebovitz, Evans and Niven⁴ modified Ludlam’s medium by adding glycine as a selective agent and adjusting the reaction of the basal medium to pH 7.2 instead of pH 9.6.

Tellurite Glycine Agar is prepared according to the formula of Zebovitz, Evans and Niven.⁴ The medium permits the isolation of coagulase-positive staphylococci from food, air, dust, soil and clinical specimens. Coagulase-negative staphylococci and other bacteria are markedly to completely inhibited.

Principles of the Procedure

Peptones are sources of nitrogen and amino acids in Tellurite Glycine Agar. Yeast extract is a vitamin source in this formulation. D-Mannitol is a source of fermentable carbohydrate for coagulase-positive staphylococci. Lithium chloride, glycine and potassium tellurite are the selective agents. Dipotassium phosphate is used to buffer the medium. Agar is the solidifying agent.

Tellurite Solution is a sterile 1% solution of potassium tellurite, a differential agent. Coagulase-positive staphylococci reduce tellurite and produce black colonies.⁵

User Quality Control

Identity Specifications

Difco™ Tellurite Glycine Agar

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	6.25% solution, soluble in purified water upon boiling. Solution is amber, opalescent with precipitate.
Prepared Appearance:	Medium amber, opalescent with precipitate.
Reaction of 6.25% Solution at 25°C:	pH 7.2 ± 0.2

Cultural Response

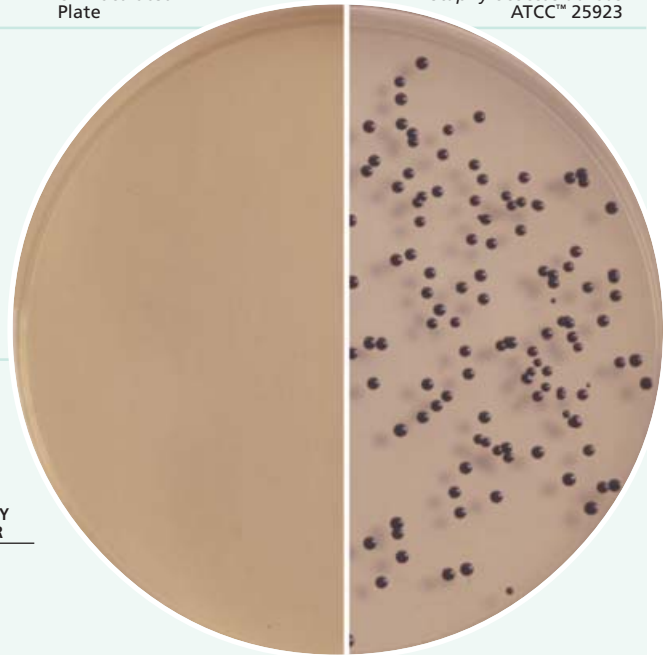
Difco™ Tellurite Glycine Agar

Prepare the medium per label directions. Inoculate and incubate at 35 ± 2°C for 18-48 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY	COLONY COLOR
<i>Escherichia coli</i>	25922	30-300	Marked to complete inhibition	–
<i>Salmonella choleraesuis</i> subsp. <i>choleraesuis</i> serotype Typhimurium	14028	30-300	Marked to complete inhibition	–
<i>Staphylococcus aureus</i>	25923	30-300	Good	Black
<i>Staphylococcus epidermidis</i>	12228	30-300	Partial inhibition	Gray, if any

Uninoculated Plate

Staphylococcus aureus
ATCC™ 25923



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Formula

Difco™ Tellurite Glycine Agar

Approximate Formula* Per Liter	
Yeast Extract	6.5 g
Soytone	3.5 g
Tryptone	10.0 g
Glycine	10.0 g
D-Mannitol	5.0 g
Dipotassium Phosphate	5.0 g
Lithium Chloride	5.0 g
Agar	17.5 g

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

Directions for Preparation from Dehydrated Product

1. Suspend 62.5 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. Aseptically add 10 mL Tellurite Solution 1% to the medium at 50-55°C. Mix well.
5. Test samples of the finished product for performance using stable, typical control cultures.

Procedure

For a complete discussion on the isolation and identification of coagulase-positive staphylococci from clinical specimens

refer to appropriate procedures.^{1,6} For the examination of staphylococci in foods refer to standard methods.^{2,7}

Expected Results

Coagulase-positive staphylococci produce black colonies within 24 hours of incubation at 35°C.

Limitation of the Procedure

Occasional coagulase-negative staphylococci may produce small gray colonies, not readily confused with black coagulase-positive colonies.

References

1. Kloos and Bannerman. 1999. In Murray, Baron, Pfaller, Tenover and Tenover (ed.). Manual of clinical microbiology, 7th ed. American Society for Microbiology, Washington, D.C.
2. U.S. Food and Drug Administration. 1995. Bacteriological analytical manual, 8th ed. AOAC International, Gaithersburg, Md.
3. Ludlam. 1949. Monthly Bull. Ministry of Health 8:15.
4. Zebowitz, Evans and Niven. 1955. J. Bacteriol. 70:686.
5. MacFaddin. 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, vol. 1, Williams & Wilkins, Baltimore, Md.
6. Isenberg (ed.). 1992. Clinical microbiology procedures handbook, vol. 1. American Society for Microbiology, Washington, D.C.
7. Lancette and Bennett. 2001. In Downes and Ito (ed.). Compendium of methods for the microbiological examination of foods, 4th ed. American Public Health Association, Washington, D.C.

Availability

Difco™ Tellurite Glycine Agar

Cat. No. 261710 Dehydrated – 500 g

BBL™ Tellurite Solution 1%

Cat. No. 211917 Tube – 1 × 20 mL*

*Store at 2-8°C.

Terrific Broth

Intended Use

Terrific Broth is used with glycerol in cultivating recombinant strains of *Escherichia coli*.

Summary and Explanation

Terrific Broth is a highly enriched medium developed by Tartoff and Hobbs to improve yield in plasmid-bearing *E. coli*.¹ Recombinant strains have an extended growth phase in the medium. The addition of extra peptone and yeast extract in the medium allows higher plasmid yield per volume. Glycerol is used as the carbohydrate source in this formulation. Unlike glucose, glycerol is not fermented to acetic acid.

Principles of the Procedure

Peptone and yeast extract provide necessary nutrients and cofactors for excellent growth of recombinant strains of *E. coli*. The yeast extract concentration is increased to allow for elevated cell yields. Potassium phosphates are added to provide potassium for cellular systems and prevent cell death due to a drop in pH. Glycerol is added as a carbon and energy source.

User Quality Control

Identity Specifications

Difco™ Terrific Broth

Dehydrated Appearance:	Light beige, free-flowing, homogeneous.
Solution:	4.76% solution, soluble in purified water. Solution is light to medium amber, clear.
Prepared Appearance:	Light to medium amber, clear.
Reaction of 4.76% Solution at 25°C:	pH 7.2 ± 0.2

Cultural Response

Difco™ Terrific Broth

Prepare the medium per label directions. Inoculate and incubate at 35 ± 2°C for 18-24 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY
<i>Escherichia coli</i> (C600)	23724	10 ² -10 ³	Good
<i>Escherichia coli</i> (HB101)	33694	10 ² -10 ³	Good
<i>Escherichia coli</i> (DH-1)	33849	10 ² -10 ³	Good
<i>Escherichia coli</i> (JM103)	39403	10 ² -10 ³	Good
<i>Escherichia coli</i> (JM107)	47014	10 ² -10 ³	Good
<i>Escherichia coli</i> (DH-5)	53868	10 ² -10 ³	Good