Mitis Salivarius Agar Tellurite Solution 1%

Intended Use

Mitis Salivarius Agar is used with Tellurite Solution 1% in isolating *Streptococcus mitis*, *S. salivarius* and enterococci, particularly from grossly contaminated specimens.

Summary and Explanation

S. mitis, *S. salivarius* and *Enterococcus* species are part of the normal human flora. *S. mitis* and *S. salivarius* are known as viridans streptococci. These organisms play a role in cariogenesis and infective endocarditis and cause an increasing number of bacteremias.[1] Enterococci cause urinary tract infections, wound infections and bacteremia.[2] These organisms can colonize the skin and mucous membranes.

Chapman[3-5] investigated methods for isolating streptococci and formulated Mitis Salivarius Agar. The medium facilitates isolation of *S. mitis* (*Streptococcus viridans*), *S. salivarius* (nonhemolytic streptococci) and enterococci from mixed cultures.[6]

Principles of the Procedure

Mitis Salivarius Agar contains peptones as sources of carbon, nitrogen, vitamins and minerals. Dextrose and saccharose are carbohydrate sources. Crystal violet and potassium tellurite (from Tellurite Solution 1%) inhibit most gram-negative bacilli and most gram-positive bacteria except streptococci. Trypan blue gives the colonies a blue color. Agar is the solidifying agent.

Formulae

Difco™ Mitis Salivarius Agar

Approximate Formula* Per Liter

Pancreatic Digest of Casein	6.0	g
Proteose Peptone No. 3	9.0	g
Proteose Peptone	5.0	g
Dextrose	1.0	g
Saccharose	50.0	g
Dipotassium Phosphate	4.0	g
Trypan Blue	75.0	mg
Crystal Violet	0.8	mg
Agar	15.0	g

BBL™ Tellurite Solution 1%

Sterile 1% solution of Potassium Tellurite.

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

Directions for Preparation from Dehydrated Product

1. Suspend 90 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. Cool to 50-55°C.
4. Add 1 mL of Tellurite Solution 1%. DO NOT HEAT THE COMPLETE MEDIUM.
5. Test samples of the finished product for performance using stable, typical control cultures.

Procedure

See appropriate references for specific procedures.

Expected Results

S. mitis produces small or minute blue colonies. These colonies may become easier to distinguish with longer incubation. *S. salivarius* produces blue, smooth or rough "gum drop" colonies, 1-5 mm in diameter depending on the number of colonies on the plate. *Enterococcus* species form dark blue or black, shiny, slightly raised, 1-2 mm colonies.

Limitations of the Procedure

1. If coliforms grow on the medium, they produce brown colonies.
2. Molds will grow on the medium after two days incubation.
3. *Erysipelothrix rhusiopathiae* produces colorless, circular, convex colonies.
4. Beta-hemolytic streptococci produce colonies that resemble *S. mitis*.

References

1. Ruoff, Whiley and Beighton. 1999. *In* Murray, Baron, Pfaller, Tenover and Yolken (ed.), Manual of clinical microbiology, 7th ed. American Society for Microbiology. Washington, D.C.
2. Facklam, Sahm and Teixeira. 1999. *In* Murray, Baron, Pfaller, Tenover and Yolken (ed.), Manual of clinical microbiology, 7th ed. American Society for Microbiology, Washington, D.C.
3. Chapman. 1944. J. Bacteriol. *48*:113.
4. Chapman. 1946. Am. J. Dig. Dis. *13*:105.
5. Chapman. 1947. Trans. N.Y. Acad. Sci. (Series 2) *10*:45.
6. MacFaddin. 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, vol. 1. Williams & Wilkins, Baltimore, Md.

Availability

Difco™ Mitis Salivarius Agar

Cat. No. 229810 Dehydrated – 500 g

BBL™ Tellurite Solution 1%

Cat. No. 211917 Tube – 20 mL

User Quality Control

Identity Specifications

Difco™ Mitis Salivarius Agar

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

Solution: 9.0% solution, soluble in purified water upon boiling. Solution is deep royal blue, very slightly opalescent.

Prepared Appearance: Deep royal blue, slightly opalescent.

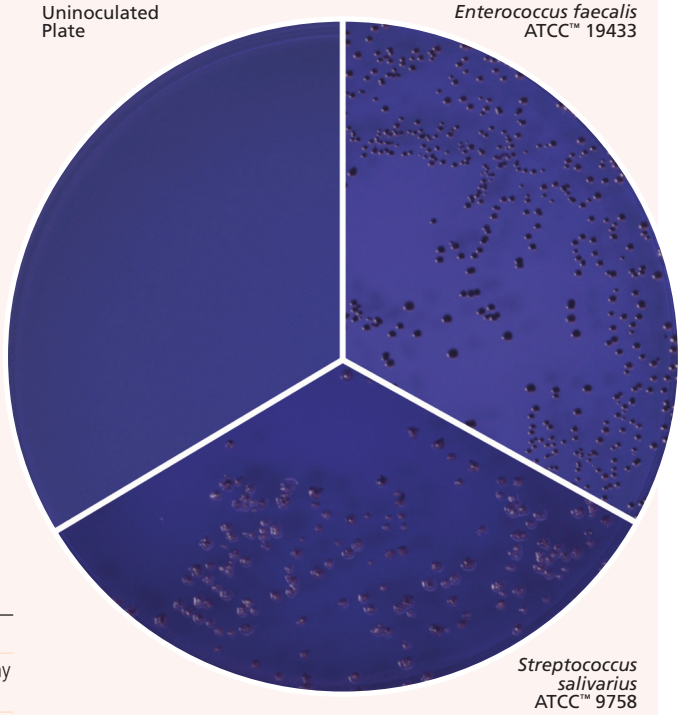
Reaction of 9.0% Solution at 25°C: pH 7.0 ± 0.2

BBL™ Tellurite Solution 1%

Appearance: Colorless and clear to trace hazy.

Cultural Response

Difco™ Mitis Salivarius Agar with BBL™ Tellurite Solution 1%

Prepare the complete medium per label directions. Inoculate and incubate under 5-10% CO_2 at 35 ± 2°C for 18-48 hours.

ORGANISM	ATCC™	INOCULUM CFU	RECOVERY	COLONY COLOR
Enterococcus faecalis	19433	10^2-10^3	Good	Blue/black
Escherichia coli	25922	10^3	Partial to complete inhibition	Brown, if any
Staphylococcus aureus	25923	10^3	Partial to complete inhibition	–
Streptococcus mitis	9895	10^2-10^3	Good	Blue
Streptococcus salivarius	9758	10^2-10^3	Good	Blue "gum drop" shape