



## VOGEL AND JOHNSON AGAR (7207)

### Intended Use

**Vogel and Johnson Agar** is used for the isolation of staphylococci.

### Product Summary and Explanation

Coagulase-positive staphylococci, primarily *Staphylococcus aureus*, are among the microorganisms that cause spoilage or chemical changes in cosmetic products.<sup>1</sup> To isolate coagulase-positive, mannitol fermenting staphylococci, Vogel and Johnson<sup>2</sup> modified Tellurite-Glycine Agar by Zebovitz, Evans, and Niven.<sup>3</sup> The modification included increasing mannitol and adding a pH indicator. Vogel and Johnson Agar selects and differentiates coagulase-positive staphylococci that ferment mannitol and reduce tellurite.<sup>4</sup>

Vogel and Johnson (VJ) Agar is specified in standard methods testing for cosmetics,<sup>1,5</sup> pharmaceutical articles,<sup>6</sup> nutritional supplements.<sup>7</sup>

### Principles of the Procedure

Enzymatic Digest of Casein provides nitrogen, amino acids, and minerals in Vogel and Johnson Agar. Yeast Extract is a vitamin source to stimulate bacterial growth. Mannitol is the fermentable carbohydrate. Dipotassium Phosphate is the buffering agent. Lithium Chloride, Glycine, and 1% Potassium Tellurite Solution inhibit the growth of most microorganisms except staphylococci. Phenol Red is the pH indicator. Agar is the solidifying agent.

### Formula / Liter

Enzymatic Digest of Casein .....	10
Yeast Extract.....	5 g
Mannitol .....	10 g
Dipotassium Phosphate .....	5 g
Lithium Chloride .....	5 g
Glycine .....	10 g
Phenol Red .....	0.025 g
Agar .....	15 g
Final pH: 7.2 ± 0.2 at 25°C	

Formula may be adjusted and/or supplemented as required to meet performance specifications.

### Supplement # 7989

Tellurite Solution (1%) Chapman
Potassium Tellurite, 100 mg
10 mL

### Precautions

1. For Laboratory Use.
2. HARMFUL. Harmful if swallowed, inhaled, or absorbed through skin. Skin irritation may be severe. May cause central nervous system effects.

### Directions

1. Suspend 60 g of the medium in one liter of purified water.
2. Heat with frequent agitation and boil for one minute to completely dissolve the medium.
3. Autoclave at 121°C for 15 minutes.
4. After cooling to 45 - 50°C add 2 vials (20 mL) of Tellurite Solution (1%) Chapman Supplement (7989) or 20 mL of a sterile 1% Potassium Tellurite Solution.
5. Mix thoroughly before dispensing.

### Quality Control Specifications

**Dehydrated Appearance:** Powder is homogeneous, free flowing, and red-beige.

**Prepared Appearance:** Prepared medium is trace to slightly hazy and red-orange.

**Expected Cultural Response:** Cultural response on Vogel and Johnson Agar at incubated aerobically 35 ± 2°C and examined for growth after 18 - 48 hours.

Microorganism	Approx. Inoculum (CFU)	Expected Results	
		Response	Reaction
<i>Enterococcus faecalis</i> ATCC® 29212	~ 1000	Partial to complete inhibition	Black colonies
<i>Escherichia coli</i> ATCC® 25922	~ 1000	Inhibition	---
<i>Staphylococcus aureus</i> ATCC® 25923	10 - 300	Growth	Black colonies w/ yellow zones
<i>Staphylococcus epidermidis</i> ATCC® 12228	~ 1000	Partial to complete inhibition	Black colonies

The organisms listed are the minimum that should be used for quality control testing.

### Test Procedure

Refer to appropriate references for the isolation and identification of staphylococci.

### Results

Coagulase-positive strains of *S. aureus* reduce tellurite and form black colonies on the medium. These strains typically ferment mannitol and exhibit yellow halos around black colonies. Most organisms other than coagulase - positive staphylococci are inhibited during the first 24 hours of incubation. After 24 hours, other organisms, especially fecal streptococci and coagulase - negative *S. epidermidis* may grow.

### Storage

Store sealed bottle containing the dehydrated medium at 2 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

### Expiration

Refer to expiration date stamped on container. The dehydrated medium should be discarded if not free flowing, or if appearance has changed from the original color. Expiry applies to medium in its intact container.

### Limitation of the Procedure

Due to nutritional variation, some strains may be encountered that grow poorly or fail to grow on this medium.

### Packaging

Vogel and Johnson Agar	Code No.	7207A	500 g
		7207B	2 kg
		7207C	10 kg
Tellurite Solution (1%) Chapman		7989	10 mL

### References

1. [www.fda.gov/Food/ScienceResearch/LaboratoryMethods/BacteriologicalAnalyticalManualBAM/default.htm](http://www.fda.gov/Food/ScienceResearch/LaboratoryMethods/BacteriologicalAnalyticalManualBAM/default.htm).
2. **Vogel, T. A., and M. Johnson.** 1960. A modification of the Tellurite-Glycine Medium for use in the identification of *Staphylococcus aureus*. Public Health Lab. **18**:131.
3. **Zebovitz, E., J. B. Evans, and C. F. Niven, Jr.** 1955. Tellurite-Glycine Agar; a selective plating medium for the quantitative detection of coagulase-positive staphylococci. J. Bacteriol. **70**:686.
4. **MacFaddin, J. F.** 1985. Media for isolation-cultivation-identification-maintenance of medical bacteria, vol.1, p. 846-849. Williams & Wilkins, Baltimore, MD.
5. **Curry, A. S., J. G. Graf, and G. N. McEwen, Jr. (eds.)**. 1993. CTFA microbiology guidelines. The Cosmetic, Toiletry, and Fragrance Association, Washington, D.C.
6. **United States Pharmacopoeial Convention.** 1995. The United States pharmacopeia, 23<sup>rd</sup> ed. The United States Pharmacopoeial Convention, Rockville, MD.

### Technical Information

Contact Acumedia Manufacturers, Inc. for Technical Service or questions involving dehydrated culture media preparation or performance at (517)372-9200 or fax us at (517)372-2006.