IFU

Instructions for Use

# VOGEL AND JOHNSON AGAR

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|---|---|---|
| Cat. no. G193 | Vogel and Johnson Agar, 15x100mm Plate, 19ml | 10 plates/bag |
| Cat. no. J314 | Cetrimide Selective Agar / MacConkey Agar / Vogel and Johnson Agar, 15x100mm Triplate, 7ml/section | 10 plates/bag |

## INTENDED USE

Hardy Diagnostics Vogel and Johnson Agar is a selective medium used for the detection of coagulase-positive, mannitol-positive *Staphylococcus aureus* strains in clinical specimens and foods.

## SUMMARY

Vogel and Johnson Agar was developed by Vogel and Johnson as a modification of the Tellurite Glycine Agar medium described by Zebovitz, Evans, and Niven. [7,8] Vogel and Johnson increased the mannitol content of the Tellurite Glycine Agar and added a pH indicator, phenol red. The pH indicator enables the detection of mannitol fermentation, a differentiating characteristic of most strains of *Staphylococcus aureus*. Coagulase-positive strains of *S. aureus* form characteristic black colonies on the medium due to the reduction of tellurite. Colonies of mannitol-fermenting strains will be surrounded by a yellow zone. The Association of Analytical Chemists (AOAC) has recommended the medium for detection of *S. aureus* in foods.[5]

Due to the high selectivity and sensitivity of the medium, Vogel and Johnson Agar may be used for the rapid detection of *S. aureus* in clinical specimens when detection of the etiologic agent is of singular importance. Other microorganisms are easily distinguished by their inability to produce black colonies. Selective agents incorporated into the medium are glycine and lithium chloride, which inhibit the growth of most other microorganisms. Potassium tellurite is an inhibitory agent and is easily reduced by coagulase-positive staphylococci, leaving a black precipitate in the colony.

## FORMULA

Ingredients per liter of deionized water:*

| | |
|---|---|
| Pancreatic Digest of Casein | 10.0gm |
| Glycine | 10.0gm |
| Mannitol | 10.0gm |
| Yeast Extract | 5.0gm |
| Dipotassium Phosphate | 5.0gm |
| Lithium Chloride | 5.0gm |
| Phenol Red | 25.0mg |

| | |
|---|---|
| Agar | 15.0gm |
| Potassium Tellurite, 1% | 20.0mL |

Final pH 7.2 +/- 0.2 at 25ºC.

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

## STORAGE AND SHELF LIFE

Storage: Upon receipt store at 2-8ºC. away from direct light. Media should not be used if there are any signs of deterioration (shrinking, cracking, or discoloration), contamination, or if the expiration date has passed. Product is light and temperature sensitive; protect from light, excessive heat, moisture, and freezing.

The expiration date on the product label applies to the product in its intact packaging when stored as directed. The product may be used and tested up to the expiration date on the product label and incubated for the recommended incubation times as stated below.

Refer to the document "Storage" for more information.

## PRECAUTIONS

This product may contain components of animal origin. Certified knowledge of the origin and/or sanitary state of the animals does not guarantee the absence of transmissible pathogenic agents. Therefore, it is recommended that these products be treated as potentially infectious, and handle observing the usual Universal Precautions for blood. Do not ingest, inhale, or allow to come into contact with skin.

This product is for *in vitro* diagnostic use only. It is to be used only by adequately trained and qualified laboratory personnel. Observe approved biohazard precautions and aseptic techniques. All laboratory specimens should be considered infectious and handled according to "standard precautions." Refer to the document "Guidelines for Isolation Precautions" from the Centers for Disease Control and Prevention.

For additional information regarding specific precautions for the prevention of the transmission of all infectious agents from laboratory instruments and materials, and for recommendations for the management of exposure to infectious disease, refer to CLSI document M29: *Protection of Laboratory Workers from Occupationally Acquired Infections.*

Sterilize all biohazard waste before disposal.

Refer to the document "Precautions When Using Media" for more information.

## PROCEDURE

Specimen Collection: Consult listed references for information on specimen collection.[2-6] Infectious material should be submitted directly to the laboratory without delay and protected from excessive heat and cold. If there is to be a delay in processing, the specimen should be inoculated into an appropriate transport medium and refrigerated until inoculation.

1. Inoculate and streak the specimen as soon as possible upon receipt in the laboratory.

2. If material is being cultured directly from a swab, roll the swab over a small area of the agar surface and streak for isolation. The selective qualities of this medium are such that the inoculum may be heavily applied.

3. Incubate plates aerobically at 35-37ºC. for 24-48 hours.

4. After 24 hours incubation, examine plated for characteristic black colonies which may or may not be surrounded by a yellow zone.

5. After 48 hours incubation, other organisms may exhibit slight growth. All black colonies should be Gram stained and a coagulase test performed for culture confirmation.

## INTERPRETATION OF RESULTS

*Staphylococcus aureus* will produce black colonies with a yellow zone surrounding growth. Other staphylococci will also grow well and exhibit gray-black colonies without a yellow zone.

## LIMITATIONS

It is recommended that biochemical, immunological, molecular, or mass spectrometry testing be performed on colonies from pure culture for complete identification of bacteria and/or fungi.

If tellurite is reduced but mannitol is not fermented, the medium surrounding colonies may be a deeper red color. This occurs due to the utilization of proteins in the medium and results in an increase in alkalinity.[3]

Refer to the document "Limitations of Procedures and Warranty" for more information.

## MATERIALS REQUIRED BUT NOT PROVIDED

Standard microbiological supplies and equipment such as loops, swabs, applicator sticks, other culture media, incinerators, and incubators, etc., as well as serological and biochemical reagents, are not provided.

## QUALITY CONTROL

Hardy Diagnostics tests each lot of commercially manufactured media using appropriate quality control microorganisms and quality specifications as outlined on the Certificate of Analysis (CofA) and the CLSI document M22-A3 *Quality Assurance for Commercially Prepared Microbiological Culture Media*. The following microorganisms are routinely used for testing at Hardy Diagnostics:

| Test Organisms | Inoculation Method* | Incubation | | | Results |
|---|---|---|---|---|---|
| | | Time | Temperature | Atmosphere | |
| *Staphylococcus aureus* ATCC® 25923** | A | 18-48hr | 35°C | Aerobic | Growth; black colonies with yellow zones |
| *Staphylococcus epidermidis* ATCC® 12228 | B | 18-48hr | 35°C | Aerobic | Growth, poor; gray-black colonies |
| *Escherichia coli* ATCC® 25922** | B | 18-48hr | 35°C | Aerobic | Partial to complete inhibition |
| *Enterococcus faecalis* ATCC® 29212 | B | 18-48hr | 35°C | Aerobic | Partial to complete inhibition |

* Refer to the document "Inoculation Procedures for Media QC" for more information.

** Recommended QC strains for User Quality Control according to the CLSI document M22 when applicable.

### USER QUALITY CONTROL

End users of commercially prepared culture media should perform QC testing in accordance with applicable government regulatory agencies, and in compliance with accreditation requirements. Hardy Diagnostics recommends end users check for signs of contamination and deterioration and, if dictated by laboratory quality control procedures or regulation, perform quality control testing to demonstrate growth or a positive reaction and to demonstrate inhibition or a negative reaction, if applicable. Hardy Diagnostics quality control testing is documented on the certificate of analysis (CofA) available from Hardy Diagnostics Certificate of Analysis website. Also refer to the document "Finished Product

Quality Control Procedures," and the CLSI document M22-A3 *Quality Assurance for Commercially Prepared Microbiological Culture Media* for more information on the appropriate QC procedures. See the references below.

## PHYSICAL APPEARANCE

Vogel and Johnson Agar should appear slightly opalescent, and reddish-orange in color.

## REFERENCES


1. Anderson, N.L., et al. *Cumitech 3B; Quality Systems in the Clinical Microbiology Laboratory*, Coordinating ed., A.S. Weissfeld. American Society for Microbiology, Washington, D.C.

2. Tille, P., et al. *Bailey and Scott's Diagnostic Microbiology*, C.V. Mosby Company, St. Louis, MO.

3. MacFaddin, J.F. 1985. *Media for Isolation, Cultivation, Identification, Maintenance of Medical Bacteria* , Vol. I. Williams & Wilkins, Baltimore, MD.

4. Jorgensen., et al. *Manual of Clinical Microbiology*, American Society for Microbiology, Washington, D.C.

5. The Official Compendia of Standards. 2008. *USP27-NF22* . United States Pharmacopeial Convention, Rockville, MD.

6. U.S. Food and Drug Administration. *Bacteriological Analytical Manual.* AOAC, Arlington, VA. www.fda.gov/Food/FoodScienceResearch/LaboratoryMethods/ucm2006949.htm

7. Vogel, R.A. and M.J. Johnson. 1960. *Public Health Lab* ; 18:131.

8. Zebovitz, E., et al. 1955. *J. Bacteriol.* ; 70:686.




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The Hardy Diagnostics manufacturing facility and quality management system is certified to ISO 13485.

HDQA 2207D [D]