VOGEL-JOHNSON AGAR

INTENDED USE
Remel Vogel-Johnson Agar is a solid medium recommended for use in qualitative procedures for the early detection of coagulase-positive, mannitol-fermenting strains of *Staphylococcus aureus* from contaminated foods and clinical specimens.

SUMMARY AND EXPLANATION
In 1955, Zebovitz et al. developed Tellurite-Glycine Agar as a selective medium for the detection of coagulase-positive staphylococci.[1] Vogel and Johnson modified Tellurite-Glycine Agar by increasing the mannitol content and adding phenol red as a pH indicator.[2] Vogel-Johnson Agar is recommended by the Association of Official Analytical Chemists (AOAC) for food bacteriology.[3,4]

PRINCIPLE
Casein peptone supplies nitrogen, amino acids, and peptides necessary for bacterial growth. Yeast extract provides B-complex vitamins. The fermentation of mannitol by coagulase-positive staphylococci is indicated by development of yellow zones surrounding the colonies. This is caused by a pH change that results in the phenol red indicator turning from red to yellow. *S. aureus* reduces potassium tellurite to metallic tellurium resulting in black colonies. Potassium tellurite, lithium chloride, and glycine are selective agents which inhibit non-staphylococcal organisms, including many gram-negative and gram-positive bacteria.

REAGENTS (CLASSICAL FORMULA)*

Casein Peptone	10.0 g	Yeast Extract	5.0 g
Mannitol	10.0 g	Phenol Red	25.0 mg
Glycine	10.0 g	Potassium Tellurite 1%	20.0 ml
Dipotassium Phosphate	5.0 g	Agar	15.0 g
Lithium Chloride	5.0 g	Demineralized Water	1000.0 ml

pH 7.2 ± 0.2 @ 25°C

*Adjusted as required to meet performance standards.

PROCEDURE
1. Inoculate and streak the specimen as soon as possible after it is received 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 applied heavily.
3. Incubate plates in ambient air at 33-37°C or at 30-35°C for 24-48 hours.
4. After 24 hours incubation, examine the plate for black colonies which may or may not be surrounded by a yellow zone. After 48 hours incubation, other organisms may exhibit slight growth.
5. Perform a Gram stain and coagulase test on all black colonies. Additional testing may be required for definitive identification of *S. aureus*. Consult appropriate references for further instructions.[3]

QUALITY CONTROL
All lot numbers of Vogel-Johnson Agar have been tested using the following quality control organisms and have been found to be acceptable. Testing of control organisms should be performed in accordance with established laboratory quality control procedures. If aberrant quality control results are noted, patient results should not be reported.

CONTROL	INCUBATION	RESULTS
Staphylococcus aureus ATCC® 6538	Ambient, up to 48 h @ 33-37°C	Black colonies with yellow zones
Staphylococcus aureus ATCC® 25923	Ambient, up to 48 h @ 33-37°C	Black colonies with yellow zones
Escherichia coli ATCC® 25922	Ambient, 18-24 h @ 33-37°C	Inhibition (partial to complete)
Staphylococcus epidermidis ATCC® 12228	Ambient, 18-24 h @ 33-37°C	Inhibition (partial to complete)

LIMITATIONS
1. If tellurite is reduced but mannitol is not fermented, the medium surrounding the colonies may be a deeper red color due to the utilization of proteins with resultant alkalinity.[4]
2. Direct inoculation of Vogel-Johnson Agar with a light inoculum is not recommended. Microscopic examination of plates may be useful to assist in early visualization of characteristic halo and color of colony.[4]

BIBLIOGRAPHY

1. Zebovitz, E., J.B. Evans, and, C.F. Niven. 1955. J. Bacteriol. 70:686-690.
2. Vogel, R.A. and M.J. Johnson. 1960. Public Health Lab. 18:131.
3. Food and Drug Administration. 2000. Bacteriological Analytical Manual Online. Media Index, Updated 07/17/2009. AOAC International, Gaithersburg, MD.
4. MacFaddin, J.F. 1985. Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria. Vol. 1. Williams & Wilkins, Baltimore, MD.

Refer to the front of Remel *Technical Manual of Microbiological Media* for **General Information** regarding precautions, product storage and deterioration, specimen collection, storage and transportation, materials required, quality control, and limitations.

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