Technical Information

Vogel- Johnson Agar Base w/o Tellurite (V.J. Agar)

Product Code: DM 1023

Application: Vogel-Johnson Agar Base (V.J. Agar) with addition of potassium tellurite is recommended for selective isolation of coagulase positive, mannitol fermenting *Staphylococcus aureus* from heavily contaminated foods and clinical specimens.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	10.000
Yeast extract	5.000
Mannitol	10.000
Dipotassium phosphate	5.000
Lithium chloride	5.000
Glycine	10.000
Phenol red	0.025
Agar	16.000
Final pH (at 25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Staphylococcus aureus, a gram-positive, spherical bacterium, though a common colonizer of the human skin and mucosa yet causes skin and wound infections, urinary tract infections, pneumonia and bacteremia. It also commonly play important role in food poisoning [4].

Vogel-Johnson Agar is prepared according to the formula of Vogel and Johnson [1]. Originally it was developed by Zebovitz [3], as Tellurite Glycine Agar, a selective medium for the detection of coagulase-positive *staphylococci.* Vogel-Johnson modified the medium in 1960 by adding phenol red as a pH indicator and increasing the quantity of mannitol [1]. Selection and differentiation of coagulasepositive staphylococci on V.J. Agar is based on mannitol fermentation and tellurite reduction [5]. V.J. Agar is specified in the standard methods for examination of cosmetics [4, 6], pharmaceutical articles and nutritional supplements [2]. The formulation also complies with recommendations by the USP for microbial limit testing [2].

Casein enzymic hydrolysate and yeast extract provide nitrogenous compounds, vitamin B complex and other growth nutrients. Dipotassium phosphate provides buffering to the medium. During the first 24 hours of incubation, contaminating organisms are almost inhibited by tellurite, lithium chloride and high glycine content. The effect of inhibitors on *S. aureus* is reduced because of the presence of mannitol and glycine. Coagulase-positive *staphylococci* reduce potassium tellurite to metallic free tellurium and thus produce black colonies surrounded by yellow zones. This yellow colour is due to phenol red indicator that turns yellow in acidic condition due to the fermentation of mannitol. If mannitol is not fermented, yellow zones are not formed. Also the colour of the medium around the colonies may even be a deeper red than normal due to utilization of the peptones in the medium. Prolonged incubation may result in the growth of black coagulase-negative colonies.

Methodology

Suspend 61.02 grams of powder media in 1000 ml distilled water. Shake well & heat to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C and add 20 ml of sterile 1% Potassium Tellurite solution (MS2052). Mix gently and pour into sterile Petri plates. Caution: Lithium chloride is harmful. Avoid bodily contact and inhalation of vapours. On contact with skin, wash with plenty of water immediately.

Quality Control

Physical Appearance

Light yellow to pink homogeneous free flowing powder

Gelling

Firm,comparable with 1.5% Agar gel.

Colour and Clarity of prepared medium

Red coloured clear to slightly opalescent gel forms in Petri plates.

pH Range:- 7.00-7.40

Reaction

Reaction of 6.1% w/v aqueous solution at 25°C. pH : 7.2±0.2

Cultural Response/Characteristics

DM 1023: Cultural characteristics observed with added 1% Potassium Tellurite solution (MS2052), after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery
Escherichia coli ATCC 25922	>=10^3	inhibited	0%
Proteus mirabilis ATCC 25933	50-100	poor	10-20%
Staphylococcus aureus ATCC 25923	50-100	luxuriant	>=50%
Staphylococcus epidermidis ATCC 12228	50-100	Fair-good	30-40%
Escherichia coli NCTC 9002	>=10^3	inhibited	0%
Escherichia coli ATCC 8739	>=10^3	inhibited	0%
Staphylococcus aureus ATCC 6538	50-100	inhibited	>=50%
Staphylococcus aureus NCIMB 9518	50-100	inhibited	>=50%

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and use before expiry date as mentioned on the label.
Prepared Media: 2-8^0 in sealable plastic bags for 2-5 days.

Further Reading

1. Vogel R. A. and Johnson M. J., 1960, Public Health Lab. 18:131.
2. United States Pharmacopeia, 2008. United States Pharmacopeial Convention, Inc., Rockville, Md.
3. Zebovitz E., Evans J. B. and Niven C. F., 1955, J. Bacteriol., 70:686.
4. FDA Bacteriological Analytical Manual, 2005, 18th Ed., AOAC, Washington, D.C.
5. MacFaddin J. F., 1985, Media for Isolation-Cultivation-Identification-Maintenance of Medical Bacteria, Vol. 1, Williams & Wilkins, Baltimore, Md.
6. Curry A. S., Graf J. G. and McEwen G. M., (Eds.), 1993, CTFA Microbiology Guidelines, The Cosmetic, Toiletry and Fragrance Association, Washington, D.C.

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