Medium 22.Vogel-Johnson Agar Medium

MM023

Vogel-Johnson Agar Medium with addition of potassium tellurite is used for the selective isolation of coagulase positive, mannitol fermenting *Staphylococcus aureus* from heavily contaminated foods and clinical specimens in accordance with Indian Pharmacopoeia, 2007

Composition**

Ingredients	Gms / Litre
Pancreatic digest of casein	10.000
Yeast extract	5.000
Mannitol	10.000
Dibasic potassium phosphate	5.000
Lithium chloride	5.000
Glycine	10.000
Phenol red	0.025
Agar	16.000
pH after sterilization (at 25°C)	7.2±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 61.02 grams in 1000 ml purified/ distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45°C and asepticaly add 20 ml of sterile 1% Potassium Tellurite solution (FD052). Mix gently and pour into sterile Petri plates.

Warning: Lithium chloride is harmful. Avoid bodily contact and inhalation of vapors. On contact with skin, wash with plenty of water immediately.

Principle And Interpretation

Vogel-Johnson Agar Medium is prepared according to the formula of Vogel and Johnson (1). Originally it was developed by Zebovitz (2) as a Tellurite Glycine Agar, a selective medium for the detection of coagulase positive Staphylococci. This medium is used to detect *Staphylococcus* in pharmaceutical and cosmetics products (4). *Staphylococcus @is a prevalent pathogen in food poisoning due to its enterotoxin production. It is a commensal found on skin and scalp of human body.*

Vogel-Johnson modified the medium by adding phenol red as a pH indicator and by increasing the mannitol quantity (3). Pancreatic digest of casein and yeast extract provide nitrogenous compounds, vitamin B complex and other growth nutrients. Dibasic potassium phosphate gives buffering capacity to the medium. During first 24 hours of incubation, contaminating organisms are almost inhibited by tellurite, lithium chloride and high glycine content. *Staphylococcus aureus* may be inhibited by these inhibitors but get compensated by 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, which turns yellow in acidic condition by the fermentation of mannitol. Prolonged incubation may result in the growth of black coagulase negative colonies.

Quality Control

Appearance
Light yellow to pink homogeneous free flowing powder

Gelling
Firm,comparable with 1.6% Agar gel.

Colour and Clarity of prepared medium
Red coloured clear to slightly opalescent gel forms in Petri plates.

pH
7.00-7.40

Growth Promotion Test
Growth promotion is carried out in accordance with Indian Pharmacopoeia.

Cultural Response
MM023: Cultural characteristics observed with added 1% Potassium Tellurite solution (FD052),after an incubation at 35-37°C for 18-48 hours.

Organism	Inoculum (CFU)	Growth	Observed Lot value (CFU)	Recovery	Colour of colony	Incubation period
Test for specified microorganisms						
Staphylococcus aureus ATCC 6538	50 -100	luxuriant	25 -100	>=50 %	black colony surrounded by yellow zone	18 -48 hrs
Additional microbiological testing						
Staphylococcus aureus ATCC 25923	50 -100	luxuriant	25 -100	>=50 %	black surrounded by yellow zone	18 -48 hrs
Staphylococcus epidermidis ATCC 12228	50 -100	fair-good	15 -40	30 -40 %	translucent to blackish	18 -48 hrs
Proteus mirabilis ATCC 25933	50 -100	none-poor	0 -10	0 -10 %	yellow	18 -48 hrs
Escherichia coli ATCC 8739	>=10^3	inhibited	0	0 %		>=48 hrs

Storage and Shelf Life
Store below 30°C in tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label.

Reference
1.Vogel and Johnson, 1960, Public Health Lab., 18:131.
2.Zebovitz, Evans and Niven, 1955, J. Bacteriol., 70:686.
3.Indian Pharmacopoeia, 2007. Government of India Ministry of Health of family Welfare, Published by the Controller of Publications, Delhi.
4.Bacteriological Analytical Manual, 8th Edition, Revision A, 1998. AOAC, Washington D.C.

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