



## Vogel-Johnson Agar Medium (MU023/MM023)

MAP023

### Intended use

Recommended for selective isolation of coagulase positive, mannitol fermenting *Staphylococcus aureus* from pharmaceutical samples in accordance with USP/IP and testing of heavily contaminated food specimens.

### Composition\*\*

Ingredients	g / L
Tryptone #	10.000
Yeast extract	5.000
Mannitol	10.000
Dipotassium hydrogen 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

# Pancreatic digest of Casein

### Directions

Suspend 30.51 grams in 500 ml purified/distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes or as per validated cycle. Cool to 45-50°C and add 10 ml of sterile PTe 1% Selective Supplement (1 ml per vial) (FD052). Mix gently and pour into sterile Petri plates.

### Principle And Interpretation

Vogel-Johnson Agar Medium is prepared according to the formula of Vogel and Johnson (1) and is recommended for the microbial limit test (pharmaceutical testing) in USP, IP (2,3). Originally it was developed by Zebovitz (4) 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 (5). *Staphylococcus* is prevalent pathogen in food borne poisoning due to its enterotoxin production. It is commensal found on skin and scalp of human body. Vogel-Johnson modified the medium by adding phenol red as a pH indicator and increased the mannitol quantity.

Tryptone and yeast extract provide nitrogenous and carbonaceous compounds, long chain amino acids, 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.

### Type of specimen

Food samples; Pharmaceutical samples

### Specimen Collection and Handling:

For pharmaceutical samples, follow appropriate techniques for handling specimens as per established guidelines (2,3).

For food samples, follow appropriate techniques for sample collection and processing as per guidelines (6).

After use, contaminated materials must be sterilized by autoclaving before discarding.

### Warning and Precautions :

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/ face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

## Limitations :

1. Individual organisms differ in their growth requirement and may show variable growth patterns on the medium.
2. Each lot of the medium has been tested for the organisms specified on the COA. It is recommended to users to validate the medium for any specific microorganism other than mentioned in the COA based on the user's unique requirement.
3. Further confirmation can be carried out by biochemical and serological tests.

## Performance and Evaluation

Performance of the medium is expected when used as per the direction on the label within the expiry period when stored at recommended temperature.

## 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

In accordance with the method of USP/IP

### Cultural Response

Cultural characteristics observed with added PTe 1% Selective Supplement (FD052), after an incubation at As per USP :at 30-35°C for 24-48 hours. As per IP: at 35-37°C for 18-24 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colour of colony	Incubation period
<b>Test for specified microorganisms</b>					
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> ATCC 6538 (00032*)	50 -100	luxuriant	>=50 %	black colony surrounded by yellow zone	18 -48 hrs
<b>Additional Microbiological testing</b>					
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> ATCC 25923 (00034*)	50 -100	luxuriant	>=50 %	black surrounded by yellow zone	18 -48 hrs
<i>Staphylococcus epidermidis</i> ATCC 12228 (00036*)	50 -100	fair - good	30 -40 %	translucent to blackish	18 -48 hrs
<i>Proteus mirabilis</i> ATCC 25933	50 -100	none-poor	0 -10 %	yellow	18 -48 hrs
<i>Escherichia coli</i> ATCC 8739 >=10 <sup>3</sup> (00012*)		inhibited	0 %		>=48 hrs

Key : (\*) Corresponding WDCM numbers.

## Storage and Shelf Life

Store between 10-30°C in a tightly closed container and the prepared medium at 2-8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition Seal the container tightly after use. Product performance is best if used within stated expiry period.

## Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (7,8).

## Reference

- 1.Vogel and Johnson, 1960, Public Health Lab., 18:131.
- 2.The United States Pharmacopoeia-National Formulary (USP-NF), 2022.
- 3.Indian Pharmacopoeia, 2022, Indian Pharmacopoeia Commission, Ministry of Health and Family Welfare Government of India.
- 4.Zebovitz, Evans and Niven, 1955, J. Bacteriol., 70:686.
- 5.Bacteriological Analytical Manual, 8th Edition, Revision A, 1998. AOAC, Washington D.C.
- 6.Salfinger Y., and Tortorello M.L., 2015, Compendium of Methods for the Microbiological Examination of Foods, 5thEd., American Public Health Association, Washington, D.C.
- 7.Isenberg, H.D. Clinical Microbiology Procedures Handbook. 2nd Edition.
- 8.Jorgensen, J.H., Pfaller , M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W.(2015) Manualof Clinical Microbiology, 11th Edition. Vol. 1.

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### Disclaimer :

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