Baird-Parker Agar Medium

MAP043

(MU043/ME043/MM043/M043B)

Intended Use:

Recommended for isolation and enumeration of coagulase positive Staphylococci from food and other materials in accordance with USP/EP/IP/BP.

Composition**

Ingredients	g / L
Tryptone $	10.000
HM peptone B #	5.000
Yeast extract	1.000
Glycine	12.000
Sodium pyruvate	10.000
Lithium chloride	5.000
Agar	20.000
pH after sterilization (at 25°C)	6.8±0.2

**Formula adjusted, standardized to suit performance parameters

$ - Pancreatic digest of casein # Equivalent to Beef extract

Directions

Suspend 63.0 grams in 950 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 45-50°C and add aseptically 50 ml concentrated Egg Yolk Emulsion (FD045) and PTe 1% Selective Supplement (1 ml per vial) (FD052). Mix well and pour into sterile Petri plates.

Principle And Interpretation

This medium was first described in 1952. This medium was developed by Baird-Parker (1,2) from the Tellurite-Glycine formulation of Zebovitz et al (3) for selective isolation of *Staphylococcus aureus* from foods. *Staphylococcus* species are common contaminants in food, dairy, pharmaceutical and cosmetics related products (4). This medium is recommended for microbial limit tests of non-sterile pharmaceutical products and to detect *S.aureus*. Baird Parker Agar Medium was reported to be the best medium for selective detection of coagulase positive and enterotoxigenic *Staphylococcus* (5). This medium was found to be less inhibitory to *S.aureus* than other media, at the same time being more selective (6,7). Subsequently it was officially adapted by the AOAC and is also recommended in USP/EP/IP/BP for use in Microbial limit test (8-12).

HM peptone B, yeast extract and tryptone provides essential minerals, vitamin and other growth requirements. Sodium pyruvate protects injured cells and helps recovery. Lithium chloride and potassium tellurite inhibit most of contaminating microflora except *S.aureus*. Glycine, pyruvate enhances growth of *Staphylococcus.* With the addition of egg yolk the medium becomes yellow and opaque.

Proteolytic bacteria produce a clear zone around colony in egg yolk containing media also known as Lecithinase reaction. A clear zone and grey-black colonies on this medium are diagnostic for coagulase positive Staphylococci. Upon further incubation, an opaque zone is developed around colonies, which can be due to lipolytic activity. Identity of *Staphylococcus aureus* isolated on Baird-Parker Agar must be confirmed with a coagulase reaction.

Type of specimen

Pharmaceutical samples for sterility testing.

Specimen Collection and Handling:

For pharmaceutical samples, follow appropriate techniques for sample collection, processing as per guidelines (9-12) 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. Though the medium is recommended for detection of coagulase positive *Staphylococcus aureus*, other bacteria may grow.
2. Individual organisms differ in their growth requirement and may show variable growth patterns on the medium.
3. Each lot of the medium has been tested with the standard strains, slight variation in growth may be observed depending on the source from where the organism has been isolated.

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

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 2.0% agar gel.

Colour and Clarity of prepared medium

Basal medium: Yellow coloured clear to slightly opalescent gel. After addition of Egg Yolk Emulsion and Tellurite Emulsion: Yellow coloured opaque gel forms in Petri plates.

pH

6.60-7.00

Cultural Response

Growth Promotion is carried out in accordance USP/EP/BP/IP. Cultural response was observed after an incubation at 30-35°C for 24-48 hours. Recovery rate is considered as 100% for bacteria growth on Soybean Casein Digest Agar.

Organism	Inoculum (CFU)	Growth	Observed Lot value (CFU)	Recovery	Colour of colony	Lecithinase
Growth Promoting						
Staphylococcus aureus subsp. *aureus* ATCC 6538 (00032*)	50 -100	luxuriant	25 -100	>=50 %	grey-black shiny	Positive, opaque zone around the colony
Additional Microbiological testing						
Staphylococcus aureus subsp. *aureus* ATCC 25923 (00034*)	50 -100	luxuriant	25 -100	>=50 %	grey-black shiny	Positive, opaque zone around the colony
Proteus mirabilis ATCC 25933	50 -100	good - luxuriant	25 -100	>=50 %	brown - black	Negative
Micrococcus luteus ATCC 10240	50 -100	poor - good	15 -40	30 -40 %	shades of brown-black (very small)	Negative
Staphylococcus epidermidis ATCC 12228 (00036*)	50 -100	poor - good	15 -40	30 -40 %	black	Negative
** *Bacillus spizizenii* ATCC 6633 (00003*)	50 -100	none - poor	0 -10	0 -10 %	dark brown matt	Negative
Escherichia coli ATCC 8739 (00012*)	50 -100	none- poor	0 -10	0 -10 %	large brown black	Negative
Escherichia coli ATCC 25922 (00013*)	50 -100	none- poor	0 -10	0 -10 %	large brown black	Negative

Key : * Corresponding WDCM numbers. **Formerly known as *Bacillus subtilis* subsp. *spizizenii*

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 (13,14).

Reference

1. Baird-Parker,A.C. 1962,J.Appl.Bact.,25: 12.
2. Baird-Parker,A.C. and Davenport,E., 1965,J.Appl.Bact.,28: 390.
3. Zebovitz, E., Evans J.B. & Niven C.F., (1955), J. Bact; 70:686.
4. Tardio and Baer,1971,J.Assoc.Off. Anal. Chem.,54:728.
5. Niskanean A and Aalto M, App. Env. Microbiol., 1978, 35:1233.
6. Baer,1971, J.Assoc. Off. Anal. Chem.,54:732.
7. Niskanean A and Aalto M, App. Env. Microbiol., 1978, 35:1233.
8. J. Assoc. off. Anal. Chem, 1971, 54:401.
9. The United States Pharmacopoeia-National Formulatory (USP-NF), 2022.
10. European Pharmacopoeia, 2022, 10 th volume, European Directorate for the quality of medicines & Healthcare.
11. The British Pharmacopoeia, 2022, Medicines and Healthcare products Regulatory Agency.
12. Indian Pharmacopoeia, 2022, Indian Pharmacopoeia Commission, Ministry of Health and Family Welfare Government of India.
13. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
14. Jorgensen, J.H., Pfaller, M.A., Carroll, K.C., Funke, G., Landry, M.L., Richter, S.S and Warnock., D.W. (2015) Manual of Clinical Microbiology, 11th Edition. Vol. 1.

Revision :01/2024