Baird Parker Agar Medium

MM043

Baird Parker Agar Medium is recommended for the selective isolation and enumeration of coagulase positive Staphylococci from food and other materials in accordance with Indian Pharmacopoeia.

Composition**

Ingredients	Gms / Litre
Pancreatic digest of casein	10.000
Beef extract	5.000
Yeast extract	1.000
Glycine	12.000
Sodium pyruvate	10.000
Lithium chloride	5.000
Agar	20.000
pH after sterilization	6.8±0.2

**Formula adjusted, standardized to suit performance parameters

Directions

Suspend 63 grams in 950 ml purified/ distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 115°C for 30 minutes or alternatively at 15lbs pressure (121°C) for 15 minutes. Cool to 50°C and aseptically add 50 ml Egg Yolk Emulsion (FD045) and 10 ml sterile 1% Potassium Tellurite Solution (FD052). Mix well and pour into sterile Petri plates.

Warning : Lithium Chloride is harmful. Avoid all bodily contact and inhalation of vapours. On contact with skin wash with plenty of water immediately.

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 (9). This medium is recommended for microbial limit tests 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* (4). This medium was found to be less inhibitory to *S.aureus* than other media, at the same time being more selective (5, 6). Subsequently it was officially adapted by the AOAC and is also recommended in Indian Pharmacopoeia for use in Microbial limit test (7, 8).

Beef extract, yeast extract and pancreatic digest of casein provides essential mineral, 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 *S.aureus* isolated on Baird-Parker Agar must be confirmed with a coagulase reaction. Growth of *Proteus* species can be inhibited by addition of sulphamethazene in this medium.

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.

Reaction
After sterilization, reaction of 6.3% w/v aqueous solution. pH : 6.8±0.2

pH
6.60-7.00

Cultural Response
Growth Promotion is carried out in accordance with 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 Soyabean Casein Digest Agar.

Cultural Response

Organism	Inoculum (CFU)	Growth	Lot value (CFU)	Recovery	Colour of colony	Lecithinase
Growth promoting						
Staphylococcus aureus ATCC 6538	50 -100	luxuriant	25 -100	>=50 %	grey-black shiny	Positive, opaque zone around the colony
Additional Microbiological testing						
Staphylococcus aureus ATCC 25923	50 -100	luxuriant	25 -100	>=50 %	grey-black shiny	Positive, opaque zone around the colony
Proteus mirabilis ATCC 25933	50 -100	good - luxuriant	50 -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	50 -100	poor - good	15 -40	30 -40 %	black	Negative
Bacillus subtilis ATCC 6633	50 -100	none - poor	0 -10	0 -10 %	dark brown matt	Negative
Escherichia coli ATCC 8739	50 -100	none- poor	0 -10	0 -10 %	large brown black	Negative
Escherichia coli NCTC 9002	50 -100	none- poor	0 -10	0 -10 %	large brown black	Negative
Escherichia coli ATCC 25922	50 -100	none- poor	0 -10	0 -10 %	large brown black	Negative

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

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. Niskanean A and Aalto M, App. Env. Microbiol., 1978, 35:1233.
5. Tardio and Baer,1971,J.Assoc.Off. Anal. Chem.,54:728.
6. Baer,1971,J.Assoc. Off. Anal. Chem.,54:732.
7. Indian Pharmacopoeia, 1996, Govt. of India, Ministry of Health and Family Welfare, New Delhi, India.
8. J. Assoc. off. Anal. Chem, 1971, 54:401.
9. Bacteriological Analytical Manual, 8th Edition, Revision A, 1998. AOAC, Washington D.C.

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