Technical Information

Baird Parker Agar Base

Product Code : DM1043S

Application: Baird Parker Agar Base with supplements is recommended for isolation and enumeration of bacteria responsible for food poisoning.

Composition**

Ingredients	Gms / Litre
Casein enzymic hydrolysate	10.000
Meat extract	5.000
Yeast extract	1.000
Glycine	12.000
Sodium pyruvate	12.000
Lithium chloride	5.000
Agar	20.000
Final pH (at 25°C)	7.0±0.2

**Formula adjusted, standardized to suit performance parameters

Principle & Interpretation

Baird Parker Agar was developed by Baird-Parker [1,2] from the Tellurite - glycine formulation of Zebovitz et al [3] for isolation of *Staphylococcus aureus* from foods.
This medium was found to be less inhibitory to *Staphylococcus aureus* than other media, and at the same time being more selective [4-6]. Subsequently it was officially adapted by the AOAC and is also recommended in USP for use in Microbial limit test [7]. However, identity of *Staphylococcus aureus* isolated on Baird-Parker Agar must be confirmed with a coagulase reaction. Smith and Baird-Parker [8] found that the addition of 50 mg/l Sulphamethazine in the medium, suppresses the growth and swarming of *Proteus species* .
Sodium pyruvate protects injured cells and helps in their recovery. Lithium chloride and potassium tellurite inhibit most of the contaminating microflora except *Staphylococcus aureus* . Glycine, pyruvate enhances growth of Staphylococcus. With the addition of egg yolk, the medium becomes yellow, opaque. Proteolytic bacteria produce a clear zone around colony in egg yolk containing media. 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. Baird-Parker Agar Base can also be used to detect coagulase activity by adding plasma fibrinogen mixture in place of egg yolk emulsion. 375 mg bovine fibrinogen, 2.5 ml rabbit plasma, 2.5 mg trypsin inhibitor and 2.5 mg potassium tellurite dissolved in 10 ml sterile distilled water and added to 90 ml sterile molten medium kept at 45-50°C [9]. Mix well and pour into plates. On this medium Staphylococcal coagulase positive colonies are white to grey-black surrounded by an opaque zone of coagulase activity, within 24-40 hours incubation at 35°C. Reduction in tellurite is necessary because of absence of egg yolk emulsion. This result in translucent agar and white to grey coloured colonies of Staphylococci. For quantitative results, select 20 - 200 colonies. Count *Staphylococcus aureus* like colonies and test them for coagulase reaction. Report *Staphylococcus aureus*per gram of food. Regardless of the negative reactions, consider all doubtful colonies as *Staphylococcus aureus* and carry out further tests for confiermation. Colonies of some contaminating organisms may digest the coagulase halo reaction.

Methodology

Suspend 65 grams of powder media in 950 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 50°C and aseptically add 50 ml concentrated Egg Yolk Emulsion (MS2045) and 3 ml sterile 3.5% Potassium Tellurite solution (MS2047) or 50 ml Egg Yolk Tellurite Emulsion (MS2046). Mix well and pour into sterile Petri plates. Warning: 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

Cream to yellow coloured 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

Reaction of 6.3% w/v aqueous solution at 25°C. pH : 7.0±0.2

pH range

6.80-7.20

Cultural Response/Characteristics

DM 1043S: Cultural characteristics observed with added Egg yolk emulsion and Tellurite Emulsion (MS2045 and MS2052), after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colour of Colony	Lecithinase
Bacillus subtilis ATCC 6633	50-100	None-poor	<=10%		
Micrococcus luteus ATCC 10240	50-100	fair-good	30-40%	shades of brown-black (very small)	Negative
Proteus mirabilis ATCC 25933	50-100	good - luxuriant	>=50%	brown - black	Negative
Staphylococcus epidermidis ATCC 12228	50-100	fair-good	30-40%	black	Negative
Escherichia coli ATCC 25922	50-100	none-poor	<=10%		
Staphylococcus aureus ATCC 25923	50-100	good – luxuriant	>=50%	grey-black shiny	Positive, opaque zone around the colony

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. 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. and Niven C.F., 1955, J. Bact., 70:686.
4. Tardio and Baer, 1971, J. Assoc. Off. Anal. Chem., 54:728.
5. Baer, 1971, J. Assoc. Off. Anal. Chem., 54:732.
6. J. Assoc. off. Anal. chem, 1971, 54:401.
7. The United States Pharmacopoeia, 1995, 23rd rev., USP Convention, Rockville, Md.
8. Smith B.A. and Baird-Parker A.C., 1964, J. Appl. Bact., 27:78.
9. Beckers N. J. et al, 1984, Can. J. Microbiol., 30:470.

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