PRODUCT SPECIFICATION SHEET

Baird Parker Agar Base (DM034BS)

Intended Use

Baird Parker Agar Base (DM034BS) is recommended for isolation and enumeration of food poisioning bacteria as per BIS IS:5887 (Part-II) - 1976

Product Summary and Explanation

A number of culture media had been utilized for the recovery of staphylococci from the Tellurite-glycine formulation of Zebovitz et al[1] for isolation of *S. aureus* from foods prior to the development of a new formulation by Baird-Parker in 1962.[2,3] This recommended for isolation and enumeration of coagulase positive *Staphylococcus aureus*. This scientist subsequently published additional results on the efficacy of the medium for the recovery of coagulase-positive staphylococci.[4,5] *Staphylococcus* species are common contaminants in food, dairy, pharmaceutical and cosmetics related products.[6] This medium is recommended for sterility checking of materials to detect *S. aureus*. Baird Parker medium was reported to be the best medium for selective detection of coagulase positive and entero-toxigenic Staphylococcus.[7] Coagulase-positive staphylococci can grow and reproduce in cosmetic products. These products are tested for the presence of coagulase-positive staphylococci using standard microbiological methods.[8] This medium was found to be less inhibitory to *S.aureus* than other media, at the same time being more selective.[9,10] The use of Baird-Parker Agar subsequently was officially adopted by AOAC International and is recommended in the USP for use in the performance of Microbial Limit Tests.[11] Recently, ISO committee has also recommended this medium for the isolation and enumeration of Staphylococci.[12,13] Present formulation having slightly increased amount of pyruvate is recommended by BIS for isolation of *Staphylococcus aureus*.[14]

Principles of the Procedure

Baird Parker Agar Base contains beef extract, yeast extract and casein enzymic hydrolysate which provides essential mineral, vitamin, nitrogenous compounds and other growth requirements. Sodium pyruvate protects injured cells and helps recovery and stimulates the growth of *S. aureus* without destroying the selectivity. Lithium chloride and potassium tellurite inhibit most of contaminating microflora except *S. aureus*. The reduction of tellurite is a characteristic of coagulase-positive staphylococci, and imparts a black color to the colonies. Glycine, pyruvate enhances growth of *Staphylococcus*. With the addition of egg yolk the medium becomes yellow and opaque. Glycine neutralizes aldehyde, while egg yolk neutralizes phenolic compounds, if any, in the test samples.

Formula / Liter

Ingredients	Gms / Liter
Casein enzymic hydrolysate	10.00
Meat extract	5.00
Yeast extract	1.00
Glycine	12.00
Sodium pyruvate	12.00
Lithium chloride	5.00
Agar	20.00
Final pH: 7.0 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

Precautions

1. For Laboratory Use only.
2. IRRITANT. Irritating to eyes, respiratory system, and skin.
3. Lithium Chloride is harmful. Avoid all bodily contact and inhalation of vapours. On contact with skin wash with plenty of water immediately

Directions

1. Suspend 65 grams of medium in 950 ml distilled water.
2. Heat to boiling to dissolve the medium completely.
3. Autoclave at 121°C, 15 psi pressure, for 15 minutes / validated cycle.

4. Cool to 50°C and aseptically add 50 ml concentrated Egg Yolk Emulsion (MS038) and 3 ml sterile Potassium Tellurite Supplement 3.5% (MS025) or 50 ml Egg Yolk Tellurite Supplement 1% (MS061).
5. Mix well and pour into sterile Petri plates.

Quality Control Specifications

Dehydrated Appearance	Cream to yellow homogeneous free flowing powder
Prepared Medium	Basal medium: Yellow coloured clear to slightly opalescent gel After addition of Egg Yolk Emulsion and Tellurite supplement: Yellow coloured opaque gel forms in Petri plates
Reaction of 6.5% Solution	pH : 7.0 ± 0.2 at 25°C
Gel Strength	Firm, comparable with 2.0% Agar gel

Expected Cultural Response: Cultural characteristics observed with added Egg yolk emulsion and Tellurite Supplement MS025 and MS038, after an incubation at 35-37°C for 24-48 hours.

Sr. No.	Organisms	Results to be achieved				
		Inoculum (CFU)	Growth	Recovery	Colour of colony	Lecithinase
1.	*Staphylococcus aureus ATCC 25923*	50 -100	good-luxuriant	>=50 %	grey-black shiny	positive, opaque zone around the colony
2.	*Proteus mirabilis ATCC 25933*	50 -100	good-luxuriant	>=50 %	brown - black	negative
3.	*Micrococcus luteus ATCC 10240*	50-100	fair-good	30-40%	shades of brown-black (very small)	negative
4.	*Staphylococcus epidermidis ATCC 12228*	50-100	fair-good	30-40%	black	negative
5.	*Bacillus subtilis ATCC 6633*	50-100	none-poor	<=10%	--	--
6.	*Escherichia coli ATCC 25922*	50-100	none-poor	<=10%	--	--

The organisms listed are the minimum that should be used for quality control testing.

Test Procedure

1. When testing the medium, inoculate the material to be examined (0.1 ml per plate of diameter 90-100 mm), incubate at 37°C and take the first reading after 24-26 hours.
2. Incubate at 37°C for another 24 hours and perform the coagulase test on the colonies with the above characteristics, which have developed during the further incubation period.
3. Plates should be used on the same day of preparation or within 48 hours, to avoid the loss of definition in the precipitated zones.
4. Baird-Parker Agar Base can also be used to detect coagulase activity by adding plasma fibrinogen mixture in place of egg yolk emulsion.
5. 375 mg bovine fibrinogen, 2.5 ml rabbit plasma, 2.5 mg trypsin inhibitor and 2.5 mg potassium tellurite dissolved in
6. 10 ml sterile distilled water and added to 90 ml sterile molten medium kept at 45-50°C.[15]
7. Mix well and pour into plates.
8. 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.
9. Reduction in tellurite is necessary because of absence of egg yolk emulsion.
10. This results in translucent agar and white to grey coloured colonies of Staphylococci.
11. Smith and Baird-Parker[16] found that the addition of 50 mg/l Sulphamethazine in the medium, suppresses the growth and swarming of Proteus species.
12. Refer appropriate references for detailed instructions of specific procedures.

Results

1. The colonies of *Staphylococcus aureus* are black and shiny, with a fine white rim, surrounded by a clear zone.
2. The identity of *Staphylococcus aureus* isolated on Baird-Parker Agar must be confirmed with a coagulase reaction.
3. Refer to appropriate references and standard procedures for interpretation of results.

Storage

Store the sealed bottle containing the dehydrated medium at 10 - 30°C. Once opened and recapped, place container in a low humidity environment at the same storage temperature. Protect from moisture and light.

Expiration

Refer to the expiration date stamped on the container. The dehydrated medium should be discarded if not free flowing, or if the appearance has changed from the original color. Expiry applies to medium in its intact container when stored as directed.

Limitations of the Procedure

1. Baird-Parker Agar is selective for coagulase-positive staphylococci, but other bacteria may grow.
2. Identity of *Staphylococcus aureus* isolated on Baird-Parker Agar must be confirmed with a coagulase reaction and deoxyribonuclease test.
3. The sterility of product is confirmed by absence of growth of *Staphylococcus aureus* on this medium.
4. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : Baird Parker Agar Base
Product Code : DM034BS
Available Pack sizes : 100gm / 500gm

References

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Further Information

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