PRODUCT SPECIFICATION SHEET

Baird Parker Agar Medium (DM034U)

Intended Use

Baird Parker Agar Medium (DM034U) is recommended for isolation and enumeration of coagulase positive *Staphylococci* from food and other materials in compliance with USP.

Product Summary and Explanation

This medium is cited in United States Pharmacopoeia, 2009[1] and is recommended for isolation and enumeration of coagulase positive *Staphylococcus aureus*. A number of culture media had been utilized for the recovery of staphylococci from the Tellurite-glycine formulation of Zebovitz et al[2] for isolation of *S. aureus* from foods prior to the development of a new formulation by Baird-Parker in 1952.[3,4] This scientist subsequently published additional results on the efficacy of the medium for the recovery of coagulase-positive staphylococci.[5,6]

Staphylococcus species are common contaminants in food, dairy, pharmaceutical and cosmetics related products.[7] 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.[8] 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.[9]This medium was found to be less inhibitory to *S.aureus* than other media, at the same time being more selective.[10,11] The use of Baird-Parker Agar subsequently was officially adopted by AOAC International and is also recommended in United States Pharmacopoeia for use in Microbial limit test.[1, 12]

Principles of the Procedure

Baird Parker Agar Medium contains beef extract, yeast extract and pancreatic digest of casein 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.

The egg yolk additive, in addition to being an enrichment, also aids in the identification process by demonstrating lecithinase activity (egg yolk reaction). Staphylococci that contain lecithinase break down the Egg Yolk and cause clear zones around the colonies. 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.

Formula / Liter

Ingredients	Gms / Liter
Pancreatic digest of casein	10.00
Beef extract	5.00
Yeast extract	1.00
Glycine	12.00
Sodium pyruvate	10.00
Lithium chloride	5.00
Agar	20.00
Final pH: 6.8 ± 0.2 at 25°C	
Formula may be adjusted and/or supplemented as required to meet performance specifications	

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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 63 grams of the medium in 950 ml of 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 add aseptically 50 ml concentrated Egg Yolk Emulsion (MS038) and 1 vial of sterile 1% Potassium Tellurite Supplement (MS024).
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 Emulsion: Yellow coloured opaque gel forms in Petri plates
Reaction of 6.3% Solution	pH : 6.8 ± 0.2 at 25°C
Gel Strength	Firm, comparable with 2.0% Agar gel

Expected Cultural Response: Growth Promotion is carried out in accordance USP. 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.

Sr. No.	Organisms	Results to be achieved					
		Inoculum (CFU)	Growth	Lot value (CFU)	Recovery	Colour of colony	Lecithinase
Growth Promotion							
1.	*Staphylococcus aureus ATCC 6538*	50 -100	good-luxuriant	25-100	>=50 %	grey-black shiny	positive, opaque zone around the colony
Additional Microbiological Testing							
1.	*Staphylococcus aureus ATCC 25923*	50 -100	good-luxuriant	25-100	>=50 %	grey-black shiny	positive, opaque zone around the colony
2.	*Proteus mirabilis ATCC 25933*	50 -100	good-luxuriant	25-100	>=50 %	brown – black	negative
3.	*Micrococcus luteus*	50-100	poor-good	15-40	30-40%	shades of	negative

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	ATCC 10240					brown-black (very small)	
4.	*Staphylococcus epidermidis ATCC 12228*	50-100	poor-good	15-40	30-40%	black	negative
5.	*Bacillus subtilis ATCC 6633*	50-100	none-poor	0-10	0-10%	dark brown matt	negative
6.	*Escherichia coli ATCC 8739*	50-100	none-poor	0-10	0-10%	large brown black	negative
7.	*Escherichia coli ATCC 25922*	50-100	none-poor	0-10	0-10%	large brown black	negative
8.	*Escherichia coli NCTC 9002*	50-100	none-poor	0-10	0-10%	large brown black	negative

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

Test Procedure

1. Food samples are macerated in suitable broth medium, diluted as desired and the dilutions spread-inoculated onto the agar surfaces, which should be dry when inoculated.
2. Incubate plates aerobically for 24 hours at 35 - 37°C.
3. Refer appropriate references for detailed instructions of specific procedures.

Results

1. Proteolytic bacteria produce a clear zone around colony in egg yolk containing media also known as Lecithinase reaction.
2. A clear zone and grey-black colonies on this medium are diagnostic for coagulase positive Staphylococci.
3. Upon further incubation, an opaque zone is developed around colonies, which can be due to lipolytic activity.
4. 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.

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Packaging
Product Name : Baird Parker Agar Medium
Product Code : DM034U
Available Pack sizes : 100gm / 500gm
References

1. The United States Pharmacopoeia, 2009, US Pharmacopoeial Convention Inc. Twinbrook Parkway, Rockville, M.D..
2. Zebovitz, E., Evans J.B. & Niven C.F., (1955), J. Bact; 70:686.
3. Baird-Parker,A.C. 1962,J.Appl.Bact.,25: 12.
4. Baird-Parker,A.C. and Davenport,E., 1965,J.Appl.Bact.,28: 390.
5. Baird-Parker. 1963. J. Gen. Microbiol. *30*:409.
6. Baird-Parker. 1965. J. Gen. Microbiol. *38*:383.
7. FDA Bacteriological Analytical Manual, 2008, 18th ed., AOAC, Washington, DC
8. Niskanean A and Aalto M, App. Env. Microbiol., 1978, 35:1233
9. Tardio and Baer,1971,J.Assoc.Off. Anal. Chem.,54:728.
10. Baird-Parker. 1965. J. Gen. Microbiol. *38*:383.
11. Baer,1971,J.Assoc. Off. Anal. Chem.,54:732.
12. J. Assoc. off. Anal. Chem, 1971, 54:401.

Further Information

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DM034UPSS,QAD/FR/024,Rev.00/01.01.2018

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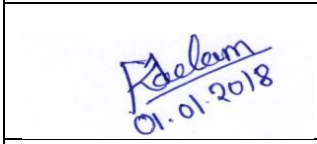	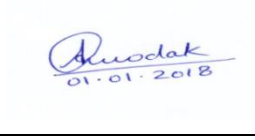	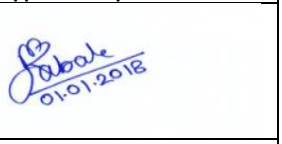
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