



PRODUCT SPECIFICATION SHEET

Agar medium O (Baird Parker Agar) (DM034E)

Intended Use

Agar Medium O (Baird Parker Agar) (DM034E) is recommended for isolation and enumeration of coagulase positive *Staphylococci* from food and other materials in compliance with EP.

Product Summary and Explanation

This medium is cited as Agar medium O in European Pharmacopoeia, 2008⁽¹⁾ and is recommended for isolation and enumeration of coagulase positive *Staphylococcus aureus*. This medium was developed by Baird-Parker^(2,3) from the Tellurite-glycine formulation of Zebovitz et al⁽⁴⁾ for isolation of *S. aureus* from foods. *Staphylococcus* species are common contaminants in food, dairy, pharmaceutical and cosmetics related products.⁽⁵⁾ 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-toxicogenic *Staphylococcus*.⁽⁶⁾ 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.⁽⁷⁾ This medium was found to be less inhibitory to *S.aureus* than other media, at the same time being more selective.^(8,9) Subsequently it was officially adapted by the AOAC and European Pharmacopoeia.^(1,10)

Principles of the Procedure

Agar Medium O (Baird Parker Agar) beef extract, yeast extract and pancreatic digest of casein 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. Identity of *S. aureus* isolated on Baird-Parker Agar must be confirmed with a coagulase reaction and deoxyribonuclease test. The sterility of product is confirmed by absence of growth of *S. aureus* on this medium.

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 if necessary, 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: Cultural characteristics observed after incubation at 35-37°C for 18-72 hours. Recovery rate is considered as 100% for bacteria growth on Soyabean Casein Digest Agar.

Sr. No.	Organisms	Results to be achieved					
		Inoculum (CFU)	Growth	Lot value (CFU)	Recovery	Colour of colony	Lecithinase
Growth Promotion Testing is carried out in accordance with EP							
1.	<i>Staphylococcus aureus ATCC 6538</i>	50 -100	good-luxuriant	25-100	>=50 %	grey-black shiny	Positive, opaque zone around the colony
Additional Microbiological Testing							
1	<i>Staphylococcus aureus ATCC 25923</i>	50 -100	good-luxuriant	25-100	>=50 %	grey-black shiny	Positive, opaque zone around the colony
2.	<i>Proteus mirabilis ATCC 25933</i>	50 -100	good-luxuriant	50-100	>=50 %	brown - black	Negative
3.	<i>Micrococcus luteus ATCC 10240</i>	50-100	poor- good	15 -40	30-40%	shades of brown-black (very small)	Negative
4.	<i>Staphylococcus</i>	50-100	poor~ good	15 -40	30-40%	black	Negative



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	<i>epidermidis</i> ATCC 12228						
5.	<i>Bacillus subtilis</i> ATCC 6633	50-100	none- poor	0 -10	0 -10	dark brown matt	Negative
6.	<i>Escherichia coli</i> ATCC 8739	50-100	none- poor	0 -10	0 -10	large brown black	Negative
7.	<i>Escherichia coli</i> ATCC 25922	50-100	none- poor	0 -10	0 -10	large brown black	Negative
8.	<i>Escherichia coli</i> 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. Coagulase-positive typical colonies of *Staphylococcus aureus* produce grey-black, shiny, convex colonies with entire margins and clear zones, (egg yolk reaction) with or without an opaque zone.
2. Coagulase-negative staphylococci generally produce poor or no growth. If growth occurs, colonies are black; typical clear or opaque zones are rare.
3. The majority of other organisms are inhibited or grow poorly. If growth appears, colonies are dark-brown matt growth, with no clear or opaque zones.



Baird Parker Agar (Agar Medium O) (DM034E)

Staphylococcus aureus ATCC 6538 showing grey-black shiny colonies with, opaque zones around the colony (Lecithinase Positive reaction).



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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. Microscopic examination and biochemical tests will differentiate coagulase-positive staphylococci from other organisms.
3. Consult appropriate texts for detailed information and recommended procedures.

Packaging

Product Name : Agar Medium O (Baird Parker Agar)

Product Code : DM034E

Available Pack sizes : 100gm / 500gm

References

1. European Pharmacopoeia, 2008, European Department for the quality of Medicines.
2. Baird-Parker, A.C. 1962, J. Appl. Bact., 25: 12.
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4. Zebovitz, E., Evans J.B. & Niven C.F., (1955), J. Bact; 70:686.
5. FDA Bacteriological Analytical Manual, 2008, 18th ed., AOAC, Washington, DC
6. Niskanean A and Aalto M, App. Env. Microbiol., 1978, 35:1233
7. Tardio and Baer, 1971, J. Assoc. Off. Anal. Chem., 54:728.
8. Baird-Parker. 1965. J. Gen. Microbiol. 38:383.
9. Baer, 1971, J. Assoc. Off. Anal. Chem., 54:732.
10. J. Assoc. off. Anal. Chem, 1971, 54:401.

Further Information

For further information please contact your local MICROMASTER Representative.



MICROMASTER LABORATORIES PRIVATE LIMITED

Unit 38/39, Kalpataru Industrial Estate,
Near Runwal Estate, Behind 'R-Mall', Ghodbunder Raod,
Thane (W) - 400607. M.S. INDIA.

Ph: +91-22-25895505, 4760, Cell: 9320126789.

Email: micromaster@micromasterlab.com

sales@micromasterlab.com

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	Checked By	Approved By
 01.01.2018	 01.01.2018	 01.01.2018
Microbiologist	Head Quality Control	Head Quality Assurance

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