

Technical Information

Baird-Parker Agar (Agar medium O)

Product Code: DM 1043B

Application: - Baird-Parker Agar is used for the isolation and enumeration of coagulase positive *Staphylococci* from food and other materials in accordance with British 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

Principle & Interpretation

This medium is cited as Agar medium O in British Pharmacopoeia, 2009 (1) recommended for isolation and enumeration of coagulase positive *S.aureus*. This medium was developed by Baird-Parker (2,3) from the Tellurite-glycine formulation of Zebovitz et.al.(4) for isolation of *Staphylococcus aureus* from foods. *Staphylococcus* species are common contaminants in food, dairy, pharmaceutical and cosmetics related products (9). This medium is used for sterility checking of materials to detect *Staphylococcus aureus*. Baird Parker medium was reported to be the best medium for selective detection of coagulase positive and entero-toxicogenic *Staphylococcus* (5). This medium was found to be less inhibited to *Staphylococcus aureus* than other media, at the same time being more selective (6,7). Subsequently it was officially adapted by the AOAC and British Pharmacopoeia (1,8).

Beef extract, yeast extract and pancreatic digest of casein supply essential mineral, vitamin and other growth requirements. Sodium pyruvate protects injured cells and helps recovery. Lithium chloride and potassium tellurite enhance most of contaminating microflora except *Staphylococcus aureus*. Glycine, pyruvate inhibited the 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.

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 *Staphylococcus 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 *Staphylococcus aureus* on this medium.

Methodology

Suspend 63 grams of dehydrated media in 950 ml distilled water. Mix thoroughly & heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 50°C and add aseptically 50 ml concentrated Egg Yolk Emulsion (MS 2045) and 10 ml sterile 1% Potassium Tellurite solution (MS 2052). Shake well before pouring into sterile Petri plates

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

Quality Control

Appearance

Cream to yellow homogeneous free flowing powder

Gelling

Firm, comparable with 2.0% agar gel.

Colour and Clarity

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 Range

6.60-7.00

Cultural Response

Growth Promotion is carried out in accordance with BP. Cultural response was observed after an incubation at 35-37°C for 18-72 hours. Recovery rate is considered as 100% for bacteria growth on Soybean Casein Digest Agar.

Cultural Response

| Organism | Inoculum (CFU) | Growth | Observed Lot value (CFU) | Recovery | Colour of colony | Lecithinase |
|--|----------------|------------------|--------------------------|----------|------------------------------------|---|
| Growth Promoting | | | | | | |
| <i>Staphylococcus aureus</i> ATCC 6538 | 50 -100 | luxuriant | 25 -100 | >=50 % | grey-black shiny | Positive, opaque zone around the colony |
| Additional Microbiological testing | | | | | | |
| <i>Staphylococcus aureus</i> ATCC 25923 | 50 -100 | luxuriant | 25 -100 | >=50 % | grey-black shiny | Positive, opaque zone around the colony |
| <i>Proteus mirabilis</i> ATCC25933 | 50 -100 | good – luxuriant | 25 -100 | >=50 % | brown - black | Negative |
| <i>Micrococcus luteus</i> ATCC10240 | 50 -100 | poor – good | 15 -40 | 30 -40 % | shades of brown-black (very small) | Negative |
| <i>Staphylococcus epidermidis</i> ATCC 12228 | 50 -100 | poor – good | 15 -40 | 30 -40 % | black | Negative |
| <i>Bacillus subtilis</i> ATCC 6633 | 50 -100 | none – poor | 0 -10 | 0 -10 % | dark brown matt | Negative |
| <i>Escherichia coli</i> ATCC 8739 | 50 -100 | none – poor | 0 -10 | 0 -10 % | large brown black | Negative |
| <i>Escherichia coli</i> ATCC25922 | 50 -100 | none – poor | 0 -10 | 0 -10 % | large brown black | Negative |
| <i>Escherichia coli</i> NCTC 9002 | 50 -100 | none – poor | 0 -10 | 0 -10 % | large brown black | Negative |

Storage and Shelf Life

Dried Media: Store below 30°C in tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label.

Prepared Media: 2-8° in sealable plastic bags for 2-5 days.



Dehydrated Culture Media
Bases / Media Supplements

Further Reading

1. British Pharmacopoeia, 2009, The Stationery office British Pharmacopoeia.
2. Baird-Parker, A.C. 1962, J.Appl. Bact., 25: 12.
3. Baird-Parker, A.C. and Davenport, E., 1965, J.Appl. Bact., 28: 390.
4. Zebovitz, E., Evans J.B. & Niven C.F., (1955), J. Bact; 70:686.
5. Niskanean A and Aalto M, App. Env. Microbiol., 1978, 35:1233
6. Tardio and Baer, 1971, J.Assoc.Off. Anal. Chem., 54:728.
7. Baer, 1971, J.Assoc. Off. Anal. Chem., 54:732.
8. J. Assoc. off. Anal. Chem, 1971, 54:401. .
9. FDA Bacteriological Analytical Manual, 2005, 18th ed., AOAC, Washington, DC.

Disclaimer :

- User must ensure suitability of the product(s) in their application prior to use.
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