



## Baird Parker Agar Base

M043S

### Intended use

Baird Parker Agar Base with supplements is recommended for isolation and enumeration of coagulase positive Staphylococci from food and other materials. It is recommended by BIS under the specifications IS : 5887 (Part II) 1976.

### Composition\*\*

Ingredients	g / L
Tryptone	10.000
HM 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

# Equivalent to Meat extract

\*\*Formula adjusted, standardized to suit performance parameters

### Directions

Suspend 65 grams in 950 ml purified / distilled water. Heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15 lbs pressure (121°C) for 15 minutes. Cool to 45-50°C and aseptically add 50 ml concentrated Egg Yolk Emulsion (FD045) and 3 ml sterile PTe 3.5% Selective Supplement (1 ml per vial) (FD047) or 50 ml Egg Yolk Tel Emulsion (FD046). Mix well and pour into sterile Petri plates.

### PrincipleAndInterpretation

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, at the same time being more selective (4, 5, 6). Subsequently it was officially adapted by the AOAC and is also recommended in USP for use in Microbial limit test (7). ISO Committee (8) has recommended this medium for isolation and enumeration of Staphylococci. Present formulation having slightly increased amount of pyruvate is recommended by BIS for isolation of *Staphylococcus aureus* (9). However identity of *Staphylococcus aureus* isolated on Baird-Parker Agar must be confirmed with a coagulase reaction. Smith and Baird-Parker (10) 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 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 (11). 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 results 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. Colonies of some contaminating organisms may digest the coagulase halo reaction.

## Type of specimen

Food samples

## Specimen Collection and Handling

For food samples, follow appropriate techniques for sample collection and processing as per guidelines (12). After use, contaminated materials must be sterilized by autoclaving before discarding.

## Warning and Precautions

Read the label before opening the container. Wear protective gloves/protective clothing/eye protection/face protection. Follow good microbiological lab practices while handling specimens and culture. Standard precautions as per established guidelines should be followed while handling specimens. Safety guidelines may be referred in individual safety data sheets.

## Limitations

1. Though the medium is recommended for detection of coagulase positive *Staphylococcus aureus*, other bacteria may grow.
2. Further biochemical test have to be performed for confirmation.

## Quality Control

### 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 6.5% w/v aqueous solution at 25°C. pH : 7.0±0.2

### pH

6.80-7.20

### Cultural Response

Cultural characteristics observed with added Egg yolk emulsion and Tellurite Emulsion (FD045 and FD052), after an incubation at 35-37°C for 24-48 hours.

Organism	Inoculum (CFU)	Growth	Recovery	Colour of colony	Lecithinase
<i>Staphylococcus aureus</i> subsp. <i>aureus</i> ATCC 25923 (00034*)	50-100	good - luxuriant	≥50%	grey-black shiny	Positive, opaque zone around the colony
<i>Micrococcus luteus</i> ATCC 10240	50-100	fair-good	30-40%	shades of brown-black	Negative
<i>Proteus mirabilis</i> ATCC 25933	50-100	good - luxuriant	≥50%	brown - black (very small)	Negative
<i>Staphylococcus epidermidis</i> ATCC 12228 (00036*)	50-100	fair-good	30-40%	black	Negative
<i>Escherichia coli</i> ATCC 25922 (00013*)	50-100	none-poor	≤10%		
** <i>Bacillus spizizenii</i> ATCC 6633 (00003*)	50-100	none - poor	≤10%		

Key : (\*) Corresponding WDCM numbers.

\*\*Formerly known as *Bacillus subtilis* subsp. *spizizenii*

## Storage and Shelf Life

Store between 10- 30°C in a tightly closed container and the prepared medium at 2 - 8°C. Use before expiry date on the label. On opening, product should be properly stored dry, after tightly capping the bottle in order to prevent lump formation due to the hygroscopic nature of the product. Improper storage of the product may lead to lump formation. Store in dry ventilated area protected from extremes of temperature and sources of ignition Seal the container tightly after use. Use before expiry date on the label. Product performance is best if used within stated expiry period.

## Disposal

User must ensure safe disposal by autoclaving and/or incineration of used or unusable preparations of this product. Follow established laboratory procedures in disposing of infectious materials and material that comes into contact with sample must be decontaminated and disposed of in accordance with current laboratory techniques (13,14).

## Reference

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13. Isenberg, H.D. Clinical Microbiology Procedures Handbook 2nd Edition.
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