TMH 119 – BAIRD PARKER AGAR BASE (as per EP/IP/BP)

INTENDED USE

For the isolation and enumeration of coagulase positive Staphylococci from food, pharmaceutical and other materials.

PRODUCT SUMMARY AND EXPLANATION

Baird Parker Agar was developed by Baird Parker from the Tellurite-glycine formulation of Zebovitz et al for isolation and enumeration of Staphylococci in food and other material since it allows a good differentiation of coagulase positive strains. A high correlation has been found between the coagulase test and the presence of clear zone of lipolysis in this medium, which is due to the lecithinase of Staphylococci that breakdown, the egg yolk. On the other hand, studies show that almost 100% of coagulase positive Staphylococci are capable of reducing tellurite, which produces black colonies, whereas other Staphylococci cannot always do so. The medium was found to be less inhibitory to *Staphylococcus aureus* than other media at the same time being more selective. Subsequently the use of Baird-Parker Agar was officially adopted by AOAC International and is recommended in the USP for use in the performance of Microbial Limit Tests. Recently, ISO committee has also recommended this medium for the isolation and enumeration of Staphylococci.

The identity of *Staphylococcus aureus* isolated on Baird-Parker Agar must be confirmed with a coagulase reaction. Baird Parker Agar can also be used to detect coagulase activity by adding fibrinogen plasma. Fibrinogen Plasma Trypsin Inhibitor supplement dissolved in 10 ml sterile distilled water added to 90 ml sterile molten media kept at 45-50°C. On this medium coagulase positive colonies appear white to grey-black surrounded by an opaque zone due to coagulase activity within 24-48 hours of 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. Smith and Baird-Parker found that the addition of 50 mg/l Sulphamethazine in the medium, suppresses the growth and swarming of *Proteus* species.

Glycine, pyruvate enhances growth of Staphylococcus. With the addition of egg yolk, the medium becomes yellow, opaque. The egg yolk additive, in addition to provide enrichment, aids in the identification process by demonstrating lecithinase activity (egg yolk 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. 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. The colonies of *Staphylococcus aureus* are black and shiny, with a fine white rim, surrounded by a clear zone. 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. Plates should be used on the same day of preparation or within 48 hours, to avoid the loss of definition in the precipitated zones. The basal medium, without the egg yolk or the tellurite, is perfectly stable. Colonies of some contaminating organisms may digest the coagulase halo reaction. Other bacteria may grow on this media but biochemical test will differentiate coagulase positive Staphylococci from the other organisms.

COMPOSITION

Ingredients	Gms / Ltr
Tryptone	10.000
Beef extract	5.000
Yeast extract	1.000
Glycine	12.000
Sodium puruvate	10.000
Lithium chloride	5.000
Agar	20.000

PRINCIPLE

Tryptone, beef extract and yeast extract are sources of nitrogen, carbon, sulphur and vitamins. Sodium pyruvate not only protects injured cells and helps recovery but also stimulates *Staphylococcus aureus* growth without destroying selectivity. Lithium chloride and potassium tellurite inhibit most of the contaminating microflora except Staphylococcus aureus. The tellurite additive is toxic to egg yolk-clearing strains other than *S.aureus* and imparts a black colour to the colonies.

INSTRUCTION FOR USE

- Dissolve 63.0 grams in 950 ml purified/ distilled water.
- Heat to boiling to dissolve the medium completely.
- Sterilize by autoclaving at 15 psi pressure (121°C) for 15 minutes.
- Cool to 50°C and aseptically add 50 ml concentrated Egg Yolk Emulsion and 3 ml sterile 3.5% Potassium Tellurite solution or 50 ml Egg Yolk Tellurite Emulsion.
- For additional selectivity, if desired add rehydrated contents of 1 vial of BP Sulpha Supplement.
- Alternatively, 1 vial of Fibrinogen Plasma Trypsin Inhibitor Supplement may be used per 90 ml medium in place of Egg yolk Tellurite Emulsion for identification of coagulase, positive Stapylococci.
- Mix well and pour into sterile Petri plates.

QUALITY CONTROL SPECIFICATIONS

Appearance of Powder : Cream to yellow homogeneous free flowing powder.

Appearance 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.

pH (at 25°C) : 7.0±0.2

INTERPRETATION

Cultural characteristics observed after incubation. Recovery rate is considered as 100% for bacteria growth on Soyabean Casein Digest Agar.

Microorganism	ATCC	Inoculum (CFU/ml)	Growth	Recovery	Colour of colony	Lecithinase	Incubation Temperature	Incubation Period
Staphylococcus aureus subsp. aureus	6538	50 -100	Luxuriant	>=70%	Grey-black shiny	Positive, opaque zone around the colony	35-37°C	24-48 Hours
Staphylococcus aureus subsp. aureus	25923	50 -100	Luxuriant	>=70%	Grey-black shiny	Positive, opaque zone around the colony	35-37°C	24-48 Hours
Proteus mirabilis	25933	50 -100	Good-luxuriant	>=50%	Brown-black	Negative	35-37°C	24-48 Hours
Micrococcus luteus	10240	50 -100	Poor-good	>=50%	Shades of brown-black (very small)	Negative	35-37°C	24-48 Hours
Staphylococcus epidermidis	12228	50 -100	Poor-good	10-40%	Black	Negative	35-37°C	24-48 Hours

Bacillus subtilis subsp. spizizenii	6633	50 -100	None-poor	0-10%	Dark brown matt	Negative	35-37°C	24-48 Hours
Escherichia coli	8739	50 -100	None-poor	0-10%	Large brown black	Negative	35-37°C	24-48 Hours
Escherichia coli	25922	50 -100	None-poor	0-10%	Large brown black	Negative	35-37°C	24-48 Hours

PACKAGING:
In pack size of 100 gm and 500 gm bottles.

STORAGE
Dehydrated powder, hygroscopic in nature, store in a dry place, in tightly-sealed containers between 25-30°C and protect from direct sunlight. Under optimal conditions, the medium has a shelf life of 4 years. When the container is opened for the first time, note the time and date on the label space provided on the container. After the desired amount of medium has been taken out replace the cap tightly to protect from hydration.
Product Deterioration: Do not use if they show evidence of microbial contamination, discoloration, drying or any other signs of deterioration.

DISPOSAL
After use, prepared plates, specimen/sample containers and other contaminated materials must be sterilized before discarding.

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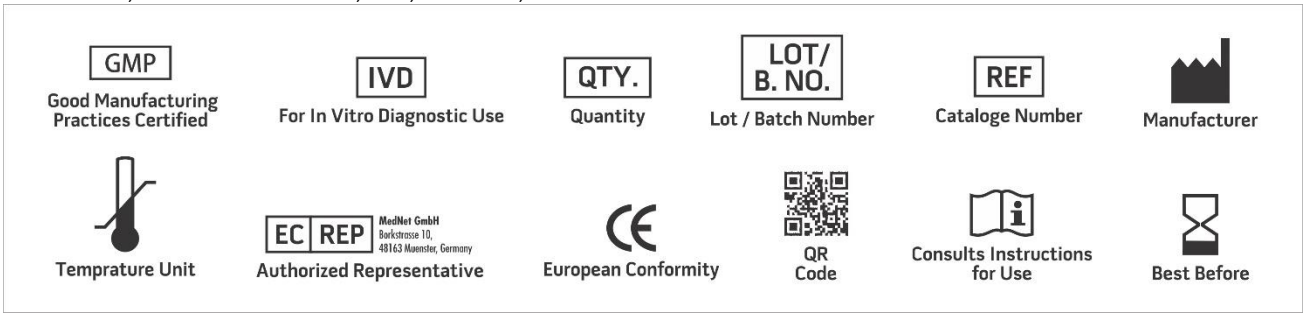

NOTE: Please consult the Material Safety Data Sheet for information regarding hazards and safe handling Practices.

***For Lab Use Only**

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