MAST® Culture Media and Supplements

Technical Information Sheet

Product Code DM 095

Baird-Parker Agar Base

For the isolation and enumeration of coagulase-positive staphylococci from food and other materials.

1. Description

In 1955 Zebovitz, Evans and Niven1 described a tellurite-glycine agar for the selective, quantitative detection of coagulase positive staphylococci.

Baird-Parker2 modified this medium to give improved growth of Staphylococcus aureus by reducing the tellurite and increasing the glycine concentrations. Growth was further improved by the addition of sodium pyruvate and egg yolk emulsion.

This Baird-Parker medium gave excellent recovery of Staph.aureus and was inhibitory to other organisms. Although a few strains of Staph.saprophyticus grew, these could be readily distinguished by the characteristic diagnostic appearance of Staph.aureus. In comparison with four other media Baird-Parker medium was far superior for isolating Staph.aureus from foodstuffs. The only problem with the medium was that poured plates had to be used almost immediately. The use of a stabilised egg yolk emulsion such as MAST DM097s has now greatly extended the life of poured plates.

The excellent performance of Baird-Parker medium has been confirmed by other workers.7 Sharpe, Neave and Reiter3 investigating the multiplication of Staph.aureus during cheesemaking, described the greater diagnostic qualities of Baird-Parker medium when compared to mannitol salt agar and phenolphthalein phosphate agar. The ability of Baird-Parker medium to recover damaged staphylococci was later demonstrated by Baird-Parker and Davenport.4 De Waart et al.5 also proved the value of the Baird-Parker medium in ecological studies on the occurrence and development of Staph.aureus in food incriminated in staphyloenterotoxicosis.

*Formulation may be modified to meet performance criteria

2. DM 097s Baird-Parker Supplement. (pack size 100ml bottles)

MAST Baird-Parker Supplement is a stabilised, sterile emulsion of egg yolk containing potassium tellurite. The concentration of tellurite in DM097s is 0.21% w/v giving a final concentration of 0.01% w/v in Baird-Parker Medium, when 50ml of supplement is added to 1 litre of basal medium.

DM097s undergoes a special stabilisation process which extends the life of the poured plates from 1-3 days to up to one month at 4°C, if plates are stored in sealed plastic bags.

3. Typical Formula*

Formula	grams per litre
Peptone mixture	12.0
Yeast extract	3.0
Sodium pyruvate	10.0
Glycine	7.5
Lithium chloride	5.0
Agar	19.0
pH 6.8 + 0.2	

4. Directions

1. Suspend by swirling 56.5g of powder in 1 litre of distilled or deionised water.

2. Heat with frequent agitation and boil to dissolve completely.

3. Sterilise by autoclaving at 121°C (15 p.s.i.) for 15 minutes.

4. Cool to 50°C and add asceptically 50ml of MAST Baird-Parker Supplement (egg yolk tellurite emulsion) DM 097s to each litre of basal medium.

5. Mix thoroughly before pouring plates. Prepared plates may be stored at 4°C for up to one month in sealed plastic bags.

5. In Use

Baird-Parker medium is selective and most organisms other than Staph.aureus will be inhibited. However for samples or specimens likely to contain Proteus spp., Smith and Baird-Parker6 recommended the addition of sulphamethazine at 50mg/litre.

The normal procedure is to firstly macerate the food sample in 0.1% peptone water and make serial dilutions. Then 0.1-1.0ml volumes of these dilutions are spread over the surface of a dried plate using a glass rod. Incubate for 24-26 hours at 37°C. Plates should be reincubated for a further 24 hours if no presumptive Staph.aureus colonies appear.

*Formulation may be modified to meet performance criteria

6. Other Organisms

Micrococci occasionally grow as minute black or brown colonies with no clearing. Yeasts may grow as white colonies with no clearing. Bacillus spp. occasionally grow as dark brown matt colonies which sometimes clear the medium after 48 hours.

7. Colonial Characteristics

Staph.aureus

Black, shiny convex colonies 1.0-1.5mm in diameter with narrow white entire margins and surrounded by a zone of clearing 2-5mm across after 24 hours incubation. Some strains only produce clearing after 36 hours. Wide opaque zones that extend into the cleared medium only show after 48 hours.

Staph.saprophyticus

May produce clearing but more irregular colonies than Staph.aureus. Wide opaque zones extend into the cleared medium after 24 hours.

8. References

1. Zebovitz E, Evans JB, Niven Jr. CF. J Bact. 1955; 70: 686-690.

2. Baird-Parker AC. J Appl Bact. 1962; 25: (1) 12-19.

3. Sharpe Elizabeth M, Neave FK, Reiter R. J Appl Bact. 1965; 28: (3) 390-402.

4. De Waart J, Mossel DAA, Ten Broeke R, Van de Moosdijk A. J Appl Bact. 1968; 31: 276-285.

5. Smith BA, Baird Parker AC. J Appl Bact. 1964; 27: (1) 78-82.

6. Chopin et al. J Food Protect. 1985; 48: (1) 21-27.

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