Our Baird-Parker Agar is used for the selective isolation and differentiation of coagulase-positive staphylococci from food and other non-clinical sources.

In 1962, Baird-Parker developed his own medium based on Zebovitz’s tellurite-glycine formulation, and subsequently demonstrated its superior performance for isolating coagulase-positive staphylococci from foods.

Pancreatic digest of casein, yeast extract, and beef extract supply the organisms with amino acids, vitamins and other complex nitrogenous components, which are essential for growth. Egg yolk tellurite emulsion contains lecithin and protein allowing for differentiation based on the organism’s lecithinase and proteolytic activity. Potassium tellurite, contained in the emulsion, is inhibitory to most organisms, but organisms capable of reducing potassium tellurite are able to grow on the medium. Lithium chloride and glycine are also incorporated into the medium to improve the general selectivity of the agar. The presence of sodium pyruvate helps to protect damaged cells and stimulate their growth; Baird-Parker and Davenport showed that recovery of damaged staphylococci on Baird-Parker Agar was better than other recovery media.

**Recommended Procedure**

**General Technique for Testing Foods**
(Please consult appropriate referencing for detailed testing protocols)

1. Prepare dilutions of samples as indicated by standard procedures.
2. Allow medium to reach room temperature.
3. Transfer 1 mL of each dilution to separate Baird-Parker Agar plates.
4. Using a glass spreader distribute the inoculum evenly over the agar surface. Let the inoculated plates air dry for 15-20 minutes before inverting them.
5. Incubate aerobically at 35°C and examine after 24 hours.
6. For enumeration purposes re-incubate plates for an additional 24 hours. Only enumerate plates with 30 to 300 typical *S. aureus* colonies.

**Interpretation of Results**

Differentiation on Baird-Parker Agar is based on egg yolk enzymatic reactions and tellurite reduction. The egg yolk emulsion contains lecithin and proteins that can be broken down by various bacterial enzymes. Lecithinase breaks down lecithin and produces an insoluble precipitate resulting in opaque zones in the medium surrounding the colonies. Proteolytic activity can be observed on this medium as clear zones surrounding the colonies. Organisms, such as *S. aureus*, capable of reducing potassium tellurite will form distinct gray-black colonies. Differentiation between members of the Genus *Staphylococcus* is possible: coagulase-positive staphylococci appear as shiny, gray-black, convex colonies with a clear zone surrounding the colonies; while coagulase-negative staphylococci grow poorly and appear as small, dull black colonies while clear or opaque zones are rare.

**Formula per Litre of Medium**

- Pancreatic Digest of Casein ................. 10.0 g
- Beef Extract ................................ 5.0 g
- Yeast Extract ................................. 1.0 g
- Lithium Chloride ............................. 5.0 g
- Agar ........................................ 17.0 g
- Glycine .................................... 12.0 g
- Sodium Pyruvate ............................ 10.0 g
- Egg Yolk Tellurite Emulsion .............. 50.0 mL

pH 6.8 ± 0.2
Additional biochemical and/or serological tests should be performed on isolated colonies from pure culture to complete identification.

- Some strains of *S. aureus* produce both clear and opaque zones
- Other organisms capable of growing on Baird-Parker Agar usually form brown colonies with no visible zones surrounding the colonies

**Quality Control**

After checking the medium for correct pH, colour, depth, and sterility, the following organisms are used to determine the growth and differential performance of the completed medium.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Expected Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>Good growth</td>
</tr>
<tr>
<td>ATCC 25923</td>
<td>Black w/ clear halo</td>
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<tr>
<td><em>Staphylococcus epidermidis</em></td>
<td>Poor growth</td>
</tr>
<tr>
<td>ATCC 14990</td>
<td>Black (no halo)</td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>Inhibition</td>
</tr>
<tr>
<td>ATCC 25922</td>
<td></td>
</tr>
</tbody>
</table>

**Storage and Shelf Life**

Our Baird-Parker Agar should be stored away from direct light at 4°C to 8°C. The medium side should be uppermost to prevent excessive accumulation of moisture on the surface of the agar. Under these conditions this medium has a shelf life of 6 weeks from the date of manufacture.

**References**