Detection and Differentiation of Staphylococcus Aureus on Baird Parker Agar

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Baird Parker Agar is used for the isolation and differentiation of coagulase-positive staphylococci in food and pharmaceuticals according to the Baird Parker method.

As a nitrogen source for the organism, casein peptone and meat extract are added to the medium. Yeast extract provides nitrogen as well as other important nutrients like vitamin B12 complex. The medium contains lithium and tellurite, which inhibit most of the contaminating microflora, while glycine and pyruvate enhance Staphylococci growth. Staphylococci can reduce tellurite to telluride, which results in grey to black coloration of the colonies. With the addition of egg yolk, the medium becomes yellow, slightly opaque. A clear halo develops around colonies from coagulase positive Staphylococcus aureus, and upon further incubation may produce an opaque zone due to an egg yolk – lecithinase reaction (lipolytic activity). Grey-black colonies and a halo on this medium are presumed to be indicative of coagulase positive staphylococci, as a high correlation between coagulase test and lipophylitic activity was found. Staphylococcus aureus and some strains of Staphylococcus saprophyticus (Shaw et al.[5]) may show both of these characteristics, but they are easily distinguished from each other by the different times at which the halo develops.

Baird Parker Agar with Rabbit Plasma Fibrinogen can be used for the detection of coagulase activity. Coagulase positive organisms appear as grey to black colonies because of the tellurite reduction and as an opaque halo, due to the conversion by coagulase from fibrinogen to fibrin. Only plates with less then 100 characteristic colonies should be counted. Use of this medium eliminates the need for an additional coagulase test.

References

6. ISO 6888-1:1999; Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of coagulasepositive staphylococci (Staphylococcus aureus and other species) – Part 1: Technique using Baird-Parker agar medium.
7. ISO 6888-2:1999; Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) – Part 2: Technique using rabbit plasma fibrinogen agar medium.