β-LACTAMASE TEST

β-Lactamase Test rapidly detects the presence of β-Lactamase enzyme produced by strains of Staph aureus, Neisseria gonorrhoeae, Branhamella catarrhalis and Haemophilus influenzae. These enzymes confer resistance to a number of penicillin antibiotics by attacking the common β-lactam ring structure, resulting in inactivation of these drugs. This mode of action forms the basis of the β-Lactamase test reaction. Each strip is impregnated with benzylpenicillin and a pH indicator, brom cresol purple. β-Lactamase positive organisms produce enzyme, which hydrolyses benzyl penicillin forming penicilloic acid. This in turn causes a fall in pH, which is demonstrated by a rapid change in the colour of the pH indicator from purple to yellow. β-Lactamase Test requires only small numbers of organisms and can be performed as soon as there is visible growth on the primary culture medium.

Procedure
1. Place a β-Lactamase Test strip on a clean microscope slide and moisten with one or two drops of sterile distilled water.
2. Using a loop take 2 or 3 colonies, to give a heavy inoculum, of the test organism and smear them onto the test strip.
3. Positive and negative controls of further test organisms can be smeared onto the same strip in a similar manner.
4. A change in colour of the strip from purple to yellow in the area of inoculation within 5-10 minutes constitutes a positive β-Lactamase test. β-Lactamase positive organisms should be reported as resistant to benzyl penicillin, ampicillin and all other β-Lactamase sensitive penicillin’s and cephalosporins.

Technical Notes
Staphylococcal β-Lactamase is inducible and therefore, colonies of Staph aureus taken from the zone edge around penicillin, ampicillin and methicillin discs will give a much stronger and faster β-Lactamase test reaction. β-Lactamase test should not be performed on colonies taken from media containing fermentable carbohydrates as it may give false positive results.

In vitro diagnostic for laboratory use only

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Date of revision 2013-09-30