CATALASE TEST

Principle

Detects the presence of the enzyme catalase which hydrolyzes H_2O_2 to produce H_2O and O_2. This test is used to differentiate Staphylococci (catalase positive) from Streptococci (catalase negative).

Reagents

Hydrogen peroxide (H_2O_2), 3%

Store in a dark bottle and avoid any undue exposure to light.
Keep refrigerated at all times when not in use.

Other Materials

Clean glass microscope slides
Plastic culture loop or wooden applicator stick

Procedure

1. Pick a colony from an 18-24 hr culture and place it on a clean glass slide. Avoid carry over of blood agar which can cause false positives.
2. Put one drop of 3% H_2O_2 over the organism on the slide. Do not reverse the order of the procedure as false positive results may occur. Do not mix.
3. Observe for immediate bubbling (gas liberation) and record the result.
4. Discard the slide into a discard container.

Interpretation

Positive test: Immediate bubbling, easily observed (0_2 formed)

Negative test: No bubbling

Precautions

1. Carry over of blood agar must be avoided.
2. Growth for testing must be from an 18-24 hr culture.
3. 3% H_2O_2 is caustic - avoid exposure to skin. If H_2O_2 does get on the skin, immediately flood the area with 70% ethyl alcohol, not water.

4. Aerosols may be released by the bubbling of the O_2.
5. H_2O_2 is unstable and breaks down easily on exposure to light. The solution must be kept refrigerated in the dark.

Quality Control

H_2O_2 is very unstable and should be tested daily or immediately prior to its use.

Positive: *S. aureus* (ATCC 25923)
Negative: Gp. A. Strep. (ATCC 19615)

References

1. MacFaddin JF, Biochemical Tests for Identification of Medical Bacteria, 2nd ed., Williams and Wilkins, Baltimore MD., 1980, p51-58.

2. Murray PA, et al. Manual of Clinical Microbiology, 7th ed., 1999; pp 426-427.