Exercise XV

Flora of the Nose and Throat

The upper respiratory tract has a rich population of indigenous microorganisms, most of which are normal flora. The nasal passages and the throat are warm and moist and have a high CO$_2$ concentration. Saliva is slightly alkaline and contains a great variety of flora. The upper respiratory tract also supports growth of several important pathogens, the most important of which include Staphylococcus, Staphylococcus, Neisseria, diptheroids, yeast (Candida), and enteric (intestinal) bacteria.

The normal flora of the nasal passages and throat are similar to that of the skin in that all three contain certain microorganisms in common – Staphylococcus, Micrococcus, and Propionibacterium (Corynebacterium). Unlike the skin, the nasal passages and throat have a large variety of microorganisms, some of which are anaerobic and many of which are pathogens. The pathogenic bacteria of the nasal passages and throat consist of: Staphylococcus aureus, Corynebacterium diptheriae, Streptococcus pneumoniae, Neisseria meningitidis, and Haemophilus influenzae.

The two pathogenic Gram positive cocci, (Staphylococcus and Streptococcus) and Propionibacterium were major causes of deaths from bacterial infections prior to the use of antibiotics. Streptococcus and Staphylococcus are still two of the most frequently encountered pathogenic bacteria. They are found in about 50% of the population, not only in sick people. As many as 90% of hospital personnel may be Staphylococcus carriers. Staphylococcus is extremely dangerous because certain strains are resistant to penicillin and other antibiotics.

Materials Needed

2 nutrient agar plates
2 sterile swabs
tube of sterile water
wax pencil
test tube rack
spray bottle of disinfectant
paper towels
Procedure

1. Obtain 2 nutrient agar plates.
2. Dip a sterile cotton swab in the tube of sterile water.
3. Press the swab against the side of the tube to remove excess water.
4. Insert the swab in your nose and rotate it along the nasal passage.
5. Using the swab, inoculate a nutrient agar plate streaking in all directions to obtain isolated colonies.
6. Dispose of the swab in a biohazard bag.
7. Using a wax pencil, label the plate with the initials of someone in the group and place it upside down in the incubator.
8. Repeat the procedure to obtain a throat culture.

Clean-up Procedure

Spray and wipe the table top with disinfectant.

Procedure: Second Lab Period

1. Obtain the plates inoculated with nose and throat cultures from the incubator.
2. Note the different types of colonies representing the different bacteria.
3. Using aseptic technique and an inoculating loop, obtain a sample of one of the colonies and prepare a Gram stain.
4. Observe the slide under oil immersion.
5. Dispose of the slide in a beaker of bleach.