Snyder Test: Determining Susceptibility to Dental Caries

Learning Objectives:

1. To become familiar with organisms that contribute to dental caries
2. To perform experiments that demonstrate susceptibility to dental caries formation

Key Terms:

Snyder test, dental caries

Introduction:

A variety of microorganisms are involved in the formation of dental caries, including *Lactobacillus acidophilus* and *Streptococcus mutans*. These bacteria build up on teeth in a sticky film known as plaque, ferment sugars in the mouth and produce organic acids such as lactic acid that reduce the pH to less than 5. Continued exposure to this low pH leads to softening of dental enamel, resulting in tiny perforations and pits known as dental caries (cavities).

One method for determining susceptibility to dental caries is the **Snyder test**. This colorimetric test measures the rate and amount of acid produced by oral bacteria, such as lactobacilli as they ferment the sugars in the medium. The test employs a differential medium, Snyder agar (pH 4.8), which contains glucose and the pH indicator bromcresol green that gives the medium a green color. The low pH of the medium inhibits the growth of many bacteria except oral bacteria such as lactobacilli and streptococci. The pH indicator, bromcresol green, remains green at pH 4.8 but turns yellow as the medium becomes more acidic. Following incubation, the Snyder agar cultures containing lactobacilli from the saliva sample will show fermentation of sugars that will lower the pH to around 4.4, the level of acidity at which dental caries tend to form. At this lower pH, the green medium will turn yellow. In general, a culture showing a yellow color within 24-48 hours suggests a greater susceptibility to the formation of dental caries.

Materials:

Synder agar deeps
Sterile cotton swab
Test tube rack

Procedure:

DAY 1

1. Carefully remove a sterile cotton swab from the wrapper and saturate the swab with your saliva by rubbing the swab on your teeth and under your tongue.

2. Stab one Synder agar deep with your swab and push all the way to the bottom. Leave the swab in the tube. NOTE: If the swab is too long, either break off or cut off the tip so the tube cap fits securely on the tube.
3. Label the tube and place it in the test tube rack for incubation for at least 24 hours.

DAY 2

1. Remove your tube from the incubation rack and observe the color of the medium.
2. Record your results

Safety and disposal:

Remove tape from your test tubes and place them on the cart at the front of the class for sterilization and disposal.

Observations:

	Hours of Incubation		
Caries Potential	**24**	**48**	**72**
Marked	Positive	…	…
Moderate	Negative	Positive	…
Slight	Negative	Negative	Positive
Low	Negative	Negative	Negative

	Color of Snyder Agar Deep			
	24 hr	**48 hr**	**72 hr**	**Caries Susceptibility**

Questions:

1. What type of medium is Snyder agar?

2. How do some oral bacteria contribute to dental caries?