

## Streptococcus viridans

*Streptococcus viridans* is a term for a large group of commensal Streptococcal bacteria that possess no lancefield antigens. These bacteria are gram-positive cocci that are catalase-negative and alpha-hemolytic. They can be differentiated from *Streptococcus pneumoniae* by optochin resistance and no bile solubility. The organisms are most abundant in the mouth as normal flora. One member of the group, *S. mutans*, is associated with dental caries. If they are introduced into the bloodstream, they have the capacity to cause subacute bacterial endocarditis, especially in individuals with previously damaged heart valves, due to a unique ability to synthesize dextrans. The dextrans allow the organisms to adhere to fibrin-platelet aggregates present on damaged heart valves.



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### Characteristics

#### Gram-Positive

[Graham-cracker Positive-angel](#)

This organism stains positive on Gram stain due to thick peptidoglycan layer which absorbs crystal violet.

#### Cocci

[Cockeyed](#)

This bacterium has a spherical shape.

#### Catalase-Negative

[Negative-cat](#)

Characteristically, *Streptococcus viridans* is catalase-negative, which is helpful in distinguishing *Streptococcus* from *Staphylococcal* species that are catalase-positive.

#### Alpha-Hemolytic

[Alpha Afro](#)

This bacteria is alpha-hemolytic, which causes dark green colonies on blood agar. It is caused by hydrogen peroxide produced by bacterium, which oxidizes hemoglobin to green methemoglobin. *Strep viridans* may also be non-hemolytic (sometimes termed  $\alpha$ -hemolysis).

#### Optochin-Resistant

[Resisting Octopus wearing Resistance-bandana](#)

Optochin test aids in the differentiation between *Streptococcus pneumoniae* and *Streptococcus viridans*. *Streptococcus viridans* is optochin-resistant, meaning the growth of bacteria is not inhibited around an optochin disc, unlike *Streptococcus pneumoniae*, which is optochin-sensitive.

#### Not Bile Soluble

[No Bile sign on the bib](#)

*Streptococcus viridans* can be differentiated from *Streptococcus pneumoniae* based on sensitivity to lysis by bile. *Streptococcus pneumoniae* is bile soluble and will lyse in presence of bile, while *Streptococcus viridans* will not.

## Normal Flora of Oropharynx

### Flowers in the Mouth

The organisms are most abundant in the mouth as normal flora.

## Synthesize Dextrans from Sucrose

### Desk made from Sucker-roses

Certain strains of this bacteria (*S. Sanguis* and *S. Mutans*) may produce extracellular polysaccharides, also known as dextrans, by using sucrose as a substrate. Dextrans promote adherence of streptococcal bacteria to fibrin which is a factor of causing subacute bacterial endocarditis.

## Disease

### Dental Caries

#### Dental Cavities

*S. mutans* is associated with dental caries.

### Subacute Bacterial Endocarditis

#### Sub Bacteria-guy with In-donut-heart-cards

If organisms are introduced into the bloodstream, they have the capacity to cause endocarditis, especially in individuals with previously damaged heart valves, due to a unique ability to synthesize dextrans. The dextrans allow the organisms to adhere to fibrin-platelet aggregates present on damaged heart valves.