

## Streptococcus Bovis

The *Streptococcus bovis* complex is a species of bacteria that are classified under Lancefield Group D Streptococcus (GDS), which is a group of catalase-negative, gram-positive cocci that share common bacterial antigens. Unique characteristics of *Streptococcus bovis* include an ability to grow in bile but not in 6.5% NaCl. These characteristics are important in differentiating *S. bovis* from other gram-positive species. *S. bovis* is an important cause of bacteremia and infective endocarditis in adults, and is also a less common cause of spontaneous bacterial peritonitis and urinary tract infections. Importantly, there is a strong association between GDS/ *S. Bovis* infection and colonic neoplasm as well as liver disease, though it is important to note that the presence of GDS is only associated with and not a cause of these conditions.



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### Characteristics

#### Group D Streptococci

##### D-Daisy Stripper-bacteria

*Streptococcus bovis* is classified as Group D Streptococcus, as it expresses the Lancefield D antigen. Lancefield Grouping is a classification system applied specifically to coagulase negative, catalase negative bacteria based on the composition of the carbohydrate antigens on their cell wall.

#### Catalase-Negative

##### Negative-Cat

*S. bovis* is catalase-negative.

#### Gram Positive Cocci

##### Cockeyed Graham-Cracker Positive-angel

*S. bovis* is a gram positive coccus that grows in pairs or chains.

#### Does Not Grow in 6.5% NaCl

##### Salt Poured on Dead Plant

*S. bovis* characteristically will not grow on 6.5% salt, which differentiates it from *Enterococcus*.

#### Grows in Bile

##### Bile-Nile

However, *S. bovis* is able to grow in bile, similar to *Enterococcus*.

### Clinical Features

#### Endocarditis

##### Donut-Heart-Card

*S. bovis* is one of the bacteria commonly isolated in blood stream infections of patients with endocarditis. In the case of endocarditis, this bacteria seeds the heart valves and creates vegetations. The exact organism is *S. gallolyticus*, but is part of the *S. bovis* complex.

### **Bacteremia Associated with Liver Disease**

#### **Bacteria In Blood Culture and Diseased Liver**

GDS bacteremia is known to be associated with various liver conditions such as cirrhosis and chronic hepatitis. It is thought that this is a result of dysfunction of the reticuloendothelial system which leads to poor bacterial clearance, thereby permitting entry of bacterial species into the circulation. For this reason, patients found to have GDS bacteremia should have a liver workup performed, including liver function tests and a hepatitis panel.

### **Bacteremia Associated with Colon Cancer**

#### **Cancerous Colon**

The association between GDS bacteremia, infectious endocarditis, and colonic neoplasia is well described. In the case of colonic neoplasm, the association is not fully understood. However, it has been suggested that it may be related to *S. bovis* (*S. gallolyticus*) binding to surface ligands that are over-expressed in colonic neoplasms.