

Serratia marcescens

Gram reaction and morphology: Gram negative bacillus

Oxygen requirement: Facultative anaerobe

Habitat and human pathogenicity: It has been known to be widely distributed in soil and water. However, it is not uncommon to find it in the intestines of humans. It can even be associated as a pathogenic organism to insects. Over the years, it has become increasingly popular as an organism associated with nosocomial infections including, but not limited to, pneumonia and septicemia. Recently, it has been linked to nosocomial infections in certain hospitals and as a major contaminant in flu vaccine, contributing to the flu vaccine shortage. Furthermore, it has also been found in urinary tract and wound infections. Major factors that are involved with the development of *Serratia* infections include poor catheterization techniques and contamination of respiratory equipment. A major complication of infections caused by *Serratia* is secondary bacteremia, which is a common complication found in other enteric infections.

Modes of transmission: Its modes of transmission include droplet transmission and direct contact.

Biochemical and cultural characteristics: *S. marcescens* produces a red pigment that can be seen when grown on rich media types such as Tryptic Soy Agar. It is known that the red pigment can be enhanced with incubation at room temperature. The following are biochemical tests that are used in the identification and differentiation of *Serratia marcescens*:

<u>Test</u>	<u>Result</u>
Motility	+
Lysine decarboxylase	+
Ornithine decarboxylase	+
DNase	+
Lactose Fermentation	-
Arabinose Fermentation	-
Hydrogen sulfide production	-
Citrate utilization	+

Small Fact: *Serratia marcescens* was once thought to be a harmless organism. It was thought to be so harmless that in the 1950s, in an attempt to study the transmission of potential biological weapons through wind currents, balloons filled with *Serratia marcescens* were sent over San Francisco and popped. Consequently, doctors found that there were increased rates of pneumonia and urinary tract infections following this balloon experiment.