Physical and Chemical Warfare between Streptococcus mutans and Streptococcus sanguinis

Ansari, Urooj

Streptococcus mutans and Streptococcus sanguinis are two bacteria that compete for limited tooth surface. This study was done to determine which one was stronger. Through experimentation, it was determined that it was S. mutans. It survived in all tested pHs and it’s growth wasn’t affected by time. In terms of chemistry, S. mutans releases lactic acid, which kills off S. sanguinis and prevents new bacteria from growing. S. mutans isn’t affected at all by ammonia, the defense mechanism of S. sanguinis, making it inefficient. In terms of physical forces, S. sanguinis has one advantage due to the motor protein pilT, found in the type four pili. This allows the bacteria to move around. When both bacteria were grown in one well of a six-well plate, there was a noticeable difference in the amount of colonies, indicating that pilT played a role. Before every experiment, all bacterial colonies were made smaller through sonication.This was done to reduce all inconsistencies that may occur due to the different chain lengths. All bacteria were also overfed to observe the effect of overeating on bacterial growth. It was determined that it makes the bacteria grow at a much faster speed, which may either be harmful or beneficial, depending on which bacteria is consuming more. If a way to make S. sanguinis stronger could be determined, eliminating cavities could soon become a reality.

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