

## CHARACTERIZATION OF *Streptococcus uberis* BIOFILM FORMATION IN VITRO CHRONIC MASTITIS-CAUSING IN DAIRY COWS

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### ABSTRACT

Mastitis is an inflammation of the mammary gland and is extremely problematic in the dairy industry. *Streptococcus uberis* is one of the main infectious agents responsible for causing mastitis. We speculate that one of the reasons behind the prevalence of *S. uberis* infections is its ability to form biofilms. The objectives of this study were to determine in vitro slime production, biofilm formation and the presence of extracellular matrix associated with biofilm production, we also observed the effect of casein, lactoferrin and skim milk in the biofilm production. Twenty four strains of *S. uberis* isolated from the chronic mastitic cows and were tested by microtiter plate (MP), Congo Red Agar (CRA) and Scanning Electron Microscopy (SEM). The MP methods were used to observed the effect of casein, lactoferrin and skim milk in the biofilm production. *Staphylococcus epidermidis* ATCC 12228, was used as a negative control *Staphylococcus aureus* ATCC 25923 and *Staphylococcus simulans* ATCC 27851 was used as positive control. Of the 24 *S. uberis* strains were show positive result in slime production using CRA method. All 24 strain also displayed a biofilm-phenotype when tested by MP. The strains were further classified as weak (56 %) and strong (44 %) biofilm formers. Casein and skim milk 100 % can induce biofilm production of *S. uberis*, while lactoferrin did not. In summary, *S. uberis* is capable of forming biofilms in vitro on an abiotic surface. The economic impact of Understanding the virulence factors that influence *S. uberis*'s ability to colonize and maintain infections will ultimately allow for effective and appropriate treatment protocols that could greatly decrease the impact of mastitis caused by this pathogen in the dairy industry.

*Key word: Streptococcus uberis, biofilm formation, Lactoferrin, Casein*