Characterization of Biofilm Production of Staphylococcal aureus Isolates of Veterinary Origin

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An opportunistic pathogen responsible for significant morbidity and mortality in clinical settings in humans and animals is known as Staphylococcus aureus. This emerging pathogen is among the top three nosocomial pathogens in human and veterinary hospitals due to its ability to survive in these environments for long periods. This survival is likely the result of S. aureus's production of biofilm: a protective matrix of bacterially secreted proteins that allow colonies to attach to environmental surfaces. Preventing and controlling this pathogen, specifically within small animal veterinary hospitals, becomes critical for two reasons. One, the presence of this pathogen increases the risk of animals developing a hospital-acquired infection. Two, this pathogen poses an occupational risk to veterinary hospital staff. Therefore, it is important to know the biofilm production potential and characteristics of S. aureus isolates in these animal facilities. This information can be used to more effectively prevent or control a uniquely natured biofilm-producing S. aureus. To quantify biofilm production potential, S. aureus isolates obtained during seven-year surveillance of a veterinary hospital will be tested using the crystal violet (CV) assay. Currently, the CV protocol is being standardized and validated. Then, we will screen approximately 30 veterinary isolates. The collected biofilm production data of these isolates will be combined with corresponding epidemiological information to better understand the potential role of biofilm production in the ecology and epidemiology of S. aureus in veterinary hospitals. By taking into consideration the unique nature of their biofilms revised and enhanced cleaning and disinfecting protocols can be created to ensure the safety of patients and hospital staff. In conclusion, we believe that S. aureus isolates that survive long term in animal hospitals can do so because of their ability to produce biofilm and we will test this theory by quantifying biofilm production of previously obtained isolates.