**ABSTRACT**

The presence of *Staphylococcus aureus* toxins was determined via Polymerase Chain Reaction and Gel Electrophoresis. Results were compared to positive and negative controls.

**BACKGROUND**

*S. aureus*, a gram positive coccobacteria, can be both a pathogen and commensal organism to humans, and is found on the skin, nasal cavity, and in the vaginal canal. Our study obtained samples from the nasal cavity of volunteers from Concordia University, Saint Paul campus (35.6% carriage rate), and the Minnesota State Fair (26% carriage rate). *S. aureus* produces a variety of toxins that are harmful to humans, and the purpose of this study was to determine if our samples produced some of these toxins (SEC1, TSST-1, alpha toxin, SEA, SEL-X).

**METHODOLOGY**

Polymerase Chain Reaction (PCR) was used to amplify the DNA of samples using a repeating process of denaturing, annealing, and synthesis. Each of the different toxins have separate thermocycler programs.

Reagents included in PCR:
- TAG Polymerase
- Forward and Reverse Primers Specific to the Toxins
- Nuclease Free Water
- DNA from Samples Extracted via Blotting

After PCR, the samples were loaded onto a 2% agarose gel, and were separated by molecular weight via gel electrophoresis and imaged through the use of Bio–Rad Gel Imager.

**RESULTS**

Samples were obtained from participants from different locations, and the Carriage rate was determined. Our study obtained samples from the nasal cavity of volunteers from Concordia University, Saint Paul campus (35.6% carriage rate), and the Minnesota State Fair (26% carriage rate). *S. aureus* produces a variety of toxins that are harmful to humans, and the purpose of this study was to determine if our samples produced some of these toxins (SEC1, TSST-1, alpha toxin, SEA, SEL-X).

**REFERENCES**


**ACKNOWLEDGEMENTS**

Special thanks to Dr. Patrick Schiavetto (University of Iowa) for helpful conversations. This research was partially funded by the CSP Faculty Development Grants. This work has IRB approval from CSP (2016_40 & 2018_371).