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ABSTRACT

The purpose of this study is to determine whether the toxin TSST-1 is in several *S. aureus* strains. Genomic prep was done to isolate the DNA from the strain, PCR was performed to amplify the gene, and DNA gel electrophoresis was performed to show whether it contained the toxin.

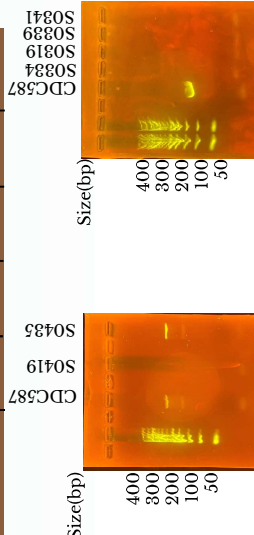
BACKGROUND

TSST-1 is a superantigen that leads to toxic shock syndrome. The immune system involves interactions between an antigen and B and T cells. The immune response is specific, therefore, the T cell for the immune response has to be specific to that antigen. However, superantigens force the interactions between an antigen presenting cell and the T cell to occur, leading to excessive cytokines and chemokines in the system, which leads to low blood pressure, shock, chills, fever in the body and sometimes death. If a *S. aureus* strain makes TSST-1 then it can lead to the complications mentioned above.

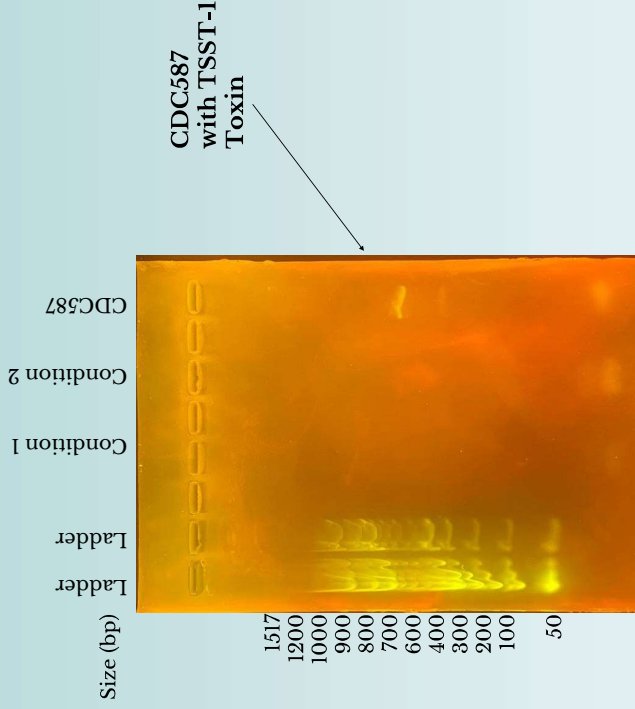
STRAIN RESULTS

Positive Control: CDC587

Positive for TSST-1	S0435			
Negative for TSST-1	S0419	S0334	S0319	S0339
	S0341	S0339	S0341	S0341



TSST-1 in Various *Staphylococcus aureus* Strains Known to Cause Infection or Disease in the Human Body



Condition 1: 12.5µL taq green. 2.5µL Forward primer. 2.5µL of reverse primer, 7.5µL of nuclease free water

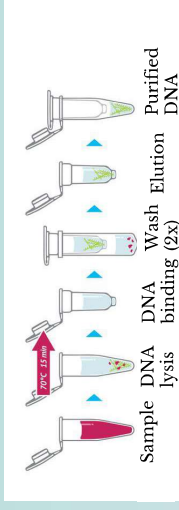
Condition 2: 12.5µL of taq green. 2.5µL of forward primer. 2.5µL of reverse primer. No nuclease free water.

CONCLUSION

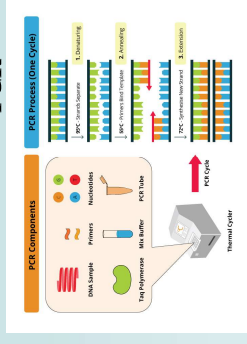
Superantigen toxin TSST-1 can lead to toxic shock syndrome by forcing the interaction between the antigen and the T cell for the immune response. The *S. aureus* strains were tested TSST-1 and out of 6 strains 1 displayed the toxin. Future research can test more strains and determine if the toxin is being expressed.

METHODOLOGY

Genomic Prep

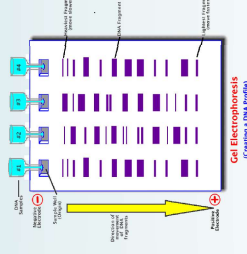


PCR



1. Denature: At 95°C breaking the hydrogen bonds
2. Anneal: At 57°C so primers can bind to each strand
3. Extension: At 74°C so DNA polymerase can synthesize new DNA
4. Repeat steps 30 times
5. Final extension for 5 minutes

DNA Gel Electrophoresis



ACKNOWLEDGEMENTS

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