

Comparative Verification of Staphylococcal Related Enterotoxin in *Staphylococcus aureus* Study Samples

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Abstract

- Sample isolates were previously characterized and classified as positive for *S. aureus*
- Purpose of the study is to identify any *S. aureus* related enterotoxins in our sample isolates by expressing the DNA through a polymerase chain reaction

Methods

- Superantigen positive control: SEA
- Streak collected sample isolates onto Tryptic Soy Agar plates
- Run Polymerase Chain Reaction for collected isolates and controlled isolates
- Run gel electrophoresis with 2% agarose gel

Results

- PCR and gel electrophoresis verified the presence of the SEA toxin in six of the twelve *S. aureus* isolates

Discussion

- Successful PCR results includes a band for the positive control, no bands for the negative control and a DNA ladder.
- Additional research should be done to test for other superantigens known to be produced in *S. aureus*.

Validating the Presence of the SEA Enterotoxin in *Staphylococcus aureus* Sample Isolates: The Communal Concern of a Widespread Enterotoxin Carriage Amongst *S. aureus* Strains

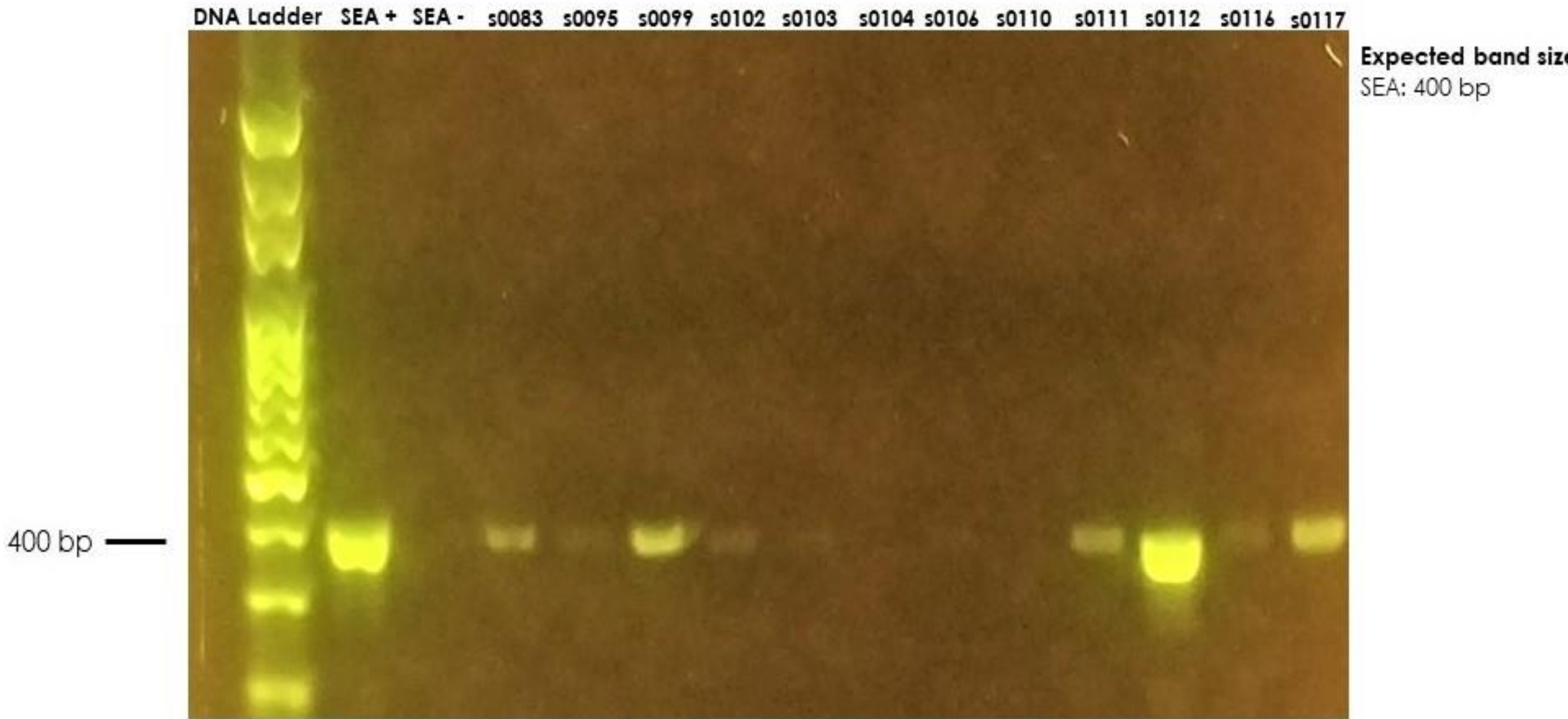


Figure 2: SEA Toxin PCR Verification

Lane 1: Standard DNA ladder. Lane 2: Positive Control SEA toxin. Lane 3: Negative Control SEA toxin. Lane 4-15: Tested *Staphylococcus aureus* isolates.

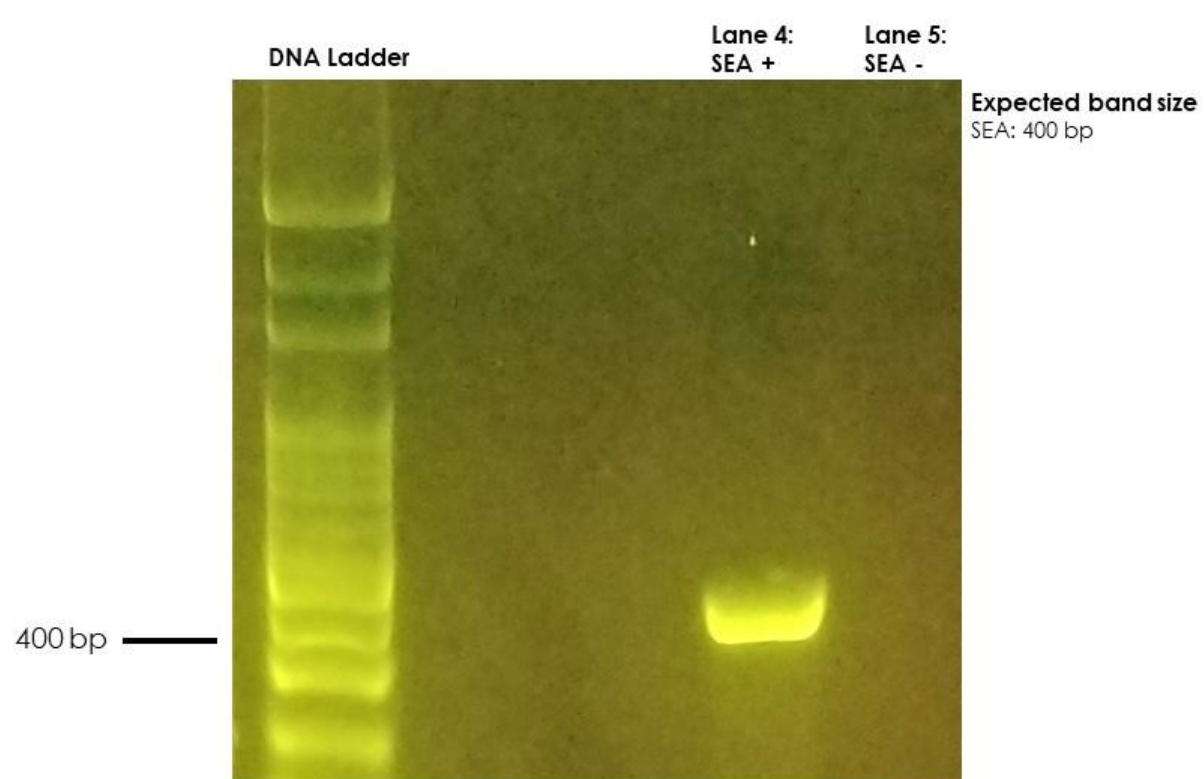


Figure 1: Positive Control Verification: SEA toxin
Lane one: standard DNA Ladder. Lane 2: positive control SEA toxin. Lane 3: negative control SEA toxin.

Isolate Number (s0###)	SEA Toxin (+/-)
s0083	+
s0095	-
s0099	+
s0102	-
s0103	-
s0104	-
s0106	-
s0110	-
s0111	+
s0112	+
s0116	+
s0117	+

Table 1: SEA Toxin PCR Results
Highlighted green and bolded isolate strains denote positive for SEA toxin.

- SEA superantigen is closely associated with food poisoning and toxic shock syndrome (1).
- Staphylococcal related enterotoxin are highly resistant to antibiotics and denaturing (1).
- SEA enterotoxin related diseases have short incubation periods and are often found in contaminated food and milk (1).
- SEA toxin superantigen can stimulate T cell activation, release excessive amounts of cytokine, and eventually lead to organ/tissue damage due to the body's systematic inflammatory response (2).

Acknowledgments/References

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(2) M. Landgraf, M. T. Destro, *Staphylococcal food poisoning. Foodborne Infections and Intoxications*. 4, 389-400 (2013).