Distribution of food-borne *Staphylococcus aureus* enterotoxin genes

W.D. Hu

Vocational and Technical College of Inner Mongolia Agricultural University, Baotou, China

Corresponding author: W.D. Hu
E-mail: huwdvtc@163.com

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ABSTRACT. We identified and analyzed 5 new-type enterotoxin genes, including SEj, SEi, SEq, SEm, and SER, to explore the distribution of 5 enterotoxin genes in *Staphylococcus aureus* of different origins as well as their correlations and differences. We examined the distribution of the *S. aureus* enterotoxin genes and their pathogenic mechanisms. A total of 660 specimens were collected from January 2011 to December 2014, and 217 strains of *S. aureus* were isolated. The template DNA of *S. aureus* was extracted. The Primer6.0 and Oligo7 software were used to design and synthesize polymerase chain reaction primers. Amplification results were analyzed by electrophoresis, and the amplification products were recovered and sequenced. Thirty-six bacterial strains contained the SEj gene (16.6%), including 15, 8, 8, 4, and 1 strains in fresh meat, quick-frozen food, raw milk, human purulent tissue, and living environment, respectively. Thirty-one bacterial strains contained the SER gene (14.3%), including 16, 9, and 6 strains in fresh meat, quick-frozen food, and raw milk, respectively. Twenty-one bacterial strains contained the enterotoxin SEq gene (9.7%), including 8, 6, 6, and 1 strains in fresh meat, quick-frozen food, raw milk, and human purulent tissue, respectively. No SEm and SEi genes were detected. Different types of foods carry different types of enterotoxins, providing a basis for quick tracing for food poisoning.
Three enterotoxin genes, \( SE_j \), \( SE_r \), and \( SE_q \), showed the highest carrier rate in quick-frozen food. It is imperative to improve their detection in quick-frozen food.

**Key words:** New-type enterotoxin gene; *Staphylococcus aureus*; Gene; Food contamination