

ABSTRAK

Deteksi Gen Penyandi *Classical Staphylococcal enterotoxin* pada *Staphylococcus aureus* Isolat Asal Hewan dan Manusia

Dheavy Kusuma Wardhani Patma Putri
19/445420/KH/10189

Angka kasus keracunan pangan di dunia selalu meningkat, penyebabnya adalah *Staphylococcal enterotoxin* yang dihasilkan oleh *Staphylococcus aureus*. Penelitian ini bertujuan untuk mendeteksi keberadaan gen penyandi *classical enterotoxin Staphylococcus aureus* pada isolat hewan dan manusia menggunakan teknik *multiplex Polymerase Chain Reaction (PCR)*.

Sebanyak 10 *S. aureus* isolat asal hewan yang digunakan dalam penelitian ini berasal dari Laboratorium Patologi Klinik FKH UGM, dan 10 *S. aureus* isolat asal manusia diperoleh dari Laboratorium Patologi Klinik FK UGM. Semua isolat diidentifikasi secara genotip dengan PCR. Gen enterotoksin *S.aureus* kemudian dianalisis menggunakan teknik *multiplex PCR*. Larutan 25 ul untuk PCR terdiri dari 2 ul primer *forward* (10pmol/ul), 2 ul primer *reverse* (10 pmol/ul), 12,5 ul PCR mix, 6,5 ul ddH₂O dan 2 ul 20-40 ng DNA *template*. Program *thermal cycler* digunakan sesuai dengan referensi untuk setiap gen yang diamplifikasi. Hasil amplifikasi dianalisis menggunakan elektroforesis dengan agarose 2% dan *Red Safe*, kemudian divisualisasikan dengan transiluminator UV dibandingkan dengan kontrol dan penanda 1 Kb DNA *Ladder*. Semua isolat hewan dan manusia secara genotip positif untuk gen *23S rRNA*, menunjukkan isolat *S. aureus*.

Identifikasi gen enterotoksin menunjukkan bahwa *S. aureus* isolat asal manusia mengandung gen enterotoksin *sec* (80%), *seh* (60%), dan *seg* (20%). 10 *S. aureus* isolat asal hewan mendeteksi gen *seh* (100%), dan *sec* (80%). 10 *S. aureus* isolat asal manusia yang diisolasi mengandung kombinasi gen *se(c,h)* 50%, *se(c,g)*10%, *se(c,g,h)*10% dan pada isolat asal hewan gen *se(c,h)* 80%. Pada penelitian ini, gen enterotoksin yang paling sering terdeteksi adalah gen *sec* dan *seh*.

Keywords: *Staphylococcus aureus*, *classical enterotoxin*, gen, *multiplex PCR*

ABSTRACT

Detection of *Staphylococcal Enterotoxin Coding Genes in *Staphylococcus aureus* Isolates of Animal and Human.*

Dheavy Kusuma Wardhani Patma Putri
19/445420/KH/10189

The number of cases of food poisoning in the world is continuously increasing. *Staphylococcal enterotoxin* is the cause of food poisoning in humans and animals. One of the bacteria that produces enterotoxin is *Staphylococcus aureus*. This study aimed to detect the presence of the gene encoding the classical enterotoxin *Staphylococcus aureus* in animal and human isolates using the multiplex Polymerase Chain Reaction (PCR) technique.

A total of 10 *S. aureus* animal isolates used in this study were derived from the Clinical Pathology Laboratory of Faculty of Veterinary Medicine UGM, and 10 *S. aureus* human isolates were obtained from the Clinical Pathology Laboratory of Faculty of medicine UGM. All isolates were genotypically identified by PCR.

The enterotoxin gene of *S. aureus* were then analysed using a multiplex PCR technique. The 25 ul solution for PCR consist of 2 ul forward primer (10pmol/ul), 2 ul reverse primer (10 pmol/ul), 12,5 ul PCR mix, 6,5 ul ddH₂O and 2 ul 20-40 ng DNA template. The thermal cycler program were used according to the references for each amplified genes. The amplification result were analyzed using electrophoresis with 2% agarose and Red Safe, and then visualized with a UV transilluminator compared to the control and 1 Kb DNA Ladder marker. All animal and human isolates were genotypically positive for 23S *rRNA* gene, indicating *S. aureus* isolates.

The identification of *enterotoxin* genes showed that *S. aureus* human isolates contained enterotoxin *sec* (80%), *seh* (60%), and *seg* (20%) genes. *Staphylococcus aureus* animal isolates detected the *seh* (100%), and *sec* (80%) genes. *Staphylococcus aureus* human isolated contained a combination of genes of *se(c,h)* 50%, *se(c,g)*10%, *se(c,g,h)*10% and in animal isolates the gene *se(c,h)* 80%. In this study, the most frequently detected enterotoxin genes were the *sec* and *seh* genes.

Keywords: *Staphylococcus aureus*, classical enterotoxin, genes, multiplex PCR