Deteksi Gen mecA dan femA pada Staphylococcus aureus dari Sampel Udara Mesin Pengering Tangan di Pusat Perbelanjaan Tangerang Selatan = Detection of mecA and femA Genes in Staphylococcus aureus from Hand Dryer Air Samples at Shopping Centers South Tangerang

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Abstrak

Penggunaan methicillin yang tidak terkendali dapat menyebabkan munculnya strain resistan S. aureus, yaitu Methicillin-resistant Staphylococcus aureus (MRSA) dengan gen utama pengode resistansi mecA dan femA. Terdapat tiga strain MRSA: Healthcare-associated (HA-MRSA), Livetock-associated (LA-MRSA) dan Community-associated (CA-MRSA). Salah satu media yang berpotensi untuk mentransmisikan mikroorganisme patogen MRSA di masyarakat adalah aliran udara mesin pengering tangan di pusat perbelanjaan. Bakteri dari aliran udara tersebut diisolasi dengan medium Mannitol Salt Agar (MSA) menggunakan metode settle plate. Isolat yang tumbuh terpisah dan mengubah warna medium dari merah menjadi kuning kemudian dikonfirmasi dengan multiplex PCR menggunakan primer gen mecA dan femA serta 16S rRNA (STPY). Hasil penelitian mendapatkan sembilan isolat MRSA karena positif terhadap gen 16S rRNA (STPY) dengan gen resistan mecA atau mecA dan femA. Tiga isolat lainnya dianalisis dengan metode singleplex PCR menggunakan gen 16S rRNA universal (27F dan 1492R) dan kemudian dilakukan sekuensing DNA sehingga terdeteksi sebagai S. cohnii dan S. saprophyticus. Keberadaan kedua bakteri tersebut menandakan bahwa aliran udara mesin pengering tangan di pusat perbelanjaan berpotensi memaparkan mikroorganisme patogen resistan antibiotik karena intensitas pemakaian dan pemaparan langsung melalui udara ke tangan pengguna (komunitas).
.....The uncontrolled use of methicillin can lead to the emergence of resistant strains of S. aureus, specifically Methicillin-resistant Staphylococcus aureus (MRSA), characterized by the presence of the primary resistance-coding genes mecA and femA. There are three MRSA strains: Healthcare-associated (HA-MRSA), Livestock-associated (LA-MRSA), and Community-associated (CA-MRSA). One potential medium for transmitting MRSA pathogenic microorganisms in the community is the airflow from hand dryers in shopping centers. Bacteria from this airflow were isolated using Mannitol Salt Agar (MSA) through the settle plate method. Isolates that grew separately and changed the color of the medium from red to yellow were then confirmed using multiplex PCR with mecA, femA, and 16S rRNA (STPY) genes as primers. The research results revealed nine MRSA isolates that tested positive for the 16S rRNA (STPY) gene, with either mecA or both mecA and femA resistance genes. Three other isolates were analyzed using the singleplex PCR method with universal 16S rRNA genes (27F and 1492R) and then underwent DNA sequencing, identifying them as S. cohnii and S. saprophyticus. The presence of these two bacteria indicates that the airflow from hand dryers in shopping centers has the potential to expose antibiotic-resistant pathogenic microorganisms to users' hands in the community due to the intensity of usage and direct exposure through the air.