ABSTRAK

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ANALISIS GEN RESISTENSI ANTIBIOTIK DARI *Lactiplantibacillus plantarum* F75 DAN *Lactiplantibacillus plantarum* SU-KC 1a
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(xvi + 82 halaman; 9 total gambar; 4 tabel; 30 lampiran)

Resistensi antibiotik merupakan salah satu tantangan kesehatan terpenting di masa sekarang. Munculnya bakteri yang resisten terhadap berbagai obat antibakteri telah menyebabkan peningkatan yang signifikan dalam jumlah penyakit dan kematian manusia. Penggunaan antibiotik secara berlebih dan tidak tepat dapat mendorong munculnya sifat resistensi antibiotik pada berbagai bakteri. Salah satu jenis bakteri asam laktat, *Lactiplantibacillus plantarum* telah lama digunakan sebagai probiotik. Akan tetapi penggunaan probiotik dalam produk makanan dikhawatirkan dapat menjadi perantara penyebaran gen resistensi antibiotik ke manusia. Tujuan penelitian ini adalah untuk mengetahui fenotip dan genotip resistensi dari *Lpb. plantarum* F75 yang berasal dari tembolok ayam dan *Lpb. plantarum* SU-KC 1a yang berasal dari air susu ibu. Oleh karena itu, dilakukan uji resistensi terhadap 25 jenis antibiotik dengan metode *Kirby-Bauer Disc Diffusion.* Kedua strain resisten terhadap *vancomycin, cefoxitin, methicillin, oxacillin, tetracycline, lincomycin, mupirocin, nalidixic acid,* dan *ofloxacin.* Selain itu, *Lpb. plantarum* F75 memiliki resistensi tambahan terhadap *tiamulin*. Melalui analisis bioinformatika, ditemukkan juga adanya gen yang memberikan sifat resistensi terhadap antibiotik tersebut. Akan tetapi, gen resistensi terhadap antibiotik *methicilin* dan *oxacillin* tidak ditemukkan, sehingga diduga terdapat gen yang belum diketahui dan dijelaskan yang dapat berkontribusi terhadap sifat resistensi tersebut. Selain itu, tidak ditemukkan adanya *plasmid* ataupun *transposable element* dalam genom kedua bakteri.

Kata Kunci : Resistensi Antibiotik, Gen, *Lactibacillus plantarum* spp.

Referensi : 119 (1995 - 2022)

ABSTRACT

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ANTIBIOTIC RESISTANCE GENE ANALYSIS OF *Lactiplantibacillus plantarum* F75 AND *Lactiplantibacillus plantarum* SU-KC 1a
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Antibiotic resistance is one of the biggest threats to global health today. The emergence of bacteria that are resistant to various antibacterial drugs has led to a significant increase in the number of diseases and deaths. Excessive and inappropriate use of antibiotics may trigger the emergence of resistance in various bacteria. *Lactiplantibacillus plantarum*, a type of lactic acid bacteria, has long been used as a probiotic. However, the use of probiotics in food products is concerned to become the mediator for the spread of antibiotic resistance genes to humans. The purpose of this study was to discover the phenotype and genotype resistance of *Lpb. plantarum* F75 derived from chicken crop and *Lpb. plantarum* SU-KC 1a derived from human breast milk. Antibiotic susceptibility tests for 25 antibiotics were determined for both *Lpb. plantarum* spp. isolates by the Kirby-Bauer disc diffusion method. Both strains exhibit resistance against vancomycin, cefoxitin, methicillin, oxacillin, tetracycline, lincomycin, mupirocin, nalidixic acid, and ofloxacin. *Lpb. plantarum* F75 exhibits another resistance against tiamulin. Bioinformatics analysis revealed the presence of several genes that confer resistance to these antibiotics. However, genes responsible for methicillin and oxacillin resistance were not found, thus it is suspected that there may be underlying resistance mechanisms or genes that have not been described so far which may contribute to the resistance profile. In addition, no plasmid or transposable elements were found in the genomes of both bacteria.

Keywords : Antibiotic Resistance, Gene, *Lactiplantibacillus plantarum* spp.

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