ABSTRAK

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IDENTIFIKASI DAN KARAKTERISASI ISOLAT SU-KC1a DARI AIR SUSU IBU

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(xii+ 65 halaman; 13 gambar; 7 tabel; 17 lampiran)

Telah diketahui bahwa bifidobakteria dan *Lactobacillus* sp. termasuk *L. plantarum* merupakan probiotik yang dapat diisolasi dari air susu ibu (ASI). Penelitian ini bertujuan untuk mengidentifikasi serta mengkarakterisasi isolat SU-KC1a, SU-KC2, dan SU-KC3 yang berasal dari ASI, dan mengevaluasi potensi sebagai probiotik. Metode pada penelitian ini terdiri dari: pemurnian isolat menggunakan media mTPY (*mupirocin-trypticase phytone yeast extract*) secara anaerobik obligat pada suhu 37 ^{o}C selama 72 jam; identifikasi morfologi dengan pewarnaan Gram dan *acid-fast*, uji aktivitas enzim katalase dengan menggunakan H_2O_2 (3%) dan uji motilitas agar pada tabung agar mTPY; serta uji potensi sebagai probiotik berupa uji ketahanan garam empedu dengan konsentrasi 0,5% - 2% pada media agar mTPY, uji kerentanan terhadap 13 antibiotik dengan metode *paper disc* dan uji aktivitas antimikroba dengan metode *well-diffusion*. Identifikasi molekular dilakukan dengan *sequencing* 16S-rRNA dan dianalisis menggunakan BLAST. Berdasarkan hasil yang didapatkan, ketiga isolat memiliki karakterisik Gram-positif, *acid-fast* negatif, morfologi sel yang basil pendek, *non-motile*, dan katalase negatif. Uji potensi probiotik ketiga isolat menunjukkan tahan pada garam empedu 0,5% - 2%, kerentanan pada 7 antibiotik (*ampicillin*, *amoxicillin*, *erthromycin*, *chloramphenicol*, *rifampin*, dan *neomycin*) dan 6 resisten (*bacitracin*, *vancomycin*, *streptomycin*, *kanamycin*, *Nalidix acid*, dan *tetracycline*). Uji aktivitas antimikroba menunjukkan penghambatan terhadap *E. coli* dan *S. aureus*. Berdasarkan hasil identifikasi molekular 16S rRNA, isolat SU-KC1a, SU-KC2 dan SU-KC3 merupakan *strain* yang identik, yaitu *Lactiplantibacillus plantarum*. Dapat disimpulkan, bahwa isolat SU-KC1a berpotensi sebagai probiotik, namun masih diperlukan penelitian lebih lanjut untuk digunakan sebagai probiotik.

Kata Kunci : Air susu ibu, probiotik, antibiotik, *Lactiplantibacillus plantarum*

Referensi : 84 (2021 - 1965)

ABSTRACT

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IDENTIFICATION AND CHARACTERIZATION SU-KC1a ISOLATE FROM HUMAN BREAST MILK

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(xii+65 pages; 13 figures; 7 tables; 17 appendices)

It is known that bifidobacteria and *Lactobacillus sp.* such as *L. plantarum* are probiotics which can be isolated from human breast milks. This study aims to identify and characterize SU-KC1a, SU-KC2, and SU-KC3 isolates derived from breast milk, and evaluate their potential as probiotics. The methods in this study consisted of: purification of isolates using mTPY (mupirocin-trypticase phytone yeast extract) media in obligate anaerobic way at 37 ^{o}C for 72 hours; morphological identification with Gram and acid-fast staining, test for catalase enzyme activity using H_2O_2 (3%) and agar motilation test on mTPY agar tubes; the probiotic potential test were evaluated through bile salt resistance test with concentration of 0.5% - 2% on mTPY agar media, the susceptibility test to 13 antibiotics using the paper disc method and the antimicrobial activity test using the well-diffusion method. Molecular identification was performed by 16S-rRNA sequencing and analyzed using BLAST. Based on the results obtained, the three isolates were Gram-positive, acid-fast negative, cell morphology with short bacilli, non-motile, and catalase negative. The evaluation of potential probiotic of the three isolates showed resistance to 0.5%-2% bile salts, susceptibility to 7 antibiotics (ampicillin, amoxicillin, erthromycin, chloramphenicol, rifampin, and neomycin) and 6 resistance (bacitracin, vancomycin, streptomycin, kanamycin, Nalidix acid and tetracycline). Antimicrobial activity test showed a zone of inhibition to *E. coli* and *S. aureus*. Based on the results of the molecular identification of 16S rRNA, SU-KC1a, SU-KC2 and SU-KC3 isolates were identical strains, which is *Lactiplantibacillus plantarum*. Therefore, it can be concluded that the SU-KC1a isolate can potentially be used as a probiotic. However, further research is required to support this claim.

Keywords : Breast milk, probiotic, antibiotics, *Lactiplantibacillus plantarum*

References : 84 (2021 - 1965)