

ABSTRAK

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ISOLASI DAN IDENTIFIKASI BAKTERI *Bifidobacterium* sp. DARI FESES BAYI

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(xiii + 49 halaman; 6 gambar; 7 tabel; 5 lampiran)

Bifidobacterium sp. adalah bakteri asam laktat (BAL) yang memiliki potensi sebagai probiotik. Salah satu sumber isolasi bakteri *Bifidobacterium* sp. adalah feses bayi terutama yang rutin mendapat asupan ASI. Penelitian mengenai isolasi *Bifidobacterium* sp. di Indonesia masih minim sehingga penelitian ini penting untuk dilakukan, dan selanjutnya isolat *Bifidobacterium* sp. yang dievaluasi potensinya menjadi probiotik. Penelitian ini dilakukan dalam beberapa tahap yaitu: Pengambilan sampel feses bayi, isolasi dan purifikasi kandidat *Bifidobacterium* sp., identifikasi morfologi dan karakterisasi isolat, uji biokimia fermentasi 10 jenis gula, dan identifikasi molekuler dengan *sequencing* 16S-rRNA. Isolasi bakteri didapat dengan inokulasi sampel feses bayi pada TPY dengan metode *spread* plate lalu dimurnikan sebanyak tiga kali. Pengamatan morfologi sel dan karakterisasi isolat dilakukan dengan pewarnaan Gram, uji katalase, dan uji motilitas. Uji aktivitas biokimia dengan fermentasi 10 jenis gula (laktosa, sukrosa, arabinosa, sorbitol, galaktosa, mannosa, *starch*, mannitol, maltosa, dan D-xylose). Dari hasil isolasi, terdapat 5 koloni Gram positif dengan morfologi yang bervariasi antara *small rods* (BR1-M1, BR1-B1), bifid (BR2-5), dan basil panjang (BR2-6, BR2-12). Uji katalase dan motilitas pada kelima isolat menunjukkan hasil negatif. Uji biokimia fermentasi gula menghasilkan 4 kandidat *Bifidobacterium* sp. yang memiliki profil fermentasi gula yang sesuai dengan *Bifidobacterium longum* subsp. *longum* (isolat BR2-5), *B. longum* subsp. *infantis* (isolat BR2-6), *B. breve* (BR1-M1) dan *B. adolescentis* (isolat BR1-B1, BR2-12). Analisis *sequencing* 16S-rRNA menunjukkan isolat BR2-5 identik dengan *Bifidobacterium animalis* subsp. *lactis* (*query cover*: 100%; *percentage identity*: 100%). Perbedaan hasil fermentasi gula dan *sequencing* 16S-rRNA pada isolat BR2-5 dapat disebabkan oleh perbedaan profil fermentasi antar *strain Bifidobacterium animalis* subsp. *lactis*.

Kata Kunci : Isolasi, Karakterisasi, *Bifidobacterium* sp.

Referensi : 60 (1972 - 2021)

ABSTRACT

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ISOLATION AND CHARACTERIZATION OF *Bifidobacterium* sp. FROM INFANT FECES

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(xiii + 49 pages; 6 pictures; 7 tables; 5 appendices)

Bifidobacterium sp. is a group of lactic acid bacteria (LAB) that are well known well as probiotics. Infant feces, especially breast-fed infant, is a great source of *Bifidobacterium* sp. This study is aimed to isolate and characterize *Bifidobacterium* sp. from infant feces, since there are not many research related to isolation of *Bifidobacterium* sp. in Indonesia, thus *Bifidobacterium* sp. from the isolation could be used as potential probiotic. This study is conducted in several general phases which are: Isolation and purification of *Bifidocterium* sp. from infant feces, morphology and characteriazation of isolates, Biochemical activity conducted by 10 types of sugar fermentation (lactose, sucrose, arabinose, sorbitol, galactose, mannose, starch, mannitol, maltose, and D-xylose), and 16S-rRNA sequencing. Bacteria isolation done with spread plate of feces sample on TPY then purified for three times. Morphology and characterization done by gram staining, catalase test, and motility test. The isolation exhibits 5 colonies of gram positive with various morphology such as small rods (BR1-M1, BR1-B1), bifid (BR2-5), and long rods (BR2-6, BR2-12). Catalase test and motility test show negative result. Fermentation test displays 4 candidates match with fermentation profile of *Bifidobacterium longum* subsp. *longum* (BR2-5), *B. longum* subsp. *infantis* (BR2-6), *B. breve* (BR1-M1), and *B. adolescentis* (isolat BR1-B1, BR2-12). 16S-rRNA sequencing shows that BR2-5 isolate identical with *Bifidobacterium animalis* subsp. *lactis* (query cover: 100%; percentage identity: 100%). Difference between fermentation test and 16S-rRNA from BR2-5 could be caused by variation of sugar fermentation profile from each *Bifidobacterium animalis* subsp. *lactis* strain.

Keywords : Isolation, Characterization, *Bifidobacterium* sp.

References : 60 (1972 - 2021)