ABSTRAK

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ANALISIS KANDUNGAN *Streptococcus* sp. DAN ISOLASI *Streptococcus thermophilus* PADA SUSU SAPI LOKAL

Skripsi, Fakultas Sains dan Teknologi (2021)

(xiii + 42 halaman; 5 gambar; 4 tabel; 2 lampiran)

Bakteri asam laktat (BAL) merupakan bakteri yang berpotensi sebagai probiotik dan memberikan manfaat baik bagi manusia saat dikonsumsi. BAL banyak ditemukan pada susu sapi, salah satunya adalah *Streptococcus thermophilus*. Tujuan dari penelitian ini adalah isolasi dan karakterisasi bakteri *Streptococcus* sp. dari sampel susu sapi dan menganalisis keberadaan *S. thermophilus*. Sampel susu sapi didilusi dengan larutan *peptone saline water* 0,1%. Sampel yang telah terdilusi diinokulasikan pada medium agar MRS. Koloni tunggal yang tumbuh kemudian dimurnikan berdasarkan seleksi morfologi. Masing-masing isolat diamati berdasarkan uji pewarnaan Gram, uji tahan asam, uji endospora dan uji aktivitas katalase untuk menentukan kandidat *Streptococcus* sp.. Setelah itu, dilakukan uji fermentasi beberapa jenis gula yaitu glukosa, sukrosa dan mannitol dan pengamatan produksi gas. Terakhir, dilakukan uji aktivitas hemolitik pada medium agar darah domba 7% dari masing-masing isolat. Dari inokulasi sampel susu sapi, diperoleh sebanyak 50 koloni tunggal yang diambil secara acak. Sebanyak 15 isolat kandidat bakteri yang menyerupai morfologi koloni *Streptococcus* sp.. Dari 15 isolat, didapatkan 10 kandidat yang menunjukkan hasil uji pewarnaan dan uji aktivitas katalase sesuai dengan *Streptococcus* sp.. Dari 10 isolat kandidat, terdapat dua isolat kandidat *S. thermophilus* berdasarkan uji fermentasi gula yang diwakilkan oleh kode STRP1 dan STRP4. Setelah uji aktivitas hemolitik, didapat bahwa STRP1 menunjukkan aktivitas alfa-hemolitik dan dapat berupa *S. thermophilus*. Sedangkan STRP4 menunjukkan aktivitas gamma-hemolitik yang dapat berupa *S. dysgalactiae* Sebagai kesimpulan, susu sapi dapat digunakan sebagai sumber *Streptococcus* sp. khususnya *S. thermophilus* yang dapat digunakan sebagai kandidat probiotik ataupun *starter culture* fermentasi susu.

Kata kunci: susu sapi, bakteri asam laktat, *Streptococcus* sp., *S. thermophilus*

Referensi: 48 (2009-2021)

ABSTRACT

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ANALYSIS OF *Streptococcus* sp. CONTENT AND *Streptococcus thermophilus* ISOLATION FROM LOCAL COW'S MILK
Thesis, Faculty of Science and Technology (2021)

(xiii + 42 pages; 5 pictures; 4 tables; 2 appendices)

Lactic acid bacteria (LAB) have the potential to become probiotics which gives several health benefits when consumed. Various strains of LAB can be found in cow's milk, like *Streptococcus thermophilus.* The purpose of this research is to isolate and characterize *Streptococcus* sp. strains and identify the presence of *S. thermophilus* from local cow milk. Cow milk sample was diluted with 0,1% peptone saline water. The samples were inoculated into MRS agar. Single colonies were then selected based on their corresponding. Each candidate was identified through Gram staining, acid-fast staining, endospore staining and catalase activity test to find *Streptococcus* sp. strains. The ability of each isolate to ferment different sugars such as glucose, sucrose and mannitol and gas production with Durham tubes were also tested. Lastly, the candidates were tested for their hemolysis activity on 7% sheep blood agar. From the inoculation of cow milk sample on MRS agar, 50 isolates with single colony were chosen randomly. Then 15 out of 50 candidates were chosen for their corresponding morphology with *Streptococcus* sp. strains. From 15 candidates, only 10 candidates shown similar staining and catalase activity as *Streptococcus* sp. strains. Then 2 out of 10 candidates were chosen by their ability to ferment sugar according to *S. thermophilus* strains, represented by the code STRP1 and STRP4. After their hemolysis activity were tested, STRP1 shown alpha-hemolysis while STRP4 shown gamma-hemolysis on sheep blood agar. Based on the results, STRP1 is a strong candidate for *S. thermophilus* while STRP4 is a strong candidate for *S. dysgalactiae*. In conclusion, cow milk can be utilized as *Streptococcus* sp. source especially *S. thermophilus* strains that can be used as a probiotic candidate and starter culture in dairy fermentation.

Keywords: cow milk, lactic acid bacteria, *Streptococcus* sp., *S. thermophilus*

References: 48 (2009-2021)