

ABSTRAK

Judul	: Isolasi, Identifikasi Molekular, Uji Antibakteri, Uji Aktivitas Inhibitor Alfa Glukosidase dari Bakteri Asam Laktat Sirup Beras Merah
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Penatalaksanaan diabetes berpotensi diuntungkan oleh adjuvan asal pangan yang memodulasi pencernaan karbohidrat. Karena α -glukosidase mengatalisis hidrolisis terminal oligosakarida, penghambatannya dapat menurunkan lonjakan glikemik pascaprandial. Studi ini mengisolasi, menyaring, dan mengidentifikasi molekuler bakteri asam laktat (BAL) dari sirup beras merah dengan barley malt terfermentasi, serta mengevaluasi sifat relevan probiotik bersamaan dengan inhibisi α -glukosidase. Seleksi MRS CaCO_3 memperoleh sembilan BAL terduga, empat kandidat (SBM6–SBM9) berupa batang Gram positif, katalase negatif dengan halo asam, lalu dilanjutkan. Pada stres asam (pH 3,0, 37 °C, 4 jam) kelangsungan hidup 37,97–56,48% (SBM7 tertinggi, 56,48%), pada 0,3% oxgall (4 jam) 53,12–71,66% (SBM6 dan SBM8 >71%), menandakan toleransi stres gastrointestinal. Uji difusi cakram tidak menampakkan zona hambat terhadap *Escherichia coli* atau *Staphylococcus aureus* pada kondisi kami. Menariknya, SBM7 menunjukkan inhibisi α -glukosidase *in vitro* yang kuat ($78,35 \pm 5,92\%$), meski lebih rendah dibanding akarbosa ($98,13 \pm 0,18\%$). Sekuensing 16S rRNA hampir penuh (1.434 bp) menempatkan SBM7 sebagai *Limosilactobacillus fermentum* dengan identitas 99,79%. Sirup beras merah terfermentasi merupakan reservoir BAL kredibel, dan *L. fermentum* SBM7 muncul sebagai kandidat utama dengan relevansi antihiperqlikemik potensial yang bermakna.

Kata Kunci: bakteri asam laktat, *Limosilactobacillus fermentum*, sirup beras merah.

ABSTRACT

Title : Isolation, Molecular Identification, Antibacterial Activity, and α -Glucosidase Inhibitory Activity of Lactic Acid Bacteria from Red Rice Syrup

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*Diabetes management may benefit from food origin adjuncts that modulate carbohydrate digestion. Because α -glucosidase catalyzes terminal oligosaccharide hydrolysis, its inhibition can dampen postprandial glycemia. We isolated, screened, and molecularly identified lactic acid bacteria (LAB) from fermented red rice barley malt syrup and evaluated probiotic relevant traits with α -glucosidase inhibition. MRS CaCO₃ selection recovered nine presumptive LAB, four candidates (SBM6–SBM9) were Gram positive, catalase negative rods with acid halos and were advanced. Under acidic stress (pH 3.0, 37 °C, 4 h) survival was 37.97–56.48% (SBM7 highest, 56.48%), in 0.3% oxgall (4 h) survival was 53.12–71.66% (SBM6 and SBM8 >71%), supporting gastrointestinal stress tolerance. Agar disc diffusion revealed no inhibition zones against *Escherichia coli* or *Staphylococcus aureus* under our conditions. Notably, SBM7 showed strong in-vitro α -glucosidase inhibition ($78.35 \pm 5.92\%$), though lower than acarbose ($98.13 \pm 0.18\%$). Near full length 16S rRNA sequencing (1,434 bp) assigned SBM7 to *Limosilactobacillus fermentum* with 99.79% identity. Fermented red rice syrup thus appears to be a credible LAB reservoir, and *L. fermentum* strain SBM7 emerges as a lead combining gastrointestinal stress tolerance with substantial α -glucosidase inhibition.*

Keywords: lactic acid bacteria, *Limosilactobacillus*, red rice syrup