

Isolasi Bakteri Asam Laktat dari Eco-enzyme sebagai Kandidat Probiotik Pakan Hewan = Isolation of Lactic Acid Bacteria from Eco-Enzyme as a Candidate Probiotic for Animal Feed

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Abstrak

Eco-Enzyme merupakan hasil fermentasi limbah organik buah yang mengandung mikroorganisme alami, salah satunya bakteri asam laktat (BAL) yang berpotensi sebagai probiotik dalam pakan ternak. Penelitian ini bertujuan untuk mengisolasi BAL dari Eco-Enzyme, menyeleksi isolat dengan aktivitas antagonis terhadap bakteri patogen, serta mengevaluasi karakteristik probiotiknya. Isolasi pada medium MRSA + CaCO menghasilkan empat isolat BAL yang mampu membentuk zona bening sebagai indikator produksi asam laktat. Uji antagonis menggunakan metode agar plug diffusion menunjukkan seluruh isolat dapat menghambat pertumbuhan bakteri patogen, dan dua isolat terbaik (A12.1 dan A22.2) dipilih untuk pengujian lanjutan menggunakan metode cylinder diffusion. Hasil menunjukkan kedua isolat mampu menghambat pertumbuhan bakteri Gram positif dan Gram negatif. Evaluasi karakter probiotik menunjukkan bahwa isolat A12.1 dan A22.2 bersifat Gram positif, berbentuk batang, non-hemolitik, oksidatif-fermentatif, katalase dan oksidase negatif, mampu mengkoagulasi susu, serta tahan terhadap kondisi asam (pH 3–5), garam empedu (hingga 2%), salinitas NaCl (hingga 6%), dan suhu inkubasi tinggi (hingga 40°C). Berdasarkan hasil tersebut, kedua isolat memiliki potensi sebagai kandidat probiotik untuk aplikasi dalam pakan hewan.

.....Eco-enzyme is a fermentation product derived from fruit based organic waste that contains natural microorganisms, including lactic acid bacteria (LAB) which have potential as probiotics in animal feed. This study aimed to isolate LAB from eco-enzyme, select isolates with antagonistic activity against pathogenic bacteria, and evaluate their probiotic characteristics. Isolation on MRSA medium supplemented with CaCO resulted in four LAB isolates capable of forming clear zones, indicating lactic acid production. Antagonistic testing using the agar plug diffusion method showed that all isolates inhibited pathogenic bacteria, and two isolates (A12.1 and A22.2) with the highest inhibitory activity were selected for further testing using the cylinder diffusion method. The results demonstrated that both isolates were effective in inhibiting the growth of both Gram positive and Gram negative bacteria. Probiotic characterization revealed that isolates A12.1 and A22.2 are Gram positive, rod-shaped, non-hemolytic, oxidative-fermentative, catalase and oxidase negative, able to coagulate milk, and tolerant to acidic conditions (pH 3–5), bile salts (up to 2%), NaCl concentrations (up to 6%), and elevated incubation temperatures (up to 40°C). Based on these findings, both isolates show promising potential as probiotic candidates for application in animal feed.