Aktivitas Antibakteri dari Filtrat Tape Ketan dan Beras Hitam Menggunakan Ragi NKL dan Isolasi Lactobacilli dari Tape Ketan Hitam = Antibacterial Activity of Fermented Black Glutinous Rice and Fermented Black Rice Filtrate Using NKL Starter Culture and Isolation of Lactobacilli from Fermented Black Glutinous Rice

Philip Wang, author

Abstrak

Pangan fungsional merupakan makanan dan minuman yang dapat memberikan manfaat kesehatan. Makanan fermentasi seperti tape termasuk makanan fungsional karena mengandung probiotik. Penelitian ini bertujuan untuk mengetahui adanya aktivitas antibakteri dari tape ketan hitam dan tape beras hitam serta mengisolasi probiotik yang berperan. Tape dibuat dengan memasak kedua beras dan kemudian diberi ragi tape NKL dan difermentasi hingga hari ke 3, 5, dan 7. Uji aktivitas antibakteri dilakukan dengan cylinder plate diffusion terhadap bakteri uji Escherichia coli, Bacillus subtilis, Pseudomonas aeruginosa, Staphylococcus aureus, dan Kocuria rhizophila. Pengukuran pH dilakukan dengan pH meter sedangkan total asam diukur dengan metode titrasi. Hasil penelitian menunjukkan aktivitas antibakteri terbesar pada filtrat tape ketan hitam dengan lama fermentasi 5 hari terhadap E. coli (16.33±1.38), P. aeruginosa (11.82±0.94), B. subtilis (13.44±1.18), S. aureus (14.14±0.67), dan K. rhizophila (15.35±1.18). Tape ketan hitam dengan lama fermentasi 5 hari memiliki nilai pH sebesar 4,935 dan persentase total asam 0,557% sedangkan nilai pH tape beras hitam sebesar 4,31 dan total asam 0,727%. Hasil aktivitas antibakteri kedua tape disebabkan oleh bakteriosin yang diproduksi oleh bakteri asam laktat. 4 isolat lactobacilli berhasil diisolasi dari air tape ketan hitam dan seluruh isolat memiliki karakteristik yang sesuai dengan ciri Lactobacillus berdasarkan identifikasi manual Cowan and Steel. Potensi isolat lactobacilli sebagai probiotik dapat diteliti lebih lanjut. .....Functional food is types of food that can provide health benefits. Fermented foods such as black glutinous rice included as functional foods because they contain beneficial probiotics. This study aims to determine the antibacterial activity of fermented black glutinous rice and fermented black rice and to isolate the probiotics. Fermented black glutinous rice is made by cooking both rice and inoculated with NKL starter culture and fermented until 3, 5, and 7 days. Antibacterial activity test was carried out with cylinder plate diffusion method on Escherichia coli, Bacillus subtilis, Pseudomonas aeruginosa, Staphylococcus aureus, and Kocuria rhizophila. pH measurement was done with pH meter while the total acid was measured by titration. Results showed that highest antibacterial activity was found in fermented black glutinous rice filtrate with 5 days of fermentation against E. coli (16.33±1.38), P. aeruginosa (11.82±0.94), B. subtilis (13.44±1.18), S. aureus (14.14±0.67), and K. rhizophila (15.35±1.18). Fermented black glutinous rice with 5 days of fermentation has a pH value of 4.935 and a total acid percentage of 0.557%, while fermented black rice has a pH value of 4.31 and a total acid percentage of 0.727%. The results of both fermented rices antibacterial activity were caused by bacteriocins produced by lactic acid bacteria. Four lactobacilli isolates were successfully isolated from fermented black glutinous rice water and all isolates had characteristics that matched those of lactobacillus based on the identification manual by Cowan and Steel. The potential of lactobacilli isolates as probiotics could be further investigated.