

AKTIVITAS ANTIOKSIDAN PADA FERMENTASI SARI KORO PEDANG PUTIH (*Canavalia ensiformis* L (DC)) OLEH BAKTERI ASAM LAKTAT

ABSTRAK

Tiga strain bakteri asam laktat yaitu *L. plantarum* WGK 4, *S. thermophilus* Dad 11, dan *L. plantarum* Dad 13 digunakan untuk fermentasi koro pedang putih dan dilihat kemampuannya dalam meningkatkan aktivitas antioksidan. Fermentasi dilakukan pada waktu 24 jam suhu 37°C dengan interval waktu 6 jam. Pengaruh penambahan sukrosa atau skim 2% dan 4% juga diuji pada waktu fermentasi 18 jam suhu 37°C. Jumlah sel, asam tertitiasi, pH, total fenolik, dan aktivitas β -glukosidase diuji pada masing - masing kultur. Aktivitas antioksidan diuji menggunakan metode DPPH (*1,1-diphenyl-2-picrylhydrazyl*). Konsentrasi isoflavon aglikon diukur menggunakan UFLC (*Ultra Fast Liquid Chromatography*).

Hasil yang didapatkan menunjukkan bahwa ketiga jenis strain bakteri asam laktat mampu tumbuh dengan baik dengan jumlah sel 9,15-9,26 log CFU/ml, meningkatkan jumlah asam dan menurunkan pH hingga 4,71-5,00 setelah 24 jam fermentasi. Selama fermentasi bakteri asam laktat mampu menghasilkan β -glukosidase (27,08-27,18 mU/ml) dan menghasilkan isoflavon aglikon (daidzein 3,71-4,02 μ g/g; genistein 9,00-10,26 μ g/g). Total fenolik dan aktivitas antioksidan meningkat sebesar 9,6 – 11,44% dan 23,62 -29,64%. Penambahan sukrosa atau susu skim 2% dan 4% tidak berpengaruh terhadap pertumbuhan bakteri asam laktat, namun berpengaruh terhadap produksi asam dan aktivitas antioksidan. Dari penelitian ini dapat ditarik kesimpulan bahwa bakteri asam laktat mampu tumbuh dalam media sari koro pedang putih dan meningkatkan aktivitas antioksidannya.

Kata kunci: fermentasi sari koro pedang putih, bakteri asam laktat, antioksidan.

ANTIOXIDANT ACTIVITY OF FERMENTED JACK BEAN MILK (*Canavalia ensiformis* L (DC)) BY LACTIC ACID BACTERIA

ABSTRACT

We had studied the effect of three strains of lactic acid bacteria (*L. plantarum* WGK 4, *S. thermophilus* Dad 11, and *L. plantarum* Dad 13) in the fermentation of jack bean milk to increase the antioxidant capacity of the final product. Fermentations were carried out for 24 h at 37 °C. The effects of supplementation of 2% and 4% sucrose or skim milk were also monitored during fermentation 18 h at 37 °C. Cell viability, titratable acids, pH value, phenolic content, and β -glucosidase activity were determined in each culture strain. Antioxidant activity was investigated using DPPH (1,1-diphenyl-2-picrylhydrazyl) method. The concentrations of isoflavone aglycone were determined using UFLC (Ultra-Fast Liquid Chromatography).

The results showed that all three lactic acid bacteria strains grew well to 9.15-9.26 log CFU/ml, increased total acid and decreased the pH value 4.71 – 5.00 after 24 h fermentation. During fermentation, lactic acid bacteria were able to produce β -glucosidase (27.08 – 27.28 mU/ml) and released aglycones in jack bean milk (3.71-4.02 μ g/g daidzein and 9.00 – 10.26 μ g/g genistein). The phenolic content and DPPH radical scavenging activity increased 9.6 – 11.44% and 23.62 -29.64%, respectively. Supplementation with 2% and 4% sucrose or skim milk did not affect the cell growth but affected acid production and antioxidant activity. The results indicate lactic acid bacteria could grow in jack bean milk medium and increased their antioxidant activity.

Keyword: jack bean milk fermentation, lactic acid bacteria, antioxidant.