

Kemampuan Asimilasi Kolesterol Tiga Strain *Lactobacillus acidophilus* Dalam Medium Cair Berkolesterol

The Ability for Cholesterol Assimilation of Three *Lactobacillus acidophilus* Strains in Cholesterol-containing Media

Widodo^{1,2*}, Indratiningsih¹, Widyantoro¹, dan Putri Adi Pertiwi¹

¹Fakultas Peternakan, Universitas Gadjah Mada Yogyakarta

²Pusat Studi Bioteknologi, Universitas Gadjah Mada Yogyakarta

E-mail: widodohs@ugm.ac.id *Penulis untuk korespondensi

Abstract

The objective of this study was to investigate the ability of three *Lactobacillus acidophilus* strains FNCC 101, FNCC 108, and FNCC 120 in cholesterol assimilation. Cholesterol assimilation was carried out *in vitro* by growing *L. acidophilus* strains anaerobically at 37°C for 24 hours in cholesterol-containing MRS broth added with oxgall at 0.4% (w/v). Concentration of cholesterol in the supernatant was measured by spectrophotometry at 550nm and the absorbance was converted to cholesterol levels based on the cholesterol standards prepared separately. Data showed that *L. acidophilus* decreased concentration of cholesterol in the supernatant. Without inoculation with *L. acidophilus*, concentration of cholesterol in the supernatant was 1.46 µg/ml, while after inoculation with *L. acidophilus* FNCC 120, 108, and 101 were 0.45, 0.47, and 0.52 µg/ml, respectively. The optimum level of oxgall addition in cholesterol assimilation was at 0.4% (w/v) with cholesterol observed at 0.52 mg/ml compared to 0.81 and 0.71 µg/ml for oxgall addition at 0.1 and 0.3%, respectively. Cholesterol assimilation was optimum at 37°C as this temperature had the lowest cholesterol concentration at 0.52 µg/ml. Cholesterol assimilation was increased after the growth reaching the logarithmic phase, and optimum after growing for 15 hours. It is concluded that *L. acidophilus* FNCC 101 has the highest level of cholesterol assimilation, this assimilation is optimum at 37°C, oxgall addition at 0.4% and at logarithmic phase of growth.

Keywords: Cholesterol assimilation, *in vitro*, *Lactobacillus acidophilus*

Abstrak

Tujuan penelitian adalah mengetahui kemampuan asimilasi kolesterol dari tiga strain *Lactobacillus acidophilus* FNCC 101, FNCC 108, dan FNCC 120. Uji asimilasi kolesterol dilakukan secara *in vitro* dengan menumbuhkan strain *L. acidophilus* secara anaerobik pada suhu 37°C selama 24 jam pada media MRS broth mengandung kolesterol dan oxgall 0,4% (w/v). Konsentrasi kolesterol pada supernatan diukur dengan spektrofotometri panjang gelombang 550nm dan absorbansi yang diperoleh dipakai untuk menghitung kadar kolesterol berdasarkan standar kolesterol. Hasil penelitian menunjukkan bahwa *L. acidophilus* menurunkan konsentrasi kolesterol pada supernatan. Tanpa inokulasi *L. acidophilus*, konsentrasi kolesterol pada supernatan adalah 1,46 µg/ml, sedangkan setelah inokulasi dengan *L. acidophilus* FNCC 120, 108 dan 101 konsentrasi kolesterol secara berurutan adalah 0,45; 0,47; dan 0,52 µg/ml. Asimilasi kolesterol optimum terjadi pada penambahan oxgall 0,4% (w/v) dengan konsentrasi kolesterol 0,52 µg/ml tersisa di supernatan dibandingkan konsentrasi 0,81 dan 0,71 µg/ml pada penambahan oxgall 0,1 dan 0,3%. Asimilasi kolesterol optimum pada suhu 37°C dengan konsentrasi kolesterol supernatan 0,52 µg/ml. Asimilasi kolesterol meningkat setelah pertumbuhan mencapai fase logaritmik dan optimum setelah inkubasi 15 jam. Sebagai simpulan, *L. acidophilus* FNCC 101 mempunyai kemampuan asimilasi kolesterol tertinggi, ini dicapai pada suhu pertumbuhan 37°C, penambahan oxgall 0,4% dan pada fase pertumbuhan logaritmik.

Kata kunci: Asimilasi kolesterol, *in vitro*, *Lactobacillus acidophilus*