

## INTISARI

### Pengaruh Pemberian Susu Sinbiotik *Lactobacillus acidophilus* dan Prebiotik Terhadap Kadar LDL Pada Model Tikus Wistar Hiperglikemia

Happy Nurlita Octavinanda<sup>1</sup>, Lily Arsanti Lestari<sup>2</sup>, Perdana Samekto TS<sup>2</sup>

**Latar Belakang:** Hiperglikemia adalah kondisi berupa kadar glukosa darah mengalami peningkatan melebihi batas normal dan salah satu tanda penyakit diabetes melitus. Hiperglikemia secara terus-menerus dapat mengarah pada dislipidemia yang berhubungan dengan terbentuknya LDL aterogenik yang dapat menyebabkan penyakit kardiovaskular. Oleh karena itu diperlukan pengaturan diet sebagai pencegahan sekunder komplikasi kardiovaskular pada hiperglikemia, sehingga dilakukan penelitian mengenai efek susu sinbiotik yang mengandung *Lactobacillus acidophilus* (LA-5®) dan prebiotik yang berbeda yaitu fruktooligosakarida dan inulin terhadap kadar LDL pada model tikus Wistar hiperglikemia.

**Tujuan Penelitian:** Mengetahui kadar LDL pada model tikus Wistar hiperglikemia yang diberi susu sinbiotik *Lactobacillus acidophilus* (LA-5®) dan prebiotik yang berbeda.

**Metode:** Penelitian ini merupakan *quasi experimental* pada hewan coba tikus Wistar sebanyak 30 ekor yang dibagi menjadi 5 kelompok perlakuan yaitu kontrol sehat, kontrol negatif, kontrol positif, dan dua kelompok intervensi yang diberi susu sinbiotik dengan prebiotik berbeda yaitu fruktooligosakarida (K1) dan inulin (K2). Intervensi dilakukan selama 28 hari dan pengukuran kadar LDL dilakukan sebelum dan setelah intervensi, sedangkan data berat badan dikumpulkan seminggu sekali serta data asupan pakan dikumpulkan setiap hari selama penelitian.

**Hasil:** Tidak ada perbedaan signifikan pada perubahan kadar LDL semua kelompok perlakuan ( $p > 0,05$ ). Tetapi, terdapat perbedaan signifikan kadar LDL sebelum dan setelah intervensi pada kelompok kontrol sehat, K1 dan K2 ( $p < 0,05$ ). Kenaikan kadar LDL pada kelompok kontrol sehat yaitu  $4,03 \pm 2,32$  mg/dL ( $19,91 \pm 5,74 - 23,95 \pm 3,93$  mg/dL), kelompok K1 yaitu  $4,05 \pm 3,32$  mg/dL ( $15,50 \pm 1,97 - 19,55 \pm 4,86$  mg/dL) dan kelompok K2 yaitu  $8,31 \pm 2,78$  mg/dL ( $11,21 \pm 3,81 - 19,53 \pm 3,44$  mg/dL). Terdapat kenaikan yang signifikan pada berat badan setiap periode waktu perlakuan pada semua kelompok ( $p < 0,05$ ), sedangkan asupan pakan pada semua kelompok perlakuan tidak berbeda signifikan ( $p > 0,05$ ).

**Kesimpulan:** Susu sinbiotik *Lactobacillus acidophilus* (LA-5®) dan prebiotik fruktooligosakarida atau inulin memiliki efek yang sama yaitu tidak memberikan penurunan kadar LDL pada model tikus Wistar hiperglikemia.

**Kata Kunci:** hiperglikemia, LDL, susu sinbiotik, *Lactobacillus acidophilus*, fruktooligosakarida, inulin

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<sup>1</sup> Mahasiswa Program Studi S1 Gizi Kesehatan FK-KMK UGM

<sup>2</sup> Dosen Program Studi S1 Gizi Kesehatan FK-KMK UGM

## ABSTRACT

### The Effect of Synbiotic Milk *Lactobacillus acidophilus* and Prebiotic on LDL Levels in Wistar Rats Model of Hyperglycemia

Happy Nurlita Octavinanda<sup>1</sup>, Lily Arsanti Lestari<sup>2</sup>, Perdana Samekto TS<sup>2</sup>

**Background:** Hyperglycemia is a condition of blood glucose levels increase above normal limits and one of diabetes mellitus signs. Hyperglycemia can continuously lead to dyslipidemia associated with the formation of atherogenic LDL which can cause cardiovascular disease. Therefore, dietary regulation is needed as a secondary prevention of cardiovascular complications in hyperglycemia. So, it is important to do research on the effects of synbiotic milk containing *Lactobacillus acidophilus* (LA-5®) and different prebiotics (fructooligosaccharides and inulin) on LDL levels in Wistar rats model of hyperglycemia.

**Objective:** To investigate the effect of synbiotic milk *Lactobacillus acidophilus* (LA-5®) and different prebiotics on LDL levels in Wistar rats model of hyperglycemia.

**Methods:** This study was a quasi experimental in 30 Wistar rats which were divided into 5 treatment groups, namely healthy control, negative control, positive control, and two intervention groups that were given synbiotic milk with different prebiotics (fructooligosaccharides for K1 and inulin for K2). The intervention was carried out for 28 days and measurements of LDL levels were assessed before and after intervention period, while body weight data were collected once a week and feed intake data were collected daily during the study.

**Results:** There was no significant difference in changes in LDL levels in all treatment groups ( $p > 0.05$ ). However, there were significant differences in LDL levels before and after the intervention in several groups, which were healthy control, K1 and K2 ( $p < 0.05$ ). The increase in LDL levels in the healthy control group was  $4.03 \pm 2.32$  mg/dL ( $19.91 \pm 5.74 - 23.95 \pm 3.93$  mg/dL), the K1 group was  $4.05 \pm 3.32$  mg/dL ( $15.50 \pm 1.97 - 19.55 \pm 4.86$  mg/dL) and the K2 group were  $8.31 \pm 2.78$  mg/dL ( $11.21 \pm 3.81 - 19.53 \pm 3.44$  mg/dL). There was a significant increase in body weight at each treatment time period in all groups ( $p < 0.05$ ), while feed intake in all treatment groups did not significantly different ( $p > 0.05$ ).

**Conclusions:** Synbiotic milk *Lactobacillus acidophilus* (LA-5®) and different prebiotics fructooligosaccharide or inulin have the same effect of not reducing LDL levels in Wistar rats model of hyperglycemia.

**Keywords:** hyperglycemia, LDL, synbiotic milk, *Lactobacillus acidophilus*, fructooligosaccharide, inulin

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<sup>1</sup> Student of Nutrition and Health Undergraduate Program, Faculty of Medicine, Public Health and Nursing Universitas Gadjah Mada

<sup>2</sup> Lecturer of Nutrition and Health Undergraduate Program, Faculty of Medicine, Public Health and Nursing Universitas Gadjah Mada