

INTISARI

Efek Variasi Probiotik dan Prebiotik dalam Sinbiotik *Shake* terhadap Kadar Glukosa Darah Model Tikus Hiperglikemia

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Latar Belakang : Kondisi ketidakseimbangan komposisi mikrobiota (disbiosis) dalam usus berkaitan dengan perkembangan hiperglikemia dan penyakit diabetes mellitus. Penggunaan probiotik dan prebiotik berpotensi menurunkan kadar glukosa darah terkait perannya dalam memodifikasi mikrobiota usus. Untuk itu perlu dilakukan penelitian pemberian sinbiotik *shake* dengan variasi probiotik dan prebiotik terhadap kadar glukosa darah.

Tujuan Penelitian : Mengetahui pengaruh pemberian sinbiotik *shake* terhadap kadar glukosa darah model tikus hiperglikemia dan mengetahui perbedaan pengaruh dari variasi probiotik *Lactobacillus acidophilus* LA-5 dan *Bifidobacterium lactis* BB-12 serta variasi prebiotik FOS dan inulin terhadap kadar glukosa darah model tikus hiperglikemia.

Metode : Desain penelitian adalah *pre post controlled group* dengan subjek tikus wistar galur jantan sebanyak 36 ekor. Kelompok kontrol sehat dan kontrol hiperglikemia diberikan aquades. Kelompok perlakuan mendapat sinbiotik *shake* dengan variasi (i) sinbiotik *shake* LA-5 + FOS; (ii) sinbiotik *shake* LA-5 + inulin; (iii) sinbiotik *shake* BB-12 + FOS; dan (iv) sinbiotik *shake* BB-12 + inulin. Dosis pemberian intervensi adalah 3,6 ml/hari dengan lama waktu intervensi 28 hari.

Hasil : Terdapat peningkatan kadar glukosa darah sebelum dan sesudah intervensi yang tidak signifikan pada kelompok kontrol dan kelompok yang mendapat sinbiotik *shake* BB-12 + inulin ($p > 0,05$). Terdapat peningkatan kadar glukosa darah yang signifikan pada kelompok yang mendapat sinbiotik *shake* LA-5 + FOS dan BB-12 + FOS ($p < 0,05$). Pada kelompok sinbiotik *shake* LA-5 + inulin terjadi penurunan kadar glukosa darah yang tidak signifikan ($p > 0,05$). Perubahan kadar glukosa darah pada seluruh kelompok tidak berbeda secara signifikan.

Kesimpulan : Intervensi sinbiotik *shake* yang mengandung *Lactobacillus acidophilus* LA-5 dan inulin berpotensi menurunkan kadar glukosa darah pada model tikus hiperglikemia. Variasi *Lactobacillus acidophilus* LA-5 menunjukkan perubahan kadar glukosa yang lebih baik dibanding *Bifidobacterium lactis* BB-12 dan variasi inulin memiliki efek lebih baik dibanding FOS. Namun, secara statistik variasi probiotik dan prebiotik tersebut tidak berbeda signifikan.

Kata kunci : probiotik, prebiotik, sinbiotik, glukosa darah puasa, hiperglikemia

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ABSTRACT

Effects of Probiotic and Prebiotic Variations in Synbiotic Shake on Blood Glucose Levels of Hyperglycemia Rats Model

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Background: An imbalance in the composition of microbiota in the intestine (dysbiosis) is related to the development of hyperglycemia and diabetes mellitus. The use of probiotics and prebiotics has the potential to reduce blood glucose levels due to their role in modifying intestinal microbiota. For this reason, it is necessary to conduct research into the administration of synbiotic shakes with probiotic and prebiotic variations on blood glucose levels.

Objective: To determine the effect of administration of synbiotic shake on blood glucose levels in hyperglycemia rats model and to know the difference in the effect of probiotics variation of *Lactobacillus acidophilus* LA-5 and *Bifidobacterium lactis* BB-12 and prebiotics variation of FOS and inulin on blood glucose levels of hyperglycemia rats model.

Methods: The study design was a pre post controlled group. The subjects were 36 male wistar rats. Healthy control and hyperglycemia control groups were given aquadest. The treatment group received a synbiotic shake with variations (i) LA-5 + FOS; (ii) LA-5 + inulin; (iii) BB-12 + FOS; and (iv) BB-12 + inulin. The dose of intervention is 3,6 ml/day and the duration of the intervention is 28 days.

Results: There was an insignificant increase in blood glucose levels before and after the intervention in the control group and the group that received BB-12 + inulin synbiotic shakes ($p > 0,05$). In the LA-5 + inulin synbiotic shake group, there was an insignificant decrease in blood glucose levels ($p > 0,05$). However, a significant increase in blood glucose levels observed in the group receiving LA-5 + FOS and BB-12 + FOS synbiotic shakes ($p < 0,05$). Changes in blood glucose levels in all groups did not differ significantly ($p > 0,05$).

Conclusion: Synbiotic shake interventions containing *Lactobacillus acidophilus* LA-5 and inulin have the potential to decreased blood glucose levels in hyperglycemic rat models. Variations of *Lactobacillus acidophilus* LA-5 showed changes in glucose levels better than *Bifidobacterium lactis* BB-12 and interventions using inulin showed better results than FOS. However, the variation of probiotics and prebiotics did not differ significantly.

Keyword: probiotic, prebiotic, synbiotic, fasting blood glucose level, hyperglycemia

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