

ABSTRACT

The Effect of Cookies Tempeh Gembus on Fasting Blood Glucose and Lipid Profile in Subjects with Type 2 Diabetes Mellitus

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Background

Type 2 diabetes mellitus (T2DM) is a metabolic disease characterized by impaired in macronutrient metabolism. The reason may be caused by low fiber intake, therefore, a high-fiber diet intervention (25-30 g/day) is effective in managing the type 2 DM. Tempe gembus cookies can be used as an alternative snacks for subjects with T2DM because it has a high-fiber content, thus could be effective in managing the T2DM.

Objective

The study aims to analyze and determine the effect of tempe gembus cookies intake on the level of fasting blood glucose (FBG) and lipid profile (total cholesterol, HDL, LDL, and triglyceride) in subjects with type 2 diabetes mellitus.

Methods

*This is a randomized controlled study with pre-post test group design involved 36 patients of T2DM in Banyumas, Central Java. The subjects whom met the inclusion and exclusion criteria were randomized to either an intervention group (30 g tempe gembus cookies given daily as a snack replacement with a standard care T2DM) or a control group (standard care of T2DM) for 28 days. The normally distributed data were analyzed with paired *t* test or independent *t* test, while non parametric tests used if the data is not normally distributed. Power in this research is 80% with 95% confidence interval. If the *p* value is smaller than 0,05, it is considered statistically significant.*

Result

There was a significant increase in daily fiber intake after the intervention ($p=0,002$). There was no statistically significant difference in fasting blood glucose ($p=0.394$), HDL ($p=0.363$), and triglyceride levels ($p=0.093$). There was a significant different in cholesterol ($p=0.000$) and LDL levels ($p=0.000$).

Conclusion: *The intake of tempeh gembus cookies at 30 g/day for 28 days could not significantly improve the fasting blood glucose, HDL, and triglyceride levels, while able to affect significantly the level of cholesterol and LDL in subjects with T2DM.*

Keywords

Type 2 diabetes mellitus, fasting blood glucose, cholesterol, HDL, LDL, triglyceride, tempe gembus cookies, dietary fiber

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ABSTRAK

Pengaruh Intervensi Kukis Tempe Gembus terhadap Kadar Glukosa Darah Puasa dan Profil Lipid pada Pasien Diabetes Melitus tipe 2

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Latar Belakang: Diabetes Melitus (DM) tipe 2 merupakan suatu penyakit metabolik yang ditandai oleh gangguan metabolisme makronutrien. Salah satu penyebabnya berupa asupan serat tidak adekuat sehingga intervensi diet tinggi serat (25-30 g/hari) terbukti efektif dalam pengelolaan DM tipe 2. Kukis tempe gembus dapat dijadikan sebagai alternatif makanan selingan bagi pasien DM tipe 2 karena mempunyai kandungan serat yang tinggi sehingga efektif dalam pengelolaan DM tipe 2.

Tujuan: Menganalisis pengaruh pemberian kukis tempe gembus terhadap kadar glukosa darah puasa (GDP) dan profil lipid (kolesterol total, HDL, LDL, dan trigliserida) pada pasien Diabetes Melitus tipe 2.

Metode: Penelitian ini menggunakan desain *randomized controlled trial with pre-post test group design* di Kabupaten Banyumas. Penelitian ini melibatkan 36 pasien DM tipe 2 yang memenuhi kriteria inklusi dan eksklusi. Subjek penelitian dibagi menjadi dua kelompok secara acak (kelompok kontrol dan kelompok intervensi) masing-masing berjumlah 18 orang. Kelompok intervensi diberikan kukis tempe gembus sebesar 30 g/hari selama 28 hari. Analisis data statistik menggunakan *uji paired t-test* dan *independent sample t-test* jika data berdistribusi normal, uji non parametrik digunakan jika data tidak berdistribusi normal. Power pada penelitian 80% dengan derajat kepercayaan 95%. Apabila nilai $p < 0,05$ maka dianggap bermakna secara statistik.

Hasil Penelitian: Terdapat peningkatan signifikan terhadap asupan serat setelah pemberian kukis tempe gembus ($p=0,002$). Tidak terdapat perbedaan bermakna terhadap kadar GDP ($p=0,394$), HDL ($p=0,363$), dan trigliserida ($p=0,093$). Terdapat perbedaan bermakna terhadap kadar kolesterol ($p=0,000$) dan LDL ($0,000$).

Kesimpulan: Pemberian kukis tempe gembus sebesar 30 g/hari selama 28 hari pada pasien DM tipe 2 tidak memberikan pengaruh yang bermakna terhadap perbaikan kadar GDP, HDL, dan trigliserida, serta berpengaruh signifikan terhadap perubahan kadar kolesterol dan LDL.

Kata kunci

Diabetes melitus tipe 2, glukosa darah puasa, kolesterol, HDL, LDL, trigliserida, kukis tempe gembus, serat pangan

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