

PENGARUH PENAMBAHAN AIR RENDAMAN GAPLEK PADA PROSES FERMENTASI TEMPE TERHADAP PERUBAHAN PROFIL LIPID TIKUS MODEL DIABETES

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INTISARI

Latar Belakang: Prevalensi diabetes mellitus (DM) dari tahun ke tahun terus meningkat. Pada penderita DM, terjadi abnormalitas profil lipid yang meliputi peningkatan kolesterol total dan LDL-kolesterol, serta penurunan HDL-kolesterol. Konsumsi diet tinggi serat dan antioksidan mampu memperbaiki profil lipid pada DM. Tempe merupakan salah satu makanan yang tinggi serat dan antioksidan. Modifikasi pembuatan tempe dengan penambahan air rendaman gaplek yang kaya bakteri asam laktat dapat meningkatkan kandungan serat dan antioksidan tempe.

Tujuan: Mengetahui pengaruh pemberian tempe modifikasi pada diet terhadap kadar kolesterol total, LDL-kolesterol, HDL-kolesterol pada tikus Wistar jantan yang diinduksi diabetes mellitus.

Metode Penelitian: Tempe modifikasi dibuat dengan penambahan pemberian air rendaman gaplek pada proses fermentasi tempe. Tiga puluh tikus Wistar jantan dibagi menjadi 6 kelompok: kelompok kontrol normal, kontrol negatif, DM+Tempe 40%, DM+Tempe 80%, DM+Tempe Modifikasi 40%, dan DM+Tempe Modifikasi 80%. Induksi diabetes dilakukan dengan menginjeksi *streptozotocin* (STZ) dan *nicotinamide* (NA). Darah diambil sebelum dan sesudah 28 hari perlakuan untuk analisis kadar kolesterol total, LDL-kolesterol, dan HDL-kolesterol.

Hasil: Terdapat perbedaan yang signifikan ($p < 0.05$) pada kadar kolesterol total, LDL-kolesterol, dan HDL-kolesterol antar kelompok perlakuan sebelum dan sesudah perlakuan. Kelompok DM+Tempe Modifikasi 80% memiliki kadar kolesterol total (102.95 ± 3.15) dan LDL-kolesterol paling rendah (32.30 ± 2.26), dan HDL-kolesterol paling tinggi (69.18 ± 1.87) dibandingkan kelompok intervensi lain. Kadar LDL-kolesterol pada kelompok DM+Tempe Modifikasi 80% tidak memiliki perbedaan dengan kelompok kontrol normal.

Kesimpulan: Pemberian tempe modifikasi pada diet mampu menurunkan kadar kolesterol total dan LDL-kolesterol, serta meningkatkan kadar HDL-kolesterol pada tikus model diabetes.

Kata Kunci: Tempe, Air Rendaman Gaplek, Diabetes Mellitus, Profil Lipid

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ANTI-HYPERCHOLESTEROL EFFECT OF TEMPEH MADE FROM ADDITION OF FERMENTED CASSAVA WATER EXTRACT IN DIABETIC RATS MODEL

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ABSTRACT

Background: Prevalence of diabetes mellitus (DM) from year to year continues to increase. In DM patients, there is an abnormality of the lipid profile which includes an increase in total cholesterol and LDL-cholesterol, and a decrease in HDL-cholesterol. Consumption of high fiber and antioxidants diet can improve lipid profiles in DM. Tempeh is a food that contains high fiber and antioxidants. Modification in making tempeh by the addition of fermented-cassava water extract which is rich in lactic acid bacteria can increase the fiber and antioxidants content of tempeh.

Objective: To determine the effect of modified tempeh in diet on total cholesterol, LDL-cholesterol, HDL-cholesterol levels in male diabetic mellitus induced Wistar rats.

Methods: Modified tempeh produced by adding fermented-cassava water extract in the fermentation process of tempeh. Thirty male Wistar rats were divided into 6 groups: normal control, negative control, DM+Tempeh 40%, DM+Tempeh 80%, DM+Modified Tempeh 40%, and DM+Modified Tempeh 80%. Diabetes mellitus was induced by injecting streptozotocin (STZ) and nicotinamide (NA). Blood was collected before and after 28 days of treatment for analysis of total cholesterol, LDL-cholesterol, and HDL-cholesterol levels.

Results: There was a significant difference ($p < 0.05$) in the levels of total cholesterol, LDL-cholesterol, and HDL-cholesterol between the treatment groups before and after treatment. DM+Modified Tempeh 80% group had the lowest total cholesterol (102.95 ± 3.15) and LDL-cholesterol (32.30 ± 2.26) levels, as well as the highest HDL-cholesterol (69.18 ± 1.87) levels, compared to other intervention groups. LDL-cholesterol levels in DM+Modified Tempeh 80% group had no difference with control normal group.

Conclusion: Modified tempeh in the diet can reduce total cholesterol and LDL-cholesterol levels, as well as increase HDL-cholesterol levels in diabetic rats.

Keywords: Tempeh, Fermented-cassava Water Extract, Diabetes Mellitus, Lipid Profile.

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