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PENGARUH SUPLEMEN BERBASIS TEMPE TERHADAP EKSPRESI RECEPTOR ADVANCED
GLYCATION END PRODUCTS DAN
NUCLEAR FACTOR KAPPA- LIGHT-CHAIN-ENHANCER OF ACTIVATED B CELLS PADA PANKREAS
MENCIT MODEL DIABETES
MELLITUS TIPE 2

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**SUPLEMEN BERBASIS TEMPE MENURUNKAN KADAR GULA DARAH
MELALUI PENGHAMBATAN AKTIVITAS RAGE DAN NF- B PADA
PANKREAS MENCIT MODEL DIABETES MELLITUS TIPE 2**

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Abstrak

Hiperglikemia memicu proses inflamasi dengan cara meningkatkan pembentukan advanced glycation end products (AGE) yang apabila berikatan dengan receptor advanced glycation end products (RAGE) di membran sel dapat mengaktifasi NF-kB. Penelitian ini bertujuan untuk menganalisis Suplemen Berbasis Tempe (SBT) yang pembuatannya mengikuti cara pembuatan NESTE terhadap ekspresi RAGE dan NF- B pada pankreas tikus model DMT2. Penelitian ini merupakan Quasi experimental dengan design pre post test with control untuk kadar glukosa darah dan post test only with control untuk ekspresi mRNA RAGE dan NF-kB. sebanyak 30 ekor, dengan usia 8-10 minggu dan berat 20-25 g yang dibagi kedalam 5 kelompok perlakuan yaitu kelompok non diabetik, kelompok diabetik, Kelompok diabetik 1 + SBT 10 mg/100 grBB, kelompok diabetik + SBT 20 mg/100 grBB dan kelompok diabetik + SBT 30 mg/100 grBB. Induksi STZ yang kemudian diikuti dengan NA untuk membuat tikus model diabetik tipe 2. Selisih GDP mencit tertinggi pada kelompok mencit diabetik yang mendapat perlakuan tempe 40 mg ($159,52 \pm 1,85$) mg/dL. Uji *One Way Anova* menunjukkan adanya perbedaan bermakna kadar glukosa darah, ekspresi relatif mRNA RAGE dan NF- B antara kelompok diabetik + tempe pada berbagai tingkatan dosis dengan kelompok diabetik tanpa perlakuan. Pemberian tempe dapat menurunkan kadar glukosa darah puasa mencit, ekspresi relatif mRNA RAGE dan NF- B

Kata kunci : Tempe, Diabetes melitus, RAGE, NF- B



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TEMPEH-BASED SUPPLEMENT DECREASES BLOOD GLUCOSE LEVEL THROUGH INHIBITING RAGE AND NF- B ACTIVITY IN TYPE 2 DIABETES MELLITUS MICE MODEL

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Abstract

Hyperglycemia promotes inflammation through inducing the formation of advanced glycation end (AGE) products which bind with receptor advanced glycation end (RAGE) products in cell membranes leading to activation of NF- κ B. This study aimed to analyze the effects of tempeh-based supplement (TBS) preparations of GABA tempeh against mRNA expressions of RAGE and NF- B on the pancreas of type 2 Diabetes Mellitus (DM) mice model. This research was a quasi-experiment with pre and posttests with control design for blood glucose level and posttest only with control for mRNA RAGE and NF- κ B expressions. A total of 30 male mice, 8-10 weeks old, weighing 20-25 g were divided into 6 treatment groups: non-diabetic, Diabetic, Diabetic + metformin, Diabetic + TBS 10 mg/100 g BW, Diabetic + TBS 20 mg/100 g BW, and Diabetic + TBS 40 mg/100 g BW. STZ induction was preceded by NA to create Type 2 DM mice model. The mean difference of fasting glucose levels in the diabetic + TBS 40 mg/100 g BW group was the highest compared to the diabetic group (159.52 ± 1.85) mg/dL. One-way ANOVA revealed a statistically significant difference in fasting glucose levels, mRNA RAGE and NF- B relative expressions in the Diabetic + TBS group at various dosage levels compared to the diabetic control group. mRNA expressions of RAGE and NF- B were downregulated in the treatment group compared to the diabetic control group. Giving TBS can decrease fasting blood glucose levels and downregulate relative mRNA expressions of RAGE and NF- B in type 2 DM mice.

Keywords: Tempeh, Diabetes mellitus, TBS, RAGE, NF- B