Pengaruh Pemberian Tepung Terung Ungu (*Solanum Melongena* L.) terhadap Indeks Resistensi Insulin Pada Tikus Model Diabetes Mellitus Akibat Induksi *Nicotinamide-Streptozotocin*

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Intisari

Latar Belakang: Kombinasi terapi farmakologi dan non-farmakologi untuk mengatasi diabetes mellitus (DM) dengan pangan fungsional perlu dipelajari. Tepung terung ungu (TTU) berpotensi dijadikan sebagai pangan fungsional, namun belum ada bukti ilmiah yang menyatakan bahwa TTU memiliki potensi sebagai pangan fungsional bagi penderita DM.

Tujuan: Mengetahui pengaruh pemberian TTU terhadap indeks resistensi insulin (IRI) melalui rasio TG/HDL-C dan TC/HDL-C pada tikus model DM akibat induksi *nicotinamide-streptozotocin* (NA-STZ).

Metode: Pada penelitian eksperimental berdesain *time series* ini, 36 tikus jantan *Sprague Dawley* berusia 10-12 minggu yang berbobot 207,25±26,76 gram dibagi ke dalam 5 kelompok intervensi secara acak, yaitu kontrol (normal dan DM), dan 3 kelompok intervensi. Model DM dibuat dengan menginduksi NA-STZ (230-65 mg/kg BB). Intervensi berupa pakan modifikasi TTU yang diberikan selama 28 hari dengan variasi dosis 2,36 gram, 4,71 gram, dan 7,01 gram TTU yang setara dengan 3,64 mg, 7,27 mg, 10,91 mg flavonoid. Pemeriksaan trigliserida, total kolesterol, dan HDL-C serum dilakukan setiap 2 minggu untuk menghitung rasio TG/HDL-C dan TC/HDL-C. Data dianalisis menggunakan uji *Oneway* Anova, Bonferroni, dan *repeated*-Anova.

Hasil: Tikus model DM mengalami peningkatan rasio TG/HDL-C dan TC/HDL-C sebanyak 3,88-4,28 dan 4,47-4,91 kali dari tikus normal. Pemberian TTU pada pakan secara bermakna menurunkan rasio TG/HDL-C dan TC/HDL-C seiring waktu pemeriksaan, yaitu 24-67% dan 32-71%. Penurunan terbanyak terjadi pada minggu ke-2, yaitu sebanyak 16-58% dan 22-62%. Banyaknya penurunan seiring dengan peningkatan TTU yang diasup.

Kesimpulan: Pemberian TTU secara oral terbukti mampu menurunkan IRI secara bermakna baik berdasarkan rasio TG/HDL-C maupun TC/HDL-C dibandingkan kelompok DM non-intervensi.

Kata Kunci: Diabetes mellitus, terung ungu, rasio TG/HDL-C, rasio TG/HDL-C, *nicotinamide*, *streptozotocin*

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The Effect of Purple Eggplant Flour (*Solanum melongena* L.) to the Insulin Resistance Index in Rat Models of Diabetes Mellitus Induced by *Nicotinamide-Steptozotocin*

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Abstract

Introduction: Combine therapy of pharmacological and non-pharmacological by functional food to manage of diabetes mellitus (DM) was emerged. The purple eggplant flour (TTU) has a potency as a new form of functional food, but there is no scientific evidence which proven that TTU could be a diabetic functional food agent.

Objective: To determine the effect of various dose of TTU to the insulin resistance index (IRI) by TG/HDL-C and TC/HDL-C ratio in rat models of DM induced by *nicotinamide-streptozotocin*.

Methods: In this experimental study with time series design, 36 male Sprague Dawley rats aged 10-12 weeks weighing 207.25±26,76 grams were randomly divided into 5 groups consist the control (normal and DM) and 3 intervention groups. DM models made by NA-STZ (230-65 mg/kg b.w.) induced. TTU modified food was given for 28 days with a variation dose as the intervention (2.36 grams, 4.71 grams and 7.01 grams TTU/days equivalent to 3.64 mg, 7.27 mg, and 10.91 mg flavonoids/days). By detection of trygliseride, total cholesterol, and HDL-C serum that measured every 2 weeks, the TG/HDL-C and TC/HDL-C ratio was calculated. The ratio were statistically analyzed using Oneway-ANOVA test, Bonferroni, and repeated-ANOVA.

Results: The ratio of TG/HDL-C and TC/HDL-C rat models of DM were increased 3.88 to 4.28 and 4.47-4.91 times from normal rats. By orally administration of TTU, significantly reduced the TG/HDL-C dan TC/HDL-C ratio over measured time at the decline range of 24-67% and 32-71% with the highest reduced at 2nd week (16-58% and 22-62%). There were reciprocal pattern between its ratio and their TTU intake.

Conclusion: By orally administration of TTU, the TG/HDL-C and TC/HDL-C ratio were significantly reduced compared to non-intervention DM group.

Keywords: Diabetes mellitus, purple eggplant, TG/HDL-C ratio, TG/HDL-C ratio, nicotinamide, streptozotocin.

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