

**PENGARUH PEMBERIAN EKSTRAK KEDELAI
HITAM (*GLYCINE SOJA.*) BERBAGAI DOSIS
TERHADAP KADAR GLUKOSA DARAH, KADAR
INSULIN, DAN HOMA-IR**

Studi pada Tikus Sprague Dawley Obesitas

***THE EFFECTS OF VARIOUS DOSAGE OF BLACK SOYBEAN
EXTRACT (*GLYCINE SOJA.*) ON BLOOD GLUCOSE, INSULIN
LEVEL AND HOMA-IR***

Study in Obese Sprague Dawley Rats



Tesis

**Untuk memenuhi sebagian persyaratan
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ABSTRAK
PENGARUH PEMBERIAN EKSTRAK KEDELAI HITAM (*GLYCINE SOJA*.) BERBAGAI DOSIS TERHADAP KADAR GLUKOSA DARAH, KADAR INSULIN, DAN HOMA-IR
(Studi pada Tikus *Sprague Dawley* Obesitas)

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Latar belakang: Obesitas merupakan faktor resiko homeostasis glukosa yang tidak normal dan memicu stres oksidatif sehingga dapat menurunkan sensitivitas insulin yang menyebabkan hiperglikemia dan hiperinsulinemia. Kedelai hitam mengandung antioksidan antosianin dan isoflavon yang diharapkan dapat mengurangi stres oksidatif.

Tujuan: Mengetahui pengaruh ekstrak kedelai hitam (*Glycine soja*.) berbagai dosis terhadap kadar glukosa darah, kadar insulin, dan HOMA-IR pada tikus *Sprague Dawley* (SD) obesitas.

Metode: *True eksperimental* dengan rancangan *randomized controlled pre test-post test design* pada tikus SD jantan. Dua puluh empat sampel dibagi 4 kelompok: kontrol (K), dosis 500 (P1), 750 (P2), dan 1000 mg/kgBB (P3). Tikus dibuat obesitas dengan *high fat sucrose diet* (HFSD) selama 4 minggu kemudian diberi ekstrak kedelai hitam selama 2 minggu. Uji beda sebelum dan setelah perlakuan menggunakan uji t dan *Wilcoxon*. Uji beda selisih antar kelompok menggunakan uji *One-way Anova* dan *Kruskal Wallis*.

Hasil: Tidak ada perbedaan kadar glukosa darah sebelum dan setelah perlakuan ($p > 0,05$). Ada perbedaan kadar insulin dosis 500 ($p = 0,012$) dan 750mg/kgBB ($p = 0,020$) serta ada perbedaan HOMA-IR dosis 500 ($p = 0,043$) dan 750mg/kgBB ($p = 0,028$). Terdapat perbedaan selisih kadar insulin ($p = 0,009$) antar kelompok.

Simpulan: Ada perbedaan kadar insulin dan HOMA-IR pada dosis 500 dan 750 mg/kgBB, namun kadar glukosa darah sebelum dan setelah pemberian ekstrak kedelai hitam tidak berbeda. Penurunan kadar glukosa darah, kadar insulin, dan HOMA-IR terbesar terdapat pada dosis 750mg/kgBB.

Kata kunci: obesitas, hiperglikemia, insulin, ekstrak kedelai hitam

ABSTRACT
THE EFFECTS OF VARIOUS DOSAGE OF BLACK SOYBEAN
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Background: Obese is risk factor for abnormal glucose homeostasis and causes oxidative stress that can decrease insulin sensitivity resulting in hyperglycemia and hyperinsulinemia. Black soy bean contains anthocyanins and isoflavones, it is expected to reduce oxidative stress.

Objective: Determine the effect of various dosage of black soybean extract (*Glycine soja.*) on blood glucose, insulin levels, and HOMA - IR in obese *Sprague Dawley* (SD) rats.

Methods: True experimental study with randomized controlled pre test-post test design in male SD rats. Twenty four samples divided into 4 groups: control (K), 500 (P1), 750 (P2), and 1000 mg/kgBW (P3). Rats were induced to become obese with High Fat Sucrose Diet (HFSD) for 4 weeks then black soybean extracts were given for 2 weeks. Dependent t-test and Wilcoxon used to determined the difference before and after treatments. One-way ANOVA and Kruskal Wallis used to determine the difference between the groups after treatments.

Results: There was no difference in blood glucose before and after treatment ($p > 0,05$). There were differences on insulin levels in 500 ($p = 0,012$) and 750mg/kgBW ($p = 0,020$) doseages. There were differences on HOMA-IR in 500 ($p = 0,043$) and 750mg/kgBW ($p = 0,028$) dosages. There was difference in insulin levels's difference ($p = 0.009$) between groups.

Conclusion: There are differences on insulin levels and HOMA – IR in 500 and 750 mg/kgBW dosages groups. However, there is no difference on blood glucose before and after black soybean extract treatment. The most decreased levels of blood glucose, insulin and HOMA- IR were in 750mg/kgBW dosage.

Keyword: Obese, hyperglycemia, insulin, black soybean extract