

**THESIS**

**THE EFFECT OF SUWEG TUBER FLOUR (*Amorphophallus  
campanulatus*) AND BAMBARA GROUNDNUT FLOUR (*Vigna  
subterranea*) FORMULATION ON TOTAL CHOLESTEROL  
AND TRIGLYCERIDE LEVELS  
(Study on Male Sprague-Dawley Rats with Diabetic Dyslipidemia)**



**Arranged by:**

**Farras Jagaddhita Widyadhana  
NIM. 422021728016**

**DEPARTMENT OF NUTRITION SCIENCE  
FACULTY OF HEALTH SCIENCE  
UNIVERSITAS DARUSSALAM GONTOR  
PONOROGO  
2025**

## APPROVAL SHEET

### THESIS DEFENCE

It is hereby stated that the thesis with the title :

**THE EFFECT OF SUWEG TUBER FLOUR (*Amorphophallus campanulatus*) AND BAMBARA GROUNDNUT FLOUR (*Vigna subterranea*) FORMULATION ON TOTAL CHOLESTEROL AND TRIGLYCERIDE LEVELS**  
**(Study on Male Sprague-Dawley Rats Diabetic Dyslipidemia)**

Written by:

**Farras Jagaddhita Widyadhana**  
**422021728016**

It has been reviewed recommended to meet scientific standards, in terms of both scope and quality.

It has been approved to presented on : Wednesday, 12 February 2025

**Supervisor I**

Indahtul Mufidah, S.Gz., M.Gz  
NIDN. 0728039501

**Supervisor II**

Kartika Pibriyanti, S.K.M., M.Gizi  
NIDN. 0704029003

Approved by,

**Head of Nutrition Science Department**  
**Faculty of Health Science, Universitas Darussalam Gontor**

**(Lulu' Luthfiya, S.Gz., M.P.H.)**  
**NIDN.0718019203**

UNIVERSITAS DARUSSALAM GONTOR

## VALIDITY SHEET

It is hereby stated that the thesis with the title :

**THE EFFECT OF SUWEG TUBER FLOUR (*Amorphophallus campanulatus*) AND BAMBARA GROUNDNUT FLOUR (*Vigna subterranea*) FORMULATION ON TOTAL CHOLESTEROL AND TRIGLYCERIDE LEVELS**  
**(Study on Male Sprague-Dawley Rats Diabetic Dyslipidemia)**

Telah diuji dan disahkan dihadapan

Written by:

**Farras Jagaddhita Widyadhana**  
**422021728016**

Has been tested and approved & before the Thesis Examiner Board  
On : Saturday, 15 February 2025

**Examiner Board :**

**Supervisor I**

Indahtul Mufidah, S.Gz., M.Gz  
NIDN. 0728039501

**Supervisor II**

Kartika Pibriyanti, S.K.M., M.Gizi  
NIDN. 0704029003

**Examiner**

Nur Amala, S.Gz., M.Gz  
NIDN.



*Approved by,*

**Head of Nutrition Science Department**  
**Faculty of Health Science, Universitas Darussalam Gontor**



(Lulu' Luthfiya, S.Gz., M.P.H.)  
NIDN.0718019203

## ABSTRACT

### THE EFFECT OF SUWEG TUBER FLOUR (*Amorphophallus campanulatus*) AND BAMBARA GROUNDNUT FLOUR (*Vigna subterranea*) FORMULATION ON TOTAL CHOLESTEROL AND TRIGLYCERIDE LEVELS

(Study on Male Sprague-Dawley Rats Diabetic dyslipidemia)

**Farras Jagaddhita Widvadhana**  
**NIM 422021728016**

Diabetic dyslipidemia was an imbalance in lipid (fat) levels in the blood, such as cholesterol and triglycerides. This study to analyze the effect of intervention with suweg tuber flour and bambara groundnut flour formulations on total cholesterol and triglyceride levels in diabetic dyslipidemia Sprague-Dawley rats. The research method is true experimental design with a pre-post test and a randomized control group design. The research was conducted at the Center for Food and Nutrition Studies Laboratory, Universitas Gadjah Mada. The study used 30 male Sprague-Dawley rats, aged 2 to 3 months, with a body weight of 150 to 200 grams, grouped into 5 groups based on the Federer formula. The treatment was carried out for 14 days. Total cholesterol levels were examined using the CHOD-PAP method, and triglyceride levels using the GPO-PAP. The groups were as follows: (K1) STZ-NA+HFD+ standard diet, (K2) STZ-NA+HFD+atorvastatin 0.36 mg/200 gBW/day, (P1) STZ-NA+HFD+ 1,9 g suweg tuber flour + 0,6 g bambara groundnut flour, (P2) STZ-NA+HFD+ 1,25 g suweg tuber flour +1,25 g bambara groundnut flour, and (P3) STZ-NA+HFD+ 0,6 g suweg tuber flour +1,9 g bambara groundnut flour. Statistical analysis used a Paired T-test test and One-Way ANOVA test followed by Post Hoc Tukey (p-value <0,05). The results showed a significant difference in total cholesterol and triglycerides between groups before and after treatment; there was a significant difference in the mean of total cholesterol and triglycerides between groups before and after treatment and there was a difference in total cholesterol in each group (p=0.000). Formulation P2 was most effective in reducing total cholesterol levels (44.54 mg/dL), while formulation P1 was most effective in reducing triglyceride levels (28.94 mg/dL). The formulations of suweg tuber flour and bambara groundnut flour were able to reduce total cholesterol and triglyceride levels in male Sprague-Dawley rats with diabetic dyslipidemia model.

**Keywords:** Diabetic dyslipidemia, total cholesterol, suweg tuber flour, bambara groundnut flour, triglycerides.

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## ABSTRAK

**PENGARUH PEMBERIAN FORMULASI TEPUNG UMBI SUWEG (*Amorphophallus campanulatus*) DAN TEPUNG KACANG BOGOR (*Vigna subterranea*) TERHADAP KADAR KOLESTEROL TOTAL DAN TRIGLISERIDA**  
**(Studi Pada Tikus *Sprague-Dawley* Jantan *Diabetic dyslipidemia*)**

**Farras Jagaddhita Widvadhana**  
**NIM 422021728016**

*Diabetic dyslipidemia* merupakan kelainan lipid dan lipoprotein plasma akibat gangguan metabolisme. Penelitian ini menganalisis pengaruh pemberian formulasi tepung umbi suweg dan tepung kacang bogor terhadap kadar kolesterol total dan trigliserida pada tikus *Sprague-dawley diabetic dyslipidemia*. Metode penelitian *true eksperimental* dengan rancangan *pre – post test with randomized control group design*. Penelitian dilakukan di Laboratorium Pusat Studi Pangan dan Gizi Universitas Gadjah Mada. Penelitian menggunakan 30 ekor tikus jantan *Sprague-dawley* berusia 2 – 3 bulan dengan berat badan 150 – 200 gram dikelompokkan menjadi 5 kelompok berdasarkan rumus *Federer*. Perlakuan dilakukan selama 14 hari. Pemeriksaan kadar kolesterol total dengan metode CHOD-PAP dan trigliserida dengan GPO-PAP. Kelompok (K1) induksi STZ-NA+HFD+pakan standar, (K2) STZ-NA+HFD+atorvastatin 0,36 mg/200 gBB/hari, (P1) STZ-NA+HFD+ 1,9 g tepung umbi suweg +0,6 g tepung kacang bogor, (P2) STZ-NA+HFD+ 1,25 g tepung umbi suweg +1,25 g tepung kacang bogor, dan (P3) STZ-NA+HFD+ 0,6 g tepung umbi suweg +1,9 g tepung kacang bogor. Analisis statistik menggunakan uji *Paired T-Test* dan uji *One-Way ANOVA* dilanjut dengan *Post Hoc Tukey* ( $p\text{-value} < 0,05$ ). Hasil menunjukkan terdapat perbedaan kolesterol total dan trigliserida yang signifikan antar kelompok sebelum dan sesudah perlakuan; terdapat perbedaan rerata kolesterol total dan trigliserida yang signifikan antar kelompok sebelum dan sesudah perlakuan; dan terdapat perbedaan kolesterol total pada setiap kelompok ( $p=0,000$ ). Formulasi P2 paling efektif menurunkan kadar kolesterol total (44,54 mg/dL) serta formulasi P1 paling efektif menurunkan kadar trigliserida (28,94 mg/dL). Formulasi tepung umbi suweg dan tepung kacang bogor dapat menurunkan kadar kolesterol total dan kadar trigliserida pada tikus *Sprague-dawley* jantan model *diabetic dyslipidemia*.

**Kata Kunci:** *Diabetic dyslipidemia*, kolesterol total, tepung umbi suweg, tepung kacang bogor, trigliserida

## ATHEENTICITY STATEMENT

It is hereby declared by,

Name : Farras Jagaddhita Widyadhana  
NIM : 422021728016  
Faculty : Health Science  
Study Program : Nutrition Science  
Thesis Title : The Effect of Suweg Tuber Flour (*Amorphophallus campanulatus*) and Bambara Groundnut Flour (*Vigna subterranea*) Formulation on Total Cholesterol and Triglyceride Levels (Study on Male Sprague-Dawley Rats with Diabetic Dyslipidemia)

I sincerely declare that the research contained in this thesis is my own work and does not belong to anyone else. This thesis has never been published before, except for some parts with original references.

If in the future it is found that this work is plagiarism, I am ready to be given administrative and academic sanctions.

Ponorogo, February 9th 2025

Writer,



Farras Jagaddhita Widyadhana  
NIM. 422021728016

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GONTOR  
UNIVERSITAS DARUSSALAM GONTOR



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