

**SUBMISSION FOR EVALUATION
FINAL YEAR PROJECT 2 - RESEARCH PROJECT**

**ANTIDIABETIC AND ANTI OBESITY POTENTIALS OF EXTRACTS OF
SPENT COFFEE GROUNDS (SCGs) WASTE**

Name : AIN NURBAITI BINTI MOHD IBRAHIM
Student ID : 2023185547
Program : AS245
Course code : FSG671
Mobile Phone : 017-4662421
E-mail :

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GROUNDS (SCGs) WASTE**

AIN NURBAITI BINTI MOHD IBRAHIM

**BACHELOR OF SCIENCE (Hons.) APPLIED
CHEMISTRY FACULTY OF APPLIED SCIENCES
UNIVERSITI TEKNOLOGI MARA**

AUGUST 2025

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF SYMBOLS	viii
LIST OF ABBREVIATIONS	ix
ABSTRACT	x
ABSTRAK	xi
CHAPTER 1 INTRODUCTION	
1.1 Research background	1
1.2 Problem statement	3
1.3 Significance of study	5
1.4 Research questions	6
1.5 Objectives	7
CHAPTER 2 LITERATURE REVIEW	
2.1 Spent coffee grounds.	8
2.1.1 Valorize products from spent coffee grounds	9
2.1.2 Composition and characterization of spent coffee grounds waste.	12
2.1.3 Extraction of bioactive substances	15
2.2 Total phenolic content	17
2.3 Antidiabetic properties	18
2.3.1 α -amylase inhibitory activity	19
2.4 Antiobesity properties	21
2.4.1 Pancreatic lipase inhibitory activity	22
CHAPTER 3 RESEARCH METHODOLOGY	
3.1 Materials and chemicals	25
3.1.1 Materials	25
3.1.2 Chemicals	25
3.2 Sample extraction	26
3.2.1 Preparation of samples	26
3.2.2 Microwave-assisted extraction (MAE)	26
3.3 Analysis of sample	27
3.3.1 Total phenolic content determination	27
3.3.2 α -amylase inhibitory assay	28
3.3.3 Pancreatic lipase inhibitory activity	29

CHAPTER 4 RESULTS AND DISCUSSION	
4.1 Percentage yield of SCGs waste	30
4.2 Total phenolic content	32
4.3 α -amylase inhibitory activity	36
4.4 Pancreatic lipase inhibitory activity	42
 CHAPTER 5 CONCLUSION AND RECOMMENDATIONS	
5.1 Conclusion	47
5.2 Recommendations	48
 CITED REFERENCES	50
APPENDICES	55
<i>CURRICULUM VITAE</i>	56

ABSTRACT

ANTIDIABETIC AND ANTI OBESITY POTENTIALS OF EXTRACT OF SPENT COFFEE GROUNDS (SCGs) WASTE

Diabetes and obesity are major global public health problems worldwide that are associated with severe complications and ever rising costs of health care. This study addressed the urgent need for safer, naturally and useful, alternative drugs in view of the common adverse effects of synthetic drugs in current use. To exploit waste valorization strategy for environmental sustainability, commercially available spent coffee grounds (SCGs) waste was evaluated for the possible antidiabetic and antiobesity activities. Extraction was performed using a microwave-assisted extraction (MAE) technique with a 70:30 ethanol-water (v/v) mixture as the solvent. Total phenolic content (TPC) was estimated using Folin-Ciocalteu method. Inhibitory activities of pancreatic lipase and α -amylase were determined by in vitro enzyme assays. The highest extract yield was 6.5% at sample-to-solvent ratio of 1:40 and the maximum TPC was 977 mg GAE/g extract at 30 ppm concentration, from the results. Meanwhile, in vitro enzyme inhibition assays were performed to assess α -amylase and pancreatic lipase inhibitory activities. The IC_{50} values for SCGs extracts were 344.78 μ g/mL for α -amylase compared to 325.58 μ g/mL for the standard drug (acarbose) and the IC_{50} for pancreatic lipase was 466.14 μ g/mL. Finally, the current work underlines that discarded coffee grounds can be used as a source of bioactive chemicals to develop functional food ingredients or nutraceuticals, indicating them as a prospective, natural and sustainable source of bioactive chemicals with moderate bioactivity against diabetes and obesity as evaluated in enzyme assays in vitro.