EXTRACTION OF CAFFEINE AND POTENTIAL APPLICATION IN DARK SPOTS CORRECTOR CREAM OF COCOA (*Theobroma cacao*) BEANS

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TABLE OF CONTENTS

		Page
ACKNOWLEDGEMENTS		iii
TABLE OF CONTENTS		iv
LIST OF TABLES		vii
LIST OF FIGURES		viii
LIST OF SYMBOLS		ix
LIST OF ABBREVIATIONS		x
ABSTRACT		xii
ABSTRAK		xiii
CHAPTER 1 : INTRODUCTION		
1.1	Background of Study	1
1.2	Problem Statement	3
1.3	Research Questions	4
1.4	Significance of Study	5
1.5	Objectives of Study	5
1.6	Scope and Limitation of Study	6
CHAPTER 2 : LITERATURE REVIEW		
2.1	Dark Spots	7
	2.1.1 Definition and Sources of Dark Spots	7
	2.1.2 Treatment of Dark Spots	8
2.2	*Theobroma cacao* (Cocoa) Plant	9
	2.2.1 Background of Cocoa Plant	9
	2.2.2 Types of Cocoa Plant	10
	2.2.3 Application of Cocoa Plant	11
2.3	Caffeine	14
	2.3.1 Properties of Caffeine	14
	2.3.2 Application of Caffeine	14
2.4	Extraction Method of Caffeine	16
	2.4.1 Ultrasound Assisted Extraction (UAE)	16
	2.4.2 Supercritical Fluid Extraction (SFE)	17
	2.4.3 Liquid-Liquid Extraction (LLE)	18
	2.4.4 Other Reported Extraction of Caffeine Method	19
2.5	Instrumentation for Analysis of Caffeine	21
	2.5.1 Fourier Transform Infrared Spectroscopy (FTIR)	21
	2.5.2 UV-Visible Spectroscopy (UV-Vis)	22

2.6 Cream Development 24

CHAPTER 3 : METHODOLOGY
3.1 Materials 26
3.1.1 Raw Materials 26
3.1.2 Chemicals 26
3.1.3 Apparatus 26
3.2 Extraction of Caffeine from Cocoa Bean 27
3.2.1 Sample Preparation 27
3.2.2 Liquid-Liquid Extraction 27
3.2.3 Determination of Caffeine Extraction Yield 28
3.3 Characterization of Caffeine 28
3.3.1 Melting Point Analysis 28
3.3.2 FTIR Analysis 28
3.3.3 UV-Vis Analysis 29
3.4 Formulation of Dark Spots Corrector Cream 29
3.5 Physicochemical Characterization of Dark Spots Corrector Cream 30
3.5.1 pH Test 30
3.5.2 Organoleptic Evaluation 31
3.5.3 Stability Test 31
3.6 Statistical Analysis 31
3.7 Methodology Flowchart 32

CHAPTER 4 : RESULTS AND DISCUSSION
4.1 Extraction of Caffeine from Cocoa Bean 33
4.1.1 Sample Preparation 33
4.1.2 Liquid-Liquid Extraction (LLE) 34
4.1.3 Determination of Caffeine Extraction Yield 36
4.2 Characterization of Caffeine 37
4.2.1 Melting Point Analysis 37
4.2.2 FTIR Analysis 39
4.2.3 UV-Vis Analysis 42
4.3 Formulation of Dark Spots Corrector Cream 44
4.4 Physicochemical Characterization of Dark Spots Corrector Cream 45
4.4.1 pH Test 45
4.4.2 Organoleptic Evaluation 47
4.4.3 Stability Test 48

CHAPTER 5 : CONCLUSION AND RECOMMENDATIONS
5.1 Conclusion 51
5.2 Recommendations 53

ABSTRACT

EXTRACTION OF CAFFEINE AND POTENTIAL APPLICATION IN DARK SPOTS CORRECTOR CREAM OF COCOA (*Theobroma cacao*) BEANS

Caffeine has recently emerged as one of the compounds that can serve multiple functions and be used in a variety of fields, including skin care products and cosmetic formulations. Given the importance of caffeine in the treatment of hyperpigmentation, age spots, and cellulite scars in cosmetic applications, this study developed a dark spots corrector cream containing caffeine extracted from cocoa (*Theobroma cacao*) beans via liquid-liquid extraction. The extracted caffeine is then characterized using a variety of techniques, including melting point analysis, Fourier-Transformed Infrared Spectroscopy (FTIR) analysis, and Ultraviolet-Visible Spectroscopy (UV-Vis) analysis. The effectiveness and stability of the formulated dark spots corrector cream are then determined through a series of tests, including pH tests, organoleptic evaluation, and stability testing. The extracted caffeine has a melting point of 232.5 °C-236.1 °C, confirming its identity. The FTIR analysis yields positive results that are consistent with the literature. Meanwhile, UV-Vis analysis was used to determine the caffeine concentration in a cocoa sample, and the result was 48.649 ± 2.79 ppm. For each formulation, the pH value of the formulated dark spots corrector cream shows an ideal range of pH that is suitable for application on the skin ranging from 5.881 to 6.155. Meanwhile, the organoleptic evaluation and stability test results are positive, confirming the cream's stability. Based on these findings, the dark spot corrector cream formulated with caffeine is effective in treating the aforementioned skin issue when applied topically.