

UNIVERSITI TEKNOLOGI MARA

**DYEABILITY OF RED CABBAGE
COLORANT ON SILK FABRIC
TREATED WITH *ENTADA SPIRALIS***

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Natural dyes have been the focus of recent researchers due to their unique colour shades and environmentally friendly processes. However, dyeing with natural dyes often results in light colour shades with poor colourfastness properties. This study focuses on dyeing using red cabbage extracts on silk fabrics which were treated with *Entada spiralis* to produce a variety of colour shades, enhance colour properties and improve the colourfastness of the dyed fabrics. *Entada spiralis*, or locally known as *pokok beluru*, was used as a colour enhancer. The red cabbage extracts were extracted through boiling water (BWE) and ultrasound-assisted extraction (UAE) methods. The extracts were used to dye silk fabrics, which were treated with *Entada spiralis*, using several types of mordants. The exhaustion method was set at 85°C for 60 minutes using different liquor ratios. Both the treated and untreated silk fabrics were dyed and comparisons were made on their colour shades, properties and colourfastness to washing, perspiration, crocking and light. The results indicated that the dyed samples treated with *Entada spiralis* and red cabbage solution gave dark shades in colour such as dark brown, and higher colour strength, and better colourfastness. The treated dyed samples gave ratings of moderate to good colourfastness in the greyscale test. Meanwhile, the untreated dyed samples gave poor to moderate colourfastness. The UAE method at 15 minutes extraction resulted in higher colour strength at 0.208 K/S value for treated sample with iron (II) sulphate as mordant compared to the boiling water extraction (BWE) method that needed 30 minutes of extraction time with a K/S value of 0.17995. As a conclusion, the *Entada spiralis* treated samples with a red cabbage solution using UAE techniques gave better colourfastness properties and higher colour strength than the untreated fabrics.

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TABLE OF CONTENTS

	Page
CONFIRMATION BY PANEL OF EXAMINERS	ii
AUTHOR'S DECLARATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ABBREVIATIONS	xii
CHAPTER ONE: INTRODUCTION	1
1.1 Research Background	1
1.2 Problem Statement	3
1.3 Objectives	4
1.4 Scope of Study	4
1.5 Significance of Study	5
CHAPTER TWO: LITERATURE REVIEW	6
2.1 Introduction	6
2.2 Natural Dyes	7
2.3 Brassica oleracea L. as red cabbage dye	8
2.4 Entada spiralis as surface active agent	10
2.5 Mordant	11
2.6 Silk fabrics	13
2.7 Natural Dyes Extraction Process	14
2.7.1 Boiling Water Extraction	14
2.7.2 Solvent Extraction	15
2.7.3 Fermentation Technique	16
2.7.4 Ultrasound-Assisted Extraction	18