



الجامعة
UNIVERSITI
TEKNOLOGI
MARA

**TLC OPTIMIZATIONS OF THE SOLVENT SYSTEM IN IDENTIFICATION
OF LYCOPENE FROM LOCAL WATERMELON (*Citrullus lanatus* (thunb.)
Matsum. And Nakai) CRUDE EXTRACT.**

By

NURAFIQAH BINTI SHUKOR

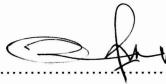
**Thesis Submitted in Partial Fulfilment of the Requirements for
Bachelor of Medical Laboratory Technology (Hons),
Faculty of Health Sciences, University Teknologi MARA**

2015

DECLARATION

I hereby declare that this thesis is based on my original work. I also declare the thesis has not previously or currently submitted by any other degree student at UiTM or other institutions.

JULY 2015



.....
NURAFIQAH BINTI SHUKOR

900421-02-5526

2011221524

TABLE OF CONTENT

	Page
DECLARATION	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENT	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
LIST OF ABBREVIATIONS	xii
ABSTRACT	xiii
CHAPTER 1: INTRODUCTION	
1.1 Background	1
1.2 Problem Statement	3
1.3 Research Objectives	4
1.3.1 General Objective	4
1.3.2 Specific Objectives	4
1.4 Research Hypothesis	4
1.5 Scope and Limitations of Study	5
1.6 Significant of Study	5
CHAPTER 2: LITERATURE REVIEW	
2.1 Watermelon (<i>Citrullus lanatus</i>)	7
2.1.1 Physical Characteristics	7
2.1.2 Classification	10
2.1.3 Local Names of Watermelon	12
2.1.4 Nutritional Value	12
2.2 Phytochemical Review	13
2.2.1 Chemical Constituents	14
2.3 Lycopene	16
2.3.1 Sources of Lycopene	16
2.3.2 Biological and Chemical Synthesis	17

ABSTRACT

TLC Optimizations of The Solvent System In Identification of Lycopene From Local Watermelon (*Citrullus Lanatus* (Thunb.) Matsum. And Nakai) Crude Extract.

Citrullus lanatus are good source of fibre and also rich in phytonutrients namely lycopene which is believed to have the ability of reducing the risks of many disease, producing collagen and as a protection for oxidative damage because. Because of the increasing trend of lycopene estimation as one of the significant nutraceuticals for the use for food and nutritional supplements, researchers are engrossed in unindustrialized products and ingredients high in lycopene by extracting and using these compounds from *Citrullus lanatus*. However there are insufficient studies on the identification of lycopene compound by using column chromatography and the solvent system as the mobile phase in column chromatography to detect and identify the lycopene compound in local watermelon (*Citrullus lanatus* (Thunb.) Matsum. and Nakai). Therefore, this study was conducted to optimize the solvent system in the identification of lycopene by using Thin Layer Chromatography (TLC). Few solvents were used to develop the most accurate solvent system to identify lycopene compound in local watermelon (*Citrullus lanatus* (Thunb.) Matsum. and Nakai). Single solvent of 100% acetonitrile solvent was proved to be the best mobile phase in detection of lycopene compound by using TLC because of the polarity of the solvent. In conclusion the polarity of the solvents and the compound plays an important roles in developing a good solvent system that will produced good separations of compound

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Plants that can be eaten contain lots of natural chemicals such as carotenoids that produce antioxidant effect. These are called phytonutrients. Phytonutrients can be defined by the words itself which is "Phyto" means plant in Greek and nutrients on the other hand means the components in foods that an entity utilizes to survive and grow. These chemicals aid the plants in protecting themselves from bacteria, pesticides, fungi, and many other threats. Phytonutrients is not an important components for keeping a living things alive, but when the phytonutrients is consumed, it helps avoid disease and helps body works in optimum level. Studies prove that they can protect humans against any ailments even though it is actually renowned that plant produce these substances to protect themselves (Badugu, 2012).

In this study, phytonutrients, specifically lycopene was identified in the local, Malaysian watermelon (*Citrullus lanatus (thunb.) Matsum. And Nakai*) crude extract. The reason that lies behind the chosen subject are the tasty juice obtained from the flesh that is beneficial and at the same time preferable comparing to herbs, the availability throughout the year because it is not a seasonal fruit, and it's practicality which everyone can get it's nutrient with cheaper price and by just consuming fruits instead of other capsules or tablets supplements. Watermelon has