PURIFICATION OF OLEIC ACID FROM PALM OIL BY MEANS OF SOLUBILITIES DIFFERENCE

NUR FATHIAH BINTI ZAHRI

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

JANUARY 2020

TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

PURIFICATION OF OLEIC ACID FROM PALM OIL BY MEANS OF SOLUBILITY DIFFERENCE

Oleic acid is an essential fatty acid in human healthy diets. It also plays a crucial role as emulsifier or surfactant in cosmetics and personal care products. Thus, a study of purification of oleic acid is beneficial to the Malaysia industry. The objectives of this study are to enrich the purity and concentration of oleic acids from palm oil at low-temperature crystallisation and to prepare free fatty acid (FFA) from palm oil. FFA was prepared by the reflux of palm oil with a hydrolysis solution. Next, the FFA was crystallized with 95% methanol with various ratios. Then, the crystallized FFA was converted to fatty acid methyl ester (FAME) using reagent consist of concentrated sulphuric acid-toluene-methanol. FAME was analysed by using Gas Chromatography-Mass Spectrum (GC-MS) detector. The results showed that a total of four fatty acids were analysed and identified in palm oil including myristic acid, palmitic acid, stearic acid, oleic acid, and linoleic acid. Oleic acid composition showed the highest percentage (45.68%) followed by palmitic acid (38.09%), linoleic acid (11.54%) and stearic acid (3.82%) and myristic acid (0.86%). The enrichment and purification of oleic acid were determined. The crystallisation process of oleic acid with 5 mL of methanol gives the highest enrichment of oleic acid (9.46%), while 10 mL methanol gives the lowest enrichment of oleic acid (2.86%). It can be concluded that the ratio of FFA: methanol 1: 5 (g: mL) gives the best result to enrich and purify the oleic acid.