CHAPTER 3

METHODOLOGY

5.1 Introduction

In overall, the research methodologies divided into 4 major steps as listed below:

a) Sample preparation of dried palm pressed fibre
b) Oil extraction of palm pressed fibre
c) Separation the mixture oil and solvent using rotary evaporator
d) Analysis

5.2 Sample preparation of dried palm pressed fibre

The palm pressed fiber (PPF) is collected at LKKP Lepar Hillir. Before the extraction process, the palm pressed fiber was dried in an oven at 50-60°C for 1 hour. Then, the dried sample was grind and stored in the room temperature.
5.3 Oil extraction of palm pressed fibre

In this study, the ultrasound-assisted extraction (UAE) was applied for the recovery oil process. An ultrasonic bath (model E 30 H) was used at constant power 240 W. The mixture of solid and solvent ratio (1:3) is pour into this beaker and sealed properly by using aluminium foil. Then the sample is placed in the ultrasonic bath with the temperature is set at 30 °C along the experiment. The extraction is carried out at 30 minutes. Then, the sample will undergo filtration and evaporation process to remove the solvent. Next, the collected oil is kept into the sample bottle at the room temperature. The same procedure is repeated for the sample with of solid: liquid ratio (1:3-1:8) and different extraction time (0 minutes- 60 minutes).
5.4 Separation the mixture oil and solvent

When the extraction process is completed, the extracted oil needs to undergo separation process in order to remove impurities or solvent contain in the oil. The sample will undergo filtration process to remove solid and impurities from this mixture by using filter paper.

Then, the solvent (methanol) is removed from the extracted oil by using rotary evaporator as shown in Figure 3-3. The purpose of separation is to remove remaining solvent in the palm pressed fiber oil. The mixture to be separated was filled into the flask. The filled and an empty solvent collection flask were placed on the unit. The flask was filled in the water bath.

Use the speed control to rotate the flask. The rotation is set up and it was constant for every separation process. The temperature was set up to boiling temperature of solvent to ensure all solvent are separated from the mixture. The rotation is set up to level three. The aspirator vacuum was switched on. When the solvent should start to evaporate, it