SOXHLET EXTRACTION OF OIL FROM *ALEURITES MOLUCCANA* NUT : THE EFFECTS OF EXTRACTION TEMPERATURE AND LIQUID/SOLID RATIO

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ABSTRACT

The world-wide consumption of vegetable oils to increase by at least 50% for the past decade. Due to this fact, various plants were studied for their potential sources of vegetable oil. For this study, *Aleurites Moluccana* oil was extracted using Soxhlet method and the effect of extraction temperature and solid to liquid ratio were analyzed. From the results obtained, candlenut yield quite high percentage oil and showed its potential as an alternative sources of vegetable oils. For Soxhlet extraction of candlenut oil, the oil yield percentage increases as temperature and solid to liquid ratio increases. By combining these two parameters, the optimum temperature and solid to liquid ratio were 95^{o}C and 1g/45 mL respectively with yield of 45.17%. The major constituents of candlenut oil found were linoleic acid, palmitic acid, oleic acid and stearic acid.

Keywords— Aleurites Moluccana, Soxhlet extraction, temperature, solid/liquid ratio

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CHAPTER 1

INTRODUCTION

1.1 Research Background

Vegetable oil is best defined as a triglyceride, an ester which is derived from glycerol and three fatty acids extracted from a plant (Lu et al., 2011). They can be extracted from different part of plant such as seeds (including sunflower, safflower, and cotton), nuts (including peanut, soybean, almond and walnut) or kernel. The unique chemical structure of vegetable oils with unsaturation sites, epoxies, hydroxyls, ester and other functional group enable them to undergo various chemical transformation (Alam et al, 2014). Due to this fact, they are widely used in various industrial applications such as in the production of plastics, solvents, resins, plasticizers and surfactants. In addition, they also have poor viscosity index, low temperature properties and low oxidation stability, (Panchal et al., 2017) (Nagendramma & Kaul, 2012) (Panchal et al., 2014) (Salimon & Salih, 2010).

Various studies has been done on different types of vegetable oils and various uses of vegetable oils has been discovered. Soybean and sunflower oil are being used as a feedstock for biodiesel production (Mohibbeazam, Waris & Nahar, 2005). The potential of non-edible oils such jatropha, neem and morigha oils are also being explored to replace soybean and sunflower as these two sources are food sources for human (Martin et al., 2010).