SOXHLET EXTRACTION OF OIL FROM CANDLENUT (*ALEURITES MOLUCCANA*): EFFECT OF SOLVENT AND EXTRACTION TIME

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ABSTRACT

Candlenut oil was extracted using soxhlet extraction technique. The types of solvent and extraction time were optimized using one-factor-at-a-time method. The ground candlenut samples were extracted using ethyl acetate as a solvent. The optimum time for the extraction was found to be 3.5 hours with a highest yield of 72.33%. The highest yield was produced by using ethyl acetate, 72.33%, followed by acetone 46.65%, ethanol 10.1% and the least yield produced by methanol 3.41%. The extracted candlenut oil was analyzed with GC-MS for its chemical constituents were tested with GC-MS analysis and it contains palmitic acid and oleic acid.

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CHAPTER ONE

INTRODUCTION

1.1 Research Background

Vegetable oils are made up of ester compounds and they contain molecules from glycerol associated with three saturated or unsaturated fatty acids (Islam *et al.*, 2014). They are primarily consists of triacylglycerol with the composition of 95 - 98% and 2-5% composition of other complex mixtures of minor compounds. These compounds are from a broad range of chemical nature (Aluyor et.al, 2009). Majority of vegetable oils are recovered from beans or seeds. They normally provide two valuable commodities which are fatty oil and a protein-rich meal (Gunstone, 2011). Variance in the distribution and composition of the vegetable oil are due to the agronomic and climatic conditions, trait of the seed and fruit, oil extraction system and refining operations. (Aluyor et.al, 2009).

Vegetable oils are renewable and abundantly available potential bio resources (Islam *et al.*, 2014).Traditional vegetable oils such as linseed, cotton seed, soybean, sunflower, castor, peanut, coconut and palm have been used as the main alternative of fuels applied in diesel engines (Mogire, 2013). They have a heat capacity of approximately 90% of that of diesel fuel (Taylor and Karaosmanoglu, 2010). Degummed sunflower oil has tested as a fuel on an extensive range of diesel-engine agricultural tractors. Long haul movement of direct infusion diesel motors on sunflower oil demonstrates a consequence of carbon develop on certain parts and