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EXTRACTION OF OIL FROM SUNFLOWER SEED BY SOLVENT EXTRACTION METHOD

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ABSTRACT

This research was conducted to determine the optimum percentage of oil yield from the sunflower seed through Solvent Extraction method. The oil yield was determine by using one parameter at one time method (OFAT). Four parameters has been tested in this method which are the type of solvent used, effect of temperature, effect of time, and the solid to liquid ratio. Then, the oil collected was tested by using the Gas Chromatography-Mass Spectrum machine (GCMS) to identify the chemical constituent consist in the oil. According to the result, the optimum oil yield is 60.4% of oil has been extracted by using Ethyl acetate as the solvent. For the effect of temperature, the optimum oil yield was collected at temperature 40°C, while for the effect of time, the optimum yield was collected at time 15 minute. As for the solid to liquid ratio, the optimum percentage of oil yield obtain is 60.4% which the ratio used are 10:1.

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CHAPTER ONE

INTRODUCTION

1.1 Research Background

Helianthus Annuus or Sunflower is a species of flowering plant that belongs to the largest family of flowering plants which is the ubiquitous sunflower family (Asteraceae or Compositae). Sunflower (Helianthus annuus L.) is cultivated on a large area and is one of the four major annual crops grown for edible oil (Pugliesi, Fambrini, and Cavallini 2000). Sunflower oil is classified as vegetable oil since it is produce from the plant base source. Vegetable oils are triglycerides that extracted from some parts of plant. Vegetable oil in every plant base oil contains of specific fatty acid distribution depending on their plant sources (Orsavova et al. 2015). The vegetable oil can be found in one or more plant part, such as nuts, seeds, or at any part of fruits. Most of it are colorless and pale yellow but it may become darker if oxidize in longer time. Sunflower seeds that extracted from the solvent extraction process contain a high amount of oil which is over than 40% (Clef and Kemper 2013). Sunflower seed oil is an important source of polyunsaturated fatty acid (linoleic acid) of potential health benefits (Lopez et al., 2000; Monotti, 2004). Sunflower oil composition consists of 90% oleic and 10% linoleic acids or vice versa(Arshad and Amjad 2012).

Vegetable oils are divided into two types which is vegetable oil and essential oil. Vegetable oil are triglyceride that extracted from plant and most of it are edible. Essential oil which also known as aromatic oil or volatile oil are normally smells. For example, garlic oil produce pungent savory smell which it can help to increase the taste of food. Fatty acids contain in the vegetable oils is formed by a mixture of saturated fatty acids (SFAs) and unsaturated fatty acids (UNFAs) classified according to the