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**TITLE:
BIO COLOURANT FROM ALGAE WITH
CHEMICAL SOLVENT METHANOL USING TLC
METHOD**

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ABSTRACT

Algae are a chlorophyll bearing autotrophic thalloid plant body which mostly are aquatic plant. Moreover, the plant body of algae are unicellular to multicellular structure. To explain further, this study is about the pigments contained within the algae could be used as alternatives ways to replace synthetic colourant. We have identified, two types of algae which can be used in our research, which are macroalgae and microalgae. The colour pigments of the algae known for their vibrant colours, such as phycobiliproteins, chlorophylls, and carotenoids. The bio colourant was produced on a small scale, as to just see the colour pigments extraction using chemical solvent of methanol. The separation of the colour pigments from algae was performed by using the Thin Layer Chromatography (TLC) method. We collected 2 sample with same amount of weight for each total, with each one of the samples using different method of colour pigment extraction process of the microalgae. There are homogenizer and boiling method used to extract the colour pigment from the algae. The chemical solvent chosen were methanol, acetone, petroleum ether, and diethyl ether for the used in separation process. The methanol was chosen to extract the pigment using the two methods. After the extraction, we conduct the TLC method inside the glass chamber with ratio of chemical solvent mixture for separation process of the colour pigments. By then, the colour length from separation were used to calculate each of the retention factor (Rf) value to observe which one of the methods of extraction yield a better outcome. Moreover, the result will be compared to the extraction of raw algae, which is macroalgae with the same chemical.

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BACKGROUND

1.1 Introduction

In our modern society, consumers are actively seeking the used of safe food products which can help their health as well as the environment. One of the applications of food products they look for is the colourant for food. It is important to know the ingredients or raw substances used in this food colourant, which the quality of flavour in the food can be known. The synthetic food colouring sure gives a bright effect to the foods; however this food colouring could potentially stimulate or gives side effects to the consumers, and it is to be said to be one of the sources of specific teratogenic and carcinogenic affects.

Not to mention, the main sources of synthetic food colouring are known to be harmful and dangerous to consume. For example, some of the mineral's compound used in the production of synthetic food colouring are petrochemicals, petroleum, and coal tar which harmfully led to disease like Attention Hyperactivity Disorder (ADHD) and brain tumours. Additionally, the main purpose of the food colouring must not be mainly to make the food look more appetizing and appealing, but to also gives additional beneficial health benefits to its consumers.

Hence, with the modern technology nowadays, researchers came up with the idea of using natural resources as the major ingredients or substances in making food colouring. Natural food colouring plays the same role as the synthetic food colouring, moreover it possesses a vast amount of nutritional and health related benefits. Using natural food colouring or bio colourant helps in sustainability of our environment because it is prepared from renewable sources which originate from the plant. One of the benefits of using bio colourant is it can act as antioxidants that can prevent several diseases and unwanted disorders for consumers.

To extract the bio colour, algae was used because it is a natural resource. Then we conduct the experiment to extract the colour pigment from the microalgae. Then, we calculate the retention factor value (R_f) with the help of Thin-Layer Chromatography (TLC) method. Lastly, it will be compared with the macroalgae result.