UNIVERSITI TEKNOLOGI MARA

A STUDY ON THE EFFECTS OF ROSE FLOWERS (*ROSA ROSA*) AS A PH INDICATOR IN EDIBLE FOOD PACKAGING FILM

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ABSTRACT

A natural pH indicator is in a high demand by the industries especially in food industry. This is because a natural ones are cheap, have simple procedure and consumer-friendly which in other word is safe to consume and use. In food packaging, it is important to have these elements where pH indicator can prevent and detect food spoilage. To have a natural pH indicator, Rose flower (*Rosa rosa*) is been use as natural resources in this project. Rose flowers contain anthocyanins that cause color changes of other substances. To extract these, three methods is been done to get significant amount of extracts in order to be mixed with edible food packaging film. The three methods are solvent extraction by using citric acid, super critical fluid and hydrodistillation. The edible film was then analyzed its physical and mechanical properties and tested with bread. The observation and the result of edible film are good and was a success.

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CHAPTER I

INTRODUCTION

1.1 RESEARCH BACKGROUND

A natural pH indicator is a weak acid that show the concentration of hydrogen ions and as natural dyes through changes of colors (Petrucci et al, 2006). In this study, three methods will be used to extract the pigmentation from rose flowers (*Rosa Rosa*) which is the anthocyanins. Rose is chosen as main subjects because the color (pink) are more visible and easy to be detected if there is changes in color (Okoduwa et al, 2015). In the flowers, pigmentation can be a natural pH indicator. This is because pigmentation will give many different color changes (Bischt et al 2011). Color changes means there is changes in acid and base value. To get the pigmentation, extraction must be performed. It is proven from the research study that super-critical fluid is the best suitable extraction methods due to its sensitivity to extract anthocyanins from rose flowers. To make a chemical-free food packaging film, the extracted anthocyanins was mixed with edible film where the film was made from potato starch powder. The heating and cooling of the powder are important for the preparation of edible packaging film. The film was tested by wrapping the film with food which is bread. Bread is chosen because it easy to get spoiled after few days. There is changes of color of the film which shows that it contain a good natural pH indicator.

Next, a comparison of edible and non-edible packaging film was made to prove the edible film was better than other film. The comparison consist of several factors which are thermal properties, tensile strength and the effect on food sample. From the finding and result obtained, edible food packaging film give a lot of benefits to consumer and environment compared to the synthetic ones. For example, edible films are easy to biodegrade and less harmful to the consumer's health while synthetic are easy to produce but are not easy to be decompose in short time.