PERFORMANCE OF GELATIN-STARCH EDIBLE FILMS PLASTICIZED WITH GLYCEROL

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ABSTRACT

Environmental concerns about increasing industrial use of plastics and the associated waste are raising the demand for renewable sources to replace petroleum-based products, especially in the packaging sector. In recent years, more attention has been concentrated on research to replace petroleum-based packaging materials, in a cost-effective manner, with biodegradable packaging materials offering competitive mechanical properties. Edible polymer film can be prepared by three type of based-forming film. They are Polysaccharides, Proteins, and Lipid based edible films. Plasticizer is use to enhance the properties of the based-forming substances. The purpose of this research is to study the properties of edible film that produce from protein and polysaccharide based edible films, which is potato starch and gelatin respectively. The plasticizer used is glycerol to improve the properties of the film. The film was prepared by mixing gelatin and starch with water at different concentration to form a solution. After that, plasticizer was added to the solution and was pour into plate and dried to form a film. Properties that been study were thickness, tensile strength, elongation, color, water vapor permeability, solubility and chemical composition. From the study conduct using potato starch-gelatin film plasticized with glycerol, with the variation concentration of potato starch by 1ml to 4ml for each film, the thickness of the film varies from 0.5mm to 0.6mm. While for the tensile strength of the film is decreasing with the increasing of potato starch amount, and the elongation percentage is increasing. The other properties that been discussed were solubility of film and the water vapor permeability were both decreasing with the increasing of potato starch amount in each film.

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CHAPTER ONE

INTRODUCTION

1.1 Background Study

The word edible is synonym with the meaning of can be eaten or consume by human being. Example used for word edible in real life is “This fruits are edible; it is not poisonous like the other one”. Edible polymer films is known as a thin layer act as barrier for moisture, oxygen and movement of food that can be eaten without bringing any harm to the body. The term, edible film, has been related to food applications.

In the twelfth century, citrus natural products were preserved by waxing it in the case by fill up liquid wax into the container. While in fifteenth century in Japan, soy milk that been boiled is utilized as edible film to keep up the quality and appearance of the food (Amrita, 2016). Today different current methods, including blends of these, such as refrigeration, controlled environment storage, and sanitization by UV radiation are utilized in order to protect the food. Nevertheless, for some sorts of nourishment, edible film keeps on being a first choice amongst the most financially savvy approaches to keep up their quality and wellbeing.

A film is totally different from a coating by the idea that it is a wrapping material simply like plastic, while a covering is connected and framed specifically on food surface itself. In 1967, edible films had next to no business opportunity, and were restricted for only to wax layers on natural products. Today, edible film