DRYING CHARACTERISTICS OF STARCH-GELATIN FILMS CONTAINING GLYCEROL PLASTICIZER

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ABSTRACT

The uncontrolled waste solid to the landfill cause researcher to invent more biodegradable product. A starch-gelatin based film is one of the product to improve the solid waste management for food and pharmaceutical industry. The main objective for this research project is to prepare starch-gelatin films containing glycerol at different temperature and to determine the drying characteristics of the starch-gelatin based films. The film was prepared by mixing the gelatin powder, potato and glycerol into distilled water at 90^{o}C for 30 minutes. Then the film is casted on plate and dried at temperature 45, 50, 55 and 60^{o}C. The film is weight every one hour until reaches equilibrium moisture content. Three model of drying kinetic was used. The models are Newton, Page, Henderson and Pabis models. The best model chosen based on value coefficient of correlation (R^2) closer to 1, root mean square error (RMSE) and reduce chi square ($\chi 2$) closer to 0. The best model is Newton model at 45^{o}C.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

The purposes of edible films and coatings used for foods such as fruits have been used for a long time ago to create a shiny fruit surface and prevent moisture loss. On 1967, the commercial use of edible films is very little. Mostly during that time people use wax layer on food. After about 20 years, the business of edible films growing in the food industry. On 1986, about 10 company was built and after 1996, the number of the company increases to 600 companies. And today, about $100 million of annual revenue for edible films uses in industries. The edible films are differentiated to the coatings where the edible films are wrapping material to the subject meanwhile coating is applied directly to the subject.

The importance of edible films in the food industry is to preserve the quality of food. Usually, foods such as fruits are directly plucking from trees or garden. However, the foods obtain is not directly to the consumer. It will undergo a few process or transportation before it can be sold. After the food stored, distributed and processed it may deteriorate the quality of food. The food might start to loss its flavor, appearance,