UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF INTELLIGENT FOOD PACKAGING FROM RED CABBAGE ANTHOCYANIN PIGMENT

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ABSTRACT

Chitosan, corn starch and red cabbage extract act as natural pH indicator to determine fruit spoilage by developing pH sensitive film and coating as the color changes based on pH of fruit. The color of the films changed from pink to purple and brownish as a function of pH. pH indicator film and coating were evaluated by their chemical, physical, mechanical and biological properties. The stability was evaluated for 4 days (presence and absence of light; with and without cooling). This film with red cabbage extract showed high stability when stored at room temperature and exposed to light. It also exhibits greater color stability when stored under cold temperature as compared when kept on room temperature.

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INTRODUCTION

1.1 Research Background

Freshness is one of the quality that contribution of attraction to consumers. Generally, fruits and vegetables have high moisture that range from 75-95% and under normal atmospheric condition, it will dry rapidly as it loss rigidity and cell shrinkage that cause wilt and shrivel. To reduce moisture loss, good packaging must be done in order to extend shelf life and freshness of fruits and vegetables. (Matche 2005) Freshness of fish become low due to endogenous autolytic enzyme and microorganism activity; where pathogens and bacterial toxins presence and thus cause spoilage. (Parlapani et al. 2015)

Common materials used for food packaging are petroleum-based and non-renewable sources. Primary function of food packaging is to protect food from surrounding exposure that can cause spoilage. Spoilage of food includes discoloration, moldy, off-flavor and other that cause the characteristic of fresh food turns damage. Plastics started to dominate food packaging market due to its mechanical resistance, heat resistance, shape versatility, degrees of rigidity and relatively low price. Types of food packaging include transparent trays, perforated polyethylene film or nets, ventilated pouch, cartons and tray.

Plastics are made from polymers that contain heavy metals and organometallic compounds that encapsulated with polymer matrix to improve the characteristics and produces low production cost. (Dilli, 2007) Plastic bag has become one of the useful products worldwide amongst consumers due to its functional, lightweight, strong and hygienic way of transporting. It becomes useful for goods, foods and chemicals packaging. However, plastic is non-biodegradable which plastic bags can last for hundreds years in anaerobic environment and merely photodegrade but not completely.

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