

**PRODUCTION OF PARTIALLY HYDROLYSED  
SAGO STARCH-ALGINATE BASED  
BIODEGRADABLE FILM  
AND COATING WITH  
ANTIMICROBIAL  
PROPERTY**

**ONG KAI LI**

Library Services  
UCSI Education Sdn. Bhd. (88099-U)  
No. 1, Jalan Menara Gading, UCSI Heights,  
56000 Kuala Lumpur, Malaysia.  
Tel: 603-9101 8880 Fax: 603-9162 3606  
Website : [www.ucsi.edu.my](http://www.ucsi.edu.my)

**B. Sc. (Hons) FOOD SCIENCE & NUTRITION  
FACULTY OF APPLIED SCIENCES  
UCSI UNIVERSITY**

**2009**

## ABSTRACT

Biodegradable film with antimicrobial property is an extremely challenging technology that response to the current market trends. This active packaging is important to prolong shelf life, improve safety and quality of fresh-cut chicken. Increase demands in food safety, quality, convenience and environmental issues associated with handling of synthetic plastic waste have contributed to the development of biodegradable film from polymer. The aims of this study were to investigate the effect of sorbitol and stearic acid towards physical and mechanical properties of biodegradable film and to assess the effectiveness of green tea extract as an antimicrobial agent while reducing water loss in stored fresh-cut chicken meat. Biodegradable film was prepared by the mixture of partially hydrolysed sago starch and sodium alginate. Sorbitol and green tea extract as natural plasticiser and antimicrobial agent, respectively were incorporated into the film-forming solution. The produced film was subjected to antimicrobial activity, water solubility, water vapour permeability and tensile properties while the coating solution was subjected to water loss measurement and total colony growth on stored fresh-cut chicken. The inhibition of *E.coli* and total microbial population increased significantly ( $p < 0.05$ ) by additional of green tea extract. This indicates that green tea extract was effective against *E.coli* and other colonies. The addition of sorbitol and green tea extract increased tensile strength and Young's modulus while reduced percent elongation at break significantly ( $p < 0.05$ ). Besides, green tea extract, sorbitol together with stearic acid and lecithin improved water vapour permeability and water solubility. Coating formulated on stored fresh-cut chicken reduced water loss and total colony growth as green tea extract incorporated into the coating solution.