UNIVERSITI TEKNOLOGI MARA

ANTIMICROBIAL EDIBLE COATINGS CONTAINING FRUIT EXTRACTS ON FISH BALL

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(Hons.)

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DECLARATION BY STUDENT

Project entitled "Antimicrobial Edible Coatings Containing Fruit Extracts on Fish Ball" is a presentation of our original research work. Whenever contributions of others are involved, every effort is made to indicate this clearly, with due reference to literature, and acknowledgement of collaborative research and discussions. The project was done under the guidance of Project Supervisor, Dr Nadiatul Syima binti Mohd Shahid. It has been submitted to the Faculty of Health Sciences in partial fulfilment of the requirement for the Degree of Bachelor in Environmental Health and Safety (Hons).

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In the name of Allah, The Most Gracious, The Most Merciful.

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ABSTRACT

The consumption of ready-to-eat (RTE) food products has become an attractive and popular to the consumers as it is proven convenient meals. Fish ball is a surimi product that is made of fish, which possesses high nutritional value and contains versatile applications in culinary dishes. However, as fish ball is mainly made from fish meat and contains high moisture, it is highly perishable. Although modern food-processing approaches have successfully eliminated bacterial contamination on the food products during manufacturing, the critical point of contamination is the post-processing contamination of food surfaces became the major source of bacterial spoilage. In this study conducted, the aim is to investigate the alternatives in order to preserve the fish ball and minimizing the bacterial contamination during post-processing. Thus, the antimicrobial solutions were used as an additional coating to achieve the purpose of the study. The results showed that all the antimicrobial solutions from *Ananas comosus, Carica papaya L.* and *Psidium guajava* extracts show promising improvement for the surimi product industries. The reduction of bacterial present on the fish ball was tested and reported that the bacteria which commonly cause bacterial spoilage and present on the fish ball are *Escherichia coli, Salmonella spp., Pseudomonas spp.* and *Staphylococcus aureus*. The antimicrobial activity of the fruit extract showed the pineapple extract has the highest antimicrobial activity against *Escherichia coli*, with the inhibition zone of 11.10±0.06 mm while the papaya extract is effective against *Salmonella spp.* with inhibition zone 8.47±0.35 mm and guava extract are effective against *Staphylococcus aureus* with inhibition zone of 29.00±0.289 mm. The treated fish ball was stored at 4ºC for 15 days and the physicochemical properties such as changes in pH and weight loss was determined. The study was done triplicate to obtain the best result of the experiment. The results obtained from this study can be used as a baseline data on the antimicrobial activity of the fruit extract. The natural antimicrobial solutions tested in this study can be an alternative in preserving other RTE food product.

Keywords: antimicrobial fruit extract solution, *Escherichia coli, Salmonella spp., Pseudomonas spp.* and *Staphylococcus aureus*.