

**APPLICATION OF CHICKEN FEET GELATIN INCORPORATED WITH  
GREEN TEA EXTRACT AS FOOD PACKAGING**

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This Final Year Project entitled “**Application of Chicken Feet Gelatin Incorporated with Green Tea Extract as Food Packaging**” was submitted by Nurul Ainizatul Binti Jalani in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Sciences, and was approved by

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## ABSTRACT

### APPLICATION OF CHICKEN FEET GELATIN INCORPORATED WITH GREEN TEA EXTRACT AS FOOD PACKAGING

Chicken feet are a rich source of collagen, which is typically used to produce gelatin. In this study, before obtaining gelatin films, the chicken feet were pre-treated with lactic acid. After the non-collagenous material was removed from the chicken feet, the chicken feet gelatin (CFG) was obtained by hot water extraction and dried in an oven. Green tea extract (GTE) contains the polyphenolic compounds that contributes to high antioxidant and antibacterial properties can be incorporated into gelatin films, allowing this film to be used for food packaging. Therefore, the purpose of this study was to develop modified gelatin film (MGF)s by incorporating the GTE at different concentration into CFG. GTE was effectively incorporated into CFG at concentrations of 0, 10, 20, and 30% (v/v) of gelatin using the casting method. The modified gelatin films were subjected to antioxidant, antibacterial, biodegradability, and FTIR analysis. It was observed that the antioxidant capacity of the MGFs was enhanced, which was believed to be due to the GTE's active components. The result showed that increase in concentration of GTE in the MGF, the radical scavenging activity also increase. 30% MGF has the highest percentage of radical scavenging activity followed by 20% and 10% MGF. On the other hand, 0% MGF showed no radical scavenging activity. Additionally, the MGFs demonstrated potential antimicrobial activity against the microorganisms tested (*S. aureus* and *E. coli*). There was action exhibited by gram-positive bacteria, *S. aureus* while no action exhibited by gram-negative bacteria, *E. coli*. Besides that, the MGFs biodegrade effectively. 30% MGF biodegrade the fastest followed by 20%, 10% and 0% MGF. As the GTE concentration within the films increased, the films' biodegradability also increased. The result from FTIR analysis showed that, the MGF revealed peaks related to amino acids, demonstrating the presence of gelatin, and phenolic compounds, demonstrating the presence of antioxidant properties. The MGFs also applied to the cherry tomatoes and minced chicken. In terms of consistency, homogeneity, and handling, the 20% MGF proved to be the most effective for preserving cherry tomatoes. The cherry tomato has better appearance compare to other cherry tomatoes. It has almost no wrinkle, it is still firm and no change in in term of colour. However, the same result was not obtained when MGFs were applied to minced chicken because it altered its physical appearance and gave it a hard rubber-like texture.