Chapter 1

Introduction

1.1. Background

Meat texture, juiciness, and overall palatability are essential factors influencing consumer acceptance, especially in value-added or processed poultry products (Mir et al., 2017). In recent years, TG, a naturally occurring enzyme known for catalyzing covalent cross-links between proteins, has gained widespread use in the food industry (Moguiliansky et al., 2024). It is commonly applied in meat systems to enhance water-holding capacity, texture, and product stability (Santos et al., 2023). While its effectiveness has been demonstrated in restructured and emulsified meat products, its functional performance in whole-muscle applications, such as bone-in chicken cuts, especially the drumette part, are still limited.

Among the quality parameters often used to assess TG's effect are texture, cooking loss, and color, which are key indicators of both processing efficiency and consumer appeal. TG is expected to reduce cooking loss by strengthening the protein matrix, retain more moisture, and improve texture by increasing structural integrity. Likewise, changes in surface or internal color attributes (L*, a*, b*) can reflect protein modifications or water-binding interactions. However, in this study, color analysis revealed no statistically significant differences among samples treated with 0%, 1%, and 2% TG, suggesting that TG had no visible impact on the appearance of braised chicken drumettes. To further evaluate product quality, sensory analysis was conducted, focusing on texture, juiciness, aroma, taste, and overall liking using a 9-point hedonic scale, along with a ranking test to understand consumer preference.

This study aimed to assess whether varying concentrations of TG would yield measurable improvements in physicochemical properties (texture, cooking loss, and color) and sensory attributes of braised chicken drumettes. Findings from this research will help determine the practicality of TG application in chicken with bone and guide its use in commercial or culinary settings.

1.2. Objective

The main objective of this research is to:

1. Evaluating the effect of Transglutaminase towards the physicochemical properties (color, yield, texture, and moisture) of Drumette Braised Chicken (Pangkal Sayap Ungkep)
2. Evaluating the effect of Transglutaminase towards the sensory evaluation of Drumette Braised Chicken (Pangkal Sayap Ungkep)
3. Determine the most optimal dosage of the enzyme to yield improvement for the meat.

1.3. Hypothesis

The hypothesis of this research is as follows:

1. The **null hypothesis (H_o)** states that there will be no significant difference in physicochemical properties (color, yield, texture, and moisture) between the control sample and the chicken samples treated with Transglutaminase. While the **alternative hypothesis (H_1)** states that the application of Transglutaminase will result in a significant improvement in yield compared to the control.
2. The **null hypothesis (H_o)** states that there will be no significant difference in sensory evaluation between the control sample and the chicken samples treated with Transglutaminase. While the **alternative hypothesis (H_1)** states that the application of Transglutaminase will result in a significant improvement in physicochemical characteristics compared to the control.
3. The **null hypothesis (H_o)** states that there will be no significant difference in different dosage between the control sample and the chicken samples treated with Transglutaminase. While the **alternative hypothesis (H_1)** states that the application of Transglutaminase will result in a significant improvement in different dosage compared to the control.