

CHAPTER I INTRODUCTION

1.1. Background of Research

Poultry meat generation and utilization have been quickly expanded in numerous parts of the world in the most recent years, though per capita utilization is relied upon to develop constantly (FAO,2014) likely because of its low cost, healthful qualities, and organoleptic characteristics (Anang et al., 2010; Barbut, 2002; Krishnan et al., 2014).

Marination is a typical technique used to enhance the delicacy of meat, meat quality properties, for example, water holding limit, delicacy and Burns are a wellbeing issue that is a challenge for medical personnel and flavor of the meat. Patterns in meet industry are centering in items with high organoleptic guidelines, surfaces, long shelf-life of usability and containing specific nutrients to cover extraordinary consumer necessities (Fadda et al., 2010).

Adding marinade solution to enhance the sensory quality of meat items is an entrenched practice in numerous nations, and the principle impacts on meat have been for quite some time known (Shreden et al., 2015). Marinating raw meat for the most part upgrades enhance and improves the delicacy of cooked meat cuts, yet additionally influences colour and general acceptances positively or negatively. Tenderization is especially imperative to expand the estimation of muscles rich in connective tissue. Also, marinating can upgrade security by decreasing bacterial improvement, particularly of pathogens (Pathania et al., 2010; Sabah et al., 2004).

So far in the ongoing years, studies identified with marinating center around the logical purposes, for example, the impact of marinades on the enhancement of

microbiological quality and security of poultry meat as many are progressively mindful of how spotless and sound healthy food must be. Studies identified with marinating center around the impact of marinades on flavor enhancement, tenderness, water-holding limit, yield, in addition to the decrease of off flavors (Goli et al., 2014; Smith and Acton, 2010; Yusop et al., 2009, 2010)

Commercial tenderizer preparations now accessible are normally spread on the outside of the meat a couple of minutes before the meat is cooked, however the best outcomes are gotten when the enzyme is permitted to infiltrate into the meat by applying profound cuts. (Hay, 1952). This rarely occurs as most meat from expansive scale preparations just slab on the tenderizer before prepacking it.

Another purpose behind the extreme interest of poultry meat is the expanded accessibility of further processed products (Fletcher,2002). From the gastronomic perspective, ingredients for example, lemon, wine or vinegar are customarily utilized in marination, while new patterns propose different mixed drinks, for example, bourbon, schnaps and furthermore organic product juices like pomegranate, pineapple or kiwi. In any case, once in a while, irregular techniques for marination, for example, tea which are effectively accessible in each cutting edge family.

Dynamic globalization of the food supply and the expansion in food intake, for example, snacks, soda pops and cheap food, normally structure a huge piece of day by day life (Juan, 2006). This is the reason it is essential to eat well healthy food that preferences taste great also. With the present world getting a charge out of sodas and tea or espresso to traverse the day, it is undoubtedly realized that these

refreshments are effectively gotten from the supermarket and enables these drinks to be utilized as tenderizers.

Tea has all the earmarks of being the oldest of caffeine drinks. The primary reported use is in China by its first extraordinary head, Shen Nung, in around 2700 BC. All through Chinese history there are numerous references to tea and its numerous advantages. The most punctual composed record of tea utilization is from a Chinese archive from 350 BC (Gilbert, 2005). Tea wound up well known with Buddhist priests to keep them conscious amid extended periods of time of contemplation. Regardless of the relationship of tea with China, some trust that tea was really brought into China from Northern India. In the fifth century, tea was a vital part of exchange on the Silk Street to China. (Gilbert, 2005). About AD 800 tea was acquainted with Japan. In Japan the utilization of tea, all the more explicitly a green powdered tea, developed into a detailed function that is as yet drilled today. The Dutch acquired tea to Europe 1610, and the Americans revolted over assessments on tea in 1773 (Gilbert, 2005). A couple of years after the fact, Britain sent the main opium to China in payment for tea, which eventually brought about the Opium Wars and Britain's control of Hong Kong. Tea packs were incidentally developed in 1908. In later occasions, we are blessed to receive a considerable number of fragrant assortments of tea from around the globe (Gilbert, 2005).

Very little work has been done on goat meat tenderization by the forms of green tea or tea in general because of reasons given above and along these lines not a well-known item, in spite of high quantities of goats found on both communal and commercial farms the world over. Goat meat is just consumed inside the family

units and families (Bille and Taapopi, 2008) as it is costly to create in substantial sums with tenderizer preparation.

On account of expansive scale production, it is important to look for a particular low-cost medium that is sufficiently proficient to tenderize meat for buyers what more for the overall population, purchasing tenderizers or pre-tenderized meat can be fairly pricy because of high consumption and interest and demand for meat that has been prepared for direct use.

The reason for this study is to research the impact of a diverse home marinade that is effectively accessible, known as Green Tea (*Camellia sinensis*) on a specific type of goat meat known as Peranakan Etawa (*Capra caprahircus*) on the muscle known as (*Musculus bicep femoris*).

1.2. Problem Statement

Based on the problems that exist in the introduction then the problem can be formulated as follows;

1. How can tea as a tenderizer affect the tenderness, organoleptic properties, pH value, tenderness and taste of dried meat?
2. How much of Tea (*Camella sinensis*) should be used to create a Tenderizer that tenderizers meat in an appropriately given time with a lower pH value?
3. Does Tea work as a cost efficient tenderizer on the organoleptic properties of Goat Meat when tenderized?
4. Does Tea work as a Time Effective tenderizer on the organoleptic properties of Goat Meat when tenderized?
5. Does the pH value affect the tenderness of Goat Meat?

1.3. Theoretical Basis

The reason this experiment is conducted with Tea (*Camellia sinensis*) is because it is a very cost effective tenderizer and can be easily found. This marination process with Tea (*Camellia sinensis*) can be easily done at home or in factories as the two products can be found in any local grocery store. The average price for a box of green tea in Indonesia is twenty thousand rupiah (Rp 20,000) for a box of ten sachets which in this case is able to be used 5 times (2 sachets per infusion, based on the instructions given on the box).

Tenderness depends basically on the measure of connective tissues present between the muscular fibers and to a lesser degree on the thickness of the muscle strands themselves (Bille and Taapopi, 2008). There are various strategies used to soften meat to be specific, natural, chemical, mechanical and manual. A commercial meat tenderizers that is acidic will be utilized and tried for their capacity to soften goat's meat and to decide the adequacy of the tenderizer. Acids have been appeared to improve tenderness, yet little work has been reported on the recommendation of acid strength to upgrade tenderness and the period of time which the muscle would remain adequate to customers. Basic house-hold marinating ingredients are vinegar and fresh citric juices, for example, grapefruit, lemon, lime, and orange. Different marinades usually utilized on meats are teriyaki sauce, soy sauce, and red wines, alone or in mix (Manteuffel-Gross and Ternes, 2009). In this thesis, we will try using an unorthodox household item with regular acidity known as Tea (*Camellia sinensis*). Most of the research in acid marination includes low centralizations of acids going from 0 to 0.5 M as well as 0 to 1.5% (

Berge et al., 2001, Aktas and Kaya, 2001, Burke et al., 2002). Higher concentrations of acid for marination have only from time to time been considered and have seldom been studied.

Some have proposed that a weakening of connective tissue and collagen by acid marination will cause a decrease in thermal stability by moving the denaturation temperature descending by 5-10°C (Berge et al., 2001). The impact of acid marination on connective tissue is considerably less than the impact on myofibrillar proteins. The denaturation temperature is fundamentally less whenever marinated in acid marination when contrasted with being marinated in water or salt (Aktas and Kaya, 2001).

1.3.1 Gradient of substance

The main type of gradient of substance, Tea (*Camellia sinensis*) that is related with tenderizing the meat is the concentration gradient. A concentration gradient occurs when a solute is more concentrated in one area than another. Concentration refers to how much of a solute there is compared to solvent. The laws of thermodynamics state that due to the constant movements of atoms and molecules, substances will move from areas of higher concentration to lower concentration, in order to produce a random solution. This is most likely the main cause of the tenderizing procedure.

Tea is categorized as a natural tenderizers. These Natural Tenderizers are defined as natural products such as different vegetables and fruit that contain proteolytic enzymes. To achieve efficient utilization of tough meat, these proteolytic enzymes obtained from natural products may be used. Among these

plant proteolytic enzymes most commonly discussed are papain, zingibain, cucumin, ficin etc. (Maiti et al., 2008)

In air-dried green tea leaves contained 7.80% moisture, 92.20% dry matter, 82.40% organic matter, 18.15% crude protein, 8.72% ether extract, 19.32% crude fibre, 9.80% ash, 36.21% nitrogen free extract and 3002 kcal.kg-1 calculated metabolisable energy (Abdo et al., 2010)

Over 200 bioactive compounds and contains over 300 different substances has been discovered in Green Tea. The chemical composition of tea is volatile oils, polysaccharides, amino acids, lipids, vitamin C, multifaceted, consisting of polyphenols (catechins and flavanoids), alkaloids (caffeine, theobromine, theophylline), minerals and other uncharacterised compounds (Karori et al., 2007; Khan, 2014).

1.4. The Aims of Research

Research on the use of Tea (*Camellia sinensis*) as tenderizers on Goat Meat aims:

1. To analyze the effects of tea (*camellia sinensis*) as a tenderizer on the organoleptic properties of goat meat.

2. To analyze the effects of tea (*camellia sinensis*) as a tenderizers pH value of goat meat.
3. To analyze the effects of tea (*camellia sinensis*) as a tenderizer on the tenderness of goat meat.
4. To determine the potential of Tea (*camellia sinensis*) as a tenderizer for Goat Meat or meat in general
5. To determine the organoleptic properties and pH value of dried meat when Tea (*camellia sinensis*) is used as a tenderizer for Goat Meat or meat in general.

1.5. Outcome of Research

1. To give the public the knowledge of Tea (*camellia sinensis*) as tenderizers to allow the public to be able to tenderize their own meat at a low cost in the comforts of their home.
2. To create a Thesis that provides knowledge for other Veterinarians or people involved in the Department of Veterinary Public Health that there are possibilities in manufacturing processed meat by using organic tenderizers such as Tea (*camilla senensis*)
3. From the outcome of this thesis, we will know the accurate amount of Tea (*camilla sinensis*) to be used as a tenderizer for Goat Meat in par with the pH value and organoleptic properties.

1.5.1 Theoretical outcome

This research is expected to enrich the science of nutrition, especially in terms of different amounts of tenderizers that can be used to tenderize various

types of meat with the consciousness of the accurate pH levels with the best organoleptic results.

1.5.2 Practical outcome

It is hoped that the results of this study will have practical benefits in the field of nutrition, especially in the utilization of and Tea (*camellia sinensis*) as a tenderizer for various types of meat such as Goat Meat, Chicken Meat, Beef, etc.

1.6 Research Hypothesis

1. The higher the amount of dried tea leaves used in the infusion when marinating the Goat Meat, correlating to the longer the time taken to tenderize the meat, the more tender the meat will be with a lower pH value.
2. The potential of Tea (*camellia sinensis*) as a tenderizer of goat meat increases with the increasing usage of dried tea leaves used in the infusion when marinating the goat meat.
3. The higher the amount of dried tea leaves used in the infusion when marinating the Goat Meat, correlating to the longer the time taken to tenderize the meat, the lower the pH value of the meat.
4. The organoleptic properties of the meat will differ and become stronger with the increasing use of dried tea leaves in the infusion when marinating the goat meat.