Analysis of various times of boiling beef using papaya leaves *(Carica papaya L.)* and Jaranan leaves *(Lannea coromandelica)*

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Abstract

In the process of boiling beef, which is usually done by the community, most people only do the boiling process so that the level of maturity of the meat and the tenderness of the meat is still lacking, regardless of the specified time and the addition of ingredients to change the texture of the beef. The purpose of this study was to determine how long it takes to boil beef so that the meat becomes soft. The research method used is an experimental method with qualitative descriptive analysis with observations and 3 repetitions of the meat boiling process at different times. The results of the study of boiling beef were identified physically, taste and texture. With the results (P1) within 10 minutes of boiling time, it shows that the taste of the meat is slightly bitter and the meat is still hard (P2) when 15 minutes of boiling meat the bitter taste is slightly reduced, (P3) after 20 minutes of boiling it shows that the meat is tender and the bitter taste caused by papaya leaves is gone. So the conclusion is that the results of boiling beef wrapped in papaya leaves and adding jaranan leaves with a treatment time/(P3) of 20 minutes of boiling show that the beef is tender/soft, does not taste bitter, after the beef is seen from the physical, texture and taste.

Keywords: Beef boiling time: papaya leaf: jaranan leaf: soft

1. Introduction

Food processing is the conversion of the original form into a form that is close to form so that it can be eaten quickly. One of the food processing processes is using heating. Food processing using heating known as the cooking process is the process of heating food ingredients to a temperature of 100 C or more with the main goal of getting a more delicious taste, better aroma, softer texture, to kill microbes and inactivate all enzymes. In many cases, the cooking process is needed before we consume a meal. Cooking can be tried by boiling and steaming (boiling and steaming at a temperature of 100 C), broiling (roasting meat), baking (toasting bread),

Meat is one of the commodities from animal agriculture that is needed to meet the body's need for protein nutrients, because meat protein contains a complete amino acid composition. Meat is body parts originating from mammals (cows, sheep, etc.) which are in good health and old enough to be slaughtered, but only limited to fibrous muscle parts, namely those from skeletal muscles or tongue, diaphragm, heart. and esophagus,

excluding lips, snout, ears, with or without accompanying fat, as well as parts of bones, veins, nerves and blood vessels Muchtadi et al., 2010.

To see the main quality of meat is determined by tenderness, taste, and color, but tenderness plays an important role because tenderness can make it easier for meat to be consumed. The quality of the tenderness of the meat can be obtained by adding proteolytic enzymes to the meat. The addition of proteolytic enzymes will increase the tenderness and acceptance of meat by consumers. And meat that has added papain enzyme is expected to shorten the cooking time because the cooking process at high temperatures and for a long time will only get meat that is tender, easy to chew or easy to digest. However, the cooking process at high temperatures and for a long time can reduce the nutritional value and require a large amount of energy according to (Silaban et al., 2013, and Arini, 201).

As a food ingredient, meat contains protein, fat, minerals, water, vitamins, and so on in different compositions, depending on the breed, diet, and age of the animal. Meat contains animal protein that has high nutritional value and is perfect. Meat proteins can be divided into three parts: myofibril proteins, sarcoplasmic proteins, and connective tissue proteins. The treatment of meat needs to be considered so as not to disappoint consumers, so that the desired quality of meat can be fulfilled. It often happens that meat that has been cooked long enough turns out to be still hard, so that the boiling of beef/buffalo is usually about jam-1 hour, while for broiler chicken it is only about 9-10 minutes, while for rejected layer chicken it takes more time. about 20-30 minutes long

In the process of boiling beef, which is usually done by the community, most people only do the boiling process, regardless of the time specified and the addition of ingredients to change the texture of the beef, so that the meat still feels hard when finished in boiling. And also when it is too long in the boiling process, it will cause negative effects, namely protein denaturation or damaged protein content and waste of fuel.

Judging from the opinions of experts and the habits of the people who lack an understanding of the time to boil beef and the optimal time for boiling beef is not known. In connection with the above, it is necessary to do research to find the time of boiling beef in boiling beef so that it becomes soft.

The purpose of this study was to determine the various concentrations of time in the beef boiling process, namely by wrapping beef in papaya leaves and adding jaranan leaves, its ability to bind the bitter taste of papaya leaves, the papain enzyme in papaya leaves functions to break down protein and soften meat fibers. The research method used is an experimental method with qualitative descriptive analysis.

2. Research methods

The type of research conducted is using an experimental method with qualitative descriptive analysis. Qualitative descriptive research methods according to Sugiyono, 2018, p. 15 is a research method based on the philosophy of postpositivism which is commonly used to examine the condition of natural objects, where the researcher acts as a key instrument and describes a situation objectively or based on visible facts.

In addition, qualitative descriptive research methods according to other experts include the opinion of Sukmadinata, 2017, p. 73 is a method used to describe and describe existing phenomena, both natural and human engineered, which pays more

attention to the characteristics, quality, and interrelationships between activities.

In our research design, we use an experimental design to evaluate or gain initial knowledge so as to find aspects of the causes or causes of social phenomena experienced by a person/society or what someone often does in boiling beef that does not see the time in boiling the meat so that the meat is finished when finished. boiled still feels hard when bitten. So in this study, researchers carried out 3 times the process of boiling beef with different times, to find out how long the process of boiling meat is suitable for getting soft meat when it is cooked.

The research time is December 15, 2020 at 14:44 and the research location is in the TUBAN INTEGRAL SD room. The population in this study is the time of the boiling process of beef wrapped in papaya leaves and the addition of jaranan leaves as a bitter taste remover that has been generated from papaya leaves as beef wrappers, then the selected sample is using 5 minutes of boiling meat, 10 minutes minutes of the meat boiling process and 15 minutes of the beef boiling process.

The data collection technique used is by observing or observing the object of research, namely beef that has been wrapped in papaya leaves and added with jaranan leaves that have undergone a boiling process using different times.

In this stage we provide various materials and tools which will be carried out by the boiling process of beef with 3 treatments / (P) time in the beef boiling process, with the first treatment (P1) the time used is 10 minutes of boiling meat, the second treatment (P2) with 15 minutes of boiling the meat and the third treatment (P3) with 20 minutes of boiling the meat. Where in each treatment, 58 grams of beef were put in with different treatment / (P) time according to what the researchers expected. Materials and tools that have been prepared include those that will be used as follows: one LPG, one scale, one gas stove, one pan, one knife, one wooden tray, one container for fruit, and enough raffia rope, 175 grams of beef which will be divided into each treatment (P),

After selecting the leaves to be used, as well as preparing the materials and tools, the steps taken are cleaning the tools and materials used with clean running water. 2 pieces of papaya leaves per treatment / (P) which will be used as a wrapper for finely ground beef so that the leaves appear to be collision but do not tear large and can still be used as a meat wrapper, the purpose of pounding the papaya leaves is so that the sap is in it. papaya leaves to come out. Papain is a protease enzyme contained in papaya sap both in the fruit, stems and leaves. The way this enzyme works can be done by breaking down protein molecules through protein hydrolysis. This enzyme will first destroy the mucopolysacrides of the basic substance matrix, then rapidly decreasing the woven binding fibers in according to Lewrie, 2003.During this process the collagen and myofibrils are hydrolyzed, this causes the loss of bonds between meat fibers and the breakdown of shorter fragment fibers, thereby increasing the tenderness of the meat, so that beef can be easier to use. consumed. The next process is after you feel it is enough to pound the papaya leaves slowly so that the leaves are not torn big then 58 grams of beef is wrapped in 2 pieces of papaya leaves and tied with a rope.

The next step is to settle the beef for 1 hour which aims to allow the beef to absorb the enzymes in the papaya leaves so that the beef does not smell and can bind to the enzyme which aims to break down protein molecules. Then it is enough to settle the beef wrapped in 2 papaya leaves for 1 hour, the next step is the process of boiling 58 grams of beef with enough water to boil in each treatment / (P), here using treatment / (P) There are different times in the boiling process, namely using P1 with 10 minutes,

P2 with 15 minutes, and P3 with 20 minutes during the boiling process of meat with the same amount of water and 58 grams of beef.

3. Research Results and Discussion

3.1 Research Results

Nutritional value because some proteins can be denatured or damaged by acid and enzymatically using protease enzymes according to Silaban, et al. 2012. Plants that are known to contain protease enzymes are papaya (papain) and pineapple (bromelin) according to Rismawati, Wulandari and Suradi, 2016. One of the protease enzymes that is widely used is papain enzyme because it is easier to obtain.

The papain enzyme work system with proteases in bacteria is different. Papain in meat will be active on connective tissue, especially collagen and but a little on muscle fiber protein. Papain degrades not only collagen but also moifibril protein so that it can cause meat to be too tender according to Qihe et al., 2006.

From the results of experiments that have been carried out by researchers in research. Analysis of various times of the boiling process of beef using papaya leaves (Carica papaya L.) and Jaranan leaves (Lannea coromandelica), with different treatments/(P) shows the following results:

Table 1. Results of treatment time/(P) in boiling beef.

No	Treatment/(P)	Results
1.	P1	Indicates that the taste of the meat is slightly bitter and the meat is still firm.
2.	P2	There is a change in taste, namely the bitter taste is slightly reduced, but the texture of the meat is still a little hard
3.	P3	Shows the meat is tender and has a bitter taste

3.2 Discussion

Papaya (Carica papaya L.) is a plantation plant that is widely cultivated in people's yards. Papaya plants have benefits in every part, the flesh of the fruit is consumed both when it is young and when it is physiologically ripe, which contains fiber to facilitate digestion. According to Warisno 2003, the stems, fruits and leaves contain the enzyme papain, and papaya flowers and leaves are consumed as fresh vegetables in most areas in Indonesia. Processed papaya leaves can be used as a supporting material in boiling beef, where the leaves contain papain sap, Warisno 2003, the papain enzyme is mixed in food, the food protein will be broken down into simpler forms called amino acids.

Papaya leaf (Carica papaya L.) is one type of leaf that produces protease enzymes. According to Martantyo, et al. In 2013, the activity of the papain enzyme in papaya leaves was greater than that of papaya latex. This is because in papaya leaves there are two other enzymes besides papain enzymes, namely chymopapain and lysozyme enzymes, which function as catalysts in protein hydrolysis reactions. According to Zusfahair, 2013, the papain enzyme is one of the proteolytic enzymes of the protease enzyme group which is the most common enzyme found in papaya plants, including the leaves. Papaya leaves have long been believed to be able to tenderize meat because of the papain enzyme content in the sap produced both in the leaves, fruit and stems of papaya. Papain can hydrolyze muscle fibers and elastin so that papain is suitable for use as a meat tenderizer according to Wibisono, 2010, because the papain enzyme is active and stable well at the pH of meat ranging from 5.3 to pH 5.9 according to Kuntoro, 2013. Papain enzyme has activity which is high in protein and can break down the protein in muscle fibers (muscle fiber) of meat and hydrolyze them into simpler ones such as peptides and amino acids that provide a tender effect on meat According to Koswara, 2009, the papain enzyme has synthetic activity, which has the ability to form new proteins or compounds that resemble proteins called plasteins from the hydrolysis of proteins. The formation of this plastein can help to tenderize the meat. This is because the papain enzyme is active and stable well at the pH of meat, which ranges from 5.3 to 5.9 according to Kuntoro, 2013. The papain enzyme has high activity and can break down protein in the muscle fibers of meat and hydrolyze it into simpler substances such as peptides and amino acids that provide a tender effect on meat. According to Koswara, 2009, the papain enzyme has synthetic activity, which has the ability to form new proteins or compounds that resemble proteins called plasteins from the hydrolysis of proteins. The formation of this plastein can help to tenderize the meat. This is because the papain enzyme is active and stable well at the pH of meat, which ranges from 5.3 to 5.9 according to Kuntoro, 2013. The papain enzyme has high activity and can break down protein in the muscle fibers of meat and hydrolyze it into simpler substances such as peptides and amino acids that provide a tender effect on meat. According to Koswara, 2009, the papain enzyme has synthetic activity, which has the ability to form new proteins or compounds that resemble proteins called plasteins from the hydrolysis of proteins. The formation of this plastein can help to tenderize the meat. The papain enzyme has high activity and can break down the protein in the muscle fibers of meat and hydrolyze them into simpler ones such as peptides and amino acids that provide a tender effect on meat. According to Koswara, 2009, the papain enzyme has synthetic activity, which has the ability to form new proteins or compounds that resemble proteins called plasteins from the hydrolysis of proteins. The formation of this plastein can help to tenderize the meat. The papain enzyme has high activity and can break down the protein in the muscle fibers of meat and hydrolyze them into simpler ones such as peptides and amino acids that provide a tender effect on meat. According to Koswara, 2009, the papain enzyme has synthetic activity, which has the ability to form new proteins or compounds that resemble proteins called plasteins from the hydrolysis of proteins. The formation of this plastein can help to tenderize the meat.

The use of the Jaranan tree plant is often used as a living fence, and is also often found on the edge of the highway so it is easy to find. Jaranan tree is a mainstay tree to quickly green an area because of the nature of its growth which is very easy to grow. There are also other benefits that the Jaranan tree has, one of which is in the culinary

field, namely the leaves can reduce the bitter taste when cooking papaya leaves in boiling beef.

One of the cooking methods to maintain the quality of the meat is by boiling the meat for 15 minutes at a temperature of 70-750 C. Sutaryo and Mulyani 2004. The length of boiling time increased followed by a decrease in water content. Protein content decreased at the level of boiling time compared to control. Cooking time can affect the nutritional content of meat according to Nuhriawangsa, 2004.

In the experimental process in the study, the analysis of various times of the boiling process of beef using papaya leaves (Carica papaya L.) and Jaranan leaves (Lannea coromandelica), when the boiling was carried out with beef as much as 58 grams, as the results in table 1. In each treatment/ (P) different times, in the boiling process / treatment / (P1) meat, P1 with 10 minutes of boiling meat, while the boiling process with treatment / (P2) with 15 minutes of boiling meat and boiling process in treatment / (P3) 20 minutes of boiling meat wrapped in 2 papaya leaves with the addition of 20 pieces of jaranan leaves which are inserted after the water boils. With the following process:

In treatment/(P1) with a time of 10 minutes, the steps start from preparing water in a pan and then cooking it using a gas stove after that the beef package that has been wrapped in papaya leaves was inserted until it boils and then 20 pieces of jaranan leaves are added, after P1 with After 10 minutes, the meat was removed and opened to see and feel what happened to the taste, the texture of the meat with the results showing that the taste of the meat was slightly bitter and the meat was still tough

In the second treatment/(P2) stage, the boiling process with the P2 treatment process took 15 minutes. From preparing water in a pan and then cooking it on a gas stove, then the meat package wrapped in papaya leaves was put in until it boils and then 20 pieces of jaranan leaves were added. After P2 with 15 minutes finished, the meat was removed and opened to see and taste what was going on. occurs in the taste, the texture of the meat can be taken as a result that there is a change in taste, namely the bitter taste is slightly reduced, but the texture of the meat is still a little hard.

Treatment/(P3) This third time treatment, the boiling process uses the same dose, and the same way, the initial process of meat wrapped in papaya leaves and water is put into the pot, after boiling water, only 20 pieces of jaranan leaves are added, until the P3 with 20 minutes the meat is removed and opened to see and feel what happens to the taste, texture of the meat with the results showing that the meat is tender and the bitter taste caused by papaya leaves is gone.

We can take the explanation that each result of boiling with different treatments / (P) shows different levels of maturity, and the level of bitter taste caused by papaya leaves as beef wrappers is also getting lost depending on the length of the boiling process with a long time. has been determined and the addition of jaranan leaves. That way people can know a more efficient way to process beef to make it more tender by using the right time, namely during P3 with 20 minutes of boiling time.

4. Conclusion

Based on the results of the study and observations from the object of research that has been carried out by researchers, that in all treatments / (P) time produces different levels of tenderness of meat and a bitter taste caused by papaya leaves. The longer the

treatment / (P) the boiling time of beef with papaya leaves, the texture of the beef is more tender but the taste is still bitter. With the results of treatment / (P3) with a time of 20 minutes of boiling beef with papaya leaf wrappers and the addition of jaranan leaves, the results show that the beef becomes tender / soft, does not taste bitter, after the beef is seen from the physical, texture and taste.

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