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Comparing the Quality of West Sumatra's Rendang: Rendang Darek vs Rendang Pasisia

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Abstract

The aim of this research is to compare the quality of beef rendang in the *Darek* and *Pasisia* regions using a standardized recipe. The recipe was a recipe obtained in the *Darek* region, called Payakumbuh City, and the *Pasisia* region, called Pariaman City. This research was quantitative research. Further, the informants of this study were Micro, Small, and Medium Enterprises or MSMEs in the *Darek* and *Pasisia* regions. Questionnaires and experiments were used to gain the data. Further, the data were analyzed using organoleptic analysis, which tested the shape qualities, color, aroma, texture, and taste. The scores were in the range of 1–5. Moreover, after determining the total scores resulting from each item score, the Man Whitney U test was conducted. The results showed that there were different qualities of beef rendang in the *Darek* and *Pasisia* regions in terms of shape, color, aroma, texture, and taste. As conclusion, there were different qualities of beef rendang in the *Darek* and Pasisia regions with specific value.

Introduction

One of the traditional foods from West Sumatra is beef rendang. It has become a part of the Minangkabau tribe's traditional heritage (Nevriansyah *et al.*, 2022;Fatimah *et al.*, 2021; Pawera *et al.*, 2020). Beef rendang is made from beef and coconut milk as the main ingredients with the addition of herbs and spices. As pointed out by (Sartika *et al.*, 2021; Nazir *et al.*, 2018; Nurmufida *et al.*, 2017; Rini *et al.*, 2016; Azima & Rini, 2016), beef rendang is characterized by a dry texture and a strong, fragrant aroma due to the slow and long cooking process. It takes around 6 to 7 hours of cooking time at a temperature of 80 to 90 degrees Celsius.

As a culinary treasure of West Sumatra that has been recognized for its deliciousness throughout the world, beef rendang has a unique and attractive manufacturing tradition. It is also favored by the local and foreign people since it is rich in taste and variation (Videbæk & Grunert, 2020; Amalia, 2019; Wijaya, 2019; Detik, 2012). In addition, beef rendang has the highest hierarchy among the others and is commonly referred to as *kapalo samba* (head of the dishes) in traditional and major events. Furthermore, beef rendang contains cultural values in it. It can be seen from the process of selecting ingredients, namely instilling accuracy in carrying out activities; the processing process reflects the value of patience; the stirring process reflects the nature of balance in living life (Andam, 2012). It is in line with Nurmufida *et al.*, (2017), she highlighted that Minang people believe that rendang has three philosophies, namely patience, wisdom, and perseverance.

Beef rendang has the advantage that it is durable,

this is due to the processing process. Furthermore, Sutomo (2012) noted that the word rendang originated from the word "randang" in Minang language means slow. This is related to the process of making rendang, which takes quite a long time. The long process of processing beef rendang aims to prevent the meat from decaying so that it can be eaten anytime. (Rahman, 2020; Azima & Rini, 2016; Rini *et al*., 2016). Moreover, Amalia (2019) stated that beef rendang was voted as the most delicious food in the world by CNN on April 7, 2011 based on readers' choice (a US cable news channel and the first TV channel to broadcast 24-hour news coverage).

In addition, beef rendang in West Sumatra has different aroma and taste. (Sari & Yuliana 2021; Gardjito *et al*.,2018). The differences in beef rendang in West Sumatra are caused by several factors, namely geography, material composition, and processing techniques. Geographically, West Sumatra consists of highlands and lowlands; the highlands are called the *Darek* region, and the lowlands are called the *Pasisia* region. According to Hanifah *et al* (2017), the *Darek* region is a term for mountainous areas in West Sumatra such as Padang Panjang, Bukittinggi, Agam, Tanah Datar, and Payakumbuh. Furthermore, the *Pasisia* region refers to the lowlands in the western part of Bukit Barisan (Elfira, 2018). The *Pasisia* regions are Pariaman, Padang Pariaman, Padang City, Pesisir Selatan and Tiku (Tempo, 2019).

Previously, many studies discussed about beef rendang generally (Nurmufida *et al*., 2017; Rini *et al*., 2016; Azima & Rini, 2016). In fact, different regions in West Sumatra will produce different aromas and tastes of beef rendang. However, there were no studies that had been conducted focusing on different qualities of beef rendang in West Sumatra. Hence, the aim of this study is to compare the quality of beef rendang in West Sumatra's *Darek* region and the *Pasisia* region in terms of shape, color, aroma, texture, and taste.

Materials and methods

The present research was a quantitative research method with experimental research design. A quantitative method is a research process that produces data in the form of numbers obtained from experiments. Furthermore, the sampling technique in this research is a purposive sampling technique. According to Sugiono (2010), purposive sampling is a technique for determining the sample with certain considerations such as experts in food processing or having a business registered with the Department of Cooperatives and Micro, Small, and Medium Enterprises (MSME). The sample in this study were five MSMEs who own a beef rendang business in *the Darek* region and five MSMEs in *the Pasisia* region. Furthermore, 10 people from *the Darek* region and Pasisia region were chosen as panelists. People who have high sensitivity to taste and people who are good at processing beef rendang, both in *the Darek* and *Pasisia* regions, are panelists. Last, the assessment was continued by limited panelists to see the quality of beef rendang that has been standardized. Limited panelists are people who have high sensitivity so that the probability of error is small, which consists of 2-3 people. The limited panelists in this study were 3

lecturers from the Department of Management Food at Universitas Negeri Padang.

The data was collected by distributing questionnaires to selected MSME in the Darek and Pasisia regions, followed by experiments. Questionnaires as supporting data were used to collect information related to the composition of materials and processing techniques of rendang *darek* and rendang *pasisia* from selected MSMEs. Experiments were carried out to collect data on the quality of rendang *darek* and rendang *pasisia*. The data collection was carried out for 1 month from December 20, 2020 until January 20, 2021 in Payakumbuh city as *part of the Darek* region and Pariaman city as *part of the Pasisia* region. Moreover, the types of data used were primary and secondary data.

Data Analysis

The data was further analyzed using organoleptic analysis, which evaluates shape qualities, color, aroma, texture, and taste. The scores were in the range of 1–5. The Man Whitney U test was conducted after determining the total scores resulted from each item's scores. The organoleptic test analysis used in this study was to find the average assessment of the quality of beef rendang by using the average central tendency formula.

Results and Discussion

The recipes that have been obtained from MSMEs in the *Darek* region and *Pasisia* region were processed and assessed for quality using an organoleptic test questionnaire in terms of shape, color, aroma, texture, and taste. The quality picture of five beef rendang recipes in Payakumbuh City as Darek region and the assessment score data can be seen in Figure 1.

Figure 1. The Quality of 5 Beef Rendang Recipes in Payakumbuh as *Darek* Region

After the organoleptic test was conducted on five beef rendang recipes in Payakumbuh city in the *Darek* Region, it was found that the highest organoleptic value was D3 with a value of 43, followed by D1 with a value of 42.3, D2 with a value of 41.5, D4 with a value of 38.9, and D5 with a value of 39.6. Furthermore, the organoleptic test was carried out again on the 3 rendang *Darek* with the highest values, namely D1, D2, and D3.
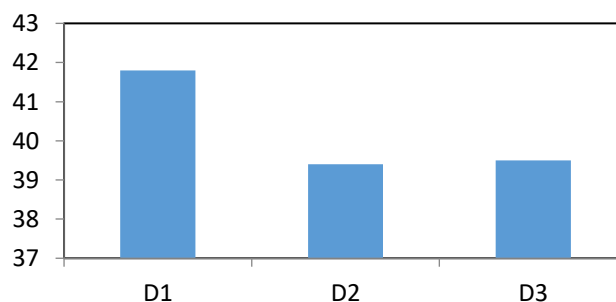

Figure 2. Average Organoleptic Test Results of 3 Recipes for Beef Rendang in *Darek* Region, Payakumbuh City

It was shown that the highest organoleptic value was D1 with a value of 41.8, followed by D2 with a value of 39.43 and D3 with a value of 39.5. The recipe for rendang *Darek* that got the highest score was used as a standard recipe, namely the recipe with the code D1 as seen in Figure 2.

Darek Region, Payakumbuh City

The quality pictures of five beef rendang recipes in Pariaman city in *Pasisia* region and the assessment score data can be seen in Figure 3.

Figure 3. The Quality of 5 Beef Rendang Recipes in Pasaman City as *Pasisia* Region

After the organoleptic test was conducted on five beef rendang recipes in Pasaman city, the *Pasisia* region, it was found that the highest organoleptic value was P3 with a value of 41.7, followed by P2 with a value of 40.5, P1 with a value of 40.4, P4 with a value of 39.9, and P5 with a value of 39.5. Furthermore, the organoleptic test was carried out again on the 3 rendang *Darek* with the highest values, namely P1, P2, and P3. It was encountered that the highest organoleptic value is P1, with a value of 40.8, followed by P3 with a value of 40.5 and P2 with a value of 39.5. The recipe for rendang *Pasisia* that got the highest score will be made as the

standard recipe for *the Pasisia* region, namely a recipe with code P1 as seen in Figure 4.
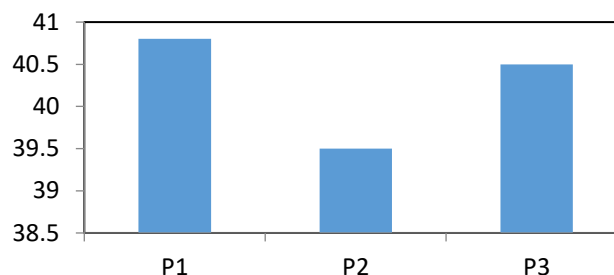

Figure 4. Average Organoleptic Test Results of 3 Recipes for Beef Rendang in *Pasisia* Region, Pariaman City

It can be concluded from both organoleptic results above that the converted rendang *Darek* recipe was a rendang recipe with code D1 and the converted rendang *Pasisia* recipe was a rendang recipe with code P1. Further, the standardized recipes of the *Darek* and *Pasisia* regions were reprocessed to see the difference in the quality of beef rendang.

The description of the average results of processing beef rendang in *Darek* region and *Pasisia* region with three repetitions can be seen in Table 1 From Table 1 can be stated that there were different qualities of rendang *Darek* and rendang *Pasisia.* Rendang Darek and rendang *Pasisia* have different qualities in terms of shape, color, aroma, texture, and taste.

Table 1. The Average Yield of Beef Rendang Processing in *Darek* and *Pasisia* Regions

Number	Rendang Quality	*Darek*	*Pasisia*
1	Square Cut of Beef Rendang	3.77	3.00
2	Neat Cut of Beef Rendang	3.73	3.47
3	Outer Color of Beef Rendang	4.40	3.80
4	Inner Color of Beef Rendang	3.33	3.63
5	Bran Color of Beef Rendang	3.77	2.66
6	Bran Aroma of Beef Rendang	4.30	4.00
7	Aroma of Beef Rendang	4.13	3.77
8	Texture of Beef Rendang	3.80	3.87
9	Bran Texture of Beef Rendang	3.63	3.17
10	Bran Flavor of Beef Rendang	4.27	4.37
11	Flavor of Beef Rendang	4.38	3.77

Based on the results of the quality assessment of rendang *Darek* and rendang *Pasisia* by the panelists, a sign value of 0.003 was obtained. This indicates that the value of sig. < 0.05, which means Ho was rejected and H1 was accepted. Thus, it can be concluded that there were different qualities of beef rendang in the *Darek* region and the *Pasisia* region in terms of shape, color, aroma, texture, and taste.

Shape Difference

Food appearance is influenced by shape (Khairani & Elida, 2020; van der Laan *et al*., 2012). The characteristics of beef rendang from the *Darek* region have a smaller size than beef rendang from the *Pasisia* region. For 1 kg of beef, the Darek region produces 28

pieces, while for Pasisia it produces 17 pieces. This was because beef rendang in the *Darek* region is used as souvenirs, which signifies the characteristics of Payakumbuh City, which has an area known as "Kampung Rendang". Meanwhile, in the *Pasisia* region, such as Pariaman City, rendang was used as a daily consumption side dish.

Based on the results of the panelist's assessment, there were different shapes of beef rendang in the *Darek* and *Pasisia* regions. The shape of beef rendang after the organoleptic test revealed different shape qualities for both rendang *Darek* and rendang *Pasisia*. The shape of rendang was different due to the initial cut and the effect of a very long cooking process, so the shape of the beef changed to a smaller size, or a shrinkage process

occurred, and the shape of the beef was not the same.

Table 2. The Average Yield of Beef Rendang Processing in *Darek* and *Pasisia* Regions

Rendang	Result	N	Mean Rank	Sum Of Ranks
	Darek	13	9.08	118.00
	Pasisia	13	17.92	233.00
	Total	26		

Ar	Rendang
Mann-Whitney U	27.000
Wilcoxon W	118.000
Z	-2.954
Asymp. Sig. {2-tailed)	.003
Exact Sig. (2*1-tailed Sig.)}	.002[a]

Color Difference

There were also different color qualities of rendang *Darek* and rendang *Pasisia* based on the results of the panelists' assessment. It was seen from the outer color of blackish brown beef, the inner color of brownish red beef and the blackish brown bran color that these were affected by a long cooking process. It is consistent with Lund & Ray (2017), they noted that food color, organoleptic characteristics, protein function, and protein digestibility may all be affected by Maillard reactions. The Maillard reaction involves lowering sugars and amino acids and is a non-enzymatic browning reaction and melanoidin (yellow to brown) forms in the product because of this reaction.

The longer the process of cooking, the darker color of beef rendang will be produced. According to Nazir *et al* (2018), he explained that beef rendang originating from the *Darek* region has a black color intensity, an aroma of smoke, and a more dominant taste. The color quality of beef rendang is expected to be blackish brown due to the caramelization process from the long cooking process (Khairani & Elida, 2020; Gardjito *et al.*, 2018). In addition, as pointed out by Hariadi *et al* (2012), he highlighted that cooked beef has a distinctive color, a blackish brown due to the long process of cooking.

Aroma Difference

The aroma of rendang *Darek* and *Pasisia* have a difference where the aroma of rendang *Darek* has a fragrant aroma, and the aroma of smoke is more dominant. According to Nazir *et al* (2018), beef rendang originating from the *Darek* region has a black color intensity and an aroma of smoke. As for the rendang from the *Pasisia* region, it was fragrant with spices. Beef rendang in the *Pasisia* region has spices that are rich in spices, so the spice aroma is stronger (Tempo, 2012). Further, Antara & Wartini (2016) declared that spices can affect the aroma, color and taste of food. Based on previous studies conducted by (Khairani, 2021; Khairani & Elida, 2020), it is known that the aroma of beef rendang is produced during the cooking process of a mixture of coconut milk and spices used.

Texture Difference

The texture of beef rendang produced from the processing of the *Darek* region was tender while the bran texture was crunchy. This was due to the long cooking process. Meanwhile, the texture of the beef rendang in the *Pasisia* region was more tender, and the texture of the bran produced was oilier and crunchier because the processing time and technique of processing beef rendang in *Darek* and *Pasisia* regions are different.

As pointed out by (Ikrar & Faridah, 2021; Khairani & Elida, 2020), in their studies, it is stated that the texture of the beef is tender and the bran is crunchy and oily due to the longs cooking process. Further, the texture of food is important, and the texture of food can be created by some technical process. For example, the beef texture can be created by heating the beef, which transforms collagen into gelatin at a specific temperature and causes the texture of the beef to become tender (Fadhila & Darmawati, 2017)

In addition, based on the results of the panelists' assessment, the bran and beef texture qualities were different in both rendang *Darek* and rendang *Pasisia*. These were due to the use of material composition and the long cooking process. Similarly, previous studies conducted by (Mentari et al., 2020; Mulyani & Elida 2020), in their studies, it is explained that the texture is influenced by the long cooking process and the use of coconut milk from old coconuts.

Flavor Difference

The flavor of beef rendang in *Darek* and *Pasisia* regions was different based on the results of the panelists' assessment. It was seen from the bran taste and beef taste. In addition, it happened due to the use of spices in the processing of rendang *pasisia*. Meanwhile, rendang *Darek* only uses natural ingredients so that the taste quality produced is different. Similarly, Tempo (2012) stated that rendang Pasisia is rich with herbs and spices so that the spices are more potent. In contrast to rendang *Darek*, the seasoning is natural, so it has a distinctive and slightly sweet taste. (Tempo, 2019). The taste of beef rendang comes from a mixture of ingredients, herbs, and spices to produce 75 combinations of salty, sweet, and spicy flavors that are just right and produce a savory rendang. (Ikrar & Faridah, 2021; Khairani & Elida, 2020).

Conclusion

A detailed explanation of the differences between beef rendang from the *Darek* and *Pasisia* regions has been shown in the findings. It showed that there were different qualities of beef rendang in the *Darek* and *Pasisia* regions in terms of shape, color, aroma, texture, and taste. The differences can be seen in the beef and bran of rendang *Darek* and rendang *Pasisia.* It happened due to the use of different materials and processing techniques.

Then, the research also proposes a suggestion for further research. Since the research reveals the different qualities of beef rendang in *the Darek* and *Pasisia* regions, further research can be expected to investigate different qualities of beef rendang in other regions in West Sumatra in terms of shape, color, aroma, texture, and taste.

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