Hedonic Test Method for Beef Rendang with Variations in the addition of *Cinnamomum verum*

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Abstract — Rendang is one of the typical foods of the Minangkabaunese in West Sumatra. Many people like to consume rendang because rendang has a distinctive taste because in making rendang the type of meat, coconut milk and spices used greatly affect the aroma and taste produced. The purpose of this study was to determine the level of aroma, color, texture, and taste of beef rendang with variations in the addition of *Cinnamomum verum*. The hedonic test of beef rendang with variations in the addition of *C. verum* was carried out on 50 panelists. Panelists present 6 samples with 6 different sample numbers. Panelists were asked to rate how much preference there was for the product using a hedonic scale. The hedonic test results showed that the less *C. verum* added, the better the taste produced. As for the aroma and color, there is no significant difference among these products.

Keywords — *Beef, Cinnamomum verum, Hedonic Test, Rendang*.

I. INTRODUCTION

Beef in the West Sumatra area is processed into a special food, namely rendang. Making rendang using coconut milk and various kinds of herbs and spices so that rendang has a distinctive taste [1]. Rendang has a distinctive aroma and taste because in making rendang, the type of meat, coconut milk and spices used greatly affect the aroma and taste produced [2]. In each area, there are some additional spices used so that rendang has a distinctive aroma and taste in each area. In this variation, several additional spices can lower cholesterol levels, for example, the addition of *Cinnamomum verum*. *C. verum*, contains high cinnamaldehyde. An in vivo study using C57BLKS/J db mice conducted by [3] revealed that plants containing cinnamaldehyde can increase the levels of High-Density Lipoprotein (HDL) and bodyweight of mice.

Research which proves that the consumption of rendang can increase cholesterol levels has not been reported yet. However, many people who have a history of cholesterol disease tend to avoid consuming rendang. Based on the background above, the authors feel the need to conduct a research on variations of the addition of *C. verum* to the manufacture of beef rendang. So that with the addition of *C. verum* variations, it can be seen how much *C. verum* is used which can be consumed by the public, thus it is necessary to test the hedonic level of beef rendang with the addition of *C. verum*.

II. METHODS

The hedonic test of beef rendang with the addition of *C. verum* was carried out using 50 non-selected panelists who were not professional tasters. The number of panelists ranged from 25-100 people. The panelists were given 6 samples of beef rendang with sample code A (original rendang), B (beef rendang with the addition of 1 gram of *C. verum* / 500 grams of beef), C (beef rendang with the addition of 2 grams of *C. verum* / 500 grams of beef), D (beef rendang with the addition of 3 grams of *Cinnamomum verum* /500 grams of beef), E (beef rendang with the addition of 4 grams of *C. verum* /500 grams of beef), F (beef rendang with the addition of 5 grams of *C. verum* / 500 grams of beef). Panelists were asked to rate how much they liked the aroma, color, texture, and taste. The scale given is as follows: 1. Dislike very much, 2. Slightly dislike, 3. Average, 4. Somewhat like, 5. Really like, 6. Like very much. The data were analyzed by using GraphPad Prism 7 with analysis of variance (ANOVA) method at 95% confidence level.

III. RESULT AND DISCUSSION

Sensory evaluation is an important quality parameter because it determine whether a product is acceptable to consumers, in addition to the nutritional and functional aspects of the product. Analysis Sensory properties are carried out to evaluate processes inline production, final

product inspection, or development new product. For researchers, knowledge of sensory properties needed in developing new analytical methods for measuring changes in sensory properties during the storage process to be consumed by consumers. Sensory evaluation is a scientific method used to measure, analyze, and interpret the response to a product based on what is captured by the human senses, such as sight, smell, taste, touch, and hearing [4].

Hedonic tests are designed to measure the degree of liking for a product. Category scales range from like extremely, through neither like nor dislike, to dislike extremely, with varied numbers of categories used. Panelists indicate their degree of liking for each sample by choosing the appropriate category [5].

A. Aroma

The result of the aroma test of beef rendang with the variations of Cinnamomum verum addition is shown in Table I.

TABEL I
AROMA TEST FOR BEEF RENDANG WITH THE VARIATIONS OF *CINNAMOMUM VERUM* ADDITION

Sample Code	Aroma Score
A	4.100ᵃ
B	4.140ᵃ
C	3.500ᵃ
D	4.320ᵃ
E	3.760ᵃ
F	3.440ᵇ

Different superscripts in the same column showed significant differences ($p<0.05$) using One Way ANOVA. The scale given is as follow: 1. Dislike very much, 2. Slightly dislike, 3. Average, 4. Slightly like, 5. Really like, 6. like very much.

Table 1 shows that the panelists' preferences for beef rendang with the variations of *C. verum* addition has no significant difference between samples codes A to E. However, sample F was significantly different from sample A.

B. Color

The result of the color test for beef rendang with the variations of *Cinnamomum verum* addition is served in Table II.

TABEL II
COLOR TEST FOR BEEF RENDANG WITH WITH THE VARIATIONS OF *CINNAMOMUM VERUM* ADDITION

Sample Code	Color Score
A	4.080ᵃ
B	4.240ᵃ
C	3.860ᵃ
D	4.260ᵃ
E	4.160ᵃ
F	3.820ᵃ

Different superscripts in the same column showed significant differences ($p<0.05$) using One Way ANOVA. The scale given is as follow: 1. Dislike very much, 2. Slightly dislike, 3. Average, 4. Slightly like, 5. Really like, 6. like very much.

Table II. shows that the panelists preference for beef rendang with the variations of Cinnamomum verum addition has no significant difference between the six samples codes.

(A)   (B)   (C)
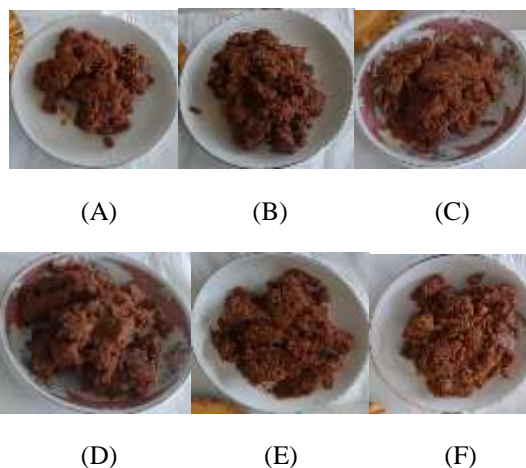
(D)   (E)   (F)

Figure 1. The appearance of beef rendang with variations in the addition of *C. verum*

The appearance of beef rendang with the variations of *C. verum* addition can be seen in Figure 1. Color is the first sensory that can be seen directly by panelists. The determination of the quality of food generally depends on the color it has, the color that does not deviate from the intended color should give the impression with a separate assessment by the panelists.

In the food industry, the color displayed and sold is an indicative parameter used in quality control. Attractive colors in food can stimulate a person's appetite [6].

C. Texture

The result of the texture test for beef rendang with the variations of *C. verum* addition is shown in Table 3.

TABEL III
COLOR TEST FOR BEEF RENDANG WITH THE VARIATIONS OF *C. VERUM* ADDITION

Sample Code	Texture Score
A	3.940ᵃ
B	4.440ᵃ
C	4.000ᵃ
D	4.680ᵇ
E	4.040ᵃ
F	4.220ᵃ

Different superscripts in the same column showed significant differences ($p<0.05$) using One Way ANOVA. The scale given is as follow: 1. Dislike very much, 2. Slightly dislike, 3. Average, 4. Slightly like, 5. Really like, 6. Like very much.

The results of the beef rendang texture test with variations in the addition of *C. verum* are presented in Table III. Showing panelists the preference for beef rendang with variations in the addition of *C. verum* did not have a significant difference between the six sample codes. However, beef rendang with the addition of 3 grams of *C. verum* had the preferred texture and experienced a significant level of preference when compared to the original rendang. This is presumably due to the same fat content between the two types of beef. According to [7], the texture of beef is largely determined by the water content, fat content and type of carbohydrates. [8] stated that texture is related to muscle bundles (*fasculi*) which are wrapped in rough and soft perimysium. The size of the texture is determined by the number of muscle fibers, the size and number of the wrapping perimysium. These things are influenced by the age and breed of livestock.

D. Taste

The result of the texture test for beef rendang with the variations of *C. verum* addition is shown in Table IV.

TABEL IV
TESTE TEST FOR BEEF RENDANG WITH THE VARIATIONS OF *C. VERUM* ADDITION

Sample Code	Taste Score
A	4.440ª
B	4.340ª
C	3.340ᵇ
D	3.980ª
E	3.600ᶜ
F	3.020ᵈ

Different superscripts in the same column showed significant differences ($p < 0.05$) using One Way ANOVA. The scale given is as follow: 1. Dislike very much, 2. Slightly dislike, 3. Average, 4. Slightly like, 5. Really like, 6. Like very much.

The results of the beef rendang taste test with variations in the addition of *C. verum* are presented in Table IV. Shows the preference panelists for beef rendang with variations in the addition of 1 gram and 3 grams of *C. verum* does not have a significant difference between the original rendang. However, the addition of *C. verum* 2 grams, 4 grams, and 5 grams had a significant difference between the original rendang. However, the most preferred rendang is the Original rendang. This is because the more *C. verum* is added to beef rendang, the more bitter the taste will be, and it is not pleasant to eat. More concentration of cinnamon is added, the antibacterial in cinnamon no longer works as it should, this is seen from the decreasing organoleptic value [9].

IV. CONCLUSION

A preference test for taste using a hedonic test shows beef rendang with less C. verum added was most preferred. Meanwhile, the preference test for aroma and color did not show significant differences among products.

REFERENSI

[1] Rini, Azima, F., Sayuti, K., & Novelina. (2016). The Evaluation of Nutritional Value of Rendang Minangkabau. *Agriculture and Agricultural Science Procedia*, *9*, 335–341. https://doi.org/10.1016/j.aaspro.2016.02.146

[2] I. Gierczynski, E. Guichard, and H. Laboure, "Aroma perception in dairy products: the roles of texture, aroma release and consumer physiology. A review", in Flavour and Fragrance Journal, 26, pp. 141–152, 2011

[3] Li, J., Liu, T., Wang, L., Guo, X., Xu, T., Wu, L., Qin, L., & Sun, W. (2012). Antihyperglycemic and antihyperlipidemic action of cinnamaldehyde in C57blks/j Db/db mice. *Journal of Traditional Chinese Medicine*, *32*(3), 446–452. https://doi.org/10.1016/s0254-6272(13)60053-9

[4] B.M. Watts, G.L. Ylimaki, L.E. Jeffery, and L.G. Elias, "Consumer–Oriented Tests", in Basic sensory methods for food evaluation, Ottawa, Ont., IDRC, 1989, pp. 66

[5] Susiwi S., "Penilaian Organoleptik", in Handout Mata Kuliah Regulasi Pangan, Jurusan Pendidikan Kimia, FMIPA, Universitas Pendidikan Indonesia, 2009 12C. M. Zuhra, "Flavor (Cita Rasa)", Scientific Work, Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Sumatera Utara, Indonesia, 2006

[6] N.A.A. Dias, S.B. Lara, L.S. Miranda, I.S.C. Pires, C.V. Pires, and N.V. Halboth, "Influence of color on acceptance and identification of flavor of foods by adults", in Ciênc. Tecnol. Aliment., Campinas, 32(2), pp. 296-301, Jun 2012

[7] Ranti, N.F. 2016. Karakteristik Fisik dan Organoleptik Daging Sapi Bali Pada Berbagai Lokasi Otot Yang Berbeda. Fakultas Peternakan, Universitas Halu Oleo. Kendari.

[8] Nurwantoro dan S. Mulyani. 2003. Buku Ajar Teknologi Hasil Ternak. Fakultas Peternakan. Universitas Diponegoro. Semarang.

[9] C. M. Zuhra, "Flavor (Cita Rasa)", Scientific Work, Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Sumatera Utara, Indonesia, 2006

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Page 55