

Hedonic Quality of Empek-Empek with the Addition of Kappa Carrageenan and Flour Porridge

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Abstract

Empek-empek is the traditional food of Palembang, Sumatera Selatan, Indonesia which is made of the mixture of minced fish and tapioca and served with cuko empek empek (empek-empek sauce). The quality of empek-empek is really determined by the special taste and crispiness. Many efforts was done to fix the crispiness of such as the addition of egg white, borax and carrageenan. The method of the research which was done was comparing the hedonic quality of empek empek from three variations of making process with commercial empek-empek (X). Those three processes were : (I) simple process, (II) process with the addition of carrageenan and (III) process with the addition of flour porridge. The parameters which were observed were crispiness, colour, taste, aroma and the level of liking. The result of the study showed that the crispiness of empek-empek with the addition of flour porridge was a slightly crispier than commercial empek-empek. The special aroma of empek-empek with the addition of kappa carrageenan was not different from the special aroma of commercial empek-empek. The colour of empek-empek with the addition of kappa carrageenan was not different from commercial empek-empek. Empek-empek with the addition of flour porridge was liked more by the panelists than other kinds of empek-empek.

Keywords: hedonic quality, empek-empek, carrageenan, flour porridge.

INTRODUCTION

Empek-empek is the traditional food of Palembang, Sumatera Selatan, Indonesia which is made of the mixture of minced fish and tapioca. It was mixed and shaped into big and small bolster or it was filled with egg. Empek-empek was served with sauce called cuko empek-empek. The quality of empek-empek was really determined by its crispiness, aroma and special taste. At first, empek-empek was made simply by mixing the meat of minced Common Snakehead fish (Ikan Gabus) with tapioca. As the time goes by, nowadays there are many empek-empek producers which use other kinds of fish. The result was not as delicious as empek-empek from Common Snakehead fish. Many efforts in fixing the quality of empek-empek had been done by mixing additional ingredients in the process of making empek-empek. The survey result of Murtado, Dasir and Verayani (2014) showed that empek-empek which were available on the market was positively contained borax. Murtado and Verayani (2014) had conducted a study on empek-empek by adding kappa carrageenan. The result was the addition of 0.45% kappa carrageenan in the making of empek-empek could fix the hedonic quality of empek-empek and lengthen the storing duration. Then, Murtado (2013) also reported that the mixing of flour porridge in the making of empek-empek could fix the crispiness of empek-empek which was produced. From the result of the research it was found that the ratio of 0.3:1:1 (flour porridge: minced fish: tapioca) was the best formula in forming the hedonic quality.

MATERIALS AND METHOD

The materials which was used were tapioca, flour, minced Dorab Wolf-herring fish (ikan Parang-parang), egg white, kappa carrageenan, water, salt and commercial empek-empek. The equipments were pan, stove, spatula, knife, spoon, plastic bowl and plate.

We tried three processes of empek-empek making and then we compared the hedonic quality of empek-empek which was produced. Those three processes were: (I) simple process, (II) process with kappa carrageenan addition, (III) process with flour porridge addition

Process I: 1 kg minced fish + 1 kg tapioca → mixed and added with 400 ml of water → mixed well → shaped into bolster → boiled → cooled down → served

Process II: do process I and added with 0.45% of kappa carrageenan while mixing

Process III: first, the making of porridge: mix 500gr flour, 1000gr boiled water and 4 egg white → mix well → second porridge: mix 300gr porridge with 1 kg minced fish → mix well → add 1kg tapioca → mixed well → shaped into bolster in the size of 2cm x 5cm (dm x panjang) → boiled → cooled down → served. To do the test of hedonic quality and level of liking we used the paired comparison test based on Soekarto (1985), amount of water (AOAC, 1995), and colour brightness used tool is colour reader type CR-10,360/12.7oz. using 36 semi trained panelists, the students of food technology study program which had given some training and guidance before. As the comparison we used commercial empek-empek which contained borax (X). The procedure of testing which was used:

Hedonic Quality of Crispiness

Panelists were asked the response about their impressions about empek-empek crispiness which were served by biting and chewing and compared it with the comparing empek-empek. Then they gave the score based on this scoring system rate:

Crispiness Specification	Score
• Crispier	5
• A bit crispier	4
• Somewhat the same	3
• A bit uncrispy	2
• More uncrispy	1

Hedonic Quality of Aroma

Hedonic quality of aroma was measured by smelling the empek-empek which were served and comparing it with the aroma of comparing empek-empek. They gave the responses based on this rate:

Aroma Specification	Score
• Fresher	5
• A bit fresher	4
• Somewhat the same	3
• A bit unfresh	2
• Unfresh	1

Hedonic Quality of Colour

The testing of hedonic quality of colour was conducted by looking at it carefully and comparing the colour with the colour of comparing empek-empek. Then, they gave the score based on this rate:

Colour Specification	Score
• Whiter	5
• A bit whiter	4
• Somewhat the same	3
• A bit dull	2
• Duller	1

Test on Level of Liking

Panelists were asked to give impression and responses about the level of liking of empek-empek which were served. The total impression and responses was given by tasting and chewing empek-empek which were served and their liking of them. They wrote what they liked based on this rate and they gave comments freely.

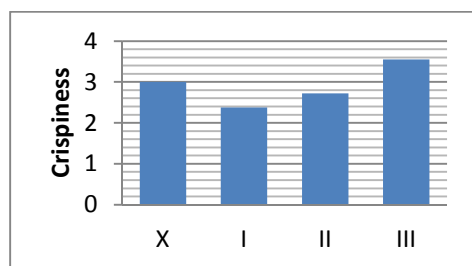
Level of Liking	Score
• Really like	1
• Like	2
• A bit like	3
• A bit dislike	4
• Dislike	5
• Hate	6
• Really hat	7

Comment :

RESULTS AND DISCUSSION

Hedonic Quality of Crispiness

The Result of paired comparison of hedonic quality of empek-empek crispiness was shown on Picture 1. Hedonic Quality of crispiness of empek-empek III was crispier than empek-empek X. While the hedonic quality of crispiness of empek-empek I and II were more uncrispy and wasn't really different from Empek-empek X. The average score of hedonic quality of crispiness of each treatment consequently were 3 : 2.4 : 2.72 : 3.55.



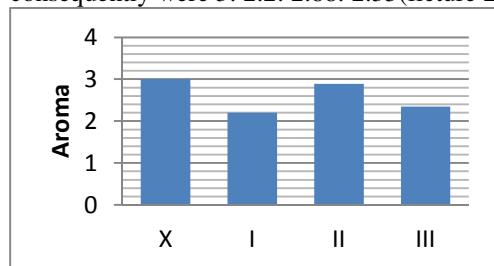
Explanation: x = commercial empek-empek, I = simple process empek-empek, II = empek-empek with addition of kappa carrageenan III = empek-empek with addition of flour porridge

Picture 1. Hedonic quality of empek-empek crispiness from three treatments (I, II, and III) compared to commercial empek-empek (X)

Porridge which was made of flour had gelatinization when it was added with hot water. This gelatinization was permanent. With the highest composition of amylase in flour, this porridge could reduce the firmness of the product. The solidifying which was caused by amylo pectin in tapioca added with porridge so the product became soft and crumb. The balance between firmness of amylo pectin in tapioca and softness of amylase in flour porridge produced a crispy product.

Hedonic Quality of Aroma

The aroma of empek-empek I and III were a bit unrefresh from the aroma of empek-empek X, while the aroma of empek-empek II was not really different from the aroma of empek-empek X. The aroma of sea fish frankly cannot be reduced through simple process. The addition of flour porridge could not reduce the aroma of sea fish in empek-empek which was produced. But, the addition of Kappa Carrageenan significantly could reduce the aroma of sea fish just like borax in commercial empek-empek. The average score of hedonic quality of aroma consequently were 3 : 2.2 : 2.88 : 2.35 (figure 2)

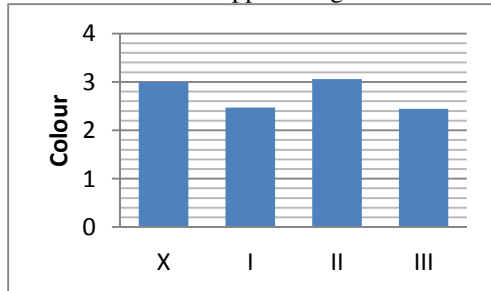


Picture 2. Hedonic quality of empek-empek of three treatments (I, II and III) compared to the aroma of commercial empek-empek (X)

Hedonic Quality of Colour

Hedonic quality of colour which was produced from the three treatments (I, II and III) consequently were 2.47 :

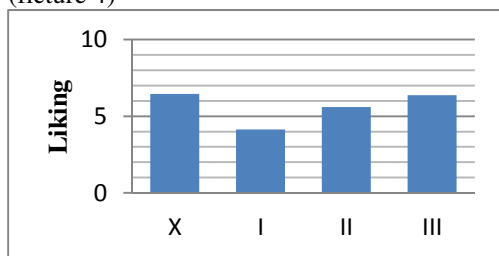
3.06 : 2.44. Hedonic quality of colour which were produced from empek-empek I and III were a bit duller than empek-empek X, while the colour of empek-empek II was not different from the colour of empek-empek X. The addition of 0.45% kappa carrageenan in the making of empek-empek could fix the colour into a whiter one.



Picture 3. Hedonic quality of empek-empek from the three treatments (I, II and III) compared to the colour of commercial empek-empek (X).

Level of Liking

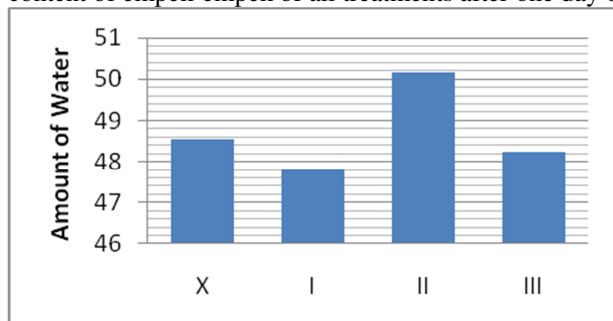
Panelists' level of liking to three empek-empek from three kinds of process showed that empek-empek from process III were liked than empek-empek from other treatments. Empek-empek from process III had softer texture and crispy when it is bitten, was not hard and was not difficult to be chewed. Panelists really liked empek-empek from process III because of its crispiness. The average score of the panelists' level of liking to four products of empek-empek (X, I, II and III) were 6.44 (like); 4.14 (a bit dislike); 5.59 (like) dan 6.36 (like) (figure 4)



Picture 4. Panelists' level of liking to commercial empek-empek, treatment I, II and III.

Water Content

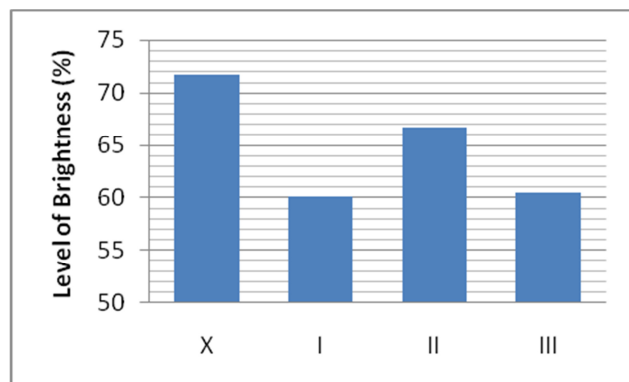
Water content in empek-empek is important, especially during the cold storing. The damage which occurred is the physical damage in form of crack on the surface which is caused by evaporation of the water content (Murtado and Verayani, 2014). The continued evaporation due to the difference of humidity between the storing room and the material can cause the crack on the material. Therefore, maintaining the high humidity in the storing room is important. Besides, the ability of the material to maintain the high water content is also important to avoid the high evaporation. High fiber content in the empek-empek is one of the factors which can maintain high water content so it can minimize the damage (Murtado and Verayani (2014). In Picture 4 is shown water content of empek-empek of all treatments after one day of storing in cold room.



Picture 5. Water content of empek-empek after 1 day of storing in a cold storage.

Level of Brightness

Level of brightness which was produced showed that commercial empek-empek (with the addition of borax) was significantly different from other treatments. The simple process, addition of kappa carrageenan and the addition of flour porridge didn't fix the colour of empek-empek like borax did. However, the colour which appeared was still in the category which was liked by the panelists.



Picture 6. Level of brightness of empek-empek (I, II, III)

CONCLUSIONS

1. Empek-empek with the addition of flour porridge is more crisp than empek-empek with the addition of kappa carrageenan and simple process. But empek-empek with the addition kappa carrageenan is somewhat the same than commercial empek-empek.
2. Empek-empek from simple process and empek-empek with the addition of flour porridge had a bit unfresh aroma compared to commercial empek-empek. While the one with the addition of kappa carrageenan had no different aroma compared to the aroma of commercial.
3. The colour which was produced from empek-empek with simple process and empek-empek with the addition of flour porridge were a bit duller than the colour of commercial empek-empek. While empek-empek with the addition of kappa carrageenan was not really different from the colour of commercial empek-empek.
4. The addition of flour porridge in the process of making empek-empek produced products which were liked best than commercial empek-empek, empek-empek from simple process and empek-empek with the addition of kappa carrageenan.

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