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Young Adult Perception of Fermented Durian (Tempoyak) in Lampung Province Indonesia

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Abstract: Tempoyak is fermented food made from durian (*Durio zibethinus*) pulp. This product is popular traditional food in Indonesia and Malaysia. To ensure the current position of tempoyak and its dishes in young generation, this research was conducted to obtain young adult perception about tempoyak as traditional food in Lampung, and discover about its innovation potential. This study used direct questionnaire through online questionnaire to investigate the response of young adult to tempoyak as traditional food. 115 respondents have participated in the survey which consisted of 43 men and 72 women. The result showed that all of the respondent were familiar with tempoyak, but only three-quarter of them had ever taste of its products. Half of the respondent were preferred intermediate acidity level of tempoyak, and the rest of them preferred tempoyak with low acidity level and sweet taste. More than 95% of respondents agreed that tempoyak needs innovation to be better known in public. The innovation needed were product form (55%), packaging innovation (21%), instant product innovation (18%), marketing strategy (1%), and others (5%).

Keywords: consumer, consumer perception, tempoyak, traditional food

Background

Tempoyak is fermented food made from durian (*Durio zibethinus*) pulp. This product is popular traditional food in Indonesia (Lampung, South Sumatera, Jambi, Bengkulu, West Sumatera, Aceh, and West Kalimantan) and Malaysia [1, 2] Tempoyak can be consumed freshly with rice or processed as ingredient with other spices and dish [3].

Commonly, Indonesian consumed tempoyak as side dish while eating rice and condiment of fish dishes [4]. In Malaysia, tempoyak is commonly consumed by Malay's farmer living near durian farm since durian can be fermented spontaneously [5].

Tempoyak making has a distinctive recipe that varies according to the region. Tempoyak from Sumatera, for example, is different from tempoyak from Kalimantan. In Sumatera tempoyak, the addition of salt is carried out in the fermentation process, while the Kalimantan tempoyak involves the addition of salt and sugar [6]. Tempoyak making can be done through spontaneous fermentation or using yeast, but most people use spontaneous fermentation in its manufacture [7]. Although the process of making tempoyak across regions in Sumatera is similar, there are several names

for tempoyak such as *asam durian* in West Sumatera and *pekasam* in Aceh [8]

Fermentation of tempoyak usually made after addition of salt with or without sugar, then kept tightly closed for 7 days at ambient temperature. Traditionally, the container used was earthenware, but nowadays mostly are using glass jar, aluminium, or plastic [9].

The shelf life of tempoyak is typically long, preserved by lactic acid bacteria (BAL) that produce lactic acid during the fermentation process [10]. The chemical compositions of durian flesh with 17% saccharose and 15-20% of total sugar content are nutritious enough to support the LAB growth [11, 12]. The existence of LAB in tempoyak fermentation make it had sour taste, with acidity as high as 2.5-3.6% (as acetic acid) and pH of 3.8 to 4.6 [2].

As a part of indigenous food, Lampung is also famous for the availability of tempoyak. Meanwhile, nowadays tempoyak has not become popular ingredient to be served as dishes because of its varies of quality. Without intervention of innovation in tempoyak, the existence of this traditional food will be vanished.

To gain more popularity on market, innovation become important strategic tool for micro, small, and medium



size enterprises (SMEs) to achieve competition advantage [13]. The term of “innovation” can be defined as an ongoing process of learning, searching and exploring things that resulted in new products, new techniques, new forms of organization and new markets [14].

To ensure the current position of tempoyak and its dishes in young generation, this research was conducted to obtain young adult perception about tempoyak as traditional food in Lampung, and also discover about its potential for innovation.

Method

Method for investigate the response of young adults to tempoyak as traditional food was evaluated using direct questionnaire survey through google form. A total of 115 respondents have participated in the survey consisted of 43 men and 72 women. Data sampling was conducted on November-December 2019.

In this study, a cross-sectional design was used, which the information collection from each element of sample population was carried out only once at a time. The sampling technique was carried out using convenience sampling, means non-probability sampling techniques in which subjects were selected because of their convenient accessibility and proximity to researcher.

During the set-up phase, the validity and reliability was assessed to ensure the data were represent the total population. Data validity testing were assessed using Pearson-Product Moment Correlation, and reliability testing using alpha-cronbach. The preliminary questionnaire were asked to 25 respondents, until fixed question were

The questionnaire consist of two categories: respondent characteristics and main topic. In respondent characteristics, respondent were asked about their gender, age, last education, and monthly expenses (in Indonesian rupiah). The main topic about tempoyak as traditional food were asked through six questions: (1) familiarity of the product, (2) experience-based for tempoyak tasting, (3) final dish made from tempoyak, (4) liking of dished made from tempoyak, (5) taste preference of tempoyak, and (6) innovation related to tempoyak development.

Data Analysis

Univariate statistics were used to analyze the data to check the distributions of frequencies and detect the possible errors occurred during data entry. The data were analyzed using SPSS software.

Result and Discussion

Validity and Reliability Results

The result of validity and reliability test were described (see Table 1). The result showed that the questionnaire have meet the requirement of validity and reliability test and ready to be asked to the respondent.

Table 1 Validity and Reliability Test Result

No	Questions	Validity		Reliability	
		Sig.	Criteria	Cronbach's Alpha	Criteria
1	Do you know what is tempoyak?	0.000	Valid	0.793	Valid
2	Have you ever consumed tempoyak?	0.000	Valid	0.734	Valid
3	Do you know processed product from tempoyak?	0.015	Valid	0.592	Valid
4	Do you like tempoyak and its processed product?	0.000	Valid	0.672	Valid
5	Which taste do you like for tempoyak?	0.147	Valid	0.813	Valid
6	How many times do you consume dishes made from tempoyak?	0.000	Valid	0.806	Valid
7	Does tempoyak need innovation to be better known to public?	0.013	Valid	0.799	Valid
8	What kind of innovation you may think about tempoyak?	0.00	Valid	0.870	Valid

Demographic Profile

Demographic profile of respondents were showed in Table 2. All of the respondents were young adult with

age between 18—30 years old. Most of them had senior high school as last education. The respondents had varies monthly expenses, mostly were under 1 million rupiah (equal to 72,17 USD) with 57,04% percentage.

Table 2. Respondent characteristic

Characteristics	Percentage (%)
Gender	
Male	37,39
Female	62,60
Age	
18-20 years old	58,52
20-30 years old	41,48
Last Education	
Senior High School	77,04
Diploma	5,93
Undergraduate	15,56
Graduate	1,48
Monthly expenses	
< 1 million rupiah	57,04
1-2 million rupiah	29,63
2-3 million rupiah	6,67
> 3 million rupiah	6,67

Main Topic Response

Table 3. Respondent Response

Questions	Answers	Percentage (%)
Do you know what is tempoyak?	Yes	100
	No	0
Have you ever consumed tempoyak?	Yes	78,52
	No	20,74
Do you know processed product from tempoyak?	Yes	87,41
	No	12,59
Do you like tempoyak and its processed product?	Yes	53,33
	No	46,67
Which taste do you like for tempoyak?	High acidity level	0
	Intermediate acidity level	46,67
	Low acidity level, sweet taste	53,33
How many times do you consume dishes made from tempoyak?	Once a week	4,44
	Once in two week	2,22
	Once a month	3,70
	Rarely	89,63
Does tempoyak need innovation to be better known to public?	Yes	95,56
	No	4,44

All of the respondents were familiar with tempoyak as traditional food from Indonesia. Table 3 showed that most of the respondents had ever taste tempoyak (78,52%), but there were some respondents that had never consumed it.

As intermediate product, tempoyak can be processed furthered as dishes or complementary food. Tempoyak can be added as seasoning for fish-based dishes and also

as mixing ingredient for chili paste [15, 16]. More than half of respondents (about 87,41%) were understand about processed product from tempoyak, and half of them (53,33%) like its processed product.

Tempoyak naturally had sour taste, with pH range from 3.96-4.08 [17, 18]. Lactic Acid Bacteria (LAB) are the predominant microorganism in tempoyak with *Lactobacillus plantarum* as predominant LAB [19]. Other species present were *L. fersantum*, *L. corynebacterium*, *L. mali*, *L. brevis*, *L. fermentum*, *L. casei*, *L. paracasei*, *L. collinoides*, and *L. fructivorans*. Result from respondents showed that they preferred tempoyak with low acidity level and sweet taste (53,33%) and tempoyak with intermediate acidity level (46,67%). None of them were like tempoyak with high acidity level. This could happened because food environment is characterised by the widespread availability of palatable foods which high in sugar and fat, especially in young consumer [20].

This study showed that 89.63% of respondents were rarely consume dishes made from tempoyak. This means that tempoyak did not regularly served as daily food.

Traditional food producers face the challenge for improving health, safety, and convenience of the products in order to fullfill market demands, by adjusting innovation that allow them to maintain and expand their influence in highly competitive and globalized market [21].

From Figure 1, the research result showed that most of respondents (95,56%) said that tempoyak needs innovation to be better known to public. Type of innovation would be product form (55%), packaging (21%), instant product (18%), other (5%) and marketing (1%).

Innovations in traditional food sector mainly formed as packaging innovations, product size and form, changes in product composition, or new ways of using the product [22]. However, As a traditional food, tempoyak have an opportunity to be distributed and sold in new channel market, since consumers percieve traditional food as high quality, fresh, and healthy products [23].

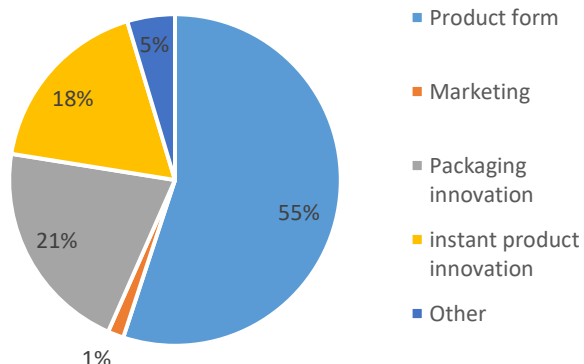


Figure 1. Possibility of innovation from tempoyak asked by respondents

Conclusions

This study showed the behaviour and perception of young adult consumers of tempoyak as one of Indonesian traditional food. The consumers were answer openly about their opinion in chance of innovation to improve tempoyak popularity. Interest from consumer where showed about the innovation made for tempoyak. This confirmed that tempoyak needs more effort to be involved to increase the market competitiveness.

Since the study was conducted in Lampung Province using responded who are mostly familiar with tempoyak, the finding could not be extended to the entire population in Indonesia. As evaluation, it is suggested that next studies should be conducted with different methodology such as qualitative in-depth interview and focus group discussion to analyze in detail of the consumer perception and behavior towards tempoyak. The results obtained from this study have important implications in improvement of tempoyak market and should be considered for product development and commercialization process.

Conflicts of interest

There are no conflicts to declare.

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