

DEVELOPMENT OF THAI STYLE CURRY SCONES

**BY
THIRADA DANPHAIBOON**

**A special project submitted to Faculty of Biotechnology,
Assumption University in part fulfillment of the requirements
of the Degree of Bachelor of Science in Biotechnology
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Title: Development of Thai Style Curry Scones

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Academic year: 2013



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Advisor

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Abstract

With an ambition to develop Thai style curry scones by using Thai traditional curry as an ingredient, this study aims to create a new style scone that is accepted from consumers in the markets. First, the study was conducted with a survey on consumer behavior and an opinion on Thai style curry scones. It showed that 67 percent of the respondents had consumed scones before and Keaw-warn curry, Ka-rhee curry, and Mus-sa-mun curry were the top three highest percentage from consumers' opinion for Thai style curry scone. Therefore, they were used to conduct a sensory evaluation and just-about-right test in the development of Thai style curry scone. In the sensory evaluation, there was no significant difference ($p < 0.05$) between three scores of each sample. Just-about-right test showed that Keaw-warn curry and Ka-rhee curry scone needed to be adjusted. In a screening formulation, the amount of Keaw-warn curry was decreased by 10 percent of its original content which had reduced the color of the product. Thus, a green colorant, (Brand, 2013), was added to improve the color intensity. For Ka-rhee curry, 20 percent of original curry was reduced as well as 10 percent of the sugar. In a selection of the most preferred Thai style curry scone for a prototype formula, three Thai style curry scones obtained from the earlier development were tested. It was found that Mus-sa-mun curry scones were the most preferred. Therefore, it was used to conduct consumer acceptance test. As a result, Mus-sa-mun curry scone received an average preference score of 7.6 ± 0.8 , indicating the preference level of moderately like to very much like of the product. With 97 percent of 200 consumers, they accepted the product and would buy it. Moreover, the consumers were willing to buy the product at the price between 20-40 baht per 50 grams weight.

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Introduction

Nowadays, especially in the city, many people are living in a stream of urgency; they wake up early to do some personal business, rushed out to work, rushed back home, and rushed out to bed. As they are living in the hustle hours, they are unable to eat before going to work, to study, or even to do their personal businesses. Many people prefer to have breakfasts during transportation. Most of their breakfasts would be something easy to prepare such as ready-to-cook foods such as instant rice porridge, instant noodle, and etc. While ready-to-cook foods are most suitable to prepare for breakfast, there is also an alternative choice for breakfast which is breads.

Around the world, bread is a staple food in almost every single meal. Throughout the history, bread has been recognized as an important part of society's survival. Bread can be grilled, baked, boiled, and fried. They come in loaf shape, flat shape, square shape, or even round shape to specialty shapes. Many breads contain sort of grain or flour in their ingredients; it can be ground chickpeas as in Roti, corn as in Tortillas, dark rye as in Pumpernickel. Breads are consumed with every meal of the day especially for breakfast. Breads for breakfast include Bagels, Croissants, Biscuits, Muffins, or Scones.

Scones are one type of bread that many Thais would prefer to eat at the break time. Normally, scones are characterized as crumble texture with butter taste. Ideally, many scone makers have been developing scones into several varieties such as assorted with nuts, fruits, and/or creams in order to make them more attractive and valuable. Besides, some Thais may think of

developing scones into Thai unique flavor that can be eaten in every meal on the main dish as Thai food style at the same time can be consumed as snack.

Therefore, this project has been proposed to show that scones can be developed in order to create appropriate Thai style baked products that can fit with Thai consumer's desire and satisfaction.



Objectives

1. To study on scones consumption in Thai society.
2. To determine the preference on Thai style curry scones.
3. To determine the best scone formula cooperating with Thai unique recipe.



Literature Review

Bread types

Bread is classified into several groups according to a composition, fat content, amount of water, amount and type of yeast, and method of bread making (Stellaculinary, 2013).

- a) Hydration – The amount of water on a flour weight base, fwb, is range from 50% to higher than 65%. Water is an essential ingredient for dough formation. Without water, wheat proteins will not denature and combine into a gluten network inside the dough. Water defines the stiffness of the dough with low amount creating stiff dough in bagel and pretzel and high amount of rustic dough in some artisan loaves. The standard dough of European style bread, sandwich or dinner rolls and French bread usually contains water from 57 to 65 on fwb.
- b) Fat content – Fat or shortening has profound effect on texture of the bread. The amount of fat is varied from none to more than 20 on fwb. Base on the fat content, bread is classified into two basic types and one additional types.
 - i. Lean dough as Baguette, French bread or Italian bread contains very little to no fat in the formula. These breads are characterized with thick hard crust and airy hard crumb.
 - ii. Rich dough as Brioche, croissants and Danish pastry has 20% or more than 20% fat content. They are usually soft and tender crumb with dense even air cells.

- iii. Enriched dough contains fat content from 5 to 20% together with other ingredients, including milk, eggs, sugar. These breads have soft and tender texture with rich flavor.
- c) Flat bread – This group of bread is characterized mainly from a flat shape. The leavening agents of flat bread derive from yeast and chemical agent as baking powder or baking soda. Their classification is based on the leavening action into
 - i. Yeasted flat bread such as pizza, Foccacia and cracker
 - ii. Un-yeasted flat bread such as quick bread, cracker, muffins and biscuits
- d) Method – Bread can be made mainly from straight dough method or sponge-dough method. These methods are different in number of dough formation while the formal has all ingredients mixed in one step, in the later, the ingredients are divided, especially flour and water, into two parts and mixed separately to sponge or pre-ferment and dough. As a result, bread made from sponge-dough method tends to possess more aroma from the yeast fermentation than the straight dough bread.
- e) Type of yeast – Yeast used in bread can come from nature such as a starter of sourdough bread, *Saccharomyces exiguus*, that is collected and stored from old batch of production or commercial Baker's yeast, *Saccharomyces cerevisiae*, produced for commercial use in bakery products such as active dry yeast, instant yeast, or cake yeast.

Quick bread

In the past the bakery products as bread and cake were leavened solely by yeast. Up until 1850 when baking powder was introduced to the market that several bakers stopped using yeast and turned to use the baking powder instead, especially in cake and cookies (Baking911, 2013)

Quick breads are one group of bakery products that used baking powder rather than yeast for their leavening action. The use of baking powder provides convenience for the bakers and shortens a preparation time from several hours in proofing time or fermentation and resting time to less than one hour of mixing and making up. Quick breads have wide range of flavor and texture from light and fluffy to dense and heavy. They can be sweet or salty. Unlike bread that is fermented, the quick breads are usually having low flavor, not complex flavor as the fermented bread. The texture also varies from light and fluffy or pancake created from high amount of chemical leavening agent in the formula to a dense less leavened of biscuits (Wisegeek, 2013).

Quick breads cover a wide range of baked products from biscuits and scones made from dough to muffins or waffle made from a batter. The consistency of dough or batter varies with the fluidity of the mixture which is related to the composition and the mixing method.

The basic ingredients of any quick bread are all-purposed flour, liquid, typical milk, salt and leavening agent (baking powder or baking soda). They can usually contain fat or shortening from butter to vegetable oil, eggs and

sugar. Fruits, nuts or spices are added to create varieties of the products. The additional ingredients are usually dried for convenient use and storing.

Chemical leavening agent is mainly sodium bicarbonate which breaks down during baking to give gas carbon dioxide that raises the products. Not only the baking powder that raises the quick bread, air incorporated during the mixing and steam evaporated from liquid ingredients also help to leaven the products.

Types of quick bread (Slideshare, 2013)

- a) Soft dough has thick consistency enough to be rolled out such as soda bread dough, biscuit dough and scone dough. The ingredients are mixed until blended to moisten the mixture not completely forming gluten as in the bread dough.
- b) Pour batters has a wide range in consistency from very thin and runny to thick of pancake batter to muffins.
- c) Drop batter is thicker than pour batter and can be scooped or spooned and dropped on a cookies sheet.

Scones

Scones are considered as quick breads since they are leavened with baking powder or baking soda and cream of tartar. Scones are a type of rich, slightly savory pastry that is often served at breakfast or tea, especially in Britain. Traditional English scones are slightly resemble American biscuits, as both use a flaky, dense pastry but scones tend to be a bit sweeter, and also incorporated ingredients like dried fruits. Scones are delicious when eaten warm or also served cold with a variety of toppings including clotted cream, marmalade, jams, honey, and butters (Phillips, 2010). Scones are also made highly savory with ingredients such as potato flour and cheese.

Basic scone dough contains flour, milk or buttermilk, eggs, butter, salt, baking soda, and sugar. The dry ingredients are whisked together until combined and then the butter is cut in with pastry knives. The butter is not permitted to melt, but is instead blended with the flour until it forms small lumps of flour coated butter, similar to pie crust dough. The buttermilk and eggs are mixed together and added at once to the flour/butter mixture. Everything is combined until it has just begun to draw together, leaving slightly sticky, lumpy dough that is rolled out on a lightly floured surface. The dough is usually made in the shape of a round that is cut into triangles, although scones can also be cut into squares or made using a cookie cutter. The top of the scone is often lightly brushed with egg and milk before being sprinkled with sugar and put into the oven to bake (Smith, 2012).

The effect of each ingredient on scone characteristics

Flour: A quality flour should be used. Professional bakers use a combination of bread and cake flours while home bakers can choose biscuit or cake flour. Self-raising flour, which already includes baking powder and salt, is perfectly acceptable as long as these ingredients are not doubled up in the recipe. The amount of protein in the flour affects how flaky the scone will be. The higher the protein content the tougher the scone may be.

Milk: The milk or liquid used can be varied depending on the end texture required. For example, replacing half milk with cream produces a heavier scone texture, while using buttermilk makes a lighter, more bread-like scone. Buttermilk has a nice thick creamy texture with a rich tangy buttery taste that makes baked goods tender, as well as lactic acid from buttermilk increasing the amount of carbon dioxide gas produced resulting in superior texture and volume.

Eggs: Egg is may be added for a more cake-like scone that's typically dropped from a spoon. Sometimes scones will be glazed (brushed) with beaten egg, giving them a browner and glossier crust.

Butter: Shortening or lard, traditional biscuit fats, and cold liquid ingredients will influence the flakiness, as well as inhibit gluten formation and will be more likely to produce a finely textured scone. The cold liquids keep the fat from melting. Butter gives a richer flavor.

Salt: Salt provides and influences rheology during making scones.

Baking powder: Baking powder can be added separately or self-raising flour may be used.

Sugar: Sugar may be added for sweetness depending on the type of scone. Obviously for savory scones it is usually omitted.

Thai cuisine

Thai people have been known for their ability to absorb foreign influences and translate them into something uniquely Thai. The culture, customs and cuisine of modern Thailand represent a happy synthesis of the many influences that have been brought to bear on Southeast Asia's rice bowl over the last hundred years. Among the cuisines of Southeast Asia, Thai food is unique. Thai cuisine is distinct from Chinese and Indian cuisines, both of which influenced Thai cooking. Thai cooking is completely identifiable in its own right, incorporating all 5 tastes: sweet, sour, bitter, salty, and spicy (Android, 2009).

The use of Curry in Thai cuisine

The influence of the foreign trade was also important. The Portuguese brought their sweets to King Narai's court in the seventeenth century. Some say Buddhist monks from India brought curry to Thailand. Indian curry and Muslim cuisine were introduced at a palace feast in honor of King Rama I at the turn of the 18th century. Curry is a favorite dish in Thai restaurants throughout the world and for good reason. Based on a delicious paste of fresh and dried herbs and spices, curry is unique and unlike any dish in Western cuisine. In Thailand, curry is usually a soupy dish consisting of

coconut milk or water, curry paste and meat and some vegetables. Thai curries tend to be more soup-like compared to their thicker Indian cousins. Curries are the richest dish of Thai cuisine, being based on spicy herb and spice pastes, i.e. curry pastes (Pongsagun, 1999).

The use of Thai curry in bakery products

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Thai curry is known of its full of taste, spicy, and hot. It is sometimes added in bakery products to create exotic taste to the common western baked products. Some of the examples of the use of Thai curry in bakery products are listed below.

The most common bakery products containing Thai curry is curry puff. Known as an Indian and western fusion baked product and popular among Thai Muslim, Malay and Singaporeans, curry puff was believed to be originated by Thathongkipma (Encyclopedia, 2013). Other Thai curry such as Green curry or Red curry are also used as ingredients for curry puff stuffing.

Thai-style cuisine pizza, several Thai curries or cuisines are used as ingredient for pizza topping commercially from Green curry, Tom-yam, Laab, Red curry, Pa-nane, Ke-mao.

Crispy bread with basil leaves and Thai curry was developed from Rajmonkhon Technology, Thanyaburi (2010)

Bread stick (Juengprasertkul, 2008) incorporated with three Thai curry pastes, Keaw-warn, Laab, and Tom-yum was developed to create bread based snack with Thai style curry. Keaw-warn bread stick was obtained and 67% of the tested consumer accepted the product.

Materials and Methods

Materials

Raw materials

- All purpose flour, Kite Brand
- Curry paste, Big C Brand
 - Keaw-warn curry
 - Ka-rhee curry
 - Mus-sa-mun curry
- Coconut milk, Chawkoh Brand
- Milk, Meiji Brand
- Butter, Allowrie Brand
- Sugar, Mitrphol Brand
- Salt, Prungthip Brand
- Egg, CP Brand
- Baking powder, Best foods Brand
- Colorant additive, Winner's Brand

Equipment and Apparatus

- Digital balance, Zepper
- Bakery utensil

Methods

1. Consumer survey on scone

100 consumers were asked to answer a questionnaire (Appendix 1) concerning their behaviors on scone consumption and opinions on Thai curry scones.

2. Preliminary experiment

Standard butter scones formula was obtained and used to prepare scones. The standard formula of butter scones was shown in Table 1.

Table 1: The standard formulation of butter scones

Ingredients	Amount (grams)	Percentage, FWB
All purpose flour	95	100.0
Milk	26	26.3
Butter	56	59.0
Sugar	27	28.4
Salt	5	5.3
Egg	15	15.8
Baking powder	3.5	3.7

Source: pg.in.th/blog (Honey, 2010)

Preparation of scone

Weigh or meter all ingredients and set them aside. Stir in the dry ingredients, all-purposed flour, sugar, baking powder and salt. Rub butter in the flour mixed so that the butter bits are coated with flour. With a pastry cutter or 2-legged fork break the butter bits into small pieces of bean size. Combine liquid ingredients, beaten egg and milk and add them into the flour. Stir the content together to create crumble dough. Gently pat the dough on a table to

a sheet of 1.5 high. With a 4-cm circular cookies cutter cut the dough into units and place them on a greased cookies sheet. Brush the surface with an egg wash. Bake in a preheated oven at 150°C for 10 minutes. Scones are best served hot.

Preparation of Thai style curry scones

Weigh or meter all ingredients and set aside. Combine curry paste, coconut milk, and sugar in a saucepan and bring to boil. Cool the curry mix to room temperature and blend in the beaten egg. Repeat the same procedure of scone preparation except replace the egg-milk mix with curry-egg mix.

3. Development of Thai style curry scone

3.1 Selection of the Thai curry

From the survey questionnaire in (Appendix 1), the first three selected types of Thai curry from Consumers' opinion on Thai style curry scone were selected to use in formulating Thai style curry scones.

3.2 Thai style curry scones formulation

3.2.1 Preparation of Thai style curry scones

The standard butter scones formula (Table 1) was added with Thai curry-egg mix to produce Thai style curry scones. Three kinds of Thai style curry scone samples were prepared and observed for their characteristics.

3.2.2 Sensory evaluation

Sensory evaluation was conducted on the Thai style curry scones prepared with three types of Thai curry by 20 untrained test panelists using

9-point hedonic scale preference test on 7 attributes including color, appearance, curry flavor, saltiness, sweetness, texture, and overall acceptance in a questionnaire (Appendix 2). Duplication of Thai style curry scone preparation and the sensory evaluation were carried out.

3.2.3 Just-About-Right or JAR test

Thai style curry scones from each type of Thai curry obtained from the result in sensory evaluation (3.2.2) were tested by 20 untrained test panelists using just-about-right test (Appendix 3). The attributes used in JAR test were color, curry flavor, saltiness, sweetness, and texture. The results were determined as percentage from just right scale. Duplication was performed.

3.2.4 Screening formulation

The formulation of Thai style curry scones was developed by varying the ingredients pertaining to the attributes needed to be adjusted according to the result from the JAR test. Each required adjustment ingredient was varied at 2 levels and a control from the standard Thai style curry score (3.2.1) were prepared. Thai style curry scone samples were evaluated (Appendix 4) the sensory preference by 20 untrained test panelists using 9-point hedonic scale preference test on the same attributes in (3.2.2) to select the most preferred sample for each Thai style curry scone formula. In case that there was more than one attribute needed to adjust, the ingredient was varied one at a time. The screening formulation was conducted twice to obtain duplication results.

3.2.5 Selection of the most preferred Thai style curry scones

The most preferred formula from each type of Thai style curry scone was chosen from the average acceptance of 20 untrained test panelists using 9-point hedonic scale to select the most preferred curry to use in Thai style curry scones. Sensory evaluation (Appendix 5) was used to select the most preferred Thai style curry scones. The result of the highest score was chosen as a prototype formula.

4. Consumer test

The consumer test questionnaire (Appendix 6) was given to 200 consumers. The consumers were given with the Thai style curry scones, obtained from 3.2.5 in order to determine the consumer acceptance of the prototype product.

5. Experimental design

a. Ranking test

To determine the suitable Thai curry to make Thai style curry scones, ranking test was used in the first consumer survey.

b. Randomized Complete Block Design (RCBD)

Randomized Complete Block Design or RCBD was used in experimental design with different preparation times as blocks. The treatments were the tested scone. The untrained test panelists were considered having the same experience of the product and would not be counted as one source of variation in the data.

6. Statistical Analysis

a. Analysis of variance

Analysis of variance or ANOVA at $\alpha = 0.05$ was used to determine whether there was a significant difference in the treatments. Duncan's multiple range test was used to determine the different treatment when there was a significant difference in ANOVA. Statistical analysis was conducted using Microsoft Excel program.

7. Location

a. First survey location

The questionnaire was given to 100 consumers around Siam Square.

b. Consumer survey location of the prototype product

The questionnaire was given to 200 consumers around Asoke Road, and Central Rama 9th.

c. Experimentation

The experimental location was performed at E1 laboratory of Faculty of Biotechnology, Assumption University, Hua Mak campus.

8. Time duration

Gant chart for experimentation was shown in Table 1.

Table 2: Experiment Gant Chart

Task	September	October	November	December	January	February	March
Searching for the information and methodology							
Preliminary test							
Collect questionnaire preference and analyze result							
Development of Thai style curry scones formula							
Sensory evaluation							
Just about right test							
Collect data and analyze result							
Development of Thai style curry scones							
Consumer survey test							
Collect data and analyze result							
Preparation of report and project presentation							

Result and Discussion

1. Consumer survey on scone

Siam Square was selected as the location for conducting the survey. As scones are the bakery products from the Western, consumers who are acquainted with foreigners, especially Englishman may have some experience with scones rather than common people. In addition, there are many choices of consumers in the area since Siam Square is one popular location for Thais and foreigners. Questionnaires were given to 100 people around Siam Square asking for their behaviors on scone consumption and opinions on Thai style curry scones.

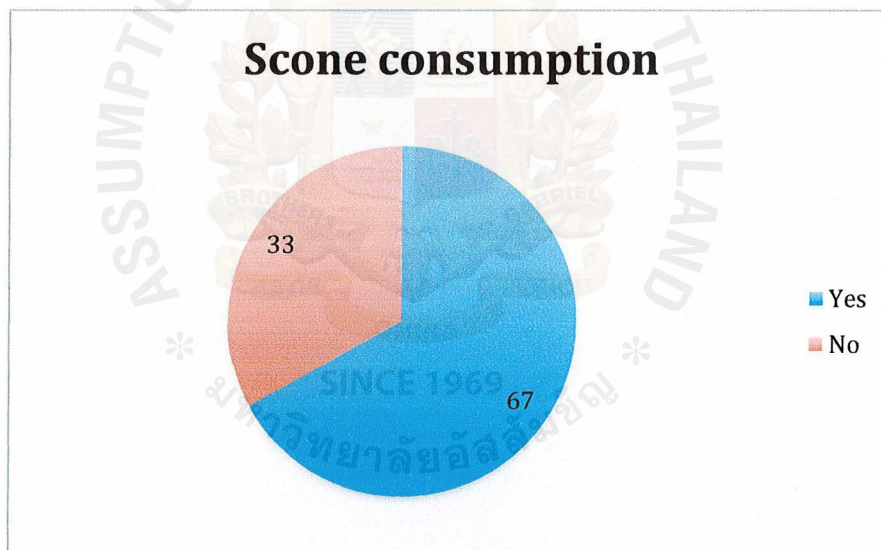


Figure 1: Scone consumption in Thai society

Figure 1 shows percentage of consumer have ever consumed scones. Out of 100 people, 67 had consumed scone before while 33 had not experience in scones.

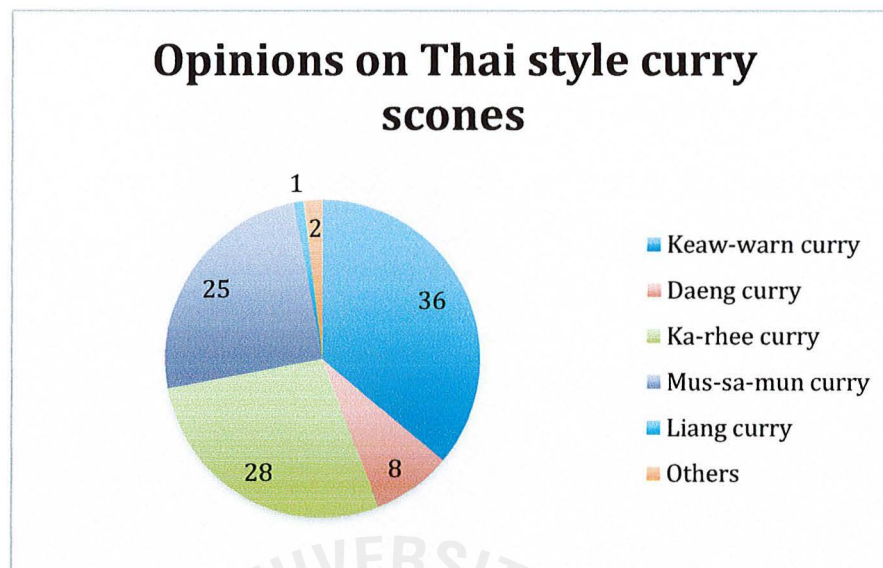


Figure 2: Opinions on Thai style curry scones

When asked what kind of Thai curry is suitable to make scones, the result as percentages of 6 choices of Thai curries were shown in Figure 2. The results showed that 36% of the respondents selected Keaw-warn curry as rank number one, followed by 28% for Ka-rhee curry and 25% for Mus-sa-mun. Daeng curry, Liang curry and others received 8, 1, and 2, respectively. Keaw-warn curry, Ka-rhee curry, and Mus-sa-mun curry were chosen for the next study.

2. Preliminary experiment

Standard formulation of butter scones, in Table 1, was used in preparation of butter scone in the preliminary in order to determine the characteristics of the scone as having crumble texture and buttery flavor. Figure 3 showed the scones made from the standard formulation of butter scones. All-purpose flour, moderately strong gluten flour, influenced the crumble texture of the scones. Moreover, preparation of the dough affected

degree of toughness of the product. To create flaky crumble texture, the dough should not be kneaded completely. Fat from butter and milk fat introduced lightness to the product. Butter influenced the flakiness, as well as shortened the gluten structure in the dough. Furthermore, butter gave scones richer flavor. Beaten egg gave a more cake-like texture and to glossiness of the scone surface. Salt provided the taste and influenced rheology during making scones. Baking powder leavened the product and influenced its crumble texture. Sugar provided sweetness and absorbed moisture.



Figure 3: Butter scones

3. Development of Thai style curry scones

3.1 Selection of the Thai curry

The result from the survey questionnaire in (Appendix 1) in (1) showed the first three selected types of Thai curry from Consumers' opinion on Thai style curry scone were selected to use in formulating Thai style curry scones. The first three selected kinds of Thai curry were Keaw-warn curry, Kar-hee curry, and Mus-sa-mun curry.

3.2 Thai style curry scone formulation

3.2.1 *Preparation of Thai curry scones*

Thai curry pastes – Keaw-warn curry, Ka-rhee curry, and Mus-sa-mun curry – from Big C were used for convenience purpose. Standard butter scone was modified by adding Thai curry paste at the amount of 13.7% Thai curry paste of the flour weight base, fwb (Table 3). This amount was derived from one Tablespoon of the curry paste. The scones were prepared following the preparation of Thai style curry scone procedure.

Table 3: Thai style curry scones formulation

Ingredients	Amount (grams)	Percentage on fwb
All purpose flour	95	100.0
Coconut milk	26	26.3
Butter	56	59.0
Sugar	27	28.4
Salt	5	5.3
Egg	15	15.8
Baking powder	3.5	3.7
Curry paste	13	13.7

As a result, three scone samples from each type of curry had the same appearance but different in color, depending on the type of curry. Keaw-warn curry scone was a bit green color from the green chili, Kar-hee curry scone was yellow from the curry powder, and Mus-sa-mun curry scone was orange from red chili (as shown in figure 4: A, B and C). However, they had the same texture as crumble, a main scone characteristic, and flavor, which was sweet. In fact, the curry flavor of each type of curry was quite different in herbal aroma in which each type of curry had unique aroma from unique herb ingredients.

3.2.2 Sensory evaluation

Sensory evaluation was conducted with the Thai style curry scone samples made from three types of curry, Keaw-warn curry, Kar-hee curry, and Mus-sa-mun curry. Each type of Thai style curry scone sample was prepared and evaluated their characteristics on 7 attributes including color, appearance, curry flavor, saltiness, sweetness, texture, and overall acceptance in a questionnaire (Appendix 2) using 9-point hedonic scale preference test. 20 untrained test panelists who were students and staff around E-building, Assumption University, Hua Mak campus, evaluated each sample while they were served hot. Duplication was performed from two batches of preparation to determine error from preparation and evaluation.

Table 4: The average preference scores from 9-point hedonic scale preference on three Thai style curry scones

Attributes	Average \pm SD preference score*		
	Keaw-warn curry scone	Ka-rhee curry scone	Mus-sa-mun curry scone
Color	6.6 \pm 1.7	7.4 \pm 1.4	7.2 \pm 1.7
Appearance	6.6 \pm 1.5	7.0 \pm 1.2	6.9 \pm 1.4
Curry flavor	6.3 \pm 1.6	6.7 \pm 1.6	6.9 \pm 1.6
Saltiness	6.4 \pm 1.6	6.5 \pm 1.4	6.4 \pm 1.5
Sweetness	6.3 \pm 1.3	6.4 \pm 1.2	6.4 \pm 1.4
Texture	7.0 \pm 1.4	7.1 \pm 1.3	7.0 \pm 1.3
Overall acceptance	6.8 \pm 1.4	7.0 \pm 1.4	7.4 \pm 1.2

Note: *There was no significant different at $p < 0.05$

Table 4 showed the average scores \pm SD on 7 attributes obtained from the 9-point hedonic scale preference tests of Keaw-warn curry scone, Ka-rhee curry scone, and Mus-sa-mun curry scone. Statistic analysis indicated that there was no significant differences in the average preference scores from all attributes of all Thai style curry scones, prepared with different Thai curry. Keaw-warn curry scones were rated from 6.3 to 7.0, from slightly like (6) to moderately like (7), while Ka-rhee curry and Mus-sa-mun curry scones received a little bit higher average scores in all attributes from 6.4 to 7.4 and 6.4 to 7.4, respectively. Thus, the overall acceptance score of Keaw-warn curry scone, Ka-rhee curry scone, and Mus-sa-mun curry scone were 6.8 \pm 1.4, 7.0 \pm 1.4, and 7.4 \pm 1.2 respectively. The test panelists preferred Thai style curry scones as more than slightly like (score > 6.5) to moderately like

moderately (7). Mus-sa-mun curry scones received the highest scores in overall acceptance as it had intense orange color of the curry paste (as shown in Figure 4: C) though it obtained lower score (7.2 ± 1.7) in color than Ka-rhee curry scone (7.4 ± 1.4 , as shown in Figure 4: B) but with no significant difference. It was noticed that the curry flavor of Mus-sa-mun curry scone obtained a little higher score than the other two Thai style scones, 6.9 ± 1.6 . It could presume that the test panelists rated Thai style curry scone samples based more on their flavor. On the other hand, Keaw-warn curry scone received the lowest scores in color intense than others (as shown in the Figure 4: A). That was why it had the lowest score in each attributes especially overall acceptance. However, the Just-About-Right test was performed for all types of Thai style curry scone to determine whether the formula should be adjusted in which direction of the selected attributes.



Figure A

Figure B

Figure C

Figure 4: Thai style curry scones, A - Keaw-warn curry scones, B - Ka-rhee curry scones, C - Mus-sa-mun curry scones

3.2.3 Just-About-Right or JAR test

Three Thai style scones were prepared from 3.2.1. Each was tested in a just-about-right (JAR) test with 20 untrained test panelists to determine five attributes relative to the true characteristics of Thai style scone. The attributes included color, curry flavor, saltiness, sweetness and texture. The results showed percentage of a level of just right in each attribute. The percentages of JAR test for Keaw warn curry scone, Ka-rhee curry scone, and Mus-sa-mun curry scone were given in table 5 to 7.

Table 5: The percentage of Just-About-Right test for Keaw-warn curry scone

Attributes	Too little	Somewhat too little	Just right	Somewhat too much	Too much
Color		60%	40%		
Curry flavor			60%	40%	
Saltiness			80%	20%	
Sweetness			90%	10%	
Texture		10%	70%	20%	

Table 5 showed that Keaw-warn curry scone was rated with 60% somewhat too little in color, 40% of somewhat too much in the curry flavor, 80% of just right in saltiness, 90% of just right in sweetness and 70% of just right for texture. The results indicated that color and curry flavor should be adjusted.

Table 6: The percentage of Just-About-Right test for Ka-rhee curry scone

Attributes	Too little	Somewhat too little	Just right	Somewhat too much	Too much
Color		10%	90%		
Curry flavor		10%	40%	50%	
Saltiness		10%	70%	20%	
Sweetness			60%	40%	
Texture		40%	50%	10%	

Table 6 for Ka-rhee curry scone showed that the scone was rated with 90% just right in color, 50% somewhat too much for curry flavor, 70% just right in saltiness, 60% just right in sweetness and 50% just right in texture. The results indicated that half of the test panelists rated that the scone had too strong curry flavor while 40% though that it was too sweet and too crumble.

Table 7: The percentage of Just-About-Right test for Mus-sa-mun curry scone

Attributes	Too little	Somewhat too little	Just right	Somewhat too much	Too much
Color		10%	70%	20%	
Curry flavor			70%	30%	
Saltiness			100%		
Sweetness			90%	10%	
Texture		20%	70%	10%	

From table 7 the percentage level of just right for Mus-sa-mun curry scone in five attributes were 70% just right in color, 70% just right in curry flavor, 100% just right for saltiness, 90% just right from sweetness, and 70% just right for texture. The results indicated that Mus-sa-mun curry scone was just right in the color, curry flavor, saltiness, sweetness, and texture.

3.2.4 Screening formulation

The results from JAR test showed that Keaw-warn curry scone and Ka-rhee curry scone required the adjustment. The ingredients responsible for the attributes to be adjusted were varied according to the trend result from 3.2.3.

In this case, Keaw-warn curry scone had two attributes required adjustment which were color and curry flavor. The test panelists' result reflected that it had too low in color but too strong curry flavor. The scone was prepared from Keaw-warn curry paste alone. Thus, to increase its color might mean increasing the curry paste. However, the scone was also rated as somewhat too strong in curry flavor. Increasing the amount of curry paste definitely would intensify the curry flavor. Thus, to solve the problem, food colorant would be used to increase green color in the product without affecting the flavor. For the too strong curry flavor, the amount of curry was varied down from 13.7% (original) to 12.3% in treatment 1 and 11.0% in treatment 2, referring 10 percent decreasing at each interval from 100 (original percentage) to 90, and 80 percent as shown in Table 8.

Table 8: Keaw-warn curry scones formulation, varying percentage of curry paste

Ingredients	Percentage composition as % fwb		
	Control containing 100% curry	Treatment 1 containing 90% curry	Treatment 2 containing 80% curry
All purpose flour	100	100	100
Coconut milk	26.3	26.3	26.3
Butter	59.0	59.0	59.0
Sugar	28.4	28.4	28.4
Salt	5.3	5.3	5.3
Egg	15.8	15.8	15.8
Baking powder	3.7	3.7	3.7
Curry paste	13.7	12.3	11.0
Color additive	4.2	4.2	4.2

For Ka-rhee curry scone, it was found that three attributes needed to be adjusted, curry flavor, sweetness and texture. The trend in adjusting the curry flavor and sweetness was to reduce the intensities by lowering the amount of curry and the amount of sugar in the formula. Thus, first, Ka-rhee paste was varied from 13.7% (original) for control to 12.3% for treatment 1 and 11.0% fwb for treatment 2 as shown in Table 9. After obtained the suitable percentage of curry paste, the sugar content was reduced in two levels and one control to 28.4% (original) for control, 25.6% for treatment 1, and 22.7% on fwb for treatment 2 as shown in Table 12. The same as in the

Keaw-warn curry scone, each reduction represented 10% decrease from the original amount. Texture was not adjusted as it was the characteristic of the scone to have crumble-like texture and half of the test panelists agreed that it was just right. Moreover, the panelists were not trained, so, further study might be required.

Table 9: Ka-rhee curry scones formulation, varying percentage of curry paste

Ingredients	Percentage composition as % fwb		
	Control containing 100% curry	Treatment 1 containing 90% curry	Treatment 2 containing 80% curry
All purpose flour	100	100	100
Coconut milk	26.3	26.3	26.3
Butter	59.0	59.0	59.0
Sugar	28.4	28.4	28.4
Salt	5.3	5.3	5.3
Egg	15.8	15.8	15.8
Baking powder	3.7	3.7	3.7
Curry paste	13.7	12.3	11.0

The adjusted Keaw-warn curry scones and the control were evaluated by 9-point hedonic scale preference test by 20 untrained taste panelists on 7 attributes – color, appearance, curry flavor, saltiness, sweetness, texture, and overall acceptance. The results were analyzed and shown in Table 10.

Table 10: The average scores of the preference test for Keaw-warn curry scones with varying the percentages of Keaw-warn curry paste in the formulas

Attributes	Average±SD preference score*		
	Control containing 100% curry	Treatment 1 containing 90% curry	Treatment 2 containing 80% curry
Color	7.4±1.0	7.5±0.8	7.4±1.0
Appearance	7.1±1.2	7.2±1.3	7.2±1.2
Curry flavor	7.2±1.0	7.6±0.9	7.4±0.8
Saltiness	7.4±0.8	7.4±1.2	7.2±1.0
Sweetness	7.3±0.9	7.4±1.2	7.3±1.1
Texture	7.4±1.1	7.5±0.8	7.4±1.1
Overall acceptance	7.5±0.8	7.6±0.9	7.6±0.8

Note: *There was no significantly different at $p < 0.05$.

Statistic analysis indicated that there were no significant differences in the control and the adjusted scones ($p < 0.05$). The curry attribute score would be concerned as to determine which level of curry would be the most preferred level from the test panelists. All treatments received the scores of around 7, referring to moderately like of the sample. The scone contain 12.3% Keaw-warn curry paste of the original had the highest score, 7.6 ± 0.9 , followed by scone with 11.0% Keaw-warn curry, 7.4 ± 0.8 , and the control, 13.7% Keaw-warn curry, got the lowest score, 7.2 ± 1.0 . Therefore, 12.3% Keaw-warn curry paste could be the most suitable percentage of the curry of

this scone and was selected for further study. As for the color, after adding food colorant, green (Brand, 2013), all Keaw-warn curry scones obtained higher scores in color than the previous score, 6.6 ± 1.7 .

Table 11: The average scores from the preference test for Ka-rhee curry scones with varying percentage of Ka-rhee curry paste in the formulas

Attributes	Average \pm SD preference score*		
	Control containing 100% curry	Treatment 1 containing 90% curry	Treatment 2 containing 80% curry
Color	7.4 \pm 1.2	7.3 \pm 1.2	7.3 \pm 1.2
Appearance	7.2 \pm 1.4	7.1 \pm 1.3	7.2 \pm 1.4
Curry flavor	6.8\pm1.2	7.1\pm1.3	7.3\pm1.3
Saltiness	7.1 \pm 1.0	7.2 \pm 1.0	7.3 \pm 0.8
Sweetness	7.2 \pm 1.1	7.4 \pm 1.0	7.4 \pm 0.9
Texture	7.2 \pm 0.9	7.2 \pm 1.1	7.4 \pm 1.1
Overall acceptance	7.2 \pm 0.9	7.2 \pm 0.9	7.4 \pm 0.8

Note: *There was no significant different at $p < 0.05$

Table 11 showed the average scores of Ka-rhee curry scones from three treatments that varied the percentage of curry paste in the formula. It was found that there were no significant differences in the average scores of all treatments in all attributes ($p < 0.05$). The highest score in curry flavor was found with Treatment 3 containing 11.0% Ka-rhee curry paste, 7.3 ± 1.3 , followed by the Treatment 1 containing 12.3% Ka-rhee curry paste, 7.1 ± 1.3 ,

and Control, 6.8 ± 1.2 . The new scores were higher than the previous score of the Control of 6.7 ± 1.6 . It was also observed that other attributes had gained higher scores than the previous scores. All treatments were rated as moderately like, except curry flavor of the control. Therefore, 11.0% Ka-rhee curry paste could be the most suitable percentage to use as the ingredient for Ka-rhee curry's formula and was selected to use for further study.

After obtaining the suitable percentage of Ka-rhee curry paste used in the Ka-rhee curry scone, the second adjustment for sugar content was carried out and the new adjusted formulas of Ka-rhee curry scone were shown in Table 12. Three scone samples were prepared and used in the preference test to compare their sensory characteristics.

Table 12: Ka-rhee curry scones formulation, varying percentage of sugar content

Ingredients	Percentage composition as % fwb		
	Control 100% original sugar content	Treatment 1 90% of original sugar content	Treatment 2 80% of original sugar content
All purpose flour	100	100	100
Coconut milk	26.3	26.3	26.3
Butter	59.0	59.0	59.0
Sugar	28.4	25.6	22.7
Salt	5.3	5.3	5.3
Egg	15.8	15.8	15.8
Baking powder	3.7	3.7	3.7
Curry paste	11.0	11.0	11.0

Table 13: The average score of 9-point hedonic scale preference test for each sugar variation of Ka-rhee curry scones

Attributes	Average±SD preference score*		
	Control 100% original sugar content	Treatment 1 90% of original sugar content	Treatment 2 80% of original sugar content
Color	6.9±1.0	6.8±0.9	6.6±0.8
Appearance	6.5±1.1	6.4±1.0	6.2±1.2
Curry flavor	6.6±1.2	6.5±1.0	6.4±1.2
Saltiness	6.5±1.1	6.5±1.0	6.2±1.1
Sweetness	6.6±1.1	7.0±0.8	6.4±1.2
Texture	6.7±0.8	6.8±0.8	6.8±1.0
Overall acceptance	6.4±0.9	6.6±1.0	6.4±1.0

Note: *There was no significant different at $p < 0.05$

Table 13 showed the average preference scores of Ka-rhee curry scone adjusted sugar content. There were no significant differences in the average scores of all treatment in all attributes at $p < 0.05$. The scone from Treatment 1 containing 25.6% sugar received the highest score in sweetness, 7.0 ± 0.8 , followed by the Control scone containing 28.4% sugar of 6.6 ± 1.1 and Treatment 2 containing 22.7% sugar of 6.4 ± 1.2 . It was observed that reducing the amount of sugar in the scone lowered other attributes' scores than without varying the sugar in the previous screening of Ka-rhee curry scone formula. It might be that the degree of sweetness in the scone affected the test panelists' decision on other attributes.

3.2.5 Selection of the most preferred Thai style curry scones

The preferable formulas from each type of Thai curry scone in 3.2.4 and 3.2.5 were chosen for selection the most preferred Thai curry to make Thai style curry scone. Table 14 summarized the formulas obtained from 3.2.4 and 3.2.5 experiments. Sensory evaluation was used in selection the suitable Thai curry.

Table 14: Adjusted Thai style curry scones formulation

Ingredients	Percentage composition as % fwb		
	Keaw-warn curry scone	Ka-rhee curry scone	Mus-sa-mun curry scone
All purpose flour	100	100	100
Coconut milk	26.3	26.3	26.3
Butter	59.0	59.0	59.0
Sugar	28.4	25.6	28.4
Salt	5.3	5.3	5.3
Egg	15.8	15.8	15.8
Baking powder	3.7	3.7	3.7
Curry paste	12.3	11.0	13.7
Color additive	4.2	-	-



Figure 5: Keaw-warn curry scones, Ka-rhee curry scones, and Mus-sa-mun curry scones made by using preferred formula of each type of curry

Table 15: The average score of 9-point hedonic scale preference test for each type of Thai style curry scones

Attributes	Average \pm SD preference score*		
	Keaw-warn curry	Ka-rhee curry	Mus-sa-mun curry
Color	7.3 \pm 1.3	7.6 \pm 0.8	7.7 \pm 0.8
Appearance	7.4 \pm 1.1	7.5 \pm 0.8	7.8 \pm 0.8
Curry flavor	7.2 \pm 1.0	7.4 \pm 0.9	7.6 \pm 1.2
Saltiness	7.3 \pm 0.9	7.4 \pm 0.8	7.4 \pm 0.8
Sweetness	7.4 \pm 1.0	7.4 \pm 0.8	7.6 \pm 0.8
Texture	7.2 \pm 0.8	7.4 \pm 0.8	7.5 \pm 0.9
Overall acceptance	7.3 \pm 0.9	7.4 \pm 0.8	7.6 \pm 0.9

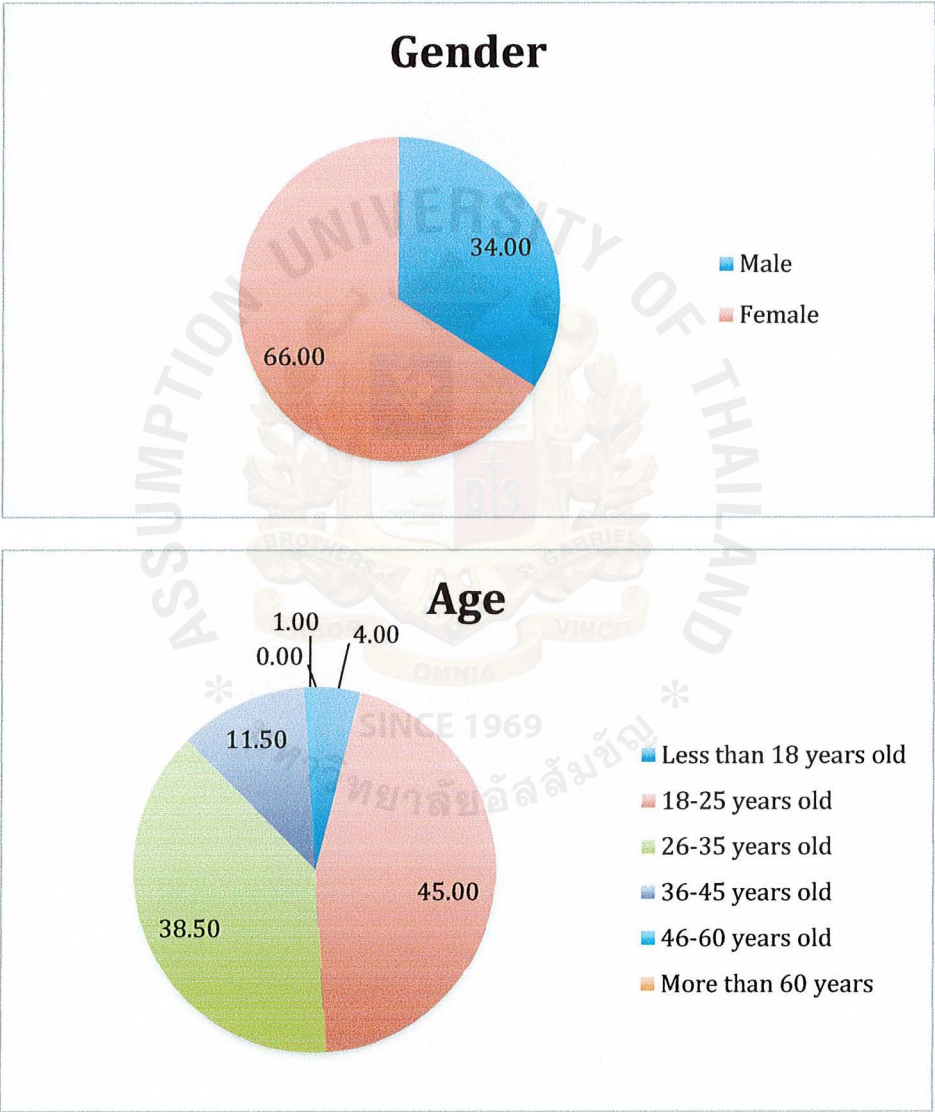
Note: *There was no significant different at $p < 0.05$

Table 15 showed the average score of three Thai style curry scones and their standard deviations. Statistical analysis resulted that there were no significant different at $p < 0.05$ for all treatments in all attributes. Mus-sa-mun curry scone received the highest scores in all attributes, 7.7 ± 0.8 in color, 7.8 ± 0.8 in appearance, 7.6 ± 1.2 in curry flavor, 7.4 ± 0.8 in saltiness, 7.6 ± 0.8 in sweetness, 7.5 ± 0.9 in texture, and 7.6 ± 0.9 in overall acceptance. The scores indicated that Mas-sa-mun curry scone was preferred as more than moderately like and almost to very much like. The second highest score was obtained from Ka-rhee curry scone, which had the score for color, appearance, curry flavor, saltiness, sweetness, texture, and overall acceptance as 7.6 ± 0.8 , 7.5 ± 0.8 , 7.4 ± 0.9 , 7.4 ± 0.8 , 7.4 ± 0.9 , 7.4 ± 0.8 , and 7.4 ± 0.8 respectively. And last but not least in Kaw-warn curry scone, its scores for color, appearance, curry flavor, saltiness, sweetness, texture, and overall acceptance were 7.3 ± 1.3 , 7.4 ± 1.1 , 7.2 ± 1.0 , 7.3 ± 0.9 , 7.4 ± 1.0 , 7.2 ± 0.8 , and 7.3 ± 0.9 , respectively. They, both, were rated as moderately like. As Mus-sa-mun curry scones had the highest score, it could be interpreted that this scone type had the strongest flavor and color intensity (Figure 5) that influenced the likeness or preference of the test panelists. Therefore, Mus-sa-mun curry scone was chosen to be the prototype formula to produce Thai style curry scone and would be used to evaluate consumer acceptance for the finished product.

4. Consumer test

A consumer test on Mus-sa-mun curry scones was conducted with 200 normal consumers around Asoke Road and Central Rama 9th. The consumer test questionnaire (Appendix 6) was given to 200 consumers together with

Mas-samun curry scone in order to determine whether the consumer would accept the product. This questionnaire composed of demographic information of consumers, consumers' behavior of scones, and consumers' behavior on Mus-sa-mun curry scones. The results were demonstrated in Figure 6-8.



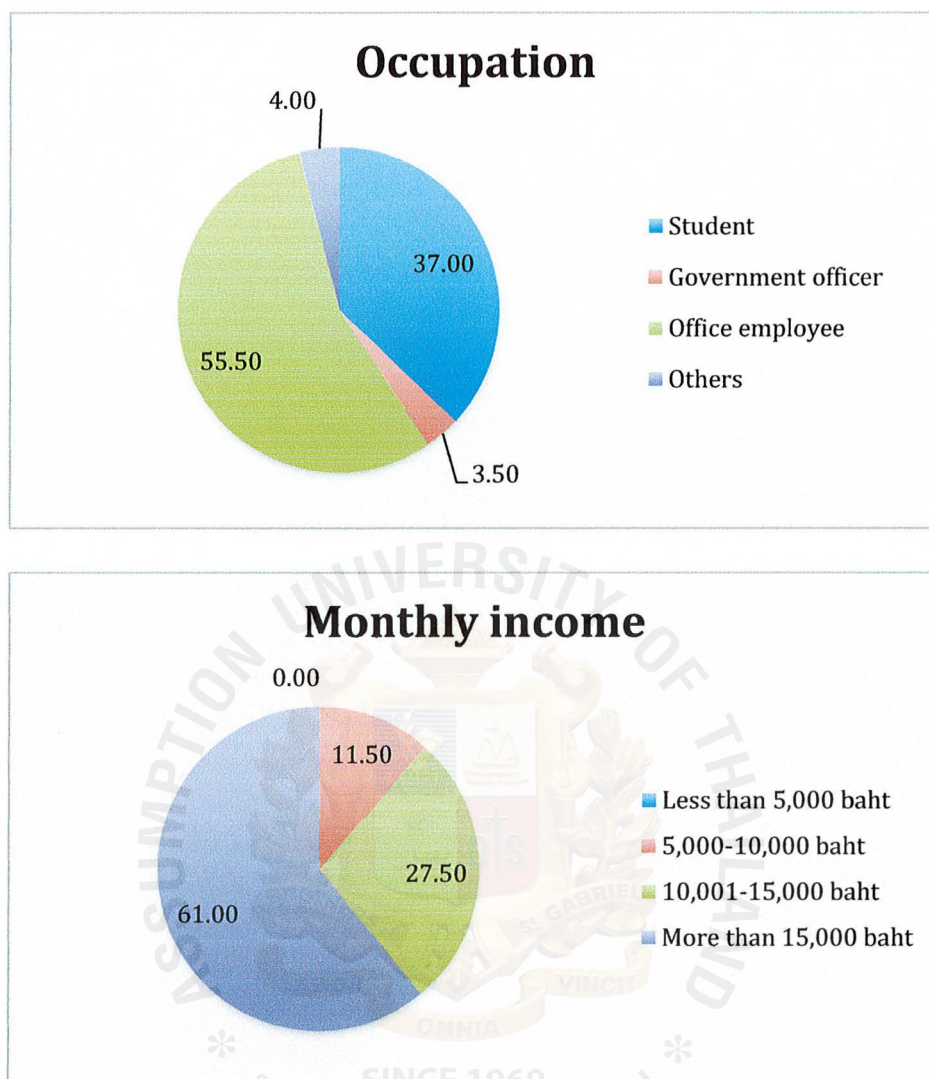
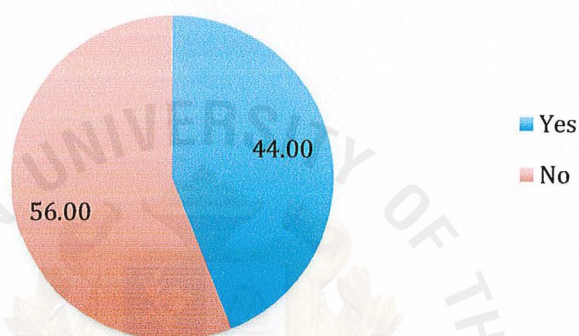


Figure 6: Pie charts of consumers' demographic

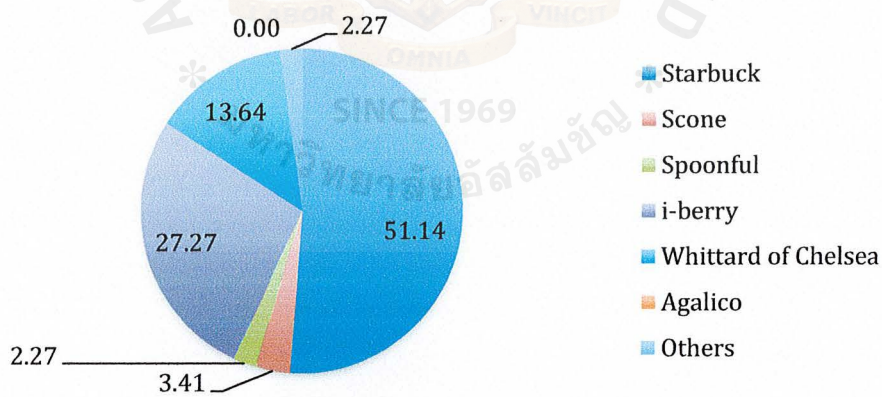
Figure 6 summarized the demographic information for the consumers, which included gender, age, occupation, and monthly income. It was resulted that 66% of the consumers were female while 34% were male. The age composed of 45%, 38.5%, 11.5%, 1%, 0%, and 4% for 36-45 year-old, 18-25 year-old, 26-35 year-old, 46-60 year-old, more than 60 year-old, and less than 18 year-old, respectively. Most of them were office employees, 55.5%, student 37%, government officers 3.5%, and 4% for other occupations such as University teacher. For the income, 61% had their

income more than 15,000 baht per month while 27.5%, 11.5%, and 0% had the incomes of 10,001-15,000 baht, 5,000-10,000 baht and less than 5,000 baht per month, respectively.

Scone consumption experience



Store



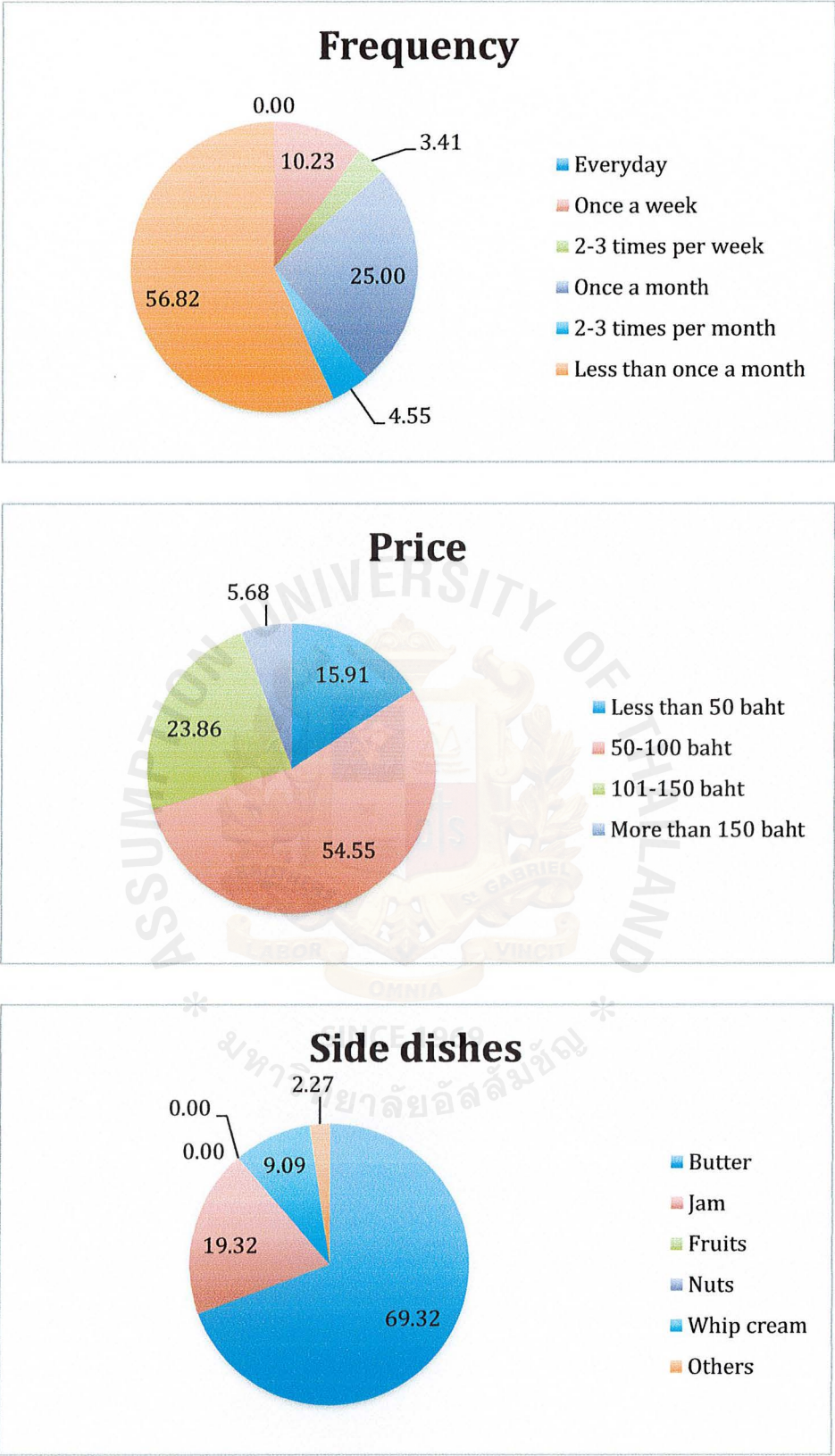
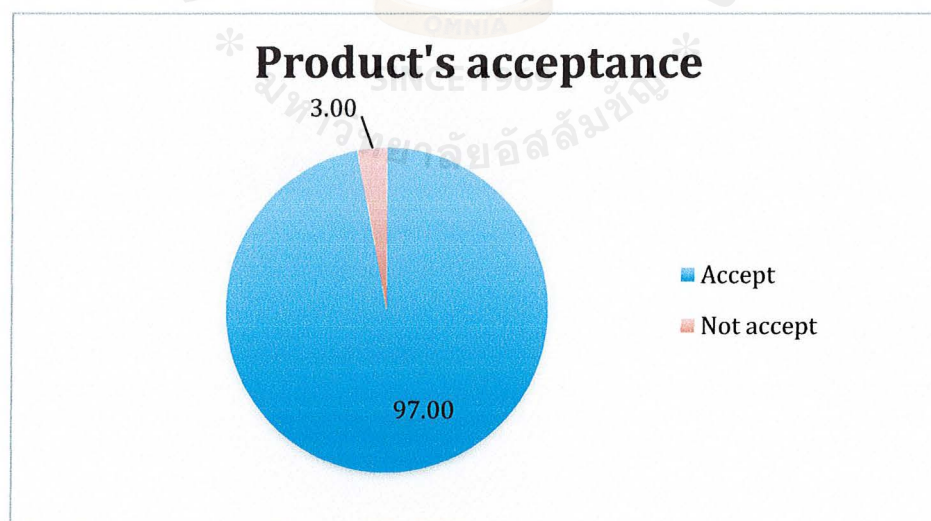


Figure 7: Pie charts of consumers' behavior on scones

From Figure 7 the consumers' behavior of scones was illustrated. The information included scones consumption experience, store, frequency, price, and side dishes. Almost half of consumers had ever eaten scones, with 44% while 56% had not consumed scone before testing. From the consumers who had consumed the scone before testing when asked the place where they bought the scone, 51.1% were Starbuck and 27.3%, 13.7%, 3.4%, 2.3%, 0.0%, and 2.3% at i-berry, Whittard of Chelsea, Scone, Spoonful, Agalico, and others, respectively. Frequency of the consumption, more than half of the consumers, 56.8% had eaten it less than once a month, 25% once a month, and the remaining combined to 18.7%. The amount of money they spent for purchasing scone, 54.6% of consumers spent 50-100 baht per time, 23.9%, 15.9%, and 5.8% for 101-150, less than 50, and more than 151 baht per time, respectively. When asking the side dishes that they consumed the scone with, 69.3% were butter, 19.3%, 9.1%, 2.3%, 0% and 0% jam, whipped cream, others, nut, and fruit, respectively.



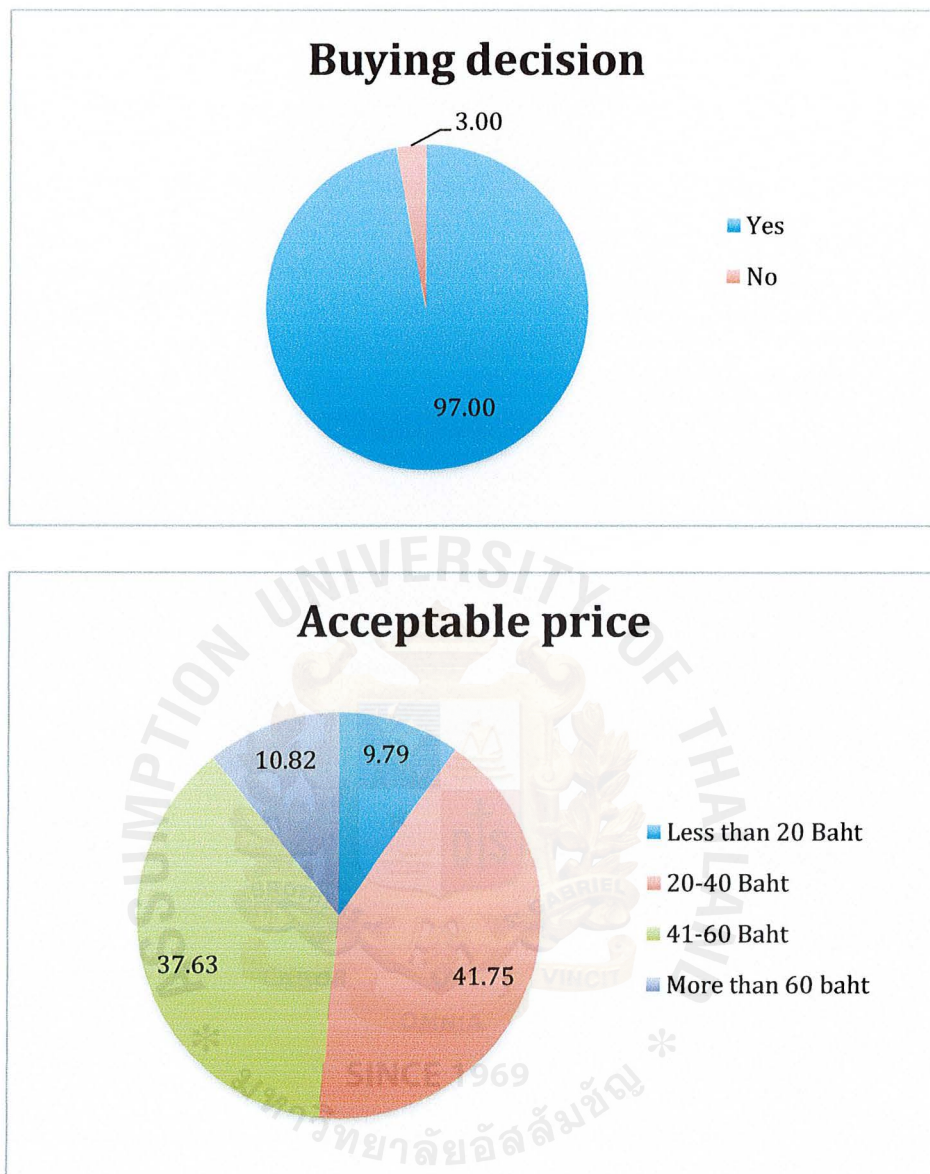


Figure 8: Pie charts of consumers' behavior of Thai style curry scones as Mus-sa-mun curry scones

The consumers were asked to rate their likeness of Mus-sa-mun curry scones as Thai style curry scones on a scale of 9-point. The tested scone sample obtained the preference score of 7.6 ± 0.8 which referred as they moderately like the sample. In Figure 8, the information on the consumers'

opinion of Thai style curry scone – Mus-sa-mun curry – was demonstrated. The opinion included product acceptance, buying intention, and price. It was found that 97% of the consumers accepted the product while 3% didn't and 97% would buy the product when it was launched, the remaining 3% would not. 41.8% would bought the product at the price of 20-40 baht per 50 grams, 37.6%, 10.8%, and 9.8% for 41-60 baht, more than 60 baht, and less than 20 baht per 50 grams, respectively.



Table 16: The cost of production

Ingredients	Amount used (grams)	Price/Packing (Baht)	Packing size (grams)	Cost (Baht)
All purpose flour	95	45	1000	4.3
Coconut milk	25	15	150	2.5
Butter	56	80	454	9.9
Sugar	27	23.5	1000	0.6
Salt	5	6	500	0.1
Egg	15	60	70	12.9
Baking powder	3.5	32	100	1.1
Curry paste	13	14	100	1.8
Color additive	4	60	200	1.2
Total raw materials cost/batch (243.5 grams)				34.4
Production cost 20% of total raw materials cost (243.5 grams)				6.9
Promotion cost 20% of total raw materials cost (243.5 grams)				6.9
Total raw materials cost + Production cost + Promotion cost (243.5 grams)				48.2
Total cost of Thai style curry scone product (50 grams)				9.9
Acceptable price from 200 consumers (50 grams)				20-40
Profit for 50 grams from selling price at 20-40 Baht, respectively				10-30
Percentage of profit from selling price at 20-40 Baht, respectively				100-300%

Conclusion

- The scones consumption in Thai society was studied. It showed that there was 67 percent of people from 100 consumers around Siam Square had ever eaten scones and none had eaten Thai curry scone before. The top three Thai curries for scone were Keaw-warn curry, Ka-rhee curry and Mus-sa-mun curry.
- From the consumer acceptance study on Thai style curry scones in Thai society, Mus-sa-mun curry scone was accepted by 97% of 200 consumers around Asoke Road and Central Rama 9th and had obtained the preference score of 7.6 out of 9-point scale, indicating moderately like of the product. Buying intention, 97% of 200 consumers were willing to buy the product with the price between 20-40 baht per 50 grams.
- The prototype formula of Thai style curry scones composed of 100% all-purpose flour, 26.3% coconut milk, 59.0% butter, 28.4% sugar, 5.3% salt, 15.8% egg, 3.7% baking powder, and 13.7% Mus-sa-mun curry paste.

Recommendation

- The color intensity of Thai style curry scones needed to be developed.
- The texture of Thai style curry scones needed to be evaluated using advance technique as Texture analysis technique.
- There should be further study on Texture profile of the products.



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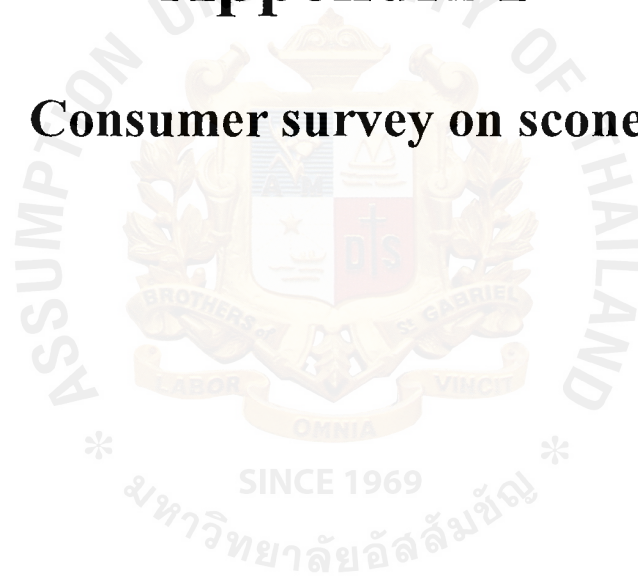
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Appendix 1

Consumer survey on scones



แบบสอบถาม

ตอนที่ 1; เรื่อง ทศณคติและพฤติกรรมการบริโภคของคนไทยที่มีต่อผลิตภัณฑ์เบเกอรี่และสโคน

สโคน(Scone),สโคโนหรือสคอนคือขนมอบที่มีรูปร่างกลมแบนหรือสามเหลี่ยม

โดยทำจากแป้งซึ่งการทำจะค่อนข้างคล้ายกับการทำขนมปังแต่สโคนจะกรอบภายนอกและค่อนข้างนุ่มภายใน(เล็กน้อย)เนื้อสัมผัสจะเป็นแบบร่วนๆไม่นุ่มเหมือนขนมปัง ทั่วไป

คำชี้แจง : โปรดทำเครื่องหมาย ✓ ลงใน () ตามความเป็นจริง

1. ท่านชอบทานเบเกอรี่ประเภทไหน ? (เลือกตอบได้มากกว่า 1 ข้อ)

- | | |
|---------------------------------|---|
| <input type="checkbox"/> พาย | <input type="checkbox"/> ขนมปัง |
| <input type="checkbox"/> คุกกี้ | <input type="checkbox"/> อื่นๆ โปรดระบุ _____ |

2. ท่านรับประทานบ่อยแค่ไหน ?

- | | |
|---|--|
| <input type="checkbox"/> น้อยกว่า 2 ครั้งต่อเดือน | <input type="checkbox"/> 2-4 ครั้งต่อเดือน |
| <input type="checkbox"/> 5-7 ครั้งต่อเดือน | <input type="checkbox"/> มากกว่า 7 ครั้งต่อเดือน |

3. ท่านเคยรับประทานสโคนหรือไม่ ? (ถ้าไม่เคย ข้ามไปทำข้อ 10)

- | | |
|------------------------------|---------------------------------|
| <input type="checkbox"/> เคย | <input type="checkbox"/> ไม่เคย |
|------------------------------|---------------------------------|

4. ท่านรับประทานสโคนบ่อยขนาดไหน ?

- | | |
|---|--|
| <input type="checkbox"/> น้อยกว่า 2 ครั้งต่อเดือน | <input type="checkbox"/> 2-4 ครั้งต่อเดือน |
| <input type="checkbox"/> 5-7 ครั้งต่อเดือน | <input type="checkbox"/> มากกว่า 7 ครั้งต่อเดือน |

5. ท่านชอบรับประทานสโคนยี่ห้อ หรือ ร้านอะไร? (เลือกตอบได้มากกว่า 1 ข้อ)

- | | |
|--|---------------------------------------|
| <input type="checkbox"/> ร้าน Starbuck | <input type="checkbox"/> ร้าน i-berry |
|--|---------------------------------------|

10. จาก ข้อ 9 ท่านชอบทานรสชาติใด ?

- ☐ รสเปรี้ยว ☐ รสเค็ม ☐ รสหวาน ☐ รสเผ็ด

11. ท่านชอบทานเบเกอรี่ที่มีรสชาติอาหารไทยหรือไม่ ? (ถ้าไม่ชอบ ข้ามไปทำข้อ 14)

- ☐ ชอบ ☐ ไม่ชอบ (ถ้าไม่ชอบ ข้ามไปทำตอนที่ 2)

12. ท่านชอบทานเบเกอรี่ที่มีรสชาติอาหารไทยประเภทใด ? (เลือกตอบได้มากกว่า 1 ข้อ)

- ☐ ขนมปัง ☐ พาย
☐ คุกกี้ ☐ อื่นๆ โปรดระบุ _____

13. ท่านคิดว่าอาหารไทยแบบแกงประเภทไหนเหมาะที่จะนำมาดัดแปลงเพื่อทำสโคน ?

- ☐ แกงเขียวหวาน ☐ แกงมัสมั่น
☐ แกงแดง ☐ แกงเลียง
☐ แกงกะหรี่ ☐ อื่นๆ โปรดระบุ _____

ตอนที่2; ข้อมูลส่วนบุคคล

คำชี้แจง : โปรดทำเครื่องหมาย □ ลงใน () ตามความเป็นจริงเกี่ยวกับตัวท่านเอง

1. เพศ

- ☐ ชาย ☐ หญิง

2. อายุ

- ☐ 18 - 25 ปี ☐ 26 - 35 ปี ☐ 36 - 45 ปี
☐ 46 - 60 ปี ☐ 61 ปีขึ้นไป

3. ระดับการศึกษาสูงสุดที่สำเร็จแล้ว

- | | |
|--|--|
| <input type="checkbox"/> ประถมศึกษา หรือ ต่ำกว่า | <input type="checkbox"/> มัธยมศึกษาตอนต้น |
| <input type="checkbox"/> มัธยมศึกษาตอนปลาย/ปวช. | <input type="checkbox"/> อนุปริญญา/ปวส. |
| <input type="checkbox"/> ปริญญาตรี | <input type="checkbox"/> ปริญญาโท |
| <input type="checkbox"/> ปริญญาเอก | <input type="checkbox"/> อื่นๆ โปรดระบุ_____ |

4. อาชีพ

- | | |
|---|---|
| <input type="checkbox"/> รับราชการ/พนักงานรัฐวิสาหกิจ | <input type="checkbox"/> นักเรียน/นักศึกษา |
| <input type="checkbox"/> พนักงานบริษัทเอกชน | <input type="checkbox"/> ค้าขาย/ธุรกิจส่วนตัว |
| <input type="checkbox"/> รับจ้างทั่วไป/ใช้แรงงาน | <input type="checkbox"/> พ่อบ้าน/แม่บ้าน |
| <input type="checkbox"/> เกษตรกรรม | <input type="checkbox"/> อื่นๆ โปรดระบุ_____ |

5. รายได้เฉลี่ยต่อเดือน

- | | |
|--|---|
| <input type="checkbox"/> ไม่เกิน 5,000 บาท | <input type="checkbox"/> 5,001 – 10,000 บาท |
| <input type="checkbox"/> 10,001 – 15,000 บาท | <input type="checkbox"/> 15,001 – 20,000 บาท |
| <input type="checkbox"/> 20,001 – 40,000 บาท | <input type="checkbox"/> มากกว่า 40,001 บาทขึ้นไป |

Frequency of consumer survey on scones consumption in Thai society

Consumption	Frequency	Percentage	Cumulative percentage
Yes	67	67.0	67.0
No	33	33.0	100.0
Total	100	100.0	

Opinion on Thai style curry scones

Curry types	Frequency	Percentage	Cumulative percentage
Keaw-warn curry	36	36.0	36.0
Daeng curry	8	8.0	44.0
Ka-rhee curry	28	28.0	72.0
Mus-sa-mun curry	25	25.0	97.0
Liang curry	1	1.0	98.0
Others	2	2.0	100.0
Total	100	100.0	

Appendix 2

Thai style curry scone formulation

Sensory evaluation



Questionnaire

Please test the different samples and score each sample following the preference test of 9-point hedonic score below

The 9-point hedonic score of preference test

9 = Like extremely

4 = Dislike slightly

8 = Like very much

3 = Dislike moderately

7 = Like moderately

2 = Dislike very much

6 = Like slightly

1 = Dislike extremely

5 = Neither like nor dislike

The preference test of 9-point hedonic score of each sample

Attributes

Sample No.

Color

Appearance

Curry flavor

Saltiness

Sweetness

Texture

Overall acceptance

Comment

THANK YOU

ANOVA table of each type of Thai style curry scones

ANOVA	Color				NS
SOV	SS	df	MS	f	
Trt	12.92	2	6.46	2.40	
Blk	0.533333333	1	0.53	0.20	
Err	311.72	116	2.69		
Total	325.17	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA	Appearance				NS
SOV	SS	df	MS	f	
Trt	3.35	2	1.67	0.87	
Blk	0.208333333	1	0.21	0.11	
Err	223.77	116	1.93		
Total	227.33	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA	Curry flavor				NS
SOV	SS	df	MS	f	
Trt	7.62	2	3.81	1.44	
Blk	9.633333333	1	9.63	3.64	
Err	307.12	116	2.65		
Total	324.37	119			
F _{table} = F _{0.05, 2,125} = 3.07 So, there was no significant different.					

ANOVA		Saltiness			NS
SOV	SS	df	MS	f	
Trt	0.15	2	0.07	0.03	
Blk	7.008333333	1	7.01	3.22	
Err	252.17	116	2.17		
Total	259.33	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA		Sweetness			NS
SOV	SS	df	MS	f	
Trt	0.22	2	0.11	0.06	
Blk	0.833333333	1	0.83	0.47	
Err	203.62	116	1.76		
Total	204.67	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA		Texture			NS
SOV	SS	df	MS	f	
Trt	0.32	2	0.16	0.09	
Blk	1.2	1	1.20	0.66	
Err	210.45	116	1.81		
Total	211.97	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA		Overall			NS
SOV	SS	df	MS	f	
Trt	5.85	2	2.92	1.65	
Blk	1.633333333	1	1.63	0.92	
Err	206.22	116	1.78		
Total	213.70	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

Appendix 3

Thai style curry scones formulation

Just-About-Right or JAR test



Questionnaire

Please test the sample and score it following the just about right test scale in the table

Table: The just about right test scale

Attributes	Too little	Somewhat too little	Just right	Somewhat too much	Too much
Color					
Curry flavor					
Saltiness					
Sweetness					
Texture					

Comments:

THANK YOU



The frequency of Just-About-Right test for each attribute of Keaw-warn curry scone

Attributes	Too little	Somewhat too little	Just right	Somewhat too much	Too much	Total
Color	0	12	8	0	0	20
Curry flavor	0	0	12	8	0	20
Saltiness	0	0	16	4	0	20
Sweetness	0	0	18	2	0	20
Crumble texture	0	2	14	4	0	20
Total	0	14	68	18	0	100

The frequency of Just-About-Right test for each attribute of Ka-rhee curry scone

Attributes	Too little	Somewhat too little	Just right	Somewhat too much	Too much	Total
Color	0	2	18	0	0	20
Curry flavor	0	2	8	10	0	20
Saltiness	0	2	14	4	0	20
Sweetness	0	0	12	8	0	20
Crumble texture	0	8	10	2	0	20
Total	0	14	62	24	0	100

The frequency of Just-About-Right test for each attribute of Mus-sa-mun curry scone

Attributes	Too little	Somewhat too little	Just right	Somewhat too much	Too much	Total
Color	0	2	14	4	0	20
Curry flavor	0	0	14	6	0	20
Saltiness	0	0	20	0	0	20
Sweetness	0	0	18	2	0	20
Crumble texture	0	4	14	2	0	20
Total	0	6	80	14	0	100

Appendix 4

Thai style curry scones formulation

Screening formulation

Questionnaire

Please test the different samples and score each sample following the preference test of 9-point hedonic score below

The 9-point hedonic score of preference test

- 9 = Like extremely

8 = Like very much

7 = Like moderately

6 = Like slightly

5 = Neither like nor dislike
- 4 = Dislike slightly

3 = Dislike moderately

2 = Dislike very much

1 = Dislike extremely

The preference test of 9-point hedonic score of each sample

Attributes	Sample No.		
	<div></div>	<div></div>	<div></div>
Color	<div></div>	<div></div>	<div></div>
Appearance	<div></div>	<div></div>	<div></div>
Curry flavor	<div></div>	<div></div>	<div></div>
Saltiness	<div></div>	<div></div>	<div></div>
Sweetness	<div></div>	<div></div>	<div></div>
Texture	<div></div>	<div></div>	<div></div>
Overall acceptance	<div></div>	<div></div>	<div></div>

Comment

THANK YOU

**The ANOVA table for each curry variation of Keaw-warn curry
scones**

ANOVA	Color				
SOV	SS	df	MS	f	
Trt	0.12	2	0.06	0.06	NS
Blk	3.675	1	3.67	3.88	
Err	109.80	116	0.95		
Total	113.59	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA	Appearance				
SOV	SS	df	MS	f	
Trt	0.35	2	0.17	0.11	NS
Blk	0.208333333	1	0.21	0.13	
Err	184.77	116	1.59		
Total	185.33	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA	Curry flavor				
SOV	SS	df	MS	f	
Trt	2.15	2	1.07	1.27	NS
Blk	3.675	1	3.68	4.34	
Err	98.30	116	0.85		
Total	104.13	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA	Saltiness				
SOV	SS	df	MS	f	
Trt	0.82	2	0.41	0.42	NS
Blk	4.033333333	1	4.03	4.11	
Err	113.82	116	0.98		
Total	118.67	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA		Sweetness			NS
SOV	SS	df	MS	f	
Trt	0.47	2	0.23	0.19	
Blk	7.008333333	1	7.01	5.74	
Err	141.52	116	1.22		
Total	148.99	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

ANOVA		Texture			NS
SOV	SS	df	MS	f	
Trt	0.22	2	0.11	0.11	
Blk	1.008333333	1	1.01	0.99	
Err	118.37	116	1.02		
Total	119.59	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

ANOVA		Overall			NS
SOV	SS	df	MS	f	
Trt	0.22	2	0.11	0.15	
Blk	1.633333333	1	1.63	2.20	
Err	86.02	116	0.74		
Total	87.87	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

The ANOVA table for each curry variation of Ka-rhee curry scones

ANOVA		Color			NS
SOV	SS	df	MS	f	
Trt	0.47	2	0.23	0.15	
Blk	1.408333333	1	1.41	0.88	
Err	185.12	116	1.60		
Total	186.99	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

ANOVA		Appearance			NS
SOV	SS	df	MS	f	
Trt	0.07	2	0.03	0.02	
Blk	0.033333333	1	0.03	0.02	
Err	235.77	116	2.03		
Total	235.87	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

ANOVA		Curry flavor			NS
SOV	SS	df	MS	f	
Trt	3.72	2	1.86	1.07	
Blk	0.3	1	0.30	0.17	
Err	201.15	116	1.73		
Total	205.17	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

ANOVA		Saltiness			NS
SOV	SS	df	MS	f	
Trt	0.65	2	0.33	0.36	
Blk	1.408333333	1	1.41	1.56	
Err	104.87	116	0.90		
Total	106.93	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

ANOVA Sweetness					
SOV	SS	df	MS	f	
Trt	1.40	2	0.70	0.72	NS
Blk	2.7	1	2.70	2.77	
Err	113.20	116	0.98		
Total	117.30	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA Texture					
SOV	SS	df	MS	f	
Trt	0.42	2	0.21	0.19	NS
Blk	0.675	1	0.68	0.61	
Err	127.70	116	1.10		
Total	128.79	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA Overall					
SOV	SS	df	MS	f	
Trt	0.82	2	0.41	0.56	NS
Blk	2.133333333	1	2.13	2.93	
Err	84.52	116	0.73		
Total	87.47	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

The ANOVA table for each sugar variation of Ka-rhee curry scones

ANOVA		Color			NS
SOV	SS	df	MS	f	
Trt	1.02	2.00	0.51	0.62	
Blk	43.20	1.00	43.20	52.61	
Err	95.25	116.00	0.82		
Total	139.47	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA		Appearance			NS
SOV	SS	df	MS	f	
Trt	1.25	2.00	0.63	0.52	
Blk	44.41	1.00	44.41	37.20	
Err	138.47	116.00	1.19		
Total	184.13	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA		Curry flavor			NS
SOV	SS	df	MS	f	
Trt	0.80	2.00	0.40	0.31	
Blk	46.88	1.00	46.88	36.68	
Err	148.25	116.00	1.28		
Total	195.93	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA		Saltiness			NS
SOV	SS	df	MS	f	
Trt	1.85	2.00	0.93	0.82	
Blk	45.63	1.00	45.63	40.31	
Err	131.32	116.00	1.13		
Total	178.80	119			
F _{table} = F _{0.05, 2, 125} = 3.07 So, there was no significant different.					

ANOVA Sweetness					
SOV	SS	df	MS	f	
Trt	6.72	2.00	3.36	3.01	NS
Blk	22.53	1.00	22.53	20.20	
Err	129.42	116.00	1.12		
Total	158.67	119			
$F_{table} =$	$F_{0.05, 2, 125}$	$= 3.07$	So, there was no significant different.		

ANOVA Texture					
SOV	SS	df	MS	f	
Trt	0.22	2.00	0.11	0.13	NS
Blk	20.01	1.00	20.01	24.24	
Err	95.77	116.00	0.83		
Total	115.99	119			
$F_{table} =$	$F_{0.05, 2, 125}$	$= 3.07$	So, there was no significant different.		

ANOVA Overall					
SOV	SS	df	MS	f	
Trt	0.35	2.00	0.18	0.19	NS
Blk	35.21	1.00	35.21	37.69	
Err	108.37	116.00	0.93		
Total	143.93	119			
$F_{table} =$	$F_{0.05, 2, 125}$	$= 3.07$	So, there was no significant different.		

Appendix 5

Thai style curry scones formulation

**Selection of the most preferred Thai style curry
scones**

Questionnaire

Please test the different samples and score each sample following the preference test of 9-point hedonic score below

The 9-point hedonic score of preference test

9 = Like extremely

4 = Dislike slightly

8 = Like very much

3 = Dislike moderately

7 = Like moderately

2 = Dislike very much

6 = Like slightly

1 = Dislike extremely

5 = Neither like nor dislike

The preference test of 9-point hedonic score of each sample

Attributes

Sample No.

Color

Appearance

Curry flavor

Saltiness

Sweetness

Texture

Overall acceptance

Comment

THANK YOU

The ANOVA table for each type of Thai style curry scones used for selecting the most preferred Thai style curry scone

ANOVA		Color			NS
SOV	SS	df	MS	f	
Trt	3.32	2	1.66	1.61	
Blk	2.70	1	2.70	2.61	
Err	119.85	116	1.03		
Total	125.87	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

ANOVA		Appearance			NS
SOV	SS	df	MS	f	
Trt	2.72	2	1.36	1.61	
Blk	0.83	1	0.83	0.99	
Err	97.92	116	0.84		
Total	101.47	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

ANOVA		Curry flavor			NS
SOV	SS	df	MS	f	
Trt	2.15	2	1.07	1.00	
Blk	1.41	1	1.41	1.31	
Err	124.57	116	1.07		
Total	128.13	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

ANOVA		Saltiness			NS
SOV	SS	df	MS	f	
Trt	0.62	2	0.31	0.43	
Blk	0.13	1	0.13	0.19	
Err	83.12	116	0.72		
Total	83.87	119			

$F_{table} = F_{0.05, 2, 125} = 3.07$ So, there was no significant different.

ANOVA Sweetness					
SOV	SS	df	MS	f	
Trt	1.05	2	0.53	0.69	NS
Blk	0.21	1	0.21	0.27	
Err	88.67	116	0.76		
Total	89.93	119			
$F_{table} =$		$F_{0.05, 2, 125}$	$= 3.07$	So, there was no significant different.	

ANOVA Texture					
SOV	SS	df	MS	f	
Trt	1.40	2	0.70	1.03	NS
Blk	0.30	1	0.30	0.44	
Err	79.10	116	0.68		
Total	80.80	119			
$F_{table} =$		$F_{0.05, 2, 125}$	$= 3.07$	So, there was no significant different.	

ANOVA Overall					
SOV	SS	df	MS	f	
Trt	1.87	2	0.93	1.19	NS
Blk	0.01	1	0.01	0.01	
Err	91.12	116	0.79		
Total	92.99	119			
$F_{table} =$		$F_{0.05, 2, 125}$	$= 3.07$	So, there was no significant different.	

Appendix 6

Consumer acceptance test



Consumers' Acceptance Survey
(แบบสอบถามการยอมรับของผู้บริโภค)

"Thai Style Curry Scones"
(**"สโคนรสอาหารไทย"**)

This survey is a part of a special project (FT 4190) for Bachelor's degree from Faculty of Biotechnology, Assumption University, under a title "Development of Thai style curry scones".
(แบบสอบถามชุดนี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาตรี(FT4190) จากคณะเทคโนโลยีชีวภาพมหาวิทยาลัยอัสสัมชัญภายใต้หัวข้อเรื่อง"**การพัฒนาสโคนรสแกงไทย**")

Please kindly complete the questions by checking ☒ in the provided spaces.
(กรุณาตอบคำถามโดยทำเครื่องหมาย ☐ ในช่องว่างที่กำหนดให้)

Part 1: Demographic information
(ข้อมูลส่วนตัวของผู้บริโภค)

1. Gender (เพศ)

☐ Male (ชาย)

☐ Female (หญิง)

2. Age (อายุ)

☐ Less than 18 years old (น้อยกว่า 18 ปี)

☐ 18-25 years old (ปี)

☐ 26-35 years old (ปี)

☐ 36-45 years old (ปี)

☐ 46-60 years old (ปี)

☐ More than 60 years

old(มากกว่า 60 ปี)

3. Occupation(อาชีพ)

☐ Student (นักเรียนหรือนักศึกษา)

☐ Government officer

(ข้าราชการ)

☐ Office employee (พนักงานบริษัท)

☐ Others, please

specify (อื่นๆโปรดระบุ) _____

4. Monthly income(เงินเดือน)

☐ Less than 5,000 baht (น้อยกว่า 5,000 บาท)

☐ 5,000-10,000 baht(บาท)

☐ 10,001-15,000 baht (บาท)

☐ More than 15,000 baht (มากกว่า 15,000 บาท)

Part2 : Basic information of consumer's behavior on scones in the market
(ข้อมูลพื้นฐานของผู้บริโภคที่มีต่อสโคนในท้องตลาด)

5. Have you ever eaten scones?(If no, please go directly to Part 3)
(ท่านเคยรับประทานสโคนมั๊ย ถ้าไม่เคย กรุณาข้ามไปทำ ส่วนที่ 3)

☐ Yes(เคย)

☐ No (ไม่เคย)

6. From which store do you normally buy scones? (Can choose more than 1)
(ท่านคุ้นเคยและนิยมซื้อในสโคนในท้องตลาดจากที่ใดสามารถเลือกได้มากกว่า1 ร้าน)
- ☐ Starbuck ☐ i-berry
☐ Scone ☐ Whittard of Chelsea
☐ Spoonful ☐ Agalico
☐ Other, please specify (อื่นๆโปรดระบุ) _____
7. How often do you consume scones?
(ท่านบริโภคสโคนบ่อยแค่ไหน)
- ☐ Everyday (ทุกวัน) ☐ 2-3 times per week (2-3 ครั้งต่อสัปดาห์)
☐ Once a week (1 ครั้งต่อสัปดาห์) ☐ 2-3 times per month (2-3 ครั้งต่อเดือน)
☐ Once a month (1 ครั้งต่อเดือน) ☐ Less than once a month (น้อยกว่า1 ครั้งต่อเดือน)
8. How much do you spend for scones in average per one time purchasing?
(ท่านใช้จ่ายสำหรับการซื้อสโคนเฉลี่ยต่อหนึ่งครั้งเป็นจำนวนเงินเท่าไร)
- ☐ Less than 50 baht (น้อยกว่า50บาท) ☐ 50-100 baht (บาท)
☐ 101-150 baht (บาท) ☐ More than 150 baht (มากกว่า150บาท)
9. What food do you consume with scones?
(อาหารอะไรที่ท่านนิยมบริโภคกับสโคน)
- ☐ Butter (เนย)
☐ Jam(แยม)
☐ Fruits (ผลไม้)
☐ Nuts (ถั่วชนิดต่างๆ)
☐ Whip cream (วิปครีม)
☐ Other, please specify (อื่นๆโปรดระบุ) _____

Part 3: Information of consumer's behavior on Thai style curry scones
(ข้อมูลพฤติกรรมของผู้บริโภคที่มีต่อสโคน)

Instructions: Please taste the scones and answer the following questions.
(คำชี้แจง: โปรดชิมตัวอย่างสโคนรสอาหารไทยและตอบคำถามดังต่อไปนี้)

10. Would you rate the product using 9-point Hedonic scale below
(กรุณาประเมินคะแนนสโคนรสอาหารไทยตามเกณฑ์ดังต่อไปนี้)

- 9 = Like extremely (ชอบมากที่สุด) 4 = Dislike slightly (ไม่ชอบเล็กน้อย)
 8 = Like very much (ชอบมาก) 3 = Dislike moderately (ไม่ชอบปานกลาง)
 7 = Like moderately (ชอบปานกลาง) 2 = Dislike very much (ไม่ชอบมาก)
 6 = Like slightly (ชอบเล็กน้อย) 1 = Dislike extremely (ไม่ชอบมากที่สุด)
 5 = Neither like nor dislike (เฉยๆ)

Score(คะแนน) _____

11. Do you accept this product?
 (ท่านจะยอมรับสโคนนี้หรือไม่)

☐ Accept (ยอมรับ)

☐ Not accept (ไม่ยอมรับ)

12. Will you buy this product if it is sold in the market with the market price?
 (ท่านจะซื้อสโคนนี้หากมีการขายในท้องตลาดด้วยราคาที่เหมาะสมหรือไม่)

☐ Yes (ซื้อ)

☐ No, because (ไม่ซื้อเพราะ)

13. What price will be acceptable for the 50 grams (3 pieces) of the product?
 (ราคาเท่าไรที่ท่านสามารถยอมรับในการซื้อสโคนขนาด50กรัมหรือ3ชิ้น)

☐ Less than 20 Baht (น้อยกว่า20บาท)

☐ 20-40 Baht (บาท)

☐ 41-60 Baht (บาท)

☐ More than 60 baht

(มากกว่า 60บาท)

Suggestion;

Thank you very much for your cooperation
 (ขอขอบพระคุณสำหรับความร่วมมือของท่าน)

Frequency of consumer acceptance test

Demographic information

Gender	Frequency	Percentage	Cumulative percentage
Male	68	34.00	34.00
Female	132	66.00	100.00
Total	200	100.00	

Age	Frequency	Percentage	Cumulative percentage
Less than 18 years old	8	4.00	4.00
18-25 years old	90	45.00	49.00
26-35 years old	77	38.50	87.50
36-45 years old	23	11.50	99.00
46-60 years old	2	1.00	100.00
More than 60 years	0	0.00	100.00
Total	200	100.00	

Occupation	Frequency	Percentage	Cumulative percentage
Student	74	37.00	37.00
Government officer	7	3.50	40.50
Office employee	111	55.50	96.00
Others	8	4.00	100.00
Total	200	100.00	

Monthly income	Frequency	Percentage	Cumulative percentage
Less than 5,000 baht	0	0.00	0.00
5,000-10,000 baht	23	11.50	11.50
10,001-15,000 baht	55	27.50	39.00
More than 15,000 baht	122	61.00	100.00
Total	200	100.00	

Consumers' behavior of scones

Scones consumption experience	Frequency	Percentage	Cumulative percentage
Yes	88	44.00	44.00
No	112	56.00	100.00
Total	200	100.00	

Stores	Frequency	Percentage	Cumulative percentage
Starbuck	45	51.14	51.14
Scone	3	3.41	54.55
Spoonful	2	2.27	56.82
i-berry	24	27.27	84.09
Whittard of Chelsea	12	13.64	97.73
Agalico	0	0.00	97.73
Others	2	2.27	100.00
Total	88	100.00	

Frequency	Frequency	Percentage	Cumulative percentage
Everyday	0	0.00	0.00
Once a week	9	10.23	10.23
2-3 times per week	3	3.41	13.64
Once a month	22	25.00	38.64
2-3 times per month	4	4.55	43.18
Less than once a month	50	56.82	100.00
Total	88	100.00	

Price	Frequency	Percentage	Cumulative percentage
Less than 50 baht	14	15.91	15.91
50-100 baht	48	54.55	70.45
101-150 baht	21	23.86	94.32
More than 150 baht	5	5.68	100.00
Total	88	100.00	

Side dishes	Frequency	Percentage	Cumulative percentage
Butter	61	69.32	69.32
Jam	17	19.32	88.64
Fruits	0	0.00	88.64
Nuts	0	0.00	88.64
Whip cream	8	9.09	97.73
Others	2	2.27	100.00
Total	88	100.00	

**Consumers' behavior of Thai style curry scones as Mus-sa-mun
curry scones**

Preference score	
Average	7.60
SD	0.78

Product's acceptance	Frequency	Percentage	Cumulative percentage
Accept	194	97.00	97.00
Not accept	6	3.00	100.00
Total	200	100.00	

Buying decision	Frequency	Percentage	Cumulative percentage
Yes	194	97.00	97.00
No	6	3.00	100.00
Total	200	100.00	

Acceptable price	Frequency	Percentage	Cumulative percentage
Less than 20 Baht	19	9.79	9.79
20-40 Baht	81	41.75	51.55
41-60 Baht	73	37.63	89.18
More than 60 baht	21	10.82	100.00
Total	194	100.00	

