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## Application of Tamarillo in Entremet Cake Recipe: Innovation in Pastry Product Development

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**Abstract:** The purpose of the research was to find out the variations of tamarillo products, develop variations of processed tamarillo other than juice and develop pastry products. The research method starts from research steps consisting of potential and problems, collecting data, product design, product design validation, design revision, preliminary product testing, design revision and dissemination. Then proceed with phase I research methods consisting of population and sample data sources, data collection techniques, research instruments, data analysis techniques, and design validation. Then the last is the phase II research method which consists of an experimental design model to test, population and sample, data collection techniques, research instruments and data analysis techniques. The results of the research produced in the form of entremet cake products processed from tamarillo fruit. The novelty of the research is the entremet cake pastry product processed from tamarillo in the mousse and jelly section.

**Keyword:** Pastry product, Tamarillo, Processed Tamarillo Fruit, Entremet cakes, Innovation Product, Tamarillo Product Innovation.

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## INTRODUCTION

Indonesia is renowned for its rich natural resources, including various tropical fruits with significant potential to be processed into high-value economic products. One such fruit that has attracted attention in this study is the tamarillo (*Cyphomandra betacea*) (Dewi et al., 2014). Tamarillo is known for its sweet and tangy flavor and its distinctive reddish-purple color. This fruit is rich in vitamins, minerals, and bioactive compounds such as antioxidants, which provide health benefits to consumers. Although tamarillo is widely recognized as an ingredient for juices, syrups, or sauces, pastry products made with tamarillo as a base ingredient are still rarely found in the market (Espin et al., 2016).

The development of the culinary industry in Indonesia, particularly in the pastry sector, has shown significant growth in recent years. According to data from Parama Indonesia, the culinary sector contributes over 30% to the creative economy, with an average growth rate of 7–14% per year. This indicates a strong public interest in culinary products, especially pastries that are visually appealing and offer unique flavors. One type of pastry currently gaining popularity is the entremet cake, a layered dessert originating from France. Entremet cakes are well-known for their aesthetic appearance and finishing techniques, such as mirror glaze, which give them an elegant and luxurious look (Gusnadi et al., 2021). Entremet cakes typically utilize various fruits as the main ingredients for mousses and jellies, such as strawberries, blueberries, and mangoes. However, there has been little research on developing entremet cakes using local Indonesian fruits like tamarillo. With its distinctive sweet and tangy flavor and high nutritional content, tamarillo has great potential to become an innovative ingredient in the pastry industry (Nisya, 2019). Therefore, this study aims to develop an entremet cake made with tamarillo as the base ingredient, serving as both a culinary product innovation and a means to introduce the potential of local fruits to a broader market.

This study not only seeks to create new variations in pastry products but also offers a solution to the lack of diversity in tamarillo-based processed products. Through the development of tamarillo-based entremet cakes, it is expected to produce pastries that are not only delicious and visually appealing but also health-promoting due to the high antioxidant content of tamarillo. Furthermore, this product has the potential to be marketed in cafes, hotels, and modern bakeries, considering the current consumer trend of seeking unique and high-quality culinary products.

## METHOD

This study employed an experimental method with several systematically designed stages to develop an entremet cake using tamarillo as the main ingredient. The research stages included initial data collection, product design, design validation, product trials, product revisions, and final product refinement. The population in this study consisted of the general public. The sample included 15 individuals with expertise in the field of pastry. The data in this study were divided into two categories: primary data, which included interviews, observations (direct observations), and questionnaires, and secondary data, which consisted of documents. According to Sugiyono as cited in Siregar (2015), commonly used data collection methods include interviews, observations, and questionnaires.

### 1. Data Collection

The initial stage involved collecting data through a survey of 95 respondents, aiming to understand the extent of public awareness and usage of tamarillo. The survey results revealed that the majority of respondents (86.3%) only recognized tamarillo as an ingredient for juices, while its use in pastry was almost entirely unknown. In addition to the survey, data were gathered from various scientific journals and books discussing tamarillo and theories related to entremet cake production.

### 2. Product Design

The initial product design involved creating an entremet cake with several layers: tamarillo mousse, tamarillo jelly, vanilla sponge cake, and a walnut sable base. The cake was finished with a reddish-purple mirror glaze, resembling the natural color of tamarillo, resulting in an attractive appearance.

### 3. Design Validation

Design validation was carried out with the involvement of two pastry experts as validators—a lecturer and an experienced pastry practitioner. The validators provided feedback on the taste, texture, color, and aroma of the entremet cake. The validation results indicated that the mousse and jelly flavors were too tangy, necessitating adjustments by adding sugar and pieces of tamarillo.

#### 4. Limited Product Testing

After revisions based on the initial validation, the product was tested on a limited basis with 15 panelists who had a background in pastry. The panelists were asked to evaluate the taste, texture, appearance, and aroma of the product using a Likert scale. The test results showed improvements in product quality, especially in taste and appearance.

#### 5. Final Product Refinement

The final stage involved refining the product based on the limited testing results. The final tamarillo-based entremet cake achieved a balanced flavor between sweetness and tanginess, with an elegant appearance due to the mirror glaze technique. This product is expected to serve as a novel innovation that attracts consumer interest and enhances the added value of tamarillo.

This study employed descriptive statistical analysis using questionnaires. The data analysis technique involved calculating the overall average scores from the assessments provided by 15 individuals with pastry expertise. The survey consisted of 10 questions rated on a scale of 1–4, with a midpoint value of 2.5

## RESULTS AND DISCUSSION

### Results

#### Initial Product Design

In the initial product design, the entremet will consist of four layers. The first layer will feature mousse as the topmost part. Below the mousse, there will be a jelly layer in the middle, made from tamarillo. The third layer will consist of soft sponge cake, providing texture to the bottom section. Beneath the sponge cake will be a sable made with walnuts, offering a contrasting texture to the other layers of the entremet. This sable layer is crispy and exudes a buttery aroma, which is a key ingredient in sable. Overall, the entremet will deliver a variety of textures when eaten while achieving a harmonious blend of flavors.

**Tabel 1. Tamarillo Entremet Cake Recipe Validation Results II**

<i>Terong Belanda Entremet</i>		
Amount	Material	Method
<i>Mousse</i>		
302 gr	Tamarillo Puree	1. Soak the gelatine in cold water until it blooms and then squeeze. water
		2. Mix in all the fruit puree.
28 ml	UHT Mil	3. Heat sugar and milk. Pour into chocolate. Stir well
28 gr	White Sugar	4. Combine fruit puree and milk mixture
51 gr	White Choc Couverture	5. Beat whipping cream until soft peak.
7 gr	Gelatine Leaf	5. Heat the gelatine and mix it into the batter.
270 gr	Whipping Cream	6. Add gelatine into the batter.
		7. Stir in the whipped cream.
<i>Tamarillo Jelly</i>		
180 gr	Tamarillo Puree	1. Soak the gelatine in cold water until it blooms and then squeeze.
60 gr	White Sugar	2. Heat the puree and sugar and add the gelatine.
9 gr	Gelatin Leaf	3. Pour into a 15 cm round mold, then refrigerate.
<i>Tamarillo Jam</i>		
200 gr	Tamarillo (cut into small pieces)	1. Cut the dutch eggplant into small pieces.
80 gr	Sugar	2. Put the eggplant pieces and sugar into a saucepan.
		3. Cook until it becomes like jam.
<i>Kenari Sable</i>		
45 gr	Unsalted Butter	1. Combine butter, flour, powdered sugar and salt,
80 gr	Flour	2. After that, add the walnuts.
22 gr	Powdered Sugar	3. Keep in the chiller for 10 minutes, then roll out 2 mm thick.
30 gr	Walnuts, chop roughly	4. Cut into rounds according to the size of the mousse mold.
1 gr	Salt	5. Bake at 165 C until golden brown.
<i>Glazing</i>		

150 gr	White Sugar	1. Soak agar-agar in cold water
75 ml	Water	2. Boil sugar, water, glucose at 101°C.
150 gr	Glucose	3. Add condensed milk, gelatine and white chocolate.
100 gr	Sweetened milk gelatin	4. Add neutral gel and food coloring.
15 gr	Gelatin	5. Strain and chill.
45 gr	White Choco Couverture	
75 gr	Neutral Gel	
drops	Pink food coloring	
drops	White food coloring	
<b>Decoration</b>		
100 gr	White Choc Couverture	

**Assembling:** Pour the mousse into the mold (fill halfway). Chill. Place the tamarillo jelly in the center. Cover with the remaining mousse and chill again until firm. After 24 hours and frozen, remove from the mold. Prepare the glaze by melting it, then mix white and pink colors to achieve a marble glaze. After glazing, prepare the sable for the base of the glazed entremet cake. Source: Processed Data (2024).

Source: Processed Data (2024)

### Phase I Test Results

In the first testing phase, a validity test was conducted to determine whether the tamarillo entremet cake product could be accepted by the public. The initial test was carried out with two validators who are professional pastry chefs, ensuring their assessments align with the standards of an entremet cake. Below are the results of the first phase of validator testing. The table above shows the results of the validity test conducted with 15 individuals knowledgeable in the field of pastry, specifically pastry concentration students. The results indicate that the glaze color and aroma aspects are still rated lower compared to the other layers.

**Tabel 2. Phase I Limited Test Assesment**

Name	Flavor		Texture			Color				Scent
	Mousse	Jelly	Mousse	Jelly	Sponge	Out Glaze	Mousse	In Glaze	Mousse	
Panelists 1	4	4	4	3	4	3	4	4	4	4
Panelists 2	3	4	4	4	4	3	3	4	3	4
Panelists 3	3	4	4	3	4	4	4	4	3	4
Panelists 4	4	4	4	4	4	3	4	4	4	4
Panelists 5	4	4	4	4	2	4	4	4	4	4
Panelists 6	3	3	4	4	4	2	3	3	3	4
Panelists 7	4	4	4	4	4	3	3	3	4	4
Panelists 8	4	4	4	4	4	2	3	4	4	4
Panelists 9	3	3	3	4	4	3	3	3	3	3
Panelists 10	4	4	3	3	4	3	4	3	4	4
Panelists 11	4	3	3	4	4	4	3	3	4	4
Panelists 12	4	4	4	4	4	4	4	4	4	4
Panelists 13	3	3	3	3	3	3	3	4	4	2
Panelists 14	4	4	3	3	3	3	4	3	3	3
Panelists 15	3	4	4	4	4	4	4	4	4	2
<b>Average Value</b>	<b>3,60</b>	<b>3,70</b>	<b>3,60</b>	<b>3,60</b>	<b>3,70</b>	<b>3,30</b>	<b>3,60</b>	<b>3,80</b>	<b>3,60</b>	<b>3,30</b>

Source: Phase I Limited Test Results (2024)

### Product Revision I

After the validator testing, the results from Table Phase I have met the average score, but the outer glaze color and aroma can still be improved. Therefore, the outer glaze color was made softer yet visually appealing, with the pink and white colors blending to resemble a marble effect. For the aroma, the improvement was made by adding more tamarillo fruit to enhance the tamarillo scent.

## Phase II Test Results

From the first phase of testing, several improvements were made, which necessitated a second round of validator testing to obtain results that align with the desired standards. The second round of validator testing was conducted, and the results can be seen in the table below. The second validator test showed an improvement compared to the first test. This improvement, with sufficient scores, indicates readiness to proceed to the validity test. It can be seen that there was an increase in the average score from the first limited trial, especially in the glaze color and aroma of the entremet. The glaze score improved by 3.70 points from the first to the second test. This improvement means that the glaze color is now better than in the first trial. The aroma also reached a score of 3.90, which is close to the perfect score. The improvements made to the product contributed to a better aroma score.

**Tabel 3. Phase II Limites Test Assesment**

Name	Flavor		Texture			Color				Scent
	Mousse	Jelly	Mousse	Jelly	Sponge	Out	Mousse	In		
						Glaze		Glaze	Mousse	
Panelists 1	4	4	4	4	4	3	3	3	4	4
Panelists 2	4	4	4	4	4	4	3	4	4	4
Panelists 3	4	4	4	3	4	4	3	4	4	4
Panelists 4	4	4	4	4	4	3	4	4	4	4
Panelists 5	4	4	4	4	4	4	4	4	4	4
Panelists 6	4	4	4	4	4	4	4	3	4	4
Panelists 7	4	4	4	4	4	4	4	4	4	4
Panelists 8	4	4	4	4	4	4	4	4	4	4
Panelists 9	4	4	4	4	4	4	4	4	4	4
Panelists 10	4	4	4	3	4	4	4	4	4	4
Panelists 11	4	4	4	4	4	4	4	4	4	4
Panelists 12	4	4	4	4	4	4	4	3	4	4
Panelists 13	4	4	4	4	4	4	3	4	4	4
Panelists 14	4	4	4	4	4	4	4	3	3	3
Panelists 15	4	4	4	4	4	4	4	4	4	4
Average Value	4,00	4,00	4,00	3,80	4,00	3,80	3,70	3,70	3,90	3,90

Source: Phase II Limited Test Results (2024)

## Product Revision II

In the second product revision, the only remaining issue was that the sable was still too thick for the testers to enjoy. Therefore, the sable was adjusted to be thinner while maintaining its crispness to preserve its texture. After the adjustment, the sable reached the perfect thickness and crispness, making it more suitable for the testers, who found it to be just the right balance—not too thick but still crispy. In this second product revision, only slight changes were made since most of the indicators in the table nearly reached a score of 4.00. However, the scores for the mousse and jelly color were 3.70 and could still be improved. Therefore, the adjustment made was to add pink food coloring to the mousse and jelly, enhancing their color.

## Product Improvement

The tamarillo entremet has undergone several trials before being presented to both the validators and validity testers. After receiving feedback and notes from the validator testing, the validity test provided different observations. With the results from both the validity and validator tests, the tamarillo entremet cake product will retain its four layers, consisting of mousse, jelly, sponge cake, and sable. The first layer is mousse made from tamarillo, which is combined with tamarillo fruit pieces processed to resemble a jam, leaving only the flesh without the seeds. The jelly layer will continue to use tamarillo as the main ingredient. The sponge cake will be made with vanilla to provide a more neutral flavor. The base layer will



feature walnut sable, adding a crispy texture to the tamarillo entremet cake. For garnish, gold flakes will be added on top to enhance the visual appeal of the entremet cake. For plating, a pink glaze will be applied beside the cake on a white plate, drawing attention to the entremet cake itself

**Figure 1. (a) Outside Entremet Cake**



Source: Data Processed Results (2024)

**Figure 2. (b) Inside Entremet Cake.**



Source: Data Processed Results (2024)

## Discussion

The product produced has not undergone any changes in shape or color. Each layer has a distinct flavor of tamarillo, both in terms of aroma and color, particularly in the jelly and mousse layers of this entremet cake. The jelly is dark red, while the mousse is pink. The base will feature a sable made from walnut to add flavor and texture to the entremet. The tamarillo mousse layer will contain pieces of tamarillo that have been processed into a jam-like consistency to enhance both the aroma and texture of the tamarillo.

**Table 4. Final Tamarillo Entremet Cake Recipe**

<i>Entremet Dutch Eggplant</i>		
Amount	Material	Method
<i>Mousse</i>		
302 gr	<i>Tamarillo Puree</i>	1. Soak the gelatine in cold water until it blooms and then squeeze.
		2. Mix in all the fruit puree.
28 ml	<i>UHT Milk</i>	3. Heat sugar and milk. Pour into chocolate. Stir well
28 gr	<i>White Sugar</i>	4. Combine fruit puree and milk mixture.
51 gr	<i>White Choc Couverture</i>	5. Beat whipping cream until soft peak.
7 gr	<i>Gelatine Leaf</i>	5. Heat the gelatine and mix it into the batter.
270 gr	<i>Whipping Cream</i>	6. Add gelatine into the batter.
		7. Stir in the whipped cream.
<i>Tamarillo Jelly</i>		

180 gr	<i>Tamarillo Puree</i>	1. Soak the gelatine in cold water until it blooms and then squeeze.
60 gr	White Sugar	2. Heat the puree and sugar and add the gelatine.
9 gr	<i>Gelatin Leaf</i>	3. Pour into a 15 cm round mold, then refrigerate.
<b><i>Tamarillo Jam</i></b>		
250 gr	Tamarillo (cut into pieces)	4. Cut the dutch eggplant into small pieces.
80 gr	Sugar	5. Put the eggplant pieces and sugar into a saucepan.
		6. Cook until it becomes like jam.
<b><i>Sable Walnuts</i></b>		
45 gr	<i>Unsalted Butter</i>	1. Combine butter, flour, powdered sugar and salt,
80 gr	Flour	2. After that, add the walnuts.
22 gr	Powdered Sugar	3. Keep in the chiller for 10 minutes, then roll out 2 mm thick.
30 gr	Walnuts, chop roughly	4. Cut into rounds according to the size of the mousse mold.
1 gr	Salt	5. Bake at 165 C until golden brown.
<b><i>Glazing</i></b>		
150 gr	White Sugar	1. Soak agar-agar in cold water
75 ml	Water	2. Boil sugar, water, glucose at 101°C.
150 gr	Glucose	3. Add condensed milk, gelatine and white chocolate.
100 gr	Sweetened Milk Gelatin	4. Add neutral gel and food coloring.
15 gr	Gelatin	5. Strain and chill.
45 gr	<i>White Choc Couverture</i>	
75 gr	<i>Neutral Gel</i>	
drops	Pink Food Coloring	
drops	White Food Coloring	

#### ***Decoration***

##### ***Gold Flakes***

**Assembling:** Pour the mousse into the mold (fill half of the mold). Chill. Place the eggplant jelly in the center. Cover with mousse, refrigerate again until firm. after 24 hours and frozen remove from the mold. Prepare the glaze that has been melted then mix the white and pink colors to get a marble glaze. After the glaze, prepare the sable for the bottom of the entremet that has been given glaze.

Source: Phase II Limited Test Results (2024)

The recommended serving suggestion for the entremet cake is that the product should be stored in a cold environment. When it needs to be transported, a cooler bag and ice gel pack should be used to maintain a temperature that is not too warm for the entremet. When the entremet is taken out of the freezer and is about to be consumed, it is recommended to wait for about 20 minutes to allow the temperature of the entremet to drop, so you can fully experience its soft texture. When consuming the entremet cake, it is best to take a bite of all the layers at once to enjoy the perfect combination of flavors and textures.

## **CONCLUSION**

This research succeeded in developing entremet cake made from tamarillo as an innovative pastry product with a unique taste, attractive appearance and high health value thanks to the antioxidant content of tamarillo. It is hoped that this product can become a new processed alternative that introduces the potential of local fruit to the modern culinary market, especially in cafes and hotels. Suggestions from this research are to improve the stability of the texture of mousse and jelly so that they are more consistent and to expand product trials to more diverse consumer segments. The sustainability plans that will be implemented include publishing research results in scientific journals, improving products based on consumer input, and developing other flavor variants to expand market share.

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