Following the Note by Note cooking concept to recreate an innovative and creative dish

"The Deconstructed Peach Harmony"

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Abstract:

This report presents the development of a dish based on the Note by Note concept. The presented dish is inspired by the traditional Bulgarian dessert “Peaches.” This year’s theme for the competition is “Food for the Future.” The presented dish is composed solely of pure compounds, which aligns with the concept's primary goal of sustainability. The final product consists of five components:– tapioca leaf cracker, peach gel shell, almond crumbs, floral aroma foam, and edible gelatin-based film. The final dish was made to comply with the EU food additive regulations. The idea behind presenting a deconstructed dish inspired by an authentic dessert and illustrating the concept of edible plastic substituting plastic packaging for some food products aligns with the Note by Note cooking concept and this year’s theme.

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1. Introduction

1.1 Background on Molecular Gastronomy

Molecular gastronomy studies the physical and chemical interactions between ingredients during cooking and any physical transformation. This scientific discipline was discovered by two scientists back in the 1980s; the two responsible persons were the physicist Nicholas Kurti and the chemist Hervé This. The discovery of molecular gastronomy was the moment in history when there was a shift from traditional cultural cooking to precision, experimentation, and scientific reasoning. This was the moment when all chefs' beliefs could be questioned from a scientific perspective. According to Kuriti (1969), the scientific understanding of how ingredients interact with each other is lacking in the kitchen. He says, "It is a sad reflection… that while we can measure the temperature in the atmosphere of Venus, we do not know what goes on inside our soufflés."

In 2006, one of the founders of molecular gastronomy, Hervé This, wrote the book *Molecular Gastronomy: Exploring the Science of Flavour, where he* explained that it is very important to understand the molecular interactions happening during the production of food. He claims that so much information is behind it, and it should be considered during cooking. However, some critics argued that as interesting as molecular gastronomy is, it removes the emotional, cultural, and intuitive aspects (This, 2006).

1.2 Introduction to Note-by-Note Cooking

Note by Note (NbN) cooking is another discovery made by the chemist Hervé This in 2009. NbN is inspired by the idea of molecular gastronomy, but instead of modifying whole ingredients, the idea is to challenge chefs to create dishes entirely from pure compounds such as water, amino acids, lipids, minerals, and different aromatic molecules. The idea is to have greater control over the texture, taste, and creativity of the final dish presentation (This, 2009).

The main idea of this concept is to address global issues such as the current rise of agricultural waste, food security, and sustainability. NbN could help solve these challenges because the ingredients used are extracted or synthesized from the raw material, usually using the minimal resources possible, and thus do not have a huge negative environmental impact. This concept contributes to the circular food economy (This, 2009; Circle Economy, 2025). Similar to the molecular gastronomy concept, and as with any innovation, there is always criticism from some people. For example, some people might say that NbN lacks the connection with nature and culture humans have, which makes it more difficult to emotionally connect with the food on their plate. Another difficulty and limitation of this concept could be the complexity of mimicking natural flavors just by using their synthetic derivatives. As many positivities Note by Note has for the future of the food industry, some drawbacks must be considered as well since it is not as easy to replace all the ingredients on the plate from sensory perception; the same issue can be seen in replicating the meat flavor in plant-based meat (Wang et al., 2022).

However, according to Hervé This, the main concept of Note by Note is not to replicate existing dishes but to develop and innovate new flavors and dishes (Burke, Danaher, and Hurley, 2020).

1.3 Relevance of This Year's Theme

This year’s Note by Note competition is titled " Food for the Future. “The concept behind this topic tries to focus on the paradox that food production is increasing, and some geographical regions have an excess of food while others experience rising hunger and malnutrition. According to the Food and Agriculture Organization, over 690 million people were undernourished before the COVID-19 pandemic. At the same time, a significant percentage of the population is overweight, which shows the current imbalance in the food system. Moreover, this theme encourages competitors to devise innovative dishes that meet current sustainable needs (Burke, Rigault, and This, 2025).

The dish presented in this report will be inspired by an old Bulgarian dessert called Peaches (Refer to Figure 2). This dessert consists of two cookies with a crumbly texture, which is stuck together with a layer of homemade peach jam. The shape is intended to resemble a peach with a small green leaf on top. This dessert serves as inspiration for the final product, which will illustrate a deconstructed dessert, allowing each person to assemble it according to their liking. Today, traditional cuisines are different from those of a century ago; this is mainly because there is influence from one culture to another, and many variations in traditions and cuisine are happening. Local dishes are being recreated with exotic ingredients, and I believe this trend represents the future of food, building a connection between different cuisines while preserving local roots (Norenzayan, 2024). Furthermore, there is currently a significant challenge regarding waste and packaging waste. One of the major issues in this area is the single-use plastic packaging employed to transport food. A component of this dish will include the introduction of edible plastic packaging, which will highlight the opportunity to first reduce packaging waste, second reduce plastic, and third facilitate the consumer's ability to take their product home and preserve it (Nair, Trafiałek, and Kolanowski, 2023).

2. Aim of the assignment

This assignment aims to create a dish that is fully prepared by using only pure compounds such as water, sugar, salt, gelatin, oils, etc. The final dish must follow the topic of this year, which is *The Future of Food.* One or multiple components should somehow reflect the future of food. This assignment is part of a class based on Advanced Gastronomy and follows the requirements from the food contest – Note by Note. The assignment will illustrate how one dish, with the help of molecular gastronomy, was prepared with the limitation of using only pure compounds. In addition to presenting the dish and its components, the assignment aims to illustrate an understanding of the chemical interactions between the ingredients.

This report will include the aim of the assignment, the finalized methodology to prepare the dish, and the required materials, and will finish with a presentation of the results supported by discussion and conclusion.

3. Final Materials and Methods

3.1. List of Ingredients, equipment, and their Functions

The methodology for preparing this dish and the required ingredients are presented in Table 1. The dish is divided into four parts, each representing a different component. In addition, the equipment needed to prepare the dish is included in Table 2. All the ingredients and materials used, their functionality, and the exact brand utilized are summarized in Appendix A.

Table 1: Presenting the ingredients used for each part of the Note by Note dish - *"Deconstructed Peach Harmony."*

Part 1 - Tapioca leaf cracker		
Ingredient	**Weight (g)**	**Function**
Tapioca Pearls	40	Starch
Water	300	Base liquid
Green coloring	1 drop	Color
Part 2 - Peach gel shell		
Ingredient	**Weight (g)**	**Function**
Water	200	Base liquid
Agar-Agar	1.5	Structure
Citrus pectin	2	Adds flexibility
Sucrose	10	Sweetness
Citric acid	1	Fruit-like acidity
Peach aroma (y-decalactone)	4 drops	Peach flavour
Yellow Food coloring	2 drops	Peach-orange colour
Red Food coloring	3 drops	Enhances colour
Part 3 - Edible gelatin film packaging		
Ingredient	**Weight (g)**	**Function**
Gelatin	10	Structure
Water	20	Base liquid
Sunflower oil	10	For easy peeling from the surface, not used in the final product
Part 4 - Almond crumbs		
Ingredient	**Weight (g)**	**Function**
Cocoa butter	10	Base
Soy lecithin	1	Thickener
Maltodextrin	4	powdery texture
Almond aroma (benzaldehyde)	1	Almond flavour
Part 5 - Floral aroma foam		
Ingredient	**Weight (g)**	**Function**
Water	200	Base liquid
Lecithin	1	Emulsifier & foaming agents
Jasmin Aroma (Natural jasmine extract)	1 drop	Jasmin flavour
Malic Acid	0,3	Adds fruity tartness
Sucrose	3	Sweetness

Table 2: *Presenting the equipment used in the preparation of this dish.*

Equipment	**Function**	**Brand**
Immersion Blender	Create foam	Robot Coupe Mini MP 160 V.V. No 06900181002
Kitchen Scale	Measure ingredients	Dunnes Stores Digital Kitchen Scale Model: 5099010877578
Oven	Drying	Electrolux SkyLine Premium Electric Combi Oven 10GN1/1

3.3. Recipe(s) and Preparation Steps

Note: Part 3 must be prepared at least 24 hours in advance.

Part 1 - Tapioca leaf cracker

To prepare the tapioca leaf Cracker, 40 grams of tapioca pearls were weighed on a kitchen scale *(Dunnes Stores Digital Kitchen Scale Model: 5099010877578)* and mixed with 300 mL of tap water in a pan. The tapioca was cooked on medium heat while continuously stirring. Once all the pearls became transparent, the tapioca was fully cooked and transferred to a sieve to wash the starch. The cleaned and cooked tapioca pearls were mixed with two drops of the green coloring and well mixed to distribute the color. The green tapioca pearls were spread in the shape of leaves on a baking tray lined with parchment paper. The leaves were dried in a preheated oven - Electrolux SkyLine Premium Electric Combi Oven 10GN1/1 130 degrees Celsius for about 40 minutes in dry air.

Part 2 - Peach gel shell

Firstly, 100 mL of water was mixed with the agar-agar in a pot, bringing the mixture to a boil while stirring. In the meantime, the pectin and the sugar were mixed with the remaining 100 mL of water in a separate bowl. The mixture was transferred to a pot and placed on medium heat to dissolve the sugar and pectin, avoiding boiling. Once both gelling agents had been activated, the agar-agar solution was mixed with the pectin mixture while stirring continuously to prevent clumping. Further, citric acid, peach flavor, and coloring agents were also added. The final mixture was poured into pre-oiled cylindrical molds and let cool to room temperature. After reaching room temperature, the mold was placed in the refrigerator for at least one hour to fully set.

Part 3 - Edible gelatin film packaging – Must be done in advance

The gelatin was mixed in a bowl together with the water and placed in a microwave to dissolve the gelatin for 20 seconds. Once the gelatin had fully melted, it was brushed on top of a pre-oiled balloon. The balloon was left to dry for 24 hours. Right before plating, the balloon was popped, and the excess of the formed film was cut with scissors to create a uniform shell.

Part 4 - Almond crumbs

In a bowl, the cocoa butter was mixed with soy lecithin, sugar, and maltodextrin. The bowl was placed over a pot with water on medium heat, creating a bain marie. Once all the components were dissolved, the almond flavor was added as well. The mixture was left to cool to room temperature and then transferred to the fridge until fully solidified, and 5 minutes before use, the bowl was moved to the freezer. With the help of a spoon, the solidified cocoa butter mixture was scraped, creating crumbs.

Part 5 - Floral aroma foam

In a deep bowl, water, floral aroma, malic acid, lecithin, and sugar were added. Using an immersion blender - Robot Coupe Mini MP 160 V.V. No 06900181002, the mixture was mixed

until foam formed on the surface, taking about one minute. The foam was collected from the top with a small spoon and used directly during plating.

3.4. Safety, Legal & EU Compliance Considerations

To understand if the compounds mentioned above are within the accepted limits, the database from the European Commission will be used. The specific database is under Regulation (EC) No 1333/2008, Annex II. The database applies only to food additives. Ingredients such as sucrose and water that are not considered food additives do not have a specified authorized limit. In the food industry, to use any food additives, the quantity must comply with Regulation 213/2012, and the type must be listed in Annex II of Regulation 1333/2008. In Table 3, each of the used ingredients is listed with its specific E-number, which can be plugged into the European database to obtain its maximum permitted daily dosage.

Table 3: *Illustrating the ingredients used to prepare this dish and their quantity and maximum authorized levels by the EU.*

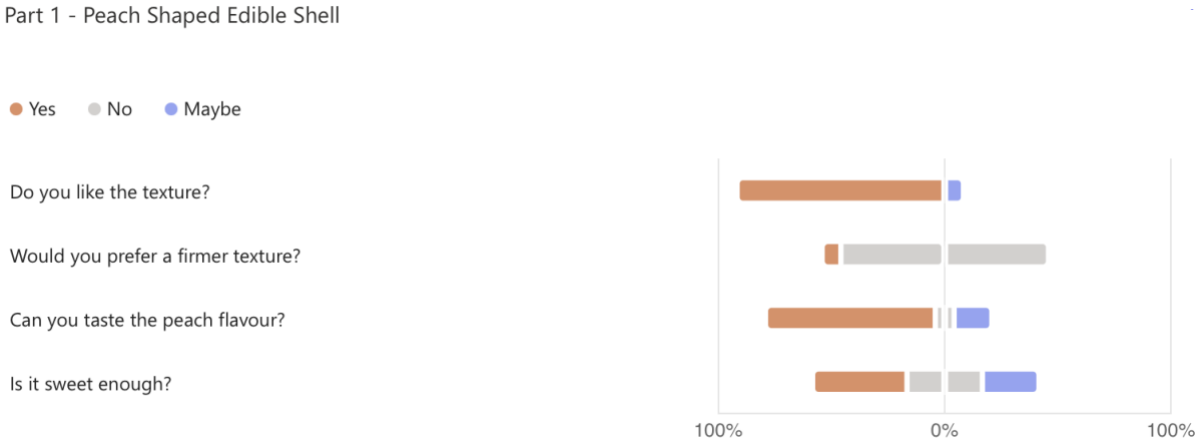
Ingredient	Function	E-number	Quantity in recipe (grams)	Max Authorized Level (EU)
Tapioca Pearls	Starch	-	30	No Restriction
Water	Base Liquid	-	720	No Restriction
Green Food Coloring	Color	E 142	0.05	0.1g/kg
Agar-Agar	Structure	E 406	1.5	10g/kg
Citrus Pectin	Adds Flexibility	E 440	2	Quantum satis (GMP)
Sucrose	Sweetness	-	13	No Restriction
Citric acid	Fruit-like acidity	E 330	1	Quantum satis (GMP)
Peach aroma (γ-Decalactone)	Peach flavour	Flavoring	0.2	No Restriction
Yellow Food Coloring	Color	E 102	0.1	0.1g/kg
Red Food Coloring	Color	E 122	0.15	0.2g/kg
Gelatin	Structure	-	10	No Restriction
Sunflower Oil	Production aid (removed later)	-	10	No Restriction
Cocoa butter	Base	-	10	No Restriction
Soy Lecithin	Emulsifier & foaming agent	E 322	2	Quantum satis (GMP)
Maltodextrin	Powdery Texture	-	4	No Restriction
Almond Aroma (benzaldehyde)	Almond Flavour	-	0.05	No Restriction
Jasmine Aroma (Natural jasmine extract)	Jasmine Flavour	-	0.05	No Restriction
Malic Acid	Adds fruity tartness	E 296	0.3	Quantum satis (GMP)

According to the EU legislation, all the ingredients that are categorized as food additives are within the acceptable levels. For some, there are no acceptable maximum levels that are specified, but the compound should be used with good manufacturing practices and only the necessary quantity. An example of such a compound is malic acid.

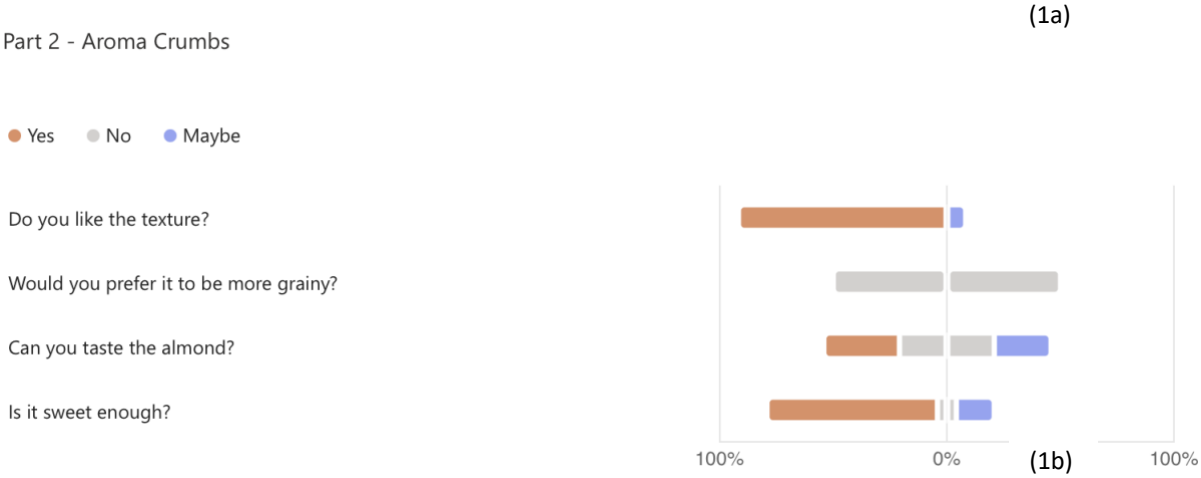
4. Results

4.1. Sensory evaluation

An informal sensory evaluation was conducted with 15 participants to assess the texture, flavor, and overall aroma of each component. Below are the answers for each question, with possible responses including Yes, No, and Maybe. In part 1, participants generally liked the texture, although a few preferred a firmer gel consistency. Most identified the peach flavor, though some favored a slightly sweeter taste. In part 2, the majority appreciated the texture, finding it balanced without the need for a grainier consistency. The sweetness was also well-balanced. However, most participants found the almond flavor weak and hard to detect, which could be improved by adjusting the almond flavor during preparation. In part 3, most responses were positive as well, although some participants suggested wanting more foam on the dish and a sweeter taste. Part 4 was very well received, with participants supporting the idea of using edible gelatin film packaging for food. Additionally, people expressed willingness to purchase a food product wrapped in edible packaging. The only aspect not universally accepted was the texture, which some found to be a bit dry and difficult to chew. Finally, in part 5, participants agreed that the crackers resembled a leaf and the texture was generally well-received; however, some would have preferred the crackers to be slightly thinner. Below are the results from the sensory analysis.

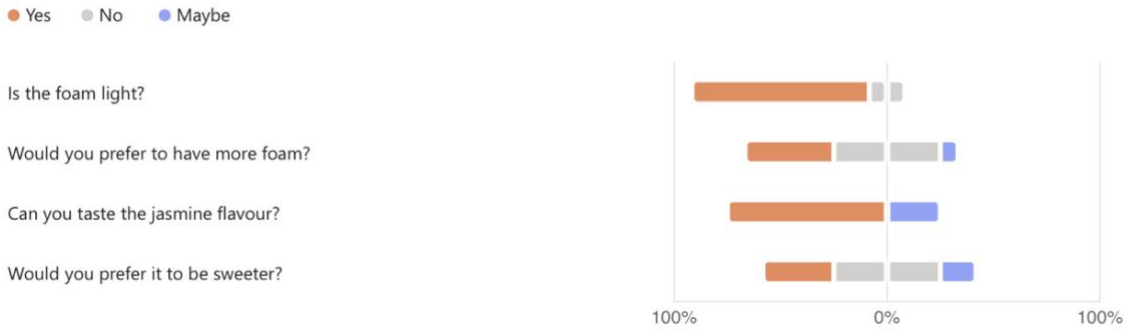


(1a)



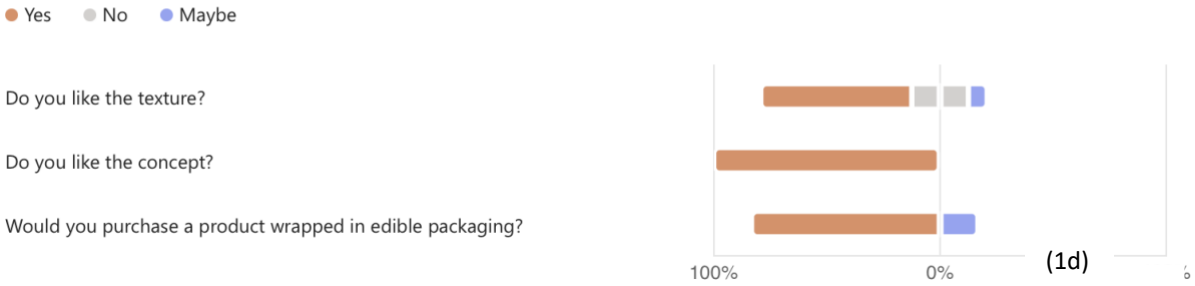
(1b)

. Part 3 - Floral foam aroma



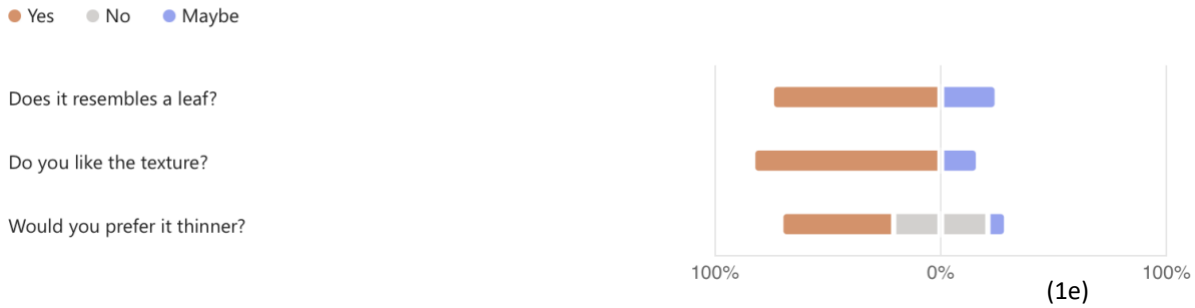
(1c)

Part 4 - Edible film packaging



(1d)

. Part 5 - Tapioca cracker



(1e)

Figure 1(a-e): Presenting results from sensory analysis among 15. Participants who evaluated t
dish – *Deconstructed Peach Harmony.*

4.2. Photos & Final product description

The concept of this dish was to create a deconstructed peach cookie dessert inspired by the original Bulgarian dessert (Refer to Figure 2). Thus, the name of this dessert is "*Deconstructed Peach Harmony.*" The name includes the deconstructed concept and the balance between different textures.

Figure 2: *Illustrating the Peach dessert that was used as an inspiration for the Deconstructed Peach Harmony (Supichka, 2016).*

Figure 3: *Final dish inspired by an authentic Bulgarian dessert for the Note by Note concept - top-down perspective.*

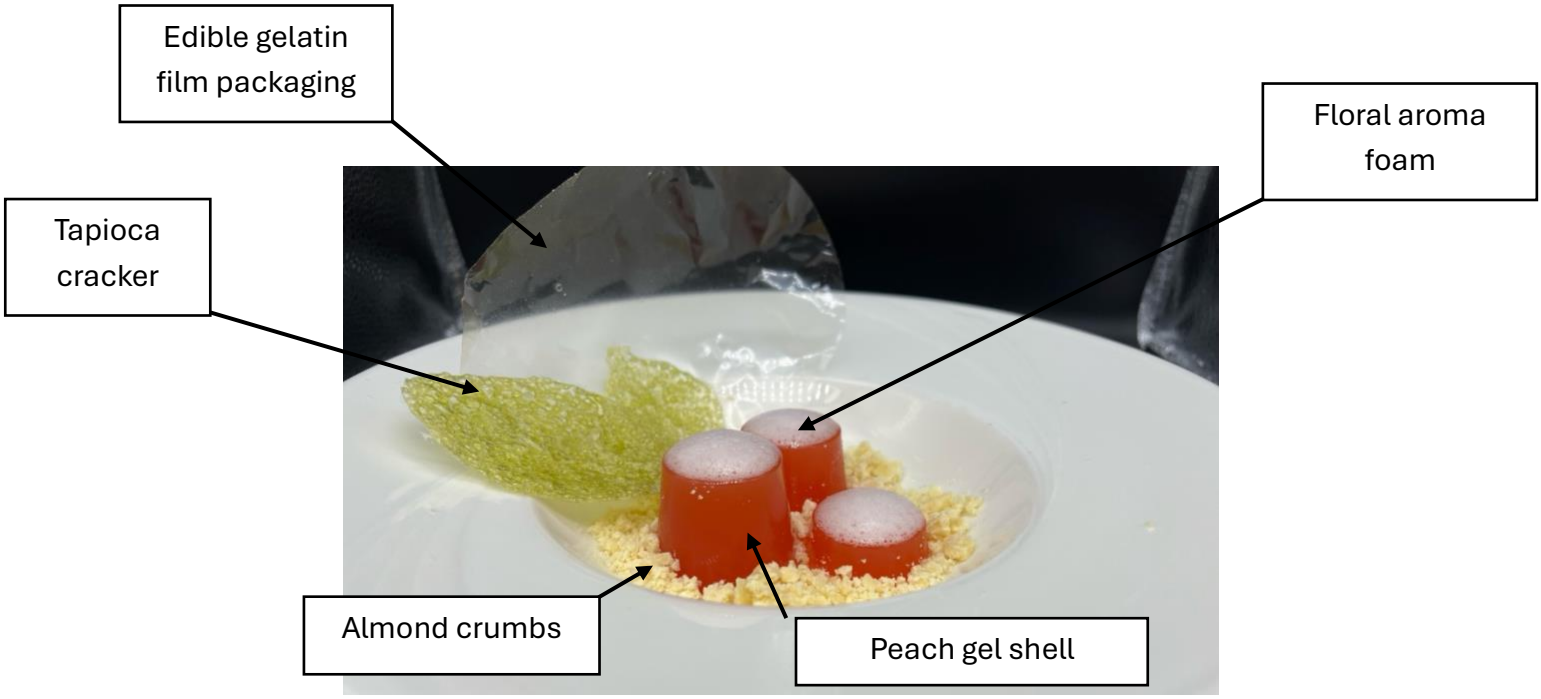


Figure 4: *Final dish inspired by an authentic Bulgarian dessert for the Note by Note concept – side profile with all components explained.*

The photos above show the final presentation of the product for the competition of Note by Note. The product is composed of five separate elements: the tapioca leaf cracker, peach gel shell, edible gelatin film packaging, almond crumbs, and floral aroma foam.

Table 4: *Comparing the components from the traditional Bulgarian dessert with the final dish for Note by Note according to this year's topic – Food for the Future.*

Component in Traditional Dessert	**Component in Note by Note Dish**
Peach cookie	Almond Crumbs
Fruit jam	Peach gel shell
Sugar Coating	Floral aroma foam
Leaves	Tapioca leaf crackers
	Addition for the future of food: Geltain base edible film packaging

5. Discussion

5.1 Scientific interactions

5.1.1 Part 1 - Tapioca leaf cracker

The tapioca leaf cracker's main ingredient are the tapioca perls. Tapioca is a type of starch, and once starch is cooked, the process of gelatinization occurs, which is also the reaction happening in this case. Once the starch is mixed with water and heated, it begins to absorb the water, and the starch granules swell as a result of that. This causes the hydrogen bonds that support the granule structure to weaken and further break, which disrupts the crystalline structure of the starch granules. The whole process of gelatinization occurs at higher temperatures and longer heating times. Usually, the breaking of hydrogen bonds occurs at around 60-80°C. Starch is made up of amylopectin and amylose; the former is highly branched, and the latter is a linear molecule. Once the hydrogen bonds have broken, the amylose leaks out, and this causes the viscosity of the mixture to increase. This is the process of gelatinization and is the same for any type of starch, including tapioca starch. Gelatinization is the reason why, when tapioca starch is mixed with water and cooked for longer while continuously stirring, the mixture becomes thicker (Bosc, 2024).

5.1.2 Part 2 - Peach gel shell

For the preparation of the peach gel, agar-agar and pectin were combined; both gelling agents are plant-based. Agar-agar comes from a seaweed known as red algae, and pectin is usually extracted from the peel of certain fruits, mainly lemons and apples. Each of the gelling agents needs a different process to be activated. For example, agar-agar needs to be diluted in boiling water. On the other hand, pectin depends on its molecular structure, whether it is high-esterified or low-esterified. In the first case, it will need to be mixed with sugar and an acid to activate the pectin, and in the latter case, it needs calcium ions. For the preparation of the peach gel, a highly esterified citrus pectin was used, first mixed with sugar and then with water to avoid clumping. High-esterified pectin creates a gel by forming hydrogen bonds between its methyl-ester groups and the introduced water. Due to this hydrogen-bond formation, an ordered structure is created, which is known as gelation. (Said, N.S., 2023).

As mentioned above, agar-agar needs to be mixed with boiling water to activate its gelling properties. Agar-agar is a type of polysaccharide made up of agarose, which is the gelling part, and agaropectin, the non-gelling part. The high temperature is needed because, at this point, the hydrogen bonds that hold together the agarose can be broken, and the agarose can be released. Once the agarose is released, it will dissolve in water, and this is the moment that the agar-agar has been fully activated. The gelling reaction will occur once the mixture starts to cool down because this is the moment that the released agarose chains can form bonds and create an organized structure, which can trap water. This organized structure becomes a 3D network, which is the reason for the formation of the gel. The gelation will start during the

cooling period from around 50°C to 35°C, and the process continues until reaching the room temperature of around 24 °C. For faster gelation, the mixture can be placed in the fridge at around 4°C (Dai and Matsukawa, 2012).

5.1.3 Part 3 - Edible gelatin film packaging

Gelatin is obtained after the hydrolysis of collagen, a fibrous type of protein mainly found in animal bones, skins, or tissues. In theory, the degree of gelation depends on the extraction process used and the type of collagen. Nevertheless, regardless of the extraction process and the type of collagen used, the gelatin will stay odorless and transparent. Gelatin is an interesting gelling agent because it can behave differently depending on the process used. For example, it can be used as a stabilizer in an emulsion, act as a foaming agent, or to be able to create films. On the other hand, gelatin can be used as a gelling agent and texturizer. The *edible gelatin film packaging* is an example of gelatin exhibiting the first type of properties. Once gelatin is mixed with water, its molecules will swell and absorb the water due to the hygroscopic characteristic of the gelling compound. The moment that the gelatin's molecules start to swell is the moment that the physical interaction between the water molecules and the gelatin molecules starts, which is explained by the protein-protein hydrogen bonds formed. This interaction leads to the creation of a complex gelatin matrix. The gelatin film is formed during this interaction because the hydrogen-hydrophilic bonds stabilize the protein in the gelatin. Once the excess water has evaporated, the gelatin film is left behind (Ramos et al., 2016).

5.1.4 Part 4 - Almond crumbs

The main ingredient in the almond crumbs is cocoa butter, which is 70% made up of saturated fats. At room temperature, cocoa butter has a solid structure, but because of its melting point, which is between 32 and - 35°C, it can easily melt in the mouth. The reaction happening, in this case, is the exact physical state transformation, which makes it easier to combine with another ingredient. Once the cocoa butter has hardened, it has a brittle texture at room temperature, which allows it to create crumbs on the plate. Because of its ability to easily melt in the mouth, maltodextrin was combined with cocoa butter to give a grainier texture. Maltodextrin is a type of polysaccharide produced by the hydrolysis of starch; it keeps its grainy texture during the production of the crumbs because the mixture is heated up to 32-35°C to melt the cocoa butter. However, the melting point of maltodextrin is 240 °C. Thus, it does not lose its molecular structure (Lai, Lo, and Akoh, 2012).

5.1.5 Part 5 - Floral Aroma Foam

The ingredients for the floral foam were water, lecithin, sucrose, malic acid, and jasmine aroma flavor. The last three mentioned were used only as flavor enhancements and did not have a big role in chemical or physical interactions during the formation of the foam. Lecithin is commonly known and used in the food industry as an emulsifier, mainly in O/W emulsions (oil droplets dispersed in water). However, in the case of the *floral aroma,* lecithin was not used for its emulsion properties due to the absence of oil. Interestingly enough, surfactants

and proteins, besides acting as emulsifiers, can also be used as stabilizers in the food industry. Typical food applications are whipped toppings, ice cream, or, as mentioned above, O/W emulsions. The interaction in the case of the foam is between the water molecules and the soy lecithin. This type of foam is known as “unstable foam” because the size of the created air bubbles is uneven, which would quickly make them coalesce together. The possible explanation behind the foam formation could be the mechanical force due to which air is introduced into the mixture. Thus, air bubbles are formed, which are probably stabilized for a short period by the dispersed soy lecithin molecules. As an emulsifier, soy lecithin has a hydrophobic and a hydrophilic part. Most likely, the stability was due to the hydrophilic side of the soy lecithin molecules attached to the water molecules and creating a thin film around them. However, due to the absence of oil, the hydrophobic side of the soy lecithin molecules cannot be attached, which is probably one of the reasons for the formation of an unstable foam (Wang, Adhikari, and Barrow, 2017).

6. Conclusion

The main objective of this project was to develop a dish that only used pure compounds following the Note by Note concept, which responds to this year's theme, "Food for the Future." In conclusion, this project illustrates a successfully developed dessert that responds to the requirements and, most importantly, combines authenticity with creativity and the use of a scientific approach. According to the sensory analysis, the overall feedback was positive, with minor improvements needed, mainly regarding the balance of flavors. The addition of the edible packaging component highlighted the sustainable approach in mind and proved that it is possible to create a functional component only using pure compounds: gelatin and water. Although there were small challenges during the design of the dish, and there might be challenges from a consumer perspective, the project showed that it is possible to combine science, creativity, and cooking to create a new dish for the future with sustainability in mind, which is all highlighted by the Note by Note cooking concept.

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Appendix

Appendix A - Final list of ingredients

Table 5: *Presenting the final list of ingredients and equipment used for the preparation of the Note by Note dish – Deconstructed Peach Harmony.*

Part 1 - Tapioca leaf cracker				
Ingredient	**Weight (g)**	**Function**	**Brand**	**Picture**
Tapioca Pearls	40	Starch	Gem	
Water	300	Base liquid	N/A	
Green food coloring	1 drop	Color	Color (Brand:Mallard Ferriere)	
Part 2 - Peach gel shell				
Ingredient	**Weight (g)**	**Function**	**Brand**	**Picture**
Water	200	Base liquid	N/A	N/A
Agar-Agar	1.5	Structure	SpecialIngredients	
Citrus pectin	2	Adds flexibility	Sosa	

Sucrose	10	Sweetness	N/A	N/A
Citric acid	1	Fruit-like acidity		
Peach aroma (y-decalactone)	4 drops	Peach flavour	The kitchen laboratory	
Yellow Food coloring	2 drops	Peach-orange colour	Mallard Ferriere	
Red Food coloring	3 drops	Enhances colour	Mallard Ferriere	
Part 3 - Edible film packaging				

Gelatin	10	Structure	Louis Francois	
Water	20	Base liquid	N/A	N/A
Sunflower oil	10	For easy peeling from the surface, not used in the final product	N/A	N/A
Part 4 - Almond crumbs				
Ingredient	**Weight (g)**	**Function**	**Brand**	**Picture**
Cocoa butter	10	Base	DGF Royal	
Soy lecithin	1	Thickener	PCB Creation	
Maltodextrin	4	powdery texture	Sosa	
Almond aroma	1	Almond flavour	The kitchen laboratory	
Part 5 - Floral aroma foam				

Ingredient	Weight (g)	Function		Comments
Water	200	Base liquid	N/A	N/A
Lecithin	1	Emulsifier & foaming agents	PCB Creation	
Jasmin Aroma	1 drop	Jasmin flavour	Sosa	
Malic Acid	0,3	Adds fruity tartness	MSK	
Sucrose	3	Sweetness	N/A	N/A

Table 6: Presenting the equipment used in the preparation of this dish and its brand.

Equipment	Function	Brand	Picture
Immersion Blender	Create foam	Robot Coupe Mini MP 160 V.V. No 06900181002	

Kitchen Scale	Measure ingredients	Dunnes Stores Digital Kitchen Scale Model: 5099010877578	
Kitchen Oven	Drying of tapioca crackers	Electrolux Skyline Premium	

Appendix B - Logbooks

MODULE CODE: TFCS9025: 2024-2025

MODULE TITLE: Advanced Molecular Gastronomy

STUDENT NAME: Polina Valkova

FOOD PRODUCT: Peaches wrapped in an edible film

WEEK NO.: 01 **DATE: 18/03/2025**

Weekly Aims and Objectives:

The goal for this week is to test the four different parts of the recipe for the final dish. The focus will be on achieving the desired texture, thus, the ingredient ratios if needed, will be adjusted. Flavours will be used this week; however, experimenting with flavour ratios will be one of the objectives for next week.

1. Prepare each of the four components using the planned recipes.
2. Adjust and test different ratios to achieve the ideal texture.
3. Observe and record, if needed, how each ingredient affects the final consistency.
4. Note any necessary changes to improve texture for the next trials.

Materials and Method (Ingredients, Equipment, and Method)

Materials:

Table 6: *Ingredients used during the first-week trial.*

Part 1 - Peach Shaped edible shell			
Ingredient	**Weight (g)**	**Function**	**Comments**
Water	200	Base liquid	
Agar-Agar	1.5	Structure	
Citrus pectin	2	Adds flexibility	
Sugar	10	Sweetness	
Glycerol	*2-5mL*	*Prevents brittleness – makes gel softer*	Try first without it
Citric acid	1	Fruit-like acidity	
Peach aroma (y-decalactone)	0,5	Peach flavour	
Yellow Food coloring	0,2	Peach-orange colour	
Red Food coloring	0,1	Enhances colour	
Part 2 - Edible film packaging			
Gelatin	10	Structure	
Water	400	Base liquid	
Sunflower oil	10	For easy peeling from the surface, not used in the final product	
Glycerol	5		
Part 3 - Almond crumbs			
Ingredient	**Weight (g)**	**Function**	**Comments**
Water	50	Binding	
Salt	2	balance	
Sucrose	4	sweetness	

Potato Starch	25	powdery texture	
Maltodextrin	*1.5*	*powdery texture*	Try it first without
Almond aroma	2	Almond flavour	
Part 4 - Floral aroma foam			
Ingredient	**Weight (g)**	**Function**	**Comments**
Water	200	Base liquid	
Xanthan Gum	*0.5*	*Improves foam stability*	Try it first without
Lecithin	1	Emulsifier & foaming agents	
Floral aroma	0,5	Floral flavour	
Malic Acid	0,3	Adds fruity tartness	
Sorbitol	3	Sweetness	

Method:

Part 1 - Peach-shaped edible shell - try with and without glycerol

Step 1: Mix agar with **100 mL of water** and bring to a boil while stirring.

Step 2: Mix pectin with sugar together with the **remaining 100 mL of water** in a separate bowl. Heat the mixture on medium heat until dissolved.

Step 3: Pour the pectin mixture into the hot agar solution. Mix the mixture while stirring continuously to prevent clumping.

Step 4: Stir in glycerol and citric/malic acid together with the peach flavor and the coloring agents.

Step 5: Pour into pre-oiled cylindrical molds and let the mixture cool at **room temperature**. After reaching room temperature, put the mold in the refrigerator for at least one hour to fully set.

Part 2 - Edible film packaging

Step 1: In a bowl, mix the water with the gelatin. Place the bowl in a microwave for 20 seconds to fully dissolve the gelatin.

Step 2: Brush the top of a balloon.

Step 3: Brush the gelatin mixture on top of the pre-oiled balloon and let it dry for 24 hrs.

Step 4: Before plating the dish, pop the balloon and shape the sphere by cutting the excess of the film with scissors.

Part 3 - Almond crumbs for coating - Try with and without maltodextrin

Step 1: In a bowl, combine starch, sugar/sorbitol, and maltodextrin if used.

Step 2: In the same bowl, add water and stir to dissolve the starch and maltodextrin. Heat the solution in a saucepan, stirring continuously, until the mixture thickens into a gel at approximately 70–80°C.

Step 3: Spread the gel in a thin layer on a baking sheet lined with parchment paper. Bake at 90–110°C until fully dry.

Step 4: Once dry, break into small pieces by hand, then transfer to a food processor for finer crumbs.

Step 5: Toast lightly in an oven at **120-150°C** for **10-15 minutes** to enhance crispiness.

Part 4 - Floral aroma foam - Try with and without xanthan gum

Step 1: Mix the water and the floral aroma in a deep bowl together with the malic acid and the sweetener used.

Step 2: Add the lecithin to the mixture and with an immersion blender, blend the mixture until foam is created on the top of the surface of the liquid.

Results and Discussion:

This week's goal was to test the recipes and the quantities of each ingredient. Since the objective of this class is to work only with pure compounds, it was essential to try the ratios and see how each ingredient corresponds to a specific processing method or in combination with others. All four parts presented above were tested out. The exact brand of. Ingredients and equipment will be summarized at the end of this section.

The first part - the peach shell made from agar-agar and pectin- worked very well. The desired texture was achieved without the addition of glycerol; thus, it will not be needed for future trials. Regarding color, a drop of red color liquid dye was added, which created a pink solution; the orange dye was not available now. Regarding flavor, the gel was a bit too acidic, and the peach was not very detectable. Three drops of the flavor were added. Due to the high acidity, two acids are not needed. Thus, malic acid will likely not be used in the future, only citric acid, which will bring enough acidity and will help the pectin to set. Thus, the color of a peach, as well as the flavor, will be one of next week's targets (Refer to Figure 5 for a picture of the final dish).

The edible film plastic did not work due to the limited time; next time, it will be prepared the night before and left to dry on a balloon to create the sphere shape.

The crumbs with starch turned out too crispy and almost unable to chew, thus an idea was to substitute the almond crumbs with a different method. I tried melting 10g cocoa butter and adding 1g soy lecithin together with 4g maltodextrin and a drop of the almond flavour. Once fully mixed, the solution was left in the fridge to set, and with the help of a spoon, I created the crumbs, which will be a new recipe for the crumb part.

The foam worked very well without the addition of xanthan gum. For flavour, the flower flavour was not available, and jasmine flavour was used as a substitution, which will probably be kept in the future. Below is presented a table with all brands of ingredients used, as well as the equipment used.

Conclusion:

This week's kitchen session showed that working with pure compounds could be challenging, especially regarding processing. Some of the parts turned out as expected, such as the peach jelly; others, like the almond crumbs, needed to be fully substituted. Another change made was substituting the floral aroma with a Jasmin one. Below is a picture of the final dish without the edible plastic due to the time limit.

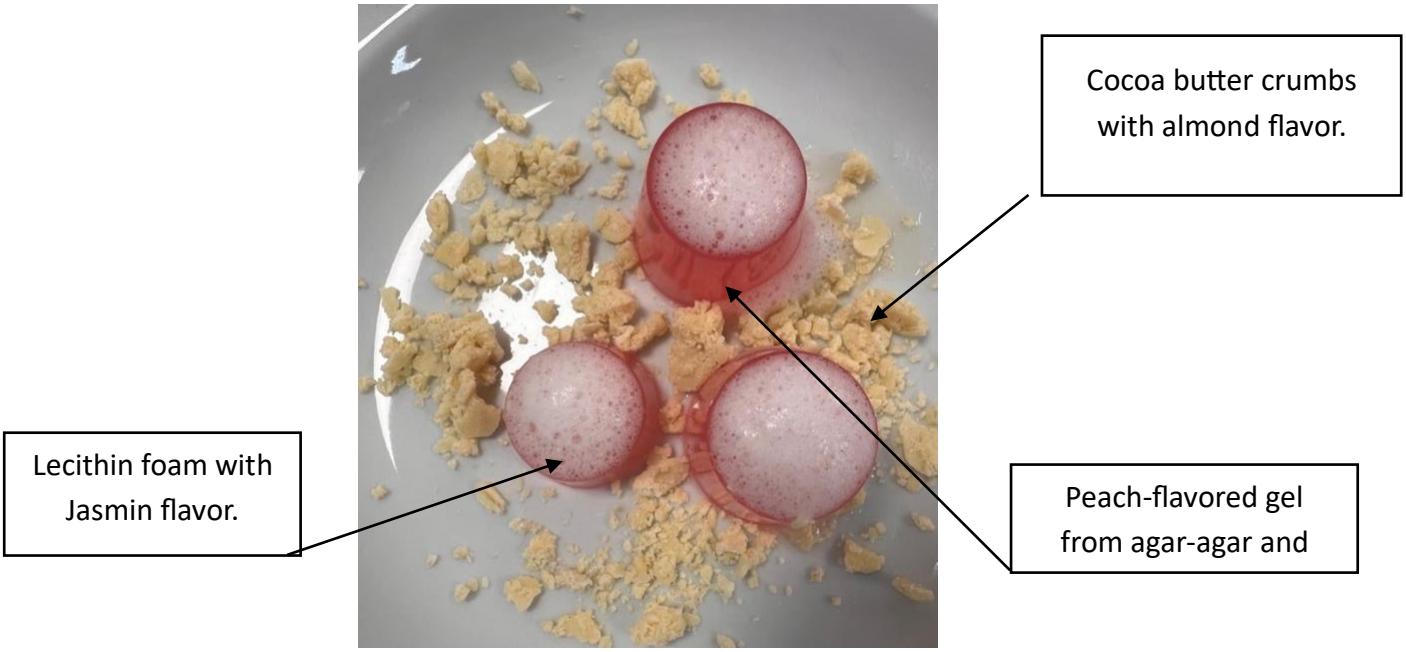

Figure 5: *Illustrating the final dish from the first-week trial without the edible plastic film.*

Recommendations:

1. Use the cocoa butter recipe for new crumbs and adjust ratios to avoid overly crispy results from the maltodextrin.
2. Play around with peach flavour and citric acid to bring out more flavour in the peach jelly.
3. Find the correct ratio between red and orange paste to achieve peach color.
4. Prepare the plastic film 24 hours in advance by drying it on a balloon to use for final plating.
5. Do not use malic acid and glycerol in the peach jelly.
6. Xanthan Gum is unnecessary for the foam, and the jasmine aroma is a good substitution for the floral aroma.

WEEK NO.: 03 **DATE: 24/03/2025**

Weekly Aims and Objectives:

1. Use the cocoa butter recipe for new crumbs and adjust ratios to avoid overly crispy results from the maltodextrin.
2. Play around with peach flavour and citric acid to bring out more flavour in the peach jelly.
3. Find the correct ratio between red and orange paste to achieve peach color.
4. Prepare the plastic film 24 hours in advance by drying it on a balloon to use for final plating.
5. Do not use malic acid and glycerol in the peach jelly.
6. Xanthan Gum is unnecessary for the foam, and the jasmine aroma is a good substitution for the floral aroma.

Materials and Method (Ingredients, Equipment, and Method)

Materials:

Table 7: *Ingredients used during the second-week trial.*

Part 1 - Peach Shaped edible shell		
Ingredient	**Weight (g)**	**Function**
Water	200	Base liquid
Agar-Agar	1.5	Structure
Citrus pectin	2	Adds flexibility
Sugar	10	Sweetness
Citric acid	1	Fruit-like acidity
Peach aroma (y-decalactone)	0,5	Peach flavour
Yellow Food coloring	0,2	Peach-orange colour
Red Food coloring	0,1	Enhances colour
Part 2 - Edible film packaging		
Gelatin	10	Structure
Water	20	Base liquid
Sunflower oil	10	For easy peeling from the surface, not used in the final product
Part 3 - Almond crumbs		
Ingredient	**Weight (g)**	**Function**
Cocoa Butter	10	Base
Maltodextrin	4	powdery texture
Soy Lecithin	1	Thickener
Almond aroma	2	Almond flavour
Sugar	4	sweetness
Part 4 - Floral aroma foam		
Ingredient	**Weight (g)**	**Function**
Water	200	Base liquid
Lecithin	1	Emulsifier & foaming agents
Jasmine aroma (Natural jasmine extract)	0,5	Floral flavour
Malic Acid	0,3	Adds fruity tartness
Sugar	5	Sweetness

Method:

Part 1 - Peach-shaped edible shell

Step 1: Mix agar with **100 mL of water** and bring to a boil while stirring.

Step 2: Mix pectin with sugar together with the **remaining 100 mL of water** in a separate bowl. Heat the mixture on a medium heat until dissolved.

Step 3: Pour the pectin mixture into the hot agar solution. Stir the mixture continuously to prevent clumping.

Step 4: Stir in citric acid with the peach flavor and the coloring agents.

Step 5: Pour into pre-oiled cylindrical molds and let the mixture cool at **room temperature**. After reaching room temperature put the mold in the refrigerator for at least one hour to fully set.

Part 2 - Edible film packaging - Must be done in advance

Step 1: In a bowl, mix the water with the gelatin. Place the bowl in a microwave for 20 seconds to fully dissolve the gelatin.

Step 2: Brush the top of a balloon with oil.

Step 3: Brush the gelatin mixture on top of the pre-oiled balloon and let it dry for 24 hrs.

Step 4: Before platting the dish, pop the balloon and shape the sphere by cutting the excess of the film with scissors.

Part 3 - Almond crumbs for coating

Step 1: In a bowl, melt the cocoa butter over a pot of boiling water (bain marie).

Step 2: In a separate bowl, mix the soy lecithin, sugar, and maltodextrin together.

Step 3: Once the butter has melted, add the dry ingredients and almond flavor and mix well.

Step 4: Let the mixture cool to room temperature and add in the fridge for 20 minutes to fully cool down.

Step 5: Using a spoon, slowly scrape the butter mixture to create crumbs.

Part 4 - Floral aroma foam

Step 1: Mix the water and the floral aroma in a deep bowl together with the malic acid and the sweetener used.

Step 2: Add the lecithin to the mixture and with an immersion blender blend the mixture until foam is created on the top of the liquids surface.

Discussion and Results:

The kitchen session went well overall. The adjustments in the recipes were followed, and indeed the removed ingredients, as proposed above, were not needed. A good ratio for the peach color was tested out today, and as a final adjustment, it would be 3 drops of red coloring and 2 drops of yellow coloring for the batch of 200 mL presented above. Regarding flavor, the peach aroma was increased to 4 drops, resulting in a stronger and more pleasant flavor; the one from last week had a watery and neutral taste. Concerning the almond crusts, 3 drops of almond aroma were added. Next week, a sensory analysis is planned, during which the exact flavor will be tested; however, the almond could indeed be increased because cocoa butter was the main flavor, and the almond could barely be detected. The edible plastic will be prepared for sensory analysis next week; however, this week, a new trial was tested, which was to develop a tapioca cracker. For this, tapioca pearls were heated with water, and then the starch was rinsed under running water. The mixture was spread on silicone paper and left to dry in the oven for 40 minutes at 110 degrees Celsius in dry air. Next week, the tapioca cracker will be tried out again because this week's batch turned out undercooked and almost impossible to chew. The reason was the low amount of water added; next week, a double amount will be used: 40 grams of tapioca to 200 mL of water. Below is a picture of this week's final dish, together with the tapioca cracker.

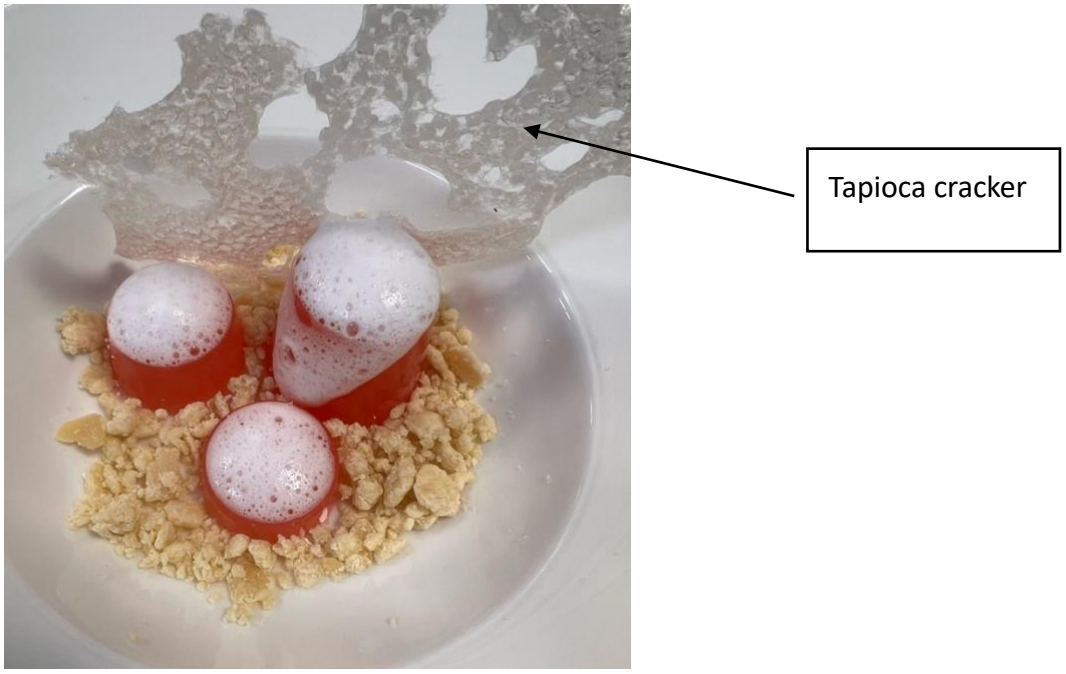

Figure 6: *Illustrating dish from the second week with the tapioca cracker included, without the edible packaging film.*

Conclusion:

Small and positive improvements were made this week. The dish's colors and some flavors were achieved, which will be further tested next week. A new component was tested, which has promising results if the correct ratio of water to tapioca is reached to fully cook the

tapioca pearls. This last part of the dish adds a different crunchy texture that was so far missing.

Recommendations:

1. Prepare the plastic film 24hr in advance, by drying it on a ballon, to use for final plating.
2. Find the correct ratio of water to tapioca to cook it fully.
3. Play around with the almond aroma and test to add more.
4. Conduct a sensory analysis.

MODULE CODE: TFCS9025: 2024-2025

MODULE TITLE: Advanced Molecular Gastronomy

STUDENT NAME: Polina Valkova

FOOD PRODUCT: Peaches wrapped in an edible film

WEEK NO.: 03 **DATE: 31/03/2025**

Weekly Aims and Objectives:

1. Prepare the plastic film 24hr in advance, by drying it on a ballon, to use for final plating.
2. Find the correct ratio of water to tapioca to cook it fully.
3. Play around with the almond aroma and test to add more.
4. Conduct a sensory analysis.

Materials and Method (Ingredients, Equipment, and Method)

Materials:

Table 8: *Ingredients used during the third-week trial.*

Part 1 - Tapioca cracker		
Ingredient	**Weight (g)**	**Function**
Tapioca Pearls	40	Starch
Water	300	Base liquid
Part 2 - Peach Shaped edible shell		
Ingredient	**Weight (g)**	**Function**
Water	200	Base liquid
Agar-Agar	1.5	Structure
Citrus pectin	2	Adds flexibility
Sugar	10	Sweetness
Citric acid	1	Fruit-like acidity
Peach aroma (γ-decalactone)	4 drops	Peach flavour
Yellow Food coloring	2 drops	Peach-orange colour
Red Food coloring	3 drops	Enhances colour
Part 3 - Edible film packaging		
Gelatin	10	Structure
Water	20	Base liquid

Sunflower oil	10	For easy peeling from the surface, not used in the final product
Part 4 - Almond crumbs		
Ingredient	**Weight (g)**	**Function**
Cocoa Butter	10	Base
Maltodextrin	4	powdery texture
Soy Lecithin	1	Thickener
Almond aroma	3 drops	Almond flavour
Sugar	4	sweetness
Part 5 - Floral aroma foam		
Ingredient	**Weight (g)**	**Function**
Water	200	Base liquid
Lecithin	1	Emulsifier & foaming agents
Jasmin aroma	3 drops	Floral flavour
Malic Acid	0,3	Adds fruity tartness
Sugar	5	Sweetness

Method:

Part 1 - Tapioca cracker

Step 1: Measure 40 grams of tapioca pearls and mix them with 100 mL of water in a pan.

Step 2: Cook the tapioca until fully transparent, and if needed, add more water.

Step 3: Transfer the tapioca mixture to a sieve and rinse it under water to remove the formed starch.

Step 4: Spread the mixture on a silicon paper and dry in an oven at 130 Celsius Degrees for about 40 minutes in dry air.

Part 2 - Peach-shaped edible shell

Step 1: Mix agar with **100 mL of water** and boil while stirring.

Step 2: In a separate bowl, mix pectin, sugar, and the **remaining 100 mL of water** until dissolved.

Step 3: Pour the pectin mixture into the hot agar solution. Mix the mixture while stirring continuously to prevent clumping.

Step 4: Stir in citric acid with the peach flavor and the coloring agents.

Step 5: Pour the mixture into pre-oiled cylindrical molds and let it cool to **room temperature**. After reaching room temperature, put the mold in the refrigerator for at least one hour to fully set.

Part 3 - Edible film packaging - Must be done in advance

Step 1: In a bowl, mix the water with the gelatin. Place the bowl in a microwave for 20 seconds to fully dissolve the gelatin.

Step 2: Brush the top of a balloon with oil.

Step 3: Brush the gelatin mixture on top of the pre-oiled balloon and let it dry for 24 hrs.

Step 4: Before plating the dish, pop the balloon and shape the sphere by cutting the excess film with scissors.

Part 4 - Almond crumbs for coating

Step 1: In a bowl, combine the cocoa butter, sugar, lecithin, and maltodextrin.

Step 2: Place the bowl on top of a pot with water and bring the water to a boil while melting the ingredients in the bowl, creating a bain-marie.

Step 3: Add the almond flavoring and stir once the mixture has melted.

Step 4: Let the mixture cool to room temperature and add in the fridge for 20 minutes to fully cool down.

Step 5: Move the bowl from the fridge to the freezer five minutes before using.

Step 6: With the help of a spoon, scrape slowly the butter set mixture, creating crumbs.

Part 5 - Floral aroma foam

Step 1: Mix the water and the floral aroma in a deep bowl together with the malic acid and the sweetener used.

Step 2: Add the lecithin to the mixture and with an immersion blender blend the mixture until foam is created on the top of the liquid surface.

Results & Discussion:

This week, the kitchen trial was successful; the entire dish was completed. The edible film packaging was prepared the night before, following the methodology described above. One area for improvement regarding the film packaging is to add more water since the mixture was very viscous, resulting in the final film being thicker than expected and less transparent. The almond crumbs turned out smaller compared to last week's because all the ingredients were mixed and melted together from the beginning. The mixture was added to the freezer 5 minutes before use, making it easier to create smaller and more uniform crumbs. Another component that was tested and improved was the tapioca crackers. The ratio of tapioca pearls to water that worked was 40 grams to 300 grams, respectively. The tapioca pearls were cooked for about 10 minutes until all the pearls became transparent. This week, instead of crackers, the tapioca mixture was shaped into leaves and colored green, adding more color and vibrancy to the final plate. The pictures below contain the two new components of the dish: the edible film packaging (Figure 7) and the tapioca leaf cracker (Figure 8).

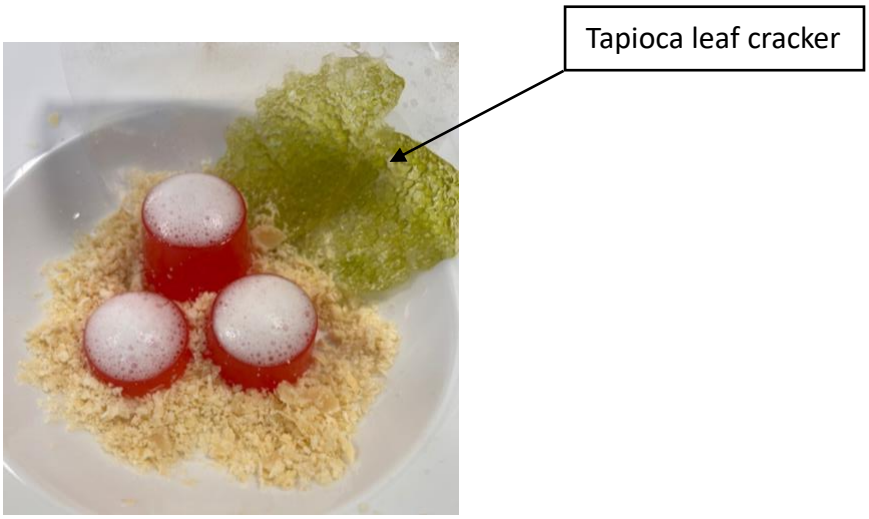

Figure 7: *Final dish plated with tapioca leaf cracker.*

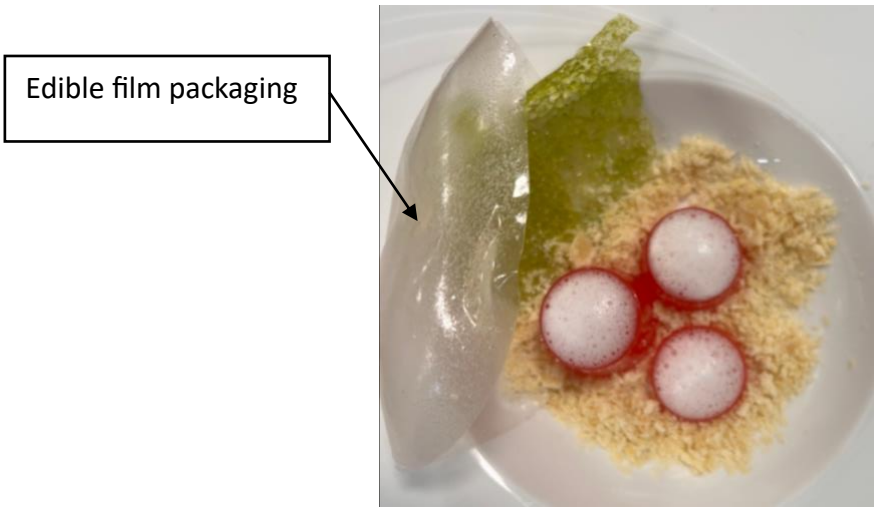

Figure 8: *Final dish plated with all five components, including the edible film packaging.*

This week, the first sensory analysis was conducted as well. Twelve participants tasted the final dish and answered questions regarding the taste, texture, aroma, and overall balance with the flavoring agents. Overall, the feedback was positive, and most of the people enjoyed the plate. Comments for improvement were to increase the sweetness in the peach-shaped edible shell and the amount of almond aroma because most of the participants did not taste any almonds in the almond crumbs. Also, a lot of people commented that it was difficult to chew the edible film packaging. However, the main idea of this component is to be part of the presentation and to illustrate an idea for the future that food can be packaged in edible packaging, which, just with the addition of warm water, can be melted and easily degraded.

Recommendations:

1. Increase sugar in the peach shell component from 10 to 20 grams.
2. Increase the almond aroma ratio from 3 drops per plate to 6 drops.
3. Try to create a thinner edible film packaging for better transparency and better sensory acceptance.
4. Adjust the process for preparation of the almond crumbs by mixing and melting all ingredients together, and adding the mixture to the freezer for 5 minutes before use.

Conclusion:

This week, all five components of the dish were completed successfully and plated on a dish. The main focus was on creating edible film packaging and improving the tapioca pearl crackers. A sensory evaluation with twelve participants was conducted and provided helpful feedback on flavour, texture, and presentation. Some small adjustments were made based on the feedback for the next trial, mainly regarding sweetness and flavour balance.

MODULE CODE: TFCS9025: 2024-2025

MODULE TITLE: Advanced Molecular Gastronomy

STUDENT NAME: Polina Valkova

FOOD PRODUCT: Peaches wrapped in an edible film

WEEK NO.: 04 **DATE: 07/04/2025**

Weekly Aims and Objectives

1. Increase sugar in the peach shell component from 10 to 20 grams.
2. Increase the almond aroma ratio from 3 drops per plate to 6 drops.
3. Try creating a thinner edible film packaging for better transparency and sensory acceptance.
4. Adjust the process for preparation of the almond crumbs by mixing and melting all ingredients together, and adding the mixture to the freezer for 5 minutes before use.
5. Take final dish photos.

Materials:

Table 9: *Ingredients used during the fourth-week trial.*

Part 1 - Tapioca cracker		
Ingredient	**Weight (g)**	**Function**
Tapioca Pearls	40	Starch
Water	300	Base liquid
Green coloring	1 drop	Color (Brand:Mallard Ferriere)
Part 2 - Peach Shaped edible shell		
Ingredient	**Weight (g)**	**Function**
Water	200	Base liquid

Agar-Agar	1.5	Structure
Citrus pectin	2	Adds flexibility
Sugar	20	Sweetness
Citric acid	1	Fruit-like acidity
Peach aroma (y-decalactone)	4 drops	Peach flavour
Yellow Food coloring	2 drops	Peach-orange colour
Red Food coloring	3 drops	Enhances colour
Part 3 - Edible film packaging		
Gelatin	10	Structure
Water	40	Base liquid
Sunflower oil	10	For easy peeling from the surface, not used in the final product
Part 4 - Almond crumbs		
Ingredient	**Weight (g)**	**Function**
Cocoa Butter	10	Base
Maltodextrin	4	powdery texture
Soy Lecithin	1	Thickener
Almond aroma	6 drops	Almond flavour
Sugar	4	sweetness
Part 5 - Floral aroma foam		
Ingredient	**Weight (g)**	**Function**
Water	200	Base liquid
Lecithin	1	Emulsifier & foaming agents
Jasmin aroma	3 drops	Floral flavour
Malic Acid	0,3	Adds fruity tartness
Sugar	5	Sweetness

Method:

Part 1 - Tapioca cracker

Step 1: Measure 40 grams of tapioca pearls and mix with 300 mL of water in a pan.

Step 2: Cook the tapioca until fully transparent; add more water if needed.

Step 3: Transfer the tapioca mixture to a sieve and rinse it under water to remove the formed starch.

Step 4: Once starch has been removed, add one drop of green food coloring.

Step 5: Spread the mixture on silicon/parchment paper and dry in an oven at 130 degrees Celsius for about 40 minutes in dry air.

Part 2 - Peach-shaped edible shell

Step 1: Mix agar with **100 mL water** and boil while stirring.

Step 2: In a separate bowl, mix pectin, sugar, and the **remaining 100 mL of water** until dissolved.

Step 3: Pour the pectin mixture into the hot agar solution. Mix the mixture while stirring continuously to prevent clumping.

Step 4: Stir in citric acid with the peach flavor and the coloring agents.

Step 5: Pour the mixture into pre-oiled cylindrical molds and let it cool to **room temperature**. After reaching room temperature, put the mold in the refrigerator for at least one hour to fully set.

Part 3 - Edible film packaging - Must be done in advance

Step 1: In a bowl, mix the water with the gelatin. Place the bowl in a microwave for 20 seconds to fully dissolve the gelatin.

Step 2: Brush the top of a balloon with oil.

Step 3: Brush the gelatin mixture on top of the pre-oiled balloon and let it dry for 24 hrs.

Step 4: Before plating the dish, pop the balloon and shape the sphere by cutting the excess film with scissors.

Part 4 - Almond crumbs for coating

Step 1: In a bowl, combine the cocoa butter, sugar, lecithin, and maltodextrin.

Step 2: Place the bowl on top of a pot with water and bring the water to a boil while melting the ingredients in the bowl, creating a bain-marie.

Step 3: Add the almond flavoring and stir once the mixture has melted.

Step 4: Let the mixture cool to room temperature and add in the fridge for 20 minutes to fully cool down.

Step 5: Move the bowl from the fridge to the freezer five minutes before using.

Step 6: With the help of a spoon, scrape slowly the butter set mixture, creating crumbs.

Part 5 - Floral aroma foam

Step 1: Mix the water and the floral aroma in a deep bowl together with the malic acid and the sweetener used.

Step 2: Add the lecithin to the mixture and blend it with an immersion blender until foam forms on the top of the liquid surface.

Results and Discussion:

The main objective for this week was to finalize the dish and present the final concept visually. The first two objectives were adjusted for a better sensorial acceptance. The edible film was successfully improved, a thinner layer was spread on the balloon, and there were no uneven parts, white spots, or bubbles created on the surface. The mixture of gelatin and water was fully dissolved in the microwave to achieve this easily spread consistency. There was no issue

creating the almond crumbs, and the extra five minutes resting in the freezer helped to scrape more uniform crumb particle sizes.

The final pictures of the dish were taken in a photo booth with extra lighting, as shown in Figure 9

Conclusion:

In conclusion, these four kitchen sessions were very useful in understanding the basics of using pure compounds in the kitchen. One of the new things I learned from this project was the ability to make foam with lecithin, which is mainly used as an emulsifying agent. Another example is the gelatin film, where gelatin is usually used as a gelling agent, but it can also create a flexible film. It is interesting to experiment with pure compounds and their properties because, as in the case of lecithin, some compounds could be mainly used in the industry in one shape and for one specific application, but they could have many more.

Figure 9: *A photograph of the final Note by Note dish.*