01/05/2025

Note by note report

Balance of elements TFCS9025

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MSC. FOOD INNOVATION AND PRODUCT DESIGN – TU DUBLIN

Summary

Illustrations summary

1. Introduction

Note-by-note cuisine was first introduced in 1988 by Hervé This (INRAE Institutionnel. 2024). Unlike traditional cooking, this approach does not use whole ingredients such as fruits, meat, or fish. Instead, dishes are created using pure or mixed chemical compounds. As Hervé This explained, it can be compared to electronic music, which is not made with traditional instruments like trumpets or violins, but with pure sound waves that are combined to produce music (This, H. 2013). The aim of note-by-note cuisine is not only to recreate existing dishes using compounds, but also to push boundaries and invent entirely new culinary creations. This method offers endless possibilities for innovation. The theme of this year, "Food for the Future," fits well with the idea of note-by-note cuisine, as it already represents a new way of thinking about food. By using pure compounds instead of regular ingredients, this method makes it possible to create sustainable, customizable, and innovative dishes, while also helping to reduce food waste and environmental impact.

2. Aim and objectives

The aim of this report is to present the note-by-note dish that was created based on the theme "food for the future".

The objectives are to:

- Present the concept of the dish and how it aligns with how I envision food for the future.
- Present the compounds used and the legislation associated as well as the equipment and methods.
- Present the different results obtained during the 4 weeks of works.
- Discuss the results and conclude about how the dish could be improve.

3. Dish concept

For this project, I created a note-by-note dessert inspired by this year's theme: *"Food for the Future."* The name of the dish is "balance of elements". The idea was to design a dish that not only uses modern techniques and ingredients, but also sends a message about how food might evolve in the future, especially as we face global challenges like climate change, overpopulation, and limited natural resources.

The dessert is made up of four parts, each one representing a different natural element: earth, water, air, and sun. These four elements are placed around the plate, and in the centre is a fifth part that combines them all together. The main idea behind the dish is that none of the elements work well on their own, each one is too intense, too unbalanced. But when you put them together, something surprising happens: the dish becomes balanced, flavourful, and complete. That transformation is what makes this dessert special and meaningful.

Here's a breakdown of each part:

- Earth is represented by a bitter chocolate craquant. It's crunchy and very dark, with a strong bitterness that stands for the grounded, deep qualities of the earth. On its own, it's honestly not that pleasant, too bitter to enjoy fully.
- Water is shown through salty alginate spheres, made using spherification. They look a bit like water droplets, and their saltiness is very strong. Just like the ocean, this part of the dish can feel overwhelming if tasted alone.
- Sun is expressed with a bright lemon coulis that's super sour and acidic. It's meant to capture the power and sharpness of sunlight, but the acidity is intentionally too much on its own.
- Air comes through in a very sweet vanilla mousse that's light and foamy. This element is soft and airy, but it's overly sweet and almost too light to leave a lasting impression on its own.

Each of these parts is unbalanced on purpose. They represent extreme tastes: too bitter, too salty, too sour, or too sweet. But in the centre of the plate, I combined all of them in the right proportions. When tasted together, they are supposed to balance each other out perfectly. The sweetness tones down the bitterness, the sourness cuts through the salt, and the textures complement each other in a satisfying way. The final result is a bite that feels complete and harmonious, even though all the individual parts felt "wrong" when tasted alone.

This experience is important because it mirrors how we might need to approach food in the future. In a world where we can't always rely on traditional ingredients or perfect growing conditions, we may need to work with what we have, even if it seems imperfect. But through creativity, science, and thoughtful design, we can still make something that

works. The dessert is a metaphor for that idea: balance can be found, even when starting from extremes.

The dish is also meant to be interactive. When people try it, they're encouraged to first taste each of the four elements one by one. This helps them feel how intense and uncomfortable each flavour is on its own. Then, when they finally try the centre, they experience that moment of surprise when everything comes together. It's not just about taste, it's about understanding contrast, balance, and how different elements can work in harmony.

In the end, this dessert is about more than just flavour. It's about showing that even if the individual parts are too much on their own, something beautiful and balanced can be created when they are combined together.

Figure 1: Picture of the final dish.

4. Materials and methods

4.1 Vanilla mousse

Ingredients :

Table 1: Ingredients for the vanilla mousse.

Ingredient	Quantity	Picture
Glucose syrup	100g	
Soy lecithin	1g	
Water	320mL	
Gelatin	3g	
Egg white proteins	40g	
White colorant	1g	
Vanilla aroma	3g	

Equipment:

- Stand mixer
- Bowl
- Microwave
- Freezer
- Silicone mold

Method:

- Bloom the gelatin in 20mL of cold water for 20min
- In a bowl, mix all the other ingredients and stir them with a stand mixer.
- Heat the gelatin mixture in the microwave and add it to the stirring mousse.
- Continue stirring until the texture of the mousse is airy and light.
- Transfer the mousse into molds and freeze for 2h.

4.2 Lemon coulis

Table 2: Ingredients for the lemon coulis.

Ingredient	Quantity	Picture
Water	100mL	
Glucose syrup	15g	
Citric acid	2g	
Pectin	2g	
Yellow colorant	1g	

Lemon aroma	3 drops	

Equipment:

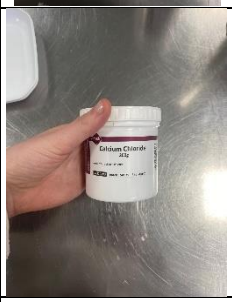
- Bowl
- Whisk
- Small saucepan

Method:

- In a small saucepan, combine all the ingredients.
- Heat gently over medium heat while whisking.
- Once the coulis has slightly thickened, place it in the refrigerator for 30 minutes.

4.3 Salty sphere

Table 3: Ingredients for the salty spheres.

Ingredient	Quantity	Picture
Water	100mL	
Sodium alginate	2g	
Calcium chloride	5g	
Sodium Chloride	2g	
Blue colorant	1g	

Equipment:

- 2 Bowls
- Whisk
- Hand blender
- Small syringe
- Strainer

Method:

- Dissolve the sodium alginate in water in a bowl and mix it with the sodium chloride and the blue colorant. Use an immersion blender to break all the clumps.
- Dissolve the calcium chloride in water in a separate bowl and stir well until fully dissolved.
- Form the spheres using the syringe by droping small amounts of the sodium alginate solution into the calcium chloride bath. Let the spheres form for 2-3 minutes.
- Use the strainer to collect the spheres.

4.4 Chocolate bitter Crunch

Table 4: Ingredients for the chocolate bitter crunch.

Ingredient	Quantity	Picture
Maltodextrin	10g	
Cocoa butter	15g	
Cocoa powder	5g	

Equipment:

- Small saucepan
- Whisk
- Fridge
- Bowl

Method:

- Combine all the ingredients in a bowl and melt the cocoa butter using a double boiler while whisking.
- When it is fully melted, take it out of the heat and continue whisking until it solidified.
- Put it in the fridge for 1h.
- Scramble it with your hands to obtain a very grainy texture.

5. Legislation

Regarding legislation, it was essential to ensure that all the ingredients used were authorized under European regulations and did not present any health risks. To assess this, I referred to the specifications provided by EFSA (European Food Safety Authority), particularly the ADI (Acceptable Daily Intake) values, where applicable.

Table 5: Authorised quantity for every ingredient used.

Ingredients	Authorised quantity
Glucose syrup	No ADI
Soy lecithin	No ADI
Gelatine	No ADI
Egg white proteins	No ADI
White colorant (calcium carbonate)	No ADI
Vanilla aroma	No ADI
Citric acid	No ADI
Pectin	No ADI
Yellow colorant	
Lemon aroma	No ADI
Sodium alginate	70mg/kg of body mass
Calcium chloride	No ADI
Sodium chloride	No ADI
Blue colorant (natural)	No ADI
Maltodextrin	No ADI
Cocoa butter	No ADI
Cocoa powder	No ADI

Among the ingredients used, only sodium alginate has an established Acceptable Daily Intake (ADI), which is measured in mg per kg of body weight. For an average person weighing 50 kg, the ADI is 3500 mg (3.5 g). In this recipe, we are using only 2 g of sodium alginate to prepare a large batch of Savory spheres. Therefore, the amount of sodium alginate used in the dish is well below the ADI, ensuring it is within safe consumption levels.

6. Results

6.1 Pictures

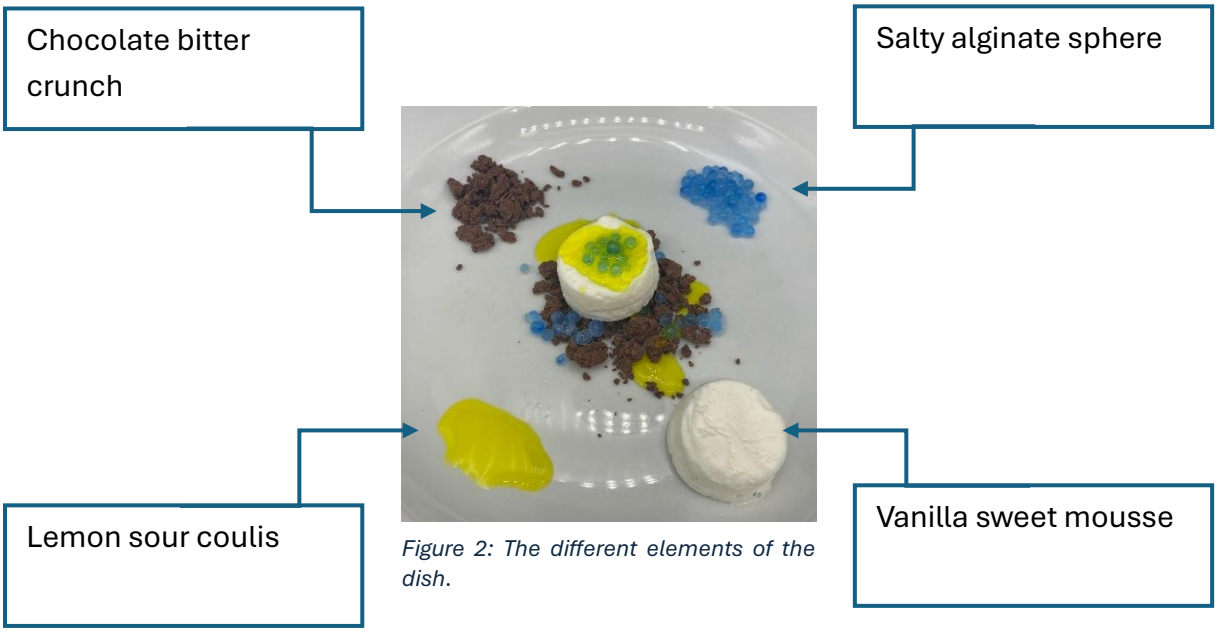


Figure 2: The different elements of the dish.

6.2 Visual sensory analysis results

Table 6: Visual sensorial analysis results.

Parameter	Note out of 5
Visual appealing	4.2
Textures balance	4.2
Aroma intensity	2.8
Overall liking	4.0
Dominant aroma noticed	Chocolate, lemon

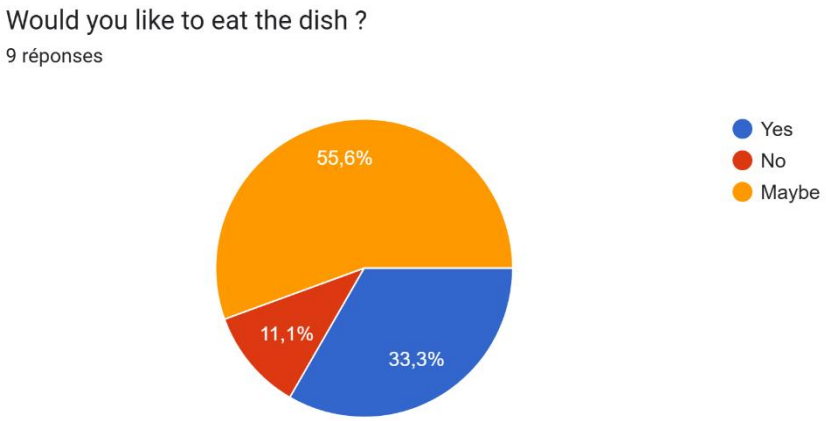


Figure 3: Answers to the question "Would you like to eat the dish ?".

For the sensory analysis of this dish, we only evaluated it visually, as it was not fully finished enough for a complete sensory analysis. The results were positive, with high ratings for visual appeal, texture balance, and overall liking, all scoring above 4 out of 5. However, the aroma intensity was relatively low, as participants struggled to identify any dominant aroma in the dish.

Although not everyone agreed on whether they would try the dish, nearly 80% expressed curiosity about trying it. Regarding the theme of the dish, many participants associated it with nature, linking it to elements such as the environment, mountains, and even space.

Although the visual results of the dish are very satisfying, it's important to keep in mind that the taste still requires improvement before it can be fully accepted by consumers. Over the course of the four weeks, we observed significant progress—there has been clear development since the beginning of week 1. However, the overall flavor experience is still not fully enjoyable.

The mousse, in particular, needs further refinement, as it currently lacks the "too sweet" sensation we were aiming for. The salty bubbles also present an issue, likely due to their texture, which isn't very pleasant in the mouth. On a more positive note, both the crunchy element and the coulis show a lot of potential in terms of flavor and are close to what I originally envisioned. They will only require minor adjustments moving forward.

7. Conclusion and recommandations

This dish is my personal take on what I think food in the future could look like, a mix of uncertainty and trial-and-error, but still something that can come together and work. You can really see how each part of the dish plays a role, and when they're combined, they create a nice balance and a good mouthfeel.

Visually, I'm really happy with the result, it looks close to what I had in mind when I first started. Taste-wise, it's not quite there yet. One thing I would recommend is improving the sweetness of the mousse. Since it's a big part of the dish, it needs to be sweeter to properly balance out the bitterness of the crunch and the acidity of the coulis.

Also, the texture of the spheres could be a bit softer to get that "pop" effect when you eat them. But overall, I've seen a lot of progress over the last four weeks, and with more time, I think the recipe could be improved even more and come really close to what I imagined.

8. References

EFSA (2021). *European Food Safety Authority*. [online] European Food Safety Authority. Available at: https://www.efsa.europa.eu/en.

INRAE Institutionnel. (2024). *La cuisine note à note : une cuisine novatrice nourrie de science*. [online] Available at: https://www.inrae.fr/actualites/cuisine-note-note-cuisine-novatrice-nourrie-science [Accessed 1 May 2025].

Introduction: Why the Need for Note-By-Note Cooking Should Be Obvious. (2014). *Note-by-Note Cooking*, pp.1–36. doi:https://doi.org/10.7312/this16486-intro.

This, H. (2013). Molecular gastronomy is a scientific discipline, and note by note cuisine is the next culinary trend. *Flavour*, 2(1). doi:https://doi.org/10.1186/2044-7248-2-1.

9. Logbook

MODULE CODE: TFCS9025

MODULE TITLE: Advanced Molecular Gastronomy

STUDENT NAME: Lilou TRONEL

FOOD PRODUCT:

WEEK NO.: 1 **DATE: 18/03/2025**

Weekly Aims and Objectives

- **Testing the recipe**
- **Getting used to the ingredients and materials**

Materials and Method (Ingredients, Equipment and Method)

Ingredients

Vanilla Mousse (Sweet)

- Glycerol (E422): 5 g
- Inverted Sugar: 15 g
- Soy Lecithin: 1 g
- Water: 250 ml
- Vanillin (synthetic vanilla): 1 g
- Titanium Dioxide (E171) (for white color): 1 g
- Gelatin: 3 g

Acidic Coulis (Acidic)

- Water: 100 ml
- Inverted Sugar: 15 g
- Citric Acid: 2 g
- Pectin: 2 g
- E102 - Tartrazine (Yellow) (for yellow color): 0.2 g
- Citrus Aroma (Lemon or Lime): 0.5 ml

Salty Spheres (Salty)

- Sodium Alginate: 2 g
- Calcium Chloride: 5 g
- Water: 250 ml (for sodium alginate bath)
- Water: 250 ml (for calcium chloride bath)
- E131 – Patent Blue V (Blue) (for blue color): 0.2 g

Bitter Crunch (Craquant)

- Maltodextrin: 10 g
- Cocoa Butter: 15 g
- Soy Lecithin: 1 g
- Cocoa Powder (Natural Brown) (for brown color): 5 g
- Bitter Compound (quinine or caffeine): 0.5 g (for bitter note)

Equipment:

- A whisk
- A hand blender
- 4 bowls
- A frying pan
- A microwave
- A plate

Method:

Vanilla Mousse (Sweet)

- Bloom the gelatin: In a small bowl, bloom gelatin (3 g) in a little cold water (about 20 ml). Let it sit for 5-10 minutes.
- Prepare the mousse base:
    - In a separate bowl, combine glycerol (5 g), inverted sugar (15 g), and water (250 ml). Stir until fully dissolved.
- Add vanilla flavor: Stir in vanillin (1 g) to the mixture for that vanilla flavor.
- Incorporate the color: Add Titanium Dioxide (E171) (1 g) to the mixture to make it white. Stir thoroughly.
- Dissolve gelatin: Heat the gelatin mixture gently (in a double boiler or microwave) until fully dissolved. Then, add the gelatin into the mousse base and stir to combine.
- Whisk the mixture: Use a hand mixer or a stand mixer to whisk the mousse until it becomes light, airy, and fully emulsified.
- Chill: Transfer the mousse into molds or serving glasses. Refrigerate for at least 3 hours or until set.

Acidic Coulis (Acidic)

- Prepare the base: In a small saucepan, combine water (100 ml), inverted sugar (15 g), and citric acid (2 g). Heat gently over medium heat while stirring until dissolved.
- Incorporate the pectin: Dissolve the pectin (2 g) in a small amount of cold water (20 ml), then slowly add it to the warm sugar solution. Stir well.
- Add color: Add E102 - Tartrazine (Yellow) (0.2 g) to the mixture to achieve a vibrant yellow color. Stir thoroughly to ensure the color is evenly distributed.

- Flavor the coulis: Once the mixture has thickened slightly, add citrus aroma (0.5 ml, lemon or lime) to enhance the acidic profile. You can adjust the amount of aroma based on your desired intensity.
- Cool the coulis: Let the coulis cool to room temperature before transferring it to a container for refrigeration. Chill until ready to use.

Salty Spheres (Salty)

- Prepare the sodium alginate bath: In a bowl, dissolve sodium alginate (2 g) in water (250 ml). Use an immersion blender or a whisk to fully incorporate the alginate and break up any clumps.
- Prepare the calcium chloride bath: In a separate bowl, dissolve calcium chloride (5 g) in water (250 ml). Stir well until fully dissolved.
- Add color: Stir E131 – Patent Blue V (Blue) (0.2 g) into the sodium alginate solution to give the spheres a blue hue. Make sure it is well mixed.
- Form the spheres: Using a syringe or small spoon, drop small amounts of the sodium alginate solution into the calcium chloride bath. Let the spheres form for 2-3 minutes. The spheres will form a gel-like skin around them.
- Rinse and set: Remove the spheres from the calcium chloride bath and rinse them in cold water to remove excess calcium chloride. Set aside on a plate.

Bitter Crunch (Craquant)

- Prepare the base: In a bowl, combine maltodextrin (10 g), cocoa butter (15 g), and soy lecithin (1 g). Gently melt the cocoa butter using a double boiler or microwave until fully melted.
- Add cocoa powder: Once the cocoa butter has melted, stir in the cocoa powder (5 g) to give the crunch a rich brown color and bitter chocolatey flavor.
- Incorporate bitterness: Add quinine or caffeine (0.5 g) to the mixture for a bitter note, which will be the key flavor profile of the crunch. Stir well.
- Set the crunch: Pour the mixture onto a flat sheet lined with parchment paper or silicone mat. Allow it to cool and harden at room temperature. Once it’s set, break it into irregular pieces to create the crunchy texture.

Results and discussion

For this session, I only had the time to do the mousse, the sphere and the crunch.

The visual aspect is good, we just miss the yellow acidic coulis to complete the dish.

The texture of the different elements is very satisfying, I froze the mousse which give an interesting texture. However, the taste is bad. The spheres are neutral in taste which can be good to balance the sweetness of the mousse. The crunch is bitter but taste a little bit like chocolate. The mousse is the main problem, we don't feel the sweetness at all which is bad because we want a product too sweet so it can be balance by all the other elements of the dish.

Conclusions

The dish is promising visually and with the texture of the elements. However the taste is not good at all and needs improvements.

Recommendations for following week.

- **Do all the elements and try the coulis**
- **Increase considerably the sweetness of the mousse.**

Ingredients required for the following 2 weeks.

Vanilla Mousse (Sweet)

- Glycerol (E422): 20 g
- Inverted Sugar: 50 g
- Soy Lecithin: 1 g
- Water: 200 ml
- Vanillin (synthetic vanilla): 1 g
- Titanium Dioxide (E171) (for white color): 1 g
- Gelatin: 3 g
- Egg white proteins: 15g

Acidic Coulis (Acidic)

- Water: 100 ml

- Inverted Sugar: 15 g
- Citric Acid: 2 g
- Pectin: 2 g
- E102 - Tartrazine (Yellow) (for yellow color): 0.2 g
- Citrus Aroma (Lemon or Lime): 0.5 ml

Salty Spheres (Salty)

- Sodium Alginate: 2 g
- Calcium Chloride: 5 g
- Water: 250 ml (for sodium alginate bath)
- Water: 250 ml (for calcium chloride bath)
- E131 – Patent Blue V (Blue) (for blue color): 0.2 g

Bitter Crunch (Craquant)

- Maltodextrin: 10 g
- Cocoa Butter: 15 g
- Soy Lecithin: 1 g
- Cocoa Powder (Natural Brown) (for brown color): 5 g

MODULE CODE: TFCS9025

MODULE TITLE: Advanced Molecular Gastronomy

STUDENT NAME: Lilou TRONEL

FOOD PRODUCT:

WEEK NO.: 2 **DATE: 24/03/2025**

Weekly Aims and Objectives

- **Do all the elements and try the coulis**
- **Increase considerably the sweetness of the mousse.**

Materials and Method (Ingredients, Equipment and Method)

Ingredients

Vanilla Mousse (Sweet)

- Glycerol (E422): 20 g
- Inverted Sugar: 50 g
- Soy Lecithin: 1 g
- Water: 200 ml
- Vanillin (synthetic vanilla): 1 g
- Titanium Dioxide (E171) (for white color): 1 g
- Gelatin: 3 g
- Egg white protein: 15g

Acidic Coulis (Acidic)

- Water: 100 ml
- Inverted Sugar: 15 g
- Citric Acid: 2 g
- Pectin: 2 g
- E102 - Tartrazine (Yellow) (for yellow color): 0.2 g
- Citrus Aroma (Lemon or Lime): 0.5 ml

Salty Spheres (Salty)

- Sodium Alginate: 2 g
- Calcium Chloride: 5 g
- Water: 250 ml (for sodium alginate bath)
- Water: 250 ml (for calcium chloride bath)
- E131 – Patent Blue V (Blue) (for blue color): 0.2 g

Bitter Crunch (Craquant)

- Maltodextrin: 10 g
- Cocoa Butter: 15 g
- Soy Lecithin: 1 g
- Cocoa Powder (Natural Brown) (for brown color): 5 g

Equipment:

- A whisk
- A hand blender
- 4 bowls
- A frying pan
- A microwave
- A plate

Method:

Vanilla Mousse (Sweet)

- Bloom the gelatin: In a small bowl, bloom gelatin (3 g) in a little cold water (about 20 ml). Let it sit for 5-10 minutes.
- Prepare the mousse base:
    - In a separate bowl, glycerol, inverted sugar, water and egg white powder. Stir until fully dissolved.
- Add vanilla flavor: Stir in vanillin (1 g) to the mixture for that vanilla flavor.
- Incorporate the color: Add Titanium Dioxide (E171) (1 g) to the mixture to make it white. Stir thoroughly.
- Dissolve gelatin: Heat the gelatin mixture gently (in a double boiler or microwave) until fully dissolved. Then, add the gelatin into the mousse base and stir to combine.
- Whisk the mixture: Use a hand mixer or a stand mixer to whisk the mousse until it becomes light, airy, and fully emulsified.
- Chill: Transfer the mousse into molds and freeze for 1h.

Acidic Coulis (Acidic)

- Prepare the base: In a small saucepan, combine water (100 ml), inverted sugar (15 g), and citric acid (2 g). Heat gently over medium heat while stirring until dissolved.
- Incorporate the pectin: Dissolve the pectin (2 g) in a small amount of cold water (20 ml), then slowly add it to the warm sugar solution. Stir well.
- Add color: Add E102 - Tartrazine (Yellow) (0.2 g) to the mixture to achieve a vibrant yellow color. Stir thoroughly to ensure the color is evenly distributed.

- Flavor the coulis: Once the mixture has thickened slightly, add citrus aroma (0.5 ml, lemon or lime) to enhance the acidic profile. You can adjust the amount of aroma based on your desired intensity.
- Cool the coulis: Let the coulis cool to room temperature before transferring it to a container for refrigeration. Chill until ready to use.

Salty Spheres (Salty)

- Prepare the sodium alginate bath: In a bowl, dissolve sodium alginate (2 g) in water (250 ml). Use an immersion blender or a whisk to fully incorporate the alginate and break up any clumps.
- Prepare the calcium chloride bath: In a separate bowl, dissolve calcium chloride (5 g) in water (250 ml). Stir well until fully dissolved.
- Add color: Stir E131 – Patent Blue V (Blue) (0.2 g) into the sodium alginate solution to give the spheres a blue hue. Make sure it is well mixed.
- Form the spheres: Using a syringe or small spoon, drop small amounts of the sodium alginate solution into the calcium chloride bath. Let the spheres form for 2-3 minutes. The spheres will form a gel-like skin around them.
- Rinse and set: Remove the spheres from the calcium chloride bath and rinse them in cold water to remove excess calcium chloride. Set aside on a plate.

Bitter Crunch (Craquant)

- Prepare the base: In a bowl, combine maltodextrin (10 g), cocoa butter (15 g), and soy lecithin (1 g). Gently melt the cocoa butter using a double boiler or microwave until fully melted.
- Add cocoa powder: Once the cocoa butter has melted, stir in the cocoa powder (5 g) to give the crunch a rich brown color and bitter chocolatey flavor.
- Set the crunch: Pour the mixture onto a flat sheet lined with parchment paper or silicone mat. Allow it to cool and harden at room temperature. Once it’s set, break it into irregular pieces to create the crunchy texture.

Results and discussion

This week, all the elements of the dish were made.
The visual is very good and exactly what I was expecting. We can really see the different elements: air, water, ground and sun.
The texture is good, the coulis could have been a little bit more viscous and is a little bit too liquid for now.

The taste however is still not good. The main problem is the mousse because I want it to be very sweet to balance the sourness, saltiness and bitterness of the other elements.

Conclusions

As last week, the visual aspect and the texture of the dish is really satisfying and exactly what I wanted. However the taste is the big problem and need big improvements.

Recommendations for following week.

- **Do a thicker coulis**
- **Increase considerably the sweetness of the mousse.**

Ingredients required for the following 2 weeks.

Vanilla Mousse (Sweet)

- Glycerol (E422): 30 g
- Glucose sirup: 70 g
- Soy Lecithin: 1 g
- Water: 200 ml
- Vanillin (synthetic vanilla): 1 g
- Titanium Dioxide (E171) (for white color): 1 g
- Gelatin: 3 g
- Egg white proteins: 20/25g

Acidic Coulis (Acidic)

- Water: 100 ml
- Glycerol: 15 g
- Citric Acid: 2 g
- Pectin: 2 g
- E102 - Tartrazine (Yellow) (for yellow color): 0.2 g
- Citrus Aroma (Lemon or Lime): 0.5 ml

Salty Spheres (Salty)

- Sodium Alginate: 2 g
- Calcium Chloride: 5 g
- Water: 250 ml (for sodium alginate bath)
- Water: 250 ml (for calcium chloride bath)
- E131 – Patent Blue V (Blue) (for blue color): 0.2 g

Bitter Crunch (Craquant)

- Maltodextrin: 10 g
- Cocoa Butter: 15 g
- Cocoa Powder (Natural Brown) (for brown color): 5 g

MODULE CODE: TFCS9025

MODULE TITLE: Advanced Molecular Gastronomy

STUDENT NAME: Lilou TRONEL

FOOD PRODUCT:

WEEK NO.: 3 **DATE: 31/03/2025**

Weekly Aims and Objectives

- **Do a thicker coulis**
- **Increase considerably the sweetness of the mousse.**

Materials and Method (Ingredients, Equipment and Method)

Ingredients

Vanilla Mousse (Sweet)

- Glycerol (E422): 30 g
- Glucose sirup: 70 g
- Soy Lecithin: 1 g
- Water: 300 ml
- Vanillin (synthetic vanilla): 1 g
- Titanium Dioxide (E171) (for white color): 1 g
- Gelatin: 3 g
- Egg white proteins: 40g

Acidic Coulis (Acidic)

- Water: 100 ml
- Glycerol: 15 g
- Citric Acid: 2 g
- Pectin: 2 g
- E102 - Tartrazine (Yellow) (for yellow color): 0.2 g
- Citrus Aroma (Lemon or Lime): 0.5 ml

Salty Spheres (Salty)

- Sodium Alginate: 2 g
- Calcium Chloride: 5 g
- Water: 250 ml (for sodium alginate bath)
- Water: 250 ml (for calcium chloride bath)
- E131 – Patent Blue V (Blue) (for blue color): 0.2 g

Bitter Crunch (Craquant)

- Maltodextrin: 10 g
- Cocoa Butter: 15 g
- Cocoa Powder (Natural Brown) (for brown color): 5 g

Equipment:

- A whisk
- A hand blender
- 4 bowls
- A frying pan
- A microwave
- A plate

Method:

Vanilla Mousse (Sweet)

- Bloom the gelatin: In a small bowl, bloom gelatin (3 g) in a little cold water (about 20 ml). Let it sit for 5-10 minutes.
- Prepare the mousse base:
    - In a separate bowl, glycerol, inverted sugar, water and egg white powder. Stir until fully dissolved.
- Add vanilla flavor: Stir in vanillin (1 g) to the mixture for that vanilla flavor.
- Incorporate the color: Add Titanium Dioxide (E171) (1 g) to the mixture to make it white. Stir thoroughly.
- Dissolve gelatin: Heat the gelatin mixture gently (in a double boiler or microwave) until fully dissolved. Then, add the gelatin into the mousse base and stir to combine.
- Whisk the mixture: Use a hand mixer or a stand mixer to whisk the mousse until it becomes light, airy, and fully emulsified.
- Chill: Transfer the mousse into molds and freeze for 1h.

Acidic Coulis (Acidic)

- Prepare the base: In a small saucepan, combine water (100 ml), inverted sugar (15 g), and citric acid (2 g). Heat gently over medium heat while stirring until dissolved.
- Incorporate the pectin: Dissolve the pectin (2 g) in a small amount of cold water (20 ml), then slowly add it to the warm sugar solution. Stir well.
- Add color: Add E102 - Tartrazine (Yellow) (0.2 g) to the mixture to achieve a vibrant yellow color. Stir thoroughly to ensure the color is evenly distributed.
- Flavor the coulis: Once the mixture has thickened slightly, add citrus aroma (0.5 ml, lemon or lime) to enhance the acidic profile. You can adjust the amount of aroma based on your desired intensity.
- Cool the coulis: Let the coulis cool to room temperature before transferring it to a container for refrigeration. Chill until ready to use.

Salty Spheres (Salty)

- Prepare the sodium alginate bath: In a bowl, dissolve sodium alginate (2 g) in water (250 ml). Use an immersion blender or a whisk to fully incorporate the alginate and break up any clumps.
- Prepare the calcium chloride bath: In a separate bowl, dissolve calcium chloride (5 g) in water (250 ml). Stir well until fully dissolved.
- Add color: Stir E131 – Patent Blue V (Blue) (0.2 g) into the sodium alginate solution to give the spheres a blue hue. Make sure it is well mixed.
- Form the spheres: Using a syringe or small spoon, drop small amounts of the sodium alginate solution into the calcium chloride bath. Let the spheres form for 2-3 minutes. The spheres will form a gel-like skin around them.
- Rinse and set: Remove the spheres from the calcium chloride bath and rinse them in cold water to remove excess calcium chloride. Set aside on a plate.

Bitter Crunch (Craquant)

- Prepare the base: In a bowl, combine maltodextrin (10 g), cocoa butter (15 g), and soy lecithin (1 g). Gently melt the cocoa butter using a double boiler or microwave until fully melted.
- Add cocoa powder: Once the cocoa butter has melted, stir in the cocoa powder (5 g) to give the crunch a rich brown color and bitter chocolatey flavor.
- Set the crunch: Pour the mixture onto a flat sheet lined with parchment paper or silicone mat. Allow it to cool and harden at room temperature. Once it's set, break it into irregular pieces to create the crunchy texture.

Results and discussion

This week's dish was more chaotic than last time. The sphere and the crunch were still good but the coulis contained to much pectin and solidified in the fridge. The mousse taste was still not good and the texture was less satisfying. I found out that the glycerine is not the best option for the mousse.

For next week, I will put less pectin in the coulis and change the glycerine by another sugar to have a better taste for the mousse.

Conclusion

The dish is not perfect yet and still needs some improvements.

Recommendations for following week.

- Change the glycerine with a sugar with a higher sweet power for the mousse
- Lower the pectin content in the coulis

Ingredients required for the following 2 weeks.

Vanilla Mousse (Sweet)

- Glycerol (E422): 30 g
- Glucose sirup: 70 g
- Soy Lecithin: 1 g
- Water: 300 ml
- Vanillin (synthetic vanilla): 1 g
- Titanium Dioxide (E171) (for white color): 1 g
- Gelatin: 3 g
- Egg white proteins: 40g

Acidic Coulis (Acidic)

- Water: 100 ml
- Glycerol: 15 g
- Citric Acid: 2 g
- Pectin: 2 g
- E102 - Tartrazine (Yellow) (for yellow color): 0.2 g
- Citrus Aroma (Lemon or Lime): 0.5 ml

Salty Spheres (Salty)

- Sodium Alginate: 2 g
- Calcium Chloride: 5 g
- Water: 250 ml (for sodium alginate bath)
- Water: 250 ml (for calcium chloride bath)
- E131 – Patent Blue V (Blue) (for blue color): 0.2 g

Bitter Crunch (Craquant)

- Maltodextrin: 10 g
- Cocoa Butter: 15 g
- Cocoa Powder (Natural Brown) (for brown color): 5 g

MODULE CODE: TFCS9025

MODULE TITLE: Advanced Molecular Gastronomy

STUDENT NAME: Lilou TRONEL

FOOD PRODUCT:

WEEK NO.: 4 **DATE: 06/03/2025**

Weekly Aims and Objectives

- **Change the glycerine by some sugar with a higher sweet power in the mousse.**
- **Lower the pectin content in the coulis**

Materials and Method (Ingredients, Equipment and Method)

Ingredients

Vanilla Mousse (Sweet)

- Glucose sirup: 100 g
- Soy Lecithin: 1 g
- Water: 300 ml
- Vanillin (synthetic vanilla): 1 g
- White colorant: 1 g
- Gelatin: 3 g
- Egg white proteins: 40g

Acidic Coulis (Acidic)

- Water: 100 ml
- Glycerol: 15 g
- Citric Acid: 2 g
- Pectin: 2 g
- E102 - Tartrazine (Yellow) (for yellow color): 0.2 g
- Citrus Aroma (Lemon or Lime): 0.5 ml

Salty Spheres (Salty)

- Sodium Alginate: 2 g
- Calcium Chloride: 5 g
- Water: 250 ml (for sodium alginate bath)
- Water: 250 ml (for calcium chloride bath)
- Sodium Chloride
- E131 – Patent Blue V (Blue) (for blue color): 0.2 g

Bitter Crunch (Craquant)

- Maltodextrin: 10 g
- Cocoa Butter: 15 g
- Cocoa Powder (Natural Brown) (for brown color): 5 g

Equipment:

- A whisk
- A hand blender
- 4 bowls
- A frying pan
- A microwave
- A plate

Method:

Vanilla Mousse (Sweet)

- Bloom the gelatin: In a small bowl, bloom gelatin (3 g) in a little cold water (about 20 ml). Let it sit for 5-10 minutes.
- Prepare the mousse base:
    - In a separate bowl, glycerol, inverted sugar, water and egg white powder. Stir until fully dissolved.
- Add vanilla flavor: Stir in vanillin (1 g) to the mixture for that vanilla flavor.
- Incorporate the color: Add Titanium Dioxide (E171) (1 g) to the mixture to make it white. Stir thoroughly.
- Dissolve gelatin: Heat the gelatin mixture gently (in a double boiler or microwave) until fully dissolved. Then, add the gelatin into the mousse base and stir to combine.
- Whisk the mixture: Use a hand mixer or a stand mixer to whisk the mousse until it becomes light, airy, and fully emulsified.
- Chill: Transfer the mousse into molds and freeze for 1h.

Acidic Coulis (Acidic)

- Prepare the base: In a small saucepan, combine water (100 ml), inverted sugar (15 g), and citric acid (2 g). Heat gently over medium heat while stirring until dissolved.
- Incorporate the pectin: Dissolve the pectin (2 g) in a small amount of cold water (20 ml), then slowly add it to the warm sugar solution. Stir well.
- Add color: Add E102 - Tartrazine (Yellow) (0.2 g) to the mixture to achieve a vibrant yellow color. Stir thoroughly to ensure the color is evenly distributed.
- Flavor the coulis: Once the mixture has thickened slightly, add citrus aroma (0.5 ml, lemon or lime) to enhance the acidic profile. You can adjust the amount of aroma based on your desired intensity.
- Cool the coulis: Let the coulis cool to room temperature before transferring it to a container for refrigeration. Chill until ready to use.

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- Set the crunch: Pour the mixture onto a flat sheet lined with parchment paper or silicone mat. Allow it to cool and harden at room temperature. Once it's set, break it into irregular pieces to create the crunchy texture.

Results and discussion

Conclusion

The dish still needs to be improved even after 4 weeks of work in the kitchen. The visual aspect is very good, and we can really identify all the different elements with the good colours and textures. However, the taste of the different elements is not yet enjoyable especially for the mousse and big improvements still needs to be done.