Beyond the Coloured Glass,

Just a Cup Away

(A Note-By-Note Dish)

By: Qudsia Rafique (D24127341)

Module: Advanced Molecular Gastronomy: TFCS9025

Module Instructors:

Pauline Danaher

Roisin Burke

Date of Submission: 09th May 2025

Table of Contents

1. Introduction

Molecular gastronomy, as a scientific discipline, focuses on understanding the physical and chemical transformations that occur during cooking by incorporating scientific principles into culinary practices (Burke et al., 2016). Initially, this discipline was named 'molecular and physical gastronomy' by scientists Hervé This and Nicholas Kurti in 1994, but the name was later shortened to molecular gastronomy (This and Kurti, 1994). One of the key developments within this field is the emergence of note-by-note (NbN) cooking, which Hervé This first proposed as a distinct approach to culinary innovation.

Note-by-note cooking involves creating dishes entirely from pure compounds rather than traditional ingredients, thus portraying a significant difference from traditional and conventional cooking practices (This, 2015). Unlike traditional methods that rely on whole foods, note-by-note cooking uses compounds like amino acids, lipids, and carbohydrates to construct textures, flavours, and aromas. Challenging traditional culinary norms while encouraging chefs and food scientists to explore the molecular composition of food and its sensory impact on consumers (Ubbink, 2015).

The acceptance of molecular gastronomy and note-by-note cuisine among consumers remains mixed. While innovative culinary techniques attract interest, research indicates that consumers are generally more willing to try similar traditional dishes compared to molecular or note-by-note dishes (Głuchowski et al., 2021). This hesitancy can be somewhat attributed to food neophobia, as some consumers are reluctant to accept dishes that are perceived as highly unconventional (This, 2013).

The integration of molecular gastronomy and note-by-note cooking into prestigious culinary institutions, such as Le Cordon Bleu, and academic curricula demonstrates their growing significance despite these obvious hurdles (Burke et al., 2016). Moreover, the traditional food sector is also facing pressure to innovate, as maintaining market relevance with the increasing requirement for the adaptation of newer and novel concepts (Stewart-Knox et al., 2003). Consequently, balancing innovation with consumer acceptance is crucial, especially when research shows that even traditional food products are expected to retain their authentic characteristics (Vanhonacker et al., 2013).

This report focuses on the development of a dish titled "Beyond the Coloured Glass, Just a Cup Away," which reflects the fusion of cultural traditions from Pakistan and Ireland through the lens of note-by-note cooking. The dish combines tea-infused ice cream, chocolate cake, a sugar glass sheet, and a strawberry coulis, emphasising both sensory diversity and thematic storytelling. By exploring the intersection of molecular gastronomy and cultural identity, the project seeks to demonstrate how food innovation can foster connection while respecting traditional culinary values.

2. Aim

The aim of this Note-by-Note report is to help students familiarise themselves with the concept of Note-by-Note cooking, advanced molecular gastronomy, and the practical application of

these concepts through project-based learning (PBL). This report specifically aims to demonstrate the process of conceptualising, creating, and presenting the dish titled "Beyond the Coloured Glass, Just a Cup Away."

This report aims to showcase the development process, from research and planning to recipe trials and presentation, while reflecting the skills gained in food science, culinary techniques, and communication. Additionally, it highlights the enhancement of critical thinking, problem-solving, and public presentation skills fostered throughout the project.

3. Materials and Methods

3.1 Tea Concentrate:

According to Schmieg (2023),

Ingredients:

Ingredients	Quantity
Barry's tea bags	8 Tea bags
Tap water	240ml

Equipment Used:

Equipment	Reference Picture
Saucepan	
Fork	
Candy Thermometer	

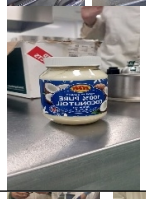
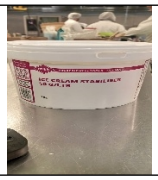
Method:

- In a small saucepan, add 8 black tea bags to 240 ml of boiling water.
- Steep the tea bags in 45°C water for 5 minutes. This will help extract the flavours without becoming too bitter.
- Remove the tea bags and gently squeeze them with a fork to release all the tea flavour.
- Reduce the heat to a gentle simmer at 40°C.
- Continue simmering for about 30 minutes until the liquid is reduced to 40ml.
- Remove the concentrate from the heat and let it cool.
- Transfer the cooled concentrate to a clean glass jar with a tight-fitting lid. Store it in the refrigerator for up to two weeks

3.2 Tea Flavoured Ice Cream:

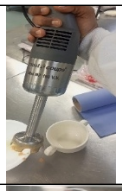
According to Marshall (2003), for a 600g portion of **premium ice cream**

Ingredients:

Ingredients (Marshall,2003)	**Ingredient used**	**Quantity**	**Reference Photos**
Milk fats (15%)	• KTC Coconut Oil (lauric acid) • DGF Royal Cocoa Butter(triglyceride) • The King Sunflower Oil (linoleic acid and oleic acid)	• 40g • 30g • 20g	  
Non-fat Milk Solids (7.5%)	• Bulk Whey Protein • My Protein Casein	• 9g • 36g	 
Sweetener (15%)	Sucrose	90g	N/A
Stabilizer (0.3%)	• En place Xanthan Gum (E 415) • MSK Ice cream stabilizer	• 0.9g • 0.9g	 
Water (56.8%)	Tap Water	340.8g	N/A
Flavourings			
Tea Extract (5%)	Self-Made using Barry's Teabags	30g	
Cinnamon (0.2%)	Iqemusu Cinna (Cinnamaldehyde)	1.2g	
Ginger Flavour (0.2%)	MSK Ginger Water Soluble Flavour Drops (Gingerol)	1.2g	

Equipment Used:

Equipment	**Reference Photo**
One Large Stainless-Steel Bowl	
Musso L2 Ice Cream Maker	

Robot Coupe Mini MP 160v.v. Hand Blender	
1 Glass Jar	
Panasonic Pro II 1400 Microwave Oven	

Method:

- In a bowl, combine dry ingredients including casein, whey protein, sugar, ice cream stabilizer, and xanthan gum.
- Take a large bowl, add water, tea concentrate, cinnamon, and ginger flavours. Stir thoroughly to help the spices and tea dissolve evenly.
- Slowly whisk in the dry ingredients into the large bowl to avoid clumping.
- Melt cocoa butter and coconut oil using a microwave oven at full power for 1 minute and 30 seconds, then add sunflower oil, and gradually add it into the mix.
- Use a hand blender to emulsify.
- Cool to 4°C in the refrigerator and let rest for at least 2 hours.
- Use an ice cream machine and churn the mixture for 7 minutes.
- After churning, transfer the ice cream to a glass jar and place it in the freezer to harden further until needed for plating.

3.3 Chocolate Cake:

According to (Godefroidt et al., 2019; Çelik et al., 2006) (For ~351g of batter)

Ingredients:

Ingredients (Çelik et al. 2006)	**Ingredients used**	**Quantity**	**Reference Photos**
Flour	• Foo Lung Wheat Starch • Biotiva Gluten	• 80g • 20g	 
Sugar	Sucrose	108g	**N/A**
Egg Whites	• Egg White powder (ovalbumin) • Water	• 10g • 39g	
Egg Yolk	• The King Sunflower oil (linolenic acid and oleic acid)	• 6g • 15g • 5g	 

	• Tap Water • Sosa Soya Lecithin		
Leavening Agent	• Gem Sodium Bicarbonate (E500) • Louis Francois Citric Acid (E 330)	• 5g • 2g	 
Milk	• My Protein Casein • Bulk Whey • The King Sunflower Oil (linolenic acid and oleic acid) • Tap Water	• 4g • 1g • 8g • 30g	  
Cocoa Powder	• Citavo Cocoa Powder	• 10g	
Vanilla Extract	• Euro Vanillie Natural Vanilla Flavouring	• 8ml	

Equipment used:

Equipment	**Reference Picture**
1 Stainless Steel Bowl	
1 Spatula	
1 Fork	
1 Rectangular Pan	
Chambers Engineering KitchenAid	
Electrolux Oven	

Method:

- Add 89g of water into the KitchenAid bowl.
- Put egg whites' powder in the water and whisk them together at the highest speed in the Kitchen Aid until foamy and soft peaks are formed.
- In a separate bowl, add all the dry ingredients from the recipe and mix them with a fork until uniform.
- Now, to this foam mixture, start to slowly add all the dry ingredients while the KitchenAid speed is at 2.
- After all the ingredients are mixed well, add the oil and vanilla extract and mix well.
- Take the bowl out of the KitchenAid and scrape the walls of the bowl with a spatula and mix any dry ingredients into the batter.
- Preheat oven to 170°C (340°F).
- Pour the batter into a lined rectangular cake pan and tap the pan on the surface of the table to remove the bubbles.
- Bake for 25 minutes at 170°C or until golden brown and a toothpick inserted comes out clean.
- Let it cool for 10 minutes in the pan before transferring and cutting it

3.4 Strawberry coulis:

According to (Kitchen, 2019)

Ingredients:

Ingredients	Quantity	Reference Picture
Water	80g	N/A
Sucrose	15g	N/A
Citric Acid (E 330)	0.5g	
Maillard Ferrier Rouge Fraise Colouring (E129)	0.1g	
Msk Strawberry Flavouring (Furaneol)	0.1g	
En Place Xanthan Gum (E 415)	0.2g	

Equipment used

Equipment	Reference Picture
Bowl	
Glass Jar	

Method:

- In a bowl, mix water, sugar, and citric acid until dissolved.
- Add strawberry flavouring drop by drop.
- Add the colour and xanthan gum.
- Put the solution in a glass jar and shake well to combine the ingredients.
- Let it rest for 10 minutes to thicken slightly and clear up air bubbles.

3.5 Sugar Sheet:
Ingredients

Ingredients	Quantity
Sucrose	200g
Water	75g
Lemon Juice	1.2g

Equipment Used

Equipment	Reference Picture
Stainless Steel Saucepan	
Candy Thermometer	

Method:

- Combine sugar, water, and lemon juice in a saucepan.
- Heat gently, stirring until the sugar is dissolved.
- Increase heat and boil without stirring until it reaches 150°C / 300°F (hard crack stage). Watch closely—without glucose, it can burn quickly.
- Remove from heat. Let bubbles settle for 10–20 seconds.
- Pour onto a silicone mat or greased baking paper and spread into a thin layer.
- Cool completely (10–15 min). Snap into shapes.

4. Results:

The dish created as a result of the four-week project-based learning for note-by-note cooking is shown in Figure 1:

(Figure 1 shows the final note-by-note dish “Beyond the Coloured glass, just a cup away Dessert”)

4.1 Sensory Analysis:

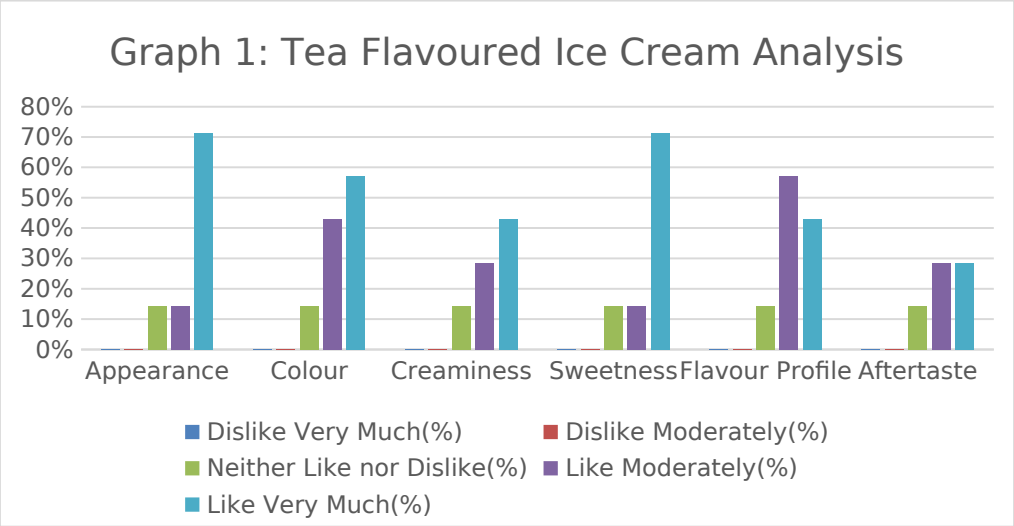
A sensory panel of 7 students evaluated four components of the dish:

Tea flavoured ice cream, chocolate cake, sugar glass, and strawberry coulis

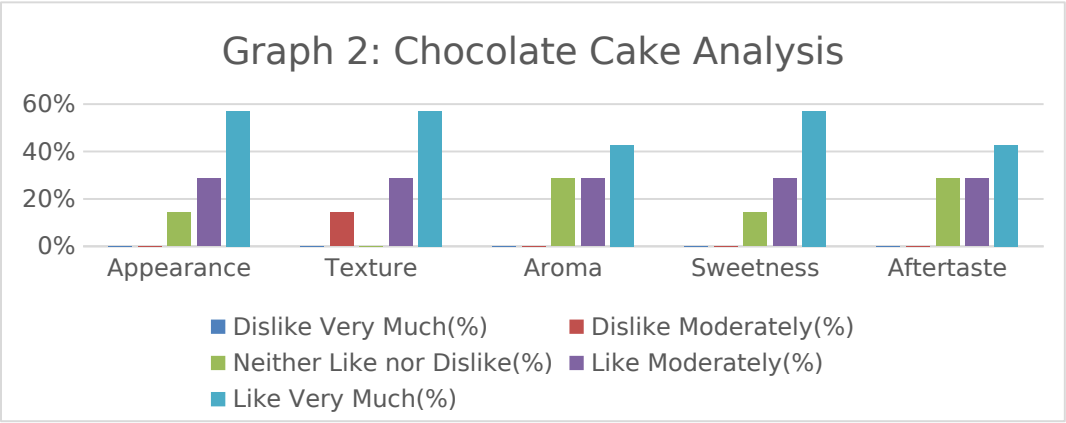
It was done using a 5-point hedonic scale (1 = Dislike very much, 5 = Like very much). The students rated each component for specific attributes (such as appearance, texture, flavour, etc.), and also provided an overall liking score for the complete dish.

4.2 Key Findings:

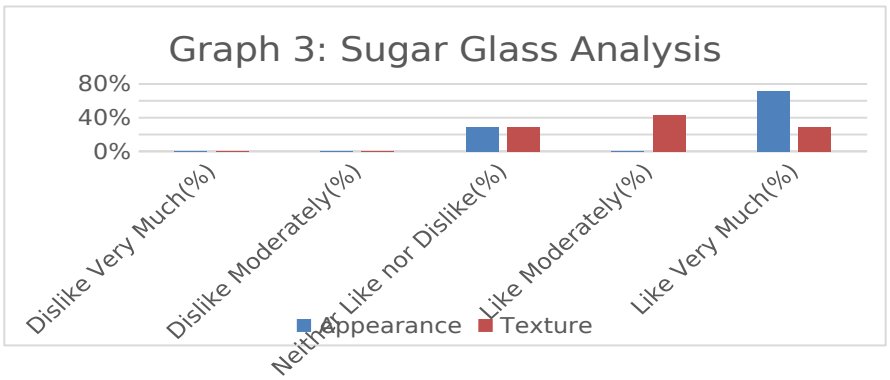
- The ice cream was highly rated for appearance and sweetness, with 71.4% of panelists selecting "Like Very Much" for both. Creaminess and aftertaste received slightly lower scores, indicating some room for improvement in these areas, as shown in Graph 1:



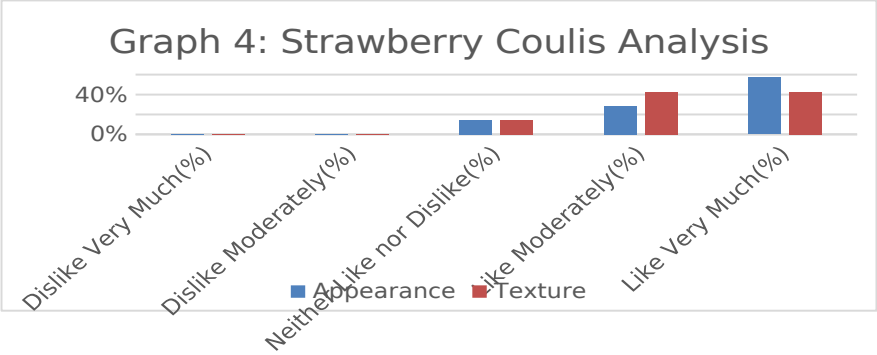
- Graph 2 shows that the appearance and sweetness of the chocolate cake were well received, with 57.1% of panelists indicating "Like Very Much." Texture was more varied, with 14.3% "Dislike Moderately" and only 28.6% "Like Very Much," suggesting texture could be improved.



- The sugar glass had a strong visual appeal (71.4% "Like Very Much" for appearance), but texture ratings were more moderate, with a split between "Like Moderately" and "Like Very Much as shown in Graph 3:



- The same is the case for strawberry coulis as shown in Graph 4:



5. Discussion:

5.1 Note-by-Note (NbN) Cooking and Project-Based Learning:

Note-by-Note (NbN) cooking in this ever-evolving world represents a shift in culinary practice, moving away from traditional ingredients to focus on pure compounds, allowing for a precise and customizable culinary experience, as Note-by-Note cooking not only introduces innovation in culinary techniques but also promises to add nutritional value to dishes, in hopes of surpassing the benefits of traditional food sources (Burke et al., 2020). This aligns with the concept of sustainable gastronomy, where ingredients can be optimized for flavour, health, and sustainability.

In an educational context, note-by-note cooking has become essential as it encourages students to think creatively and innovate beyond conventional boundaries. According to Burke et al. (2016), integrating NbN practices into culinary education pushes students to think outside the box.

The project follows a project-based learning (PBL) approach, where students engage in hands-on, reflective practice to create an innovative dish. According to Burke et al., (2020), this type of approach has improved the learning outcomes, with approximately 90% of students achieving the desired expertise. Allowing the students to not only be better in culinary skills but also other soft skills.

The creation of the dish, "Beyond the Coloured Glass, just a Cup Away," is the testimony of the effectiveness of this method. The dish is a beautiful amalgamation of four different textures with tea flavoured ice cream providing a smooth and creamy sensation, with the warm and moist chocolate cake, and crispiness coming from sugar glass on top, and strawberry coulis bringing the whole dish together with its bright and slight tartness. This dish reflects the integration of molecular techniques with traditional elements, making the dish both innovative and culturally resonant.

5.2 Ingredient Analysis and EU Compliance

A key consideration in creating the dish was ensuring that all ingredients comply with EU regulations in the Regulation (EC) No 1333/2008 of the European Parliament and of the Council of 16 December 2008 on food additives. According to this regulation, all ingredients present in this dish can be used “quantum satis,” which, according to Wikipedia, means “the

amount which is enough.” But we still used all ingredients at minimal levels to maintain good manufacturing practices and achieve desired results without exceeding safe limits.

5.3 Timeline of Dish Development

The development of the dish "Beyond the Coloured Glass, Just a Cup Away" followed a structured process, combining ideation, experimentation, and refinement. The timeline below highlights the key stages of this project:

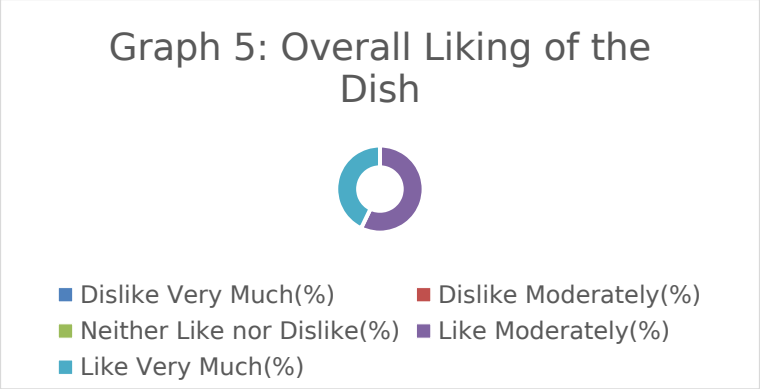
- **February 2025:** The project began with the ideation phase, where the concept of note-by-note cooking was introduced. After the initial brainstorming focused on what type of dish I wanted to make. Ingredients were ordered on **17th February 2025** to begin practical trials.
- **8th March 2025:** The first practical session focused on the initial development of the ice cream component. After this trial, it was evident that adjustments were needed, particularly in enhancing the tea flavour, and it also proved that the dish was going in the right direction.
- **24th March 2025:** A second trial was conducted, this time using a tea concentrate I made myself. During this session, the cake recipe was also tested for the first time. The ice cream recipe was It was confirmed that the ingredients from the first session and the method from the second session were best, hence leading to confirmation of the ice cream recipe, while the cake still required further refinement.
- **31st March 2025:** A session dedicated to experimenting with the sugar dome was conducted. The attempt to create a stable sugar dome was unsuccessful. However, the cake was reattempted with adjustments and successfully finalized during this session.
- **1st to 6th April 2025:** During a break between formal sessions, the strawberry coulis and sugar glass were tested and refined at home. After several trials, the final recipes for both components were established.
- **7th April 2025:** The entire dish was assembled for the first time, including all finalized components. The complete dish was presented and well received, marking the successful culmination of the project.
- **28th April 2025:** Presentation of the dish in front of the class

5.4 Innovative Approach to Recipe Creation:

We utilized various recipes from credible source for creating of the components as a guideline meanwhile striving towards using pure molecules and compounds in the cooking of this dish, making it a note-by-note recipe. So, the ingredients from these recipes were more like a reference point to understand the fundamentals used in that specific component, like in ice cream, we found that the fundamental ingredients are milk solids, milkfat, sweetener, stabilizer, and water in different percentages. From there, we got into the basics for example milk solids are mostly made from casein and whey, similarly milkfats are very important for texture but we

cannot use the whole compound therefore we used combination of three different ingredients like coconut oil, cocoa butter and oil to give milkfat like mouthfeel, calculated the appropriate ratios of pure compounds to replicate the desired textures and flavours and used those ratios. This approach aligns with the principles of note-by-note cooking by maintaining sustainability while also prioritizing taste and quality.

The sensory experience of the dish is rooted in the interplay of diverse textures and flavours. Feedback from sensory analysis highlighted that the dish successfully combined familiar flavours with modern techniques. Graph 5 shows the overall liking of the dish as a whole:



According to Burke et al. (2020), presenting NbN dishes in a familiar format can reduce neophobic reactions, making them more approachable. In this case, the use of recognizable elements like cake and ice cream contributed to a positive reception, reinforcing the idea that culinary innovation should not alienate consumers.

5.5 Cultural Fusion: A Dish That Breaks Barriers

The dish serves as a metaphor for overcoming preconceived notions and biases. The sugar glass represents the barriers that divide cultures and people. And the dish symbolizes that breaking the glass reveals the core elements underneath ‘tea and cake,’ personifying the shared human experience beyond cultural differences.

(Figure 2 shows Beyond the coloured glass, Just a cup away with a broken glass)

Drawing inspiration from traditional foods makes NbN cooking more relatable and less intimidating (Burke et al., 2020). We framed this dish around universally comforting elements while incorporating molecular innovation and bridging the gap between tradition and modernity.

6. Conclusion

The dish "Beyond the Coloured Glass, Just a Cup Away" successfully integrates the principles of note-by-note cooking and molecular gastronomy while celebrating cultural connections. The project demonstrates that using molecular techniques to create familiar and comforting elements, such as tea-infused ice cream and chocolate cake, can make innovative dishes more approachable, appealing to consumers, and sustainable for the future.

The sensory analysis revealed that while the dish was well-received, some elements, like the texture of the chocolate cake and the creaminess of the ice cream, could be further refined to enhance overall satisfaction. Nevertheless, the positive feedback on appearance and flavour indicates that the dish effectively balances tradition with innovation.

The use of project-based learning in creating this dish helped in developing critical thinking, creativity, and practical application of scientific principles. In conclusion, the project not only met the goal of combining molecular gastronomy with cultural storytelling but also provided valuable insights into consumer acceptance and the potential challenges of introducing novel culinary concepts. The experience demonstrated the importance of balancing innovation with tradition to create dishes that are not only thought-provoking but also enjoyable and meaningful.

7. Reference list

- **Burke, R. and Danaher, P.** (2016). *Note by Note: A New Revolution in Cooking*. https://arrow.tudublin.ie/cgi/viewcontent.cgi?article=1060&context=dgs
- **Burke, R., This, H. and Kelly, A.L.** (2016). *Molecular Gastronomy*. *Reference Module in Food Science*. doi: 10.1016/b978-0-08-100596-5.03302-3.
- **Burke, R.M. and Danaher, P.** (2020). 'Assessment and Evaluation of Student Learning Through a Project-Based Assignment on Note by Note Cooking'. *International Journal of Food Studies*, 9(2), pp. 282–294. doi: 10.7455/ijfs/9.2.2020.a2.
- **Burke, R.M., Danaher, P. and Hurley, D.** (2020). 'Creating bespoke note by note dishes and drinks inspired by traditional foods'. *Journal of Ethnic Foods*, 7(1). doi: 10.1186/s42779-020-00071-3.
- **Çelik, I., Yilmaz, Y., Işik, F. and Üstün, Ö.** (2006). 'Effect of soapwort extract on physical and sensory properties of sponge cakes and rheological properties of sponge cake batters'. *Food Chemistry*, 101(3), pp. 907–911.
- **Głuchowski, A., Czarniecka-Skubina, E., Kostyra, E., Wasiak-Zys, G. and Bylinka, K.** (2021). 'Sensory Features, Liking and Emotions of Consumers towards Classical, Molecular and Note by Note Foods'. *Foods*, 10(1), p. 133. doi: 10.3390/foods10010133.
- **Godefroidt, T., Ooms, N., Pareyt, B., Brijs, K. and Delcour, J.A.** (2019). 'Ingredient Functionality During Foam-Type Cake Making: A Review'. *Comprehensive Reviews in Food Science and Food Safety*, 18(5), pp. 1550–1562. doi: 10.1111/1541-4337.12488.
- **Kurti, N. and This-Benckhard, H.** (1994). 'Chemistry and Physics in the Kitchen'. *Scientific American*, 270(4), pp. 66–71. doi: 10.1038/scientificamerican0494-66.
- **La Pâte de Dom** (2023). 'Le dôme en sucre (la recette et la technique)'. *YouTube*. Available at: https://www.youtube.com/watch?v=3e4Xi6XiSm4 [Accessed 9 May 2025].
- **Marshall, R.T., Goff, H.D. and Hartel, R.W.** (2003). *Ice Cream*. Springer Science & Business Media.
- **Regulation (EC) No 1331/2008** of the European Parliament and of the Council of 16 December 2008 establishing a common authorisation procedure for food additives, food enzymes, and food flavourings. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02008R1333-20241216 [Accessed Day Month Year].
- **Schmieg, B.** (2023). 'How to Make Liquid Black Tea Concentrate for Drinks'. *The Fig Jar*. [online] Available at: https://www.figjar.com/black-tea-concentrate/ [Accessed 9 May 2025].
- **Stewart-Knox, B. and Mitchell, P.** (2003). 'What separates the winners from the losers in new food product development?'. *Trends in Food Science & Technology*, 14(1-2), pp. 58–64. doi: 10.1016/s0924-2244(02)00239-x.
- **This, H.** (2013). 'Molecular gastronomy is a scientific discipline, and note by note cuisine is the next culinary trend'. *Flavour*, 2(1). doi: 10.1186/2044-7248-2-1.

- **This, H. and DeBevoise, M.** (2014). *Note-by-Note Cooking: The Future of Food*. New York, NY: Columbia Scholarship Online. doi: 10.7312/columbia/9780231164863.001.0001 [Accessed 8 May 2025].
- **Ubbink, J.** (2015). 'Food futurism'. *Science*, 347(6228), p. 1322. doi: 10.1126/science.aaa2504.
- **Vanhonacker, F., Kühne, B., Gellynck, X., Guerrero, L., Hersleth, M. and Verbeke, W.** (2013). 'Innovations in traditional foods: Impact on perceived traditional character and consumer acceptance'. *Food Research International*, 54(2), pp. 1828–1835. doi: 10.1016/j.foodres.2013.10.027.
- **Wikipedia Contributors** (2024). 'Quantum satis'. *Wikipedia*. Available at: https://www.wikipedia.org/

8. Appendix

Logbooks

MODULE CODE: TFPD9025

MODULE TITLE: Advanced Molecular Gastronomy

STUDENT NAME: Qudsia Rafique

FOOD PRODUCT: Beyond the Coloured Glass, Just a cup away

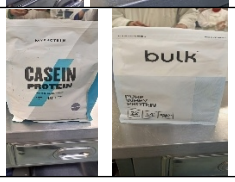
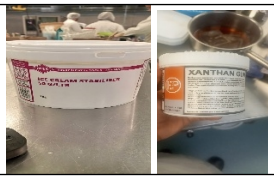
WEEK NO.: 1 **DATE: 18th March 2025**

Weekly Aims and Objectives

- Make one of the four components of the recipe (Tea Infused Ice cream)
- Determine if the simple tea extraction method works **(from the milk and pop blog)**

Materials and Method (Ingredients, Equipment, and Method)

According to Marshall (2003), for a 200g portion of **premium ice cream**

Ingredients (Marshall,2003)	**Ingredient used**	**Quantity**	**Reference Photos**
Milk fats (15%)	• KTC Coconut Oil • DGF Royal Cocoa Butter • The King Sunflower Oil	• 8g • 12g • 10g	
Non-fat Milk Solids (7.5%)	• Bulk Whey Protein • My Protein Casein	• 3g • 12g	
Sweetener (15%)	Sucrose	30g	N/A
Stabilizer (0.3%)	• En place Xanthan Gum • MSK Ice cream stabilizer	• 0.3g • 0.3g	
Water (60.2%)	Tap Water	120.4g	N/A
Tea Bags	Barrys Teabags	4	
	Flavourings		
Tea Extract (2%)	Self-Made using Barry's Teabags	4g	
Cinnamon (0.5%)	Iqemusu Cinna (Cinnamaldehyde)	0.3g	

Ginger Flavour (0.5%)	MSK Ginger Water Soluble Flavor Drops	0.3g	

Equipment Used:

Equipment	Reference Photo
One Large Stainless-Steel Bowl	
Musso L2 Ice Cream Maker	
Robot Coupe Mini MP 160V.V. Hand Blender	
1 Glass Jar	

Steps:

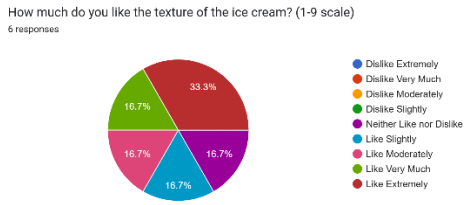
- In a large bowl, combine casein, whey protein, sugar, ice cream stabilizer, and xanthan gum.
- Heat **water** to about **45°C** and add **tea bags**, and after ten minutes, remove the tea bags and add **cinnamon** and **ginger flavors** into the water. Allowing the flavours to infuse.
- Stir occasionally to help the spices and tea dissolve evenly.
- Slowly whisk in the dry ingredients to avoid clumping.
- Melt **cocoa butter and coconut oil**, then add sunflower oil, and gradually blend it into the mix.
- Use a **hand blender** to emulsify.
- Cool to **4°C** and let rest for at least **2 hours**.
- Use an **ice cream machine** and churn the mixture for 10 minutes.
- After churning, transfer the ice cream to a glass jar and place it in the freezer to harden further.
- Put into the freezer and then serve.

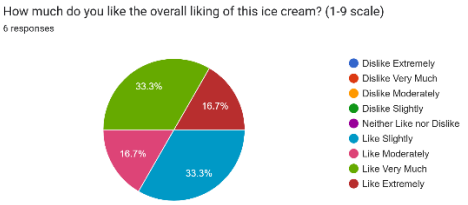
Results and discussion:

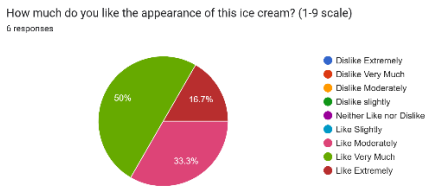
I want to make a tea concentrate, but today I wanted to start with an experiment to see if the method of doing it note by note, the way I want to do will work or not, by taking a recipe from a place and see the percentage and then add the ingredients that I think will work. Figure shows the ice cream

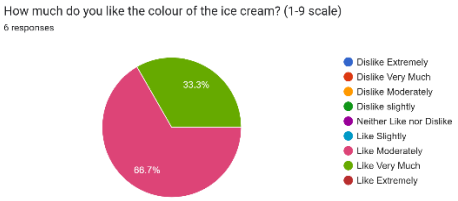
I think it worked very well. Overall, liking was positive on the 9-point hedonic scale.

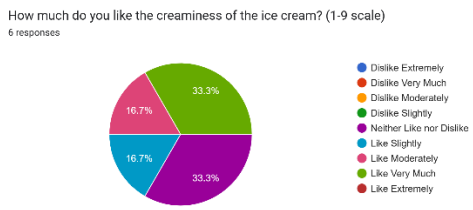
Texture was also in the positive spectrum of the hedonic.

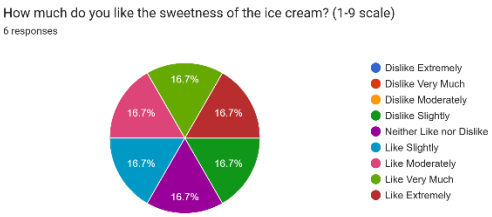












The sweetness and creaminess have varied results.

Conclusions

Need more work on the ice cream. But it was a good try for the first try.

Recommendations for the following week.

Try the super-premium ice cream recipe as it has more sweetener and fat content to see if it changes the people's perspective about the sweetness and creaminess towards a more positive response.

Try and make the tea concentrate, as we know now that the recipe thinking process is working.

Evaluate the cake component of the recipe.

Ingredients required for the following 2 weeks.

Same as the order before

MODULE CODE: TFPD9025

MODULE TITLE: Advanced Molecular Gastronomy

STUDENT NAME: Qudsia Rafique

FOOD PRODUCT: Beyond the coloured glass, just a cup away.

WEEK NO.: 2 **DATE : 24th March 2025**

Weekly Aims and Objectives

Aim

To create a more enjoyable and satisfying dessert experience by improving the ice cream, tea concentrate, and cake elements in our recipe.

Objectives

Aim

To create a more enjoyable and satisfying dessert experience by improving the ice cream, tea, and cake elements in our recipe.

Objectives

- To assess the impact of increased sweetener and fat content in a super-premium ice cream recipe on consumer perceptions.
- Evaluate the preparation of tea concentrate to understand the effectiveness of the recipe.
- Evaluate the cake component of the recipe.

Material and Methods:

Tea Concentrate:

According to Schmieg (2023),

Ingredients:

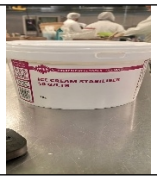
- 8 Barry's tea bags
- 240ml tap water

Instructions:

- In a small saucepan, add 8 black tea bags to 240 ml of boiling water.
- Steep the tea bags in 45°C water for 5 minutes. This will help extract the flavours without becoming too bitter.
- Remove the tea bags and gently squeeze them with a fork to release all the tea flavour.
- Reduce the heat to a gentle simmer at 40°C (not in the recipe, but deducted after trial and error, so that it does not become bitter).
- Continue simmering for about 30 minutes or until the liquid is reduced to 40ml.
- Remove the concentrate from the heat and let it cool.
- Transfer the cooled concentrate to a clean glass jar with a tight-fitting lid. Store it in the refrigerator for up to two weeks

Tea Flavoured Ice Cream

According to Marshall (2003), for a 400g portion of super premium ice cream

Ingredients	**Ingredient used**	**Quantity**	**Reference Photos**
Milk fats 18%	• KTC Coconut Oil • DGF Royal Cocoa Butter • The King Sunflower Oil	• 36g • 21.6g • 14.4g	  
Non-fat Milk Solids 7%	• Bulk Whey Protein • My Protein Casein	• 5.6g • 22.4g	 
Sweetener 16%	Sucrose	64g	N/A
Stabilizer 0.2%	• En place Xanthan Gum • MSK Ice cream stabilizer	• 0.8g • 0.8g	 
Water 53.1%	Tap Water	213g	N/A
Flavouri			

	ngs		
Tea Extract 4.5%	Self-Made using Barry's Teabags	20ml	
Cinnamon 0.7%	Iqemusu Cinna (Cinnamaldehyde)	0.7g	
Ginger Flavour 0.7%	MSK Ginger Water Soluble Flavor Drops	0.7g	

Equipment Used:

Equipment	**Reference Photo**
Two Large Stainless-Steel Bowls	
Musso L2 Ice Cream Maker	
Robot Coupe Mini MP 160V.V. Hand Blender	
1 Glass Jar	

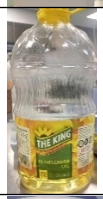
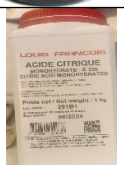
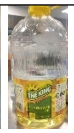
Method:

- In a large bowl, combine casein, whey protein, sugar, ice cream stabilizer, and xanthan gum.
- Take a large bowl, add water, tea concentrate, cinnamon, and ginger flavours. Stir thoroughly to help the spices and tea dissolve evenly.
- Slowly whisk in the dry ingredients into the liquid bowl to avoid clumping.
- Melt **cocoa butter and coconut oil**, then add sunflower oil, and gradually blend it into the mix.
- Use a **hand blender** to emulsify.
- Cool to **4°C** and let rest for at least **2 hours**.
- Use an **ice cream machine** and churn the mixture for 10 minutes.
- After churning, transfer the ice cream to a glass jar and place it in the freezer to harden further.
- Put into the freezer and then serve.

Sponge Cake:

Ingredients

According to (Godefroidt et al., 2019; Çelik et al., 2006) (For ~336g of batter)

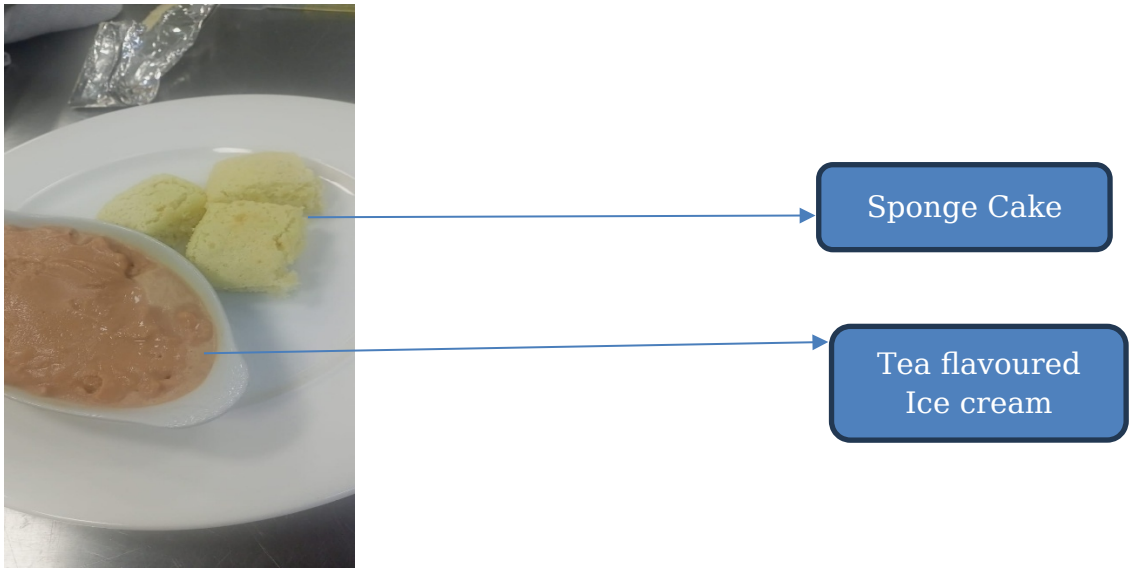
Ingredients (Çelik et al. 2006)	Ingredients used	Quantity	Reference Photos
Flour	• Foo Lung Wheat Starch • Biotiva Gluten	• 80g • 20g	 
Sugar	Sucrose	108g	**N/A**
Egg Whites	• Egg White powder • Water	• 10g • 39g	
Egg Yolk	• The King Sunflower oil • Tap Water • Sosa Soya Lecithin	• 6g • 15g • 5g	 
Leavening Agent	• Gem Sodium Bicarbonate • Louis Francois Citric Acid	• 5g • 5g	 
Milk	• My Protein Casein • Bulk Whey • The King Sunflower Oil • Tap Water	• 4g • 1g • 8g • 30g	  

Method:

1. Add 10g of egg whites to 39g of water in the KitchenAid.
2. Whisk vigorously at the highest speed until foamy and soft peaks form.
3. In a separate bowl, whisk together 5g lecithin, 6g oil, and 15g water with a fork to form an emulsion (making egg yolk emulsion).
4. Put 80g wheat starch, 20g gluten, 108g sucrose, 5g sodium bicarbonate, and 5g citric acid in a bowl.
5. Combine 4g of casein, 1g of whey protein, 30g of water, and 8g of oil in a separate container (making milk).
6. To the egg whites foam, add the mixtures from steps 3 and 5. Mix thoroughly at speed 2 of the KitchenAid.

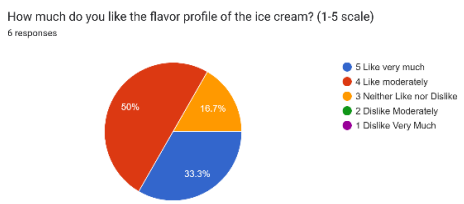
7. Add in the dry ingredients from step 4 slowly while mixing at speed 2 of the KitchenAid.
8. Stop the KitchenAid. Take out the bowl.
9. Scrape the sides of the walls of the bowl with a spatula and mix gently until fully combined.
9. Preheat oven to **170°C (340°F)**.
10. Pour the batter into a lined rectangular cake pan.
11. Bake for **25 minutes** or until golden brown and a toothpick inserted comes out clean.
12. Let cool for 10 minutes in the pan before transferring and cutting it.

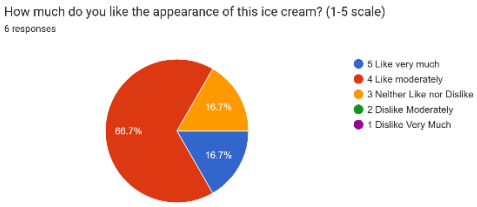
Results and discussion:

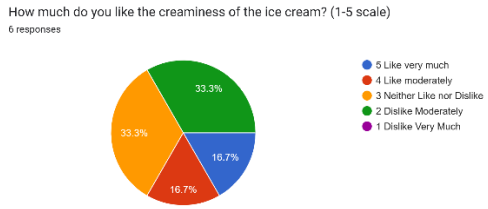


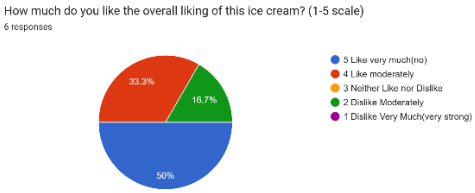
For Ice cream

The ice cream tasted good, but it split after some time. The reason might lie with the ingredients change, as we used the recipe for super premium ice cream, as the same method as the last session of making the ice cream was used.



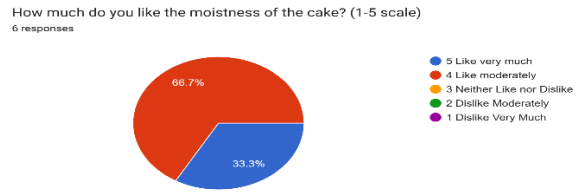


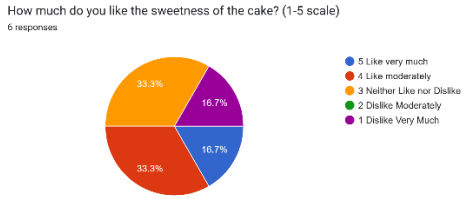


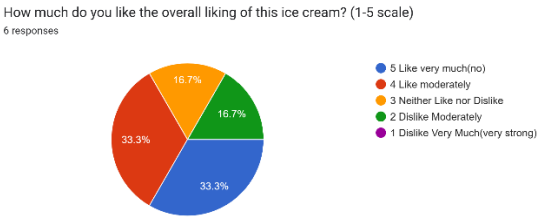


Cake:

The consumer liked the moistness of the cake. But the sweetness and overall liking were not the best. We got comments like “it is very tart”, and we believe it is due to the presence of 5g of citric acid in the cake.







Conclusions

The tea concentrate was a success as consumers liked the flavour profile of the ice cream. But the ice cream split, we concluded that we should go with the ice cream recipe from the last session, as it was more holistically approved by the consumers. We think this recipe can also work if we give it a few more tries, but we only have four weeks to produce a product for this assignment; therefore, we decided to choose the recipe that worked well.

The cake has good potential as it was light and airy. But we need to work on the flavour profile of the cake to make it more appealing to the consumer.

Recommendations for the following week.

Try to make the sugar dome.

Reduce the amount of citric acid without losing the integrity of the cake.

Work on a flavour profile for a cake that would go well with the tea-flavoured ice cream

Ingredients required for the following 2 weeks.

No changes to the order except I need cocoa powder for the cake

MODULE CODE: TFPD9022

MODULE TITLE: Food Prototype Development and Evaluation

STUDENT NAME: Qudsia Rafique

FOOD PRODUCT: Beyond the Coloured Glass, just a Cup away

WEEK NO.: 03 **DATE: 31st March 2025**

Weekly Aims and Objectives

Aim

To refine the dessert by experimenting with new techniques and adjusting flavours for a more balanced and enjoyable experience.

Objectives

1. Experiment with creating a sugar dome to enhance the dessert's presentation and texture.
2. Adjust the amount of citric acid in the cake recipe to maintain its structure while achieving a more balanced flavour.
3. Develop a chocolate cake that complements the tea-flavoured ice cream, ensuring the components work well together.

Materials and Method (Ingredients, Equipment, and Method)

According to (Godefroidt et al., 2019; Çelik et al., 2006) (For ~351g of batter)

Ingredients (Çelik et al. 2006)	**Ingredients used**	**Quantity**	**Reference Photos**
Flour	• Foo Lung Wheat Starch • Biotiva Gluten	• 80g • 20g	 
Sugar	Sucrose	108g	**N/A**
Egg Whites	• Egg White powder • Water	• 10g • 39g	

Egg Yolk	• The King Sunflower oil • Tap Water • Sosa Soya Lecithin	• 6g • 15g • 5g	
Leavening Agent	• Gem Sodium Bicarbonate • Louis Francois Citric Acid	• 5g • 2g	
Milk	• My Protein Casein • Bulk Whey • The King Sunflower Oil • Tap Water	• 4g • 1g • 8g • 30g	
Cocoa Powder	• Citavo Cocoa Powder	• 10g	
Vanilla Extract	• Euro Vanillie Natural Vanilla Flavouring	• 8ml	

Method:

- Add 89g of water into the KitchenAid.
- Put egg whites' powder in the water and whisk them at the highest speed in the Kitchen Aid until foamy and soft peaks are formed.
- In a separate bowl, add all the dry ingredients from the recipe and mix them with a fork until uniform.
- Now, to this foam mixture, start to slowly add all the dry ingredients while the KitchenAid speed is at 2.
- After all the ingredients are mixed well, add the oil and vanilla extract and mix well.
- Take the bowl out of the KitchenAid and scrape the walls of the bowl with a spatula and mix any dry ingredients into the batter.
- Preheat oven to 170°C (340°F).
- Pour the batter into a lined rectangular cake pan and tap the pan on the surface of the table to remove the bubbles.
- Bake for 25 minutes at 170°C or until golden brown and a toothpick inserted comes out clean.
- Let it cool for 10 minutes in the pan before transferring and cutting it

Sugar Dome:

According to La Pâte de Dom (2023)

Ingredients:

Sugar 100g

Glucose syrup 50g

Water 50g

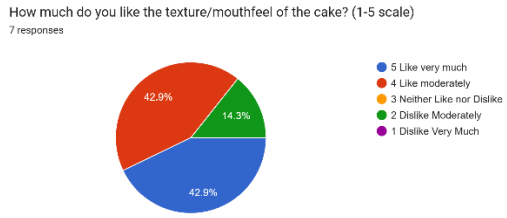
Methods:

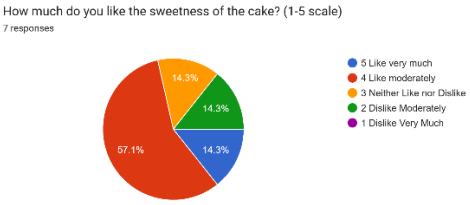
- Take a saucepan and cover it with clingfilm and secure tightly so that you can pour the sugar syrup on it.
- Take a 5cm steel cookie cutter and wrap it with baking paper.
- In a saucepan put all three ingredients and heat it to 145°C.
- Take it of the heat.
- Now take the saucepan with the clingfilm and put the cookie cutter on the top and add 3g of sugar syrup in the middle.
- Push on the cookie cutter. This will cause the sugar to rise to the top in a dome shape.

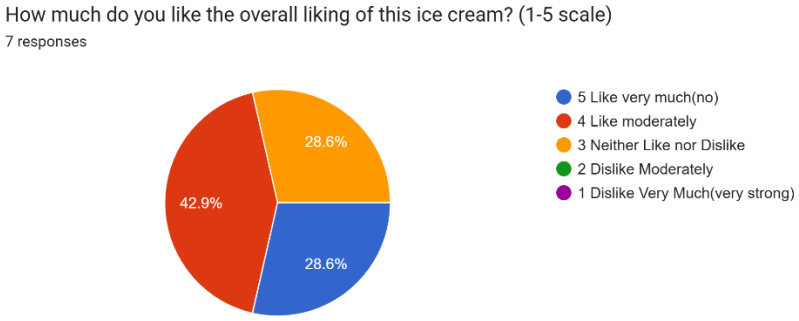
Results and discussion

The sugar dome did not turn out right. The figure shows the chocolate cake

But the consumers were pleased with the chocolate cake. The ranking of the texture, sweetness and the overall liking of the cake moved in the positive side of the spectrum of the hedonic scale.







Conclusions

We confirmed that the chocolate cake is a viable option as the base of our dessert, and we are moving forward with this recipe for our final dish.

Even though we were not able to make the dome today, we will try to make it for the final dish.

Recommendations for the following week.

Find a way to make the sugar element work for the next and last session.

Make the tea flavoured ice cream, chocolate cake and strawberry coulis.

Ingredients required for the following 2 weeks.

No change in order.

MODULE CODE: TFPD9022

MODULE TITLE: Food Prototype Development and Evaluation

STUDENT NAME: Qudsia Rafique

FOOD PRODUCT: Beyond the coloured glass, just a cup away

WEEK NO.: 04 **DATE: 7th April 2025**

Weekly Aims and Objectives

Aim

To finalise and enhance the dessert by perfecting all four elements of the dish in preparation for the final dish.

Objectives

1. **Develop the chocolate cake recipe to ensure it serves as a strong foundation for the dessert.**
2. **Recreating and enhancing the tea-flavoured ice cream.**
3. **Experiment with making the sugar dome and strawberry coulis, aiming to successfully incorporate them into the final presentation.**

Materials and Method (Ingredients, Equipment, and Method)

For the ice cream, we are using the percentage of premium ice cream from week 1, but the quantity and method used to make the best ice cream.

As in the first week, we did not have the tea concentrate, and in week 2, we had the tea concentrate, but we were using a different ingredient percentage.

Discussed thoroughly in the materials and methods session of the report.

Conclusions

The final prototype met the desired positive outcome and was also accepted by the consumers. The flavour profile was positively received during sensory analysis.

Recommendation for next week

N/A

ORDER for next week

N/A

Presentation:

Presentation slides for Flash Presentation

THE MESSAGE

Figure shows Beyond the Coloured glass just a cup away Dessert

Making a choice
Breaking the
Coloured Glass

Find out
not that Different
after all

Some tea and cake

Food for the future
Sustainable
Emotionally resonant
Complete Sensory experience

THANK YOU

With everything happening in the world — with fear, with anger — we still have a choice.
To leave the glass whole and stay divided.
Or to break it — and choose kindness, and share what we have.