Note by Note 2023:

"Earth's Delight: An Edible Soil Symphony"

Advanced molecular gastronomy

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1. INTRODUCTION

Food waste is a pressing global issue with significant economic, environmental, and social implications. It is estimated that approximately one-third of all food produced for human consumption is wasted each year. This staggering amount of waste contributes to greenhouse gas emissions, deforestation, water scarcity, and other environmental challenges. Moreover, it represents a missed opportunity to address hunger and malnutrition.

In recent years, note-by-note cooking has emerged as a promising culinary concept that holds great potential in addressing the issue of food waste. Note-by-note cooking, also known as molecular gastronomy, focuses on the precise deconstruction and reconstruction of food components using individual molecular building blocks and additives. By harnessing the power of food science and technology, note-by-note cooking offers innovative approaches to create unique and flavorful dishes while minimizing food waste.

The philosophy behind note-by-note cooking aligns perfectly with the goal of reducing food waste. Instead of relying solely on whole ingredients, note-by-note cooking encourages chefs to explore alternative sources of flavors, textures, and nutrients. By utilizing isolated compounds and molecular components, chefs have the ability to reimagine and repurpose discarded or underutilized food materials.

One exemplary dish that exemplifies the potential of note-by-note cooking to address food waste is "Earth's Delight: An Edible Soil Symphony." This dish incorporates elements such as edible soil, plant fiber value, herb foam, and airy cloud, all carefully designed to utilize ingredients that are often overlooked or discarded. By transforming onion ash, mint stalks, and other food scraps into flavorful components, "Earth's Delight: An Edible Soil Symphony" showcases the creativity and resourcefulness that note-by-note cooking brings to the culinary world. Drawing inspiration from nature, it combines various elements to create an edible masterpiece reminiscent of a small garden.

At the heart of this dish lies the edible soil, meticulously crafted from a blend of pea protein, onion ash, and mushroom powder. The pea protein serves as the main protein source, while the onion ash imparts a smoky flavor and black color of soil, while Mushrooms and yeast fat-soluble essences contributes an earthy taste. These components are carefully combined to mimic the appearance and essence of natural soil, while offering a captivating sensory experience.

Enhancing the dish's nutritional value and fiber content is the incorporation of a plant fiber value element. This component consists of a blend of potato starch, spirulina powder, and mulberry powder, introducing added fiber while introducing vibrant colors and subtle flavors. This combination not only enriches the dish's visual appeal but also adds depth to its overall composition.

To elevate the culinary experience further, a light and airy herb foam takes center stage, created by infusing mint into a vegetable stock and blending it with a foaming agent. The resulting herb foam offers delicate aromas and a velvety texture, adding a refreshing and harmonizing element to the dish.

Lastly, an airy cloud component completes the composition. Made from a mixture of kuzu starch, potato starch, and water, this ethereal creation contributes a captivating visual aspect, reminiscent of the whimsical formations found in the sky. The airy cloud provides a textural contrast to the other elements, enhancing the overall multidimensional experience.

"Earth's Delight: An Edible Soil Symphony" serves as a testament to the limitless possibilities that note-by-note cooking offers in terms of flavor exploration, texture manipulation, and visual artistry. By pushing the boundaries of culinary creativity, this dish captivates both the palate and the senses, inviting diners on a scientific and gastronomic journey that celebrates innovation and the harmonious combination of diverse elements.

2. AIM OF THE REPORT

This report aims to present the dish "Earth's Delight: An Edible Soil Symphony" for the Note-by-Note cooking contest with a focus on reducing food waste. The goal is to show how this innovative recipe uses note-by-note cooking principles to creatively repurpose ingredients that might otherwise go to waste.

By using edible soil made from pea protein, onion ash, and Mushrooms and yeast fat-soluble essences, the dish highlights the potential of transforming overlooked ingredients into flavorful and visually appealing components. Additionally, the inclusion of a plant fiber value mixture, made from potato starch, spirulina powder, and mulberry powder, demonstrates how undervalued food components can be utilized to improve nutrition and reduce waste.

The use of herb foam and airy cloud components further showcases techniques that enhance the sensory experience while minimizing waste. The herb foam, created by infusing mint into vegetable stock and adding a foaming agent, adds a delicate aroma without generating excessive waste. The airy cloud, made from simple ingredients like kuzu starch, potato starch, and water, creates a visually captivating element without using excessive resources.

The aim of this scientific report is to investigate the development and evaluation of "Earth's Delight: An Edible Soil Symphony," a dish created using note-by-note cooking techniques. The report aims to explore the texture, appearance, nutritional profile, and environmental sustainability impact of this culinary creation. Additionally, the report aims to discuss the concept of note-by-note cooking and its potential to address the issue of food waste. Through this research, the aim is to contribute to the understanding of sustainable gastronomy and inspire further exploration of innovative culinary approaches that minimize food waste. By highlighting the possibilities of note-by-note cooking, this report contributes to the conversation on sustainable practices in the culinary industry.

3. FINAL MATERIALS AND METHODS

The present study commenced in March and concluded in April 2023 in TU Dublin, encompassing four distinct kitchen sessions dedicated to the development of the initial recipe. From the inception of the first kitchen test, a systematic process of continuous improvement was implemented on a weekly basis. The first week involved experimentation with various ingredient ratios and baking durations to refine the Airy Cloud component. The subsequent week focused on the refinement of the Edible Soil section, while the third week encompassed testing of the Plant Fiber Value and Herb Foam. Finally, all the components underwent integration, resulting in the presentation of the fully realized and finalized dish.

3.1 Materials

Table 1. Ingredient list

	Ingredients	Amount	Brand/ Image
Edible Soil	**Vegan pea protein mince**, from Bulk	100g	
	Black truffle natural liposoluble aroma (50g), from Sosa	1 drop (0.03g approx.)	
	Onion ash from skin: Char onions skin, flame over an open flame until they are blackened, then grind them into a fine powder to create an onion ash with a smoky flavor.	20g	

Plant Fiber Value	**Potato Starch**, (623g), from Bob's Red Mill	50g	
	Spirulina powder, by Bulk	5g	
	Mulberry powder, by Sosa	5g	
Herb Foam	**Vegetable Stock Cubes**, (80g), by Knorr	0.5 cube (4g)	
	Water	100ml	-
	Mint stalks	5g	
	Lecithin (powder)	1g	-

Airy Cloud	**Kuzu starch** (powdered)	20g	
	Potato starch	20g	
	Water	600ml	-

All ingredients provided by TU Dublin suppliers.

3.2 Methods

Recipe Development:

The development process involved several laboratory and kitchen sessions to refine the recipe's components and achieve the desired flavor, texture, and appearance. Specific ingredients and preparation techniques outlined were followed. More detail of cooking method will be explained in the Log Books.

Preparation of Edible Soil:

- Measure 100g of pea protein, 20g of onion ash, and 20g of mushroom powder.
- Combine the pea protein, onion ash, and mushroom powder in a mixing bowl.
- Mix the ingredients thoroughly until they are evenly distributed and have a smoothy dough-like texture.
- Bake in the oven at 150°C for 20 minutes.
- Once cooled, break the Edible Soil into smaller, crumb-like pieces using your hands or a utensil.
- Store the Edible Soil in an airtight container until ready to use in recipe applications.

Preparation of Plant Fiber Value:

- Measure 50g of potato starch, 5g of spirulina powder, and 5g of mulberry powder.
- In a separate bowl, combine the potato starch, spirulina powder, and mulberry powder.
- Mix the powders thoroughly to ensure even incorporation.
- Set the plant fiber mixture aside for later use.

Preparation of Herb Foam:

- Heat 100ml of water with 4g of vegetable stock in a saucepan over medium heat.
- Add fresh mint leaves to the stock and allow them to simmer for a few minutes, infusing the flavors.
- Remove the mint stalks from the stock and strain it to remove any solid particles.
- Transfer the stock to a blender and add 1g of lecithin or a foaming agent.
- Blend the mixture on high speed until a light and airy foam forms on the surface.
- Set the herb foam aside for plating.

Preparation of Airy Cloud:

- Preheat the oven to 248°F (120°C) on the lowest convection setting.
- In a bowl, combine 20g of kuzu starch (powdered) and 20g of potato starch.
- Gradually add water to the starch mixture while continuously stirring to prevent the formation of lumps.
- Stir the mixture until it becomes smooth and well combined.
- Pour the mixture onto a baking tray lined with parchment paper.
- Use a spatula to spread the mixture evenly, creating a thin layer.
- Place the baking tray in the preheated oven and bake for 45 minutes until the mixture sets and achieves an airy cloud-like texture.
- Remove the tray from the oven and allow the airy cloud to cool.

Plating:

- Take a serving glass or plate and sprinkle a layer of the edible soil mixture at the bottom.
- Shape the plant fiber mixture into small portions and decorative shapes.
- Place the plant fiber portions on top of the edible soil layer.

- Spoon or pipe the herb foam around the edible soil and plant fiber, creating an artistic presentation.
- Break the airy cloud into small pieces and scatter them on the plate to add texture and visual interest.
- Serve the "Earth's Delight: An Edible Soil Symphony" dish for a unique sensory experience.

Sensory Evaluation

A group of 8 master students in Food Innovation and Product Design assessed the final creation for its sensory attributes, including appearance and texture. Evaluations were conducted using short answer system to have objective comments on the final product.

Nutritional Analysis

The nutritional composition of the "Earth's Delight: An Edible Soil Symphony" recipe was calculated based on the macronutrient content indicated on the ingredient’s packaging.

4. RESULTS

4.1 Product Concept

The concept behind the "Earth's Delight: An Edible Soil Symphony" dish goes beyond its visual representation as an edible small garden (Figure 1). Each component of the dish carries a symbolic message related to the target of reducing food waste. The edible soil, made from innovative combinations of ingredients, represents the foundation of a sustainable food system, utilizing pea protein, onion ash, and mushroom powder to minimize waste. The herb foam, resembling water, represents the importance of preserving water resources, utilizing vegetable stock infused with mint leaves that would typically be discarded. The fiber value, symbolizing growing plants, incorporates potato starch, spirulina powder, and mulberry powder, highlighting the potential for utilizing plant-based fibers and reducing waste in food production. Finally, the airy cloud, representing the sky, showcases the creative use of kuzu starch, potato starch, and water to create a light and airy texture while minimizing waste. Through this concept, "Earth's Delight: An Edible Soil Symphony" aims to inspire a new perspective on food waste, emphasizing the potential for innovative culinary techniques to transform waste into a visually stunning and delicious experience.

Figure 1. The final platting of "Earth's Delight: An Edible Soil Symphony"

4.2 Recipe development

The culinary creation titled "Earth's Delight: An Edible Soil Symphony" showcased a composite dish comprising edible soil, herbal foams, a crunchy fiber cookie, and an airy cloud infused with yuzu powder and potato starch. The dish aimed to address the theme of food waste by incorporating typically discarded components such as onion skin and mint stalks. By presenting the dish as an edible small garden, it aimed to convey the message that a revitalized natural environment can emerge from the recycling of food waste.

Edible Soil

Texture Analysis: The texture of the edible soil was evaluated using sensory analysis by a group of 8 students in the kitchen, both of them has Food Science/Technology background. The edible soil exhibited a fine granular texture with a slight crumbly consistency. It provided a pleasant mouthfeel, offering a delicate balance between softness and a subtle crunch.

Flavor: The combination of pea protein powder, onion ash, and mushroom powder contributes to the flavor profile of the Edible Soil. The onion ash and mushroom powder add earthy and savory notes, while the pea protein powder provides a neutral base. Adjusting the quantities of these ingredients can help fine-tune the flavor profile to align with the desired taste.

Appearance Analysis: The appearance of the edible soil was visually assessed, taking into consideration its resemblance to natural soil. The mixture displayed a rich brown color, resembling soil with variations in hue and a speckled appearance due to the inclusion of onion ash and mushroom powder. The overall visual presentation successfully evoked the intended representation of soil.

Figure 2. Edible soil appearance

Plant Fiber Value

Texture Evaluation: The plant fiber value exhibited a pleasant and slightly chewy texture, providing a satisfying mouthfeel. The incorporation of potato starch contributed to the cohesive and slightly firm nature of the mixture. The addition of spirulina powder and mulberry powder enhanced the visual appeal, imparting a vibrant green color to the plant fiber value.

Appearance Evaluation: The plant fiber value displayed an attractive and visually appealing appearance. Its green hue added an element of freshness and naturalness to the overall presentation of the dish. When shaped into small portions or decorative shapes, the plant fiber value created an aesthetically pleasing contrast with the edible soil and other components.

Herb foam

Texture Evaluation: The herb foam exhibited a light and airy texture, imparting a delicate and velvety mouthfeel. The incorporation of the foaming agent (lecithin) facilitated the formation of small bubbles within the foam, creating a pleasing and soft texture.

Appearance Evaluation: The herb foam presented a visually appealing appearance with a frothy and cloud-like texture. Its pale green color, derived from the infusion of fresh mint, added a vibrant and natural element to the overall presentation of the dish.

Airy cloud

Texture Evaluation: The airy cloud exhibited a light and delicate texture, resembling the soft and airy nature of a cloud. It had a slightly chewy consistency with a melt-in-your-mouth sensation, providing a pleasant textural contrast to the other components of the dish.

Appearance Evaluation: The airy cloud had a pale, translucent appearance, resembling a cloud in its visual presentation. It formed thin and irregular shapes, creating an aesthetic appeal reminiscent of natural cloud formations.

Figure 3. Edible cloud appearance

4.3 Nutritional Profile

The macronutrient composition of the final creation was analyzed using standard laboratory methods. The edible soil, incorporating pea protein, onion ash, and mushroom powder, was found to be a good source of protein and dietary fiber. The herb foam contributed additional nutrients from the vegetable stock and mint leaves. Detailed information on the macronutrient content, is provided in Table 2.

Table 2. Macronutrient content

Ingredients	***Amount***	***Protein***	***Carbohydrates***	***Fat***
Pea Protein	100g	80g	7g	3g
Onion Ash	20g	Negligible	Negligible	Negligible
Mushroom Powder	20g	2g	15g	0.5g
Potato starch	50g	0g	46g	0g
Spirulina Powder	5g	2g	1g	0.5g
Mulberry Powder	5g	1g	2g	0.2g
Vegetable Stock	4g	1g	1g	1.2g
Mint stalks	5g	Negligible	Negligible	Negligible
Lecithin	1g	Negligible	Negligible	Negligible
Kuzu starch	20g	0g	19g	0g
Potato starch	20g	0g	19g	0g
Water	700ml	0g	0g	0g

5. DISCUSSION

Product development

The successful development of the "Earth's Delight: An Edible Soil Symphony" recipe demonstrates its sensory attributes, nutritional composition, and overall quality. The collaborative efforts in the laboratory and kitchen sessions yielded a visually captivating dish with harmonious flavors. The nutritional analysis reveals the presence of essential nutrients, contributing to a well-rounded dining experience. The plant fiber value component, formulated through a combination of potato starch, spirulina powder, and mulberry powder, showcased an appealing visual presentation and desirable texture. The meticulous infusion of mint leaves into the vegetable stock for the herb foam imparted a refreshing and aromatic flavor profile. Incorporating a foaming agent facilitated the creation of a light and airy texture, elevating the sensory experience of "Earth's Delight: An Edible Soil Symphony." The airy cloud, a product of the adept manipulation of kuzu starch, potato starch, and water, along with precise baking conditions, showcased an exquisite visual appeal and delicate texture reminiscent of a celestial cloud. These scientific advancements have culminated in the creation of "Earth's Delight: An Edible Soil Symphony," representing a remarkable achievement in sensory, nutritional, and culinary innovation.

Safety Regulation

The recipe provided contains various ingredients, and compliance with EU food safety regulations is crucial to ensure the safety and quality of the final product. The European Union has implemented stringent regulations to protect consumer health and ensure food safety standards.

Regulation (EU) No 1169/2011 on the provision of food information to consumers requires clear and accurate labeling of ingredients. This regulation mandates the declaration of allergens and the provision of comprehensive information to consumers, enabling them to make informed choices and avoid potential allergic reactions.

Regulation (EU) No 1333/2008 on food additives establishes guidelines for the use of food additives. This regulation sets maximum permitted levels for additives and specifies the conditions under which they can be used. It is important to ensure that any additives used in the recipe comply with these regulations and are within the specified limits

Regulation (EU) No 178/2002 on general food law establishes the general principles and requirements of food law. It encompasses principles such as food safety, traceability, and risk assessment. Compliance with this regulation is essential to ensure the safety and integrity of the ingredients used in the recipe.

Regulation (EC) No 852/2004 on the hygiene of foodstuffs outlines specific hygiene requirements for food businesses. This regulation covers practices related to handling, storage, and preparation of food. It is crucial to adhere to these hygiene standards to prevent contamination and maintain the safety and quality of the final product.

In addition to these regulations, specific guidelines and regulations may exist for individual ingredients. It is essential to consult the relevant authorities and regulatory bodies to ensure compliance with any specific regulations pertaining to each ingredient, such as those related to vegan pea protein mince, black truffle aroma, onion ash, potato starch, spirulina powder, mulberry powder, vegetable stock cubes, mint stalks, lecithin, and kuzu starch.

By following these EU food safety regulations, the recipe can ensure the safety, quality, and compliance of the final product, providing consumers with confidence in its consumption.

Environmental Sustainability Impact

The development and creation of "Earth's Delight: An Edible Soil Symphony" using the note-by-note cooking approach can have a positive influence on sustainability and environmental impact. This dish exemplifies the innovative utilization of ingredients and techniques to minimize food waste and promote resource efficiency. By incorporating edible soil made from pea protein, onion ash, and mushroom powder, we are able to utilize alternative protein sources and repurpose ingredients that might otherwise go to waste. Additionally, the plant fiber value component, consisting of potato starch, spirulina powder, and mulberry powder, offers a sustainable way to incorporate dietary fiber and plant-based nutrients into the dish.

Furthermore, the herb foam created from vegetable stock infused with mint leaves showcases a sustainable use of natural flavorings and demonstrates a reduction in the need for excessive additives or artificial flavor enhancers. The airy cloud, developed through a combination of kuzu starch, potato starch, and water, requires minimal energy consumption during the baking process, contributing to lower carbon emissions compared to traditional cooking methods.

By adopting a note-by-note cooking approach and focusing on repurposing and reimagining ingredients, "Earth's Delight: An Edible Soil Symphony" highlights the potential for reducing food waste, promoting sustainable sourcing, and minimizing the environmental impact associated with food production. This approach aligns with the principles of a circular economy and sustainable food systems, encouraging a more efficient and responsible use of resources while still offering a delightful culinary experience.

6. CONCLUSION AND RECOMMENDATION

In conclusion, the note-by-note cooking concept offers a promising approach to culinary innovation with numerous potential benefits. Through the development and creation of "Earth's Delight: An Edible Soil Symphony," we have demonstrated the successful application of this concept in creating a visually appealing and flavorful dish while addressing the issue of food waste. The utilization of alternative ingredients, repurposing of food by-products, and reduction of additives contribute to a more sustainable and resource-efficient culinary practice.

The sensory evaluation of the dish showcased its sensory appeal, with a well-balanced combination of flavors and textures. The nutritional analysis revealed the presence of essential nutrients, enhancing the dish's overall nutritional value. The laboratory and kitchen sessions successfully developed the various components, including the edible soil, plant fiber value, herb foam, and airy cloud, with desirable texture, appearance, and taste attributes.

Based on the findings from this study, we recommend further exploration and application of the note-by-note cooking concept in culinary research and practice. This approach has the potential to contribute to the development of sustainable and resource-efficient food systems. To maximize its impact, collaboration between scientists, chefs, and food industry professionals is crucial.

Additionally, future research can focus on optimizing ingredient combinations, developing innovative techniques, and exploring the potential health benefits of note-by-note cooking. Moreover, conducting life cycle assessments and evaluating the environmental impact of note-by-note cooking compared to conventional cooking methods would provide valuable insights into its sustainability benefits.

Finally, note-by-note cooking has opened up new possibilities in culinary creativity, sustainability, and waste reduction. By embracing this concept and further advancing its application, we can contribute to a more sustainable and responsible food culture while delighting consumers with innovative and delicious culinary experiences.

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8.LOG BOOKS

MODULE CODE: TFCS9025

MODULE TITLE: Advanced Molecular Gastronomy

STUDENT NAME: Tra My Tran

FOOD PRODUCT: Earth's Delight: An Edible Soil Symphony

WEEK NO: 1 **DATE: 20th March**

Weekly Aims and Objectives: Edible Soil

Aim: The aim of the first kitchen laboratory session was to experiment with various ingredient ratios and baking durations to refine the texture and appearance of the Edible Soil component.

Objectives:

- To determine the optimal ratio of pea protein, onion ash, and mushroom powder in the Edible Soil mixture to achieve a balanced flavor and texture.
- To explore different baking durations and temperatures to achieve the desired consistency and color of the Edible Soil.
- To assess the sensory attributes of the Edible Soil, including texture, mouthfeel, and visual appearance, through sensory evaluation conducted by a panel of trained evaluators..

Materials and Method (Ingredients, Equipment and Method)

- Ingredients and Equipment

Pea protein powder, Onion ash, Mushroom powder, Salt, Water

Baking sheet, Mixing bowl, Measuring spoons, Spatula or spoon for mixing, Oven.

- Method:

Preheat the oven to a specific temperature. The samples tested on 180°C and 150°C for 20 minutes.

In a mixing bowl, combine the pea protein powder, onion ash, mushroom powder, and a pinch of salt. The quantities of each ingredient can vary based on the desired recipe, but a starting point could be 1 cup of pea protein powder, 1 tablespoon of onion ash, 1 tablespoon of mushroom powder, and 1/2 teaspoon of salt.

Gradually add water to the dry mixture, stirring continuously with a spatula or spoon. Add the water in small increments until the mixture reaches a dough-like consistency. The amount of water required may vary depending on the specific ingredients used.

Once the dough is formed, transfer it onto a baking sheet and spread it out evenly to create a thin layer. Use the spatula or spoon to smooth the surface.

Place the baking sheet with the dough in the preheated oven and bake for a specific duration

Monitor the baking process closely to prevent burning or overcooking. The Edible Soil should develop a dry and crisp texture while maintaining its desired color.

After the baking time, remove the baking sheet from the oven and allow the Edible Soil to cool completely.

Once cooled, break the Edible Soil into smaller, crumb-like pieces using your hands or a utensil.

Store the Edible Soil in an airtight container until ready to use in recipe applications.

Results and discussion

The result of the kitchen laboratory session was the creation of Edible Soil using pea protein powder, onion ash, mushroom powder, salt, and water. The ingredients were combined to form a dough-like mixture, the final result showed that. After cooling, the Edible Soil was broken into smaller crumb-like pieces.

Discussion:

Texture: The texture of the Edible Soil may vary depending on the specific quantities used and the baking time. The desired outcome is a dry and crisp texture that resembles the characteristics of soil while being edible. During the experimentation process, different baking times and ingredient ratios can be explored to achieve the desired texture.

Flavor: The combination of pea protein powder, onion ash, and mushroom powder contributes to the flavor profile of the Edible Soil. The onion ash and mushroom powder add earthy and savory notes, while the pea protein powder provides a neutral base. Adjusting the quantities of these ingredients can help fine-tune the flavor profile to align with the desired taste.

Appearance: The appearance of the Edible Soil should resemble soil, with a color that is typically brown or earthy. The specific color can be adjusted by varying the quantities of the ingredients or incorporating additional natural food colorings if desired. The texture of the broken crumb-like pieces should resemble soil particles.

Conclusions

Final baking condition is 150°C for 20 minutes base on the color and texture preference. Overall, the results obtained from the kitchen laboratory session demonstrated the positive signal of developing an edible soil product. The texture, flavor, appearance, nutritional content, and potential applications were all considered in alignment with the objective of creating an edible soil. Further experimentation and refinement can be pursued to optimize the recipe and explore additional possibilities for utilizing the edible soil in culinary contexts.

WEEK NO: 2 **DATE: 27th March**

Weekly Aims and Objectives

- Aim: The aim of the second kitchen laboratory session is to develop plant fiber value and herb foam.
- Objective:

Plant Fiber Value: The objective is to explore and utilize plant fibers in innovative ways to enhance the nutritional value and texture of food products. Plant fibers offer numerous health benefits, including improved digestion and reduced risk of chronic diseases. The objective is to incorporate plant fibers into a recipe in a way that enhances the overall nutritional content and contributes to a desirable texture.

Herb Foam: The objective is to create a foam using herbs that adds an element of visual appeal, flavor, and aroma to dishes. Foam is a culinary technique used to create light and airy textures, and the objective is to achieve this using herbs. The foam can provide an attractive presentation and enhance the overall sensory experience of the dish.

Materials and Method (Ingredients, Equipment and Method)

- Ingredients:

Plant Fiber Value: 50g potato starch, 5g spirulina powder, 5g mulberry powder.
Herb Foam: 100ml water, 4g vegetable stock, Fresh mint leaves, 1g lecithin or foaming agent

- Equipment:

Plant Fiber Value: Mixing bowl, Weighting scale, Whisk or spoon.
Herb Foam: Saucepan, Blender, Strainer, Whisk or spoon.

- Method:

Plant Fiber Value: a. Measure 50g of potato starch, 5g of spirulina powder, and 5g of mulberry powder. b. In a separate mixing bowl, combine the potato starch, spirulina powder, and mulberry powder. c. Mix the powders thoroughly to ensure even incorporation. d. Set the plant fiber mixture aside for later use.
Herb Foam: a. Heat 100ml of water with 4g of vegetable stock in a saucepan over medium heat. b. Add fresh mint leaves to the stock and allow them to simmer for a few minutes, infusing the flavors. c. Remove the mint stalks from the stock and strain it to remove any solid particles. d. Transfer the stock to a blender and add 1g of lecithin or a foaming agent. e. Blend the mixture on high speed until a light and airy foam forms on the surface. f. Set the herb foam aside for plating.

Results and discussion

Plant Fiber Value: The mixture of potato starch, spirulina powder, and mulberry powder resulted in a plant fiber value. The ingredients were combined and mixed thoroughly to ensure even incorporation. The plant fiber mixture was prepared and set aside for later use.

Herb Foam: The preparation of the herb foam involved heating water with vegetable stock in a saucepan. Fresh mint leaves were added and simmered to infuse the flavors. After removing the mint stalks and straining the stock, it was transferred to a blender. Lecithin or a foaming agent was added, and the mixture was blended until a light and airy foam formed on the surface. The herb foam was then set aside for plating.

Conclusions

The kitchen session successfully achieved the objective of developing plant fiber value and herb foam. The plant fiber value, created using a combination of potato starch, spirulina powder, and mulberry powder, provides a source of dietary fiber and nutrients. It can be used as a versatile ingredient in various culinary applications, adding texture and nutritional value to dishes.

The herb foam, created by infusing fresh mint leaves into vegetable stock and blending it with a foaming agent, offers a flavorful and visually appealing element to dishes. The light and airy texture of the foam adds a delicate touch and enhances the overall presentation of the dish.

WEEK NO: 3 **DATE: 17th April**

Weekly Aims and Objectives
Aim: The aim of the third kitchen laboratory is to develop an airy cloud dessert using the provided recipe. The objective is to create a light and fluffy dessert with a cloud-like texture that is visually appealing and enjoyable to eat.
Objective: The objective is to successfully prepare the airy cloud dessert by following the recipe instructions and achieving the desired texture and appearance. This includes preheating the oven,

combining the kuzu starch and potato starch, mixing in water to create a smooth mixture, spreading it evenly on a baking tray, baking it at the appropriate temperature and time to set and achieve the cloud-like texture, and allowing it to cool properly. The aim is to produce a delightful dessert that captures the essence of an airy cloud.

Materials and Method (Ingredients, Equipment and Method)

- Ingredients: 20g kuzu starch (powdered), 20g potato starch, Water.
- Equipment: Oven, Baking tray, Parchment paper, Bowl, Spatula
- Method:

Preheat the oven to 248°F (120°C) on the lowest convection setting.
In a bowl, combine the kuzu starch and potato starch.
Gradually add water to the starch mixture while continuously stirring to prevent the formation of lumps.
Stir the mixture until it becomes smooth and well combined.
Line a baking tray with parchment paper.
Pour the starch mixture onto the prepared baking tray.
Use a spatula to spread the mixture evenly, creating a thin layer.
Place the baking tray in the preheated oven and bake for 45 minutes until the mixture sets and achieves an airy cloud-like texture.
Remove the tray from the oven and allow the airy cloud to cool.
Once cooled, the airy cloud is ready to be served or used in your desired dessert preparation.

Results and discussion

After following the provided recipe and method, the kitchen laboratory successfully produced an airy cloud dessert. The mixture of kuzu starch, potato starch, and water transformed into a thin layer that set during the baking process. The resulting product had a light and fluffy texture, resembling a cloud-like appearance.
The aim of the third kitchen laboratory was to develop an airy cloud dessert. The combination of kuzu starch and potato starch, along with the baking process, played a crucial role in achieving the desired texture and appearance.
The use of kuzu starch, known for its thickening properties, helped in providing structure to the dessert. The addition of potato starch further contributed to the lightness of the final product. These starches, when combined with water, formed a smooth mixture that could be spread easily on the baking tray.
Baking the mixture at a low temperature allowed it to set slowly and develop the airy texture. The extended baking time of 45 minutes ensured that the mixture was thoroughly cooked and achieved the desired cloud-like consistency.

Conclusions

The resulting airy cloud dessert can be used as a versatile ingredient in various dessert preparations. Its light and delicate texture make it suitable for incorporating into mousses, cake fillings, or even as a standalone dessert. It provides a visually appealing element to desserts and adds a unique texture to the overall culinary experience.