

Note-by-Note Mojito Cocktail Dish

By:

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Materials and Methods

Concept Development

The proposed dish is a bite-sized mojito cocktail, consisting of a semi-translucent lime gel sheet filled with an airy rum-infused mousse, topped with tiny mint pearls to create a “caviar” effect for more attractive plating. While the sensory profile aimed to create a subtle, delicate bite through the thin gel slice and foamy mousse, the flavour profile was intended to simulate the sweetness and freshness of the classic mojito cocktail by incorporating lime, mint and rum flavour essences. Figure 1 shows the plating inspiration considered for the final plating, as illustrated in Figure 2. The dish was meant to build the illusion of a sushi roll, with the lime gel wrapper as the *nori* sheet, the rum mousse as the rice, and the mint pearls as the caviar on top.



Figure 1: Plating Inspiration

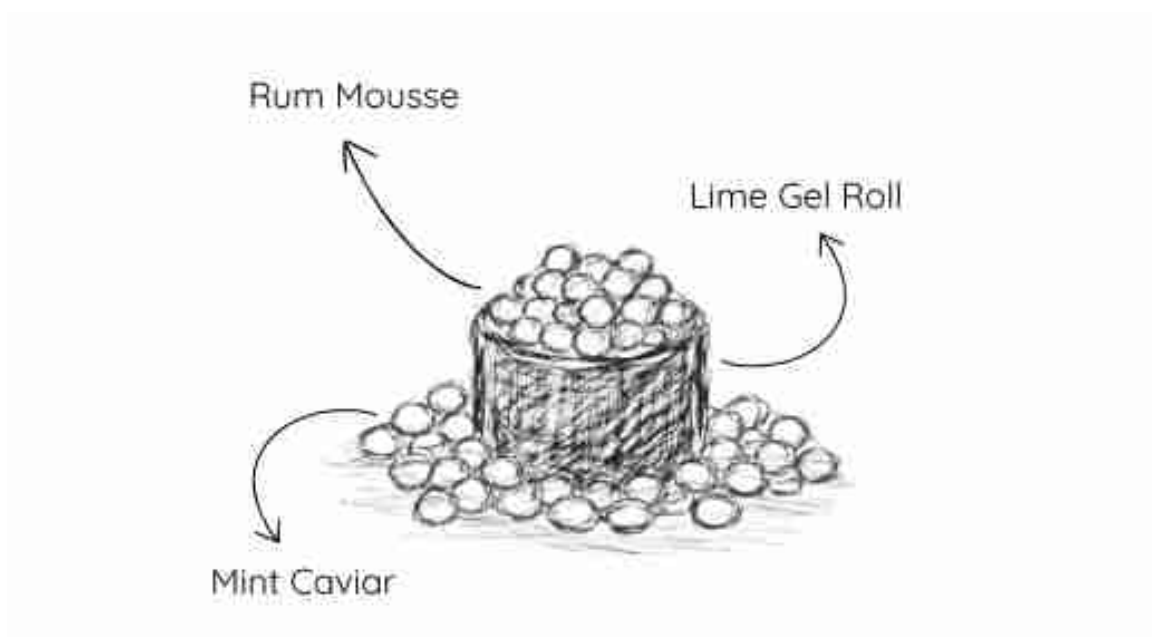


Figure 2: Plating Sketch

3.2 Equipment

In terms of equipment, all materials were provided by TU Dublin. Due to its simple formulation, the production of the Note-by-Note dish required only accessible, non-technical items, with no need for specialised or high-end laboratory equipment. Figure 3 shows all the materials used and provides details on the makes and models of each item.

Figure 3: Table of Equipment

Product Name	Product Specification/Description
Bowl (x4)	Stainless steel, small size
Dropper (x1)	Plastic
Fork (x1)	Metal (stainless steel)
Knife (x1)	Metal (stainless steel)
Large Flat Tray (x1)	Stainless steel, Gastronorm 1/1 (325 x 530)
Medium Deep Tray (x1)	Stainless steel, Gastronorm 2/3 (325 x 352)
Plastic Tray (x4)	Plastic, small size
Plating Tweezer (x1)	Metal (stainless steel)
Pot (x2)	Stainless steel, medium size
Precision Scale (x1)	ONBALANCE, CH-1000-BK
Scale (x1)	JADEVER SCALE, JWP
Siphon (x1)	Solid stainless steel
Spatula (x1)	Plastic and rubber, heat resistant
Spherification Spoon (x1)	Stainless steel
Spoon (x5)	Metal (stainless steel), small size (teaspoon)
Thermomix (x1)	Vorwerk, Thermomix TM5-1
Whisk (x1)	Stainless steel

3.3 Ingredients and Final Recipe

The recipe development for the dish focused on simplicity and efficiency, using easily sourced, cost-effective ingredients. After testing the feasibility of each dish component over the four weeks of production, the recipes were slightly adjusted and refined, resulting in a final comprehensive recipe. Figure 4 shows all ingredients used for the production of the Note-by-Note Mojito Cocktail.

Figure 4: Table of Ingredients

Product Name	Product Specification/Description
Agar-Agar Powder	Louis Francois (E406 – Agar Gum, gelling agent)
Calcium Chloride	MSK (E509) – MSK-0493
Citric Acid	TRS (E330)
Colour Liquid Green	Cake Decoration, contains: Water, glucose syrup, sugar, thickener: E406, humectant: E422, acidity regulator: E330, preservative: E202, colouring: E102, E133
Colour Liquid Yellow	Cake Decoration, contains: Water, glucose syrup, sugar, thickener: E406, humectant: E422, acidity regulator: E330, preservative: E202, colouring: E102
Gelatine Leaf	Newforge (500gr) – 100% pig skin
Lemon Essential Oil Flavouring	MSK (30ml) – MSK-0108
Lime Natural Flavouring	Sosa, contains: invert sugar, emulsifier: glycerine (E422), natural lime extract
Mint Natural Flavouring	Sosa, contains: invert sugar syrup, emulsifier: glycerine (E422), peppermint extract
Sodium Alginate Powder	Sosa, thickener: sodium alginate (E401)
Sucralose	bulk (E955)
Water	Tap water
White Rum	Bacardi (700ml)
Xanthan Gum Powder	Sosa, thickener: xanthan gum (E415)

Figure 5 shows the final recipes for each component of the dish: the lime gel roll, the rum mousse, and the mint caviar.

Figure 5: Final Recipe Table

Component	Ingredients	Method of Preparation
Lime Gel Roll	200ml Water 4gr Agar-Agar 1gr Citric Acid 1 pinch Sucralose 3 drops Lime Aroma/Flavouring 4 drops Green Colouring	- In a small pot, heat water to simmer and add agar-agar while whisking until dissolved - Remove from heat, add rest of ingredients, whisking until fully incorporated - Pour mixture into a large flat tray, refrigerate until firm but flexible - Cut into strips for rolling
Rum Mousse	350ml Water	Hydrate the gelatine leaves in a

	• 2 Gelatine Leaves • 1 pinch Sucralose • 20ml White rum	large bowl with cold water • Meanwhile, in a medium pot, heat up the water, white rum and sucralose until warm (not boiling) • Weight warmed liquid • Squeeze excess of water from gelatine leaves and add them to the rum mixture, whisking until dissolved • Pour mixture into a medium tray and refrigerate • Scrape the mixture with a fork and add it to a syphon
Mint Caviar	• 200ml Water • 2gr Sodium Alginate • 1 drops Mint Aroma/Flavouring • 2 drop Green Colouring • 1 drop Yellow Colouring • 500ml Water + 5gr Calcium Chloride	• Prepare Calcium Bath in a separate bowl • Mix water, sodium alginate, sucralose, mint flavouring, and food colouring using the Thermomix • Fill a dropper with alginate mixture and drop small droplets into calcium bath • With a spherification spoon remove droplets from calcium bath and rinsed them in a small bowl with water

Two plating options were proposed. On the one hand, Figure 21 shows the first plating option of the final dish, featuring two vertical slices of the lime gel roll, filled with the rum mousse and topped with the mint caviar on a large plate.



Figure 6: Final Plating Option 1

Option 2 (Figure 22), on the other hand, featured only one vertical slice of the lime gel roll, filled with the rum mousse and topped with the mint caviar plated on a catering spoon, for an easy one-bite eating.



Figure 7: Final Plating Option 2

In terms of the nutritional content of the Note-by-Note dish, Nutritics' results revealed that the dish strongly aligns with the assignment aim of reducing the total calories. As shown in Figure 23, the dish provides 8kcal per 100gr and 62kcal per the total recipe amount of 787gr, contributing only 3% energy to the daily reference intake (RI).

Considering the macronutrient values, the Mojito Cocktail dish contains 0gr of fat, of which saturates are also 0gr, 0gr of fibre, and minor carbohydrates values, with 0gr per 100gr and 0.5gr per the total recipe, sugars representing also 0gr. This result further confirms the minimal caloric load of the dish, as the absence of fat and sugars significantly reduces the total energy density per portion. Moreover, although the protein content is relatively low it still is present, providing 0.5gr per 100gr and 3.7gr per total recipe (7% RI). While not significant (0.09gr per 100gr and 0.69gr per recipe), the salt content of the dish represents a rather important contributor in the formulation with a 12% RI.



Figure 8: Nutritional Values (Total Recipe)

The complete final recipe of the dish yields for approximately 20 portions of the Mojito Cocktail. Each serving provides roughly 3kcal, with minimal carbohydrate content, and zero fat, saturated fat, sugars and protein. In terms of salt, the values remain low and within adequate parameters (see Appendix 8.4.2). Overall, the nutritional profile of the dish supported the low-calorie concept aim.

Conclusion

The aim of the Note-by-Note project was to elaborate a molecular gastronomy dish made entirely of pure compounds that not only reduced preparation time, production costs, and total calorie count but also preserved flavour quality. The results from the sensory analysis and nutritional assessment demonstrated that the goals were reached.

The integration of pure compounds enabled the development of a dish with a significantly reduced caloric content, due to the absence of fat, sugars and dense carbohydrates. Despite its low nutrient density, the Mojito Cocktail dish achieved positive sensory outcomes, especially in aroma, appearance, and, most importantly, flavour. Although texture remained an area for improvement, the overall findings validated the project's aim of being calorie-free. In addition, the use of readily available, economical ingredients and the absence of advanced laboratory equipment in the recipe further reduced preparation time and production complexity.

References

- BARHAM, P., SKIBSTED, L. H., BREDIE, W. L., BOM FRØST, M., MØLLER, P., RISBO, J., SNITKJÆR, P. & MORTENSEN, L. M. 2010. Molecular gastronomy: a new emerging scientific discipline. *Chemical reviews*, 110, 2313-2365.
- BURKE, R. & DANAHER, P. 2016. Note by note: A new revolution in cooking.
- BURKE, R., THIS, H. & KELLY, A. 2016. Molecular gastronomy.
- CAPORASO, N. 2021. The impact of molecular gastronomy within the food science community. *Gastronomy and Food Science*. Elsevier.
- THIS, H. 2005. Molecular gastronomy. *Nature Materials*, 4, 5-7.
- THIS, H. 2009a. *Building a meal: from molecular gastronomy to culinary constructivism*, New York, Columbia University Press.
- THIS, H. 2009b. Molecular Gastronomy, a Scientific Look at Cooking. *Accounts of Chemical Research*, 42, 575-583.
- THIS, H. 2011. Molecular gastronomy in France. *Journal of Culinary Science & Technology*, 9, 140-149.
- THIS, H. 2013. Molecular gastronomy is a scientific discipline, and note by note cuisine is the next culinary trend. *Flavour*, 2, 1.
- THIS, H. 2014. *Note-by-Note Cooking: The Future of Food*, Columbia University Press.
- UNION, E. 2011. Commission Regulation (EU) No 1130/2011 of 11 November 2011 amending Annex III to Regulation (EC) No 1333/2008 of the European Parliament and of the Council on food additives by establishing a Union list of food additives approved for use in food additives, food enzymes, food flavourings and nutrients Text with EEA relevance.
- UNION, E. n.d.-a. Additives.
- UNION, E. n.d.-b. EU Rules - food additives.
- VEGA, C. & UBBINK, J. 2008. Molecular gastronomy: a food fad or science supporting innovative cuisine? *Trends in food Science & technology*, 19, 372-382.

