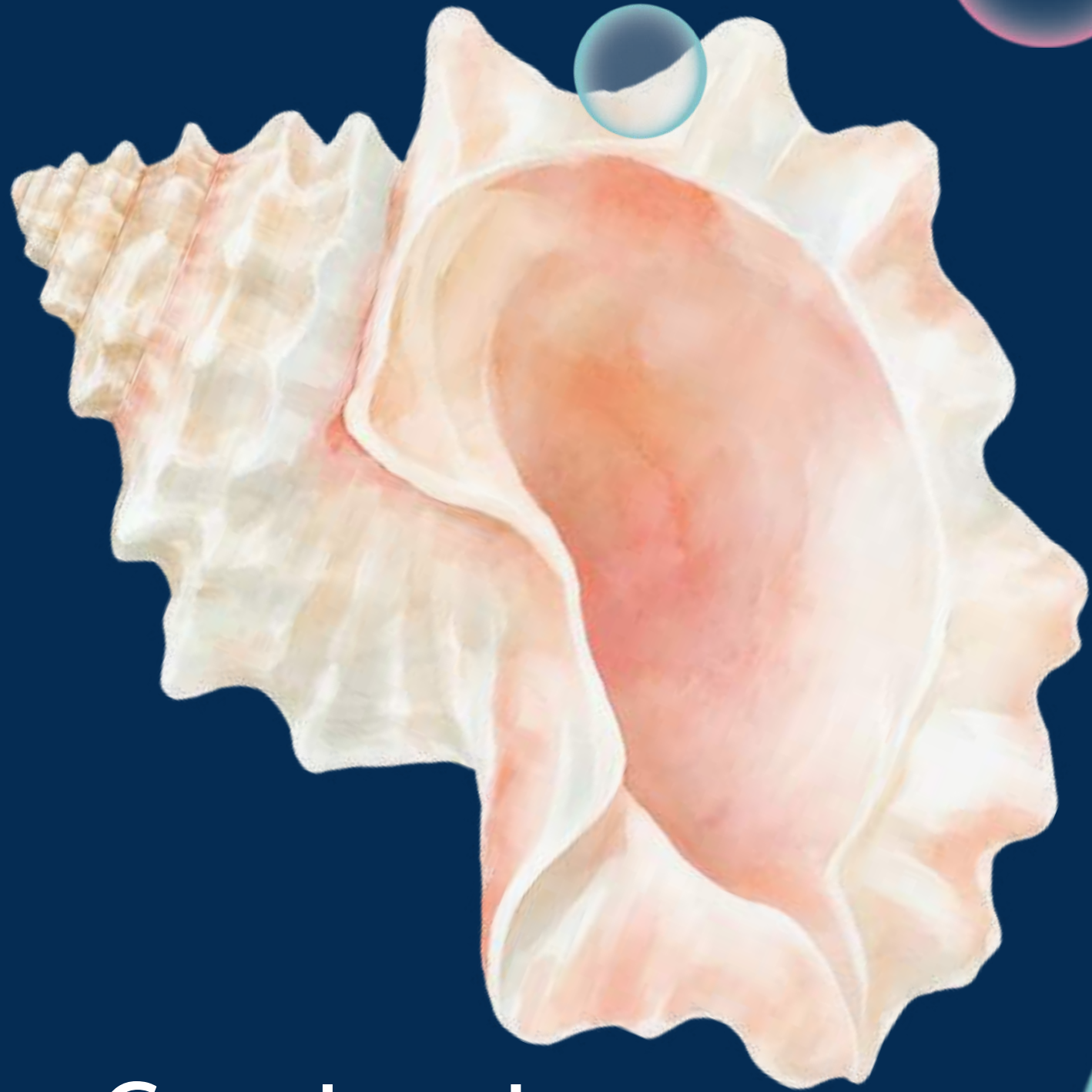


MSC CULINARY INNOVATION & FOOD PRODUCT DEVELOPMENT · MOLECULAR GASTRONOMY

Seashells by the Sea Shore

● Nerea Landa | TU Dublin, Grangegorman



Contents

- 01 · The Concept.
- 02 · The Brief.
- 03 · Aims & Objectives.
- 04 · Dish Overview.
- 05 · Ingredients & Process.
- 06 · Sensory Analysis.
- 07 · Key Results.
- 08 · Conclusions.



Concept

Inspiration

Collecting seashells at the beach

Different Flavours

cotton candy & melon, strawberry & lime, hazelnut & toffee

Note-by-Note

combining purified compounds instead of whole ingredients (This, 2013)



The Brief

1

Lower Cost

Reduce ingredient cost per portion versus a conventional dessert

2

Lower Calories

Cut caloric density while keeping a satisfying, structured plate

3

Same Great Flavour

Preserve taste, aroma and texture.
The sensory experience is non-negotiable

Aims & Objectives

1

Formulate a low calorie dessert using note-by-note components

2

Apply simple, efficient techniques to minimize time & energy

3

Evaluate sensory quality

4

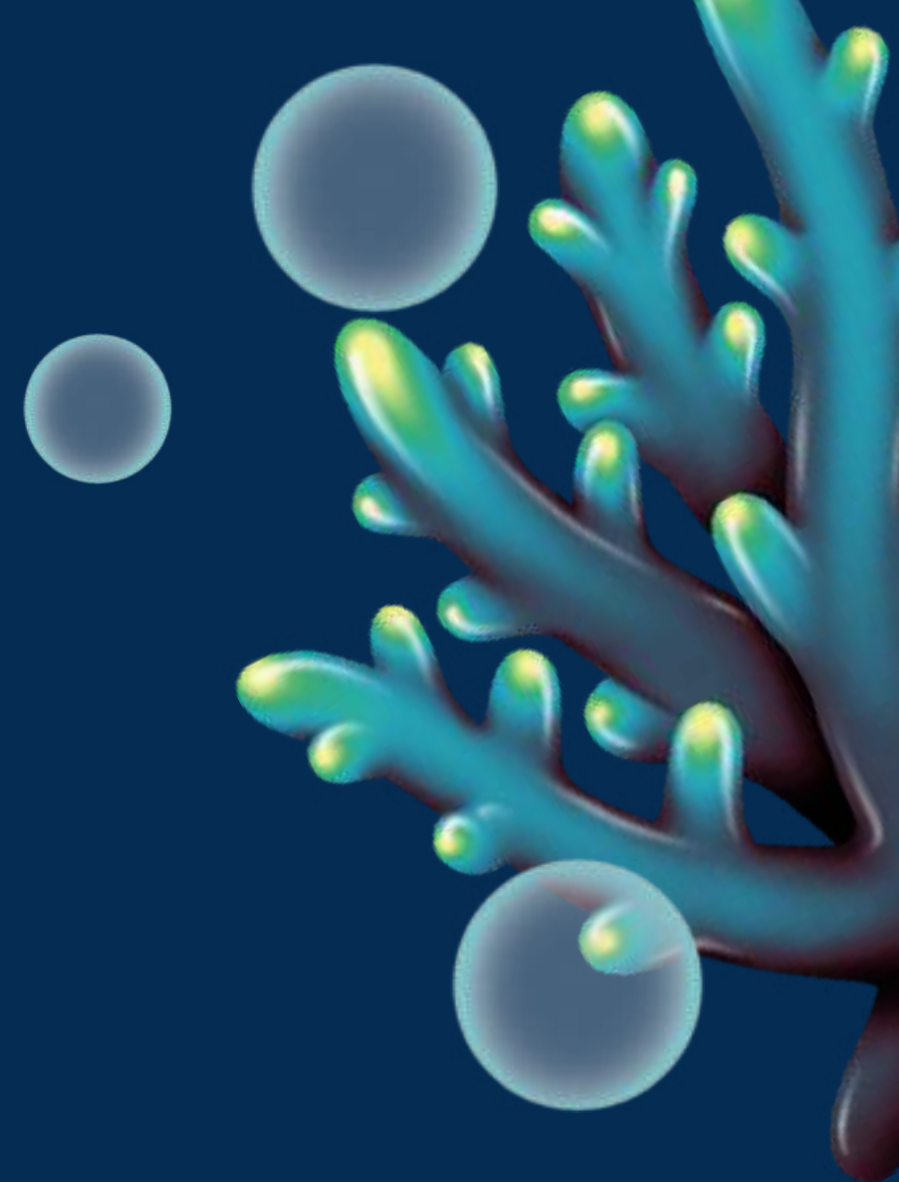
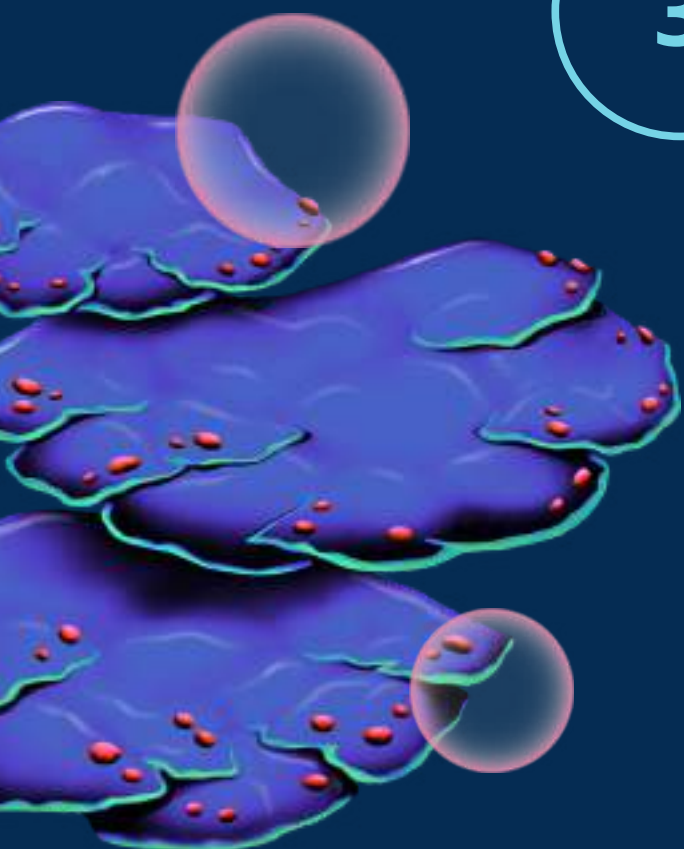
Design a coastal-inspired aesthetic dish

5

Optimise texture of each component

6

Refine iteratively across kitchen trials



Dish Overview



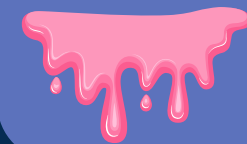
Foam



Granita Sea



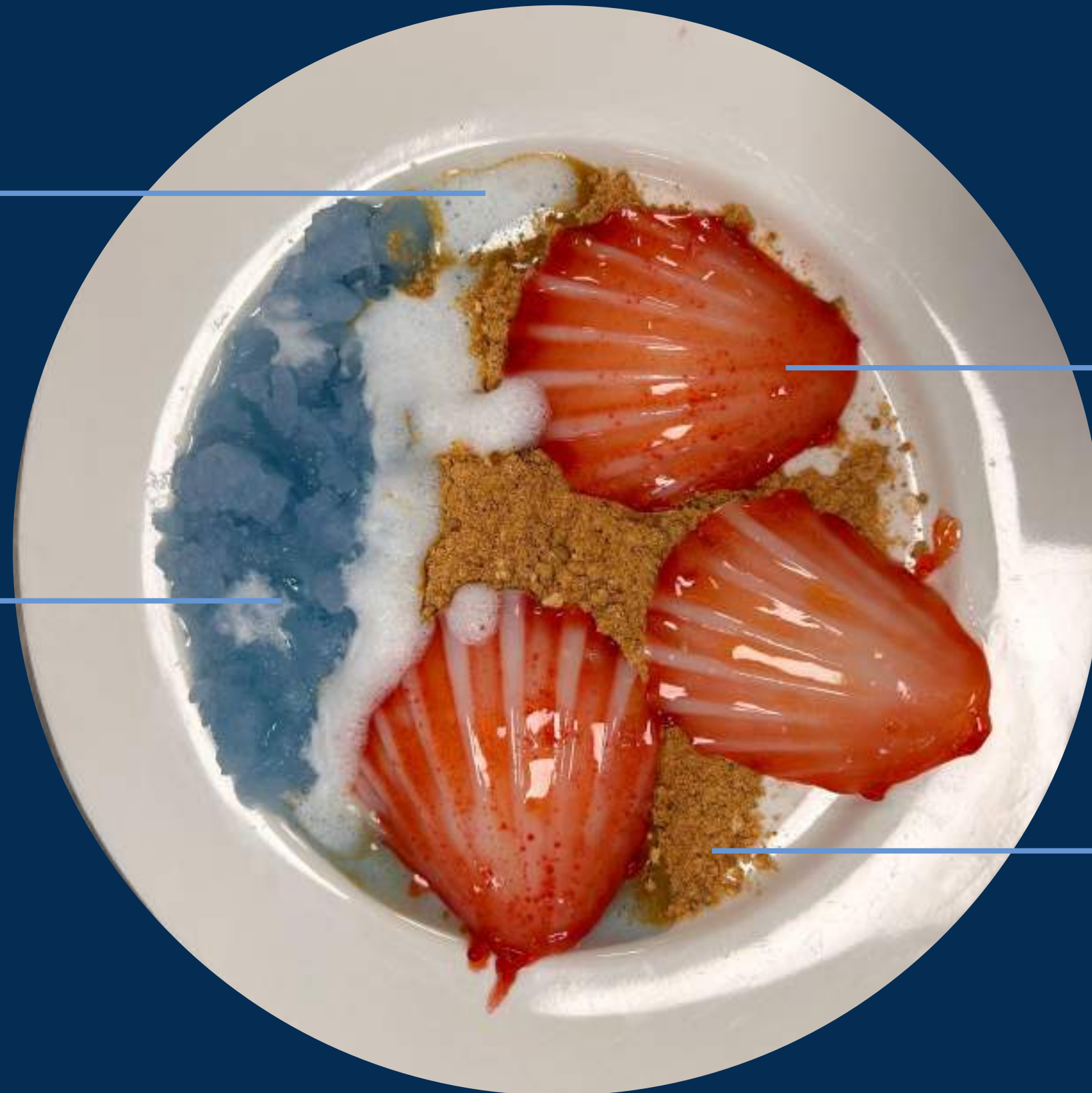
Protein Shells



Gel Glaze



Protein Sand



The Shells



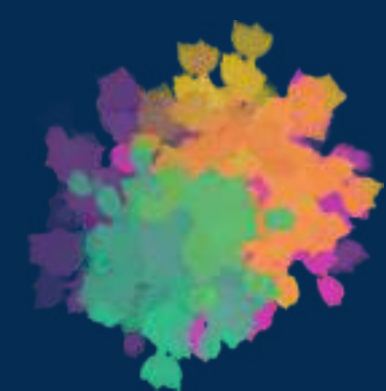
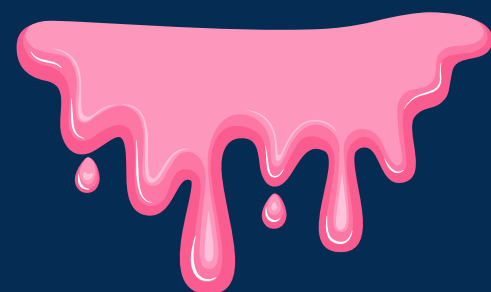
Ingredients

Ingredient	Quantity (g)	Function
Water	370	Continuous phase
Whey Protein Isolate	13	Structure, nutritional value
Agar-agar	2.7	Thermoreversible gelation
Locust Bean Gum	0.54	Elasticity, reduces brittleness
Dextrose	3	Flavour balance
Citric acid	1.2	pH adjustment
Sodium chloride	1	Flavour enhancement

Process

1. Thoroughly mix the powders.
2. Heat the water to ~60 °C.
3. Gradually add the dry mixture while blending until smooth.
4. Bring to a full boil (100 °C) and maintain for 60–90 seconds.
5. Cool to ~80 °C, add the flavour compounds, and mix gently.
6. Pour into the shell moulds, leave to set 8–10 minutes at room temperature, then refrigerate for 20 minutes.

The Glaze



Ingredients

Ingredient	Quantity (g)	Function
Water	200	Continuous phase
Agar-agar	1.6	Thin gel structure for coating
Glycerol	20	Improves shine and flexibility
Glucose syrup	20	Viscosity, gloss, sweetness
Salt	0.5	Flavour enhancement
Food Colour	as required	Visual appearance

Process

1. Combine water, glucose, agar and glycerol; bring to a boil.
2. Cook for 1 minute.
3. Remove from heat and add colouring.
4. Cool to 55–60 °C.
5. Dip chilled shells for 1–2 seconds and allow to set on an oven rack.

The Sand



Ingredients

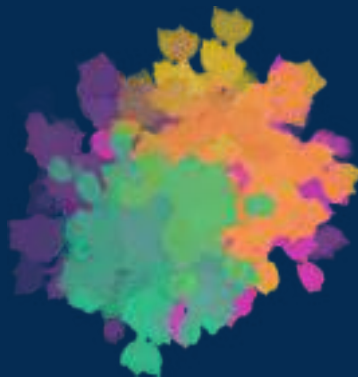
Ingredient	Quantity (g)	Function
Whey Protein Isolate	70	Base structure, protein content
Maltodextrin	25	Sandy, granular texture
Dextrose	3	Flavour and browning
Salt	2	Flavour enhancement
Water	10	Granulation of particles

Process

1. Mix the dry ingredients thoroughly.
2. Add water gradually to form small, irregular crumbs.
3. Spread on an oven tray and bake at 180 °C for 8 minutes.
4. Cool, break, and sieve to obtain varied particle sizes.



The Sea



Ingredients

Process

- 1.Heat water and sugar until dissolved (do not boil).
- 2.Cool and add flavouring and colouring.
- 3 Freeze in a shallow container.
- 4.Scrape every 5–10 minutes to form crystals.

Ingredient	Quantity (g)	Function
Water	500	Continuous phase
Sucrose	120	Sweetness, freezing point depression
Watermelon flavour	2 drops	Sensory profile
Food colour	as needed	Visual appearance

The Foam

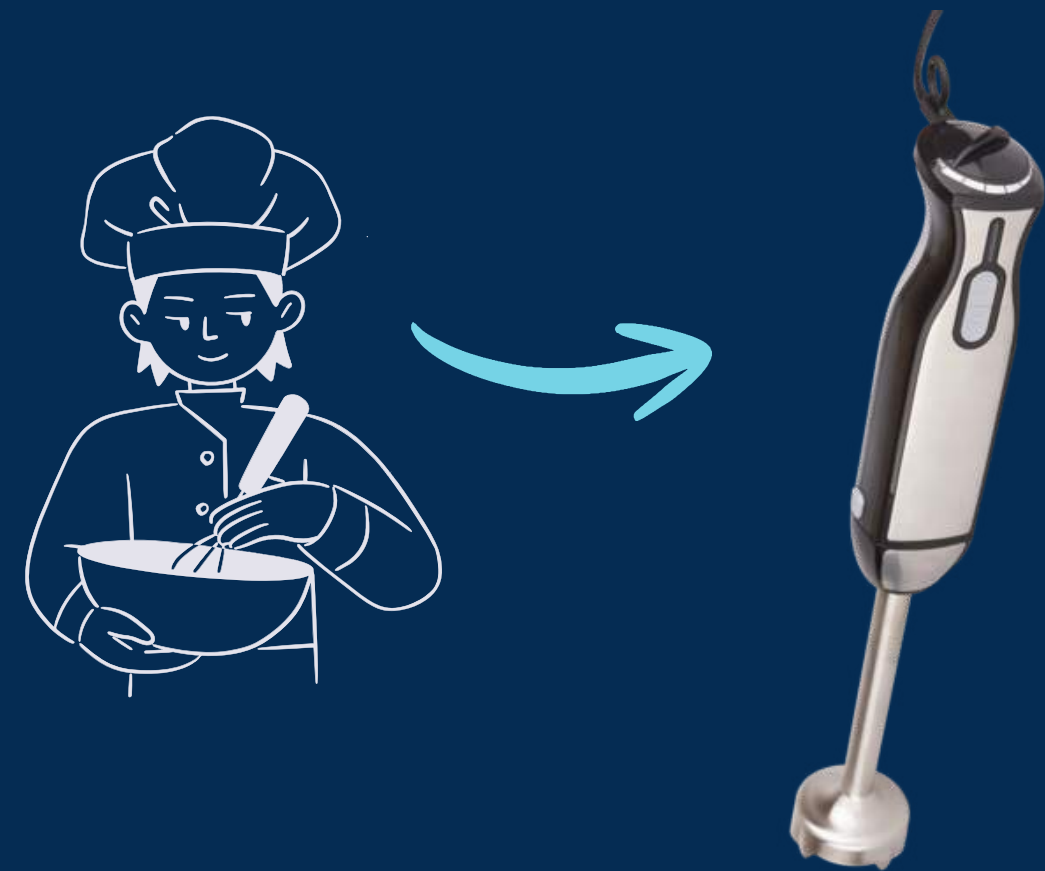


Ingredients

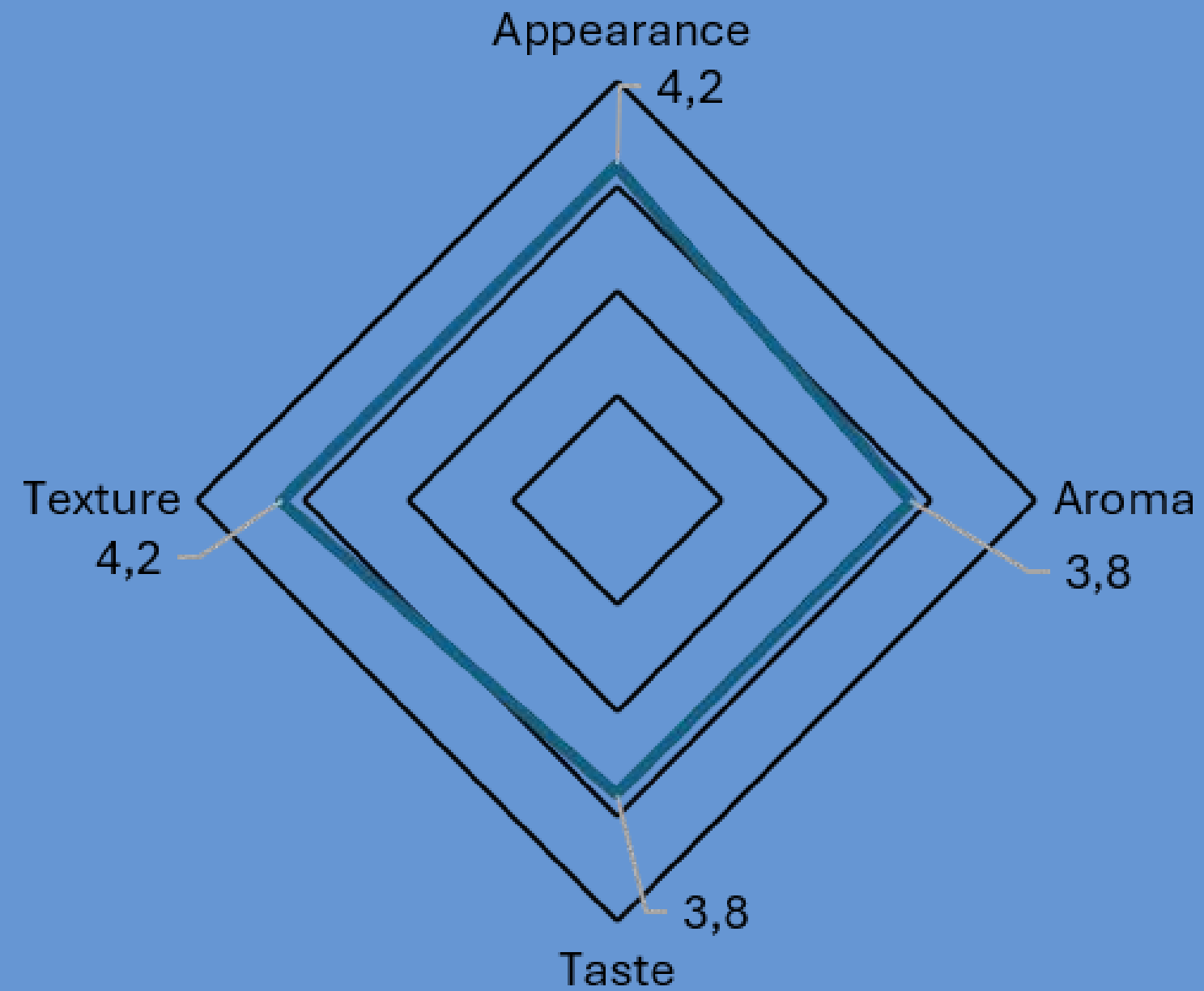
Ingredient	Quantity (g)	Function
Water	100	Continuous phase
Sucrose ester	2	Stabilises air bubbles
Salt	7	Saltiness

Process

- 1.Combine ingredients and heat until dissolved.
- 2.Blend at high speed to form foam.



Sensory Analysis



Appearance 4.2 / 5

Strongest score, coastal concept read clearly on the plate

Texture 4.2 / 5

Contrast between smooth shells, granular sand and icy granita worked well

Aroma 3.8 / 5

Positive, but aroma intensity could be sharpened

Taste 3.8 / 5

Improved after removing mango & cutting sweetness in the granita

The Project in Numbers

182

Kcal / Portion.

Total calorie count per dessert portion, confirmed through nutritional analysis of the final recipe.

19.8g

Protein / Portion.

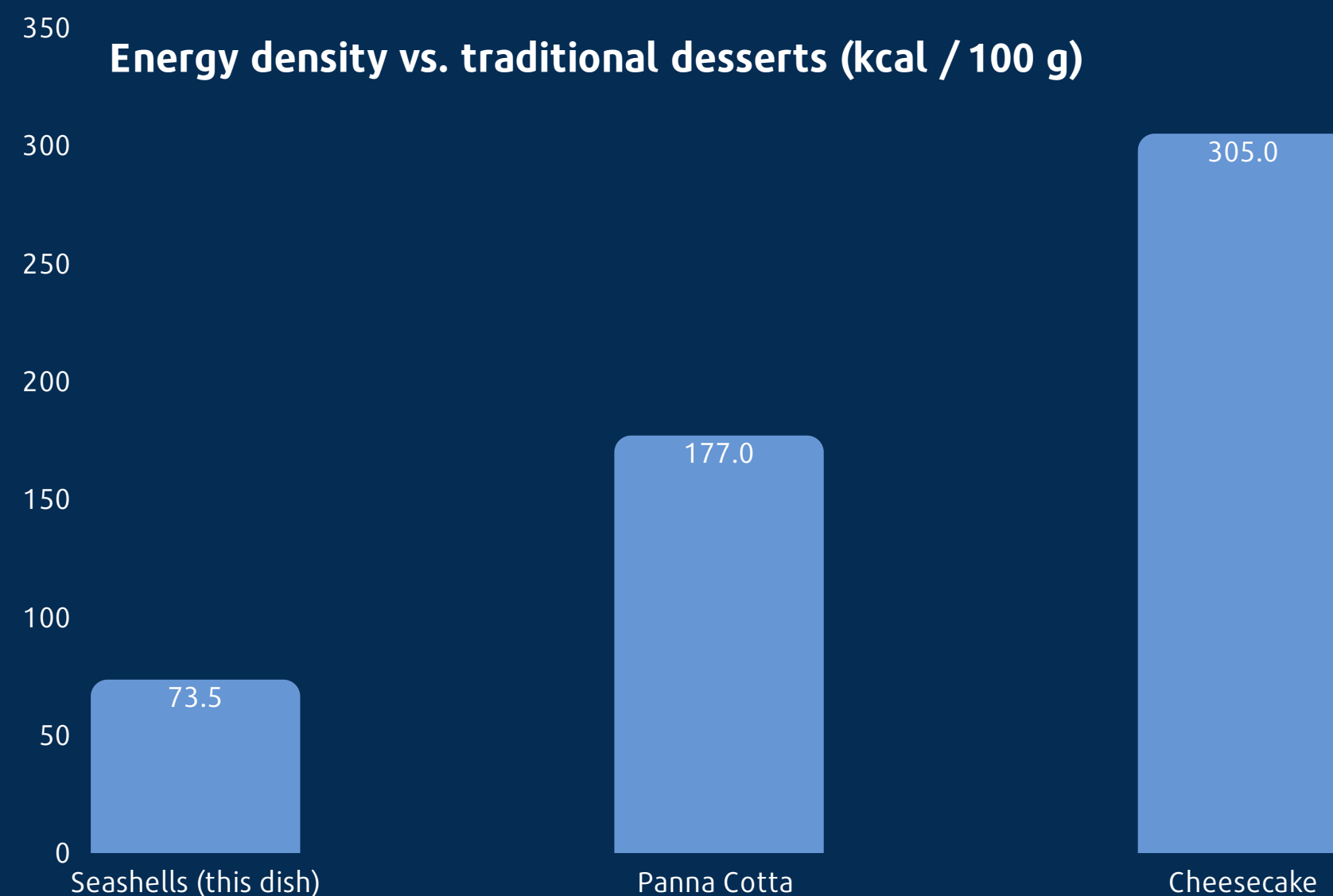
Protein content per portion, boosted with a whey-protein based shell gel.

€1.30

Cost / Portion.

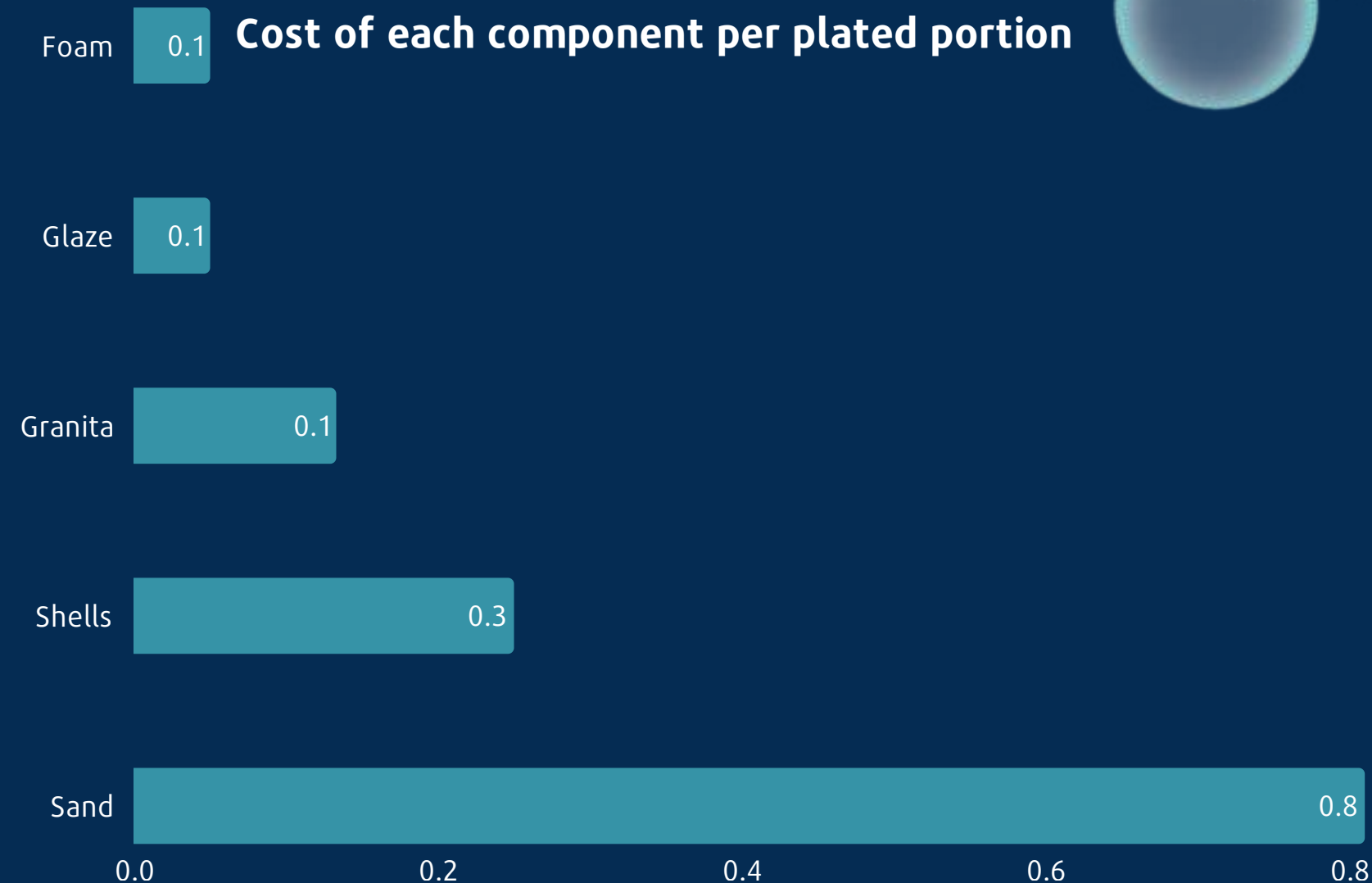
Ingredient cost per portion, kept low through note-by-note substitutions.

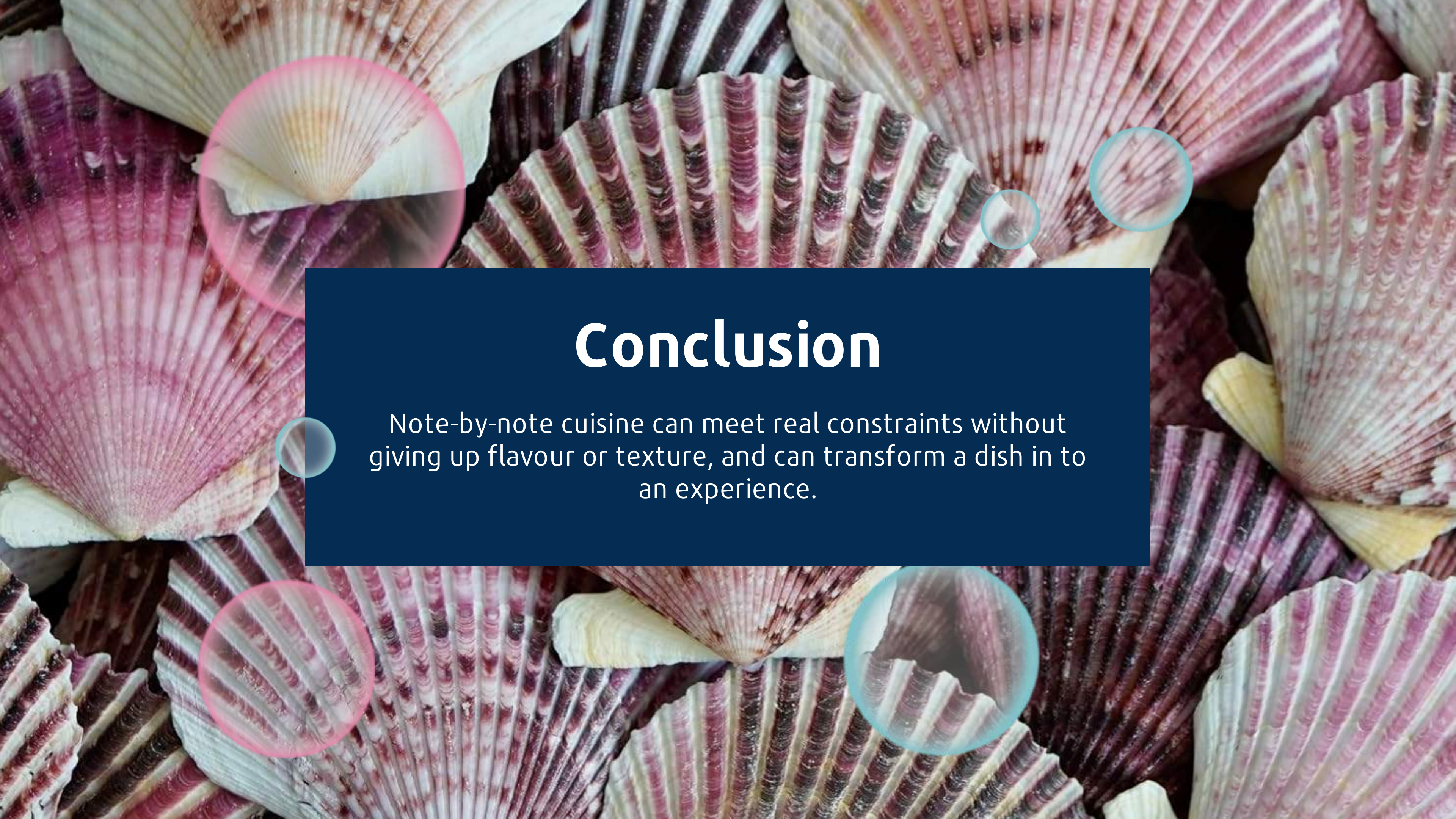
Energy density vs. traditional desserts (kcal / 100 g)



USDA FoodData Central, 2024 (indicative comparison)

Cost of each component per plated portion



The background of the slide is a close-up photograph of several scallop shells. The shells are arranged in a dense, overlapping pattern. They exhibit a variety of colors, including deep reds, purples, and pinks, with prominent concentric ridges. There are five circular highlights overlaid on the image: a large pink one in the upper left, a small light blue one in the upper right, a medium light blue one in the lower right, and two medium pink ones in the lower left. A dark blue rectangular box is centered on the slide, containing the title and a paragraph of text.

Conclusion

Note-by-note cuisine can meet real constraints without giving up flavour or texture, and can transform a dish into an experience.



Thank You

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