NOTE BY NOTE DISH

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Molecular Gastronomy

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Content

- Importance of Note by Note cooking
- Objective of this report
- Pectin as an ingredient
- Note by Note cooking and foods for elderly
- Dish concept
- Ingredients
- Material & Methods
- Final result

Importance of Note by Note

Note by Note Cooking is the **culinary technique** using pure compounds, in order to build food.

The cook has to decide the **shapes, consistencies, tastes, odours, trigeminal sensations,** temperatures, colours.

Important aspects to note: **nutrition, toxicity**

A solution to **sustainable development**

Contribution to the **fight against spoilages** and taking care of the **environment**

(Note-by-note cooking: the future of food, 2015)

Objectives

Playing with pectin’s and a minimum content of sugar

To create dishes with interesting consistencies and/or flavours using pectin's.

Pectin – Things to ‘Note’

Name	**Pectin (E440) low methoxy (LM)**	**Pectin (E440) high methoxy (HM)**
Origin	Citrus peel and apple	Citrus peel and apple
Texture	thermoreversible gels	thermoirreversible gels
Dispersion	cold water, can be improved by mixing with sugar (3-5x)	cold water, can be improved by mixing with sugar (3-5x)
Hydration	coldor hot water	cold or hot, will not dissolve if >35% sugar
pH	**2.5-7**	**2.5-4**
Setting		40-85 degrees (depending on pH)
Melting	yes	no
Promoter	**calcium ions for gelling**	requires acidity (pH <3.5) and high sugar contents for gelling (60-80% soluble solids, mainly sugar)
Inhibitor	high sugar concentrations low pH, alcohol	
Typical concentration	**(0.15-3.1%)**	**(0.16-6.3%)**

(Blog.khymos.org, 2019)

Common eating problems for elderly

CHEWING DIFFICULTIES

REDUCES TASTE

DRY MOUTH

POOR DIGESTION

POOR APPETITE

(Elderly.gov.hk, 2019)

The sad reality of foods for elderly

- Most foods pureed
- Dull colored
- Clinical in appearance
- Lack of care paid to this market

Note by Note foods as a solution

Note by note gel based foods can mimic familiar foods

Gel and foam textures can be adjusted to ensure easy swallowing and digestion

Flavours can be increased to substitute for reduced taste perception

Gels can be fortified with nutrients lacking in diet

Colours and shaped can bring more excitement to a mostly bland and dull diet

PRODUCT CONCEPT

Product Features

Protein fiber jelly

- *Coagulated protein strands*
- *Binded with gelatine solution*

Carrots

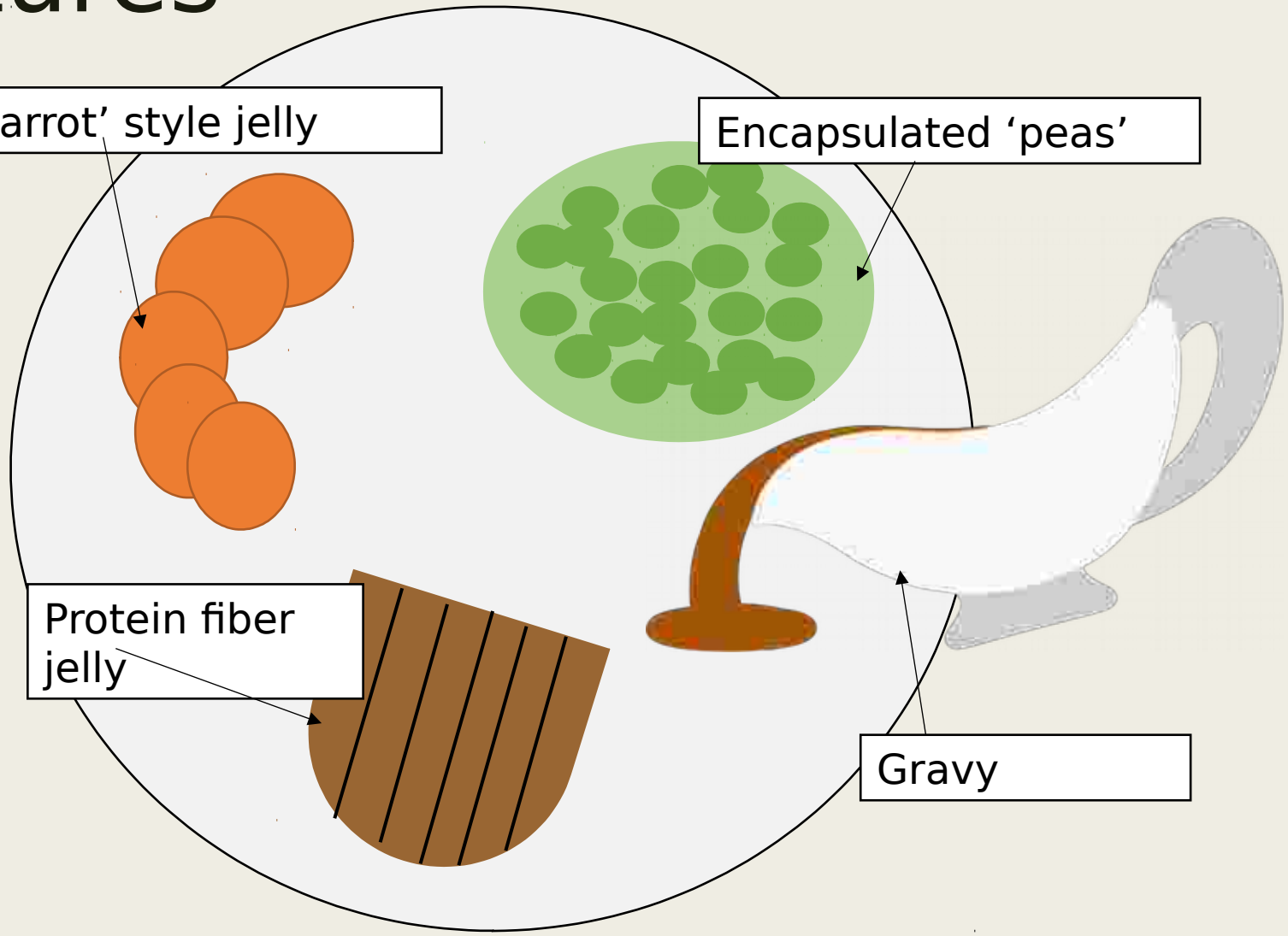
- *Pectin based gel shaped using 3d printed template*

Peas

- *Encapsulated liquid spheres entrapped in a solid gel*

Gravy

- *Liquid gel solution, seasoned with key aromatic compounds*



Protein fibre jelly

Materials & Methods

Part 1. Gel entrapped protein fibres	
Ingredients	**Quantity**
1. Protein fibres	
Protein	42%
Sucrose	6%
water	40%
Amino acid powder	5%
Fatty acids (EPA &DHA)	5%
Brown colorant	0.01%
Flavour (1-octen-3 & 2-methyl-3-furanthiol)	0.01%
2. Gel binder	
Agar	3%
water	97%

Part 1. Materials
Mixing bowl
Electric whisk
wooden spoon
weighing scale
Microwave oven
3D printed meat template
Pouring jug

Protein fibre jelly
Methodology

Step 1.1. Protein fibres

- Spoon the dry ingredients (protein powder, amino acids and triglycerides into bowl and in a separate bowl combine wet ingredients (water, glucose, colorant and flavour)
- Combine the wet and dry ingredients
- Place the mixture onto a flat surface
- Use a knife to cut very strips (fibre like)
- Put the raw dough into a microwave oven for 15 seconds and until the mix has coagulated
- Allow to cool

Step 1.2. Prepare the gel coating

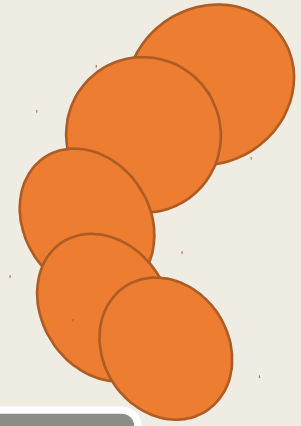
- Disperse the agar in the water using an electric whisk until well combined
- Heat the mixture in a microwave oven for approximately 3 minutes or until boiling

Step 1.3. Setting

- Arrange the protein fibres side by side within the template, leaving a gap of approximately 1 mm
- Pour the liquid gel coating over the fibres and allow to cool and solidify
- When solid gel is formed remove from the template

(The MAD Feed, 2019)

Carrot jelly
Ingredients, materials & methodology



Part 2. Carrot gel	
Ingredients	**Quantity**
LM Pectin	3.00 %
Calcium lactate	0.05 %
Powdered sucrose	6%
water	90.03 %
Colorant (Sunset Yellow FCF)	0.01 %
Daucus carota L	0.01 %

Step 2. Materials
Mixing bowl
Weighing scales
Pouring jug
Sauce pan
temperature probe
ph. paper
3d printed carrot template

Method

- Combine the dry ingredients (pectin, powdered sucrose and calcium lactate)
- Combine water, colorant and flavour in the water
- Stir the water into the dry mix and mix well until well dissolved
- Heat the mix until 100 degrees
- Add citric acid to adjust the PH so within range (2.5-5)
- Pour into template and allow to cool

Peas
Ingredients & Materials

Part 3. Peas	
Ingredients	**Quantity**
3.1. Internal gel solution	
HM pectin	2%
Sucrose	60%
Calcium lactate	0.05%
Chlorella	0.01%
Citronelle	0.01%
Citric acid	adjust PH
water	27.
3.2. Setting solution	
LM amidated pectin	3%
Sucrose	6%
Water	93%%
3.3. Chilling bath	
Water	83%
Sucrose	16%
Citric acid	1%

Material
1. Syringe
2. 3 x Mixing bowl
3. Sauce pan
4. Whisk

Peas

Methodology

Step 3.1. Internal gel

- Combine the dry ingredients (pectin, sucrose powder, calcium and chlorella)
- Combine the wet ingredients (water and flavouring agent)
- Combine ingredients and heat to boiling point
- Adjust ph.
- Pour liquid gel into a glass cylinder and using a syringe uptake the liquid gel

Step 3.2. Gelling solution

- Dissolve pectin & sugar in the water and heat to boiling point
- Pour into a large bowl and allow to cool

Step 3.3. Specification

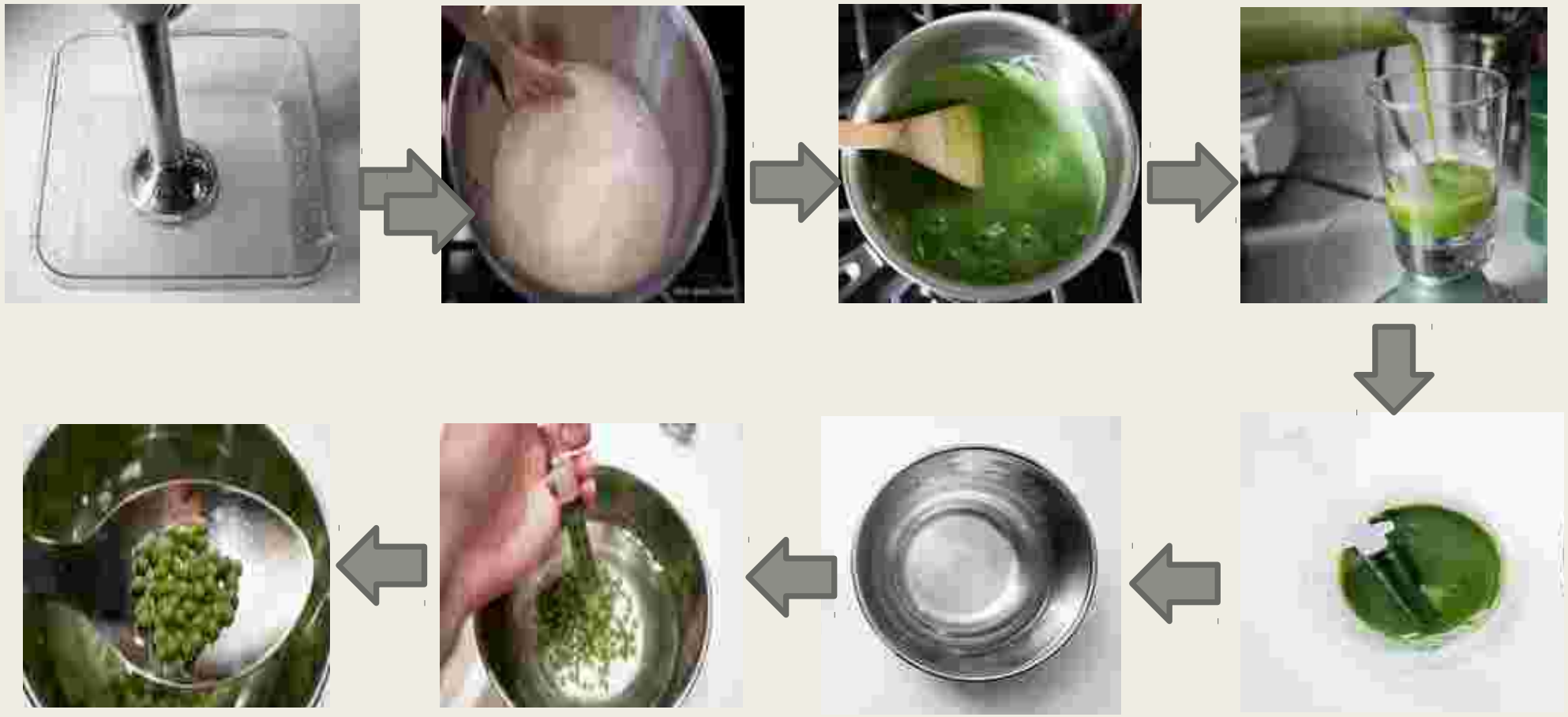
- Using the syringe drop the liquid gel into the gelling solution and allow to immerse for 1 or 2 minutes
- Remove the coated spheres and place into a setting solution

Step 3.4. Packing

- The small spheres are bundles together and further coated with the gelling solution to entrap the spheres closely together
- Allow to cool

(Molecular Recipes, 2019)

Spherification procedure



Ingredients, materials & methodology

Part 4. Red wine sauce	
Ingredients	Quantity
Pectin	0.50%
Sucrose	6%
Sodium	0.50%
Tartaric acid & verbenone	0.01%
Water	83.99%
Fatty acids	5%

Materials
1. Saucepan
1. Mixing bowl
1. Hand whisk

Method

- Combine the dry ingredients
- Combine with water and mix well
- Heat the mixture until boiling
- Cool and allow to simmer on a low heat
- Adjust sodium and tartaric acid to taste

THE RESULT

Thank you for your attention!

Bibliography

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