

External assessment 2023

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Stimulus book

# Food & Nutrition

## General instruction

- Work in this book will not be marked.

# Stimulus 1

## Formulations for lemon basil risotto and sensory profiling

|                      | Food components   | Procedure   |
|----------------------|---|---|
| <b>Formulation 1</b> | 1 L vegetable stock<br>40 mL olive oil<br>150 g red onion, chopped<br>100 g celery, chopped<br>440 g arborio rice<br>300 mL dry white wine<br>Zest of 2 lemons<br>80 mL lemon juice<br>40 g parmesan, finely grated<br>100 g ricotta cheese<br>50 g fresh basil leaves, chopped<br>Extra parmesan, to serve                 | <ol style="list-style-type: none"> <li>1. Boil the stock, then reduce heat and simmer.</li> <li>2. Heat oil, add onion and celery. Stir for 10 minutes. Add rice, stir for one minute, then stir in wine.</li> <li>3. Add simmering stock to rice mixture, 200 mL at a time. Stir. Cook for two minutes.</li> <li>4. Remove from heat. Stir in lemon zest, juice, parmesan, ricotta and basil.</li> <li>5. Season and top with extra parmesan.</li> </ol>   |
| <b>Formulation 2</b> | 600 mL vegetable stock<br>40 mL olive oil<br>150 g red onion, chopped<br>100 g celery, chopped<br>220 g arborio rice<br>250 mL water<br>Zest of 1 lemon<br>20 mL lemon juice<br>40 g parmesan, finely grated<br>50 g ricotta cheese<br>10 g butter, chopped<br>50 g fresh basil leaves, chopped<br>Extra parmesan, to serve | <ol style="list-style-type: none"> <li>1. Boil the stock, then reduce heat and simmer.</li> <li>2. Heat oil, add onion and celery. Stir for 10 minutes. Add rice, stir for one minute. Add water and stir until absorbed.</li> <li>3. Add 200 mL of the simmering stock and stir until stock is absorbed.</li> <li>4. Continue adding the stock, 200 mL at a time. Stir until the stock is absorbed.</li> <li>5. Remove from heat. Stir in lemon zest, juice, parmesan, ricotta, butter and basil.</li> <li>6. Season and top with extra parmesan.</li> </ol> |
| <b>Formulation 3</b> | 500 mL vegetable stock<br>40 mL olive oil<br>150 g red onion, chopped<br>100 g celery, chopped<br>150 g arborio rice<br>150 mL dry white wine<br>40 mL lemon juice<br>40 g parmesan, finely grated<br>100 g ricotta cheese<br>50 g fresh basil leaves, chopped<br>Extra parmesan, to serve                                  | <ol style="list-style-type: none"> <li>1. Boil the stock, then reduce heat and simmer.</li> <li>2. Heat oil, add onion and celery. Stir for five minutes. Add rice, stir for one minute, then stir in wine.</li> <li>3. Add simmering stock, 100 mL at a time. Stir before adding more. Cook for five minutes.</li> <li>4. Remove from heat. Stir in lemon juice, parmesan, ricotta and basil.</li> <li>5. Season and top with extra parmesan.</li> </ol>   |

**Average scores of sensory profilers**

| <b>Formulation 1</b> |                             |              |
|----------------------|-----------------------------|--------------|
| <b>Food quality</b>  | <b>Description</b>          | <b>Score</b> |
| <b>Appearance</b>    | Creamy colour               | 3            |
| <b>Taste</b>         | Very tart flavour           | 1            |
| <b>Aroma</b>         | Very strong lemon aroma     | 2            |
| <b>Texture</b>       | Watery sauce and chewy rice | 1            |

| <b>Sensory profiling scale</b> |   |
|--------------------------------|---|
| Poor                           | 1 |
| Fair                           | 2 |
| Satisfactory                   | 3 |
| Good                           | 4 |
| Great                          | 5 |

| <b>Formulation 2</b> |  |              |
|----------------------|--|--------------|
| <b>Food quality</b>  | <b>Description</b>                       | <b>Score</b> |
| <b>Appearance</b>    | Creamy colour, rice grains still evident | 5            |
| <b>Taste</b>         | Very mild cheesy flavour, creamy         | 3            |
| <b>Aroma</b>         | No aroma                                 | 1            |
| <b>Texture</b>       | Tender yet firm to bite                  | 5            |

| <b>Formulation 3</b> |                                      |              |
|----------------------|--------------------------------------|--------------|
| <b>Food quality</b>  | <b>Description</b>                   | <b>Score</b> |
| <b>Appearance</b>    | Pale creamy colour but appears lumpy | 3            |
| <b>Taste</b>         | Lemony and cheesy flavour            | 5            |
| <b>Aroma</b>         | Lemon aroma                          | 5            |
| <b>Texture</b>       | Rice hard, very chewy                | 1            |

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## Stimulus 2

### Test kitchen report

A food company has developed three prototype formulations for the pregnant nutrition consumer market (NCM) that would be suitable for vegans. All prototypes are proposed to be sealed, last up to seven days in a refrigerator and may require heating before consumption. The company researched current food trends and tested these prototypes with pregnant consumers who are vegan. The results are outlined in this report.

#### Prototype options

- Prototype 1 — Raw chocolate peanut brownies
- Prototype 2 — Vegan frittata
- Prototype 3 — Refried bean and plant-based mince burritos

### Current food trends for pregnant consumers

#### *Eat a variety of foods*

- Provide nutritionally dense foods to ensure nutrients such as protein, calcium, iron and fibre are supplied to the growing baby and parent.
- Provide appropriate foods that deliver the recommended kilojoules to maintain a healthy weight.

#### *Incorporate more plant-based proteins*

- Consider plant-based sources of protein, such as soy products and combinations of plant-based foods, which can provide the essential amino acids required during pregnancy.
- Consider the availability of calcium and iron in plant-based foods.

#### *Be aware of foodborne illness*

- Avoid foods with a bacterial risk already present in the food or introduced due to cross contamination, e.g.
  - vegan bread
  - cooked soy products, such as tofu and textured vegetable protein (TVP)
  - cooked
    - » rice
    - » lentils
    - » pasta
    - » beans
    - » chickpeas
  - pre-packaged
    - » fruit tubs
    - » salads
  - raw sprouts.

| Recommended daily intake (RDI)<br>for a pregnant consumer |           |
|---|-----------|
| Energy  | 10 202 kJ |
| Protein   | 70 g      |
| Fat, total  | 60 g      |
| – saturated   | 20 g      |
| Carbohydrate  | 210 g     |
| – sugar   | 30 g      |
| Fibre   | 30 g      |
| Sodium  | 460 mg    |
| Vitamin C   | 40 mg     |
| Iron  | 27 mg     |
| Folate  | 400 µg    |
| Calcium   | 1000 mg   |
| Zinc  | 400 mg    |

### Prototype 1: Raw chocolate peanut brownies

|             | Food components   | Procedure  |
|-------------|---|--|
| 10 servings | 90 g walnut halves<br>10 g chia seeds<br>30 g cacao powder<br>85 g seedless raisins<br>150 g pitted dates<br>30 g vegan dark chocolate<br>50 g rolled oats<br>100 g unsalted peanuts<br>90 g unsalted peanut butter | 1. In a food processor, process walnuts, chia seeds, cacao powder, raisins and half of the dates.<br>2. Press mixture into tray. Refrigerate until firm.<br>3. Process oats, peanuts and peanut butter.<br>4. Add remaining dates and process.<br>5. Press mixture on top of first layer. Refrigerate until firm.<br>6. Melt chocolate and drizzle over second layer. Refrigerate until set.<br>7. Cut into squares, then package. |

### Prototype 2: Vegan frittata

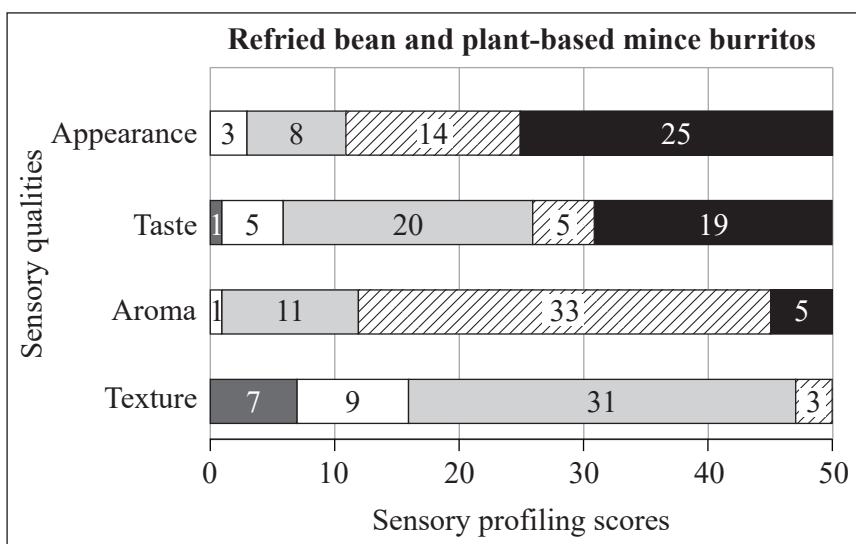
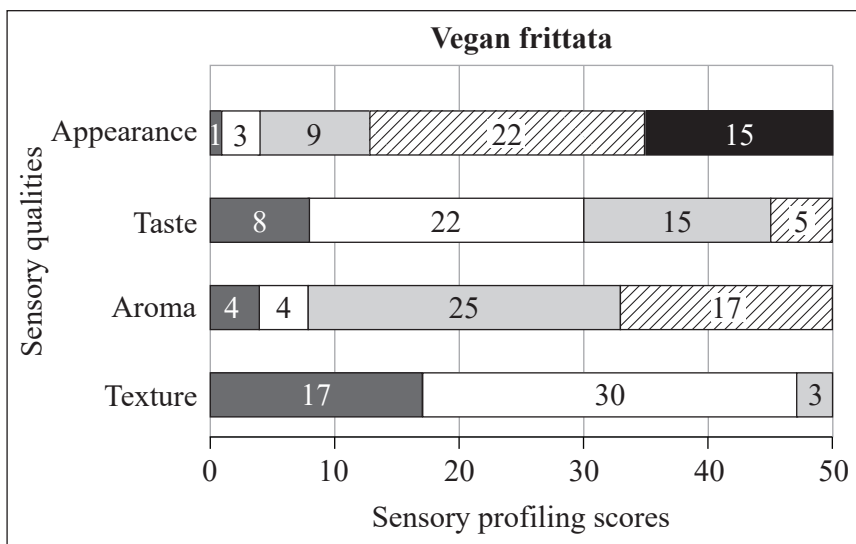
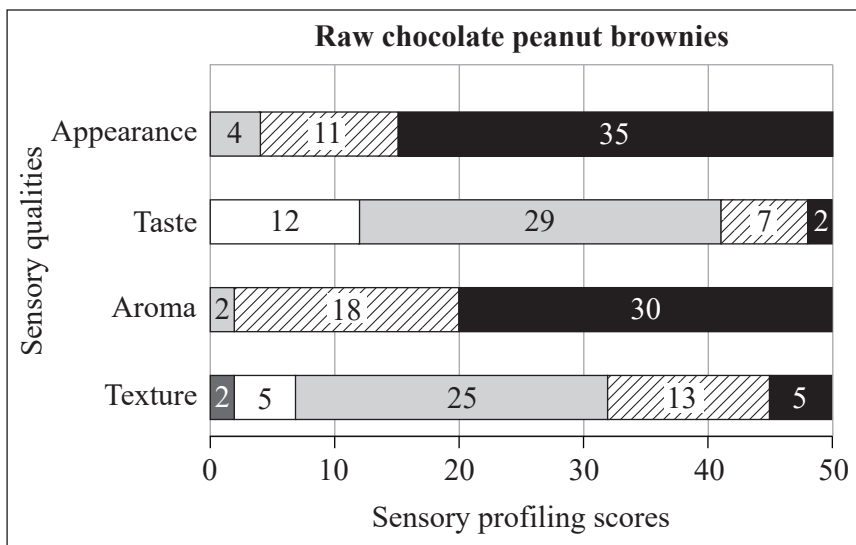
|           | Food components  | Procedure   |
|-----------|--|---|
| 1 serving | 120 g egg substitute<br>10 mL oat milk<br>125 g green capsicum, chopped<br>5 mL canola oil<br>30 g shredded soy-based cheese<br>30 g tofu, sliced<br>100 g English spinach | 1. Whisk the egg substitute and oat milk.<br>2. Stir in green capsicum, cheese, tofu and English spinach.<br>3. Add oil to the pan and add mixture.<br>4. Cook until set.<br>5. Cool, then package. |

### Prototype 3: Refried bean and plant-based mince burritos

|            | Food components   | Procedure   |
|------------|---|---|
| 2 servings | 10 mL olive oil<br>60 g TVP mince<br>60 g egg substitute<br>20 mL oat milk<br>30 g refried beans<br>400 g plain flour<br>20 g vegan cheese, grated<br>50 g Roma tomato, diced<br>10 g coriander, chopped<br>salt and pepper | 1. Brown TVP mince.<br>2. Whisk egg substitute and oat milk.<br>3. Put flour in a separate bowl and add egg mixture. Season and combine to form a dough.<br>4. Halve dough and roll into tortillas.<br>5. Add oil to a flat pan and cook each tortilla.<br>6. Assemble burritos by spreading beans over tortilla, then adding mince, tomato, cheese and coriander. Roll up.<br>7. Cool, then package. |

### Sensory profiling data (50 profilers)

Key ■ poor □ fair ▒ satisfactory ▨ good ■ great



### Nutritional information

| Prototype 1  | Per serve<br>105 g | Per<br>100 g |
|--------------|--------------------|--------------|
| Energy       | 2500 kJ            | 2380 kJ      |
| Protein      | 14.3 g             | 13.6 g       |
| Fat, total   | 37.1 g             | 35.3 g       |
| – saturated  | 5.4 g              | 5.1 g        |
| Carbohydrate | 46.6 g             | 44.4 g       |
| – sugar      | 37.1 g             | 35.3 g       |
| Fibre        | 7.2 g              | 6.9 g        |
| Sodium       | 42 mg              | 40 mg        |
| Calcium      | 80 mg              | 76 mg        |
| Iron         | 37.5 mg            | 35.7 mg      |

| Prototype 2  | Per serve<br>200 g | Per<br>100 g |
|--------------|--------------------|--------------|
| Energy       | 2880 kJ            | 1440 kJ      |
| Protein      | 26.6 g             | 13.3 g       |
| Fat, total   | 20 g               | 10 g         |
| – saturated  | 3 g                | 1.5 g        |
| Carbohydrate | 82.4 g             | 41.2 g       |
| – sugar      | 3.2 g              | 1.6 g        |
| Fibre        | 7.2 g              | 3.6 g        |
| Sodium       | 1060 mg            | 530 mg       |
| Calcium      | 1140 mg            | 570 mg       |
| Iron         | 8.6 mg             | 4.3 mg       |

| Prototype 3  | Per serve<br>190 g | Per<br>100 g |
|--------------|--------------------|--------------|
| Energy       | 2860 kJ            | 1500 kJ      |
| Protein      | 25.7 g             | 13.5 g       |
| Fat, total   | 9.1 g              | 4.8 g        |
| – saturated  | 1.5 g              | 0.8 g        |
| Carbohydrate | 118 g              | 62.1 g       |
| – sugar      | 2.7 g              | 1.4 g        |
| Fibre        | 9.8 g              | 5.2 g        |
| Sodium       | 397 mg             | 209 mg       |
| Calcium      | 163 mg             | 85.8 mg      |
| Iron         | 4.9 mg             | 2.6 mg       |

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## References

Prototype 1: Adapted from Freer, C, 'Raw chocolate peanut brownies',  
<https://www.taste.com.au/recipes/raw-chocolate-peanut-brownies/6c9c4949-41cf-4c71-a4d3-e12f32d0df94>



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