The Waffle Bar: A twist on the American Classic

Jer Lin Poh, Sierra Jamir, Michelle Duong & Zi Xing Song
A savory cheddar & chive waffle

Innovative  Upgrading your breakfast from Sweet to Savory

Better-for-you  37g whole grains per serving

Breakfast on-the-go, anytime
What’s inside?

✓ 17g of protein
✓ 5g of fiber
✓ No sugar added
✓ Good source of calcium
✓ Does not contain eggs or soy
• 37% of consumers want healthier options at coffee shops

• All day breakfast: Savory bakery options are suitable for all-day snacking

• Savory flavors grew by 28% between Q2 2012 and Q2 2015
Market trends

Nutritious

On-the-Go

New flavors

Innovative
Eggo Nutri-Grain Whole Wheat Waffles

The Waffle Bar

<table>
<thead>
<tr>
<th>Nutritional Facts</th>
<th>Per 100 kcal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat</td>
<td>3.5g</td>
</tr>
<tr>
<td>Sodium</td>
<td>235mg</td>
</tr>
<tr>
<td>Calcium</td>
<td>1.8g</td>
</tr>
<tr>
<td>Fiber</td>
<td>2.9g</td>
</tr>
<tr>
<td>Protein</td>
<td>5.9%</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Per 100 kcal</th>
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<tbody>
<tr>
<td>4.2g</td>
</tr>
<tr>
<td>178mg</td>
</tr>
<tr>
<td>6.5%</td>
</tr>
<tr>
<td>1.6g</td>
</tr>
<tr>
<td>5.4g</td>
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</tbody>
</table>

Just as nutritious, and packed with flavor
Cost & Retail

Distribution of Cost

To be sold at Starbucks outlets in NY, NJ & CT

Production cost: $0.38* (By local co-packer)

Retail price: $2.75

*Does not include Starbucks’ operation costs
Technical Challenges

Sodium content vs water activity: $A_w$ reduction 0.98 to 0.92

Mold Growth

Egg supply & cholesterol content

Staling
Functional Ingredients

**Whey Protein**
- Sustainable byproduct
- Egg replacer
- Cholesterol reduction: 144mg to 14mg

**Citrus Fiber**
- Sustainable byproduct
- Egg replacer
- Moisture retention

**Potassium sorbate & Calcium propionate**
- Retard mold growth

**Sorbitol**
- Sugar substitute
  - Moisture retention

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*THE WAFFLE BAR*

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*BAKING TECH 2016*

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*AMERICAN SOCIETY OF BAKING*
Packaging

- Modified atmosphere packaging
- PVDC-coated OPP film
  - High moisture and gas barrier properties

Prevents microbial growth & texture deterioration

60% CO₂
4% O₂
36% N₂
1. Preparation of chives

- Chives → Cascade washing system → Slicer

2. Waffle Production

- Water
- Butter
- Shredded cheddar
- Chives

- Dry ingredients → Batch mixer → Transfer pump → Servo pump depositor

- Batch mixer → Tunnel oven

- Pan oiling system → Picking drum

3. Packaging

- Spiral cooler → Automatic stacker → Modified atmosphere packaging line → X-ray detector

CCP #1: Bake time and temperature
CCP #2: MAP gas composition & proper sealing
CCP #3: No foreign particles
Ensuring Product Safety
Sensory Analysis I

More whole grains, please!

- The 100% whole grain analog was the most well-received.
Sensory Analysis II

Butter is better

- The Waffle Bar was perceived to be very new and different
- 70% prefer to purchase waffles made with butter
- 79% were willing to pay more for a waffle formulated with butter
- WTP: $2.82 per serving
Butter vs Vegetable oil + Butter flavoring

JAR scale

<table>
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<tr>
<th>Moistness</th>
<th>Canola Oil</th>
<th>Butter</th>
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<tr>
<td>Denseness</td>
<td>Canola Oil</td>
<td>Butter</td>
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</table>

Hedonic scale

- Aftertaste: Canola Oil = 5, Butter = 5.4
- Flavor: Canola Oil = 5.4, Butter = 6
- Overall liking: Canola Oil = 5.4, Butter = 6

Chart Area

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Thank you!
Thank you!