Whey4Fun members:
Ana Georgiana POPA
Alina Marina CHIRILA
Adelina PRICOPE

Coordinators:
Professor dr.eng. Daniela BORDA
Lecturer dr.eng. Iulia Bleoancă
PhD eng. Florentina Bucur
HEALTHY EATING TREND
 Consumers are highly concerned by their wellbeing, they are label readers, and want to trust in food.

DIVERSITY
 Consumers would like to discover new flavors and taste in their ice-creams.

POTENTIAL
 There is a regional potential of the market growth in Moldova, Ukraine, Italy, Hungary and Cyprus.

Eurostat statistics:
- Chart showing EU production in 2016 (t/year)
- Countries with highest production: France, Germany, Italy, etc.

Ice cream makes you happy - it’s official!

Too hot.
Need ice cream.

Consumers would like to discover new flavors and taste in their ice-creams.
ECO-INNOVATIVE PROCESSING DESIGN

RAW MILK → CREAM → ICE CREAM MIX → WHEY → CHEESE

PLUMS + QUINCES + EGG + CaCl₂ → SUGAR → Topping

Quills → WHOOPIE Ice-cream

CHEESEMAKING ← ICE CREAM ← FRUIT PROCESSING

insoluble fibers → edible crafted letters
RAW MATERIALS

WHEY

✓ High-value aminoacids
✓ Rapid proteins
✓ Antimicrobial activity

QUINCE

✓ High pectine content
✓ Functional proantocyanidins

PLUM

✓ Rich in anthocyanins
✓ High in vitamins and minerals

CREAM

✓ High in Vit. A, D and E
✓ Creamy taste

EGG

✓ Good foaming properties
✓ Improves texture

SUGAR

✓ Reduced ice cristal growth
✓ Smooth texture
Enzymatic hydrolysis (40 °C, 1h)
FRUITS MARC
Lactase
DELACTOSED WHEY
Mix formulation
Mixing
Pasteurization (85 °C, 10min)
Insoluble fibers removal
Aseptic homogenisation (120 bar, 75 °C)
Aging
Freezeration (-6 °C)
Hardening (-35 °C)
Storage (-21 °C)

WHOOPIE ICE FLOW DIAGRAM

Sorting- washing

Sugar

Sweet whey

Concentration (10% dw)

Enzymatic hydrolysis (40 °C, 1h)

Delactosed whey

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Calcium binding and calcium-induced gelation of normal low-methoxyl pectin modified by low molecular-weight polyuronate fraction, Food Hydrocolloids 69, 318-328

### NUTRITIONAL FACTS

<table>
<thead>
<tr>
<th>Nutritional information</th>
<th>100g</th>
<th><strong>%DV</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy</strong></td>
<td>206kcal/862kJ</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Protein, g</strong></td>
<td>3.1</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Total carbohydrate, g</strong></td>
<td>24.7</td>
<td>8%</td>
</tr>
<tr>
<td><strong>Sugar, g</strong></td>
<td>23.1</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Dietary fiber, g</strong></td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td><strong>Total fat, g</strong></td>
<td>10.8</td>
<td>17%</td>
</tr>
<tr>
<td><strong>Saturated fat, g</strong></td>
<td>6.4</td>
<td>32%</td>
</tr>
<tr>
<td><em><em>Salt</em>, mg</em>*</td>
<td>136</td>
<td>6%</td>
</tr>
</tbody>
</table>

*Exclusive from whey
**Percent Daily Values are based on a 2000 kcal/8360 kJ diet.

Values calculated in 100% dry matter

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### Whoopie-Ice formulation

- 54% whey
- 9.6% plum
- 9.6% quince
- 13.4% cream
- 3.4% egg
- 10% sugar

http://nutritiondata.self.com/

<table>
<thead>
<tr>
<th>100 g product</th>
<th>Proteins, g</th>
<th>Lipids, g</th>
<th>Carbs, g</th>
<th>Ca, mg</th>
<th>P, mg</th>
<th>Fe, mg</th>
<th>A, mg</th>
<th>B1, mg</th>
<th>B2, mg</th>
<th>C, mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whoopie Ice-cream</td>
<td>3.10</td>
<td>10.80</td>
<td>24.70</td>
<td>1.21</td>
<td>1.25</td>
<td>0.40</td>
<td>0.09</td>
<td>0.00</td>
<td>0.50</td>
<td>2.60</td>
</tr>
</tbody>
</table>
i.e. 3000 kg RO

3000 \times \frac{6.5}{100} = CW \times \frac{28}{100}
\Rightarrow CW = 3000 \times \frac{6.5}{28} = 1083.8 \text{ kg}

Evaporated water = 3000 - 694.43 = 2303.57 \text{ kg}

Conc(RO)+Free(4mo) = 1479 \text{ kg CO}_2 \text{ e/ annually}

3.8 times less CO\text{_2} emissions

Concentration (45% DM) + Drying = 5602 kg CO\text{_2} e /annually
Costs analysis

<table>
<thead>
<tr>
<th>Whey annually processed</th>
<th>280 t/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentrated whey</td>
<td>76 t/yr</td>
</tr>
<tr>
<td>Total ice-cream t/yr</td>
<td>148 t/yr</td>
</tr>
</tbody>
</table>

Concentrated whey

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Income</th>
<th>Total Expenses</th>
<th>Gross Profit/Loss</th>
<th>Profit Tax Charge</th>
<th>Net Profit/Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>707,500.00 €</td>
<td>581,772.76 €</td>
<td>125,727.24 €</td>
<td>20,116.36 €</td>
<td>105,610.88 €</td>
</tr>
<tr>
<td>2020</td>
<td>1,480,000.00 €</td>
<td>742,984.37 €</td>
<td>737,015.63 €</td>
<td>117,922.50 €</td>
<td>619,093.13 €</td>
</tr>
<tr>
<td>2021</td>
<td>1,824,375.00 €</td>
<td>908,494.89 €</td>
<td>915,880.11 €</td>
<td>146,540.82 €</td>
<td>769,339.29 €</td>
</tr>
<tr>
<td>2022</td>
<td>2,039,625.00 €</td>
<td>1,105,778.75 €</td>
<td>933,846.25 €</td>
<td>149,415.40 €</td>
<td>784,430.85 €</td>
</tr>
</tbody>
</table>

Whey-to-go!

Whey prices:
- Concentrated whey: 21.6 lei/kg
- Whey: 1.35 lei/kg
MARKETING STRATEGY

Tools to promote Whoppie Ice:

W = wealth
H = happiness
O = optimism
O = originality
P = passion
I = imagination
E = enthusiasm

Erasmus + Training Blueprints for Accelerated Growth

Middle class
Upper middle class
MARKETING CAMPAIGNS

1. Decision making to run Whoopie Ice advertising campaign
2. Ice cream market analysis
3. Promote the product via Internet and external human resources
4. Budget allocation for the chosen promoting activities
5. Implementation of the online campaign
6. Implementation of an informative campaign by distributing flyers
7. Implementation of a product sampling campaign
8. Assessment of the campaign.

Come and enjoy... Whoopie Ice

fb.me/whoopieice
http://whoopie-ice.ugal.ro
ECOINNOVATION - AN INTEGRATED SMART PROCESSING APPROACH

- New dimension in whey valorization
- Connecting different part of the food chain
- Reduce the by-products from processing
- Reduced energy consumption
- Low carbon footprint
- Transferrable solution into industry

Whoopie ice range

- Proteins
  - Ice-cream for athletes
- Probiotics
  - Functional ice-cream
- Berries
  - Different flavours

Ice-cream for athletes
- Functional ice-cream
- Different flavours
The story of Whoopie Ice

Once upon a time............
Thank you!

Georgiana  Marina  Adelina

Prof Corneliu Popa
Sef lucr. dr. ing. Corina Neagu
Conf. Iordachescu Gabriela
Asis dr. ing. Dana Moraru
Ing. Octavian Gavrila

ASIAR
Print House Anarecom Regioserv
Paperprint
Brandvertising MEDIA
Chr. Hansen Romania
RDIA Romania
Betty Ice
APAR