Fat-Free Dairy-Based Frozen Dessert

Ruby Jenkins, Hannah Wilson and Kiera Smith - Massey High School

“Indulgence without the fat...”

Brief:
Develop a fat free dairy based frozen dessert at 0.8% fat for females between the age of 25 – 59 in New Zealand.

The product must be consistent with the Tip Top image.

Design Specification:
- Contains only natural colours and flavours
- Only fresh cream and milk
- Palm free
- Vegetarian
- Egg free
- Fat free
- Contains dairy

Our Initial Trials

Water, Milk Solids Non Fat, Sucrose, Emulsifier (477), Vegetable Gums (400, 410, 412)

Water, Milk Solids Non Fat, Sucrose, Vegetable Gums (410, 412), Methylcellulose (400), Maltodextrin (477)

Water, Milk Solids Non Fat, Sucrose, Vegetable Gums (410, 412), Emulsifier (477), Methylcellulose (400), Flavour, Masticating Flavour

Our Packaging Prototype

Givaudan

Our Final Ingredient List

Ingredients: Frozen Dessert (Water, Milk Solids Non Fat, Sucrose, Glucose Syrup [from Maize], Tapioca Maltodextrin, Emulsifier (477), Vegetable Gums (400, 410, 407a), Dextrose, Natural Flavour, Cream)

Our Final Method

Cool quickly to room temperature by placing the pot in an ice bath

Transfer to an air tight container and age for at least 8 hours or overnight in the fridge.

Churn for 10 minutes then freeze overnight in an air tight container

Our Group and Mentors

We had our target marked trial 3 flavours, vanilla, salted caramel, chocolate and butterscotch, all without colouring. We concluded that vanilla and butterscotch were the favourites so we went for vanilla

The Group: Ruby Jenkins, Hannah Wilson and Kiera Smith

The Mentors: Jemima Sheldrick, Hannah Wilson and Ruby Jenkins

We would like to say a special thank you to the following people: Esmaa El Shal and Emre Ozturk – Tip Top (products above)
Jacqui Crawford and Delph Nguyen – Massey High School
Nitin Prasad – Ingegno
Derek Home – Douglas and Cameron
Farran Moodie, Megan Bramble and Daina Duliakas – Givaudan
Jennie Wallhas – futureintech.
Michelle Mason – The Tip Top

Some of our ingredients

Dispensing of test trials

Our Final Formulation

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk Fat (Oils)</td>
<td>0.25%</td>
</tr>
<tr>
<td>Skim Milk Solids</td>
<td>12.0%</td>
</tr>
<tr>
<td>Sucrose</td>
<td>12.0%</td>
</tr>
<tr>
<td>Glucose Syrup (38-42DE; 80% solids)</td>
<td>8.6%</td>
</tr>
<tr>
<td>Maltodextrin powder (17TDE)</td>
<td>2.0%</td>
</tr>
<tr>
<td>PIONEER</td>
<td>1.0%</td>
</tr>
<tr>
<td>Givaudan Dairy Improved Flavour</td>
<td>0.2%</td>
</tr>
<tr>
<td>Givaudan Fat Improved Flavour</td>
<td>0.2%</td>
</tr>
<tr>
<td>Colour/Flavour</td>
<td>0.25%</td>
</tr>
<tr>
<td>Water</td>
<td>63.1%</td>
</tr>
</tbody>
</table>