The Big Fat Debate

Fat Replacers

Lindsey Bagley
Product Development Consultant
www.flavourhorizons.com
Where are fats?

Naturally occurring fats in meats, fish, eggs, nuts & seeds

<table>
<thead>
<tr>
<th>Processed Foods</th>
<th>% Fat Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table spreads and Butter</td>
<td>35.0 - 80.0</td>
</tr>
<tr>
<td>Mayonnaise and Light Mayo</td>
<td>10.0 - 80.0</td>
</tr>
<tr>
<td>Cheese</td>
<td>3.0 - 35.0</td>
</tr>
<tr>
<td>Yogurt</td>
<td>0.2 - 10.0</td>
</tr>
<tr>
<td>Milk</td>
<td>0.2 - 4.5</td>
</tr>
<tr>
<td>Ice cream</td>
<td>8.0 - 15.0</td>
</tr>
<tr>
<td>Chips</td>
<td>5.0 - 14.0</td>
</tr>
<tr>
<td>Crisps</td>
<td>10.0 – 30.0</td>
</tr>
<tr>
<td>Biscuits</td>
<td>15.0 - 29.0</td>
</tr>
<tr>
<td>Chocolate</td>
<td>28.0 – 32.0</td>
</tr>
</tbody>
</table>
What are they doing?

• Melting, Crystallisation, Texture, Aeration, Heat transfer and Lubrication, Appearance and Flavour

• Adding calories: 9 calories a gram

• A ‘lower fat’ food is different for different foods

• Replacing ‘fats’ is a different proposition for different foods and easier in some compared to others

• Most success in foods which lend themselves to building structured water into the system
Replacers using Water

- Emulsion technology to reduce fat: Create oil in water or water in oil emulsion and dilute the fat phase by increasing the water phase
- Have to compensate for all the characteristics:
  - Best use of emulsifiers to create stable emulsion
  - Build structure into the water
    - Hydrocolloids such as xanthan, starch
    - Proteins such as milk fractions and gelatine
    - Fibres such as inulin and cellulosics
- Replace flavour
  - Water soluble and fat soluble
- Ensure microbiological stability
  - Preservatives
Replacers without water

• A solid must replace a solid on a one to one basis

• Carbohydrates past favourites as lower calorie, cost effective however current climate means inappropriate to increase sugars

• Non metabolisable fat Olestra (Olean)

• Need new technologies:
  – Fat encapsulated fibres
  – Micro/Nano sugars being explored in chocolate
  – Adapted ingredients
  – Process and ingredient combinations
  – Consortium/ cross industry projects
Summary

• Consumers want reduced fat foods and Industry has worked to deliver these
• Fat levels vary widely across food types
• Reduced fat options available across a wide variety of foods but result in more complex formulations which is contrary to consumer desire for ‘clean label’
• Reduced fat foods must be as acceptable as full fat ones
• Technologies limit access to some sectors but these are constantly being finessed and developed