Challenges of Incorporating Functional Ingredients into Foods - An NPD and Analytical Perspective

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Overview

• Introduction to RSSL
• What is meant by Functional Ingredients?
• The development brief
• Analytical considerations
• Case studies
What Do We Do at RSSL?

• We provide science and technology outsourcing to the global food, healthcare and pharmaceutical industries

• Key areas of expertise for food sector include:
  ✓ Functional Foods & Ingredients
  ✓ Allergens Analysis & Consultancy
  ✓ Contaminant Investigative Analysis
  ✓ Product Development
Definition of Functional Ingredient

Ingredients that provide some health benefit above and beyond fulfilling basic nutrition (health-promotion)

- Vitamins
- Antioxidants
- Minerals
- Omega-3
- Proteins
- Plant sterols
Challenge Your Development Brief

**What**
- What is the product?
- What functional ingredients are to be added?
- What claims do you want to make?
- What is the target shelf life?

**Where**
- Where will it be manufactured?
- Where will the product be stored?

**When**
- When is product due to be launched?
- When is product to be consumed? How often?

**Who**
- Who is target retailer?
- Who is the target consumer?
Key Challenge

Know what product you want........

but more importantly......

know what product you do not want
Challenges For The Developer

- Scrutinise original concept
- Sensory attributes
- Choice of ingredient(s)
- Quality of ingredient / supplier
- Active levels
- Incorporation of active/raw material
- Stability of ingredient & product
- Storage conditions
- Packaging
Why Analyse?

- Raw material assessment
- Development process
- Label claims
- Shelf life
- Troubleshooting
- Due diligence
Challenges For Analysts

- Sampling
- Stability
- Active form
- Method selection
- Extraction
- Sensitivity
- Speed, robustness
Case Study:
Omega 3 & 6 Fatty Acids
Development Challenges

- Select the optimum source of active
- Flavour selection
- Taste optimisation
- Consider how being consumed
Analytical Challenges

- Source of ingredient
- Component of interest
- Is the product fortified?
- Form of ingredient
- Nature of finished product
- Ingredient stability
Outline of Method

- Sampling
- Extraction
- Derivatisation
- Instrumentation GC
- Results
Case Study:

Botanicals
Challenges

- Are you claiming an amount of active or plant extract?

<table>
<thead>
<tr>
<th>Botanical</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Tea</td>
<td>Catechins</td>
</tr>
<tr>
<td>Guarana</td>
<td>Caffeine</td>
</tr>
<tr>
<td>Echinacea</td>
<td>Chlorogenic acid</td>
</tr>
<tr>
<td>Pomegranate</td>
<td>Ellagic acid</td>
</tr>
<tr>
<td>Soy</td>
<td>Isoflavones</td>
</tr>
<tr>
<td>Ginseng</td>
<td>Ginsenosides</td>
</tr>
</tbody>
</table>

- Are you looking at a mixture of botanicals?
- Carotenoids methodology vs forms
- Stability of active
Example of Chromatography Of Markers Used For Stability

24 months

12 months

0 months
Lots to consider to ensure a successful product...
Get The Most Out Of Your NPD Team

Development Support:

- Ensure development brief is very specific and achievable
- Incorporate the correct amount of ingredient to make any claims
- Start analytical validation and checking at the earliest point possible
Get The Most Out Of Your Analyst

Analytical Support:

• Consult at early stage
• Check method available
• Ingredient details
• Product information
• Homogenous sample
• Transport of sample
• Manufacturing process
Ensure your expectations.....

and the abilities of your partner organisation.....

are matched
Future Challenges

- New forms of ingredients
- Legislation changes
- New products
- Increased dosage
- Combinations of ingredients
- Method developments
- Media attention
Any Questions?

Thank You For Your Attention

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