Assessment of scientific substantiation of health claims on foods in the EU

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Outline

• EU Regulation on nutrition and health claims – the need for substantiation
• EFSA review of the evidence for scientific substantiation of health claims
• Health claims with a favourable evaluation by EFSA
• Issues arising with review of evidence on health claims by EFSA
• EFSA guidance for applicants for health claims
• Future perspectives
EU Regulation 1924/2006 on Nutrition and Health Claims made on foods: the requirement for scientific substantiation of health claims
EU Regulation 1924/2006: scientific substantiation

• Scientific substantiation should be the main aspect to be taken into account for the use of health claims and food business operators using claims should justify them.

• Health claims should only be authorized for use in the Community after a scientific assessment of the highest possible standard.

• In order to ensure harmonized scientific assessment of these claims, the European Food Safety Authority should carry out such assessments - independent review.
EU evidence standard for health claims

• All claims must be substantiated by generally accepted scientific evidence, taking into account totality of available scientific data, and weighing the evidence

  = generally accepted by scientific experts

• whether the evidence for a claim meets this standard is a scientific judgement of EFSA’s NDA Panel
EFSA review of the evidence submitted for scientific substantiation of health claims
EFSA’s role in assessment of health claims

- EFSA’s **NDA panel** performs **independent assessment** of claims and provides scientific advice on substantiation
  - 20 Panel experts
  - Supported by Working Group, EFSA staff and additional experts (as needed)

Authorisation of claims is by EU Commission (+ EU Member States + Eur. Parliament scrutiny)
Main issues addressed by NDA Panel

1. is the food/constituent defined and characterised?
2. is the claimed effect defined and is it a beneficial physiological effect?
3. is a cause and effect relationship established between the consumption of the food/constituent and the claimed effect?
   - for the target group
   - under the proposed conditions of use
Evidence review - steps

1. Selection of relevant human studies (central studies)

2. Review of individual human studies

3. Review of studies on biological plausibility - mechanisms, bioavailability

4. Weighing the evidence - combining the relevant human studies + other studies to conclude on substantiation

- transparent scientific judgement of the NDA Panel
- published scientific opinion in EFSA journal:

Relevant human studies

- studies carried out with the food/constituent for claim
- appropriate outcome measure(s) for the claimed effect
- conditions for studies comparable to conditions of use for claim (e.g. quantity of food/constituent)
- study groups representative of the target group or extrapolation to the target population possible
Review of relevant human studies

- Published and unpublished studies accepted
- Review by study type – e.g. intervention, observational
- Study quality – design, execution, analysis, reporting
- Additional information may be requested from the applicant
- Studies of low quality may be excluded
Weighing the evidence

• combine the relevant human studies by study type (RCT strongest evidence)
  – number of studies for and against, taking into account study population, study quality, study size, effect size, dose-response
  – consistency among studies
• evidence for biological plausibility – bioavailability, mechanisms
  – studies in humans, animals, *in vitro*
Health Claims with a favourable evaluation by EFSA

Examples
# Claims for development and health of children (11)

<table>
<thead>
<tr>
<th>Claim</th>
<th>Food/constituent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain development + eye development in foetus, infant</td>
<td>DHA (maternal)</td>
</tr>
<tr>
<td>Visual development in infant</td>
<td>DHA (infant)</td>
</tr>
<tr>
<td>Growth &amp; development of children</td>
<td>ALA, LA</td>
</tr>
<tr>
<td>Cognitive development</td>
<td>Iron</td>
</tr>
</tbody>
</table>
Iron and cognitive development

Authorized claim:
Iron contributes to normal cognitive development of children

EFSA:
Based on evidence of the biochemical functions of iron in the brain and effects of iron deficiency on cognitive function in children

Conditions of use:
The claim may be used only for food which is at least a source of iron (≥15% RDA per 100g)
### Disease risk reduction claims (11)

<table>
<thead>
<tr>
<th>Claim</th>
<th>Food/constituent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood LDL-cholesterol/heart disease</td>
<td>Plant sterols/stanols oat β-glucans MUFA/PUFA replacing saturated fat</td>
</tr>
<tr>
<td>Dental plaque/caries</td>
<td>Sugar-free chewing gum</td>
</tr>
<tr>
<td>Plaque acids/caries</td>
<td></td>
</tr>
<tr>
<td>Demineralisation/caries</td>
<td></td>
</tr>
<tr>
<td>Bone density/osteoporotic fracture</td>
<td>Ca; Ca + vitamin D</td>
</tr>
<tr>
<td>Falling/osteoporotic fracture</td>
<td>Vitamin D</td>
</tr>
</tbody>
</table>
Plant sterols/plant stanol esters and coronary heart disease

Authorized claim:

Plant sterols and plant stanol esters have been shown to lower/reduce blood cholesterol. High cholesterol is a risk factor in the development of coronary heart disease.

EFSA:

Claim substantiated based on 41 human studies (sterols) and 30 human studies (stanol esters)

Conditions of use: Information to the consumer that the beneficial effect is obtained with a daily intake of 1.5-2.4 g plant sterols/stanols
<table>
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<th>Food/constituent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tooth mineralisation</td>
<td>Sugar replacers, fluoride</td>
</tr>
<tr>
<td>Bone</td>
<td>calcium, vit. D, vit. K</td>
</tr>
<tr>
<td>Body weight</td>
<td>Meal replacements, VLCD</td>
</tr>
<tr>
<td>Bowel function</td>
<td>Cereal fibres (various)</td>
</tr>
<tr>
<td>Blood glucose after meals</td>
<td>Pectins, guar gum, resistant starch, sugar replacers</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>potassium, reduced sodium</td>
</tr>
<tr>
<td>Blood LDL-cholesterol</td>
<td>Pectins, β-glucans, MUFA, PUFA, reduced sat. fat</td>
</tr>
<tr>
<td>Platelet aggregation</td>
<td>Water sol. tomato conc.</td>
</tr>
</tbody>
</table>
Nutrient function claim: calcium and bone

Authorized claim:
Calcium is needed for the maintenance of normal bones.

EFSA:
Based on generally accepted function of calcium in bone.

Conditions of use: The claim may be used only for food which is at least a source of calcium (≥15% RDA per 100g).
Water soluble tomato concentrate (WSTC) and blood flow

Authorized claim:

Water-Soluble Tomato Concentrate helps maintain normal platelet aggregation, which contributes to healthy blood flow

EFSA:

claim substantiated based on eight human studies and seven non-human studies

(including 10 studies claimed as proprietary: 7 unpublished studies protected)
EU register of health claims

- EU Register of nutrition and health claims made on foods
- Authorised health claims (241)
- Non-authorised health claims (1796)

http://ec.europa.eu/nuhclaims/index.cfm?event=register.home
Issues arising with review of evidence on health claims by EFSA

Examples
Quality of human studies

Commonly observed sources of bias

**Intervention studies**
- design – insufficient size, control of confounding
- execution - randomisation, blinding
- statistical analysis - drop outs and treatment of missing data, treatment of multiple outcomes

**Observational studies**
- measurement of relevant exposure, confounding
Evidence from studies in patients

- Health claims are for general population, not treatment of patients ( medicinal )

- Some diseased populations may be considered representative of ( non-diseased ) target groups when mechanisms for effect are the same in both groups

  - Type II diabetics ( treated with diet only ) - for claims on post-prandial blood glucose
    - But not if treated with drugs for lowering blood glucose
Claims on probiotics/prebiotics

Non-authorised claim:
Helps to maintain a desirable balance of beneficial bacteria in the digestive system

• EFSA does not consider that increasing numbers of lactobacilli/bifidobacteria in the intestine is a beneficial physiological effect *per se*

• Beneficial consequences should be demonstrated
  
  ➢ lactose digestion (claim authorised)
  
  ➢ defence against pathogens in the intestine (no claim substantiated to date)
EFSA Guidance for Applicants for Health Claims
EFSA Guidance for Substantiation of Health Claims on Foods in EU

• General guidance – principles for scientific substantiation of health claims

• Specific guidance on scientific requirements for specific types of health claims

• >400 scientific opinions, technical reports

EFSA guidance on scientific requirements for specific types of claims

- which relationships are eligible for health claims
- what types of studies, outcome measures and study groups are appropriate:
  - Gut, immune
  - Bone, joints, skin, oral
  - Appetite, body weight, blood glucose
  - Antioxidants, cardiovascular
  - Physical performance
  - Neurological, psychological

Future perspectives

• EFSA has defined scientific criteria for substantiation of health claims and has provided extensive guidance to applicants
  – will help set future directions for research and will guide innovation

• International collaboration between scientific authorities on approaches to scientific substantiation of health claims