Nutrition research and food legislation – the role of EFSA

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EFSA has no direct influence on food legislation

But sometimes there may be an impact:

Some examples will be presented:

1. A positive opinion by EFSA led to an amendment of a Directive (goat‘s milk protein in IF)
2. An positive opinion by EFSA is considered as difficult to be converted into a legislative act (*„glucose contributes to energy metabolism“*)
3. An opinion by EFSA for „insufficient evidence“ is converted into a legislative act (DHA and vision)

EFSA about itself:

- The European Food Safety Authority (EFSA) is the keystone of European Union (EU) risk assessment regarding food and feed safety. In close collaboration with national authorities and in open consultation with its stakeholders, EFSA provides independent scientific advice and clear communication on existing and emerging risks.
- EFSA is an independent European agency funded by the EU budget that operates separately from the European Commission, European Parliament and EU Member States

Comprehensive - in one document

Management Board

Advisory Forum

Executive Director and Staff

Scientific Committee Scientific Panels, working Groups

Contractors and grant beneficiaries Networks and networking meetings

EFSA's Scientific Panels:

- Additives and products or substances used in animal feed (FEEDAP)
- Animal health and welfare (AHAW)
- Biological hazards (BIOHAZ), including BSE-TSE-related risks
- Contaminants in the food chain (CONTAM)
- **Dietetic products, nutrition and allergies** (NDA)
- **Food additives and nutrient sources added to food** (ANS)
- Food contact materials, enzymes, flavourings and processing aids (CEF)
- **Genetically modified organisms** (GMO)
- Plant health (PLH)
- Plant protection products and their residues (PPR)
- Scientific Committee & Emerging Risks (SCER)

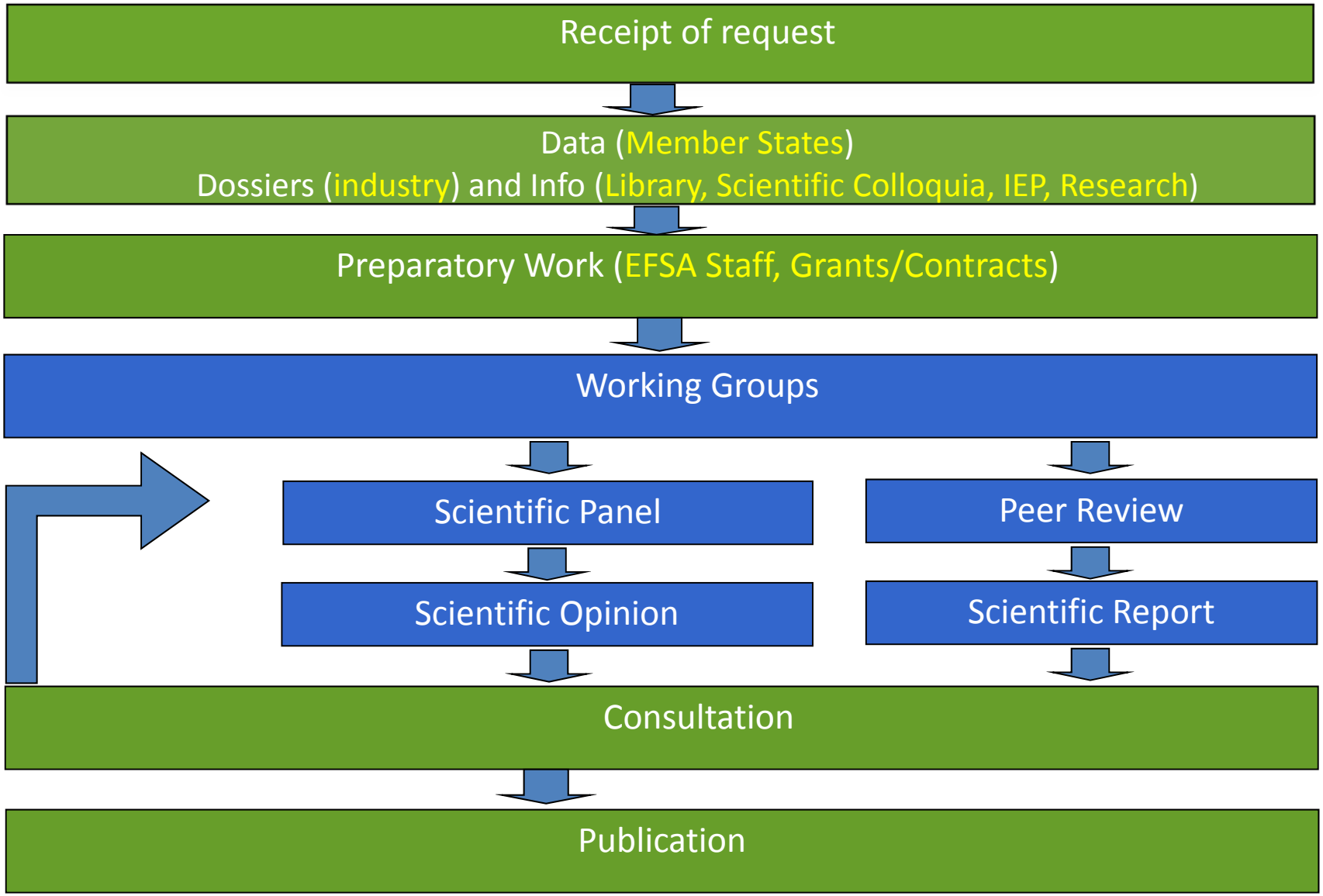
Scientific Panels

- EFSA's Scientific Panels are composed of highly qualified, independent scientific experts with a thorough knowledge of risk assessment. All members are appointed through an open selection procedure on the basis of proven scientific excellence. The Scientific Committee and the Scientific Panels are supported by EFSA staff from three scientific directorates.
- EFSA **monitors** and **analyses** information and data on **biological hazards, chemical contaminants, food consumption and emerging risks**. These areas of work are carried out by EFSA's scientific units supported by working groups and networks. The Authority also supports the development of risk assessment approaches.

What EFSA does

- EFSA's role is to **assess** and **communicate** on all risks associated with the food chain.
- A large part of EFSA's work is undertaken in response to specific requests for scientific advice from the European Commission, the European Parliament and EU Member States. EFSA also undertakes scientific work on its own initiative, so-called self-tasking.
- Accordingly, EFSA's advice frequently supports the risk management and policy-making processes. These may involve the process of adopting or revising European legislation on food or feed safety, deciding whether to approve regulated substances such as pesticides and food additives, or, developing new regulatory frameworks and policies for instance in the field of nutrition. **EFSA is not involved in these management processes**, but its independent advice gives them a solid scientific foundation.
- Through its risk communications activities EFSA seeks to **raise awareness** and further **explain the implications** of its scientific work. EFSA aims to provide appropriate, consistent, accurate and timely communications on food safety issues based on the Authority's risk assessments and scientific expertise.

Scientific process: workflow



Looking at both sides of the coin –use of risk-benefit analysis?

What is discussed?

Risk assessment

- Problem formulation
- Hazard identification
- Dose-response assessment
- Exposure assessment
- Risk characterisation

Benefit assessment

- Problem (?) formulation
- Benefit identification
- Dose-response assessment
- Exposure assessment
- Benefit characterisation

Balancing probability of harm against probability of risk

- Why ?
- When ?
- How ?
- For whom ?

What is the difference ?

- **Safety of food**

= free **from harm or risk,**

The state of being safe.

Question for EFSA: *is the consumption of the particular food by the intended consumer group connected with risks?*

But the consumption of a nutritionally unsuitable food by infants is also connected with risks and, therefore, not **safe!**

- **Suitability of food**

= adapted **to a use or** purpose.

Question for EFSA: *can the food or ingredient fulfil ist intended function in the particular food for the intended consumer group* ?

Example
Nutrient source: Goatmilk as a protein source for infant formula and follow-on formula(EFSA-Q-2003-019)

BACKGROUND

"The current legislation on infant formulae and follow-on formulae (Directive 91/321/EEC) Specifically mentions and sets criteria for formulae containing cows' milk protein, soya protein isolates and partially hydrolysed protein as the protein sources in infant formulae and follow-on formulae….. The safety and suitability of milk proteins of animals other than cows have been discussed in the recent SCF Report on the Revision of Essential Requirements of Infant Formulae and Follow-on Formulae (SCF, 2003).

(Commission Directive 2006/141/EC of 22 December 2006 on infant formulae and follow-on Formulae) …..*"specific rules for such products, if necessary, should be* adopted at a later date".*)*

TERMS OF REFERENCE 2003

"In accordance with Article 29 (1) (a) of Regulation (EC) No 178/2002, the European Food Safety Authority is asked to evaluate the data submitted in order to give an opinion on the ***suitability of goats' milk protein as a source of protein in infant formulae and in follow-on formulae".***

Need for:

a) comparison of goat milk protein with human milk protein

b) growth study with goat milk protein based infant formula

Nutrient source: Goat milk as a protein source for infant formula and follow-on formula(EFSA-Q-2003-019)

Data submitted:

- -Composition of goat milk; protein of goat milk, its aminoacid pattern and digestibility both *in-vitro* and in animals *in-vivo;* allergenicity of goatmilk protein, each in comparison to human and cow milk.
- -Composition of infant formula based on goat milk solids.
- -Goat milk infant formula growth rate pilot study: double-blind multi-centre RCT on 72 infants exclusively fed goat milk formula (69 kcal/100 ml) or cow milk formula (65 kcal/100 ml) from birth to 112 d of age. 14% drop-out; follow-up until 168 d of age for growth parameters, stools, sleeping patterns, adverse events.

Nutrient source: Goatmilk protein as a protein source for infant formula and follow-on formula(EFSA-Q-2003-019)

Assessment:

- **amino acid pattern**: lack of cysteine and tryptophan. Protein content of 3.5 g/100 kcal would be necessary. Protein contents higher than 3.0 g/100 kcal undesirable. The Panel notes apparent analytical deficiencies.
- **digestibiliy (piglet study):** no relevant data on the digestibility of goats' milk nitrogen in infants.
- **allergenicity: no evidence for less allergenicity than cows' milk proteins**
- **clinical study:** double-blind RCT, no differences in increments in weight, length and head circumference. Good tolerance. Adverse events with equal frequency in both groups. Body weights comparable to New Zealand reference growth data. Violations of study protocol. Too small sample size for detecting differences in growth. No breast-fed reference group. Overall **too many flaws in this pilot study to consider it** sufficient to provide proof for the **suitability, the nutritional safety and nutritional adequacy of unmodified** goats' milk protein for infant formula.
- **follow-on formula:** no data supplied, conclusion impossible

Nutrient source: Goat milk protein as a protein source for infant formula and follow-on formula continued

Continued 2005: additional information on the„real“ amino acid pattern of the goatmilk formula and on the growth study, including data of an exclusively breast-fed reference group(n=34).

Conclusion of the NDA Panel 5 December 2005

- amino acid analysis fulfills the requirements of Directive 91/321/EEC with respect to the amino acid pattern.
- the clinical study of a goats' milk protein-based formula is insufficient due to methodological flaws. Therefore, the previous negative conclusion of the Panel remains valid.

Continued 2010/2011: new application with new compositional and clinical data

Terms of reference

"….. the Commission asks EFSA to give a scientific opinion on the basis of the new application and the current scientific knowledge on the suitability of ***goat's milk protein as a source of protein in infant formulae and in follow-on formulae.*** *If goat's milk protein under evaluation is considered to be suitable as a source of protein in infant formulae and follow-on formulae, EFSA is asked to* ***advise on any condition for use that might be necessary***

Nutrient source: Goat milk protein as a protein source for infant formula and follow-on formula continued

Final assessment2012:

- New multi-centre RCT in 200 infants, infant formula with unmodified goat milk protein versus a cow milk formula exclusively for at least four months and thereafter in addition to complementary food until 12 months
- No statistically significant or clinically relevant differences in weight, length or head circumference development.
- The growth pattern of formula-fed infants differed, as expected, from that of the WHO growth standard in particular with respect to weight-for-length.
- The results of this study were supported by the results of the trial considered in the Panel's earlier assessment, in which, however, the sample size was insufficient to draw conclusions.
- The Panel concludes that protein from goat milk can be suitable as a protein source for infant and follow-on formulae, provided the final product complies with the compositional criteria laid down in Directive 2006/141/EC.

- **COMMISSION DIRECTIVE 2013/46/EU of 28 August 2013 amending Directive 2006/141/EC with regard to protein requirements for infant formulae and follow-on formulae**

Requirements of EFSA for studies with foods and dietetic products (FPNU)

- The food must be clearly identified (composition – both quantity and quality, origin, manufacturing and processing procedures, portioning
- The studies should be performed with the food under consideration, not with individual ingredients only
- The studies should be performed on the target population
- The study goal(s) should be defined and stated
- Outcomes should be defined *a priori*
- The study design should be available in writing
- The study design should comply with guidelines on the conduction of (clinical) trials including statstics
- Secondary or result-driven group forming should be avoided
- Reporting of results should be done according to existing guidelines (e.g. CONSORT, STROBE, PRISMA, DELPHI)
- The study should preferably be registered

EFSA's role in evaluation of health claims

- **Regulation (EC) No 1924/2006**
  - health claims only authorised for use in the Community after **a scientific assessment of the highest possible standard**
  - in order to ensure harmonised scientific assessment of these claims, the **European Food Safety Authority** should carry out such assessments
  - **EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA)** adopts scientific opinions
  - Resources - Panel experts, additional experts, EFSA staff

How are claims regulated in the EU?

Article 13

Health claims other than those referring to the reduction of disease risk and to children's development and health

1. role of a nutrient in growth, development and the functions of the body
2. psychological+behavioural functions
3. slimming, weight control, hunger, satiety, reduced energy

Community list adopted by the Commission after consulting EFSA on compilation of claims from Member States by 31 December 2011 (**Register**)

Article 14

Reduction of disease risk claims and claims referring to children's development and health

Must be accompanied by a statement that diseases have multiple risk factors and that altering one of these may or may not have a beneficial effect.

Application for authorisation (dossier) via Member State to EFSA, information of other Member States and the Commission and of the public; EFSA's opinion within 5 months; decision draft by Commission after 2 months; decision with Member States after 3 months;

(Register, public, contains also rejected claims and reasons for rejection)

Presently permitted claims on infant formula in the EU

- **Nutrition claims** (n=6)

Lactose only

Lactose-free (lactose<10 mg/100 kcal)

Added LCP (or DHA >0.2% of total fatty acids)

Contains (added) taurine or fructo- and galacto-oligosaccharides or nucleotides

- **Health claims** (n=1)

Reduction of risk for allergy to milk proteins or reduced allergenic or antigenic properties (data of proof required; immunoreactive protein<1% of nitrogen-containing substances; warning against use in infants allergic to protein source; formula does not induce sensitisation in animals against intact protein source)

N-3 LC-PUFA consumption of mothers and visual and cognitive development of the child

- EFSA has evaluated two applications for health claims in 2009: „***DHA is important for early development of the eyes in the foetus (unborn child) and infant. Maternal DHA supply contributes to the child's visual development***“ **(**Question No. EFSA-Q-2008-675) and „***DHA is important for early development of the brain in the foetus (unborn child) and infant. Maternal DHA supply contributes to the child's cognitive development***“ (Question No. EFSA-Q-2008-773).
- On the basis of the data provided, EFSA concluded that there was **insufficient evidence** to conclude on a cause-and-effect relationship between DHA consumption of the mother during pregnancy and lactation and the visual or cognitive development of the unborn or breastfed infant.
- In answer to a question of the European Commission , EFSA stated that DHA is one of the major structural and functional LC-PUFA and, therefore, can contribute to the normal development of the brain and eyes of the foetus and breastfed infant. In addition, the breastfed infant receives DHA predominantly via mother's milk, in which its concentration is determined both by the maternal DHA intake and by maternal DHA stores.
- **Health claims that refer to these relationships and that are accompanied by recommendations for consumption should, therefore, be permitted**

Conclusions

1. For risk assessment in relation to foods or ingredients of foods intended for infants and young children EFSA follows the established procedures of risk assessment(hazard identification, hazard characterisation, exposure assessment, risk characterisation).
2. For nutritional risk assessment (both deficiency and excess) the NDA Panel follows appropriately modified established procedures of risk assessment.
3. For a judgement on the nutritional safety of foods intended for infants and young children the NDA Panel requires clinical trials of a defined question, conducted according to recognised guidelines, preferably in the target group,and including appropriate reference goups and reference foods, with relevant pre-defined clinical or chemical outcomes which can be reliably measured.
4. For a judgement on the toxicological or microbial safety of foods intended for infants and young children EFSA relies on the appropriate risk assessments with extrapolation from animal or *in-vitro studies.*

The most critical points in the study reports submitted to EFSA are:
unclear study design, deviations from the study design, deficits in reporting and - most often – deficits in or inappropriate statistics, no definition of primary/secondary endpoints, creating new end points, insufficient power, power calculation based on irrelevant endpoints, use of unvalidated questionnaires, dealing with drop-outs, etc.

EFSA has not invented new „processes of and criteria for riskassessment and safety evaluation of infant „nutrition products“ but has been active in the systematic development of relevant guidance documents.

Otto von Bismarck, 1815-1898

„Je weniger die Leute wissen, wie Würste und Gesetze gemacht werden, desto besser schlafen sie“

„The less people know about how sausages and laws are made, the better they sleep“

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