Risk-Benefit Assessment of Foods: Lessons Learned from a Capacity Building Experience Under the RiskBenefit4EU Project

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Outline of the presentation

1. Risk-Benefit Assessment in foods?
2. The RiskBenefit4EU project (RB4EU)
3. Capacity building experience
4. Lessons learned
1 - Risk-Benefit Assessment in foods

Papers published in Pubmed about

“Food + Health”

(in title and/or abstract)

- NUTRITION
- TOXICOLOGY
- MICROBIOLOGY

Nombre de publications avec "Food + Health"
1 - Risk-Benefit Assessment in foods

• Our DIET, our FOODS consumed and all of their COMPONENTS... can contain at the same time different:

Nutrients
Microorganisms
Chemicals contaminants

Risk-Benefit Assessment (RBA):
Scientific evaluation of known or potential adverse/beneficial health effects resulting from human exposure to specified agents in food
1 - Risk-Benefit Assessment in foods

- Risk-Benefit Assessment (RBA) has emerged at the beginning of the 21st century:
  - Approach similar to steps of universal Risk Assessment

\[\text{Hazard Identification} \rightarrow \text{Hazard Characterisation} \rightarrow \text{Exposure Assessment} \rightarrow \text{Risk Characterisation} \rightarrow \text{Risk Benefit Comparison} \rightarrow \text{Positive Health / Reduced Adverse Health Effect Identification} \rightarrow \text{Positive Health / Reduced Adverse Health Effect Characterisation} \rightarrow \text{Benefit Characterisation}\]

- European projects: BRAFO (Hoekstra et al., 2012), QALIBRA (Hart et al., 2012), BEPRARIBEAN (Boobis et al., 2012)
- Recent workshops organised:
  - Sept 2016, NFA (Sweden)
  - May 2017, DTU (Denmark) (Pires et al., 2018)
  - May 2018, RB4EU project (Lisbon) (Assunção et al., 2018)
- Various studies performed

From EFSA colloquium meetings in 2006 and 2010
1 - Risk-Benefit Assessment in foods

• In practice, performing a RBA is challenging because:
  • Between scientific discipline
    o Different languages
    o Use different methodological approaches
    o Have different specific objectives
  • RBA requires
    o Multiple expertise
    o A harmonized and fit for purpose approach
    o A centralized coordination
2 - The RiskBenefit4EU project

• Project funded by EFSA under Partnering Grants (GP/EFSA/AFSCO/2017/01)

Knowledge transfert in Risk-Benefit Assessment
2 - The RiskBenefit4EU project

Gather, develop and harmonize approaches for risk-benefit problem-formulation and -solving

• Specific objectives:
  1) to capacitate recipient partners on food RBA (risk-benefit assessment)
  2) to develop RBA tools that can estimate the overall health effects of foods, food ingredients and diets
  3) to develop a harmonized framework for RBA that can be applied to data from different countries
  4) to validate the generated framework through the application to a case study
  5) to disseminate and promote the harmonized framework to potential EU users
• **Main activities**

  • **2 Trainings** (2018), Lisbon, INSA
    - 1 week in May 2017
    - 1 week in October 2018

  • **Framework** development & validation with a **case-study**

  • Short-term scientific missions of 1 week
    - 1 week in February 2019 at INRA
    - 1 week in March 2019 at DTU

  • International conference: September 2019
3 - Capacity building experience

TRAINING 1 ➔ Be able to perform a qualitative Risk-Benefit Assessment (RBA)

- Brainstorming sessions on concepts
- Individual risk assessment in Toxicology, Nutrition and Microbiology
- RBA Stepwise approach
- Connect with the RB4EU case study
3 - Capacity building experience

TRAINING 2 ➔ Application of RBA concepts to the project case study

- Analysis of RBA Examples (RBA papers)
- Remind of important concepts: Metric of comparison and Uncertainty in RBA
- Definition of a RBA Protocol
- Working groups on the case study
Lesson #1: *Build a shared language within the team*

- **Brainstorming session to define:** hazard, health effect, adverse health effect, beneficial health effect, risk, benefit, health and health impact
4 - Lessons learned

Lesson #2: Learn basis used in RBA (to all participants)

➢ To create a common scientific culture and understanding of all individual fields of research and methods used in RBA
4 - Lessons learned

Lesson #3 : Become familiar with the stepwise RBA approach

- Explanation of all different key steps
- Illustrated with RBA case studies/examples already published

Adapted from (Boué, 2017)
4 - Lessons learned

Lesson #4: **Initiate an RBA case study performed by the team**

- Use all individuals expertise in a concrete RBA case study
- Practice with the definition of a specific RBA public health question
- Definition of a RBA case study protocol to organize the work in interconnected working groups
CONCLUSION

Build a team including:

- Experienced researchers in RBA
- Experts eager to perform the RBA case study

Avoid starting from scratch
Build on previous work
Share and improve a harmonized Risk-Benefit approach at the international scale
CONCLUSION

➢ Paper submitted to the journal Trends in Food Science & Technology: “Building capacity in risk-benefit assessment of foods: lessons learned from the RB4EU Project”
References


