Globalisation of diet: risk/benefit of insect consumption

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Conference on the impact of globalisation on the emergence of new risks in the food chain

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Outline

• Insects as food – traditions and novel initiation
• Insects – food of the history and our future?
• Why should we eat and why not? (advantage and possible risks)
• Ethical considerations
• Conclusions
Promoting insect eating

Previous documents, events

http://www.wageningenur.nl/en/Expertise-Services/Chair-groups/Plant-Sciences/Laboratory-of-Entomology/Edible-insects.htm

Importance of insects

- **Environment**: pollination, waste decomposition, maintaining equilibrium and biodiversity of nature, waste bioconversion

- **Products**: honey, silk, bee-wax, colorants etc

- **Medicinal**: toxins, propolis, maggot therapy, healing wounds...

- **Feed**: source of protein

- **Food**: combating hunger, improve nutrition for pleasure
Entomophagy
(greek. - ἔντομος éntomos = „insect” and φαγεῖν phagein = „eating”)

- Insects eaten by humans
- more than 2000 edible insects (in April 2014)
- in 130 countries
- ca. 2 billion people

(Source: FAO, 2014)
How can we get our daily insects?

- Picking/collecting from the nature
- Semidomestication
- Mass-rearing
- Buying from market/internet
Why to eat insects?

Benefits
Food and feed security

Growing population (by 2050 over 9 billion)
• Increasing demand for animal-based protein
• Growing number of animals, demand for feed
• Land and water pollution, over-grazing, over-fishing, destruction of environment...

Insects are everywhere
• Reproduce quickly, can be reared on bio (food) waste
• High feed conversion rate (insect 2:1, beef 8:1)
• Used as food or feed ingredients, as well
Nutritional value

- High protein, fat and mineral content
- Rich in fibre and micronutrients
- High in unsaturated fatty acids, essential amino-acids

WinFood study
Greeninsect project

Picture: Children and Mothers participating at WinFood study
Environmental considerations

• Low environmental footprint
• Less water, less greenhouse gases
• Less land-dependent
• Insects can feed on bio-waste, such as food and human waste, compost and animal slurry
• Alternative for traditional feed

But: accidental release of insects to the environment?
Why have to be careful?

Potencial risks
Are insects safe to eat?

- Some yes, some not
- In Europe no tradition, no knowledge
- Not widely known what are edible, what are not
- Some insect produce venoms, toxins (eg. scorpions, bees, warps), some cause allergy
- Careful hazard analysis/risk assessment needed
SOME PRODUCTS

www.hotlix.com
www.crunchycritters.com
www.selfridges.com
www.bugsoriginals.nl
HACCP analysis of chain

- **Environment**
  - Pathogens, pesticides, heavy metals, mycotoxins

- **Insect**
  - Allergens, toxins, pathogens, chitin

- **Rearing**
  - Degradation products, pathogens

- **Processing**
  - Extraction agents, solvents, additives
Risk assessment

• Advisory report on the risk associated with the consumption of mass-reared insects
  • (Netherlands Food and Consumer Safety Authority 15 October 2014)
• Main issues: microbial contamination (process hygiene criteria), toxic substances, chitin as physical hazard, allergenicity
• Potential occupational risk: hypersensitivity
• Shelf-life (1 year is OK?)
• No toxicological studies yet
Advice 14-2014 of the Scientific Committee of the FASFC and advice SHC N° 9160 of the Superior Health Council on food safety aspects of insects destined for human consumption

Main issues:
• microbial, chemical, physical hazards,
• allergenicity, importance of labeling,
• cross-reaction with seafood and dust-mites,
• importance of heating step before consumption

More research needed!
Legislation in the EU

• Controversial
• Novel food? 258/97/EC
• Food of animal origin? 853/2004/EC
• Pre-market approval needed?
• And for feed?
• EFSA has been asked for RA/advice
• Guidance document is in process (DG SANCO)
• Some insects are tolerated
Questions to NEBIH

2010 – scorpion vodka
2012 – cherry with larvae
2013 – selling
Ethical issues

- Animal welfare
- Free choice of the consumer (proper product information, labelling)
- The disgust factor („yuck factor”)

(Source: Eilenberg J., NL)
In Hungary

• We do not eat our friends (cats, dogs)
• Neither our enemies (snakes, snails, rats, mice etc.)
• Nor insects, worms

„Rather eaten by worms
than eating worms”
„Ínkább egyenek meg a férgek,
mint hogy a férget megegyem”

(Karinthy Frigyes)

Shall we change our attitude?
CONCLUSIONS

• Insect-eating not common in EU. It should be considered novel food.
• Industrial mass-rearing of insects is new technology. It needs thorough hazard analysis (HACCP)
• Risk assessment of insect eating would be welcomed
• More microbial and toxicological research needed
• Proper labelling and consumer information inevitable
• Sound and solid legislative background is urgent since the entrepreneurs are on their way to fulfill the new demands
ENJOY!

NYAMI!