Introduction

Gerhard Eisenbrand

ILSI Europe
2012 Annual Symposium
“The 21st century food chain”
29-30 March 2012

ILSI Mission

To improve public health and safety through advancement of science, bringing together the expertise of eminent scientists from private, academic and public sectors to provide science-based consensus on nutrition and food safety

www.ilsi.org/europe
ILSI Mission

**ILSI Europe goals:**

To transparently provide consensus-based nutrition and food safety science and to make it publicly available.

To foster ILSI Europe's international recognition as a credible source of science supporting public health decision-making.

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Publications

Cumulative number of publications (per type of publication)
IMPACT

• From the 2012 Activity and Budget Document:

• EFSA’s Part 1 of the Consolidated list of Article 13 health claims references, covering the first 1000 Article 13 health claims assessed by EFSA, contains 83 references to our work and that of our colleagues from other ILSI entities, and 21 references to the EC-funded project PASSCLAIM that was coordinated by ILSI Europe.

• Our work on the Threshold of Toxicological Concern (TTC) was widely cited, e.g. by EFSA’s Opinion on PET recycling, guidance for sensory additives dossiers, assessment of metabolites and degradates of pesticides, and a dedicated draft opinion on TTC. JRC’s citations of TTC included the report on the use of computational methods in the toxicological assessment of chemicals in Food, as well as JRC/IHCP’s report on applicability of QSAR analysis for the safety assessment of pesticides. The JRC report also mentioned our recent working group on chemical risk assessment in the absence of adequate toxicological information.

Most cited (> 100) ILSI publications:

ACCEPTABLE DAILY INTAKE


ALCOHOL


257 Effects of Moderate Alcohol Consumption on the Central Nervous System; Written by M.J. Eckardt, B. Tabakoff, et al. Published in Alcoholism, 22, 5:999-1040. 1998. ISSN 0145-6008

Introduction to the symposium
Prof Gerhard Eisenbrand
University of Kaiserslautern

Most cited (> 100) ILSI publications:
peer-reviewed journals
selected from Web of Knowledge (2012)

CARBOHYDRATES


FUNCTIONAL FOODS


MICROBIOLOGY


MICRONUTRIENTS

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Most cited (> 100) ILSI publications:
peer-reviewed journals

RISK ASSESSMENT

122 Human Exposure and Internal Dose Assessments of Acrylamide in Food E. Dybing, P.B. Farmer, et al. Published in Food and Chemical Toxicology, Vol. 43, Number 3, pp. 365-410, 2005


THRESHOLD OF TOXICOLOGICAL CONCERN


Citations: Peer-Reviewed Journals

- total number of references/citations to ILSI publications (including lower frequency citations) in peer-reviewed scientific journals (2012) : close to 8000 (taken from web of knowledge)
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2012 Annual Symposium
“The 21st century food chain”

- Primary production, sourcing and society
  Chair: Geoff Thompson (Danone, BE)

- Processing technologies
  Chair: Gérard Pascal (Emeritus, I.N.R.A. , F)

- Diet and physiology
  Chair: Gerhard Eisenbrand (Emeritus Univ. of Kaiserslautern, DE)

- Societal impact of food
  Chair: John O’Brien (Nestle, CH)

Food Chain and Evolution

- Looking back from 21st century processing technology (food chain) to when it all began
- Heat treatment of food
- major driver of human individual/societal evolution
Cooking Hypothesis

- About 1.5 mio years ago → vague evidence of controlled fire in East and South Africa → Decrease in size of teeth, vast increase in body size, significant decrease in sexual body size dimorphism
- Some increase in habitat use
- → Strong biological signals for change in diet → suggesting cooking began that time → marked influence on phenotype development

SKLM-Symposium 2005: "Thermal Processing of Food: Potential Health Benefits and Risks"

Controlling fire for food preparation: the major landmark in human development

- enhanced palatability/digestibility/bioavailability of (non) nutrient
- enhanced shelf life, staple foods, sustained availability
- novel food forms (grain → bread, beer...)
- development of agriculture
- development of family/society
- development of self-reflection, experience, science and culture

→ Major drivers of societal / individual evolution, sculpting
→ individual phenotype
→ socio-economic development
“Mind is subject to the same rules as body: both can only be maintained by sustained nourishment”

Luc de Clapiers, Marquis de Vauvenargues (1715-47), écrivain français

Let’s have a nourishing symposium!

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- **Primary production, sourcing and society**
  
  **John Fawell** (Cranfield University, UK): *Sustainable water management for crops*
  
  Agriculture ➔ important to ascertain sustainable sourcing of water
  
  ➔ Model development taking into account geographical/societal differences in water productivity

  **Peter Erik Ywema** (SAI platform, NL): *How mainstream food production can be based on sustainable agriculture and supply*
  
  Food companies precompetitive team driven ➔ define a global joint understanding of sustainable agriculture ➔ crop specific principles & practices ➔ understanding indicators to measure progress ➔ ultimately the main way to produce

  **Josef Schmidhuber** (FAO, I): *The impact of Europe’s Common Agricultural Policy on Food and Nutrition*

  **Anna Maria Carazzo Bildt** (Member EU Parliament, I/S): *Too good to waste – food loss reduction and sustainability*
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Processing technologies

Tiny van Boekel (Wageningen University, NL): Benefits and risks of food processing
- Optimize heat treatment of foods to improve benefit/risk balance
- develop tools for understanding desired/undesired changes
- mitigation, how far?
- future work

Yves Wyser (Nestle, CH): Sustainable food contact materials
- Contribution of packaging to sustainable development
- Improving environmental performance of packaging
- tools to assess packaging impact by life cycle thinking

Diet and physiology

Michael Symonds (University Nottingham, UK): Metabolic imprinting: is the die cast before birth?
Maternal diet at defined stages of gestation can have a significant impact on development of metabolic syndrome
- epigenetic modification of key regulatory mechanisms

Willem de Vos (Wageningen University, NL): Gut health – you never walk alone
Recent insight in gut microbiota and relation with intestinal health
- human intestinal tract chip (HIT chip)
- core microbiota in healthy subjects and changes / modifications associated with diseases / food intake / pharma treatment

David Kennedy (Newcastle University, UK): Nutrition and mental performance
Active components of food → essential nutrients (vitamins, nutrients, polyunsaturated fatty acids)
- compounds voluntarily consumed (mostly derived from plants, herbal supplements)
- both can modulate cognitive performance
- benefits to brain function, e.g. by consuming a range of both
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Societal impact of food

Lynn Frewer (Newcastle University, UK): Consumer response to novel agri-food technologies
Communication with the public about food issues with health / environment impact
→ focus almost exclusively on risks
→ separate information on health benefits e.g. by nutrition information
→ need to understand consumers perception of risks & benefits and decision-making regarding food choices
→ need to develop communication strategy to facilitate best practice in technological application, risk-benefit governance, public input into policy development

Klaus Grunert (Aarhus University, DK): Sustainability and responsibility in consumer food choice
Need to communicate differences in sustainability in food production to consumers to enable them to make educated food choice decisions
Potential barriers: lacking perception, misinterpretation, important buying criteria, lack of informational credibility → means to overcome such barriers

Gert Meijer (Unilever, NL): Future outlook for ILSI Europe

ILSI Europe’s Portfolio

ASSESSMENT OF BENEFITS AND RISKS
- Addition of Nutrients to Food
- Emerging Technologies for Efficacy Demonstration
- Food Intake Methodology
- Functional Foods
- Novel Foods and Nanotechnology
- Risk Analysis in Food Microbiology
- Risk Assessment of Chemicals in Food
- Risk Assessment of Genotoxic Carcinogens
- Threshold of Toxicological Concern

SOCIETAL ASPECTS
- Consumer Science

FOOD CHAIN
- Emerging Microbiological Issues
- Environment and Health
- Packaging Materials
- Process-Related Compounds and Natural Toxins

DIET, HEALTH AND DISEASE
- Dietary Carbohydrates
- Eating Behaviour and Energy Balance
- Food Allergy
- Metabolic Imprinting
- Metabolic Syndrome and Diabetes
- Nutrient Requirements
- Nutrition and Immunity
- Nutrition and Mental Performance
- Probiotics
- Prebiotics
- Weight Management in Public Health