Adherence to the Danish food-based dietary guidelines and risk of myocardial infarction: a cohort study

A direct way to evaluate food-based dietary guidelines is to assess if adherence is associated with development of non-communicable diseases. Thus, the objective was to develop an index to assess adherence to the 2013 Danish food-based dietary guidelines and to investigate the association between adherence to the index and risk of myocardial infarction (MI). Population-based cohort study with recruitment of participants in 1993-1997. Information on dietary intake was collected at baseline using an FFQ and an index ranging from 0 to 6 points was created to assess adherence to the 2013 Danish food-based dietary guidelines. MI cases were identified by record linkage to the Danish National Patient Register and the Causes of Death Register. Cox proportional hazards models were used to estimate hazard ratios (HR) of MI. Greater areas of Aarhus and Copenhagen, Denmark. Men and women aged 50-64 years (n 55 021) from the Diet, Cancer and Health study. A total of 3046 participants were diagnosed with first-time MI during a median follow-up of 16.9 years. A higher Danish Dietary Guidelines Index score was associated with a lower risk of MI. After adjustment for potential confounders, the hazard of MI was 13 % lower among men with a score of 3-
Adipose tissue content of alpha-linolenic acid and the risk of ischemic stroke and ischemic stroke subtypes: A Danish case-cohort study

BACKGROUND: The plant-derived omega-3 fatty acid alpha-linolenic acid (ALA) may reduce the risk of cardiovascular disease. OBJECTIVE: We have investigated associations between the content of ALA in adipose tissue and the risk of ischemic stroke and its subtypes. METHODS: Incident cases of ischemic stroke among participants enrolled into the...
Danish Diet, Cancer and Health cohort (n = 57,053) were identified by linkage with the Danish National Patient Register. Subsequently, all potential cases were validated and classified into ischemic stroke subtypes. The fatty acid composition of adipose tissue was determined by gas chromatography in cases and in a randomly drawn sub-cohort (n = 3500). Statistical analyses were performed using weighted Cox regression. RESULTS: During a median of 13.4 years of follow-up, 1735 cases of total ischemic stroke were identified including 297 cases of large artery atherosclerosis, 772 cases of small-vessel occlusion, 99 cases of cardio-embolism, 91 cases with stroke of other etiology and 476 cases with stroke of undetermined etiology. The median content of ALA in adipose tissue within the sub-cohort was 0.84% (95% central range: 0.53-1.19%). Multivariable analyses showed a U-shaped association between adipose tissue content of ALA and the rate of total ischemic stroke, but this association was not statistically significant (p = 0.172). In analyses of ischemic stroke subtypes, we observed a statistically significant U-shaped association between ALA and the rate of ischemic stroke due to large artery atherosclerosis (p = 0.017), whereas no appreciable association was observed between ALA and the rate of small-vessel occlusion (p = 0.427). A positive but statistically non-significant association was observed between ALA and the rate of ischemic stroke due to cardio-embolism (p = 0.162). CONCLUSIONS: The content of ALA in adipose tissue was statistically non-significantly U-shaped associated with risk of total ischemic stroke. For ischemic stroke subtypes a statistically significant, U-shaped association with large artery atherosclerosis was observed.

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Web of Science (2014): Indexed yes
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ISI indexed (2012): ISI indexed yes
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BFI (2011): BFI-level 1
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ISI indexed (2011): ISI indexed no
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BFI (2010): BFI-level 1
The role of dairy fat for the risk of stroke is not yet clear. Adipose tissue reflects long-term fatty acid intake and metabolism. We, therefore, investigated associations for percentages of adipose tissue fatty acids, for which dairy products are a major source (12:0, 14:0, 14:1 cis-9, 15:0, 17:0, 18:1 trans-11 and 18:2 cis-9, trans-11), with incident total stroke and stroke subtypes. We conducted a case-cohort study within the Danish Diet, Cancer and Health cohort, including all incident stroke cases (n=2108) and a random sample of the total cohort (n=3186). The fatty acid composition of adipose tissue biopsies was determined by gas chromatography and specific fatty acids were expressed as percentage of total fatty acids. Stroke cases were identified in the Danish National Patient Registry and the diagnoses were individually verified. We recorded 2108 stroke cases of which 1745 were ischemic, 249 were intracerebral hemorrhages and 102 were subarachnoid hemorrhages. We observed a lower rate of ischemic stroke for a higher adipose tissue percentage of 12:0, 14:0, 15:0, 17:0, 18:1 trans-11 and 18:2 cis-9, trans-11. Adipose tissue percentages of 15:0 and 18:1 trans-11 were also inversely associated with intracerebral hemorrhage, whereas no associations between the adipose tissue fatty acids and subarachnoid hemorrhage were observed. No associations between 14:1 cis-9 and ischemic or hemorrhagic stroke were found. Our results suggest that a larger percentage in adipose tissue of fatty acids for which dairy products are a major source is associated with a lower rate of ischemic stroke.

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Organisations: National Food Institute, Research Group for Risk-Benefit, Aarhus University Hospital, Aarhus University Authors: Laursen, A. S. D. (Ekstern), Dahm, C. C. (Ekstern), Johnsen, S. P. (Ekstern), Schmidt, E. B. (Ekstern), Overvad, K. (Ekstern), Jakobsen, M. U. (Intern)
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BFI (2016): BFI-level 1
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Web of Science (2016): Indexed yes
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Scopus rating (2015): SJR 1.36 SNIP 1.143 CiteScore 3.13
BFI (2014): BFI-level 1

Adipose tissue fatty acids present in dairy fat and risk of stroke: the Danish Diet, Cancer and Health cohort
The role of dairy fat for the risk of stroke is not yet clear. Adipose tissue reflects long-term fatty acid intake and metabolism. We, therefore, investigated associations for percentages of adipose tissue fatty acids, for which dairy products are a major source (12:0, 14:0, 14:1 cis-9, 15:0, 17:0, 18:1 trans-11 and 18:2 cis-9, trans-11), with incident total stroke and stroke subtypes. We conducted a case-cohort study within the Danish Diet, Cancer and Health cohort, including all incident stroke cases (n=2108) and a random sample of the total cohort (n=3186). The fatty acid composition of adipose tissue biopsies was determined by gas chromatography and specific fatty acids were expressed as percentage of total fatty acids. Stroke cases were identified in the Danish National Patient Registry and the diagnoses were individually verified. We recorded 2108 stroke cases of which 1745 were ischemic, 249 were intracerebral hemorrhages and 102 were subarachnoid hemorrhages. We observed a lower rate of ischemic stroke for a higher adipose tissue percentage of 12:0, 14:0, 15:0, 17:0, 18:1 trans-11 and 18:2 cis-9, trans-11. Adipose tissue percentages of 15:0 and 18:1 trans-11 were also inversely associated with intracerebral hemorrhage, whereas no associations between the adipose tissue fatty acids and subarachnoid hemorrhage were observed. No associations between 14:1 cis-9 and ischemic or hemorrhagic stroke were found. Our results suggest that a larger percentage in adipose tissue of fatty acids for which dairy products are a major source is associated with a lower rate of ischemic stroke.
Advancing food, nutrition, and health research in Europe by connecting and building research infrastructures in a DISH-RI: Results of the EuroDISH project

Background
Research infrastructures (RIs) are essential to advance research on the relationship between food, nutrition, and health. RIs will facilitate innovation and allow insights at the systems level which are required to design (public health) strategies that will address societal challenges more effectively.

Approach
In the EuroDISH project we mapped existing RIs in the food and health area in Europe, identified outstanding needs, and synthesised this into a conceptual design of a pan-European DISH-RI. The DISH model was used to describe and structure the research area: Determinants of food choice, Intake of foods and nutrients, Status and functional markers of nutritional health, and Health and disease risk.

Key findings
The need to develop RIs in the food and health domain clearly emerged from the EuroDISH project. It showed the necessity for a unique interdisciplinary and multi-stakeholder RI that overarches the research domains. A DISH-RI should bring services to the research community that facilitate network and community building and provide access to
standardised, interoperable, and innovative data and tools. It should fulfil the scientific needs to connect within and between research domains and make use of current initiatives. Added value can also be created by providing services to policy makers and industry, unlocking data and enabling valorisation of research insights in practice through public-private partnerships. The governance of these services (e.g. ownership) and the centralised and distributed activities of the RI itself (e.g. flexibility, innovation) needs to be organised and aligned with the different interests of public and private partners.

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Web of Science (2015): Indexed yes
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ISI indexed (2011): ISI indexed yes
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Scopus rating (2009): SJR 2.187 SNIP 2.567
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Scopus rating (2008): SJR 1.75 SNIP 2.321
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.682 SNIP 2.279
Apple pomace improves gut health in Fisher rats independent of seed content

The mechanism behind the cholesterol lowering effects of apple pomace, a polyphenol- and fibre rich by-product in apple juice production, was investigated. Groups of male F344 rats were fed a control feed or the same feed with 2.1% or 6.5% dry apple pomace with or without seeds for 4 weeks. Effects on plasma cholesterol concentrations, excretion of bile acids, expression of genes involved in cholesterol- and bile acid synthesis, and other markers related to gut health were investigated. We found that pomace feeding decreased total-, LDL- and IDL-cholesterol concentrations compared to control. Higher production of SCFA, indicating elevated caecal fermentation, and increased excretion of total- and primary bile acids could explain the observed hypocholesterolemic effects of apple pomace, however, expression of selected genes involved in cholesterol and bile acid biosynthesis (Hmgcr and Cyp7a1) were not affected. We found no hepatotoxic or other effects of apple seeds. Altogether, our results indicate that apple pomace has beneficial effects on gut health, and that the cholesterol-lowering effect is linked to increased production of SCFA and excretion of bile acids. These effects are most likely linked to the fibre and other fruit constituents present in the pomace. Presence of apple seeds seems to impart no toxicity even at 6.5% pomace in the feed and seeds also had no influence on the biological effect of the pomace. In the future, apple pomace could potentially be used as a bioactive and possibly health promoting food ingredient.
A quantitative microbial risk assessment model for Listeria monocytogenes in RTE sandwiches

A Quantitative Microbial Risk Assessment (QMRA) was performed to estimate the expected number of listeriosis cases due to the consumption, on the last day of shelf life, of 20,000 servings of multi-ingredient sandwiches produced by a medium scale food producer in Italy, by different population strata, defined by infection susceptibility (healthy, susceptible, transplant recipients and total population). First, all the sandwich ingredients were analysed for pH, Aw, salt and organic acids content and submitted to challenge tests at three different temperatures (4, 6 and 10 °C) to evaluate their suitability for L. monocytogenes growth. Next, a stochastic model was constructed simulating the contamination of the ingredients that were the best (bean cream) and worst (cheese cream) growth substrates. For each substrate, an exposure assessment was performed, estimating the number of L. monocytogenes within each serving. Then, two dose-response models were alternatively applied: the first used a fixed r value for each of the three population groups, while the second considered a variable r value (lognormal distribution), taking into account the variability in strain virulence and different host subpopulations susceptibility. The stochastic model predicted zero cases for total population for both the substrates by using the fixed r approach, while 3 cases were expected when a higher variability (in virulence and susceptibility) was considered in the model; the number of cases increased to 45–52 in the worst scenario (bean cream contamination) assuming all servings would be consumed by transplant recipients. An uncertainty analysis was performed by considering alternative scenarios: a higher mean bacterial concentration (+ 0.5 Log CFU/g) or higher standard deviation (+ 0.5) determined evident increases in the expected number of cases, almost doubling the risk. A similar effect was also exerted by an extended storage time (from 72 to 96 h), in particular in the worst case scenario. Finally, different protective interventions were evaluated (70/30 N₂/CO₂ packaging, home cooking or their combination). Both the interventions resulted in a strong decrease of the risk; MAP packaging, should be regarded as the most promising one, as it can be performed by the producer, who can assure a strict control of the treatment performances.

Are wild and cultivated flowers served in restaurants or sold by local producers in Denmark safe for the consumer?

New Nordic Food has within the last decade received much media coverage with chefs of top restaurants using wild plants for foods. As part of a control campaign, the Danish Veterinary and Food Administration visited 150 restaurants and local food producers from May-October 2016 and investigated their use of plants picked from the wild, cultivated in private gardens or market gardens. Among the species used were the flowers from 23 plants. Here we present a safety evaluation of these flowers based on published phytochemical investigations and toxicological data in humans, farm animals, pets, or experimental animals. Of the 23 flowers reviewed, nine contained compounds with toxic or potentially toxic effects if eaten, two contained unidentified toxic compound(s), and four were flowers from plants with potentially toxic
compounds present in other plant parts or related species. Many of the flowers may be considered novel, since a use to a significant degree in Europe prior to 15 May 1997 before Regulation (EC) 258/97 on novel food and novel food ingredients came into force could not be established. In conclusion, this review illuminates a striking lack of chemical and toxicological data of many of the proposed wild or cultivated flowers for food use.

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Authors: Egebjerg, M. M. (Intern), Olesen, P. T. (Intern), Eriksen, F. D. (Intern), Ravn-Haren, G. (Intern), Bredsdorff, L. (Intern), Pilegaar, K. (Intern)
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Scopus rating (2014): SJR 1.038 SNIP 1.369 CiteScore 3.12
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BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.771 SNIP 1.163
Web of Science (2008): Indexed yes
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Associating spatial correlations of sea surges around Copenhagen

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Associations between adherence to the Danish Food-Based Dietary Guidelines and cardiometabolic risk factors in a Danish adult population: the DIPI study: the DIPI study

Diet is recognised as one modifiable lifestyle factor for ischaemic heart disease (IHD). We aimed at investigating the associations between adherence to the Danish Food-Based Dietary Guidelines (FBDG) indicated by a Dietary Quality Index (DQI) and selected cardiometabolic risk factors in a cross-sectional study with 219 Danish adult participants (59 % women; age 31-65 years) with a minimum of one self-rated risk marker of IHD. Information regarding diet was obtained using web-based dietary assessment software and adherence to the Danish FBDG was expressed by a DQI calculated from 5 food and nutrient indicators (whole grain, fish, fruit and vegetables, energy from saturated fat and from added sugar). Background information, blood samples and anthropometrics were collected and blood pressure was measured. Linear regression analyses were used to evaluate the association between DQI and cardiometabolic risk factors. DQI was inversely associated with LDL:HDL ratio and TAG (-0.089 per unit; 95 % CI -0.177, -0.002 and -5 % per unit; 95 % CI -9, 0, respectively) and positively associated with HDL-cholesterol (0.047 mmol/l per unit; 95 % CI 0.007, 0.088). For men, DQI was inversely associated with BMI (-3 % per unit; 95 % CI -5, -1), trunk fat (-1 % per unit; 95 % CI -2, -1), high-sensitivity C-reactive protein (-30 % per unit; 95 % CI -41, -16 %), HbA1c (-0.09 % per unit; 95 % CI -0.14, -0.04), insulin (-13 % per unit; 95 % CI -19, -7) and homeostatic model assessment-insulin resistance (-14 % per unit; 95 % CI -21, -7). In women, DQI was positively associated with systolic blood pressure (2.6 mmHg per unit; 95 % CI 0.6, 4.6). In conclusion, higher adherence to the current Danish FBDG was associated with a more beneficial cardiometabolic risk profile in a Danish adult population with a minimum of one self-rated risk factor for IHD.

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Can stochastic consumer phase models in QMRA be simplified to a single factor?

In quantitative microbiological risk assessment (QMRA), the consumer phase covers the part of the food chain following production and retail, where the consumer transports, stores, prepares and consumes the food products considered. These consumer practices have a crucial impact on exposure, and a consumer phase model (CPM) needs to be included in a QMRA to allow an evaluation of the effectiveness of intervention measures in food production and processing in terms of human health risk. However, the development of a CPM is complex because consumer practices can be highly variable and data are scarce. So far, it is unclear to which extent CPMs need to include data on variability and detailed descriptions of the stochastic processes that may result in exposure. We therefore compared the performance of published stochastic CPMs with a simple surrogate CPM that assumes a proportional linear relation between concentration at retail and ingested dose, described by a constant factor. A comparative study was performed for different pathogens and different food products: Campylobacter in broiler meat, Salmonella in minced pork and pork cuts and Listeria in smoked salmon. Published stochastic CPMs were re-implemented and their equivalent surrogate models were derived, basing the value of the constant surrogate model factor on the absolute risk estimate from the stochastic model. The performances of the models were evaluated by comparing the effects of hypothetical intervention measures that reduce the mean or the standard deviation of the distribution of concentrations at retail. These effects were expressed in terms of relative risk estimates, as estimated in the risk assessments using the simplified and the stochastic CPMs. Results showed that after interventions that result in a reduction of the mean or standard deviation of the distribution of concentrations at retail, the relative risk estimates obtained for the simple surrogate models are always lower than those of the stochastic CPMs, which means that simplified models tend to overestimate the effects of interventions. The difference was largest in the Listeria model, where growth during storage is expected to be the dominant process. It was found that for interventions affecting the prevalence only, a simplified surrogate CPM performs similarly to a stochastic CPM. We concluded that the use of a single surrogate CPM, which does not include the variability inherent to consumer practices, may lead to an overestimation of the effect of intervention measures in a QMRA, especially in these interventions affect the concentrations. For adequate risk assessment, it may therefore be necessary to include the variation in consumer practices (e.g. variation in storage time and temperature, cooking time and temperature and cross-contamination), as described in more realistic and more complex CPMs, definitely if this variation is expected to be large.

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Climate change and the health impact of aflatoxins exposure in Portugal - an overview
Climate change has been indicated as a driver for food safety issues worldwide, mainly due to the impact on the occurrence of food safety hazards at various stages of food chain. Mycotoxins, natural contaminants produced by fungi, are among the most important of such hazards. Aflatoxins, which have the highest acute and chronic toxicity of all mycotoxins, assume particular importance. A recent study predicted aflatoxin contamination in maize and wheat crops in Europe within the next 100 years and aflatoxin B1 is predicted to become a food safety issue in Europe, especially in the most probable scenario of climate change (+2 °C). This review discusses the potential influence of climate change on the health risk associated to aflatoxins dietary exposure of Portuguese population. We estimated the burden of disease associated to the current aflatoxin exposure for Portuguese population in terms of Disability Adjusted Life Years (DALYs). It is expected that in the future the number of DALYs and the associated cases of hepatocellular carcinoma due to aflatoxins exposure will increase due to climate change. The topics highlighted through this review, including the potential impact on health of the Portuguese population through the dietary exposure to aflatoxins, should represent an alert for the potential consequences of an incompletely explored perspective of climate change. Politics and decision-makers should be involved and committed to implement effective measures to deal with climate change issues and to reduce its possible consequences. This review constitutes a contribution for the prioritisation of strategies to face the unequal burden of effects of weather-related hazards in Portugal and across Europe.

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Scopus rating (2015): SJR 0.778 SNIP 0.878 CiteScore 2.11
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Scopus rating (2014): SJR 0.764 SNIP 0.978 CiteScore 2.07
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.041 SNIP 1.168 CiteScore 2.55
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
Scopus rating (2012): SJR 0.906 SNIP 1.123 CiteScore 2.12
Critical review of methods for risk ranking of food related hazards, based on risks for human health

This study aimed to critically review methods for ranking risks related to food safety and dietary hazards on the basis of their anticipated human health impacts. A literature review was performed to identify and characterize methods for risk ranking from the fields of food, environmental science and socio-economic sciences. The review used a predefined search protocol, and covered the bibliographic databases Scopus, CAB Abstracts, Web of Sciences, and PubMed over the period 1993-2013. All references deemed relevant, on the basis of predefined evaluation criteria, were included in the review, and the risk ranking method characterized. The methods were then clustered - based on their characteristics - into eleven method categories. These categories included: risk assessment, comparative risk assessment, risk ratio method, scoring method, cost of illness, health adjusted life years, multi-criteria decision analysis, risk matrix, flow charts/decision trees, stated preference techniques and expert synthesis. Method categories were described by their characteristics, weaknesses and strengths, data resources, and fields of applications. It was concluded there is no single best method for risk ranking. The method to be used should be selected on the basis of risk manager/assessor requirements, data availability, and the characteristics of the method. Recommendations for future use and application are provided.

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Scopus rating (2015): SJR 1.941 SNIP 2.264 CiteScore 5.72
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.041 SNIP 2.417 CiteScore 5.97
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Environmental sustainable decision making – The need and obstacles for integration of LCA into decision analysis

Decision analysis is often used to help decision makers choose among alternatives, based on the expected utility associated to each alternative as function of its consequences and potential impacts. Environmental impacts are not always among the prioritized concerns of traditional decision making. This has fostered the development of several environmental problems and is nowadays a reason of concern. Life Cycle Assessment (LCA) can assess an extensive range of environmental impacts associated with a product or service system and support a life cycle perspective on the alternative products or service systems, revealing potential problem shifting between life cycle stages. Through the integration with traditional risk based decision analysis, LCA may thus facilitate a better informed decision process. In this study we explore how environmental impacts are taken into account in different fields of interest for decision makers to identify the need, potential and obstacles for integrating LCA into conventional approaches to decision problems. Three application areas are used as examples: transportation planning, flood management, and food production and consumption. The analysis of these cases shows that environmental impacts are considered only to a limited extent in traditional evaluation of transport and food projects. They are rarely, if at all, addressed in flood risk management. Hence, in each of the three cases studied, there is a clear need for the inclusion of a better and systematic assessment of environmental impacts. Some LCA studies have been conducted in all three research areas, mainly on infrastructures and production systems. The three cases show the potential of integrating LCA into existing decision analysis by providing the environmental profiles of the alternatives. However, due to different goals and scopes of LCA and other decision analysis approaches, there is a general lack of consistency in study system scoping in terms of considered elements and boundaries, in uncertainty treatment, and in applied metrics. In the present paper, we discuss the obstacles arising when trying to integrate LCA with conventional evaluation tools and we propose a research agenda to eventually make such integration feasible and consistent.

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Organisations: Department of Management Engineering, Quantitative Sustainability Assessment, Department of Civil Engineering, Transport DTU, Transport Modelling, National Food Institute, Research Group for Risk-Benefit, Department of Applied Mathematics and Computer Science, Department of Environmental Engineering, Urban Water Systems, Research Group for Genomic Epidemiology, Section for Structural Engineering

Authors: Dong, Y. (Intern), Miraglia, S. (Intern), Manzo, S. (Intern), Georgiadis, S. (Intern), Sørup, H. J. D. (Intern), Boriani, E. (Intern), Hald, T. (Intern), Thöns, S. (Intern), Hauschild, M. Z. (Intern)

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Scopus rating (2011): SJR 1.3 SNIP 1.632 CiteScore 3.06
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.283 SNIP 1.34
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.165 SNIP 1.538
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Scopus rating (2008): SJR 0.998 SNIP 1.093
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Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.692 SNIP 1.457
Scopus rating (2005): SJR 0.606 SNIP 1.108
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Scopus rating (2002): SJR 0.459 SNIP 0.582
Scopus rating (2001): SJR 0.327 SNIP 0.302
Web of Science (2001): Indexed yes
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Harmonized terms, concepts and metadata for microbiological risk assessment models: the basis for knowledge integration and exchange

In the last decades the microbial food safety community has developed a variety of valuable knowledge (e.g., mathematical models and data) and resources (e.g., databases and software tools) in the areas of quantitative microbial risk assessment (QMRA) and predictive microbiology. However, the reusability of this knowledge and the exchange of information between resources are currently difficult and time consuming. This problem has increased over time due to the lack of harmonized data format and rules for knowledge annotation. It includes the lack of a common understanding of basic terms and concepts and of a harmonized information exchange format to describe and annotate knowledge. The existence of ambiguities and inconsistencies in the use of terms and concepts in the QMRA and predictive microbial (PM) modelling necessitates a consensus on their refinement, which will allow a harmonized exchange of information within these areas. Therefore, this work aims to harmonize terms and concepts used in QMRA and PM modelling spanning from high level concepts as defined by Codex Alimentarius, Food and Agriculture Organization (FAO) and World Health Organization (WHO), up to terms generally used in statistics or data and software science. As a result, a harmonized schema for metadata that allows consistent annotation of data and models from these two domains is proposed. This metadata schema is also a key component of the Food Safety Knowledge Markup Language (FSK-ML), a harmonized format for information exchange between resources in the QMRA and PM modelling domain. This work is carried out within a research project that aims to establish a new community resource called Risk Assessment Modelling and Knowledge Integration Platform (RAKIP). This platform will facilitate the sharing and execution of curated QMRA and PM models using the foundation of the proposed harmonized metadata schema and information exchange format. Furthermore, it will also provide access to related open source software libraries, converter tools and software-specific import and export functions that promote the adoption of FSK-ML by the microbial food safety community. In the future, these resources will hopefully promote both the knowledge reusability and the high-quality information exchange between stakeholders within the areas of QMRA and PM modelling worldwide.

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Authors: Ungaretti Haberbeck, L. (Intern), Rodriguez, C. P. (Ekstern), Desvignes, V. (Ekstern), Dalgaard, P. (Intern), Sanaa, M. (Ekstern), Guilier, L. (Ekstern), Nauta, M. (Intern), Filter, M. (Ekstern)
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Interplay between genetic predisposition, macronutrient intake and type 2 diabetes incidence: analysis within EPIC-InterAct across eight European countries

Aims/hypothesis: Gene–macronutrient interactions may contribute to the development of type 2 diabetes but research evidence to date is inconclusive. We aimed to increase our understanding of the aetiology of type 2 diabetes by investigating potential interactions between genes and macronutrient intake and their association with the incidence of type 2 diabetes. Methods: We investigated the influence of interactions between genetic risk scores (GRSs) for type 2 diabetes, insulin resistance and BMI and macronutrient intake on the development of type 2 diabetes in the European Prospective Investigation into Cancer and Nutrition (EPIC)-InterAct, a prospective case-cohort study across eight European countries (N = 21,900 with 9742 incident type 2 diabetes cases). Macronutrient intake was estimated from diets reported in questionnaires, including proportion of energy derived from total carbohydrate, protein, fat, plant and animal protein, saturated, monounsaturated and polyunsaturated fat and dietary fibre. Using multivariable-adjusted Cox regression, we estimated country-specific interaction results on the multiplicative scale, using random-effects meta-regression, we estimated country-specific interaction results on the multiplicative scale, using random-effects meta-analysis. Secondary analysis used isocaloric macronutrient substitution. Results: No interactions were identified between any of the three GRSs and any macronutrient intake, with low-to-moderate heterogeneity between countries (I² range 0–51.6%). Results were similar using isocaloric macronutrient substitution analyses and when weighted and unweighted GRSs and individual SNPs were examined. Conclusions/interpretation: Genetic susceptibility to type 2 diabetes, insulin resistance and BMI did not modify the association between macronutrient intake and incident type 2 diabetes. This
suggests that macronutrient intake recommendations to prevent type 2 diabetes do not need to account for differences in genetic predisposition to these three metabolic conditions.

**General information**

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**Organisations:** National Food Institute, Research Group for Risk-Benefit, University of Cambridge, German Institute of Human Nutrition, German Center for Diabetes Research (DZD), Institute Catala Oncologia, Navarre Public Health Institute, Centros de Investigacion Biomedica en Red - CIBER, Imperial College London, Bjørknes University College, Public Health Division of Gipuzkoa, Basque Government, ComUE Paris-Saclay, Fondazione IRCCS - Istituto Nazionale dei Tumori, Milan, International Agency for Research on Cancer, IMIB-Arrixaca, German Cancer Research Center (DKFZ), University of Oxford, Danish Cancer Society, University of Granada, Lund University, Utrecht University, Centro Per Lo Studio E La Prevenzione Oncologica, University of Naples Federico II, Umeå University, Public Health Directorate, University of Turin, Regional Health Service ASL TO3, National Institute of Public Health and the Environment, Azienda Sanitaria Provinciale, Associazione Iblea per la Ricerca Epidemiologica (AIRE-ONLUS), University of Gothenburg, Aarhus University


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- BFI (2015): BFI-level 1
- Scopus rating (2015): SJR 3.61 SNIP 1.933 CiteScore 5.57
- Web of Science (2015): Indexed yes
- BFI (2014): BFI-level 1
- Scopus rating (2014): SJR 3.243 SNIP 1.964 CiteScore 5.57
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- Web of Science (2013): Indexed yes
- BFI (2012): BFI-level 1
- Scopus rating (2012): SJR 3.235 SNIP 1.914 CiteScore 5.76
- ISI indexed (2012): ISI indexed yes
- BFI (2011): BFI-level 2
- Scopus rating (2011): SJR 3.177 SNIP 1.857 CiteScore 5.47
- ISI indexed (2011): ISI indexed yes
- BFI (2010): BFI-level 2
- Scopus rating (2010): SJR 3.345 SNIP 1.847
- Web of Science (2010): Indexed yes
Investigating the risk-benefit balance of substituting red and processed meat with fish in a Danish diet

Danish dietary guidelines recommend the Danish population to increase the consumption of fish while decreasing the consumption of red and processed meat to prevent nutrition-related diseases. However, the presence of contaminants in these foods may affect the overall risk-benefit balance of such substitution. We performed a quantitative risk-benefit assessment on substituting red and processed meat with fish in a Danish diet. We modeled the substitution among Danish adults based on data from a Danish dietary survey and compared four alternative scenarios based on varying chemical and nutrient exposures to the current consumption. We quantified the overall health impact of the substitutions in terms of Disability-Adjusted Life Years (DALYs). Approximately 150 DALYs/100,000 individuals could be averted each year if Danish adults consumed 350 g of fish/week (fatty or mix of fatty and lean) while decreasing the consumption of red and processed meat. A lower beneficial impact was observed when consumption of fish was restricted to lean fish (80 DALYs/100,000 averted), and a marked health loss (180 DALYs/100,000) was estimated when consumption was restricted to tuna. Our results show an overall beneficial effect of the substitution if the consumption of large predatory fish is low and at least half is fatty fish.

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Authors: Thomsen, S. T. (Intern), Pires, S. M. (Intern), Devleesschauwer, B. (Ekstern), Poulsen, M. (Intern), Fagt, S. (Intern), Ygil, K. H. (Intern), Andersen, R. (Intern)
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Linoleic Acid in Adipose Tissue and Development of Ischemic Stroke: A Danish Case-Cohort Study
BACKGROUND: We investigated the association between the content of linoleic acid in adipose tissue, a biomarker of long-term intake of linoleic acid, and the risk of ischemic stroke and its subtypes. METHODS AND RESULTS: The Danish cohort study Diet, Cancer and Health included 57,053 patients aged 50 to 65 years at enrollment. All participants had an adipose tissue biopsy performed at enrollment, while information on ischemic stroke during follow-up was obtained from the Danish National Patient Register. Stroke diagnoses were all validated and classified according to the Trial of Org 10172 in Acute Stroke Treatment (TOAST) classification. Cases and a randomly drawn subcohort of 3,500 patients had their fatty acid composition in adipose tissue determined by gas chromatography. Hazard ratios with 95% confidence intervals were calculated using weighted Cox proportional hazard regression. During 13.5 years of follow-up, 1,879 ischemic stroke cases were identified, for which 1,755 adipose biopsies were available, while adipose biopsies were available for 3,203 patients in the subcohort. When comparing the highest and the lowest quartiles of adipose tissue content of linoleic acid there was a negative association with the rate of total ischemic stroke (hazard ratio, 0.78; 95% confidence interval, 0.65-0.93) and large artery atherosclerosis (hazard ratio, 0.61; 95% confidence interval, 0.43-0.88), while there was an indication of a negative association with small-vessel occlusion (hazard ratio, 0.87; 95% confidence interval, 0.69-1.11). There was no clear association with the rate of cardioembolism. CONCLUSIONS: The content of linoleic acid in adipose tissue was inversely associated with the risk of total ischemic stroke and stroke caused by large artery atherosclerosis.
used in the underlying research disciplines, the differences between the “bottom-up” and the “top-down” approaches and
the need for clear risk-benefit questions. The frequent lack of data and knowledge with their consequential uncertainties is
considered, as well as the imbalance in the level of scientific evidence associated with health risks and benefits. The
challenges that are consequential to the need of considering substitution issues are discussed, as are those related to the
inclusion of microbiological hazards. Further challenges include the choice of the integrative health metrics and the
potential scope of RBAs, which may go beyond the health effect. Finally, the need for more practical applications of RBA
is stressed. Suggestions for meeting the identified challenges include an increased interdisciplinary consensus,
reconsideration of methodological approaches and health metrics based on a categorisation of risk-benefit questions, and
the performance of case studies to experience the feasibility of the proposed approaches.

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Authors: Nauta, M. (Intern), Andersen, R. (Intern), Pilegaard, K. (Intern), Pires, S. M. (Intern), Ravn-Haren, G. (Intern),
Tetens, I. (Intern), Poulsen, M. (Intern)
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Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 6 SJR 2.357 SNIP 2.775
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.232 SNIP 2.626 CiteScore 5.51
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Scopus rating (2010): SJR 1.763 SNIP 2.508
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Scopus rating (2009): SJR 2.187 SNIP 2.567
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.75 SNIP 2.321
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.682 SNIP 2.279
Web of Science (2007): Indexed yes
Modelling of adequate and safe vitamin D intake in Danish women using different fortification and supplementation scenarios to inform fortification policies

Fortification of foods with vitamin D may be a population-based solution to low vitamin D intake. We performed modelling of vitamin D from diet, fortified foods and supplements in a population of Danish women 18-50 years, a risk group of vitamin D deficiency, to inform fortification policies on safe and adequate levels. Based on individual habitual dietary vitamin D intake of female participants from the Danish National Survey of Dietary Habits and Physical Activity (DANSDA) (n=855), we performed graded intake modelling to predict the intake in six scenarios increasing the vitamin D intake from a habitual diet without fish to habitual diet including fish, fortified foods and supplements (40/80 µg). Four different foods were used as potential foods to fortify with vitamin D. The vitamin D intake was below the Average Requirement (AR) of 7.5 µg/day for 88% of the assessed women. Safe levels of intake (
Primary genotoxicity in the liver following pulmonary exposure to carbon black nanoparticles in mice

Background
Little is known about the mechanism underlying the genotoxicity observed in the liver following pulmonary exposure to carbon black (CB) nanoparticles (NPs). The genotoxicity could be caused by the presence of translocated particles or by circulating inflammatory mediators released during pulmonary inflammation and acute-phase response. To address this, we evaluated induction of pulmonary inflammation, pulmonary and hepatic acute-phase response and genotoxicity following exposure to titanium dioxide (TiO2), cerium oxide (CeO2) or CB NPs. Female C57BL/6 mice were exposed by intratracheal instillation, intravenous injection or oral gavage to a single dose of 162 μg NPs/mouse and terminated 1, 28 or 180 days post-exposure alongside vehicle control.

Results
Liver DNA damage assessed by the Comet Assay was observed after intravenous injection and intratracheal instillation of CB NPs but not after exposure to TiO2 or CeO2. Intratracheal exposure to NPs resulted in pulmonary inflammation in terms of increased neutrophils influx for all NPs 1 and 28 days post-exposure. Persistent pulmonary acute phase response was detected for all NPs at all three time points while only a transient induction of hepatic acute phase response was observed. All 3 materials were detected in the liver by enhanced darkfield microscopy up to 180 days post-exposure. In
contrast to TiO2 and CeO2 NPs, CB NPs generated ROS in an acellular assay.

Conclusions
Our results suggest that the observed hepatic DNA damage following intravenous and intratracheal dosing with CB NPs was caused by the presence of translocated, ROS-generating, particles detected in the liver rather than by the secondary effects of pulmonary inflammation or hepatic acute phase response.

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Scopus rating (2016): CiteScore 9.4 SJR 2.755 SNIP 2.144
Web of Science (2016): Indexed yes
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Web of Science (2014): Indexed yes
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Scopus rating (2013): SJR 2.857 SNIP 2.552 CiteScore 8.5
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Scopus rating (2010): SJR 2.097 SNIP 1.413
BFI (2009): BFI-level 1
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BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.227 SNIP 1.742
Scopus rating (2007): SJR 1.812 SNIP 1.747
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Scopus rating (2005): SJR 0.487 SNIP 0.297
Original language: English
With increased focus on dietary intake among youth and risk of diseases later in life, it is of importance, prior to assessing diet-disease relationships, to examine the validity of the dietary assessment tool. This study's objective was to evaluate the relative validity of a self-administered web-based FFQ among Danish children aged 12 to 15 years. From a nested sub-cohort within the Danish National Birth Cohort, 124 adolescents participated. Four weeks after completion of the FFQ, adolescents were invited to complete three telephone-based 24HRs; administered 4 weeks apart. Mean or median intakes of nutrients and food groups estimated from the FFQ were compared with the mean of 3x24HRs. To assess the level of ranking we calculated the proportion of correctly classified into the same quartile, and the proportion of misclassified (into the opposite quartile). Spearman's correlation coefficients and de-attenuated coefficients were calculated to assess agreement between the FFQ and 24HRs. The mean percentage of all food groups, for adolescents classified into the same and opposite quartile was 35 and 7.5%, respectively. Mean Spearman's correlation was 0.28 for food groups and 0.35 for nutrients, respectively. Adjustment for energy and within-person variation in the 24HRs had little effect on the magnitude of the correlations for food groups and nutrients. We found overestimation by the FFQ compared with the 24HRs for fish, fruits, vegetables, oils and dressing and underestimation by the FFQ for meat/poultry and sweets. Median intake of beverages, dairy, bread, cereals, the mean total energy and carbohydrate intake did not differ significantly between the two methods. The relative validity of the FFQ compared with the 3x24HRs showed that the ranking ability differed across food groups and nutrients with best ranking for estimated intake of dairy, fruits, and oils and dressing. Larger variation was observed for fish, sweets and vegetables. For nutrients, the ranking ability was acceptable for fatty acids and iron. When evaluating estimates from the FFQ among Danish adolescents these findings should be considered.
Risikovurdering af rabarberblade som fødevare

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Authors: Pilegaard, K. (Intern), Eriksen, F. D. (Intern), Ravn-Haren, G. (Intern), Bredsdorff, L. (Intern), Egebjerg, M. M. (Intern), Olesen, P. T. (Intern)
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Scientific advice for policy - The Danish Campylobacter Action plan

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Source Attribution and Risk Assessment of Antimicrobial Resistance

Source attribution and microbial risk assessment methods have been widely applied for the control of several foodborne pathogens worldwide by identifying (i) the most important pathogen sources and (ii) the risk represented by specific foods and the critical points in these foods’ production chains for microbial control. Such evidence has proved crucial for risk managers to identify and prioritize effective food safety and public health strategies. In the context of antimicrobial resistance (AMR) from livestock and pets, the utility of these methods is recognized, but a number of challenges have largely prevented their application and routine use. One key challenge has been to define the hazard in question: Is it the antimicrobial drug use in animals, the antimicrobial-resistant bacteria in animals and foods, or the antimicrobial resistance genes that can be transferred between commensal and pathogenic bacteria in the animal or human gut or in the environment? Other important limitations include the lack of occurrence and transmission data and the lack of evidence to inform dose-response relationships. We present the main principles, available methods, strengths, and weaknesses of source attribution and risk assessment methods, discuss their utility to identify sources and estimate risks of AMR from livestock and pets, and provide an overview of conducted studies. In addition, we discuss remaining challenges and current and future opportunities to improve methods and knowledge of the sources and transmission routes of AMR from animals through food, direct contact, or the environment, including improvements in surveillance and developments in genotypic typing methods.

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Subacute oral toxicity investigation of selenium nanoparticles and selenite in rats

Selenium (Se) nanoparticles have been proposed as food supplements. However, the particle formulation may exert unexpected toxicity. The aim was therefore to compare toxicity of low doses of Se nanoparticles and the dissolved, ionized Se species selenite. Female rats were dosed orally for 28d with either: 0.05, 0.5, or 4 mg Se/kg body weight (bw)/day as 20nm Se nanoparticles or 0.05 or 0.5mg Se/kg bw/day as sodium selenite. Male rats were dosed 4 mg Se/kg bw/day as Se nanoparticles. Body weight and clinical appearance were recorded throughout the experiment. At necropsy, blood
samples were taken for hematological and clinical chemistry analyses; organ weights were recorded. At the high-dose of Se nanoparticles, overt toxicity occurred and the female animals had to be euthanized prematurely, whereas the male animals were reduced in dose. At all doses of Se nanoparticles and at 0.5mg Se/kg bw/day as selenite, a lower body weight gain as compared to vehicle occurred. Relative liver weight was increased for both Se formulations at 0.5mg Se/kg bw/day. Creatinine clearance and urinary pH were affected in some Se dosed groups. There were no effects among dosed groups on brain neurotransmitters or on hematological parameters compared with controls. There were no histological changes in the livers of animals exposed to Se nanoparticles or to selenite. Based on effects on body weight and liver weight, selenium nanoparticles and ionic Se exerted similar toxicity. This suggests that a nanoparticle-specific toxicity of Se did not occur.

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Scopus rating (2014): SJR 0.453 SNIP 0.636 CiteScore 1.27
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.406 SNIP 0.537 CiteScore 1.25
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.39 SNIP 0.47 CiteScore 1.23
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.371 SNIP 0.537 CiteScore 1.27
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.34 SNIP 0.544
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.389 SNIP 0.875
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.412 SNIP 0.665
Scopus rating (2007): SJR 0.367 SNIP 0.55
Scopus rating (2006): SJR 0.379 SNIP 0.498
Scopus rating (2005): SJR 0.298 SNIP 0.699
Scopus rating (2004): SJR 0.257 SNIP 0.549
Scopus rating (2003): SJR 0.302 SNIP 0.446
Scopus rating (2002): SJR 0.304 SNIP 0.606
Scopus rating (2001): SJR 0.446 SNIP 0.617
Scopus rating (2000): SJR 0.176 SNIP 0.568
Scopus rating (1999): SJR 0.221 SNIP 0.378
Towards transparent and consistent exchange of knowledge for improved microbiological food safety

Predictive microbial modelling and quantitative microbiological risk assessment, two important and complementary areas within the food safety community, are generating a variety of scientific knowledge (experimental data and mathematical models) and resources (databases and software tools) for the exploitation of this knowledge. However, the application and reusability of this knowledge is still hampered as the access to this knowledge and the exchange of information between databases and software tools are currently difficult and time consuming. To facilitate transparent and consistent knowledge access and exchange new tools and community resources are needed. These resources will promote the creation of a public microbiological food safety knowledge repository encompassing available data and models. However, essential components are currently missing, such as open data formats supported by different software tools and consistent rules for knowledge annotation. The knowledge repository would be a user friendly tool to benefit different users within the microbiological food safety community, especially users like risk assessors and managers, model developers and research scientists working in the private sector (e.g. food industries, consultancy companies), research institutes or food authorities.

Use of Mathematical Optimization Models to Derive Healthy and Safe Fish Intake

Recommended fish intake differs substantially from observed fish intake. In Denmark, ∼15% of the population consumes the state-recommended fish intake. How much fish individuals eat varies greatly, and this variation cannot be captured by considering the fish intake of the average population. We developed a method intended to provide realistic and achievable personalized dietary recommendations based on an individual’s body weight and current fish intake. The objective of the study was to propose specific fish intake levels for individuals that meet the recommendations for eicosapentaenoic acid, docosahexaenoic acid, and vitamin D without violating the permitted intake recommendations for methyl mercury, dioxins, and polychlorinated biphenyls. Two mathematical optimization models were developed that apply quadratic programming to model personalized recommended fish intake, fulfilling criteria on nutrients and contaminants, while simultaneously deviating as little as possible from observed individual intake. A recommended intake for 8 fish species was generated for each individual in a group of 3016 Danes (1552 women and 1464 men, aged 18-75 y), whose fish intakes and body weights were known from a national dietary survey. Individual, personalized dietary recommendations were successfully
modeled. Modeled fish intake levels were compared to observed fish intakes. For women, the average proposed increase in fish intake was 14 g/wk for lean fish and 63 g/wk for fatty fish; and for men these numbers were 12 and 55 g/wk, respectively. Using fish intake as an example, we show how quadratic programming models may be used to advise individual consumers how to optimize their diet, taking both benefits and risks into account. This approach has the potential to increase compliance with dietary guidelines by targeting the individual consumers and minimizing the need for large and ultimately unrealistic behavior changes.

General information
State: Published
Organisations: National Food Institute, Division of Risk Assessment and Nutrition, Research Group for Risk-Benefit, MS-Nutrition, Technical University of Denmark
Authors: Persson, M. (Ekstern), Fagt, S. (Intern), Pires, S. M. (Intern), Poulsen, M. (Intern), Vieux, F. (Ekstern), Nauta, M. J. (Intern)
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Scopus rating (2016): CiteScore 3.93 SJR 2.025 SNIP 1.336
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 2.107 SNIP 1.517 CiteScore 4.08
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 2.121 SNIP 1.581 CiteScore 4.13
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BFI (2013): BFI-level 2
Scopus rating (2013): SJR 2.15 SNIP 1.615 CiteScore 4.6
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BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.94 SNIP 1.657 CiteScore 4.45
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.908 SNIP 1.6 CiteScore 4.32
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.729 SNIP 1.569
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.572 SNIP 1.542
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.592 SNIP 1.41
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.599 SNIP 1.477
Web of Science (2007): Indexed yes
Vitamin D vitamers affect vitamin D status differently in young healthy males

Dietary intake of vitamin D includes vitamin D3 (vitD3), 25-hydroxyvitamin D3 (25OH-D3), and vitamin D2 (vitD2). However, the bioactivity of the different species has not been scientifically established. The hypothesis in this study was that vitD3, 25OH-D3, and vitD2 have an equal effect on 25-hydroxyvitamin D in serum (vitamin D status). To test our hypothesis, we performed a randomized, crossover study. Twelve young males consumed 10 µg/day vitD3 during a four-week run-in period, followed by 3 × 6 weeks of 10 µg/day vitD3, 10 µg/day 25OH-D3, and 10 µg/day vitD2. The content of vitD3, vitD2, 25OH-D3, and 25-hydroxyvitamin D2 (25OH-D2) in serum was quantified by liquid chromatography-tandem mass spectrometry (LC-MS/MS). The hypothesis that the three sources of vitamin D affect vitamin D status equally was rejected. Based on the assumption that 1 µg vitD3/day will show an increase in vitamin D status of 1.96 nmol/L, the results showed that 23 µg vitD2 and 6.8 µg 25OH-D3 was similar to 10 µg vitD3. These results demonstrate that further investigations are necessary to determine how to quantify the total vitamin D activity based on chemical quantification of the individual vitamin D metabolites to replace the total vitamin D activity assessed in biological rat models.

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Organisations: National Food Institute, Research Group for Bioactives – Analysis and Application, Department of Applied Mathematics and Computer Science, Division of Risk Assessment and Nutrition, Research Group for Risk-Benefit, University of Copenhagen
Authors: Jakobsen, J. (Intern), Wreford Andersen, E. A. (Intern), Christensen, T. (Intern), Andersen, R. (Intern), Bügel, S. (Ekstern)
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Scopus rating (2017): SNIP 1.403 SJR 1.557 CiteScore 4.35
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Scopus rating (2016): CiteScore 4.29 SJR 1.543 SNIP 1.411
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Concepts and procedures for mapping food and health research infrastructure

Background Recent initiatives in Europe have encouraged the formalisation of research infrastructure to unify fragmented facilities, resources and services; and to facilitate world-class research of complex public health challenges, such as those related to non-communicable disease. How this can be achieved in the area of food and health has, to date, been unclear.

Scope and approach This commentary paper presents examples of the types of food and health research facilities, resources and services available in Europe. Insights are provided on the challenge of identifying and classifying research infrastructure. In addition, suggestions are made for the future direction of food and health research infrastructure in Europe. These views are informed by the EuroDISH project, which mapped research infrastructure in four areas of food and health research: Determinants of dietary behaviour; Intake of foods/nutrients; Status and functional markers of nutritional health; Health and disease risk of foods/nutrients. Key findings and conclusion There is no objective measure to identify or classify research infrastructure. It is therefore, difficult to operationalise this term. EuroDISH demonstrated specific challenges with identifying the degree an organisation, project, network or national infrastructure could be considered a research infrastructure; and establishing the boundary of a research infrastructure (integral hard or soft facilities/resources/services). Nevertheless, there are opportunities to create dedicated food and health research infrastructures in Europe. These would need to be flexible and adaptable to keep pace with an ever-changing research environment and bring together the multi-disciplinary needs of the food and health research community.

General information

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Organisations: National Food Institute, Research Group for Risk-Benefit, University of Surrey, National Institute of Public Health and the Environment, Wageningen University & Research, University of Paris 13 (UP13), Quadram Institute, Universite Claude Bernard Lyon 1, CREA-NUT, International Agency for Research on Cancer
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Adiposity, Dysmetabolic Traits, and Earlier Onset of Female Puberty in Adolescent Offspring of Women With Gestational Diabetes Mellitus: A Clinical Study Within the Danish National Birth Cohort
OBJECTIVE:
Offspring of pregnancies affected by gestational diabetes mellitus (GDM) are at increased risk of the development of type 2 diabetes. However, the extent to which these dysmetabolic traits may be due to offspring and/or maternal adiposity is unknown. We examined body composition and associated cardiometabolic traits in 561 9- to 16-year-old offspring of mothers with GDM and 597 control offspring.

RESEARCH DESIGN AND METHODS:
We measured anthropometric characteristics; puberty status; blood pressure; and fasting glucose, insulin, C-peptide, and lipid levels; and conducted a DEXA scan in a subset of the cohort. Differences in the outcomes between offspring of mothers with GDM and control subjects were examined using linear and logistic regression models.

RESULTS:
After adjustment for age and sex, offspring of mothers with GDM displayed higher weight, BMI, waist-to-hip ratio (WHR), systolic blood pressure, and resting heart rate and lower height. Offspring of mothers with GDM had higher total and abdominal fat percentages and lower muscle mass percentages, but these differences disappeared after correction for offspring BMI. The offspring of mothers with GDM displayed higher fasting plasma glucose, insulin, C-peptide, HOMA-insulin resistance (IR), and plasma triglyceride levels, whereas fasting plasma HDL cholesterol levels were decreased. Female offspring of mothers with GDM had an earlier onset of puberty than control offspring. Offspring of mothers with GDM had significantly higher BMI, WHR, fasting glucose, and HOMA-IR levels after adjustment for maternal prepregnancy BMI, and glucose and HOMA-IR remained elevated in the offspring of mothers with GDM after correction for both maternal and offspring BMIs.

CONCLUSIONS:
In summary, adolescent offspring of women with GDM show increased adiposity, an adverse cardiometabolic profile, and earlier onset of puberty among girls. Increased fasting glucose and HOMA-IR levels among the offspring of mothers with GDM may be explained by the programming effects of hyperglycemia in pregnancy.
A risk modelling approach for setting microbiological limits using enterococci as indicator for growth potential of Salmonella in pork

Microbiological limits are widely used in food processing as an aid to reduce the exposure to hazardous microorganisms for the consumers. However, in pork, the prevalence and concentrations of Salmonella are generally low and microbiological limits are not considered an efficient tool to support hygiene interventions. The objective of the present study was to develop an approach which could make it possible to define potential risk-based microbiological limits for an indicator, enterococci, in order to evaluate the risk from potential growth of Salmonella. A positive correlation between the concentration of enterococci and the prevalence and concentration of Salmonella was shown for 6640 pork samples taken at Danish cutting plants and retail butchers. The samples were collected in five different studies in 2001, 2002, 2010, 2011 and 2013. The observations that both Salmonella and enterococci are carried in the intestinal tract, contaminate pork by the same mechanisms and share similar growth characteristics (lag phase and maximum specific growth rate) at temperatures around 5-10 °C, suggest a potential of enterococci to be used as an indicator of potential growth of Salmonella in pork. Elevated temperatures during processing will lead to growth of both enterococci and, if present, also Salmonella. By combining the correlation between enterococci and Salmonella with risk modelling, it is possible to predict the risk of salmonellosis based on the level of enterococci. The risk model used for this purpose includes the dose-response relationship for Salmonella and a reduction factor to account for preparation of the fresh pork. By use of the risk model, it was estimated that the majority of salmonellosis cases, caused by the consumption of pork in Denmark, is caused by the small fraction of pork products that has enterococci concentrations above 5 log. CFU/g. This illustrates that our approach can be used to evaluate the potential effect of different microbiological limits and therefore, the perspective of this novel approach is that it can be used for definition of a risk-based microbiological limit for enterococci. The limit for enterococci can then be used for development of a process hygiene criterion in cutting plants and retail butcher shops, with the purpose of reducing the risk of Salmonella for the consumer.

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Organisations: National Food Institute, Research Group for Microbial Food Safety, Research Group for Risk-Benefit
Authors: Bollerslev, A. M. (Intern), Nauta, M. (Intern), Hansen, T. B. (Intern), Aabo, S. (Intern)
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Main Research Area: Technical/natural sciences
Association between single nucleotide polymorphisms in the antioxidant genes CAT, GR and SOD1, erythrocyte enzyme activities, dietary and life style factors and breast cancer risk in a Danish, prospective cohort study

Exposure to estrogens and alcohol consumption - the two only well-established risk factors for breast cancer - are capable of causing oxidative stress, which has been linked to progression of breast cancer. Here, five functional polymorphisms in the antioxidant genes SOD1, CAT and GSR were investigated in 703 breast cancer case-control pairs in the Danish, prospective "Diet, Cancer and Health" cohort together with gene-environment interactions between the polymorphisms, enzyme activities and intake of fruits and vegetables, alcohol and smoking in relation to breast cancer risk. Our results showed that genetically determined variations in the antioxidant enzyme activities of SOD1, CAT and GSR were not associated with risk of breast cancer per se. However, intake of alcohol, fruit and vegetables, and smoking status interacted with some of the polymorphisms in relation to breast cancer risk. Four polymorphisms were strongly associated with enzyme activity, but there was no interaction between any of the studied environmental factors and the polymorphisms in relation to enzyme activity. Additionally, single measurement of enzyme activity at entry to the cohort was not associated with risk of breast cancer. Our results therefore suggest that the antioxidant enzyme activities studied here are not major determinants of breast cancer risk.

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Web of Science (2017): Indexed yes
Scopus rating (2016): CiteScore 4.73 SJR 1.994 SNIP 1.062
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.26 SNIP 1.116 CiteScore 4.91
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.551 SNIP 1.285 CiteScore 4.96
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 3.061 SNIP 1.261 CiteScore 5.26
ISI indexed (2013): ISI indexed yes
Scopus rating (2012): SJR 2.512 SNIP 1.065 CiteScore 6.54
ISI indexed (2012): ISI indexed no
Scopus rating (2011): SJR 1.505 SNIP 0.489 CiteScore 3.38
ISI indexed (2011): ISI indexed no
Original language: English
antioxidant enzymes, breast cancer, gene-environment interactions, prospective cohort study, single nucleotide polymorphisms
Electronic versions:
A Stochastic Model to Assess the Effect of Meat Inspection Practices on the Contamination of the Pig Carcasses

The objective of meat inspection is to promote animal and public health by preventing, detecting, and controlling hazards originating from animals. With the improvements of sanitary level in pig herds, the hazards profile has shifted and the inspection procedures no longer target major foodborne pathogens (i.e., not risk based). Additionally, carcass manipulations performed when searching for macroscopic lesions can lead to cross-contamination. We therefore developed a stochastic model to quantitatively describe cross-contamination when consecutive carcasses are submitted to classic inspection procedures. The microbial hazard used to illustrate the model was Salmonella, the data set was obtained from Brazilian slaughterhouses, and some simplifying assumptions were made. The model predicted that due to cross-contamination during inspection, the prevalence of contaminated carcass surfaces increased from 1.2% to 95.7%, whereas the mean contamination on contaminated surfaces decreased from 1 logCFU/cm² to −0.87 logCFU/cm², and the standard deviations decreased from 0.65 to 0.19. These results are explained by the fact that, due to carcass manipulations with hands, knives, and hooks, including the cutting of contaminated lymph nodes, Salmonella is transferred to previously uncontaminated carcasses, but in small quantities. These small quantities can easily go undetected during sampling. Sensitivity analyses gave insight into the model performance and showed that the touching and cutting of lymph nodes during inspection can be an important source of carcass contamination. The model can serve as a tool to support discussions on the modernization of pig carcass inspection.
Combining traditional dietary assessment methods with novel metabolomics techniques: present efforts by the Food Biomarker Alliance

FFQ, food diaries and 24 h recall methods represent the most commonly used dietary assessment tools in human studies on nutrition and health, but food intake biomarkers are assumed to provide a more objective reflection of intake. Unfortunately, very few of these biomarkers are sufficiently validated. This review provides an overview of food intake biomarker research and highlights present research efforts of the Joint Programming Initiative ‘A Healthy Diet for a Healthy Life’ (JPI-HDHL) Food Biomarkers Alliance (FoodBAll). In order to identify novel food intake biomarkers, the focus is on new food metabolomics techniques that allow the quantification of up to thousands of metabolites simultaneously, which may be applied in intervention and observational studies. As biomarkers are often influenced by various other factors than the food under investigation, FoodBAll developed a food intake biomarker quality and validity score aiming to assist the systematic evaluation of novel biomarkers. Moreover, to evaluate the applicability of nutritional biomarkers, studies are presently also focusing on associations between food intake biomarkers and diet-related disease risk. In order to be successful in these metabolomics studies, knowledge about available electronic metabolomics resources is necessary and further developments of these resources are essential. Ultimately, present efforts in this research area aim to advance quality control of traditional dietary assessment methods, advance compliance evaluation in nutritional intervention studies, and increase the significance of observational studies by investigating associations between nutrition and health.

General information

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Number of pages: 9
Common genetic variants are associated with lower serum 25-hydroxyvitamin D concentrations across the year among children at northern latitudes

In a longitudinal study including 642 healthy 8-11-year-old Danish children, we investigated associations between vitamin D dependent SNP and serum 25-hydroxyvitamin D (25(OH)D) concentrations across a school year (August-June). Serum 25(OH)D was measured three times for every child, which approximated measurements in three seasons (autumn, winter, spring). Dietary and supplement intake, physical activity, BMI and parathyroid hormone were likewise measured at each time point. In all, eleven SNP in four vitamin D-related genes: Cytochrome P450 subfamily IIR1 (CYP2R1); 7-dehydrocholesterol reductase/nicotinamide adenine dinucleotide synthetase-1(DHCR7/NADSYN1); group-specific complement (GC); and vitamin D receptor were genotyped. We found minor alleles of CYP2R1 rs10500804, and of GC rs4588 and rs7041 to be associated with lower serum 25(OH)D concentrations across the three seasons (all P

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Organisations: National Food Institute, Research Group for Risk-Benefit, University of Copenhagen, Aalborg University Hospital
Authors: Petersen, R. A. (Ekstern), Larsen, L. H. (Ekstern), Damsgaard, C. T. (Ekstern), Sørensen, L. B. (Ekstern), Hjorth, M. F. (Ekstern), Andersen, R. (Intern), Tetens, I. (Intern), Krarup, H. (Ekstern), Ritz, C. (Ekstern), Astrup, A. (Ekstern), Michaelsen, K. F. (Ekstern), Mølgaard, C. (Ekstern)
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Scopus rating (2017): CiteScore 3.65 SJR 1.756 SNIP 1.555
Web of Science (2017): Indexed yes
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Scopus rating (2016): CiteScore 3.46 SJR 2.055 SNIP 1.535
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.583 SNIP 1.442 CiteScore 3.52
Web of Science (2015): Indexed yes
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Scopus rating (2014): SJR 1.532 SNIP 1.273 CiteScore 3.18
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BFI (2013): BFI-level 1
Scopus rating (2013): SJR 2.746 SNIP 2.479 CiteScore 3.61
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.308 SNIP 2.427 CiteScore 3.12
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.085 SNIP 1.649 CiteScore 3.13
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
This study aimed to evaluate the effect of different processing scenarios along the farm-to-fork chain on the contamination of minced pork with human pathogenic Y. enterocolitica. A modular process risk model (MPRM) was used to perform the assessment of the concentrations of pathogenic Y. enterocolitica in minced meat produced in industrial meat processing plants. The model described the production of minced pork starting from the contamination of pig carcasses with pathogenic Y. enterocolitica just before chilling. The endpoints of the assessment were (i) the proportion of 0.5 kg minced meat packages that contained pathogenic Y. enterocolitica and (ii) the proportion of 0.5 kg minced meat packages that contained more than 10³ pathogenic Y. enterocolitica at the end of storage, just before consumption of raw pork or preparation. Comparing alternative scenarios to the baseline model showed that the initial contamination and different decontamination procedures of carcasses have an important effect on the proportion of highly contaminated minced meat packages at the end of storage. The addition of pork cheeks and minimal quantities of tonsillar tissue into minced meat also had a large effect on the endpoint estimate. Finally, storage time and temperature at consumer level strongly influenced the number of highly contaminated packages.
Disease burden due to gastrointestinal infections among people living along the major wastewater system in Hanoi, Vietnam

Background: Despite recent improvements of wastewater treatment capacities in urban areas of Hanoi, Vietnam, microbial pollution is still considerable. There is a paucity of burden estimates due to gastrointestinal infection in people living along the wastewater system, and among people who are in direct contact with the wastewater, such as farmers using wastewater in agriculture and aquaculture. Methods: A quantitative microbial risk assessment (QMRA) was pursued focussing on four population groups characterised by different levels of exposure to wastewater: (i) workers maintaining the wastewater conveyance and treatment systems; (ii) urban farmers using wastewater from To Lich River; (iii) community members in urban areas exposed to flooding events in the districts of Hoang Mai and Thanh Tri; and (iv) peri-urban farmers in Thanh Tri district, where Red River water is used for agriculture and aquaculture. The QMRA was developed on the basis of measured concentration of Escherichia coli and Salmonella spp. and Ascaris spp. eggs in water samples. Published ratios between measured organisms and pathogenic strains of norovirus, rotavirus, Campylobacter spp., pathogenic E. coli, pathogenic Salmonella spp., Cryptosporidium spp. and Ascaris lumbricoides were employed to estimate annual risk of gastrointestinal infection and disease burden. Results: The QMRA estimated a disease burden of 0.011 disability-adjusted life years (DALYs) per person per year in urban farmers, 0.006 DALYs for sanitation workers, 0.0005 DALYs for urban communities at risk of flooding events and 0.0004 DALYs for peri-urban farmers. Urban farmers had considerably higher incidence estimates for gastrointestinal disease episodes per year (2.0) compared to the other exposure groups (≤ 1.0). Conclusions: Urban farmers using wastewater from To Lich River have a high gastrointestinal disease burden, which is about 100 times larger than the health-based targets for wastewater use set by the World Health Organization. These findings are of direct public health relevance and call for upgrading Hanoi's wastewater system to reduce microbial contamination. Finally, this study presents a first example on how to link QMRA to a sanitation safety planning (SSP) approach in an Asian context and its findings are interesting in the frame of Sustainable Development Goal (SDGs) #6.

General information
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Organisations: National Food Institute, Research Group for Risk-Benefit
Authors: Fuhrimann, S. (Ekstern), Nauta, M. (Intern), Pham-Duc, P. (Ekstern), Tram, N. T. (Ekstern), Nguyen-Viet, H. (Ekstern), Utzinger, J. (Ekstern), Cissé, G. (Ekstern), Winkler, M. S. (Ekstern)
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Web of Science (2017): Indexed yes
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Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.24 SNIP 2.062 CiteScore 4.31
Web of Science (2015): Indexed yes
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Scopus rating (2014): SJR 1.951 SNIP 1.951 CiteScore 3.66
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BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.432 SNIP 1.748 CiteScore 3.03
Genetisk bestemte forskelle i antioxidant enzymaktivitet er ikke associeret med risiko for brystkræft

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Organisations: National Food Institute, Research Group for Risk-Benefit, Det Nationale Forskningscenter for Arbejdsmiljø, University of Copenhagen, Danish Cancer Society
Authors: Kopp, T. I. (Intern), Vogel, U. (Ekstern), Dragsted, L. O. (Ekstern), Tjønneland, A. (Ekstern), Ravn-Haren, G. (Intern)
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Main Research Area: Technical/natural sciences

Publication information
Journal: Miljø og Sundhed
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Maternal protein intake in pregnancy and offspring metabolic health at age 9-16 y: results from a Danish cohort of gestational diabetes mellitus pregnancies and controls

Background: Recent years have seen strong tendencies toward high-protein diets. However, the implications of higher protein intake, especially during developmentally sensitive periods, are poorly understood. Conversely, evidence on the long-term developmental consequences of low protein intake in free-living populations remains limited. Objective: We examined the association of protein intake in pregnancy with offspring metabolic health at age 9-16 y in a longitudinal cohort that oversampled pregnancies with gestational diabetes mellitus (GDM). Design: Six hundred eight women with an index pregnancy affected by gestational diabetes mellitus and 626 controls enrolled in the Danish National Birth Cohort were used for the analysis. Protein (total, animal, vegetable) intake was assessed by using a food frequency questionnaire in gestational week 25. The offspring underwent a clinical examination including fasting blood samples and a dual-energy X-ray absorptiometry scan (subset of 650) from which metabolic outcomes were derived. Multivariable analyses were conducted applying a 1:1 substitution of carbohydrates for protein. Results: The mean ± SD protein intake in pregnancy was 93 ± 15 g/d (16% ± 3% of energy) in GDM-exposed women and 90 ± 14 g/d (16% ± 2% of energy) in control women. There were overall no associations between maternal protein intake and offspring fasting insulin and homeostasis model assessment of insulin resistance (HOMA-IR). We found that maternal total protein intake was associated with a tendency for a higher abdominal fat mass percentage (quartile 4 compared with quartile 1: 0.40 SD; 95% CI: -0.03, 0.83 SD; P = 0.07) in GDM-exposed offspring and a tendency for a higher total fat mass percentage among male offspring (quartile 4 compared with quartile 1: 0.33 SD; 95% CI: -0.01, 0.66 SD; P = 0.06), but a small sample size may have compromised the precision of the effect estimates. GDM-exposed offspring of mothers with a protein intake in the lowest decile (12.5% of energy) had lower fasting insulin (ratio of geometric means: 0.82; 95% CI: 0.68, 0.99; P = 0.04) and a tendency toward lower HOMA-IR (ratio of geometric means: 0.82; 95% CI: 0.66, 1.02; P = 0.07), but there was no evidence of associations with body composition. Male offspring seemed to derive a similar benefit from a maternal low protein intake as did GDM-exposed offspring. Conclusions: Overall, our results provide little support for an association of maternal protein intake in pregnancy with measures of offspring metabolic health. Further studies in larger cohorts are needed to determine whether low maternal protein intake in pregnancy may improve glucose homeostasis in GDM-exposed and male offspring.

General information
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Organisations: National Food Institute, Research Group for Risk-Benefit, Statens Seruminstitute, Rigshospitalet, University of Copenhagen, Aarhus University, University of Iceland
Authors: Maslova, E. (Ekstern), Hansen, S. (Ekstern), Grunnet, L. G. (Ekstern), Strom, M. (Ekstern), Bjerregaard, A. A. (Ekstern), Hjort, L. (Ekstern), Bach Kampmann, F. (Intern), Madsen, C. M. (Ekstern), Thuesen, A. C. B. (Ekstern), Bech, B. H. (Ekstern), Halldorsson, T. I. (Ekstern), Vaag, A. (Ekstern), Olsen, S. F. (Ekstern)
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Modelling Dietary Exposure to Chemical Components in Heat-Processed Meats

Several chemical compounds that potentially increase the risk of developing cancer in humans are formed during heat processing of meat. Estimating the overall health impact of these compounds in the population requires accurate
estimation of the exposure to the chemicals, as well as the probability that different levels of exposure result in disease. The overall goal of this study was to evaluate the impact of variability of exposure patterns and uncertainty of exposure data in burden of disease estimates. We focus on the first phase of burden of disease modelling, i.e. the estimation of exposure to selected compounds in the Danish population, based on concentration and consumption data. One of the challenges that arises in the probabilistic modelling of exposure is the presence of "artificial" zero counts in concentration data due to the detection level of the applied tests. Zero-inflated models, e.g. the Poisson-Lognormal approach, are promising tools to address this obstacle. The exposure estimates can then be applied to dose-response models to quantify the cancer risk.

Optimistic and pessimistic self-assessment of own diets is associated with age, self-rated health and weight status in Danish adults

The aim of this study was to analyse concordance between Danish adults' recorded diet quality and their own assessment of the healthiness and to examine socio-demographic, health and behavioural characteristics associated with an optimistic or pessimistic self-assessment. Data were derived from The Danish National Survey of Diet and Physical Activity 2011-2013 and included a random sample of 3014 adults (18-75 y). Diet quality was evaluated on the basis of seven-day pre-coded food diaries and categorised 'unhealthy', 'somewhat healthy' and 'healthy'. Self-assessment of the healthiness of own diets was registered via personal interviews and categorised healthy enough 'to a high degree', 'to some degree' or 'not at all/only partly'. Highly and somewhat optimistic self-assessment, respectively, were defined as assessing own diets as healthy enough to a high degree or to some degree while having unhealthy diets. Highly and somewhat pessimistic self-assessment, respectively, were defined as assessing own diets as not healthy enough or healthy enough to some degree while having healthy diets. Multiple logistic regression models were used to examine characteristics associated with optimistic and pessimistic self-assessments, respectively. Among individuals with unhealthy diets, 13% were highly optimistic and 42% somewhat optimistic about the healthiness of their diets. Among individuals with healthy diets, 14% were highly pessimistic and 51% somewhat pessimistic about the healthiness of their diets. Highly optimistic self-assessment was associated with increasing age, excellent self-rated health, normal weight and a moderate activity level. Highly pessimistic self-assessment was associated with decreasing age, good self-rated health and being overweight or obese. The findings indicate that people seem to use personal health characteristics as important references when assessing the healthiness of their diets.
Quantitative microbial risk assessment of Salmonella in dry fermented sausage (salami) in Southern Brazil

Dry fermented sausage (salami) is a very popular ready-to-eat product in Southern Brazil, of which the raw materials can be contaminated with pathogens such as Salmonella. This product can put consumers at risk if a failure occurs during the manufacturing process. To investigate this risk, a quantitative microbiological risk assessment was performed. The objective was to assess the impact of Salmonella inactivation during the process of fermenting and drying and the distribution of the bacteria in minced pork used in Italian-Style salami on the consumer health risk, using a modular process risk model (MPRM) approach. A total of 405 scenarios were tested combining five scenarios for sausage fermentation, three maturation times (12, 15, and 24 days), nine scenarios for prevalence and concentrations of Salmonella on pork carcasses, and three scenarios for clustering of cells (homogeneous and heterogeneous). In general, it was observed that the mean exposure to Salmonella due to ingestion of a portion of contaminated salami was very low;
“zero risks” (with no cases of salmonellosis among 100,000 consumed portions of salami) were found in 65% of the scenarios (265/405) assessed and low risks were found in the other 35% of the scenarios (140/405). Low risks were observed in all scenarios that included 24 days of maturation (0 to 9.8 Å—10-9; n = 135 scenarios) or ≥2.2 log reduction at any stage of the process (0 to 3 Å—10-9; n = 189 scenarios). According to the model, 134 of the 135 scenarios presenting log reduction greater than 3.3 during maturation reduced the mean risk to zero. The most important variables, increasing the risk, were lack of fermentation, short maturation period (12 days), and high concentration of Salmonella on the carcass. On the contrary, a negative association (indicating a decreased risk) was observed when 24 days of maturation is applied and or with good fermentation process. If a realistic heterogeneous distribution of bacteria over the sausages is assumed instead of homogeneous distribution, the estimated risk is larger. Although in general the mean risks found here were low, selling dry fermented sausage before complete maturation of the product and failure in fermentation can pose a risk to the consumers from the studied region. It was found that a maturation period of 24 days can be considered safe, even in a situation with high initial levels of contamination.

**General information**

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Organisations: National Food Institute, Research Group for Risk-Benefit, Universidade Federal do Rio Grande do Sul
Authors: Corbellini, L. G. (Intern), Costa, E. D. F. (Ekstern), Cardoso, M. (Ekstern), Nauta, M. (Intern)
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"Recycled paper for food packaging: burden of disease methodology to link sustainability and safety"

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Authors: Boriani, E. (Intern), Piek, E. N. (Intern), Hald, T. (Intern), Pires, S. M. (Intern), Boberg, J. (Intern), Jakobsen, L. S. (Intern)
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"Risikovurdering af bog (frugten fra bagétræet) som fødevare"

**General information**

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Scientific Opinion on the safety of alginate-konjac-xanthan polysaccharide complex (PGX) as a novel food pursuant to Regulation (EC) No 258/97

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on alginate-konjac-xanthan polysaccharide complex (PGX) as a novel food (NF) submitted pursuant to Regulation (EC) No 258/97. The NF is an off-white granular powder composed of three non-starch polysaccharides: konjac glucomannan, xanthan gum and sodium alginate. The information provided on the composition, the specifications, the batch-to-batch variability and the stability of the NF is sufficient and does not raise safety concerns. The production process is sufficiently described and does not raise concerns about the safety of the NF. The applicant intends to add the NF to a variety of foods as well as to market the NF in capsules. The recommended maximum daily intake of the NF from fortified foods and food supplements is 15 g. The target population proposed by the applicant is adults from 18 to 64 years of age. Considering the no observed adverse effect level of 1.8 g/kg body weight (bw) per day in a subchronic toxicity study with PGX and the highest mean and 95th percentile anticipated daily intake of NF from fortified foods, the margin of exposure (MoE) is 12 and 6, respectively, whereas the MoE for the NF from food supplements is 9. The Panel concludes that the safety of the novel food, PGX, for the intended uses and use levels as proposed by the applicant, has not been established.

Scientific Opinion on the safety of cranberry extract powder as a novel food ingredient pursuant to Regulation (EC) No 258/97

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on ‘cranberry extract powder’ as a novel food (NF) submitted pursuant to Regulation (EC) No 258/97 of the European Parliament and of the Council. The NF contains about 55–60% proanthocyanidins (PACs). The Panel considers that the information provided on the composition, the specifications, batch-to-batch variability and stability of the NF is sufficient and does not raise safety concerns. Cranberry extract powder is produced from cranberry juice.
concentrate through an ethanolic extraction using an adsorptive resin column to retain the phenolic components. The Panel considers that the production process is sufficiently described and does not raise concerns about the safety of the novel food. The NF is intended to be added to beverages and yogurts to provide 80 mg PACs per serving. The target population is the adult general population. The mean and 95th percentile estimates for the all-user intakes from all proposed food-uses are 68 and 192 mg/day, respectively, for female adults, and 74 mg/day and 219 mg/day, respectively, for male adults. Taking into account the composition of the novel food and the intended use levels, the Panel considers that the consumption of the NF is not nutritionally disadvantageous. While no animal toxicological studies have been conducted on the NF, a number of human clinical studies have been conducted with cranberry products. Considering the composition, manufacturing process, intake, history of consumption of the source and human data, the Panel considers that the data provided do not give reasons for safety concerns. The Panel concludes that the cranberry extract powder is safe as a food ingredient at the proposed uses and use levels.
Scientific Opinion on the safety of synthetic N-acetyl-D-neuraminic acid as a novel food pursuant to Regulation (EC) No 258/97

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on synthetic N-acetyl-d-neuraminic acid (NANA) as a novel food (NF) submitted pursuant to Regulation (EC) No 258/97. The information on the composition, the specifications, the batch-to-batch variability, stability and production process of the NF is sufficient and does not raise concerns about the safety of the NF. The NF is intended to be marketed as an ingredient in formulae and foods for infants and young children as well as an ingredient in a variety of foods and in food supplements for the general population. NANA is naturally present in human milk, in a bound and free form. The Margin of Exposure, which was based on the no-observed-adverse effect level (NOAEL) of 493 mg/kg body weight (bw) per day from a subchronic study and the anticipated daily intake of the NF, was considered to be sufficient for fortified foods for the general population and for food supplements for individuals above 10 years of age, as the anticipated daily intake was in the range of the exposure to free NANA from the consumption of early human milk, which is considered to be safe. The Panel concludes that the NF is safe when added to foods other than food supplements at the proposed uses and use levels for the general population; is safe in food supplements alone at the proposed uses and use levels for individuals above 10 years of age; is safe at the combined intake from fortified foods plus food supplements in individuals above 10 years of age; the safety of the NF is not established in food supplements alone at the proposed uses and use levels for individuals below 10 years of age.

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Source attribution of Campylobacter infections in Denmark - Technical Report

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Authors: Pires, S. M. (Intern), Christensen, J. (Intern)
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Statement on the safety of EstroG-100™ as a novel food pursuant to Regulation (EC) No 258/97

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to update its scientific opinion on the safety of EstroG-100™ as a novel food (NF) in the light of additional information submitted by the applicant. In its previous scientific opinion of 2016, the Panel concluded that EstroG-100™, which is a hot-water extract of a mixture of three herbal roots, is safe for the use in food supplements at the maximum intake level of 175 mg/day in post-menopausal women, which is lower than the maximum intake level proposed by the applicant (514 mg/day). The Panel reached its conclusions based on the effects of EstroG-100™ on liver and haematology as observed in several oral toxicity studies, the lack of information on liver and haematological parameters in human studies and the absence of chronic toxicity data. In view of the Panel's conclusion on the safety of EstroG-100™, the applicant has now provided additional information on haematological and liver parameters for the human intervention study with EstroG-100™ and historical control data related to the subchronic 90-day oral toxicity study with EstroG-100™. After assessing the additional information provided by the applicant, the Panel considers that the conclusion of the scientific opinion on the safety of EstroG-100™ does not need to be revised, and thus, the Panel reconfirms that the NF is safe for the use in food supplements at the maximum intake level of 175 mg/day in post-menopausal women.

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The disease burden of congenital toxoplasmosis in Denmark, 2014

Congenital toxoplasmosis (CT) causes a substantial disease burden worldwide. The aim of this study was to estimate the disease burden of CT in Denmark, a developed country with free public healthcare and nationwide data available. Using data primarily from two public health surveillance programmes conducted between 1992 and 2007, we estimated the incidence, occurrence of sequelae, mortality and the burden of disease in terms of disability-adjusted life years (DALYs) of CT in Denmark in 2014. We estimated that 14 children were born with CT in 2014, of which six will have developed sequelae by the age of 12. CT resulted in a total disease burden of 123 DALYs (95% uncertainty interval [UI], 100–148), of which 78 (95% UI, 64–94) were due to foetal loss and 2 (95% UI, 1–3) were due to neonatal death; the remaining burden was due to moderate to severe life-long sequelae. A comparison of the estimated incidence of CT with the number of reported CT cases in 2008–2014 indicated that for each reported CT case, at least five other CT cases could be expected to have occurred and gone unreported. Early onset, severity, and life-long duration of sequelae have a major effect on the disease burden of CT. Our data suggest that CT is under-diagnosed or under-reported in Denmark. The estimated disease burden and public health impact in Denmark is lower than in other European countries, highlighting the need for country-specific studies.
Whole-Grain Intake, Reflected by Dietary Records and Biomarkers, Is Inversely Associated with Circulating Insulin and Other Cardiometabolic Markers in 8- to 11-Year-Old Children

Background: Whole-grain consumption seems to be cardioprotective in adults, but evidence in children is limited. Objective: We investigated whether intakes of total whole grain and dietary fiber as well as specific whole grains were associated with fat mass and cardiometabolic risk profile in children. Methods: We collected cross-sectional data on parental education, puberty, diet by 7-d records, and physical activity by accelerometry and measured anthropometry, fat mass index by dual-energy X-ray absorptiometry, and blood pressure in 713 Danish children aged 8-11 y. Fasting blood samples were obtained and analyzed for alkylresorcinols, biomarkers of whole-grain wheat and rye intake, HDL and LDL cholesterol, triacylglycerols, insulin, and glucose. Linear mixed models included puberty, parental education, physical activity, and intakes of energy, fruit and vegetables, saturated fat, and n-3 (ω-3) polyunsaturated fatty acids. Results: Median (IQR) whole-grain and dietary fiber intakes were 52 g/d (35-72 g/d) and 17 g/d (14-22 g/d), respectively. Fourteen percent of children were overweight or obese and most had low-risk cardiometabolic profiles. Dietary whole-grain and fiber intakes were not associated with fat mass index but were inversely associated with serum insulin [both P <0.01; e.g., with 0.68 pmol/L (95% CI: 0.26, 1.10 pmol/L) lower insulin · g whole grain-1 · MJ-1]. Whole-grain oat intake was inversely associated with fat mass index, systolic blood pressure, and LDL cholesterol (all P <0.05) as well as insulin (P = 0.003), which also tended to be inversely associated with whole-grain rye intake (P = 0.11). Adjustment for fat mass index did not change the associations. The C17-to-C21 alkylresorcinol ratio, reflecting whole-grain rye to wheat intake, was inversely associated with insulin (P <0.001). Conclusions: Higher whole-grain intake was associated with lower serum insulin independently of fat mass in 8- to 11-y-old Danish children. Whole-grain oat intake was linked to an overall protective cardiometabolic profile, and whole-grain rye intake was marginally associated with lower serum insulin. This supports whole grains as healthy dietary components in childhood. This trial was registered at clinicaltrials.gov as NCT01577277.
Alcohol-related breast cancer in postmenopausal women - effect of CYP19A1, PPARG and PPARGC1A polymorphisms on female sex-hormone levels and interaction with alcohol consumption and NSAID usage in a nested case-control study and a randomised controlled trial

Alcohol consumption is associated with increased risk of breast cancer (BC), and the underlying mechanism is thought to be sex-hormone driven. In vitro and observational studies suggest a mechanism involving peroxisome proliferator-activated receptor gamma (PPARγ) in a complex with peroxisome proliferator-activated receptor gamma coactivator 1-α (PGC-1α) and interaction with aromatase (encoded by CYP19A1). Use of non-steroidal anti-inflammatory drugs (NSAID) may also affect circulating sex-hormone levels by modifying PPARγ activity. In the present study we assessed whether genetic variation in CYP19A1 is associated with risk of BC in a case-control study group nested within the Danish "Diet, Cancer and Health" cohort (ncases = 687 and ncontrols = 687) and searched for gene-gene interaction between CYP19A1 and PPARGC1A, and CYP19A1 and PPARG, and gene-alcohol and gene-NSAID interactions. Association between the CYP19A1 polymorphisms and hormone levels was also examined among 339 non-HRT users. Incidence rate ratios were calculated based on Cox' proportional hazards model. Furthermore, we performed a pilot randomised controlled trial to determine the effect of the PPARG Pro(12)Ala polymorphism and the PPARγ stimulator Ibuprofen on sex-hormone levels following alcohol intake in postmenopausal women (n=25) using linear regression. Genetic variations in CYP19A1 were associated with hormone levels (estrone: P rs11070844 = 0.009, estrone sulphate: P rs11070844 = 0.01, P rs749292 = 0.04, P rs1062033 = 0.007 and P rs10519297 = 0.03, and sex hormone-binding globulin (SHBG): P rs3751591 = 0.03) and interacted with alcohol intake in relation to hormone levels (estrone sulphate: P interaction/rs2008691 = 0.02 and P interaction/rs1062033 = 0.03, and SHBG: P interaction/rs11070844 = 0.03). CYP19A1/rs3751591 was both associated with SHBG levels (P = 0.03) and with risk of BC (Incidence Rate Ratio = 2.12, 95 % Confidence Interval: 1.02-4.43) such that...
homozygous variant allele carriers had increased levels of serum SHBG and were at increased risk of BC. Acute intake of alcohol decreased blood estrone (P = ...
Application of Molecular Typing Results in Source Attribution Models: The Case of Multiple Locus Variable Number Tandem Repeat Analysis (MLVA) of Salmonella Isolates Obtained from Integrated Surveillance in Denmark

Salmonella is an important cause of bacterial foodborne infections in Denmark. To identify the main animal-food sources of human salmonellosis, risk managers have relied on a routine application of a microbial subtyping-based source attribution model since 1995. In 2013, multiple locus variable number tandem repeat analysis (MLVA) substituted phage typing as the subtyping method for surveillance of S. Enteritidis and S. Typhimurium isolated from animals, food, and humans in Denmark. The purpose of this study was to develop a modeling approach applying a combination of serovars, MLVA types, and antibiotic resistance profiles for the Salmonella source attribution, and assess the utility of the results for the food safety decisionmakers. Full and simplified MLVA schemes from surveillance data were tested, and model fit and consistency of results were assessed using statistical measures. We conclude that loci schemes STTR5/STTR10/STTR3 for S. Typhimurium and SE9/SE5/SE2/SE1/SE3 for S. Enteritidis can be used in microbial subtyping-based source attribution models. Based on the results, we discuss that an adjustment of the discriminatory level of the subtyping method applied often will be required to fit the purpose of the study and the available data. The issues discussed are also considered highly relevant when applying, e.g., extended multi-locus sequence typing or next-generation sequencing techniques.
Application of TRiMiCri for the evaluation of risk based microbiological criteria for Campylobacter on broiler meat

A potential solution for the reduction of consumer exposure to Campylobacter is establishing a microbiological criterion (MC) for Campylobacter on broiler meat. In the present study the freely available software tool TRiMiCri was applied to evaluate risk-based microbiological criteria by two approaches: the traditional one that implies a microbiological limit (ML-MC) and the second one which is based on the relative risk estimate (RRL-MC). A baseline risk was estimated based on the Belgian baseline data, whereas the data for the evaluated batches were Campylobacter counts from 28 Campylobacter positive batches sampled in six Belgian slaughterhouses. Results showed that approximately 60% of Campylobacter positive batches did not comply with ML criteria based on the n = 5, m = 1000 and c = 0 for ML-MC and equivalently for RRL criteria when RRcrit = 1. As expected, the less stringent MCs decreased the percentages of non-compliance (NC) but they are less effective, as reflected in increased minimum relative residual risks (MRRRs). When the Belgian baseline is used, more batches are found to be compliant than when the Danish baseline provided by TRiMiCri is used. Based on this, the application of microbiological criteria for Campylobacter in the EU is discussed. TRiMiCri provides user friendly software to evaluate the available data and can help risk managers in establishing risk based microbiological criteria for Campylobacter in broiler meat.

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Organisations: National Food Institute, Research Group for Risk-Benefit, Ghent University
Authors: Seliwiorstow, T. (Ekstern), Uyttendaele, M. (Ekstern), De Zutter, L. (Ekstern), Nauta, M. (Intern)
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A QMRA Model for Salmonella in Pork Products During Preparation and Consumption

As part of a quantitative microbiological risk assessment (QMRA) food chain model, this article describes a model for the consumer phase for Salmonella-contaminated pork products. Three pork products were chosen as a proxy for the entire pork product spectrum: pork cuts, minced meat patties, and fermented sausages. For pork cuts cross-contamination is considered the most important process and therefore it is modeled in detail. For minced meat, both cross-contamination and undercooking are the relevant processes. For those commodities bacterial growth during transport and storage is also modeled. Fermented sausages are eaten raw and the production may be defective. Variability between consumers’ behavior and the impact of variability between production processes at the farm and abattoir are taken into account. Results indicate that Salmonella levels on products may increase significantly during transport and storage. Heating is very efficient at lowering concentrations, yet cross-contamination plays an important role in products that remain contaminated. For fermented sausage it is found that drying is important for Salmonella reduction. Sensitivity analysis revealed that cross-contamination factors “knife cleaning” and “preparation of a salad” are important parameters for pork cuts. For minced meat cleaning of the board, salad consumption, refrigerator temperature, and storage time were significant.
A risk-based approach for evaluation of hygiene performance at pig slaughter

In Denmark, the pig slaughterhouses have a daily input of pigs infected and/or contaminated with Salmonella, and the slaughter hygiene has major influence on the level of Salmonella contamination on the meat leaving the slaughterhouse. However, the relationship between the effect of improved hygiene performance and the consequential reduction of human health risk has not been estimated so far. In this study, swab samples from 2702 pig carcasses were collected, originally for other purposes, from five large Danish slaughterhouses in a period from 2005 to 2007, covering all seasons of the year. The samples were analysed quantitatively for E. coli and semi-quantitatively for Salmonella. A positive association between the number of E. coli on carcasses and the prevalence of Salmonella positive carcasses was shown. For carcasses positive for Salmonella, a positive association was also shown between the number of E. coli and the number of Salmonella on the carcass. As no biological association has been reported between faecal shedding of E. coli and presence of Salmonella, the relationship was considered to be associated with the level of faecal contamination. The positive association between E. coli and Salmonella was used as basis for developing a quantitative risk assessment model for Salmonella, using the level E. coli as model input. The model output associated the hygiene performance with a relative risk estimate of human salmonellosis. The overall objective was to develop a decision support tool that can be used to support risk-based hygiene interventions in pig slaughterhouses.

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Authors: Bollerslev, A. M. (Intern), Nauta, M. (Intern), Hald, T. (Intern), Hansen, T. B. (Intern), Aabo, S. (Intern)
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Associations between school meal-induced dietary changes and metabolic syndrome markers in 8–11-year-old Danish children

Purpose: We recently showed that provision of Nordic school meals rich in fish, vegetables and potatoes and with reduced intakes of fat improved blood pressure, insulin resistance assessed by the homeostatic model (HOMA-IR), and plasma triacylglycerol despite increasing waist circumference in Danish 8–11-year-olds. This study explored whether intake or biomarkers of key dietary components in the schools meals were associated with these metabolic syndrome (MetS) markers during the 6-month intervention. Methods: Data from 7-day dietary records and measurements of whole-blood docosahexaenoic acid (DHA, 22:6n-3), blood pressure, fasting blood MetS markers, waist circumference and android/total fat mass assessed by dual-energy X-ray absorptiometry collected at baseline, 3 and 6 months from 523 children were analyzed in linear mixed-effects models adjusted for puberty, growth and fasting. Results: After adjustment for multiple testing, whole-blood DHA was negatively associated with HOMA-IR (P <0.001) and triacylglycerol (P <0.0001). Potato intake was positively associated with waist circumference (P <0.01), but not with android/total fat mass (P = 0.94). Intakes of whole-grain as well as dietary fiber, protein and fat were not associated with any of the MetS markers. Conclusions: DHA in whole-blood, an indicator of DHA and fish intake, seemed to be the main diet-related predictor of the beneficial effects of the school meals on MetS markers. Increased potato intake was associated with increased waist circumference, but this may not only be due to an increase in abdominal fat, as no association was seen with fat distribution.

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Organisations: National Food Institute, Division of Risk Assessment and Nutrition, Research Group for Risk-Benefit, University of Copenhagen, Swedish University of Agricultural Sciences, University of Waterloo
Authors: Damsgaard, C. T. (Ekstern), Ritz, C. (Ekstern), Dalskov, S. M. (Ekstern), Landberg, R. (Ekstern), Stark, K. D. (Ekstern), Biltoft-Jensen, A. P. (Intern), Tetens, I. (Intern), Astrup, A. (Ekstern), Michaelsen, K. F. (Ekstern), Lauritzen, L. (Ekstern)
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Scopus rating (2017): CiteScore 3.36 SJR 1.408 SNIP 1.076
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.22 SJR 1.328 SNIP 1.158
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.36 SNIP 1.143 CiteScore 3.13
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.271 SNIP 1.213 CiteScore 3.28
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.031 SNIP 1.138 CiteScore 3.2
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
Burden of disease of dietary exposure to acrylamide in Denmark

Acrylamide (AA) is a process-contaminant that potentially increases the risk of developing cancer in humans. AA is formed during heat treatment of starchy foods and detected in a wide range of commonly consumed products. Increased focus on risk ranking and prioritization of major causes of disease makes it relevant to estimate the impact that exposure to chemical contaminants and other hazards in food have on health. In this study, we estimated the burden of disease (BoD) caused by dietary exposure to AA, using disability adjusted life years (DALY) as health metric. We applied an exposure-based approach and proposed a model of three components: an exposure, health-outcome, and DALY-module. We estimated BoD using two approaches for estimating cancer risk based on toxicological data and two approaches for estimating DALY. In Denmark, 1.8 healthy life years per 100,000 inhabitants are lost each year due to exposure to AA through foods, as estimated by the most conservative approach. This result should be used to inform risk management decisions and for comparison with BoD of other food-borne hazards for prioritizing policies. However, our study shows that careful evaluation of methodological choices and assumptions used in BoD studies is necessary before use in policy making.

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, Research Group for Food Production Engineering
Authors: Jakobsen, L. S. (Intern), Granby, K. (Intern), Knudsen, V. K. (Intern), Nauta, M. (Intern), Pires, S. M. (Intern), Poulsen, M. (Intern)
Number of pages: 9
Pages: 151-159
Publication date: 2016
Main Research Area: Technical/natural sciences
Campylobacter spp. and Escherichia coli contamination of broiler carcasses across the slaughter line in Danish slaughterhouses

This study presents levels of Campylobacter spp. and Escherichia coli on broiler carcasses across the slaughter line in three fully automated Danish slaughterhouses with the aim to investigate differences in slaughter hygiene between the lines, correlation between concentrations of E.coli and Campylobacter, and finally, the relationship between Campylobacter counts in caeca and on chilled meat. In total, 15 commercial, indoor flocks were examined and from each flock 24 caecal samples and 24 carcass samples were collected from each of the control points after plucking (AP), after evisceration (AE) and after chilling (AC). Results showed distinct differences between slaughterhouses. For slaughterhouse I the contamination level was high AP and decreased AE while for slaughterhouse II the contamination level was low AP and increased AE. For slaughterhouse III the contamination level varied insignificantly across the processes. Results also showed differences in contamination levels of E. coli and Campylobacter between slaughterhouses. Mean counts of the two organisms increased or decreased concurrently from after plucking to after evisceration within slaughterhouses; however, after chilling counts of E. coli were reduced to a larger extent than counts of Campylobacter. This suggests that for processing of Campylobacter positive broilers E. coli may be used as an indicator of faecal contamination during the processing steps up to the point of chilling but not as an indicator of Campylobacter contamination of chilled broiler meat. A correlation was found, though, between the mean number of Campylobacter in caeca and the mean number of Campylobacter on broiler meat after chilling which means that the level in the gut at slaughtering significantly impacts the level on the chilled meat. In conclusion, our data confirm that less faecal contamination throughout processing, and/or less Campylobacter in the gut at the point of chilling will lead to less Campylobacter contamination on the meat and thereby improve food safety. Exchange of information between slaughterhouses on best hygiene practices and compliance with these is an option to reduce numbers of Campylobacter in broiler meat.

General information
State: Published
Organisations: National Food Institute, Division of Risk Assessment and Nutrition, Research Group for Risk-Benefit, Danish Veterinary and Food Administration
Authors: Boysen, L. (Intern), Nauta, M. (Intern), Rosenquist, H. (Ekstern)
Number of pages: 5
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Main Research Area: Technical/natural sciences

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Journal: Microbial Risk Analysis
Volume: 2-3
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Scopus rating (2017): CiteScore 1.17
Original language: English
Caeca, Chicken, Hygiene, Indicator, Correlation, Campylobacter spp., E. coli
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Source: FindIt
Source-ID: 2305901489
Publication: Research - peer-review › Journal article – Annual report year: 2016

Cardiovascular risk factors in rural Kenyans are associated with differential age gradients, but not modified by sex or ethnicity

The relationship between metabolic disease and the non-modifiable risk factors sex, age and ethnicity in Africans is not well-established. This study aimed to describe sex, age and ethnicity differences in blood pressure (BP) and lipid status in rural Kenyans. A cross-sectional study was undertaken among rural Kenyans. BP and pulse rate (PR) were measured while sitting and fasting blood samples were taken for analysis of standard lipid profile. Standard anthropometric measurements were collected. Physical activity energy expenditure was obtained objectively and lifestyle data were obtained using questionnaires. In total, 1139 individuals (61.0% women) participated aged 17-68 years. Age was positively associated with BP and plasma cholesterol levels. Sitting PR was negatively associated with age in women only (sex-interaction p
Cost-effectiveness of Campylobacter interventions on broiler farms in six European countries

Broilers are an important reservoir for human Campylobacter infections, one of the leading causes of acute diarrheal disease in humans worldwide. Therefore, it is relevant to control Campylobacter on broiler farms. This study estimated the cost-effectiveness ratios of eight Campylobacter interventions on broiler farms in six European countries: Denmark, the Netherlands, Norway, Poland, Spain, and United Kingdom. The cost-effectiveness ratio of an intervention was the estimated costs of the intervention divided by the estimated public health benefits due to the intervention, and was expressed in euro per avoided disability-adjusted life year (DALY). Interventions were selected on the basis of a European risk factor study and other risk factor research. A deterministic simulation model was developed to estimate the cost-effectiveness ratio of each intervention, if it would be implemented on all broiler farms in a country where it isn't implemented yet and implementation is possible. The model considered differences between countries in number and size of broiler farms and established practices, in import, export and transit of live broilers, broiler meat and meat products, in effect of interventions on Campylobacter prevalence in broilers, in disease burden of Campylobacter related human illness, in national economic factors, such as interest rate and general cost levels, and in technical and economic farm performance. Across interventions, cost-effectiveness ratios were the lowest for Poland and Spain, and highest for Norway and Denmark. Across countries, applying designated tools for each farm house and building an anteroom with hygiene barrier in each farm house had the lowest cost-effectiveness ratios, whereas a ban on thinning (partial depopulation), slaughter at 35 days, replacing old houses by new houses, and applying drink nipples without cup had the highest. Applying fly screens in Denmark had an intermediate cost-effectiveness ratio. A maximum downtime between flocks of ten days had a negative cost-effectiveness ratio (i.e. revenue) in Poland, a low positive cost-effectiveness ratio in Spain and high positive cost-effectiveness ratios in Denmark, the Netherlands and United Kingdom. Estimated cost-effectiveness ratios of Campylobacter interventions on broiler farms differed substantially between the six countries, but the order of interventions in increasing cost-effectiveness ratio was generally similar across the countries.

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, Wageningen University & Research
Authors: van Wagenberg, C. (Ekstern), van Horne, P. (Ekstern), Sommer, H. M. (Intern), Nauta, M. (Intern)
Number of pages: 10
Pages: 53-62
Publication date: 2016
Main Research Area: Technical/natural sciences

De fleste får nok vitaminer og mineraler fra kosten alene

General information
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Organisations: National Food Institute, Division of Risk Assessment and Nutrition, Research Group for Risk-Benefit
Pages: 1-13
Publication date: 2016
Main Research Area: Technical/natural sciences
Development, validation and implementation of a quantitative food frequency questionnaire to assess habitual vitamin D intake

Background A well-designed, validated quantitative food frequency questionnaire (FFQ) could offer an efficient and cost-effective method for assessing habitual vitamin D intake. The present study aimed to describe the development, validation and implementation of a vitamin D FFQ. Methods National food consumption survey data obtained from Irish adults (18–64 years) were used to identify foods that contribute 95% of vitamin D intake. A winter-based validation study was carried out for the resulting FFQ in 120 females, including 98 women [mean (SD) 65.0 (7.3) years] and 22 girls [12.2 (0.8) years], using a 14-day diet history (DH) as a comparator. Serum 25(OH)D concentrations were analysed. Validity coefficients were calculated using the method of triads. Cross-classification and Bland–Altman analysis were also performed. Results Median (interquartile range) vitamin D intakes (including the contribution from nutritional supplements) were 5.4 (3.7) and 3.7 (5.9) μg day⁻¹ from the FFQ and DH, respectively and intakes of vitamin D from food sources were 3.6 (3.1) and 2.4 (2.2) μg day⁻¹. The FFQ and DH classified 86% and 87% of individuals into the same and adjacent thirds of wintertime serum 25(OH)D status, respectively. There was a strong association (r = 0.71, P < 0.0001) and no significant systematic or proportional bias observed for the difference between estimates from the FFQ and DH. The validity coefficient for the FFQ was 0.92 (95% confidence interval = 0.80–0.97). Repeatability analysis (n = 56) performed 6–12 months later showed no significant difference in estimates of vitamin D between administrations. Conclusions The data obtained in the present study indicate high validity and good reproducibility of a short, interviewer-administered FFQ for vitamin D.
Dietary adequacy of lunch meals served and consumed at Danish daycare centers

General information
State: Published
Organisations: National Food Institute, Division of Risk Assessment and Nutrition, Research Group for Risk-Benefit
Authors: Tørsleff, E. H. (Intern), Trolle, E. (Intern), Tetens, I. (Intern), Lassen, A. D. (Intern)
Number of pages: 1
Publication date: 2016
Main Research Area: Technical/natural sciences
Electronic versions:
Poster_Ellen_H_Tørsløff.pdf
Source: PublicationPreSubmission
Source-ID: 127215452
Publication: Research - peer-review › Poster – Annual report year: 2016
Differences in the effects of school meals on children's cognitive performance according to gender, household education and baseline reading skills

BACKGROUND/OBJECTIVES: We previously found that the OPUS School Meal Study improved reading and increased errors related to inattention and impulsivity. This study explored whether the cognitive effects differed according to gender, household education and reading proficiency at baseline.

SUBJECTS/METHODS: This is a cluster-randomised cross-over trial comparing Nordic school meals with packed lunch from home (control) for 3 months each among 834 children aged 8 to 11 years. At baseline and at the end of each dietary period, we assessed children's performance in reading, mathematics and the d2-test of attention. Interactions were evaluated using mixed models. Analyses included 739 children.

RESULTS: At baseline, boys and children from households without academic education were poorer readers and had a higher d2-error%. Effects on dietary intake were similar in subgroups. However, the effect of the intervention on test outcomes was stronger in boys, in children from households with academic education and in children with normal/good baseline reading proficiency. Overall, this resulted in increased socioeconomic inequality in reading performance and reduced inequality in impulsivity. Contrary to this, the gender difference decreased in reading and increased in impulsivity. Finally, the gap between poor and normal/good readers was increased in reading and decreased for d2-error%.

CONCLUSIONS: The effects of healthy school meals on reading, impulsivity and inattention were modified by gender, household education and baseline reading proficiency. The differential effects might be related to environmental aspects of the intervention and deserves to be investigated further in future school meal trials.

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, University of Copenhagen, Aarhus University
Authors: Sørensen, L. B. (Ekstern), Damsgaard, C. T. (Ekstern), Petersen, R. A. (Ekstern), Dalvikov, S. (Ekstern), Hjorth, M. F. (Ekstern), Dysegaard, C. B. (Ekstern), Egelund, N. (Ekstern), Tetens, I. (Intern), Astrup, A. (Ekstern), Lauritzen, L. (Ekstern), Michaelsen, K. F. (Ekstern)
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Pages: 1155-1161
Publication date: 2016
Main Research Area: Technical/natural sciences

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BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 1.062 SJR 1.249 CiteScore 2.66
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.8 SJR 1.444 SNIP 1.189
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.5 SNIP 1.228 CiteScore 2.86
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.561 SNIP 1.174 CiteScore 2.78
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.44 SNIP 1.324 CiteScore 3.15
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.459 SNIP 1.215 CiteScore 3
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
In wastewater systems in Kampala, Uganda, microbial contamination has increased over the past two decades. Those people who live or work along the Nakivubo channel and wetland and those who use the recreational areas along the shores of Lake Victoria are at an elevated risk of gastrointestinal infections. A quantitative microbial risk assessment (QMRA) was applied for five population groups, characterised by different levels of exposure to wastewater in the Nakivubo area, namely: (i) slum dwellers at risk of flooding; (ii) children living in these slum settlements; (iii) workers maintaining the drainage system or managing faecal sludge (sanitation workers); (iv) urban farmers; and (v) swimmers in Lake Victoria. The QMRA was based on measured concentrations of Escherichia coli, Salmonella spp. and Ascaris spp. eggs in wastewater samples. Published ratios between measured organism and pathogenic strains of norovirus, rotavirus, Campylobacter spp., pathogenic E. coli, pathogenic Salmonella spp., Cryptosporidium spp. and Ascaris lumbricoides were used to estimate annual incidence of gastrointestinal illness and the resulting disease burden. The QMRA estimated a total of 59,493 disease episodes per year across all 18,204 exposed people and an annual disease burden of 304.3 disability-adjusted life years (DALYs). Incidence estimates of gastrointestinal disease episodes per year were highest for urban farmers (10.9) and children living in slum communities (8.3), whilst other exposed groups showed lower incidence (<4.3). Disease burden per person per year was highest in urban farmers (0.073 DALYs) followed by sanitation workers (0.040 DALYs) and children in slum communities (0.017 DALYs). Our findings suggest that the exposure to wastewater is associated with public health problems, particularly children and adults living and working along the major wastewater and reuse system in Kampala. Our findings call for specific interventions to reduce the disease burden due to exposure to wastewater.
Effect of slaughterhouse and day of sample on the probability of a pig carcass being Salmonella-positive according to the Enterobacteriaceae count in the largest Brazilian pork production region

Sources of contamination of carcasses during slaughter include infected pigs as well as environmentally related sources. There are many microbial indicators that can be used in the processing of food to assess food hygiene and the safety of food processing. The presence of some microbial indicators can be viewed as a result of direct or indirect contamination of a food with fecal material. The presence of Enterobacteriaceae is often used as a hygiene indicator, as they are found both in the environment and in the intestine of warm-blooded animals. An association between Salmonella isolation and Enterobacteriaceae count (EC) on pre-chill carcasses has been described, however the impact of slaughterhouse and the day of sampling on the occurrence of Salmonella has not been previously investigated. To this end, mixed logistic regressions (MLRs) with random effects and fixed slopes were performed to assess the change in EC and its correlation with Salmonella occurrence using two data sets. The first describes the EC and Salmonella isolation in 60 pork carcasses in one slaughterhouse sampled at 11 different slaughter steps, including the carcass as a random effect. The second describes the EC and Salmonella isolation on 1150 pre-chill carcasses sampled in 13 slaughterhouses over 230 sampling days, and the model combined two random intercepts, slaughterhouse and date of sampling nested with slaughterhouse (day/slaughterhouse). Statistically significant associations (p <0.0001) between the log of the EC and Salmonella occurrence were found in all models. Nevertheless, although a strong association was found between Enterobacteriaceae and Salmonella contamination in pork carcasses, this association was not constant, given that there was a high variation in the probability of a carcass being positive for Salmonella according to the EC mainly between days of samples. The effect of the day of sampling on Salmonella prevalence was so large that the predictive value of the EC count for Salmonella isolation on a daily basis was compromised. It is possible that on some days batches with a high prevalence of Salmonella carriers shedding a high number of Salmonella were slaughtered. On these days, the potential for contamination/cross-contamination of carcasses will be so large that even hygienic slaughter, confirmed by the low EC on carcasses, will not be able to prevent the presence of Salmonella on some carcasses. The results of this study demonstrate that, despite the statistically significant association found, it may be difficult to predict when hygiene failure measured via EC actually indicates Salmonella contamination, and neither the inverse.

General information
State: Published
Organisations: National Food Institute, Research Group for Genomic Epidemiology, Research Group for Risk-Benefit, Ministério da Agricultura, Universidade Federal do Rio Grande do Sul, Embrapa Suínos e Aves
Number of pages: 9
Pages: 58-66
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
Journal: International Journal of Food Microbiology
Effects of 14-day oral low dose selenium nanoparticles and selenite in rat—as determined by metabolite pattern determination

Selenium (Se) is an essential element with a small difference between physiological and toxic doses. To provide more effective and safe Se dosing regimens, as compared to dosing with ionic selenium, nanoparticle formulations have been developed. However, due to the nano-formulation, unexpected toxic effects may occur. We used metabolite pattern determination in urine to investigate biological and/or toxic effects in rats administered nanoparticles and for comparison included ionic selenium at an equimolar dose in the form of sodium selenite. Low doses of 10 and 100 fold the recommended human high level were employed to study the effects at borderline toxicity. Evaluations of all significantly changed putative metabolites, showed that Se nanoparticles and sodium selenite induced similar dose dependent changes of the metabolite pattern. Putative identified metabolites included increased decenedioic acid and hydroxydecanedioic acid for both Se formulations whereas dipeptides were only increased for selenite. These effects could reflect altered fatty acid and protein metabolism, respectively.

General information

State: Published
Authors: Hadrup, N. (Intern), Löschner, K. (Intern), Skov, K. (Intern), Ravn-Haren, G. (Intern), Larsen, E. H. (Intern), Mortensen, A. (Intern), Lam, H. R. (Ekstern), Frandsen, H. L. (Intern)
Number of pages: 14
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Main Research Area: Technical/natural sciences

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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.896 SJR 1.087 CiteScore 2.38
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 1.124 SNIP 0.859 CiteScore 2.36
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.152 SNIP 0.979 CiteScore 2.1
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.998 SNIP 0.84 CiteScore 2.14
BFI (2013): BFI-level 1
ISI indexed (2013): ISI indexed no
Original language: English
Food Science and Technology, Toxicology, Pharmacology, Metabolic Sciences, Selenium, Nanoparticle, Metabolomic pattern recognition
Electronic versions:
Hadrup_et_al_2016.pdf
DOIs:
10.7717/peerj.2601
EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2016. Scientific opinion on the safety of fermented soybean extract NSK-SD® as a novel food pursuant to Regulation (EC) No 258/97

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the fermented soybean extract NSK-SD®, which is standardised to a nattokinase enzyme activity of 20,000–28,000 fibrin degradation units/g. The information provided on the composition of the NF, the specifications, batch-to-batch variability and the stability is sufficient and does not raise safety concerns. The proposed maximum intake is 100 mg NSK-SD®/day as a food supplement. The target population proposed by the applicant is healthy men and women over the age of 35 years, excluding pregnant and lactating women. The Panel noted that nattokinase exhibits in vitro fibrinolytic activity and in vivo thrombolytic activity in animals when administered parenterally. However, the information provided with respect to absorption, distribution, metabolism and excretion of the NF does not allow conclusions to be drawn on the absorption of active nattokinase or any functional metabolites therefrom. A bacterial reverse mutation test did not show any indication of mutagenicity, and the NF was not clastogenic in an in vitro chromosome aberration assay. Taking into account the no observed adverse effect level (NOAEL) of 1,000 mg/kg body weight per day in the subchronic toxicity study in rats, and considering the proposed maximum intake level for the NF, the Panel concludes that the margin of exposure is sufficient. The Panel concludes that the NF, the fermented soybean extract NSK-SD®, is safe under the intended conditions of use as specified by the applicant.
Estimating the true burden of foodborne diseases in Denmark

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit
Evaluation of a cross contamination model describing transfer of Salmonella spp. and Listeria monocytogenes during grinding of pork and beef
A cross contamination model was challenged and evaluated applying a new approach. • QMRA and Total Transfer Potential (TTP) were included. • Transfer estimates were not applicable for unlike processing. • The risk of disease may be reduced when using a stainless steel grinder. • Well-sharpened knife, and room temperatures lower than 4°C can be beneficial.

General information
State: Published
Organisations: National Food Institute, Research Group for Microbial Food Safety and Quality, Research Group for Risk-Benefit, University of Campinas, Universidade de Sao Paulo
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Volume: 226
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 3.76 SJR 1.366 SNIP 1.436
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.97 SJR 1.481 SNIP 1.553
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.614 SNIP 1.683 CiteScore 4.02
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.493 SNIP 1.695 CiteScore 3.62
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.612 SNIP 1.841 CiteScore 3.8
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
Exploring the dynamics of a free fruit at work intervention

Background: The workplace has been identified as an ideal setting for health interventions. However, few UK-based workplace intervention studies have been published. Fewer still focus on the practicalities and implications when running an intervention within the workplace setting. The objective of this paper was to qualitatively determine the perceived behaviour changes of participants in a free fruit at work intervention. Understanding the dynamics of a workplace intervention and establishing any limitations of conducting an intervention in a workplace setting were also explored.

Methods: Twenty-three face-to-face interviews were conducted with individuals receiving free fruit at work for 18 weeks (74 % female). The worksite was the offices of a regional local government in the North East of England. Analysis was guided theoretically by Grounded Theory research and the data were subjected to content analysis. The transcripts were read repeatedly and cross-compared to develop a coding framework and derive dominant themes.

Results: Topics explored included: the workplace food environment; the effect of the intervention on participants and on other related health behaviours; the effect of the intervention on others; participant's fruit consumption; reasons for not taking part in the intervention; expectations and sustainability post-intervention; and how to make the workplace healthier. Five emergent themes included: the office relationship with food; desk based eating; males and peer support; guilt around consumption of unhealthy foods; and the type of workplace influencing the acceptability of future interventions.

Conclusion: Exploring the perceptions of participants offered valued insights into the dynamics of a free fruit workplace intervention. Findings
suggest that access and availability are both barriers and facilitators to encouraging healthy eating in the workplace.

**General information**
State: Published
Organisations: National Food Institute, Division of Nutrition, Research Group for Risk-Benefit, Durham University, Technical University of Denmark, Newcastle University
Authors: Lake, A. A. (Ekstern), Smith, S. A. (Ekstern), Bryant, C. E. (Ekstern), Alinia, S. (Intern), Brandt, K. (Ekstern), Seal, C. J. (Ekstern), Tetens, I. (Intern)
Number of pages: 10
Publication date: 2016
Main Research Area: Technical/natural sciences

**Publication information**
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Volume: 16
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): SNIP 1.268 SJR 1.337 CiteScore 2.66
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.54 SJR 1.431 SNIP 1.303
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.445 SNIP 1.358 CiteScore 2.68
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.429 SNIP 1.439 CiteScore 2.62
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.353 SNIP 1.389 CiteScore 2.66
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.208 SNIP 1.292 CiteScore 2.57
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.156 SNIP 1.314 CiteScore 2.63
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.258 SNIP 1.383
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.211 SNIP 1.335
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.147 SNIP 1.132
Scopus rating (2007): SJR 0.862 SNIP 0.94
Scopus rating (2006): SJR 0.774 SNIP 1.094
Scopus rating (2005): SJR 0.688 SNIP 1.004
Scopus rating (2004): SJR 0.959 SNIP 0.88
Scopus rating (2003): SJR 0.304 SNIP 0.778
Scopus rating (2002): SJR 0.257 SNIP 0.357
Original language: English
Fruit, Intervention development, Perceived healthy behaviour, Workplace, Public Health, Environmental and Occupational Health, behavior change, content analysis, DNA transcription, eating, England, expectation, fruit, government, grounded theory, guilt, health behavior, human, interview, peer group, perception, workplace

DOIs:
Gender differences in purchase intentions and reasons for meal selection among fast food customers – Opportunities for healthier and more sustainable fast food

Understanding the factors that influence food selection and dietary behavior is fundamental to support the successful translation of dietary goals into consumer behavior. The present study aims to identify gender differences in fast food consumers’ reasons for actual fast food meal selection and their purchase intentions. Based on this background, possible opportunities toward implementing healthier and more sustainable fast food options are discussed. Data were collected at three fast food restaurants from different parts of Denmark among randomly selected customers (aged 15 or above). The customers were approached after having ordered their meal. They filled out a questionnaire on reasons for their actual fast food meal selection and purchase intentions in relation to four hypothesized burger menus, including a regular beef burger menu, a wholegrain beef burger menu, a nutrition labeled beef burger menu and a nutrition labeled chicken burger menu. Results showed that the majority of the fast food customers expressed a wish for healthier menus (55% males vs. 64% females agree or strongly agree, \( p < 0.001 \)) and more sustainable menus in terms of environmental impact (43% males vs. 52% females agree or strongly agree, \( p < 0.001 \)), however only 7% of the participants’ meals included healthier food choices (\( n = 740 \)). Habits, taste and price were the main drivers among both genders for the actual meal selection. Compared with women, more men expressed that actual food choice was based on offers and promotions (\( p < 0.001 \)), and on food perceived as the most satiating (\( p = 0.001 \)). With regard to purchase intentions, the majority of men preferred a beef burger menu (healthier or regular) over a healthier chicken burger menu or a wholegrain burger menu, whereas the majority of women responded positively to either of the healthier-labeled burger menus (\( p < 0.001 \)). In conclusion, the study shows that having a focus on gender differences is of particular importance in order to improve the food nutrition environment and support healthier food selections among fast food customers.

General information

State: Published
Organisations: National Food Institute, Division of Risk Assessment and Nutrition , Research Group for Risk-Benefit, Department of Applied Mathematics and Computer Science , Statistics and Data Analysis, Aalborg University
Number of pages: 7
Pages: 123-129
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Main Research Area: Technical/natural sciences

Publication information

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BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 3.86 SJR 1.237 SNIP 1.546
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.21 SJR 1.17 SNIP 1.681
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.051 SNIP 1.855 CiteScore 3.92
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 0.997 SNIP 1.672 CiteScore 3.18
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.218 SNIP 1.714 CiteScore 3.3
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Generne styrer danskernes D-vitaminniveau

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, Det Nationale Forskningscenter for Arbejdsmiljø
Authors: Nissen, I. (Intern), Andersen, R. (Intern), Ravn-Haren, G. (Intern), Vogel, U. (Ekstern)
Pages: 29-30
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information
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Issue number: 140
ISSN (Print): 1395-1769
Ratings:
ISI indexed (2013): ISI indexed no
ISI indexed (2012): ISI indexed no
ISI indexed (2011): ISI indexed no
Original language: Danish
Electronic versions:
Guidance on the preparation and presentation of an application for authorisation of a novel food in the context of Regulation (EU) 2015/2283

Following the adoption of Regulation (EU) 2015/2283 of the European Parliament and of the Council on novel foods, the European Commission requested EFSA to update and develop scientific and technical guidance for the preparation and presentation of applications for authorisation of novel foods. This guidance presents a common format for the organisation of the information to be presented in order to assist the applicant in preparing a well-structured application to demonstrate the safety of the novel food. The application should be comprehensive and complete. This guidance outlined the data needed for the safety assessments of novel foods. Requirements which should be covered in all applications relate to the description of the novel food, production process, compositional data, specification, proposed uses and use levels, and anticipated intake of the novel food. Further sections on the history of use of the novel food and/or its source, absorption, distribution, metabolism, excretion, nutritional information, toxicological information and allergenicity should be considered by the applicant by default. If not covered in the application, this should be justified. The applicant should integrate the data presented in the different sections to provide their overall considerations on how the information supports the safety of the novel food under the proposed conditions of use. Where potential health hazards have been identified, they should be discussed in relation to the anticipated intakes of the novel food and the proposed target populations. On the basis of the information provided, EFSA will assess the safety of the novel food under the proposed conditions of use.

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State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit
Authors: EFSA Journal
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Turck_et_al_2016_EFSA_Journal_1_.pdf
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10.2903/j.efs.a.2016.4594
Source: PublicationPreSubmission
Source-ID: 134853568
Publication: Commissioned › Report – Annual report year: 2017

Improving conceptual understanding by inductive teaching: an example of its success

We are teaching a PhD/MSc course on quantitative microbiological risk assessment with up to 20 students with a varying (international) background and two teachers. We have experienced a challenge in explaining one of the key concepts in the theory. It requires that the students adopt a way of thinking about the concepts variability and uncertainty that requires deeper understanding, and accommodation rather than assimilation of new knowledge is required. I therefore decided to change the teaching method, without impacting the rest of the course too much, as it is mainly successful as it is. I choose to try the use of an inductive instead of a deductive approach, based on Kolb's learning cycle (experience, reflection, conceptualization, practice). The performance of the students after application of the inductive approach was compared with the performance with the old approach.

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit
Authors: Nauta, M. (Intern)
Normal weight children have higher cognitive performance – Independent of physical activity, sleep, and diet

Background/objectives Aside from the health consequences, observational studies indicate that being overweight may also negatively affect cognitive function. However, existing evidence has to a large extent not controlled for the possible confounding effect of having different lifestyles. Therefore, the objective was to examine the independent associations...
between weight status and lifestyle indicators with cognitive performance in 8–11 year old Danish children.

**Subjects/methods** The analyses included 828 children (measured in 2011–2012) each having one to three measurement occasions separated by approximately 100 days. Dietary intake, physical activity, sedentary time, and sleep duration were measured using dietary records and accelerometers. The Children's Sleep Habits Questionnaire was used to access sleep problems and the Andersen test was carried out to estimate cardio-respiratory fitness (CRF). Weight status (underweight, normal weight, and overweight/obese) was defined according to body mass index and cognitive performance was assessed using the d2-test of attention, a reading test, and a math test. A linear mixed model including a number of fixed and random effects was used to test associations between lifestyle indicators as well as BMI category and cognitive performance. Results After adjustment for demographics, socioeconomics, and multiple lifestyle indicators, normal weight children had higher cognitive test scores than overweight/obese and underweight children of up to 89% and 48% of expected learning within one school year (P < 0.05). Daily breakfast consumption, fewer sleep problems, higher CRF, less total physical activity, more sedentary time, and less light physical activity were associated with higher cognitive performance independently of each other in at least one of the three cognitive tests (P < 0.05). Conclusions Normal weight children had higher cognitive performance compared to overweight/obese as well as underweight children, independent of multiple lifestyle indicators.
Optimistic self-assessments of unhealthy diets are associated with positive indicators of health and health behaviours in Danish adults.

General information
State: Published
Organisations: National Food Institute, Division of Risk Assessment and Nutrition, Department of Applied Mathematics and Computer Science, Statistics and Data Analysis, Research Group for Risk-Benefit, University of Copenhagen
Authors: Sørensen, M. R. (Intern), Matthiessen, J. (Intern), Holm, L. (Ekstern), Knudsen, V. K. (Intern), Andersen, E. W. (Intern), Tetens, I. (Intern)
Number of pages: 1
Publication date: 2016
Main Research Area: Technical/natural sciences
Electronic versions:
Poster_NNC_2016_Mette_Rosenlund_S_rensen.pdf
Source: PublicationPreSubmission
Source-ID: 127215931
Publication: Research - peer-review › Poster – Annual report year: 2016

Organic food conversion in Danish public kitchens: The effects of the Danish Organic Action Plan 2020 on organic public procurement and wellbeing at work

General information
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Organisations: Research Group for Risk-Benefit, National Food Institute, Division of Risk Assessment and Nutrition, Research Group for Food Production Engineering
Authors: Sørensen, N. N. (Intern), Tetens, I. (Intern), Lassen, A. D. (Intern), Leje, H. (Intern)
Number of pages: 89
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Publisher: National Food Institute, Technical University of Denmark
ISBN (Electronic): 978-87-93109-81-0
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
PhD_Thesis_Nina_N_rgaard_S_rensen_print_final.pdf
Diet has an important role in the management of diabetes. However, little is known about dietary intake in Danish diabetes patients. A food frequency questionnaire (FFQ) focusing on most relevant nutrients in diabetes including carbohydrates, dietary fibres and simple sugars was developed and validated. To examine the relative validity of nutrients calculated by a web-based food frequency questionnaire for patients with diabetes. The FFQ was validated against a 4-day pre-coded food diary (FD). Intakes of nutrients were calculated. Means of intake were compared and cross-classifications of individuals according to intake were performed. To assess the agreement between the two methods, Pearson and Spearman's correlation coefficients and weighted kappa coefficients were calculated. Ninety patients (64 with type 1 diabetes and 26 with type 2 diabetes) accepted to participate in the study. Twenty-six were excluded from the final study population. 64 volunteer diabetes patients at the Steno Diabetes Center. Intakes of carbohydrates, simple sugars, dietary fibres and total energy were higher according to the FFQ compared with the FD. However, intakes of nutrients were grossly classified in the same or adjacent quartiles with an average of 82% of the selected nutrients when comparing the two methods. In general, moderate agreement between the two methods was found. The FFQ was validated for assessment of a range of nutrients. Comparing the intakes of selected nutrients (carbohydrates, dietary fibres and simple sugars), patients were classified correctly according to low and high intakes. The FFQ is a reliable dietary assessment tool to use in research and evaluation of patient education for patients with diabetes.
Relevance of microbial finished product testing in food safety management

Management of microbiological food safety is largely based on good design of processes, products and procedures. Finished product testing may be considered as a control measure at the end of the production process. However, testing gives only very limited information on the safety status of a food. If a hazardous organism is found it means something, but absence in a limited number of samples is no guarantee of safety of a whole production batch. Finished product testing is often too little and too late. Therefore most attention should be focussed on management and control of the hazards in a more pro-active way by implementing an effective food safety management system. For verification activities in a food safety management system, finished product testing may however be useful. For three cases studies; canned food, chocolate and cooked ham, the relevance of testing both of finished products and the production environment is discussed. Since the level of control of different processes can be largely different it is beneficial if the frequency of sampling of finished products and production environments would be related to the associated human health risk, which can be assessed on the basis of risk assessment and epidemiological data.

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State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, Wageningen IMARES, Ghent University, L’Université Nantes Angers Le Mans, Nestle
Authors: Zwietering, M. H. (Ekstern), Jacxsens, L. (Ekstern), Membré, J. M. (Ekstern), Nauta, M. (Intern), Peterz, M. (Ekstern)
Number of pages: 13
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Scopus rating (2017): CiteScore 4.06 SJR 1.502 SNIP 1.69
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.86 SJR 1.492 SNIP 1.709
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.498 SNIP 1.73 CiteScore 3.65
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.38 SNIP 1.717 CiteScore 3.27
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.278 SNIP 1.728 CiteScore 3.14
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.245 SNIP 1.931 CiteScore 3.1
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.209 SNIP 1.723 CiteScore 2.9
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.23 SNIP 1.708
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Reproducibility of a web-based FFQ for 13- to 15-year-old Danish adolescents

FFQ are widely used in large-scale studies to assess dietary intake. To aid interpretation of diet-disease associations assessment of validity must be performed. Reproducibility is one aspect of validity focusing on the stability of repeated assessment with the same method which may also reveal problems in instrument design or participant instructions. The aim of the present study was to evaluate the reproducibility of a web-based FFQ targeting Danish adolescents within the Danish National Birth Cohort (DNBC). Data for the present study were obtained from a prospective design nested within the DNBC. Adolescents aged 13 to 15 years old (n 48, 60 % girls) completed the FFQ twice 4 weeks apart. The proportion of adolescents consistently classified into the same tertile according to amount of food intake ranged from 45 % (fish) to 77 % (vegetables), whereas classification into opposite tertiles ranged from 0 % (fruit, oils and dressing) to 15 % (beverages). Overall, no significant differences were observed in intake of food groups or nutrients between the two completions of the FFQ. Mean crude Spearman correlation for all food groups was 0.56 and mean intra-class correlation for all food groups was 0.61. In conclusion, the reproducibility of the FFQ for Danish adolescents was acceptable. The study revealed that adolescents aged 13-15 years seemed capable of recalling consistently overall dietary habits and had some difficulties estimating the frequency of consumption of regularly consumed food items.

General information

State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, Statens Serum Institut
Authors: Bjerregaard, A. A. (Ekstern), Tetens, I. (Intern), Olsen, S. F. (Ekstern), Halldorsson, T. I. (Ekstern)
Number of pages: 7
Publication date: 2016
Main Research Area: Technical/natural sciences

Publication information

Journal: Journal of Nutritional Science
Volume: 5
Article number: e5
ISSN (Print): 2048-6790
Ratings:
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.822 SJR 0.984 CiteScore 2.44
We live in an age that increasingly calls for national or regional management of global risks. This article discusses the contributions that expert elicitation can bring to efforts to manage global risks and identifies challenges faced in conducting expert elicitation at this scale. In doing so it draws on lessons learned from conducting an expert elicitation as part of the World Health Organizations (WHO) initiative to estimate the global burden of foodborne disease; a study commissioned by the Foodborne Disease Epidemiology Reference Group (FERG). Expert elicitation is designed to fill gaps in data and research using structured, transparent methods. Such gaps are a significant challenge for global risk modeling. Experience with the WHO FERG expert elicitation shows that it is feasible to conduct an expert elicitation at a global scale, but that challenges do arise, including: defining an informative, yet feasible geographical structure for the elicitation; defining what constitutes expertise in a global setting; structuring international, multidisciplinary expert panels; and managing demands on experts’ time in the elicitation. This article was written as part of a workshop, Methods for Research Synthesis: A Cross-Disciplinary Approach held at the Harvard Center for Risk Analysis on October 13, 2013.
Robustness of a cross contamination model describing transfer of pathogens during grinding of meat
This study aimed to evaluate a cross contamination model for its capability of describing transfer of Salmonella spp. and L. monocytogenes during grinding of varying sizes and numbers of pieces of meats in two grinder systems. Data from 19 trials were collected. Three evaluation approaches were applied: i) Acceptable Simulation Zone method compared observed with simulated transfer, ii) each trial was fitted and parameters were integrated in a Quantitative Microbiological Risk Assessment model, iii) the Total Transfer Potential was calculated from fitted parameters. Risk estimates revealed that grinding was influenced by sharpness of grinder knife, specific grinder and grinding temperature.

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, Research Group for Microbial Food Safety, Universidade de Sao Paulo, University of Campinas
Authors: Møller, C. O. D. A. (Intern), Sant’Ana, A. S. (Ekstern), Hansen, S. K. H. (Intern), Nauta, M. (Intern), Silva, L. P. (Ekstern), Alvarenga, V. O. (Ekstern), Maffei, D. (Ekstern), Pacheco, F. (Ekstern), Lopes, J. (Ekstern), Franco, B. D. G. M.
Safety of UV-treated milk as a novel food pursuant to Regulation (EC) No 258/97

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on UV-treated milk as a novel food submitted pursuant to Regulation (EC) No 258/97, taking into account the comments and objections of a scientific nature raised by Member States. The novel food is cow’s milk (whole, semi-skimmed or skimmed) to which a treatment with ultraviolet (UV) radiation is applied after pasteurisation in order to extend the shelf life of the milk. This treatment results in an increase in the vitamin D3 concentrations. The Panel considers that the provided compositional data, the specifications and the data from batch testing do not give rise to safety concerns. The data provided on the production process are sufficient and do not give rise to safety concerns. The target group is the general population with the exclusion of infants (up to 1 year of age). The Panel considers that it is unlikely that tolerable upper intake levels established by EFSA for children aged 1–10 years, adolescents and adults will be exceeded. The Panel considers that the novel food is not nutritionally disadvantageous. The data provided do not give rise to concerns with regard to the microbiological quality. The Panel considers that the risk of allergic reactions to the novel food is not dissimilar to that associated with conventional milk. The Panel concludes that the novel food, UV-treated milk, is safe under the intended conditions of use as specified by the applicant.

Scientific opinion on the safety of synthetic L-ergothioneine (Ergoneine®) as a novel food pursuant to Regulation (EC) No 258/97
Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on synthetic l-ergothioneine, marketed as Ergoneine®, as a novel food submitted pursuant to Regulation (EC) No 258/97 of the European Parliament and of the Council. The novel food, synthetic l-ergothioneine, is produced by a one-pot patented manufacturing process. Chemically, l-ergothioneine is a derivative of thiolhistidine, and it is naturally present in a number of foodstuffs such as mushrooms, some varieties of black and red beans, offal and cereals. The production process for the novel food is sufficiently described and does not raise concerns about the safety of the novel food. The information on the composition, specifications, batch-to-batch variability and stability of the novel food is sufficient and does not raise safety concerns. The applicant intends to use the novel food in quantities of up to 5 mg per serving in alcohol-free beverages, cereal bars, milk, fresh dairy products and chocolate. The applicant also proposes to provide the novel food as a food supplement, with a daily dose of up to 30 mg/day for adults and 20 mg/day for children. The target population is children above 3 years of age and the general adult population, except pregnant and breastfeeding women. Considering the NOAEL of 800 mg/kg bw per day, which was based on two subchronic toxicity studies in rats, and the maximum estimated intake levels for l-ergothioneine from all sources, the Panel concludes that the margins of safety of 470 for adults (except pregnant and breastfeeding women) and of 216 for children above 3 years of age are sufficient. The Panel concludes that the novel food, synthetic l-ergothioneine (marketed as Ergoneine®), is safe under the intended conditions of use as specified by the applicant.

General information
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Authors: EFSA Journal
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Publication Information
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Source-ID: 134853684
Publication: Commissioned › Report – Annual report year: 2017

Sleep duration modifies effects of free ad libitum school meals on adiposity and blood pressure
Background: Insufficient sleep can potentially affect both energy intake and energy expenditure resulting in obesity and reduced cardiometabolic health. Objective: To investigate if habitual sleep duration of 8-11-year-olds modifies the effect of free ad libitum school meals on cardiometabolic markers, body composition, dietary intake, and physical activity. Methods: For two consecutive three-month periods this cluster-randomized, controlled, cross-over trial provided 530 children with school meals or usual lunch brought from home. Dietary intake, activity, and sleep were measured simultaneously for seven consecutive days using dietary records and accelerometers. Short and long sleeping children were defined as lower and upper tertile of sleep duration. Body composition, blood pressure, blood lipids, and homeostatic model assessment of insulin resistance (HOMAIR) were measured/calculated. Results: Overall, school meals compared to lunch from home had positive effects on physical activity and blood pressure in long sleeping children and negative effects on body fat in short sleeping children. Short sleeping children increased fat mass compared to long sleeping children by 0.21 (95% CI 0.03; 0.38) kg, android fat mass by 0.02 (0.001; 0.04) kg, waist circumference by 0.73 (0.23; 1.24) cm, blood pressure by 1.5 (0.4; 2.6) mmHg, fat intake by 1.1 (0.2; 2.0) energy %, and decreased total physical activity by 7.2 (1.6; 12.7) % (all P≤0.04), while HOMAIR and blood lipids were not modified by sleep duration (all P≥0.32). Conclusions: The susceptibility to increase abdominal adiposity and blood pressure when exposed to dietary changes can potentially be explained by too little sleep that results in increased caloric intake and reduced physical activity.

General information
State: Published
Organisations: National Food Institute, Division of Risk Assessment and Nutrition, Research Group for Risk-Benefit
Authors: Hjorth, M. F. (Ekstern), Sjödin, A. M. (Ekstern), Dalskov, S. (Ekstern), Damsgaard, C. T. (Ekstern), Michaelsen, K. F. (Ekstern), Biltoft-Jensen, A. P. (Intern), Andersen, R. (Intern), Ritz, C. (Ekstern), Chaput, J. (Ekstern), Astrup, A. (Ekstern)
Socio-economic differences in cardiometabolic risk markers are mediated by diet and body fatness in 8- to 11-year-old Danish children: a cross-sectional study

Objective To explore whether socio-economic differences exist in cardiometabolic risk markers in children and whether lifestyle-related factors potentially mediate these differences. Design Cross-sectional study including measurements of fasting blood lipids, glucose, homeostasis model assessment of insulin resistance (HOMA-IR), blood pressure and heart rate. Potential mediators examined were fat mass index (FMI); intakes of fruit, vegetables, dietary fibre and added sugar; whole-blood n-3 long-chain PUFA (LCPUFA) as a biomarker of fish intake; and physical activity and sedentary time.

Setting Nine primary schools in Denmark. Subjects Children aged 8–11 years (n 715). Results Children of parents with the
shortest compared with longest education had higher TAG by 0.12 (95% CI 0.04, 0.21) mmol/l and HOMA-IR by 0.36 (0.10, 0.62), whereas children of parents with a vocational education had higher total cholesterol by 0.14 (0.02, 0.27) mmol/l and LDL cholesterol by 0.14 (0.03, 0.25) mmol/l compared with children of parents with the longest education; all P<0.05. FMI explained 25% of the difference in TAG, 64% of the difference in HOMA-IR and 21–29% of the differences in cholesterol. FMI and whole-blood n-3 LCPUFA combined explained 42% of the difference in TAG, whereas FMI, whole-blood n-3 LCPUFA and dietary fibre explained 89% of the difference in HOMA-IR. Conclusions Socio-economic differences were present in blood lipids and insulin resistance among 8- to 11-year-olds and were mediated by body fatness, whole-blood n-3 LCPUFA and dietary fibre. These lifestyle factors may be targets in public initiatives to reduce socio-economic differences. Confirmation in longitudinal studies and trials is warranted.

**General information**
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Organisations: National Food Institute, Division of Risk Assessment and Nutrition, Research Group for Risk-Benefit, University of Copenhagen
Authors: Hauger, H. (Ekstern), Groth, M. V. (Intern), Ritz, C. (Ekstern), Biltoft-Jensen, A. P. (Intern), Andersen, R. (Intern), Dalskov, S. (Ekstern), Hjorth, M. F. (Ekstern), Sjödin, A. (Ekstern), Astrup, A. (Ekstern), Michaelsen, K. F. (Ekstern), Damsgaard, C. T. (Ekstern)
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BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.982 SJR 1.122 CiteScore 2.29
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.04 SJR 1.1 SNIP 0.896
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.058 SNIP 1.075 CiteScore 1.82
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.134 SNIP 1.086 CiteScore 2.15
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.105 SNIP 1.191 CiteScore 2.22
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.266 SNIP 1.189 CiteScore 2.22
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.139 SNIP 1.118 CiteScore 1.86
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.093 SNIP 0.991
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.331 SNIP 1.287
Web of Science (2009): Indexed yes
Sun Exposure Guidelines and Serum Vitamin D Status in Denmark: The StatusD Study

Little is known on how vitamin D status is affected by adherence to UVB-limiting sun exposure guidelines. Our aim was to investigate the relationship between adherence to the Danish sun exposure guidelines and vitamin D status. In total, 3194 Danes (2625 adults, 569 children) were recruited among the general population, and more than 92% had blood samples taken both autumn and spring. Using linear regression, we associated serum vitamin D concentrations to questionnaire responses on: seeking shade, wearing a sunhat, wearing protective clothing or using sunscreen. The odds ratio (OR) of either low (<25 or 50 nmol/L) or adequate/high (≥50 nmol/L) vitamin D status was examined using logistic regression. For adults, those who always sought shade or wore protective clothing compared to those who did not had lower levels of vitamin D (autumn concentrations for shade: 7.2 nmol/L lower (-11.0--3.6 nmol/L); for protective clothing: 9.9 nmol/L lower (-13.6--6.2 nmol/L). Adherence to all four guidelines was also associated with lower vitamin D concentrations (autumn: 9.7 nmol/L lower (-14.3--5.1 nmol/L). Use of sunscreen was associated with adequate vitamin D status, as those who always sought shade compared to those who did not had an OR (95% CI) of 1.68 (1.25-2.35) of having ≥50 nmol/L during both spring and autumn. No associations were found with wearing a sunhat, and there were no clear associations for children.

In conclusion, adherence to the sun exposure guidelines on shade and protective clothing was associated with lower vitamin D status among Danish adults, but not children.

General information
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Organisations: National Food Institute, Research Group for Risk-Benefit, Campus Service, Danish Cancer Society, Danish Health Authority, Statens Serum Institut
Authors: Hansen, L. (Ekstern), Tjønneland, A. (Ekstern), Køster, B. (Ekstern), Brot, C. (Ekstern), Andersen, R. (Intern), Lundqvist, M. (Ekstern), Christensen, J. N. (Intern), Olsen, A. (Ekstern)
Number of pages: 14
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Main Research Area: Technical/natural sciences

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The burden of disease caused by botulism

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The burden of disease caused by botulism

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, Technical University of Denmark
Authors: Nissen, I. (Intern), Pires, S. M. (Intern), Pedersen, A. A. (Ekstern)
Pages: 15-15
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Title of host publication: Annual Report on Zoonoses in Denmark 2015
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The Burden of diseases caused by congenital toxoplasmosis

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Authors: Nissen, I. (Intern), Pires, S. M. (Intern), Vedel Nielsen, H. (Ekstern)
Pages: 16-16
The effectiveness of the Danish Organic Action Plan 2020 to increase the level of organic public procurement in Danish public kitchens

To measure the effect of organic food conversion projects on the percentage of organic food used in Danish public kitchens participating in the Danish Organic Action Plan 2020. The current longitudinal study was based on measurements of organic food percentages in Danish public kitchens before and after kitchen employees participated in conversion projects. Public kitchens participating in the nine organic food conversion projects under the Danish Organic Action Plan 2020, initiated during autumn 2012 and spring 2013 and completed in summer 2015. A total of 622 public kitchens. The average (median) increase in organic food percentage from baseline to follow-up was 24 percentage points (P<0·001) during an overall median follow-up period of 1·5 years. When analysing data according to public kitchen type, the increase remained significant for seven out of eight kitchens. Furthermore, the proportion of public kitchens eligible for the Organic Cuisine Label in either silver (60–90 % organic food procurement) or gold (90–100 % organic food procurement) level doubled from 31 % to 62 %, respectively, during the conversion period. Conversion project curriculum mostly included elements of ‘theory’, ‘menu planning’, ‘network’ and ‘Organic Cuisine Label method’ to ensure successful implementation. The study reports significant increases in the level of organic food procurement among public kitchens participating in the Danish Organic Action Plan 2020. Recommendations for future organic conversion projects include adding key curriculum components to the project’s educational content and measuring changes in organic food percentage to increase the chances of successful implementation.

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, Research Group for Food Production Engineering, Division of Risk Assessment and Nutrition
Authors: Sørensen, N. N. (Intern), Tetens, I. (Intern), Løje, H. (Intern), Lassen, A. D. (Intern)
Number of pages: 8
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Main Research Area: Technical/natural sciences

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Scopus rating (2017): SNIP 0.982 SJR 1.122 CiteScore 2.29
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.04 SJR 1.1 SNIP 0.896
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.058 SNIP 1.075 CiteScore 1.82
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.134 SNIP 1.086 CiteScore 2.15
BFI (2013): BFI-level 1
The effect of reducing numbers of Campylobacter in broiler intestines on human health risk

One option for Campylobacter control in broiler chickens is to reduce the concentration in the intestinal content of the birds prior to slaughter, for example by vaccination or phage therapy. It is however unsure how such a reduction in concentration can be translated into a reduction in concentration on the meat and a reduction in the human health risk of campylobacteriosis. In this study, two methods are presented and compared. The first is a linear regression model, based on count data from caecal contents and skin sample data, obtained after processing from the same flocks. Alternatively, a previously published risk assessment model is used, that describes the dynamics of transfer and survival of Campylobacter during broiler processing at the slaughterhouse. Data from five European countries are used as inputs for the models. For both approaches the analyses show that a one to two log reduction in concentration in the intestinal content has a large impact on the risk of campylobacteriosis due to the consumption of chicken meat: a relative risk reduction between 44% and 95%. Therefore it seems promising to aim interventions at a reduction of the concentration of Campylobacter in the broiler intestines. However, it is not possible to derive a generic rule that can be used to relate a reduction in concentration in broiler intestines into a reduction in human health risk. Regression models based on different data sets predict different relationships between bacterial count data from caeca and skins, whereas the risk assessment

model requires data on contamination of the birds' exterior, which is not sufficiently available in combination with caecal concentration data. Simulations performed with the risk assessment model show that it can pretty well adequately describe the observed correlation in the data and the variation in regression lines obtained.

The use of risk assessment to support control of Salmonella in pork
Despite the effectivity of control measures in the past decade, domestic pork was estimated to be the most important food source for salmonellosis in Denmark in 2014 (Anonymous 2015). Therefore, there is a continued focus on the identification of effective intervention measures in the pig and pork production chain. In this paper, an overview will be given of the results of some research projects that have been performed at the National Food Institute to study the potentials of interventions. In these projects, the specific objective was to estimate the effectivity in terms of reduction of the risk of salmonellosis for the Danish population. The results of these projects illustrate how quantitative microbiological risk assessments (QMRAs) can be applied to support the control of Salmonella in pork.
competencies regarding the holistic health concept, active involvement of school children and the IVAC approach. Components developed for parental support included a homepage, an APP, a Facebook-group and a handout produced by their child.

A quasi-experimental study design with 4 intervention schools and 4 matched control schools was conducted. In total 658 school children participated. The baseline data were collected in October/November 2015 and the follow-up in May/June 2016 with the intervention in between the measurements. The quality of dietary intake during the school day was measured using a digital photographic method, physical activity was registered by pedometers and an electronic questionnaire was used to assess wellbeing among the pupils. A process evaluation was done.

Results and conclusion: The recruitment of schools for the full health promoting school process was demanding due to the context of the school reform and the present pressure on schools. In total 27 municipalities and 256 schools were contacted. A moderation of the theory based intervention, reducing the school level, was done to recruit the necessary number of schools. The result of theory and real life setting has been an intervention focusing on health education but in a health promoting perspective.

General information
State: Published
Organisations: National Food Institute, Division of Risk Assessment and Nutrition , Research Group for Risk-Benefit, Steno Diabetes Centre, Aarhus University
Authors: Sabinsky, M. (Intern), Høstgaard Bonde, A. (Ekstern), Stjernqvist, N. W. (Intern), Terkildsen Maindal, H. (Ekstern) , Tetens, I. (Intern)
Number of pages: 2
Publication date: 2016
Event: Abstract from Folkesundhedsdage 2016, Nyborg , Denmark.
Main Research Area: Technical/natural sciences
Electronic versions: Abstract.pdf
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2016

Translation of risk factor estimates into on-farm interventions and their effect on Campylobacter broiler flock prevalence
Before deciding upon interventions to control Campylobacter in broiler flocks, it would be useful to estimate the potential effects of different interventions. Certain previously identified risk factors for colonization of broiler flocks with Campylobacter may seem to have large impact on the broiler flock prevalence. Nevertheless, interventions related to these risk factors may have only limited effect on the overall prevalence estimate, since in practice only a relatively small fraction of farms are actually amenable for an intervention related to a given risk factor. We present a novel method for the risk assessor that predicts effects of interventions at the farm, based on results from a risk factor study that included data from six European countries (Denmark, Netherlands, Norway, Poland, Spain and United Kingdom). In the present study, five previously identified risk factors, which had shown to have significant impact on Campylobacter flock prevalence, were translated into practical on-farm interventions. Given the implementation of these interventions the population prevalence was predicted by developing and using a statistical method anchored in the ideas behind standardized population estimations using logistic regression. To obtain population estimates per country, the predicted prevalence values were multiplied by the frequencies (no. of farms) in a reference population based on data from the risk factor study and a large questionnaire. The latter was included to improve the representativeness of the reference population. Population prevalence estimates were calculated before and after implementation of a given intervention in the six countries. Results showed that if biosecurity was not accounted for, some individual interventions resulted in a limited reduction of the population prevalence. The reduction differed between countries depending on the current farm management practices and the actual flock prevalence level. In general, the most effective interventions were “building new houses with strict biosecurity for all houses older than 15 years” and “apply drinkers with nipples without cups”. In conclusion, the novel method translates results from risk factor studies into effects of on-farm interventions for the reduction of the prevalence of Campylobacter in broiler flocks. The method is very useful for providing the basis for risk management decisions. The usefulness would improve further when the results are integrated with costs of interventions in a cost effectiveness study. The approach was developed for Campylobacter in broiler flocks, but it can also be applied to other pathogens and other farm animals, given that the required data are available.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science , Statistics and Data Analysis, National Food Institute, Research Group for Risk-Benefit
Authors: Sommer, H. M. (Intern), Nauta, M. (Intern), Rosenquist, H. (Intern)
Number of pages: 11
Pages: 27-37
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Main Research Area: Technical/natural sciences
Publication information
Journal: Microbial Risk Analysis
Volume: 2-3
Use of Linear Programming to Develop Cost-Minimized Nutritionally Adequate Health Promoting Food Baskets

Food-Based Dietary Guidelines (FBDGs) are developed to promote healthier eating patterns, but increasing food prices may make healthy eating less affordable. The aim of this study was to design a range of cost-minimized nutritionally adequate health-promoting food baskets (FBs) that help prevent both micronutrient inadequacy and diet-related non-communicable diseases at lowest cost. Average prices for 312 foods were collected within the Greater Copenhagen area. The cost and nutrient content of five different cost-minimized FBs for a family of four were calculated per day using linear programming. The FBs were defined using five different constraints: cultural acceptability (CA), or dietary guidelines (DG), or nutrient recommendations (N), or cultural acceptability and nutrient recommendations (CAN), or dietary guidelines and nutrient recommendations (DGN). The variety and number of foods in each of the resulting five baskets was increased through limiting the relative share of individual foods. The one-day version of N contained only 12 foods at the minimum cost of DKK 27 (€ 3.6). The CA, DG, and DGN were about twice of this and the CAN cost ~DKK 81 (€ 10.8). The baskets with the greater variety of foods contained from 70 (CAN) to 134 (DGN) foods and cost between DKK 60 (€ 8.1, N) and DKK 125 (€ 16.8, DGN). Ensuring that the food baskets cover both dietary guidelines and nutrient recommendations doubled the cost while cultural acceptability (CAN) tripled it. Use of linear programming facilitates the generation of low-cost food baskets that are nutritionally adequate, health promoting, and culturally acceptable.

General information

State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, Metropolitan University College, University of Copenhagen, National Institute of Public Health, University of Oxford, Aix-Marseille University
Authors: Parlesak, A. (Ekstern), Tetens, I. (Intern), Dejgård Jensen, J. (Ekstern), Smed, S. (Ekstern), Gabrijelčič Blenkuš, M. (Ekstern), Rayner, M. (Ekstern), Darmon, N. (Ekstern), Robertson, A. (Ekstern)
Number of pages: 19
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BFI (2018): BFI-level 1
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Scopus rating (2017): CiteScore 3.01 SJR 1.164 SNIP 1.111
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.11 SJR 1.236 SNIP 1.101
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.427 SNIP 1.136 CiteScore 3.32
Web of Science (2015): Indexed yes
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Scopus rating (2014): SJR 1.559 SNIP 1.148 CiteScore 3.54
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.772 SNIP 1.153 CiteScore 3.94
Validation of Reported Whole-Grain Intake from a Web-Based Dietary Record against Plasma Alkylresorcinol Concentrations in 8- to 11-Year-Olds Participating in a Randomized Controlled Trial

BACKGROUND: Whole-grain (WG) intake is important for human health, but accurate intake estimation is challenging. Use of a biomarker for WG intake provides a possible way to validate dietary assessment methods. OBJECTIVE: Our aim was to validate WG intake from 2 diets reported by children, using plasma alkylresorcinol (AR) concentrations, and to investigate the 3-mo reproducibility of AR concentrations and reported WG intake. METHODS: AR concentrations were analyzed in fasting blood plasma samples, and WG intake was estimated in a 7-d web-based diary by 750 participants aged 8-11 y in a 2 school meal × 3 mo crossover trial. Reported WG intake and plasma AR concentrations were compared when children ate their usual bread-based lunch (UBL) and when served a hot lunch meal (HLM). Correlations and cross-classification were used to rank subjects according to intake. The intraclass correlation coefficients (ICCs) between subjects’ measurements at baseline and after the UBL were used to assess reproducibility. RESULTS: Correlations between reported WG wheat + rye intake and plasma AR were 0.40 and 0.37 (P <0.001) for the UBL and the HLM diets, and 78% and 77% were classified in the same or adjacent quartiles for the UBL and HLM diets, respectively. The ICC over 3 mo was 0.47 (95% CI: 0.38, 0.55) for plasma total ARs and 0.64 (95% CI: 0.58, 0.70) for reported WG intake. Correlations were higher when using the AR C17:0 homolog as a biomarker, reflecting rye intake instead of plasma total ARs [UBL: r = 0.47; HLM: r = 0.43, P <0.001; ICC = 0.51 (95% CI: 0.43, 0.59)]. CONCLUSIONS: Self-reported WG wheat + rye intake among children showed moderate correlations with plasma AR concentrations. Substantial intraindividual variation was found in WG intake and plasma AR concentrations. The AR homolog C17:0 may be used as a biomarker for WG intake when the WG intake primarily comes from rye as in the present study. This trial was registered at clinicaltrials.gov as NCT01457794.
Variation in the effect of carcass decontamination impacts the risk for consumers

• The variation of decontamination has an effect on consumer risk reduction.
• The effect of variation on risk is lower when mean log reduction is high.
• The effect of variation on risk also depends on initial carcass contamination.
• The effect of decontamination should be expressed as consumer risk reduction.

General information

State: Published
Organisations: National Food Institute, Research Group for Genomic Epidemiology, Division of Epidemiology and Microbial Genomics, Research Group for Risk-Benefit, Research Group for Microbial Food Safety and Quality
Authors: Ribeiro Duarte, A. S. (Intern), Nauta, M. (Intern), Aabo, S. (Intern)
Number of pages: 8
Pages: 12-19
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Main Research Area: Technical/natural sciences

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Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.86 SJR 1.492 SNIP 1.709
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.498 SNIP 1.73 CiteScore 3.65
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.38 SNIP 1.717 CiteScore 3.27
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.278 SNIP 1.728 CiteScore 3.14
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.245 SNIP 1.931 CiteScore 3.1
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.209 SNIP 1.723 CiteScore 2.9
ISI indexed (2011): ISI indexed yes
Wellbeing at work among kitchen workers during organic food conversion in Danish public kitchens: a longitudinal survey

Background: In 2011, the Danish Ministry of Food, Agriculture and Fisheries launched the Danish Organic Action Plan 2020 intending to double the organic agricultural area in Denmark. This study aims to measure experienced physical and psychological wellbeing at work along with beliefs and attitudes among kitchen workers before and after participating in educational training programmes in organic food conversion. Method: This longitudinal study applied an online self-administered questionnaire among kitchen workers before and after the implementation of an organic food conversion programme with 1-year follow-up. The study targeted all staff members in the participating public kitchens taking part in the organic food conversion process funded by the Danish Organic Action Plan 2020. Results: Of the 448 eligible kitchen workers, 235 completed the questionnaire at baseline (52%) and 149 at follow-up (63% of those surveyed at baseline). No substantive differences between baseline and follow-up measurements of organic food conversion were detected on physical or psychological wellbeing at work. Kitchen workers reported a significant improvement in the perceived food quality, motivation to work and application of nutritional guidelines. Reported organic food percentages for the kitchens also increased significantly (P < 0.001) and a shift from using ready-made food products to producing more food from base was indicated. Conclusion: Within 1 year, a significant increase in motivation to work among kitchen staff was observed with no substantive changes in physical or psychological wellbeing at work identified. The results support the Danish Organic Action Plan 2020 and initiatives of similar kind.

General information
State: Published
Organisations: Research Group for Risk-Benefit, National Food Institute, Center for Bachelor of Engineering Studies, Division of Risk Assessment and Nutrition , University of Sydney
Authors: Sørensen, N. N. (Intern), Løje, H. (Intern), Tetens, I. (Intern), HY Wu, J. (Ekstern), Neal, B. (Ekstern), Lassen, A. D. (Intern)
Number of pages: 6
Pages: 323-328
Publication date: 2016
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Publication information
Journal: European Journal of Public Health
A Bayesian approach to the evaluation of risk-based microbiological criteria for Campylobacter in broiler meat

Shifting from traditional hazard-based food safety management toward risk-based management requires statistical methods for evaluating intermediate targets in food production, such as microbiological criteria (MC), in terms of their effects on human risk of illness. A fully risk-based evaluation of MC involves several uncertainties that are related to both the underlying Quantitative Microbiological Risk Assessment (QMRA) model and the production-specific sample data on the prevalence and concentrations of microbes in production batches. We used Bayesian modeling for statistical inference and evidence synthesis of two sample data sets. Thus, parameter uncertainty was represented by a joint posterior
distribution, which we then used to predict the risk and to evaluate the criteria for acceptance of production batches. We also applied the Bayesian model to compare alternative criteria, accounting for the statistical uncertainty of parameters, conditional on the data sets. Comparison of the posterior mean relative risk, $E(\text{RR}|\text{data})=E(P(\text{illness}|\text{criterion is met})/P(\text{illness})|\text{data})$, and relative posterior risk, $E(\text{RPR})=P(\text{illness}|\text{criterion is met})/P(\text{illness}|\text{data})$, showed very similar results, but computing is more efficient for RPR. Based on the sample data, together with the QMRA model, one could achieve a relative risk of 0.4 by insisting that the default criterion be fulfilled for acceptance of each batch.

General information

State: Published

Organisations: National Food Institute, Research Group for Risk-Benefit, Finnish Food Safety Authority, Swedish University of Agricultural Sciences, National Veterinary Institute Sweden

Authors: Ranta, J. (Ekstern), Lindqvist, R. (Ekstern), Hansson, I. (Ekstern), Tuominen, P. (Ekstern), Nauta, M. (Intern)

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Main Research Area: Technical/natural sciences

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Scopus rating (2017): SNIP 1.167 SJR 1.745 CiteScore 1.81

Web of Science (2017): Indexed Yes

BFI (2016): BFI-level 2

Scopus rating (2016): SJR 1.847 SNIP 1.402 CiteScore 1.93

BFI (2015): BFI-level 2

Scopus rating (2015): SJR 1.611 SNIP 1.239 CiteScore 1.53

Web of Science (2015): Indexed yes

BFI (2014): BFI-level 2

Scopus rating (2014): SJR 2.087 SNIP 1.534 CiteScore 1.75

BFI (2013): BFI-level 2

Scopus rating (2013): SJR 1.839 SNIP 1.197 CiteScore 1.66

BFI (2012): BFI-level 2

Scopus rating (2012): SJR 1.702 SNIP 1.092 CiteScore 1.8

BFI (2011): BFI-level 2

Scopus rating (2011): SJR 1.629 SNIP 1.239

BFI (2010): BFI-level 2

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BFI (2009): BFI-level 2

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Bayesian modeling, hierarchical models, evidence synthesis, uncertainty, OpenBUGS, 2D Monte Carlo, quantitative microbiological risk assessment, food safety, Campylobacter

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Accounting for Campylobacter biology and epidemiology in source attribution modelling

General information
Accuracy of self-reported intake of signature foods in a school meal intervention study: comparison between control and intervention period

Bias in self-reported dietary intake is important when evaluating the effect of dietary interventions, particularly for intervention foods. However, few have investigated this in children, and none have investigated the reporting accuracy of fish intake in children using biomarkers. In a Danish school meal study, 8- to 11-year-old children (n 834) were served the New Nordic Diet (NND) for lunch. The present study examined the accuracy of self-reported intake of signature foods (berries, cabbage, root vegetables, legumes, herbs, potatoes, wild plants, mushrooms, nuts and fish) characterising the NND. Children, assisted by parents, self-reported their diet in a Web-based Dietary Assessment Software for Children during the intervention and control (packed lunch) periods. The reported fish intake by children was compared with their ranking according to fasting whole-blood EPA and DHA concentration and weight percentage using the Spearman correlations and cross-classification. Direct observation of school lunch intake (n 193) was used to score the accuracy of food-reporting as matches, intrusions, omissions and faults. The reporting of all lunch foods had higher percentage of matches compared with the reporting of signature foods in both periods, and the accuracy was higher during the control period compared with the intervention period. Both Spearman's rank correlations and linear mixed models demonstrated positive associations between EPA+DHA and reported fish intake. The direct observations showed that both reported and real intake of signature foods did increase during the intervention period. In conclusion, the self-reported data represented a true increase in the intake of signature foods and can be used to examine dietary intervention effects.
Aetiology-Specific Estimates of the Global and Regional Incidence and Mortality of Diarrhoeal Diseases Commonly Transmitted through Food

Diarrhoeal diseases are major contributors to the global burden of disease, particularly in children. However, comprehensive estimates of the incidence and mortality due to specific aetiologies of diarrhoeal diseases are not available. The objective of this study is to provide estimates of the global and regional incidence and mortality of diarrhoeal diseases caused by nine pathogens that are commonly transmitted through foods. We abstracted data from systematic reviews and, depending on the overall mortality rates of the country, applied either a national incidence estimate approach or a modified Child Health Epidemiology Reference Group (CHERG) approach to estimate the aetiology-specific incidence and mortality of diarrhoeal diseases, by age and region. The nine diarrhoeal diseases assessed caused an estimated 1.8 billion (95% uncertainty interval [UI] 1.1-3.3 billion) cases and 599,000 (95% UI 472,000-802,000) deaths worldwide in 2010. The largest number of cases were caused by norovirus (677 million; 95% UI 468-1,153 million), enterotoxigenic Escherichia coli (ETEC) (233 million; 95% UI 154-380 million), Shigella spp. (188 million; 95% UI 94-379 million) and Giardia lamblia (179 million; 95% UI 125-263); the largest number of deaths were caused by norovirus (213,515; 95% UI 171,783-266,561), enteropathogenic E. coli (121,455; 95% UI 103,657-143,348), ETEC (73,041; 95% UI 55,474-96,984) and Shigella (64,993; 95% UI 48,966-92,357). There were marked regional differences in incidence and mortality for these nine diseases. Nearly 40% of cases and 43% of deaths caused by these nine diarrhoeal diseases occurred in children under five years of age. Diarrhoeal diseases caused by these nine pathogens are responsible for a large disease burden, particularly in children. These aetiology-specific burden estimates can inform efforts to reduce diarrhoeal diseases caused by these nine pathogens commonly transmitted through foods.
A risk-based microbiological criterion that uses the relative risk as the critical limit

A risk-based microbiological criterion is described, that is based on the relative risk associated to the analytical result of a number of samples taken from a food lot. The acceptable limit is a specific level of risk and not a specific number of microorganisms, as in other microbiological criteria. The approach requires the availability of a quantitative microbiological risk assessment model to get risk estimates for food products from sampled food lots. By relating these food lot risk estimates to the mean risk estimate associated to a representative baseline data set, a relative risk estimate can be obtained. This relative risk estimate then can be compared with a critical value, defined by the criterion. This microbiological criterion based on a relative risk limit is particularly useful when quantitative enumeration data are available and when the prevalence of the microorganism of concern is relatively high. The use of the approach is therefore illustrated with an example of Campylobacter in broiler meat. It shows that this microbiological criterion can be applied in practice. An advantage of the method is that the acceptable limit is directly defined in terms of risk, without the need to define other food safety standards.
A risk modelling approach for setting microbiological criteria: using enterococci as indicator for Salmonella in pork

General information
State: Published
Organisations: National Food Institute, Research Group for Microbial Food Safety and Quality, Research Group for Risk-Benefit

Original language: English
Risk assessment, Food safety control, Risk-based microbiological criteria, Campylobacter

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A risk modelling approach for setting process hygiene criteria for Salmonella in pork cutting plants, based on enterococci.

Pork is known to be a key source of foodborne salmonellosis. Processing steps from slaughter to cutting and retail contribute to the Salmonella consumer exposure. In two extensive surveys comprising a total of 5,310 pork samples, cuttings and minced meat were analysed semiquantitatively for Salmonella and quantitatively for the hygiene indicator enterococci. The samples were collected in 2001/2002 and 2010/2011 in Danish cutting plants, retail supermarkets and butcher shops. A positive correlation between prevalence of Salmonella and number of enterococci was shown (Hansen et al., 2013). As enterococci and Salmonella share a lower growth limit around 5°C, the positive correlation could imply that the meat had been exposed to temperatures above 5°C. Based on these findings, the objective of this study was to develop an approach for setting process hygiene criteria for predicting Salmonella risk in cutting plants from enterococci counts. The novel approach uses risk modelling to associate a relative consumer risk to different levels of enterococci in pork. The applied risk model was a modification of a model developed by Duarte et al. (submitted). The output is an estimate of the relative risk of acquiring salmonellosis associated to a given concentration of Salmonella. The relative risk of acquiring salmonellosis was then associated to the concentration of enterococci by using the observed positive correlation between Salmonella and enterococci as model input. From the applied model it was deduced how much the consumer risk can be reduced if enterococci is kept below a certain limit.

Burden of disease estimates of cancer caused by dietary exposure to acrylamide: How methodological choices affect the outcome

General information
State: Published
Organisations: National Food Institute, Research Group for Microbial Food Safety and Quality, Research Group for Risk-Benefit
Authors: Jakobsen, L. S. (Intern), Nauta, M. (Intern), Knudsen, V. K. (Intern), Pires, S. M. (Intern), Poulsen, M. (Intern)
Pages: 115-115
Publication date: 2015
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Proces hygiene criteria, Risk modelling, Salmonella, Pork meat
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Challenges in setting Dietary Reference Values. Where to go from here?

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, University of East Anglia
Authors: Tetens, I. (Intern), Fairweather-Tait, S. (Ekstern)
Pages: 23-23
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Web of Science (2017): Indexed Yes
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Scopus rating (2016): SJR 1.215 SNIP 1.003 CiteScore 2.69
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.074 SNIP 1.016 CiteScore 2.55
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.294 SNIP 1.096 CiteScore 2.64
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.957 SNIP 1.036 CiteScore 2.46
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.867 SNIP 0.89 CiteScore 2.35
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.889 SNIP 0.95 CiteScore 2.38
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.768 SNIP 0.834
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.688 SNIP 0.898
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 0.786 SNIP 0.785
Scopus rating (2007): SJR 0.697 SNIP 0.763
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.709 SNIP 0.763
Common genetic variations in the CYP2R1 and GC genes are determinants of vitamin D status in Danes

Vitamin D is considered a key fat-soluble vitamin critically important for good bone- and overall health throughout life. Vitamin D deficiency increases the risk of developing rickets, osteomalacia and osteoporosis, and moreover increases the risk of various non-skeletal adverse health outcomes including cardiovascular diseases, autoimmune diseases, some cancers and overall mortality. In humans, vitamin D is mainly synthesized in the skin after solar exposure and only a small amount is obtained through the diet.

An inter-individual variation in vitamin D status exists, which may be explained by genetic variation in vitamin D modulating genes. Twin and family-based studies indicate that genetic variation may have an appreciable influence on vitamin D status. Moreover, several candidate gene studies including two genome-wide association studies (GWAS) have found single nucleotide polymorphisms (SNPs) in CYP2R1, CYP24A1, CYP27B1, C10orf88, DHCR7/NADSYN1, GC and VDR genes to be associated with vitamin D status. The main hypothesis of this work was that genetically determined variation in vitamin D metabolism would influence the effect of vitamin D sources (vitamin D-supplementation and ultraviolet (UV)-B) on vitamin D status.

This was done by assessing the association between 25 SNPs located in the CYP2R1, CYP24A1, CYP27B1, C10orf88, DHCR7/NADSYN1, GC and VDR genes and vitamin D status in 756 participants in the VitmaD study in late summer (paper I), at the end of a winter season (paper II), after 6 months intake of vitamin D3-fortified bread and milk (paper II) and in 92 participants in the VitDgen study after artificial UVB irradiation during winter (paper III).

Common genetic variations in the CYP2R1 and GC genes were found to be important determinants of vitamin D status in three out of four scenarios: in late summer, after 6 months intake of vitamin D3-fortified bread and milk and after artificial UVB irradiation, but not at the end of winter when no artificial vitamin D sources (vitamin D-supplementation or ultraviolet (UV)-B) had been given.

Overall, a general negative gene-dose dependent relationship was observed between increasing numbers of risk alleles of CYP2R1 and GC and lower vitamin D status, and moreover an additive effect of CYP2R1 and GC polymorphisms on vitamin D status was observed. Genetically predisposed individuals carrying all risk alleles of CYP2R1 and GC had the lowest vitamin D status in late summer, the largest decrease in vitamin D status after intake of vitamin D3-fortified bread and milk during winter and the smallest increase in vitamin D status after artificial UVB irradiation compared to individuals carrying fewer or no risk alleles of CYP2R1 and GC.

Based on the studies included in this thesis, it is concluded that genetically predisposed individuals, with a genetic profile of CYP2R1 and GC leading to low vitamin D status, had the lowest vitamin D status in late summer and responded the least to increased exposure of the vitamin D sources, vitamin D3-fortification and UVB irradiation. Genetically determined variation in CYP2R1 and GC may potentially be used as a biomarker to identify at-risk individuals who have substantially increased risk of having low vitamin D status.

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Authors: Nissen, I. (Intern), Vogel, U. (Ekstern), Rasmussen, L. B. (Intern), Andersen, R. (Intern)
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Critical review of methodology and application of risk ranking for prioritisation of food and feed related issues, on the basis of the size of anticipated health impact

This study aimed to critically review methodologies for ranking of risks related to feed/food safety and nutritional hazards, on the basis of their anticipated human health impact. An extensive systematic literature review was performed to identify and characterize the available methodologies for risk ranking in the fields of feed and food safety and nutritional hazards, as well as the socio-economic field. Risk ranking methods from the environmental field were studied as well to determine whether approaches used in this field could also be applied for ranking human health risks related to feed and food safety and nutritional hazards. The review used a predefined search protocol. It covered the bibliographic databases Scopus, CAB Abstracts, Web of Sciences, and PubMed over the period 1993-2013. All references obtained were stored into an Endnote database and evaluated for their relevance. All references deemed to be relevant were studied in–depth so as to characterize the risk ranking method described. Characteristics of each method were stored in an Excel database. The methods for risk ranking were then grouped into method categories, which were described in general. These groups included: risk assessment, comparative risk assessment, risk ratio method, scoring method, cost of illness, DALY/QALY, willingness to pay, multi criteria decision analysis, risk matrix, flow charts/decision trees and expert judgment methods. Based on the characteristics of the individual methods and the method categories, an overarching framework was developed for selection of the appropriate method(s) that could be used for risk ranking of feed and food related hazards, on the basis of human health impact. This framework has the format of a decision tool, with which – given the characteristics of the risk ranking question at hand - the most appropriate method(s) can be selected. Application of this overall framework to several case studies showed it can be a useful tool for risk managers/assessors to select the most suitable method for risk ranking of feed/food and diet related hazards, on the basis of expected human health impact.

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Diet-induced changes in iron and n-3 fatty acid status and associations with cognitive performance in 8-11-year-old Danish children: secondary analyses of the Optimal Well-Being, Development and Health for Danish Children through a Healthy New Nordic Diet School Meal Study

Fe and n-3 long-chain PUFA (n-3 LCPUFA) have both been associated with cognition, but evidence remains inconclusive in well-nourished school-aged children. In the Optimal Well-Being, Development and Health for Danish Children through a Healthy New Nordic Diet (OPUS) School Meal Study, the 3-month intervention increased reading performance, inattention, impulsivity and dietary intake of fish and Fe. This study investigated whether the intervention influenced n-3 LCPUFA and Fe status and, if so, explored how these changes correlated with the changes in cognitive performance. The study was a cluster-randomised cross-over trial comparing school meals with packed lunch (control). At baseline and after each treatment, we measured serum ferritin, whole-blood n-3 LCPUFA and Hb, and performance in reading, mathematics and d2-test of attention. Data were analysed using mixed models (n 726) and principal component analysis of test performances (n 644), which showed two main patterns: 'school performance' and 'reading comprehension'. The latter indicated that children with good reading comprehension were also more inattentive and impulsive (i.e. higher d2-test error%). The intervention improved 'school performance' (P=0·015), 'reading comprehension' (P=0·043) and EPA+DHA status 0·21 (95 % CI 0·15, 0·27) w/w % (P

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Organisations: National Food Institute, Research Group for Risk-Benefit, University of Copenhagen, Aarhus University, University of Waterloo
Authors: Sørensen, L. B. (Ekstern), Damsgaard, C. T. (Ekstern), Dalskov, S. (Ekstern), Petersen, R. A. (Ekstern), Egelund, N. (Ekstern), Dyssegaard, C. B. (Ekstern), Stark, K. D. (Ekstern), Andersen, R. (Intern), Tetens, I. (Intern), Astrup, A. (Ekstern), Michaelsen, K. F. (Ekstern), Lauritzen, L. (Ekstern)
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Scopus rating (2016): CiteScore 3.46 SJR 2.055 SNIP 1.535
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Scopus rating (2010): SJR 1.236 SNIP 1.253
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Scopus rating (2009): SJR 0.627 SNIP 0.572
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Scopus rating (2008): SJR 0.966 SNIP 1.2
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.987 SNIP 1.255
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.715 SNIP 0.925
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.519 SNIP 1.139
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.626 SNIP 1.088
Web of Science (2004): Indexed yes
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Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 0.838 SNIP 1.515
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n-3 PUFA, CP concentration performance, CRP C-reactive protein, Cognitive performance, ID Fe deficiency, IDA ID with anaemia, Iron, PCA principal component analysis, RCT randomised controlled trial, School meals, School performance, n-3 LCPUFA n-3 long-chain PUFA

Electronic versions:
Effects of school meals with weekly fish servings on vitamin D status in Danish children: secondary outcomes from the OPUS (Optimal well-being, development and health for Danish children through a healthy New Nordic Diet) School Meal Study

Children's vitamin D intake and status can be optimised to meet recommendations. We investigated if nutritionally balanced school meals with weekly fish servings affected serum 25-hydroxyvitamin D (25(OH)D) and markers related to bone in 8- to 11-year-old Danish children. We conducted an explorative secondary outcome analysis on data from 784 children from the OPUS School Meal Study, a cluster-randomised cross-over trial where children received school meals for 3 months and habitual lunch for 3 months. At baseline, and at the end of each dietary period, 25(OH)D, parathyroid hormone (PTH), osteocalcin (OC), insulin-like growth factor-1 (IGF-1), bone mineral content (BMC), bone area (BA), bone mineral density (BMD), dietary intake and physical activity were assessed. School meals increased vitamin D intake by 0.9 (95% CI 0.7, 1.1) μg/d. No consistent effects were found on 25(OH)D, BMC, BA, BMD, IGF-1 or OC. However, season-modified effects were observed with 25(OH)D, i.e. children completing the school meal period in January/February had higher 25(OH)D status (5.5 (95% CI 1.8, 9.2) nmol/l; P = 0.004) than children completing the control period in these months. A similar tendency was indicated in November/December (4.1 (95% CI 0.0, 8.3) nmol/l; P = 0.057). However, the effect was opposite in March/April (-4.0 (95% CI -7.9, -0.9) nmol/l; P = 0.010), and no difference was found in May/June (P = 0.214). Unexpectedly, the school meals slightly increased PTH (0.18 (95% CI 0.07, 0.29) pmol/l) compared with habitual lunch. Small increases in dietary vitamin D might hold potential to mitigate the winter nadir in Danish children's 25(OH)D status while higher increases appear necessary to affect status throughout the year. More trials on effects of vitamin D intake from natural foods are needed.

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Organisations: National Food Institute, Research Group for Risk-Benefit, University of Copenhagen, Aalborg University Hospital
Authors: Petersen, R. A. (Ekstern), Damsgaard, C. T. (Ekstern), Dalskov, S. (Ekstern), Sørensen, L. B. (Ekstern), Hjorth, M. F. (Ekstern), Andersen, R. (Intern), Tetens, I. (Intern), Krarup, H. (Ekstern), Ritz, C. (Ekstern), Astrup, A. (Ekstern), Michaelsen, K. F. (Ekstern), Melgaard, C. (Ekstern)
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Scopus rating (2016): CiteScore 0.72 SJR 0.62 SNIP 0.545
Web of Science (2016): Indexed yes
Scopus rating (2015): SNIP 0.376 SJR 0.381
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EFSA (European Food Safety Authority) and ECDC (European Centre for Disease Prevention and Control), 2015. The European Union summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks in 2014

This report of the European Food Safety Authority and the European Centre for Disease Prevention and Control presents the results of the zoonoses monitoring activities carried out in 2014 in 32 European countries (28 Member States (MS) and four non-MS). Campylobacteriosis was the most commonly reported zoonosis with an increase in confirmed human cases in the European Union (EU) since 2008. In food the occurrence of Campylobacter remained high in broiler meat. The decreasing EU trend for confirmed human salmonellosis cases since 2008 continued. More human Salmonella Enteritidis cases were reported whereas the S. Stanley cases remained, as in 2013, at a higher level compared with 2011–2012. Most MS met their Salmonella reduction targets for poultry but isolates of S. Infantis increased at EU level. In foodstuffs, the EU-level Salmonella non-compliance in fresh and processed poultry meat was rare and low, respectively. The numbers of human listeriosis cases further increased, since 2008. In ready-to-eat foods Listeria seldom exceeded the EU food safety limit. The decreasing EU trend for confirmed yersiniosis cases since 2008 continued. Positive findings for Yersinia were mainly reported in pig meat and products thereof. The number of confirmed verocytotoxigenic Escherichia coli (VTEC) infections in humans slightly decreased compared with 2013. VTEC was reported from food and animals. A total of 5,251 food-borne outbreaks, including water-borne outbreaks, were reported. Most food-borne outbreaks were caused by viruses, followed by Salmonella, bacterial toxins and Campylobacter and with unknown causative agent in 29.1% of all outbreaks. Important food vehicles in strong-evidence food-borne outbreaks were ‘eggs and egg products’, followed by ‘mixed food’ and ‘crustaceans, shellfish, molluscs and products thereof’. The report further summarises trends and sources along the food chain of tuberculosis due to Mycobacterium bovis, Brucella, Trichinella, Echinococcus, Toxoplasma, rabies, Coxliella burneti (Q fever), West Nile virus and tularaemia.

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Following an application from Specialised Nutrition Europe (formerly IDACE), submitted for authorisation of a health claim pursuant to Article 14 of Regulation (EC) No 1924/2006 via the Competent Authority of France, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to biotin and contribution to normal energy-yielding metabolism. The Panel considers that biotin, the food constituent that is the subject of the health claim, is sufficiently characterised. Contribution to normal energy-yielding metabolism is a beneficial physiological effect. The Panel has previously assessed a claim on biotin and contribution to normal energy-yielding metabolism with a favourable outcome. The target population was the general population. The Panel considers that the role of biotin in contributing to normal energy-yielding metabolism applies to all ages, including infants and young children (from birth to three years). The Panel concludes that a cause and effect relationship has been established between the dietary intake of biotin and contribution to normal energy-yielding metabolism. The following
EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2015. Scientific Opinion on Dietary Reference Values for calcium

Following a request from the European Commission, the Panel on Dietetic Products, Nutrition and Allergies derived Dietary Reference Values for calcium. These include Average Requirement (AR), Population Reference Intake (PRI) and Adequate Intake (AI). For adults, data were analysed from a number of balance studies undertaken in North America and the mean value at which calcium intake equals excretion was calculated as 715 mg/day in adults ≥ 25 years. An allowance for dermal calcium losses (not included in the balance data) of 40 mg/day was added to derive an AR of 750 mg/day. The upper bound of the 95 % prediction interval at the estimated population mean at null balance (which represents the 97.5th percentile of the distribution of the individual predictions for each calcium intake level) was 904 mg/day, and when dermal losses are added this gives a PRI of 950 mg/day for adults ≥ 25 years. For infants (7–11 months), an AI was derived by extrapolating the average amount of calcium absorbed by exclusively breast-fed infants (120 mg/day) using isometric scaling and assuming an absorption of 60 %, and was calculated as 280 mg/day. The AR for children was derived using the factorial approach. The total quantity of calcium required for bone accretion and replacement of endogenous losses was adjusted for percentage absorption to derive PRIs for children aged 1–3, 4–10 and 11–17 years of 450, 800 and 1 150 mg/day, respectively. The PRI for young adults (18–24 years), who still accumulate calcium in bones, is 1 000 mg/day. This is the intermediate value between children aged 11–17 years and adults. Taking into consideration adaptive changes in calcium metabolism that occur during pregnancy and lactation, the PRI for non-pregnant women also applies to pregnant and lactating women of the same age group.

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EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2015. Scientific Opinion on Dietary Reference Values for cobalamin (vitamin B12)

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) derived Dietary Reference Values (DRVs) for cobalamin (vitamin B12). The Panel considers that the approach based on a combination of biomarkers of cobalamin status, i.e. serum cobalamin, holotranscobalamin (holoTC), methylmalonic acid (MMA) and plasma total homocysteine (tHcy), is the most suitable approach to derive DRVs for cobalamin. The Panel notes the uncertainties with respect to cut-off values for cobalamin insufficiency of these indicators and that an Average Requirement (AR) cannot be determined from the limited data available. There is consistent evidence in adults that a cobalamin intake of 4 μg/day and greater is associated with serum concentrations of holoTC and cobalamin within the reference ranges derived from healthy subjects, together with MMA and tHcy concentrations below the cut-off values for adults, which indicates an adequate cobalamin status. Therefore, the Panel sets an Adequate Intake (AI) for cobalamin at 4 μg/day for adults based on data on different biomarkers of cobalamin status and in consideration of observed mean intakes, which range between 4.2 and 8.6 μg/day in adults in several EU countries. AIs for infants and children are calculated by extrapolation from the AI for adults using allometric scaling and applying a growth factor. Estimated AIs range from 1.5 μg/day in infants aged 7–11 months to 4 μg/day in children aged 15–17 years. For pregnancy and lactation, additional cobalamin intakes related to the accumulation of cobalamin in fetal tissues and transfer of cobalamin into breast milk are considered and AIs of 4.5 and 5 μg/day, respectively, are proposed.

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EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2015. Scientific Opinion on Dietary Reference Values for magnesium

Following a request from the European Commission, the Panel on Dietetic Products, Nutrition and Allergies (NDA) derived Dietary Reference Values (DRVs) for magnesium. The Panel considers that Average Requirements (ARs) and Population Reference Intakes (PRIs) for magnesium cannot be derived for adults, infants or children, and therefore defines Adequate Intakes (AIs), based on observed intakes in healthy populations in the European Union (EU). This approach considers the range of average magnesium intakes estimated by EFSA from dietary surveys in children and adults in nine EU countries. For adults, an AI for magnesium is set at 350 mg/day for men and 300 mg/day for women. For children aged 1 to < 3 years, an AI for magnesium is set at 170 mg/day for both sexes. For children aged 3 to < 10 years, an AI for magnesium is set at 230 mg/day for both sexes. For children aged 10 to < 18 years, an AI for magnesium is set at 300 mg/day for boys and 250 mg/day for girls. For infants aged 7–11 months, an AI for magnesium of 80 mg/day is derived by extrapolating upwards from the estimated magnesium intake in exclusively breast-fed infants aged 0–6 months and by considering observed average intakes in the few surveys for which data are available. For pregnant and lactating women, the Panel considers that there is no evidence for an increased need for magnesium, and the same AI is set for them as for non-pregnant, non-lactating women.

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Authors: EFSA Journal
EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2015. Scientific Opinion on Dietary Reference Values for phosphorus

Following a request from the European Commission, the Panel on Dietetic Products, Nutrition and Allergies derived Dietary Reference Values (DRVs) for phosphorus. The Panel considered data from balance studies, losses of phosphorus from the body and intestinal absorption for possible use in a factorial approach, and studies on phosphorus intake and long-term health outcomes. The Panel concluded that these data were insufficient for setting DRVs for phosphorus. Data on the calcium to phosphorus ratio in bones of healthy adults, adjusted for the proportion of phosphorus found outside bone, and data on whole-body calcium and phosphorus contents in Caucasian adults indicate that the calcium to phosphorus molar ratio in the body ranges from 1.4:1 to 1.9:1. Although the fractional absorption of phosphorus is higher than that of calcium, the Panel considered that the actual amounts of calcium and phosphorus that are available for absorption from the diet cannot be determined; therefore, the whole-body calcium to phosphorus ratio was used to set DRVs. The data were considered insufficient to derive Average Requirements and Population Reference Intakes. Based on the DRVs for calcium and considering a molar calcium to phosphorus ratio of 1.4:1 to 1.9:1, amounts of phosphorus were calculated. The Panel chose the lower bound of this range (a ratio of 1.4:1, which results in a higher phosphorus intake value) for setting an Adequate Intake (AI), taking into account estimated phosphorus intakes in Western countries, which are considerably higher than the values calculated. The AI is 160 mg/day for infants (7–11 months) and between 250 and 640 mg/day for children. For adults, the AI is 550 mg/day. Taking into consideration adaptive changes in phosphorus metabolism that occur during pregnancy and lactation, it was considered that the AI for adults also applies to pregnant and lactating women.
EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2015. Scientific Opinion on Dietary Reference Values for vitamin E as α-tocopherol

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) derived Dietary Reference Values (DRVs) for vitamin E. In this Opinion, the Panel considers vitamin E as α-tocopherol only. The Panel considers that Average Requirements (ARs) and Population Reference Intakes (PRIs) for vitamin E (as α-tocopherol) cannot be derived for adults, infants and children, and therefore defines Adequate Intakes (AIs), based on observed intakes in healthy populations with no apparent α-tocopherol deficiency in the EU. This approach considers the range of average intakes of α-tocopherol and of α-tocopherol equivalents estimated by EFSA from dietary surveys in children and adults in nine countries. The Panel notes the uncertainties in the available food composition and consumption data, the fact that most EU food composition databases contain values for vitamin E as α-tocopherol equivalents, as well as the contribution of average α-tocopherol intakes to average α-tocopherol equivalent intakes in these countries. For adults, an AI for α-tocopherol is set at 13 mg/day for men and 11 mg/day for women. For children aged 1 to < 3 years, an AI for α-tocopherol is set at 6 mg/day for both sexes. For children aged 3 to < 10 years, an AI for α-tocopherol is set at 9 mg/day for both sexes. For children aged 10 to < 18 years, an AI for α-tocopherol is set at 13 mg/day for boys and 11 mg/day for girls. For infants aged 7–11 months, an AI for α-tocopherol of 5 mg/day is derived by extrapolating upwards from the estimated α-tocopherol intake in exclusively breast-fed infants aged 0–6 months and rounding. For pregnant or lactating women, the Panel considers that there is no evidence for an increased dietary α-tocopherol requirement, and the same AI is set as for non-pregnant non-lactating women.


Following an application from Specialised Nutrition Europe (formerly IDACE), submitted for authorisation of a health claim pursuant to Article 14 of Regulation (EC) No 1924/2006 via the Competent Authority of France, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to niacin and contribution to normal energy-yielding metabolism. The Panel considers that niacin, the food constituent that is the subject of the health claim, is sufficiently characterised. Contribution to normal energy-yielding metabolism is a beneficial physiological effect. The Panel has previously assessed a claim on niacin and contribution to normal energy-yielding metabolism with a favourable outcome. The target population was the general population. The Panel considers that the role of niacin in contributing to normal energy-yielding metabolism applies to all ages, including infants and young children (from birth to three years). The Panel concludes that a cause and effect relationship has been established between the dietary intake of niacin and contribution to normal energy-yielding metabolism. The following wording reflects the scientific evidence: ‘Niacin contributes to normal energy-yielding metabolism.’ The target population is infants and young children up to three years of age.
EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2015. Scientific opinion on the safety of 2'-O-fucosyllactose as a novel food ingredient pursuant to Regulation (EC) No 258/97

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on 2'-O-fucosyllactose as a novel food ingredient (NFI) submitted pursuant to Regulation (EC) No 258/97 of the European Parliament and of the Council, taking into account the comments and objections of a scientific nature raised by Member States. 2'-O-fucosyllactose (2'-FL) is a synthetic trisaccharide, which is intended to be used in infant and follow-on formulae, foods for special medical purposes for infants and young children, and other foods for infants and young children, as well as in foods or food supplements for adults. The information provided on the potential mutagenicity of 2'-FL does not raise safety concerns as regards the genotoxicity of this NFI. Based on the observations from a sub-chronic 90-day toxicity study in rats, the Panel considers that the no observed adverse effect level is 2 000 mg/kg body weight per day. The applicant provided a double-blind, randomised, controlled clinical trial on the effects of 2'-FL consumed in combination with another oligosaccharide (lacto-N-neotetraose (LNnT)) in infants. The Panel concludes that 2'-FL is safe for infants (up to one year of age) when added to infant and follow-on formulae, in combination with LNnT, at concentrations up to 1.2 g/L of 2'-FL and up to 0.6 g/L of LNnT, at a ratio of 2:1 in the reconstituted formulae; is safe for young children (older than one year of age) when added to follow-on and young-child formulae, at concentrations up to 1.2 g/L of 2'-FL (alone or in combination with LNnT, at concentrations up to 0.6 g/L, at a ratio of 2:1). The Panel also concludes that 2'-FL is safe when added to other foods at the uses and use levels proposed by the applicant.

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EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2015. Scientific Opinion on the safety of caffeine

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies was asked to deliver a scientific opinion on the safety of caffeine, providing advice on caffeine intakes, from all dietary sources that do not give rise to concerns about adverse health effects for the general healthy population and subgroups thereof. Possible interactions between caffeine and other constituents of so-called "energy drinks", alcohol, p-synephrine and physical exercise should also be addressed. Single doses of caffeine up to 200 mg (about 3 mg/kg bw for a 70-kg adult) do not give rise to safety concerns. The same amount does not give rise to safety concerns when consumed < 2 hours prior to intense physical exercise under normal environmental conditions. Other constituents of "energy drinks" at typical concentrations in such beverages (about 300–320, 4 000 and 2 400 mg/L of caffeine, taurine and d-glucurono-γ-lactone, respectively), as well as alcohol at doses up to about 0.65 g/kg bw, would not affect the safety of single doses of caffeine up to 200 mg. Habitual caffeine consumption up to 400 mg per day does not give rise to safety concerns for non-pregnant adults. Habitual caffeine consumption up to 200 mg per day by pregnant women does not give rise to safety concerns for the fetus. Single doses of caffeine and habitual caffeine intakes up to 200 mg consumed by lactating women do not give rise to safety concerns for breastfed infants. For children and adolescents, the information available is insufficient to derive a safe caffeine intake. The Panel considers that caffeine intakes of no concern derived for acute caffeine consumption by adults (3 mg/kg bw per day) may serve as a basis to derive single doses of caffeine and daily caffeine intakes of no concern for these population subgroups.

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Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on lacto-N-neotetraose as a novel food ingredient (NFI) submitted pursuant to Regulation (EC) No 258/97 of the European Parliament and of the Council, taking into account the comments and objections of a scientific nature raised by Member States. Lacto-N-neotetraose (LNnT) is a synthetic tetrasaccharide, which is intended to be used in infant and follow-on formulae, foods for special medical purposes for infants and young children and other foods for infants and young children, as well as in foods or food supplements for adults. The information provided on the potential mutagenicity of LNnT does not raise safety concerns as regards the genotoxicity of this NFI. Based on the observations from a sub-chronic 90-day toxicity study in rats, the Panel considers that the no observed adverse effect level is 2 500 mg/kg body weight per day. The applicant provided a double-blind, randomised, controlled clinical trial on the effects of LNnT consumed in combination with another oligosaccharide (2'-O-fucosyllactose (2'-FL)) in infants. The Panel concludes that LNnT is safe for infants (up to one year of age) when added to infant and follow-on formulae, in combination with 2'-FL, at concentrations up to 0.6 g/L of LNnT and up to 1.2 g/L of 2'-FL, at a ratio of 1:2 in the reconstituted formulae; is safe for young children (older than one year of age) when added to follow-on and young-child formulae, at concentrations up to 0.6 g/L of LNnT (alone or in combination with 2'-FL, at concentrations up to 1.2 g/L, at a ratio of 1:2). The Panel also concludes that LNnT is safe when added to other foods at the uses and use levels proposed by the applicant.

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Organisations: National Food Institute, Research Group for Risk-Benefit
Authors: EFSA Journal
EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2015. Scientific Opinion on the safety of UV-treated bread as a novel food

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA Panel) was asked to carry out the additional assessment for UV-treated bread as a novel food (NF) in the context of Regulation (EC) No 258/97, taking into account the comments and objections of a scientific nature raised by Member States. The NF is bread to which a treatment with UV radiation is applied after baking in order to convert ergosterol, which is present in bread as a result of yeast fermentation, to vitamin D2. The provided compositional data, the specifications (i.e. vitamin D2 content of 0.75–3 μg/100 g in the UV-treated bread, 1–5 g/100 g of yeast in the dough) and the data from batch testing do not give rise to safety concerns. The data provided on the production process are sufficient and do not give rise to safety concerns. The Panel considers that even if it is conservatively assumed that all consumed breads are UV-treated and contain the maximum proposed amount of 3 μg vitamin D2/100 g, it is highly unlikely that tolerable upper intake levels for vitamin D, established by EFSA for various age groups, will be exceeded. The NF is not nutritionally disadvantageous. Under certain conditions, UV treatment may result in reactions of biomolecules. However, the levels of potential reaction products that may be formed under the employed conditions are low compared with the reactions induced by the baking process. Therefore, the Panel considers that it is not necessary to perform additional analyses and that the absence of toxicological studies with the novel food is acceptable. The risk of allergic reactions to the NF is not dissimilar to that associated with conventional bread. The Panel considers that bread enriched with vitamin D2 through UV treatment is safe under the conditions of use as specified by the applicant.

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Authors: EFSA Journal
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Publication date: 2015
Following an application from Nerthus ApS, submitted for authorisation of a health claim pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of Denmark, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to a combination of pomegranate pomace extract (standardised by its content of punicalagins) and greater galangal rhizome powder (standardised by its content of acetoxychavicol acetate) and an increase in the number of motile spermatozoa in semen. The Panel considers that the food is sufficiently characterised. An increase in the number of motile spermatozoa in semen is a beneficial physiological effect. In weighing the evidence, the Panel took into account that one human study showed an increase in the number of motile spermatozoa in semen when the combination of pomegranate pomace extract and greater galangal rhizome powder was consumed for three months, that no other human studies in which these results have been replicated were provided, and that no evidence was provided for a mechanism by which the food could exert the claimed effect. The Panel concludes that a cause and effect relationship has not been established between the consumption of the combination of pomegranate pomace extract (standardised by its content of punicalagins) and greater galangal rhizome powder (standardised by its content of acetoxychavicol acetate) and an increase in the number of motile spermatozoa in semen.

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Following an application from Han-Asiabiotech GmbH, submitted for authorisation of a health claim pursuant to Article 14 of Regulation (EC) No 1924/2006 via the Competent Authority of Germany, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to Symbiosal® and lowering of blood pressure and reduced risk of hypertension. The Panel considers that the food, Symbiosal®, which is the subject of the health claim, and the food, table salt, which Symbiosal® should replace, are sufficiently characterised. Lowering of blood pressure is a beneficial physiological effect for people who want to lower their blood pressure. Increased blood pressure is a risk factor for hypertension. In weighing the evidence, the Panel took into account that one human study with methodological limitations showed a decrease in blood pressure when Symbiosal® was consumed instead of table salt for eight weeks in the context of a salt-restricted diet, but that no other human studies in which these results have been replicated were provided, that the animal studies did not support the results of the human study and that no evidence was provided for a mechanism by which the food could exert the claimed effect. The Panel concludes that a cause and effect relationship has not been established between the consumption of Symbiosal® instead of table salt and lowering of blood pressure.

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Place of publication: Parma, Italy
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EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2015. Scientific Opinion on the substantiation of a health claim related to vitamin D and contribution to the normal function of the immune system pursuant to Article 14 of Regulation (EC) No 1924/2006

Following an application from VAB-nutrition, submitted for authorisation of a health claim pursuant to Article 14 of Regulation (EC) No 1924/2006 via the Competent Authority of France, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to vitamin D and contribution to the normal function of the immune system. The Panel considers that vitamin D is sufficiently characterised. Contribution to the normal function of the immune system is a beneficial physiological effect for children. The Panel had previously assessed a claim on vitamin D and contribution to the normal function of the immune system with a favourable outcome. The target population was the general population. The Panel considered that vitamin D plays a regulatory role in the functioning of the immune system. The Panel considers that the role of vitamin D in the functioning of the immune system applies to all ages, including children. The Panel concludes that a cause and effect relationship has been established between the dietary intake of vitamin D and contribution to the normal function of the immune system. The following wording reflects the scientific evidence: “Vitamin D contributes to the normal function of the immune system”. The target population is children from 3 to 18 years of age.

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Following an application from Cross Vetpharm Group UK Ltd, submitted for authorisation of a health claim pursuant to Article 14 of Regulation (EC) No 1924/2006 via the Competent Authority of the United Kingdom, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to β-galactosidase from Kluyveromyces lactis in Colief® and a reduction of gastrointestinal discomfort. The Panel considers that the food is sufficiently characterised in relation to the claimed effect. A reduction of gastrointestinal discomfort is a beneficial physiological effect for infants and young children. The applicant provided two human intervention studies for the substantiation of the health claim. No conclusions could be drawn from one of the two studies for the scientific substantiation of the claim, as the information provided in the publication and that supplied later by the applicant was inadequate to allow a scientific evaluation. The second study with methodological limitations showed an effect of the food on crying time in infants fed exclusively with milk. This study also provided some evidence for the
proposed mechanism by which β-galactosidase could exert the claimed effect. In weighing the evidence, the Panel took into account that one study with methodological limitations showed an effect of β-galactosidase from Kluyveromyces lactis in Colief® on infant crying time, that no other human studies in which these results have been replicated were provided, and that there was some evidence for a mechanism by which the food could exert the claimed effect. The Panel concludes that the evidence provided is insufficient to establish a cause and effect relationship between the consumption of β-galactosidase from Kluyveromyces lactis in Colief® and a reduction of gastrointestinal discomfort.

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Following an application from Specialised Nutrition Europe (formerly IDACE), submitted for authorisation of a health claim pursuant to Article 14 of Regulation (EC) No 1924/2006 via the Competent Authority of France, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to vitamin D and its contribution to the normal function of the immune system. The Panel considers that vitamin D is sufficiently characterised. A contribution to the normal function of the immune system is a beneficial physiological effect. The Panel has previously assessed claims on vitamin D and its contribution to the normal function of the immune system with favourable outcomes. The target populations were the general population and children aged 3 to 18 years. The Panel considers that the role of vitamin D in the functioning of the immune system applies to all ages, including infants and young children (from birth to three years of age). The Panel concludes that a cause and effect relationship has been established between the dietary intake of vitamin D and contribution to the normal function of the immune system. The following wording reflects the scientific evidence: ‘Vitamin D contributes to the normal function of the immune system.’ The target population is infants and young children up to three years of age.

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EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2015. Statement on the safety of lacto-N-neotetraose and 2'-O-fucosyllactose as novel food ingredients in food supplements for children

Following a request from the European Commission, the Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to provide a scientific opinion on the safety of lacto-N-neotetraose and 2'-O-fucosyllactose as novel food ingredients in food supplements for children (excluding infants). In July 2015, the Panel concluded that LNnT and 2'-FL are safe for infants and for young children when added to infant, follow-on and young-child formulae under specific conditions of use; and for adults when added to foods at the uses and use levels proposed by the applicant, which include food supplements at a maximum intended daily intake of 1.5 g for LNnT and 3 g for 2'-FL. The applicant also intends to include LNnT and 2'-FL in food supplements for children, with maximum daily intake levels of 0.6 g for LNnT and 1.2 g for 2'-FL for toddlers (1–3 years of age), and maximum daily intake levels of 1.5 g for LNnT and 3 g for 2'-FL for children (4–18 years of age). In this scientific assessment, maximum daily intakes from food supplements for toddlers, children and teenagers are presented and two scenarios are calculated in which the maximum daily intakes from food supplements are added to the mean and 95th percentile intake estimates from all foods in which LNnT and 2'-FL are intended to be added. The Panel concludes that LNnT and 2'-FL are safe for the proposed use in food supplements at the maximum use levels proposed for toddlers (1–3 years of age) of 0.6 g/day for LNnT and 1.2 g/day for 2'-FL (alone or in combination) and for children (4–18 years of age) of 1.5 g for LNnT and 3 g for 2'-FL (alone or in combination). However, in children of 1-10 years of age the combined intakes from all foods in which the NFIs are intended to be added and from food supplements could result in intake levels which were reported to cause mild gastrointestinal symptoms in adults.

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Estimation of on-farm interventions to control Campylobacter
Before making risk management decisions to control Campylobacter prevalence in broiler flocks, it is useful to identify effective interventions. A given risk factor may seem to have a large effect, but in practice interventions related to this risk factor may have only limited effect due to a relative small proportion of the farms that can actually be intervened for the given risk factors. We present a novel tool for risk assessors to obtain such estimates of the effect of interventions before it is implemented at the farms. A statistical method was developed in order to estimate the flock prevalence if an intervention was to be implemented in a given population of broiler farms. The method is anchored in the ideas behind standardized population estimations. In order to obtain a country wise population estimate the predicted prevalence values are multiplied with elements from a reference population. In the present study risk factor estimates from a European study was used and the reference population consisted of data from the risk factor study plus extra data from a large questionnaire survey to improve the representativeness of the reference population. The results showed that some individual interventions gave only a limited reduction in prevalence if the biosecurity was not accounted for. Furthermore, the effect of the interventions differed between countries, depending on current farm management practices and Campylobacter prevalence. The most effective interventions were “building new houses with strict biosecurity for all houses older than 15 years” and “apply drinkers with nipples without cups”.
Evaluation of a cross contamination model describing transfer of salmonella spp. and listeria monocytogenes during grinding of pork and beef

Introduction: The cross contamination model (Møller et al. 2012) was evaluated to investigate its capability of describing transfer of Salmonella spp. and Listeria monocytogenes during grinding of pork and beef of varying sizes (50 – 324 g) and numbers of pieces to be ground (10 – 100), in two grinder systems. Methods: Data from 19 trials were collected. Three different evaluation approaches were applied: i) an Acceptable Simulation Zone (ASZ) method compared observed with simulated transfer from the proposed model, ii) each trial was fitted and its respective parameter estimates were integrated in a Quantitative Microbiological Risk Assessment (QMRA) model (Møller et al. 2015), and iii) the Total Transfer Potential (TTP) was calculated for each of the 20 fitted parameter estimates. Results: The ASZ showed that the Møller et al. (2012) model could only describe seven of the 19 trials to an acceptable extent. However, all transfer curves could be fitted to the model structure proposed by Møller et al. (2015). A positive correlation was found between QMRA risk estimates and TTP for the individual trials. Conclusions: Results indicated that transfer estimates were not applicable for unlike processing. QMRA risk estimates and TTP both revealed that risk attribution from grinding was mainly influenced by sharpness of grinder knife > specific grinder > grinding temperature whereas the specific pathogen was of minor importance.
Gene-gene and gene-environment interactions in prostate, breast and colorectal cancer

The incidence of cancer in the western world has increased steeply during the last 50 years. For three of the most prevalent cancer types in Denmark, prostate, breast and colorectal cancer (PC, BC and CRC, respectively), only a small fraction (1-15%) of the incidences are caused by highly penetrant single-gene mutations due to their low frequency in the general population. Overall, the contribution from hereditary factors to the causation of BC is only 27%, whereas genetics contributes to 35% and 42% for CRC and PC, respectively. Additionally, immigration studies point to environmental factors as having strong influence on carcinogenesis. Therefore, very frequent, low effect polymorphisms may have a greater contribution on a population level in combination with environmental factors. Indeed, several dietary and lifestyle factors are now well-established risk factors for different cancer types, such as alcohol consumption, smoking, obesity, inflammation and high meat intake; whereas other factors protect against cancer, such as high intake of dietary fibre, fruits and vegetables, and physical activity. Investigating the interactions between genetic variations and environmental factors, such as dietary and lifestyle factors may provide information about the underlying mechanisms and reveal new biological pathways.

The aim of this PhD thesis was to investigate relevant risk factors in relation to the three major cancer types in Denmark: PC, BC and CRC, respectively. The two major risk factors examined in this thesis are inflammation and alcohol consumption. With regard to inflammation, biological pathways involved in inflammation and the interaction with different...
dietary and lifestyle factors modulating the risk of CRC (Paper II-IV) and PC (Paper I), respectively, was examined. Moreover, a possible mechanism in alcohol-related BC in postmenopausal women involving a specific polymorphism in PPARG (coding the peroxisome proliferator-activated receptor (PPARγ)) and its interaction with the aromatase (encoded by CYP19A1) was investigated (Paper V-VI).

The Danish prospective “Diet, Cancer and Health” cohort study was used to examine gene-gene and gene-environment interactions in relation to risk of cancer (Paper I-V). A human intervention trial (Paper V) was conducted in order to directly examine the effect on concurrent use of nonsteroidal anti-inflammatory drugs (NSAIDs) and alcohol consumption on circulating female sex-hormones. Finally, in vitro assays were performed to study the effect on PPARγ transactivation and sex-hormone concentrations following exposure to other commonly used organic solvents than alcohol (Paper VI).

Based on the results from Paper I, inflammation did not seem to be a major risk factor for aggressive PC, whereas the results on non-aggressive PC were equivocal. In contrast, Paper II and III indicated that the immune system is indeed involved in the carcinogenesis of CRC. Carriage of a pro-inflammatory allele of the NFKB1 gene, was not associated with aggressive PC risk, but was associated to lowered risk of nonaggressive PC, and to increased risk of CRC. Even though none of the results were strong statistically, they demonstrated that cancer is a very heterogeneous disease; and indicated that inflammation may not be a risk factor for (aggressive) PC, but in relation to CRC, inflammation seems important. In Paper III, a new possible mechanism involving the ATP-binding cassette (ABC) transporters, the cytokine interleukin (IL) 10 and dietary fibre in relation to protection against inflammation-induced CRC was found. Furthermore, use of NSAIDs seemed to interact with the ABC transporters and IL-10 in relation to CRC.

Paper V illustrated that genetic variations in CYP19A1 predicts circulating sex-hormone levels in postmenopausal women, and that alcohol intake affects female sex-hormone concentrations in the blood. However, it was not possible to put PPARγ and the aromatase in the same pathway as hypothesized a priori in alcohol-related BC; and the possible effect modification of concurrent use of NSAIDs and alcohol consumption was not confirmed. Nevertheless, results from Paper VI, indicated that exposure to commonly used organic solvents may act via PPARγ modulating sex-hormone levels. However, whether there is a common mechanism linking the aromatase and PPARγ, and also whether the differences in hormone levels increases risk of BC, still needs to be elucidated. Furthermore, these studies illustrated that acute and chronic alcohol consumption may have different effects on sex-hormone biosynthesis and metabolism, and that it is not straightforward to compare observational studies with experimental studies.

Overall, this PhD thesis has shown that genetic epidemiology can be used to study biological mechanisms in combination with other mechanistic studies, although there are several limitations involved such as missing knowledge of confounders and limited statistical power to study gene-environment interactions.

Future research could establish whether and how dietary fibre, IL-10 and ABC transporters are connected in reducing the risk of CRC; and whether red meat per se, specific preparation methods or the life style associated with high red meat intake is carcinogenic. The acquired knowledge would improve the current dietary recommendations. There also seem to be several yet unknown effects of NSAID usage that need to be clarified. Information of these potential (side) effects would lead to better and safer medication regimens and, hence, improved public health. Also, further knowledge of the harmful health effects related to alcohol consumption, including the potential effect modification with concurrent use of NSAIDs, would lead to improved public preventive strategies.
Intake of macro- and micronutrients in Danish vegans

Since information about macro- and micronutrient intake among vegans is limited, we aimed to determine and evaluate their dietary and supplementary intake. Seventy 18-61 years old Danish vegans completed a four-day weighed food record from which their daily intake of macro- and micronutrients was assessed and subsequently compared to an age-range-matched group of 1,257 omnivorous individuals from the general Danish population. Moreover, the vegan dietary and supplementary intake was compared to the 2012 Nordic Nutrition Recommendations (NNR). Dietary intake differed significantly between vegans and the general Danish population in all measured macro- and micronutrients (p...
Introduction of complementary foods to Danish infants

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Methodological Framework for World Health Organization Estimates of the Global Burden of Foodborne Disease

The Foodborne Disease Burden Epidemiology Reference Group (FERG) was established in 2007 by the World Health Organization to estimate the global burden of foodborne diseases (FBDs). This paper describes the methodological framework developed by FERG’s Computational Task Force to transform epidemiological information into FBD burden estimates. The global and regional burden of 31 FBDs was quantified, along with limited estimates for 5 other FBDs, using
Disability-Adjusted Life Years in a hazard- and incidence-based approach. To accomplish this task, the following workflow was defined: outline of disease models and collection of epidemiological data; design and completion of a database template; development of an imputation model; identification of disability weights; probabilistic burden assessment; and estimating the proportion of the disease burden by each hazard that is attributable to exposure by food (i.e., source attribution). All computations were performed in R and the different functions were compiled in the R package 'FERG'. Traceability and transparency were ensured by sharing results and methods in an interactive way with all FERG members throughout the process. We developed a comprehensive framework for estimating the global burden of FBDs, in which methodological simplicity and transparency were key elements. All the tools developed have been made available and can be translated into a user-friendly national toolkit for studying and monitoring food safety at the local level.
New insights from EuroDISH mapping of food and health research infrastructure

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Scopus rating (2016): SJR 1.215 SNIP 1.003 CiteScore 2.69
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.074 SNIP 1.016 CiteScore 2.55
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.294 SNIP 1.096 CiteScore 2.64
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.957 SNIP 1.036 CiteScore 2.46
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.867 SNIP 0.89 CiteScore 2.35
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.889 SNIP 0.95 CiteScore 2.38
Plate waste and intake of school lunch based on the New Nordic Diet and on packed lunches: A randomised controlled trial in 8- to 11-year-old Danish children

The aim of the present study was to compare total food intake, total and relative edible plate waste and self-reported food likings between school lunch based on the new Nordic diet (NND) and packed lunch from home. In two 3-month periods in a cluster-randomised controlled unblinded cross-over study 3rd- and 4th-grade children (n 187) from two municipal schools received lunch meals based on NND principles and their usual packed lunch (control). Food intake and plate waste (n 1558) were calculated after weighing lunch plates before and after the meal for five consecutive days and self-reported likings (n 905) assessed by a web-based questionnaire. Average food intake was 6 % higher for the NND period compared with the packed lunch period. The quantity of NND intake varied with the menu (P < 0·0001) and was positively associated with self-reported likings. The edible plate waste was 88 (sd 80) g for the NND period and 43 (sd 60) g for the packed lunch period whereas the relative edible plate waste was no different between periods for meals having waste (n
1050). Edible plate waste differed between menus (P < 0.0001), with more waste on soup days (36 %) and vegetarian
days (23 %) compared with the packed lunch period. Self-reported likings were negatively associated with percentage
plate waste (P < 0.0001). The study suggests that portion sizes need to be considered in new school meal programmes.
New strategies with focus on reduction of plate waste, children's likings and nutritious school meals are crucial from both a
nutritional, economic and environmental point of view.

Raspberry ketone in food supplements – High intake, few toxicity data – A cause for safety concern?
Raspberry ketone (4-(4-hydroxyphenyl)-2-butaneone) is marketed on the Internet as a food supplement. The recommended
intake is between 100 and 1400 mg per day. The substance is naturally occurring in raspberries (up to 4.3 mg/kg) and is
used as a flavouring substance. Toxicological studies on raspberry ketone are limited to acute and subchronic studies in
rats. When the lowest recommended daily dose of raspberry ketone (100 mg) as a food supplement is consumed, it is 56
times the established threshold of toxicological concern (TTC) of 1800 μg/day for Class 1 substances. The margin of
safety (MOS) based on a NOAEL of 280 mg/kg bw/day for lower weight gain in rats is 165 at 100 mg and 12 at 1400 mg.
The recommended doses are a concern taking into account the TTC and MOS. Investigations of raspberry ketone in
quantitative structure-activity relationship (QSAR) models indicated potential cardiotoxic effects and potential effects on
reproduction/development. Taking into account the high intake via supplements, the compound's toxic potential should be
clarified with further experimental studies. In UK the pure compound is regarded as novel food requiring authorisation prior
to marketing but raspberry ketone is not withdrawn from Internet sites from this country.
Reduction in pedometer-determined physical activity in the adult Danish population from 2007 to 2012

Aims: To examine the development in pedometer-determined physical activity from 2007–2008 to 2011–2012 in the adult Danish population. Methods: The study population comprised two random samples of 18–75-year-old individuals who took part in cross-sectional studies in 2007–2008 (n=224) and 2011–2012 (n=1515). Pedometer data (sealed Yamax SW 200) were obtained for seven consecutive days. Data for 1624 participants (48.2% men) were included in the analysis. An overall step-defined activity level was examined based on a graduated step index (sedentary, low active, somewhat active, active, highly active). The pedometer-determined outcomes were analysed using regression models. Results: A borderline significant decline (p=0.077) from 8788 to 8341 steps/day (−446 (95% confidence intervals −50, 943)) was found between 2007–2008 and 2011–2012. Furthermore, a 23.7% (95% confidence intervals −41.7%, −0.1%) lower overall step-defined activity level was observed in 2011–2012 compared to 2007–2008. These changes were primarily due to a reduced level of activity among women. The proportion of individuals taking 10,000 steps/day decreased non-significantly from 34.8% to 29.3%, whereas the proportion taking...
Relative validity of a semi-quantitative, web-based FFQ used in the ‘Snart Forældre’ cohort – a Danish study of diet and fertility

Objective: To assess the relative validity of a semi-quantitative, web-based FFQ completed by female pregnancy planners in the Danish ‘Snart Forældre’ study. Design: We validated a web-based FFQ based on the FFQ used in the Danish National Birth Cohort against a 4 d food diary (FD) and assessed the relative validity of intakes of foods and nutrients. We compared means and medians of intakes, and calculated Pearson correlation coefficients and de-attenuated coefficients to assess agreement between the two methods. We also calculated the proportion correctly classified based on the same or adjacent quintile of intake and the proportion of grossly misclassified (extreme quintiles). Setting: Participants (n 128) in the ‘Snart Forældre’ study who had completed the web-based FFQ were invited to participate in the validation study. Subjects: Participants in the ‘Snart Forældre’ study, in total ninety-seven women aged 20–42 years. Results: Reported intakes of dairy products, vegetables and potatoes were higher in the FFQ compared with the FD, whereas reported intakes of fruit, meat, sugar and beverages were lower in the FFQ than in the FD. Overall the de-attenuated correlation coefficients were acceptable, ranging from 0·33 for energy to 0·93 for vitamin D. The majority of the women were classified in the same or adjacent quintile and few women were misclassified (extreme quintiles). Conclusion: The web-based FFQ performs well for ranking women of reproductive age according to high or low intake of foods and nutrients and, thus,
provides a solid basis for investigating associations between diet and fertility.

**General information**

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Organisations: National Food Institute, Research Group for Risk-Benefit, Division of Risk Assessment and Nutrition, Boston University, Aarhus University Hospital, University of Massachusetts
Pages: 1027-1034
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BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.982 SJR 1.122 CiteScore 2.29
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.04 SJR 1.1 SNIP 0.896
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.058 SNIP 1.075 CiteScore 1.82
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.134 SNIP 1.086 CiteScore 2.15
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.105 SNIP 1.191 CiteScore 2.22
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.266 SNIP 1.189 CiteScore 2.22
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.139 SNIP 1.118 CiteScore 1.86
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.093 SNIP 0.991
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.331 SNIP 1.287
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.12 SNIP 1.058
Scopus rating (2007): SJR 1.09 SNIP 1.35
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 0.989 SNIP 1.068
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.311 SNIP 1.287
Scopus rating (2004): SJR 0.913 SNIP 1.073
Reproducibility of a web-based Food frequency Questionnaire for 14 years old Danish adolescents

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, State Serum Institute, University of Iceland, Statens Serum Institut
Authors: Bjerregaard, A. A. (Ekstern), Tetens, I. (Intern), Olsen, S. F. (Ekstern), Halldorsson, T. I. (Ekstern)
Pages: 120-120
Publication date: 2015
Conference: 12th European Nutrition Conference (FENS), Berlin, Germany, 20/10/2015 - 20/10/2015
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Journal: Annals of Nutrition and Metabolism
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BFI (2017): BFI-level 1
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Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 1.215 SNIP 1.003 CiteScore 2.69
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.074 SNIP 1.016 CiteScore 2.55
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.294 SNIP 1.096 CiteScore 2.64
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.957 SNIP 1.036 CiteScore 2.46
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.867 SNIP 0.89 CiteScore 2.35
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.889 SNIP 0.95 CiteScore 2.38
Risikorangering af sygdomsfremkaldende mikroorganismer i frisk frugt og grønt: Frugt og grønt indsatser 2013-2016

General information
State: Published
Organisations: National Food Institute, Division of Risk Assessment and Nutrition, Research Group for Risk-Benefit, Research Group for Genomic Epidemiology
Authors: Boysen, L. (Intern), Dalhoff Andersen, V. (Intern), Hald, T. (Intern), Korsgaard, H. (Intern)
Number of pages: 44
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Place of publication: Søborg
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Original language: Danish
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Risikorangering_af_sygdomsfremkaldende_mikroorganismer_i_frisk_frugt_og_gr_nt.pdf
Publication: Research › Report – Annual report year: 2015

Risk assessment of human pathogenic Yersinia enterocolitica in minced meat in Belgium

General information
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit, Ghent University
Authors: Van Damme, I. (Ekstern), De Zutter, L. (Ekstern), Jacxsens, L. (Ekstern), Nauta, M. (Intern)
Number of pages: 1
Publication date: 2015
Event: Poster session presented at EFSA's 2nd Scientific Conference, Milan, Italy.
Main Research Area: Technical/natural sciences
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Risk assessment of *Salmonella* in Danish meatballs produced in the catering sector

**General information**
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Organisations: National Food Institute, Research Group for Microbial Food Safety and Quality, Research Group for Risk-Benefit, Rutgers University
Authors: Møller, C. O. D. A. (Intern), Nauta, M. (Intern), Schaffner, D. W. (Ekstern), Dalgaard, P. (Intern), Christensen, B. B. (Intern), Hansen, T. B. (Intern)
Number of pages: 36
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**Relations**
Activities: Predictive microbiology in Quantitative Microbiological Risk Assessment (QMRA) applied to food
Publication: Research › Sound/Visual production (digital) – Annual report year: 2015

Robustness of a cross contamination model describing transfer of pathogens during grinding of meat

**General information**
State: Published
Organisations: National Food Institute, Research Group for Microbial Food Safety and Quality, Division of Industrial Food Research, Research Group for Risk-Benefit, University of Campinas, Universidade de Sao Paulo, Universidade de Sao Paulo
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Publisher: Technical University of Denmark (DTU)
Main Research Area: Technical/natural sciences
Microbial transfer, Foodborne pathogens, Meat processing, Model evaluation

**Science-based health messages to consumers and effective ways for increasing wholegrain consumption**

**General information**
State: Published
Organisations: National Food Institute, Research Group for Risk-Benefit
Authors: Tetens, I. ( Intern)
Pages: 51-51
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Conference: 12th European Nutrition Conference (FENS), Berlin, Germany, 20/10/2015 - 20/10/2015
Main Research Area: Technical/natural sciences

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Journal: Annals of Nutrition and Metabolism
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Scientific Opinion on Dietary Reference Values for vitamin A

Following a request from the European Commission, the Panel on Dietetic Products, Nutrition and Allergies derived Dietary Reference Values for vitamin A. The Panel considered that a concentration of 20 µg retinol/g liver can be used as a target for establishing the Average Requirement (AR) for vitamin A. In the absence of a better characterisation of the
relationship between vitamin A intake and liver stores, a factorial approach was applied. This approach considered a total body/liver retinol store ratio of 1.25, a liver/body weight ratio of 2.4 %, a fractional catabolic rate of body retinol of 0.7 % per day, an efficiency of storage in the whole body for ingested retinol of 50 % and reference weights for women and men in the EU of 58.5 and 68.1 kg, respectively. ARs of 570 µg retinol equivalent (RE)/day for men and 490 µg RE/day for women were derived. Assuming a coefficient of variation (CV) of 15 %, Population Reference Intakes (PRIs) of 750 µg RE/day for men and 650 µg RE/day for women were set. For infants aged 7–11 months and children, the same equation as for adults was applied by using specific values for reference weight and liver/body weight ratio. For catabolic rate, the adult value corrected on the basis of a growth factor was used. ARs range from 190 µg RE/day in infants aged 7–11 months to 580 µg RE/day in boys aged 15–17 years. PRIs for infants and children were estimated using a CV of 15 % and range from 250 to 750 µg RE/day. For pregnancy and lactation, additional vitamin A requirements related to the accumulation of retinol in fetal and maternal tissues and transfer of retinol into breast milk were considered and PRIs of 700 and 1 300 µg RE/day, respectively, were set.

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Scientific Opinion on the essential composition of total diet replacements for weight control
Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on the essential composition of total diet replacements for weight control. Total diet replacements for weight control are intended to induce a substantial energy deficit in overweight or obese adults who wish to lose weight and replace the whole diet in the context of energy-restricted diets for weight reduction. In this opinion, the Panel proposed a minimum protein content based on a Population Reference Intake for protein adjusted for the overweight or obese (75 g/day), a minimum carbohydrate content based on the obligatory glucose demands of the brain (30 g/day) and minimum contents of linoleic acid (11 g/day), α-linolenic acid (1.4 g/day) and micronutrients based on reference values established either by the Panel or by other scientific or authoritative bodies. Derived from the minimum content of macronutrients, the Panel proposed a minimum energy content of total diet replacements for weight control of 2 510 kJ/day (600 kcal/day). The Panel also advised on potential conditions and restrictions of use for these products.

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Main Research Area: Technical/natural sciences
Scientific Opinion on the safety of Arracacia xanthorrhiza as a novel food

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on the safety of "Arracacia xanthorrhiza". This novel food (NF) comprises pre-cooked and individually quick-frozen slices, chunks and "other formats" of the roots of Arracacia xanthorrhiza Bancroft (arracacha roots). Arracacia xanthorrhiza var. xanthorrhiza (cultivated) is one of three varieties of this species. In the original application the analytical methods employed for the batch testing of these three lots from 2008 had not been described and certificates regarding the accreditation of the laboratory had been missing. No data on secondary plant metabolites were provided. The applicant provided data on cultivation, production tonnage and human consumption, including information on the preparation and recipes for arracacha used in South American countries. According to the applicant, arracacha is consumed in the same way as other crops such as potato, cassava, yam or carrot. The NF is intended for human consumption in dishes such as “sudados”, soups and stews. EFSA requested the applicant to provide information on potential “other formats” of the NF intended by the applicant, compositional data on a current lot of the NF covering all analyses contained in the specifications of the NF as proposed in the original application and analysed by a certified laboratory and analytical data on the presence of secondary metabolites, in particular of coumarin and monoterpenoid derivatives. EFSA also asked for details on the two-step steam heating process, in particular time–temperature conditions. As the applicant did not respond to the request by EFSA, the Panel cannot conclude on the safety of the NF.

Scientific Opinion on the safety of 'heat-treated milk products fermented with Bacteroides xylanisolvens DSM 23964’ as a novel food

Following a request from the European Commission, the EFSA NDA Panel was asked to carry out the additional assessment for ‘pasteurised milk products fermented with Bacteroides xylanisolvens DSM 23964’ as a novel food (NF) in the context of Regulation (EC) No 258/97. Pasteurised or ultra-high-temperature-treated milk is used for the fermentation process with B. xylanisolvens DSM 23964. After fermentation the product is heat treated for one hour at 75 °C to ensure the absence of viable B. xylanisolvens DSM 23964. The Panel considers the information provided on the identity and characterisation of B. xylanisolvens DSM 23964 to be sufficient. The production process encompasses standard techniques used by the dairy industry, is sufficiently described by the applicant and does not give rise to safety concerns. The Panel considers that the information provided on the production process and on the content of vitamins B2 and B12 and furosine in heat-treated fermented milk products does not give rise to concerns regarding disadvantageous nutritional effects. The Panel considers that the microbiological data provided do not give rise to safety concerns. The Panel also notes that a pilot study and a RCT over six weeks with 140 volunteers receiving daily doses of a spray-dried heat-treated fermented milk product containing intakes of up to 1´10^12 inactivated bacterial cells of B. xylanisolvens DSM 23964 were provided. No clinical effects related to the treatment were observed in the two studies. Although no information has been provided to conclude on the risk of allergic reactions caused by the NF, the Panel considers that it is unlikely that its allergenic potential is dissimilar to that of other fermented dairy products. The Panel concludes that the NF ‘heat-treated milk products fermented with B. xylanisolvens DSM 23964’ is safe for the proposed uses and at the proposed use levels.
Scientific Opinion on the safety of refined Buglossoides oil as a novel food ingredient

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on refined Buglossoides oil as a novel food ingredient (NFI) in the context of Regulation (EC) No 258/97. The NFI is produced from the seeds of Buglossoides arvensis (L.) I. M. Johnst, using processes conventionally used for edible oil production. The main fatty acids (FAs) contained in the NFI are alpha-linolenic acid (ALA), stearidonic acid (SDA) and linoleic acid, with smaller amounts of oleic acid, gamma-linolenic acid (GLA) and saturated FAs. With the exceptions of SDA and GLA, these FAs are widely present in common foods. The NFI is intended to be used in a range of foods and food supplements to provide approximately 200 mg of SDA per day. Upon digestion, FAs are used primarily as an energy source. ALA and SDA can be elongated and desaturated to produce eicosapentaenoic acid. In human studies using various sources of SDA, no increase or small increases in SDA were observed in blood cell membranes or in total plasma. The proposed specifications for pyrrolizidine alkaloids and erucic acid, which are undesirable substances, do not give rise to concern in view of the proposed conditions of use. The available information does not give concerns as regards other undesirable substances in the NFI. Available animal studies provide only limited information on the safety of the NFI. Human studies that investigated different plant oils or fatty acid ethyl esters as sources of SDA, GLA and ALA found no adverse effects with up to 4 200 mg SDA/day for 12 weeks, up to 1 700 mg GLA/day for 28 days and 9 100 mg ALA/day for four weeks. The Panel concludes that the NFI is safe for the proposed uses and use levels.
Scientific Opinion on the substantiation of a health claim related to an equimolar mixture of the CLA isomers c9,t11 and t10,c12 (marketed as Clarinol® and Tonalin®) and “contributes to a reduction in body fat mass” pursuant to Article 13(5) of Regulation

Following an application from BASF SE and Stepan Lipid Nutrition, submitted for the authorisation of a health claim pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of the Netherlands, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to an equimolar mixture (marketed under the trade names Clarinol® and Tonalin®) of the two conjugated linoleic acid (CLA) isomers c9,11 and t10,c12. The Panel considers that the food is sufficiently characterised. The claimed effect is “contributes to a reduction in body fat mass”. In previous assessments on the safety of these equimolar isomeric mixtures of CLA, the NDA Panel considered that the observed increase in plasma and urinary concentrations of isoprostanes, which may indicate an increase in lipid peroxidation, and the increase in some markers of subclinical inflammation associated with CLA consumption, together with the limited data available on the effects of CLA on vascular function, may indicate a potential for vascular damage in the longer term. The Panel considers that the information provided does not establish that a reduction in body fat mass, when accompanied by an increase in markers of lipid peroxidation and inflammation, is a beneficial physiological effect for the target population. The Panel concludes that a cause and effect relationship has not been established between the consumption of an equimolar mixture of the CLA isomers c9,t11 and t10,c12, marketed under the trade names of Clarinol® and Tonalin®, and a beneficial physiological effect.

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Scientific Opinion on the substantiation of a health claim related to Bifidobacterium bifidum CNCM I-3426 and defence against pathogens in the upper respiratory tract pursuant to Article 13(5) of Regulation (EC) No 1924/2006

Following an application from Lallemand Health Solutions, submitted pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of France, the Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to Bifidobacterium bifidum CNCM I-3426 and defence against pathogens in the upper respiratory tract. The food constituent that is the subject of the claim is B. bifidum CNCM I-3426. The Panel considers that B. bifidum CNCM I-3426 is sufficiently characterised. The Panel considers that defence against pathogens in the upper respiratory tract is a beneficial physiological effect. The applicant provided one published human intervention study, one unpublished human intervention study (which was published during the evaluation of the claim) and one in vitro study as pertinent to the claimed effect. The Panel considers that no conclusions can be drawn from either of the human studies for the scientific substantiation of the claim. In the absence of evidence of an effect of B. bifidum CNCM I3426 on defence against pathogens in the upper respiratory tract in humans, the results of the in vitro study submitted cannot be used as a source of data for the scientific substantiation of the claim. The Panel concludes that a cause and effect relationship has not been established between the consumption of B. bifidum CNCM I-3426 and defence against pathogens in the upper respiratory tract.

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Organisations: National Food Institute, Research Group for Risk-Benefit
Authors: EFSA Journal
Number of pages: 9
Scientific Opinion on the substantiation of a health claim related to coffee C21, a coffee standardised by its content of caffeoylquinic acids, trigonelline and N-methylpyridinium, and reduction of DNA damage by decreasing spontaneous DNA strand breaks

Following an application from Tchibo GmbH, submitted for authorisation of a health claim pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of Germany, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to coffee C21 and reduction of DNA damage by decreasing spontaneous DNA strand breaks. The scope of the application was proposed to fall under a health claim based on newly developed scientific evidence. Coffee C21, a coffee standardised by its content of caffeoylquinic acids, trigonelline and N-methylpyridium (NMP), which is the subject of the health claim, is sufficiently characterised. Reduction of DNA damage by decreasing spontaneous DNA strand breaks is a beneficial physiological effect. In weighing the evidence, the Panel took into account that one human intervention study showed that daily consumption of coffee C21 (750 ml/day) for four weeks decreased spontaneous DNA strand breaks in habitual coffee drinkers after coffee withdrawal over the previous four weeks, but that no other human studies in which these results have been replicated were provided, and that no evidence was provided for a mechanism by which coffee (including coffee C21) could exert the claimed effect. The Panel concludes that a cause and effect relationship has not been established between the consumption of coffee C21, a coffee standardised by its content of caffeoylquinic acids, trigonelline and NMP, and a reduction of DNA damage by decreasing spontaneous DNA strand breaks.

Scientific Opinion on the substantiation of a health claim related to fat-free yogurts and fermented milks complying with the specifications "fat free", "low in sugars", "high protein", "source of calcium" and "source of vitamin D" for nutrition claims

Following an application from Federación Nacional de Industrias Lácteas (FeNIL), submitted pursuant to Article 13.5 of Regulation (EC) No 1924/2006 via the Competent Authority of Spain, the Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to fat-free yogurts and fermented milks complying with the specifications "fat free", "low in sugars", "high protein", "source of calcium" and
"source of vitamin D" for nutrition claims and reduction of body and visceral fat while maintaining lean body mass in the context of an energy-restricted diet. The food that is the subject of the claim is fat-free yogurts and fermented milks complying with the specifications "fat free", "low in sugars", "high protein", "source of calcium" and "source of vitamin D" for nutrition claims. The Panel considers that fat-free yogurts and fermented milks complying with the specifications "fat free", "low in sugars", "high protein", "source of calcium" and "source of vitamin D" for nutrition claims are sufficiently characterised. The Panel considers that reduction of body and visceral fat mass while maintaining lean body mass in the context of an energy-restricted diet is a beneficial physiological effect. No human intervention studies from which conclusions could be drawn for the scientific substantiation of the claim were provided. The Panel concludes that a cause and effect relationship has not been established between the consumption of fat-free yogurts and fermented milks complying with the specifications “fat free”, “low in sugars”, “high protein”, “source of calcium” and “source of vitamin D” for nutrition claims and reduction of body and visceral fat mass while maintaining lean body mass in the context of an energy-restricted diet.

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Scientific Opinion on the substantiation of a health claim related to fat-free yogurts and fermented milks with live yogurt cultures complying with the specifications "fat free", "low in sugars", "high protein", "source of calcium" and "source of vitamin
Following an application from Federación Nacional de Industrias Lácteas (FeNIL), submitted pursuant to Article 13.5 of Regulation (EC) No 1924/2006 via the Competent Authority of Spain, the Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to fat-free yogurts and fermented milks with live yogurt cultures complying with the specifications “fat free”, “low in sugars”, “high protein”, “source of calcium” and “source of vitamin D” for nutrition claims and maintenance of lean body mass in the context of an energy-restricted diet. The Panel considers that the food that is the subject of the claim, fat-free yogurts and fermented milks complying with the specifications “fat free”, “low in sugars”, “high protein”, “source of calcium” and “source of vitamin D” for nutrition claims, is sufficiently characterised. The Panel considers that maintenance of lean body mass in the context of an energy-restricted diet is a beneficial physiological effect. No human intervention studies from which conclusions could be drawn for the scientific substantiation of the claim were provided. The Panel concludes that a cause and effect relationship has not been established between the consumption of fat-free yogurts and fermented milks with live yogurt cultures complying with the specifications “fat free”, “low in sugars”, “high protein”, “source of calcium” and “source of vitamin D” for nutrition claims and maintenance of lean body mass in the context of an energy-restricted diet.

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Scientific Opinion on the substantiation of a health claim related to FRUIT UP® and a reduction of post-prandial blood glucose responses pursuant to Article 13(5) of Regulation (EC) No 1924/2006

Following an application from WILD-Valencia SAU, submitted for authorisation of a health claim pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of Spain, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to FRUIT UP® and a reduction of post-prandial blood glucose responses. The Panel considers that the food, FRUIT UP®, and the food (i.e. glucose, sucrose) that FRUIT UP® should replace in foods or beverages are both sufficiently characterised in relation to the claimed effect. A reduction of post-prandial glycaemic responses (as long as post-prandial insulinaemic responses are not disproportionally increased) is a beneficial physiological effect. In weighing the evidence, the Panel took into account that in the human intervention studies, from which conclusions could be drawn, FRUIT UP® decreased post-prandial blood glucose responses compared with glucose but not compared with sucrose, and that this effect may be explained by the partial replacement of glucose by fructose. The Panel concludes that a cause and effect relationship has not been established between the consumption of FRUIT UP® and a reduction of post-prandial glycaemic responses over and above the well-established effect of fructose on reducing post-prandial glycaemic responses when replacing glucose in foods.

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Authors: EFSA Journal
Number of pages: 12
Publication date: 2015

Scientific Opinion on the substantiation of a health claim related to glycaemic carbohydrates and contribution to normal cognitive function pursuant to Article 13(5) of Regulation (EC) No 1924/2006

Following an application from Dextro Energy GmbH & Co. KG, submitted for the authorisation of a health claim pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of Germany, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to glycaemic carbohydrates and contribution to normal cognitive function. The Panel considers that the food constituent, glycaemic carbohydrates, which is the subject of the health claim, is sufficiently characterised in relation to the claimed effect. Contribution to normal cognitive function is a beneficial physiological effect. Glycaemic carbohydrates contribute to the maintenance of normal brain functions, including cognition. The Panel concludes that a cause and effect relationship has been established between the consumption of glycaemic carbohydrates and contribution to normal cognitive function. A daily intake of 130 g of glycaemic carbohydrates has been estimated to cover the glucose requirement of the brain. Such amounts can be consumed as part of a balanced diet. The target population is the general population.

Scientific Opinion on the substantiation of a health claim related to glycaemic carbohydrates and contribution to normal cognitive function pursuant to Article 13(5) of Regulation (EC) No 1924/2006

Following an application from Dextro Energy GmbH & Co. KG, submitted for the authorisation of a health claim pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of Germany, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to glycaemic carbohydrates and contribution to normal cognitive function. The Panel considers that the food constituent, glycaemic carbohydrates, which is the subject of the health claim, is sufficiently characterised in relation to the claimed effect. Contribution to normal cognitive function is a beneficial physiological effect. Glycaemic carbohydrates contribute to the maintenance of normal brain functions, including cognition. The Panel concludes that a cause and effect relationship has been established between the consumption of glycaemic carbohydrates and contribution to normal cognitive function. A daily intake of 130 g of glycaemic carbohydrates has been estimated to cover the glucose requirement of the brain. Such amounts can be consumed as part of a balanced diet. The target population is the general population.
Scientific Opinion on the substantiation of a health claim related to "L-tug lycopene" and reduction of blood LDL-cholesterol pursuant to Article 14 of Regulation (EC) No 1924/2006

Following an application from Lycotec Ltd, submitted pursuant to Article 14 of Regulation (EC) No 1924/2006 via the Competent Authority of the United Kingdom, the Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to "L-tug lycopene" and reduction of blood low-density lipoprotein (LDL)-cholesterol. The food constituent that is the subject of the claim is L-tug lycopene (i.e. Lyc-O-Mato® embedded in fat-rich matrices by a manufacturing process claimed as proprietary and confidential by the applicant). The Panel considers that the food constituent, L-tug lycopene, which is the subject of the claim, is sufficiently characterised. The Panel considers that reduction of blood LDL-cholesterol concentrations is a beneficial physiological effect. A reduction in blood LDL-cholesterol concentrations reduces the risk of CHD. The Panel notes that the unpublished studies submitted to support the claim were exploratory in nature and insufficient information was provided to allow the scientific evaluation of these studies. The Panel concludes that a cause and effect relationship has not been established between the consumption of L-tug lycopene and reduction of blood LDL-cholesterol.

Scientific Opinion on the substantiation of a health claim related to "native chicory inulin" and maintenance of normal defecation by increasing stool frequency pursuant to Article 13.5 of Regulation (EC) No 1924/2006

Following an application from BENEO-Orafti S.A., submitted pursuant to Article 13.5 of Regulation (EC) No 1924/2006 via the Competent Authority of Belgium, the Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to "native chicory inulin" and maintenance of normal
defecation by increasing stool frequency. The food constituent that is a subject of a claim is “native chicory inulin”. The Panel considers that “native chicory inulin”, a non-fractionated mixture of monosaccharides (< 10%), disaccharides, inulin-type fructans and inulin extracted from chicory, with a mean DP ≥ 9, is sufficiently characterised in relation to the claimed effect. The Panel considers that maintenance of normal defecation by increasing stool frequency (provided that it does not result in diarrhoea) is a beneficial physiological effect. Six studies involving 86 subjects consistently showed that consumption of “native chicory inulin” at an amount of at least 12 g/day increases stool frequency. The Panel also notes the plausible mechanisms by which inulin and inulin-type fructans in “native chicory inulin” could exert the claimed effect. The Panel concludes that a cause and effect relationship has been established between the consumption of “native chicory inulin” and maintenance of normal defecation by increasing stool frequency. The following wording reflects the scientific evidence: “Chicory inulin contributes to maintenance of normal defecation by increasing stool frequency”. In order to obtain the claimed effect, 12 g of “native chicory inulin” should be consumed daily.
Scientific Opinion on the substantiation of a health claim related to Teestar™, a fenugreek seed extract standardised by its content of galactomannan, and a reduction of post-prandial glycaemic responses pursuant to Article 13(5) of Regulation (EC) No 1924/2006

Following an application from Avesthagen Limited, submitted for authorisation of a health claim pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of France, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of a health claim related to Teestar™ and a reduction of post-prandial glycaemic responses. The Panel considers that the food, Teestar™, a fenugreek seed extract standardised by its content of galactomannan, is sufficiently characterised. A reduction of post-prandial glycaemic responses might be a beneficial physiological effect. The applicant submitted one unpublished and eight published human studies as being pertinent to the health claim. No conclusions can be drawn from the eight published studies, as they were not carried out with Teestar™ or any other fenugreek seed extract which complied with the specifications of the food which is the subject of the claim. In one unpublished study, the consumption of Teestar™ did not lead to a reduction in mean peak post-prandial blood glucose concentrations, which was the primary endpoint of the study. The Panel concludes that a cause and effect relationship has not been established between the consumption of Teestar™, a fenugreek seed extract standardised by its content of galactomannan, and a reduction of post-prandial glycaemic responses.

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Scientific Opinion on the substantiation of health claims related to glycaemic carbohydrates and maintenance of normal brain function pursuant to Article 13(5) of Regulation (EC) No 1924/2006

Following applications from Dextro Energy GmbH & Co. KG, submitted for the authorisation of health claims pursuant to Article 13(5) of Regulation (EC) No 1924/2006 via the Competent Authority of Germany, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver an opinion on the scientific substantiation of health claims related to glycaemic carbohydrates and maintenance of normal brain function. The scope of the applications was proposed to fall under health claims based on newly developed scientific evidence. The Panel considers that the food constituent, glycaemic carbohydrates, which is the subject of the health claims, is sufficiently characterised in relation to the claimed effect. Maintenance of normal brain function is a beneficial physiological effect. A claim on glycaemic carbohydrates and maintenance of normal brain function has already been assessed by the Panel with a favourable outcome.

General information

Socioeconomic differences in cardiometabolic risk markers are mediated by diet and fatness in Danish children

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Authors: Damsgaard, C. T. (Ekstern), Hauger, H. (Ekstern), Groth, M. V. (Intern), Ritz, C. (Ekstern), Biltoft-Jensen, A. P. (Intern), Andersen, R. (Intern), Dalskov, S. (Ekstern), Sjödin, A. (Ekstern), Astrup, A. (Ekstern), Michaelsen, K. F. (Ekstern)
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Standardizing serum 25-hydroxyvitamin D data from four Nordic population samples using the Vitamin D Standardization Program protocols: Shedding new light on vitamin D status in Nordic individuals

Knowledge about the distributions of serum 25-hydroxyvitamin D (25(OH)D) concentrations in representative population samples is critical for the quantification of vitamin D deficiency as well as for setting dietary reference values and food-based strategies for its prevention. Such data for the European Union are of variable quality making it difficult to estimate the prevalence of vitamin D deficiency across member states. As a consequence of the widespread, method-related differences in measurements of serum 25(OH)D concentrations, the Vitamin D Standardization Program (VDSP) developed protocols for standardizing existing serum 25(OH)D data from national surveys around the world. The objective of the present work was to apply the VDSP protocols to existing serum 25(OH)D data from a Danish, a Norwegian, and a Finnish population-based health survey and from a Danish randomized controlled trial. A specifically-selected subset (n = 100-150) of bio-banked serum samples from each of the studies were reanalyzed for 25(OH)D by LC-MS/MS and a calibration equation developed between old and new 25(OH)D data, and this equation was applied to the entire data-sets from each study. Compared to estimates based on the original serum 25(OH)D data, the percentage vitamin D deficiency (<30 nmol/L) decreased by 21.5% in the Danish health survey but by only 1.4% in the Norwegian health survey; but was relatively unchanged (0% and 0.2%) in the Finish survey or Danish RCT, respectively, following VDSP standardization. In conclusion, standardization of serum 25(OH)D concentrations is absolutely necessary in order to compare serum 25(OH)D concentrations across different study populations, which is needed to quantify and prevent vitamin D deficiency.
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Scopus rating (2016): SJR 0.595 SNIP 0.667 CiteScore 1.4
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.73 SNIP 0.737 CiteScore 1.79
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.75 SNIP 0.887 CiteScore 1.9
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.64 SNIP 0.686 CiteScore 1.84
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BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.484 SNIP 0.668 CiteScore 1.43
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Scopus rating (2010): SJR 0.543 SNIP 0.7
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Scopus rating (2009): SJR 0.462 SNIP 0.597
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.458 SNIP 0.577
Web of Science (2008): Indexed yes
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Scopus rating (2006): SJR 0.492 SNIP 0.612
Scopus rating (2005): SJR 0.394 SNIP 0.627
Scopus rating (2004): SJR 0.384 SNIP 0.648
Scopus rating (2003): SJR 0.448 SNIP 0.642
Scopus rating (2002): SJR 0.385 SNIP 0.711
Scopus rating (2001): SJR 0.432 SNIP 0.695
Web of Science (2001): Indexed yes
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Statement on the post-marketing monitoring of the use of lycopene

Following a request from the European Commission, the Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to provide an update of its exposure assessment on lycopene as a novel food ingredient in the context of Regulation (EC) No 258/97 taking into account the new additional information from the post-marketing monitoring programme imposed by the Commission Decisions authorising the use of synthetic lycopene, lycopene oleoresin from tomatoes and lycopene from Blakeslea trispora as a novel food ingredient in several foodstuffs. The marketing authorisation holders for the use of lycopene as a novel food ingredient jointly prepared and submitted a dossier containing sales data, product launch data, an intake estimate and toxicological information. On the basis of information on sales and new product launch data for the period from July 2009 to June 2012 provided by the lycopene manufacturers, food supplements appear to be the main source of lycopene after intake from natural occurrence. Since no new toxicological studies became available, there is no scientific basis on which the ADI established by EFSA in 2008 could be reconsidered. On the basis of previous intake assessments performed by EFSA and data on sales and product launch data provided for the period from July 2009 to June 2012, the Panel concludes that intakes of naturally occurring lycopene and from its use as a food colouring and as a novel food ingredient at permitted use levels do not lead to intakes above the ADI of 0.5 mg/kg bw/day.
The Danish Organic Action Plan 2020: assessment method and baseline status of organic procurement in public kitchens

Objective With political support from the Danish Organic Action Plan 2020, organic public procurement in Denmark is expected to increase. In order to evaluate changes in organic food procurement in Danish public kitchens, reliable methods are needed. The present study aimed to compare organic food procurement measurements by two methods and to collect and discuss baseline organic food procurement measurements from public kitchens participating in the Danish Organic Action Plan 2020. Design Comparison study measuring organic food procurement by applying two different methods, one based on the use of procurement invoices (the Organic Cuisine Label method) and the other on self-reported procurement (the Dogme method). Baseline organic food procurement status was based on organic food procurement measurements and background information from public kitchens. Setting Public kitchens participating in the six organic food conversion projects funded by the Danish Organic Action Plan 2020 during 2012 and 2013. Subjects Twenty-six public kitchens (comparison study) and 345 public kitchens (baseline organic food procurement status). Results A high significant correlation coefficient was found between the two organic food procurement measurement methods \((r=0.83, P<0.001)\) with measurements relevant for the baseline status. Mean baseline organic food procurement was found to be 24 % when including measurements from both methods. Conclusions The results indicate that organic food procurement measurements by both methods were valid for the baseline status report of the Danish Organic Action Plan 2020. Baseline results in Danish public kitchens suggest there is room for more organic as well as sustainable public procurement in Denmark.

General information
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Organisations: National Food Institute, Research Group for Risk-Benefit, Division of Risk Assessment and Nutrition, Research Group for Food Production Engineering
Authors: Sørensen, N. N. (Intern), Lassen, A. D. (Intern), Løje, H. (Intern), Tetens, I. (Intern)
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Web of Science (2015): Indexed yes
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Scopus rating (2013): SJR 1.105 SNIP 1.191 CiteScore 2.22
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Web of Science (2013): Indexed yes
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Web of Science (2012): Indexed yes
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The effects of substitution dietary guidelines on dietary intake: the DIPI single-blind randomized controlled trial

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Authors: Arentoft, J. L. (Intern), Hoppe, C. (Intern), Lausten, M. S. (Intern), Schiff, L. (Intern), Ege, M. (Intern), Tetens, I. (Intern)
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The role of hazard- and risk-based approaches in ensuring food safety

Background
Food legislation in the European Union and elsewhere includes both hazard- and risk-based approaches for ensuring safety. In hazard-based approaches, simply the presence of a potentially harmful agent at a detectable level in food is used as a basis for legislation and/or risk management action. Risk-based approaches allow consideration of exposure in assessing whether there may be unacceptable risks to health.

Scope and approach
The advantages and disadvantages of hazard- and risk-based approaches for ensuring the safety of food chemicals, allergens, ingredients and microorganisms were explored at an ILSI Europe workshop.

Key findings and conclusions
It was concluded that both types of approach have their place, depending on the context. However, problems can arise when both types of approach are used in regulation by separate agencies that address different aspects of the same agent/substance present in food. This separation of decision-making can result in hazard-based restrictions on marketing and use, whereas risk-based assessments for those exposed show there is reasonable certainty no harm will result. This in turn can lead to contradictory, confusing and ultimately unnecessary actions. Use of hazard-based approaches for foods also means that comparisons with benefits for nutrition and food security cannot be undertaken. This has the potential to lead to bias in the overall conclusions of regulators and risk managers, who may not have been presented with the benefits of particular foods. The value of risk-based approaches is becoming increasingly recognised.
Tissue content of vitamin D₃ and 25-hydroxy vitamin D₃ in minipigs after cutaneous synthesis, supplementation and deprivation of vitamin D₃

Information regarding the endogenous storages of vitamin D₃ after cutaneous vitamin D synthesis compared to oral vitamin D₃ supplementation is sparse. Furthermore, it is not known whether vitamin D₃ can be stored for later use during periods of shortages of vitamin D₃. To investigate the endogenous storages of vitamin D₃, two studies were carried out in Göttingen minipigs. In study 1, one group of minipigs (n=2) was daily exposed to UV light corresponding to 10–20 min of midday sun, and another group (n=2) of pigs were fed up to 60 μg vitamin D₃/day corresponding to 3.7–4.4 μg/kg body weight. Study 1 demonstrated that daily UV-exposure of minipigs stimulated the cutaneous synthesis of vitamin D₃ and resulted in increasing serum vitamin D₃ and 25-hydroxy vitamin D₃, but also carcasses containing vitamin D₃ and 25-hydroxy vitamin D₃. The vitamin D₃ content in adipose tissue from the UV-exposed minipigs was 150–260 ng/g and the content was 90–150 ng/g in the orally supplemented minipigs. In study 2, minipigs were UV-exposed daily for 49 days. Subsequently, one group (n=2) was fed a vitamin D-free diet, and another group (n=2) was dosed daily with 13C-labeled vitamin D₃. The concentrations of vitamin D₃ and 25-hydroxy vitamin D₃ in serum and skin- and subcutaneous adipose tissue biopsies were repeatedly monitored. Vitamin D₃ and 25-hydroxy vitamin D₃ were eliminated from the skin and the adipose tissue after UV-exposure was ceased. Supplementation of 13C-vitamin D₃ did not seem to affect the decline in the endogenous vitamin D₃ in the adipose tissue formed during UV-exposure.

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Authors: Burild, A. (Intern), Frandsen, H. L. (Intern), Poulsen, M. (Intern), Jakobsen, J. (Intern)
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Toxicological risk assessment of elemental gold following oral exposure to sheets and nanoparticles – A review

Elemental gold is used as a food coloring agent and in dental fillings. In addition, gold nanoparticles are gaining increasing attention due to their potential use as inert carriers for medical purposes. Although elemental gold is considered to be inert, there is evidence to suggest the release of gold ions from its surface. Elemental gold, or the released ions, is, to some extent, absorbed in the gastrointestinal tract. Gold is distributed to organs such as the liver, heart, kidneys and lungs. The main excretion route of absorbed gold is through urine. Data on the oral toxicity of elemental gold is limited. The acute toxicity of elemental gold seems to be low, as rats were unaffected by a single dose of 2000mg nanoparticles/kg of body weight. Information on repeated dose toxicity is very limited. Skin rashes have been reported in humans following the ingestion of liquors containing gold. In addition, gold released from dental restorations has been reported to increase the risk of developing gold hypersensitivity. Regarding genotoxicity, in vitro studies indicate that gold nanoparticles induce DNA damage in mammalian cells. In vivo, gold nanoparticles induce genotoxic effects in Drosophila melanogaster; however, genotoxicity studies in mammals are lacking. Overall, based on the literature and taking low human exposure into account, elemental gold via the oral route is not considered to pose a health concern to humans in...
Udvikling af proceshygiejnekriterier i fersk køds opskæringen

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Organisations: National Food Institute, Research Group for Microbial Food Safety and Quality, Research Group for Risk-Benefit, Fødevarestyrelsen
Authors: Bollerslev, A. M. (Intern), Hansen, T. B. (Intern), Nauta, M. (Intern), Birk, T. (Intern), Sandø, G. (Ekstern), Perge, A. (Ekstern), Nielsen, N. L. (Ekstern), Thielke, S. (Ekstern)
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Validation of a Food Frequency Questionnaire for dietary vitamin D and calcium by cognitive interviewing

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Authors: Grønborg, I. M. (Intern), Tetens, I. (Intern), Ege, M. (Intern), Andersen, R. (Intern)
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Vitamin D Intake-status relationship among Danes aged 4-60 years during winter

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Organisations: National Food Institute, Research Group for Risk-Benefit, Division of Risk Assessment and Nutrition, Department of Applied Mathematics and Computer Science, Statistics and Data Analysis, University of Copenhagen
Authors: Andersen, R. (Intern), Madsen, K. H. (Intern), Mejborn, H. (Intern), Andersen, E. W. (Intern), Mølgaard, C. (Ekstern), Grenborg, I. M. (Intern), Rasmussen, L. B. (Intern), Tetens, I. (Intern)
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Vitamin D status and its determinants during autumn in children at northern latitudes: a cross-sectional analysis from the optimal well-being, development and health for Danish children through a healthy New Nordic Diet (OPUS) School Meal Study

Sufficient summer/autumn vitamin D status appears important to mitigate winter nadirs at northern latitudes. We conducted a cross-sectional study to evaluate autumn vitamin D status and its determinants in 782 Danish 8-11-year-old children (55°N) using baseline data from the Optimal well-being, development and health for Danish children through a healthy New Nordic Diet (OPUS) School Meal Study, a large randomised controlled trial. Blood samples and demographic and behavioural data, including 7-d dietary recordings, objectively measured physical activity, and time spent outdoors during school hours, were collected during September-November. Mean serum 25-hydroxyvitamin D (25(OH)D) was 60.8 (sd 18.7) nmol/l. Serum 25(OH)D levels ≤50 nmol/l were found in 28.4 % of the children and 2.4 % had concentrations

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Organisations: National Food Institute, Research Group for Risk-Benefit, University of Copenhagen, Aarhus University Hospital
Authors: Petersen, R. A. (Ekstern), Damsgaard, C. T. (Ekstern), Dalskov, S. (Ekstern), Sørensen, L. B. (Ekstern), Hjorth, M. F. (Ekstern), Ritz, C. (Ekstern), Kjølbæk, L. (Ekstern), Andersen, R. (Intern), Tetens, I. (Intern), Krarup, H. (Ekstern), Astrup, A. (Ekstern), Michaelsen, K. F. (Ekstern), Mølgaard, C. (Ekstern)
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Web of Science (2011): Indexed yes
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Vitamin D status is associated with cardiometabolic markers in 8-11-year-old children, independently of body fat and physical activity

Vitamin D status has been associated with cardiometabolic markers even in children, but the associations may be confounded by fat mass and physical activity behaviour. This study investigated associations between vitamin D status and cardiometabolic risk profile, as well as the impact of fat mass and physical activity in Danish 8-11-year-old children, using baseline data from 782 children participating in the Optimal well-being, development and health for Danish children through a healthy New Nordic Diet (OPUS) School Meal Study. We assessed vitamin D status as serum 25-hydroxyvitamin D (25(OH)D) and measured blood pressure, fasting plasma glucose, homoeostasis model of assessment-insulin resistance, plasma lipids, inflammatory markers, anthropometry and fat mass by dual-energy X-ray absorptiometry, and physical activity by 7 d accelerometry during August-November. Mean serum 25(OH)D was 60·8 (sd 18·7) nmol/l. Each 10 mmol/l 25(OH)D increase was associated with lower diastolic blood pressure (-0·3 mmHg, 95 % CI -0·6, -0·0) (P=0·02), total cholesterol (-0·07 mmol/l, 95 % CI -0·10, -0·05), LDL-cholesterol (-0·05 mmol/l, 95 % CI -0·08, -0·03), TAG (-0·02 mmol/l, 95 % CI -0·03, -0·01) (P≤0·001 for all lipids) and lower metabolic syndrome (MetS) score (P=0·01). Adjustment for fat mass index did not change the associations, but the association with blood pressure became borderline significant after adjustment for physical activity (P=0·06). In conclusion, vitamin D status was negatively associated with blood pressure, plasma lipids and a MetS score in Danish school children with low prevalence of vitamin D deficiency, and apart from blood pressure the associations were independent of body fat and physical activity. The potential underlying cause-effect relationship and possible long-term implications should be investigated in randomised controlled trials.

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Authors: Petersen, R. A. (Ekstern), Dalskov, S. (Ekstern), Sørensen, L. B. (Ekstern), Hjorth, M. F. (Ekstern), Andersen, R. (Intern), Tetens, I. (Intern), Krarup, H. (Ekstern), Ritz, C. (Ekstern), Astrup, A. (Ekstern), Michaelsen, K. F. (Ekstern), Mølgaard, C. (Ekstern), Damsgaard, C. T. (Ekstern)
Number of pages: 9
Pages: 1647-1655
What do Danish children eat, and does the diet meet the recommendations?: Baseline data from the OPUS School Meal Study

A child’s diet is an important determinant for later health, growth and development. In Denmark, most children in primary school bring their own packed lunch from home and attend an after-school care institution. The aim of the present study was to evaluate the food, energy and nutrient intake of Danish school children in relation to dietary guidelines and nutrient recommendations, and to assess the food intake during and outside school hours. In total, 834 children from nine public schools located in the eastern part of Denmark were included in this cross-sectional study and 798 children (95.7 %) completed the dietary assessment sufficiently (August-November 2011). The whole diet was recorded during seven consecutive days using the Web-based Dietary Assessment Software for Children (WebDASC). Compared with the food-based dietary guidelines and nutrient recommendations, 85 % of the children consumed excess amounts of red meat, 89 % consumed too much saturated fat, and 56 % consumed too much added sugar. Additionally 35 or 91 % of the children (depending on age group) consumed insufficient amounts of fruits and vegetables, 85 % consumed insufficient amounts of fish, 86 % consumed insufficient amounts of dietary fibre, 60 or 84 % had an insufficient Fe intake (depending on age group), and 96 % had an insufficient vitamin D intake. The study also showed that there is a higher intake of fruits and bread during school hours than outside school hours; this is not the case with, for example, fish and vegetables, and future studies should investigate strategies to increase fish and vegetable intake during school hours.

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Scopus rating (2015): SNIP 0.376 SJR 0.381
Web of Science (2015): Indexed yes
EFSA CEF Panel (EFSA Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids), 2014. Scientific Opinion on lipase from a genetically modified strain of Aspergillus oryzae (strain NZYM-FL)

The food enzyme considered in this opinion is a lipase (triacylglycerol lipase; EC 3.1.1.3) produced with a genetically modified strain of Aspergillus oryzae. The genetic modifications do not raise safety concern. The food enzyme contains neither the production organism nor recombinant DNA. The lipase is intended to be used in a number of food manufacturing processes, such as oils, fats and eggs processing. The dietary exposure was assessed on the basis of data retrieved from the EFSA Comprehensive European Food Consumption Database. The food enzyme did not induce gene mutations in bacteria nor chromosome aberrations in human lymphocytes. Therefore, there is no concern with respect to genotoxicity. The systemic toxicity was assessed by means of a 90-day subchronic oral toxicity study in rodents. A No Observed Adverse Effect Level was derived, which compared with the dietary exposure results in a sufficiently high Margin of Exposure. The allergenicity was evaluated by searching for similarity of the amino acid sequence to those of known allergens. The Panel considered that the likelihood of food allergic reactions to the enzyme is low and therefore does not raise safety concern. Based on the genetic modifications performed, the manufacturing process, the compositional and biochemical data provided and the toxicological studies, this food enzyme does not raise safety concern under the intended conditions of use.

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EFSA CEF Panel (EFSA Panel on Food Contact Materials, Enzymes, Flavourings and Processing Aids), 2014. Scientific Opinion on xylanase from a genetically modified strain of Aspergillus oryzae (strain NZYM-FB)

The food enzyme considered in this opinion is a xylanase (endo-1,4-β-xylanase; EC 3.2.1.8) produced with a genetically modified strain of Aspergillus oryzae. The genetic modifications do not raise safety concern. The food enzyme contains neither the production organism nor recombinant DNA. The xylanase is intended to be used in a number of food manufacturing processes, such as starch processing, beverage alcohol (distilling), brewing, baking and other cereal based processes. The dietary exposure was assessed according to the Budget method. The food enzyme did not induce gene mutations in bacteria nor chromosome aberrations in human peripheral blood lymphocytes. Therefore, there is no concern with respect to genotoxicity. The systemic toxicity was assessed by means of a 90-day subchronic oral toxicity study in rodents. A No Observed Adverse Effect Level was derived, which compared with the dietary exposure results in a sufficiently high Margin of Exposure. The allergenicity was evaluated by searching for similarity of the amino acid sequence to those of known allergens. The Panel considered that the likelihood of food allergic reactions to the enzyme is low and therefore does not raise safety concern. Based on the genetic modifications performed, the manufacturing process, the compositional and biochemical data provided and the toxicological studies, this food enzyme does not raise safety concern under the intended conditions of use.
sequence to those of known allergens. The Panel considered that the likelihood of food allergic reactions to the enzyme is low and therefore does not raise safety concern. Based on the genetic modifications performed, the manufacturing process, the compositional and biochemical data provided and the toxicological studies, this food enzyme does not raise safety concern under the intended conditions of use.

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**EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2014. Scientific Opinion on the extension of use for DHA and EPA-rich algal oil from Schizochytrium sp. as a Novel Food ingredient**
Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on an extension of use for docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA)-rich algal oil from Schizochytrium sp. as a novel food ingredient (NFI) in the context of Regulation (EC) No 258/97. The NFI is already authorised for use in a range of foodstuffs at specified maximum levels. The applicant requests an extension of use of the NFI in food supplements up to a maximum DHA and EPA content of 3 g per daily dose for the adult population, excluding pregnant and lactating women. In a previous opinion on the Tolerable Upper Intake Level of EPA, DHA and docosapentaenoic acid (DPA), the Panel concluded that supplemental intake of EPA and DHA combined at doses up to 5 g/day, does not give rise to safety concerns for adults. Based on estimations of high intake of DHA and EPA from the NFI which are considered to be conservative, the Panel considers that this level will not be exceeded by the use of the NFI. The conclusion that there are no safety concerns for the NFI is supported by a 90-day study in which no adverse effect was observed at the highest dose tested of 5 %, equivalent to 3.149 and 3.343 g NFI/kg body weight per day for male and female rats. Following a request from a Member State, the Panel reviewed the evidence for an association between DHA and/or EPA intake and risk of prostate cancer. The Panel considers that, on the basis of available data, there is no evidence for a role of EPA and/or DHA intake in the development of prostate cancer. The Panel concludes that the NFI is safe under the proposed extension of use.

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EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2014. Scientific Opinion on the safety of astaxanthin-rich ingredients (AstaREAL A1010 and AstaREAL L10) as novel food ingredients

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on the safety of astaxanthin-rich ingredients AstaREAL A1010 and AstaREAL L10 as novel food ingredients (NFIs) in the context of Regulation (EC) No 258/97. The NFIs are produced from astaxanthin-rich alga Haematococcus pluvialis. Astaxanthin content is 5.0–5.6 % in AstaREAL A1010 powder, 10.0–12.0 % in AstaREAL L10 oil and 2.5–2.7 % in AstaREAL L10 encapsulated oil. Sufficient information was provided regarding the composition, specification, manufacture and stability of the NFIs. The NFIs are intended to be used in fermented liquid dairy products, non-fermented liquid dairy products, fermented soya products and fruit drinks for healthy adults. The applicant recommends a maximum consumption of astaxanthin from the NFIs of 4 mg/day. Mean and high-level (95th percentile) daily intakes of 0.106 mg/kg bw and 0.256 mg/kg bw astaxanthin from the NFIs were estimated, based on European consumption data of the proposed food categories. The consumption of the NFIs is not considered to be nutritionally disadvantageous. There are no safety concerns regarding genotoxicity. There is no indication from the available toxicological data that the NFIs would be more toxic than astaxanthin. Therefore, the Panel bases the evaluation of the NFIs on the acceptable daily intake (ADI) of 0.034 mg/kg bw for astaxanthin derived by the FEEDAP Panel. The Panel notes that the maximum recommended intake of 4 mg astaxanthin per day (0.06 mg/kg bw) and the estimated mean intake based on the use levels in the proposed food categories (0.106 mg/kg bw per day) exceed the ADI by approximately two- and three-fold, respectively. The Panel therefore concludes that the safety of the NFIs at the proposed use and use levels has not been established.

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Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on the safety of “UV-treated baker’s yeast” (Lallemand SAS) as a novel food ingredient in the context of Regulation (EC) No 258/97, taking into account the comments and objections of a scientific nature raised by Member States. The novel food ingredient (NFI) is baker’s yeast treated with UV irradiation to induce the conversion of ergosterol to vitamin D2. The applicant intends to use the NFI during the production of yeast-leavened
bread, rolls, fine pastry and food supplements. The Panel considers that the provided compositional data, the specification, the data from batch testing, data on the stability on the production process are sufficient and do not give rise to safety concerns. The Panel concludes that the data provided are sufficient and do not give rise to safety concerns. The applicant intends to use the NFI as an alternative source of vitamin D for food supplements and for fortification of yeast-leavened bread, rolls and fine pastry at maximum concentrations of 5 μg vitamin D2 per 100 g of these foods. The applicant provided combined intake estimates for these two food categories for “all subjects” and “consumers only”. The source for the production of the NFI is Saccharomyces cerevisiae, an organism with a long history of safe food use. Even if the NFI is used at the maximum intended use levels, which deliver 5 μg vitamin D/100 g bread, rolls and fine pastry, it is highly unlikely that Tolerable Upper Intake Levels as established by EFSA (EFSA NDA Panel, 2012) are exceeded. The Panel considers that UV-treated baker’s yeast exhibiting an enhanced content of vitamin D2 is safe under the intended conditions of use.

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EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2014. Statement on the safety of ‘Cetyl Myristoleate Complex’ as an ingredient in food supplements
Following a request from the European Commission, the Panel on Dietetic Products, Nutrition and Allergies was asked to update its opinion on the safety of ‘Cetyl Myristoleate Complex’ (CMC) as a novel food ingredient in the light of additional information submitted by the applicant. In its previous opinion of 2010, the Panel concluded that the safety of CMC as an ingredient in food supplements at an intake of 3.3 g per day has not been established. This conclusion was based on the considerations that in the absence of appropriate data on absorption, distribution, metabolism and excretion, the provided toxicological data were insufficient. In 2012, the Commission requested EFSA to review and update its opinion by taking into account a new subchronic 90-day oral toxicity study conducted with “Cetylated Fatty Acid Esters Powder 50 %” in mice. In its opinion of 2013, the Panel considered that a new 90-day study cannot serve as a reliable source of information supporting the absence of adverse effects of CMC. The dossier of this new mandate contains three new references which were not submitted and hence not considered in the previous assessments. The Panel notes that two references do not address the concerns expressed by the Panel in its previous assessments. The third reference provided is a report on an in vitro hydrolysis study demonstrating a low rate of hydrolysis of cetyl myristoleate and cetyl myristate. The Panel notes the low rate of hydrolysis of the two esters found in this in vitro hydrolysis study and therefore reiterates the need for adequate safety information on the unhydrolysed esters contained in CMC as expressed in its opinions of 2010 and 2013. The Panel concludes that, even after considering the newly submitted information, the safety of ‘Cetyl Myristoleate Complex’ has not been established.

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Vitamin D status and its determinants in children and adults among families in late summer in Denmark.

The impact of the familial relationship on vitamin D status has not been investigated previously. The objective of the present cross-sectional study was to assess serum 25-hydroxyvitamin D (25(OH)D) concentration and its determinants in children and adults among families in late summer in Denmark (56°N). Data obtained from 755 apparently healthy children (4-17 years) and adults (18-60 years) recruited as families (n 200) in the VitmaD study were analysed. Blood samples were collected in September-October, and serum 25(OH)D concentration was measured by liquid chromatography-tandem MS. Information on potential determinants was obtained using questionnaires. The geometric mean serum 25(OH)D concentration was 72·1 (interquartile range 61·5-86·7) nmol/l (range 9-162 nmol/l), with 9 % of the subjects having 25(OH)D concentrations <50 nmol/l. The intra-family correlation was 0·27 in all subjects, 0·24 in the adults and 0·42 in the children. Serum 25(OH)D concentration was negatively associated with BMI (P<0·001) and positively associated with dietary vitamin D intake (P= 0·008), multivitamin use (P= 0·019), solarium use (P= 0·006), outdoor stay (P= 0·001), sun preference (P= 0·002) and sun vacation (P<0·001), but was not associated with lifestyle-related factors in the adults when these were assessed together with the other determinants. In conclusion, the majority of children and adults among the families had serum 25(OH)D concentrations >50 nmol/l in late summer in Denmark. Both dietary and sun-related factors were determinants of vitamin D status and the familial component was stronger for the children than for the adults.

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EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2013. Scientific Opinion on Rooster Combs Extract

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to carry out the additional assessment for „Rooster Combs Extract“ (RCE) as a food ingredient in the context of Regulation (EC) No 258/97, taking into account the comments and objections of a scientific nature raised by Member States. Rooster combs extract results from a production process involving enzymatic hydrolysis of rooster combs and subsequent filtration, concentration and precipitation steps. The principle constituents of RCE are the glycosaminoglycans hyaluronic acid, chondroitin sulphate A and dermatan sulphate. The applicant intends to add RCE to a number of dairy products with a recommended maximum intake of 80 mg RCE per portion and per day. The target population is the general population, with the exception of pregnant women, children and people with adverse reactions to sodium hyaluronate and/or avian protein. In the high intake scenario for “consumers only”, the highest daily intake would occur in adults in Belgium (0.788 g). The highest intake scenario for “all subjects” was estimated for adolescents in Denmark (0.427 g/day). The Panel notes that no adverse effects were observed at the highest tested dose of 600 mg/kg bw per day in a 90-day oral toxicity study in rats. Considering the nature, the natural occurrence and previous consumption of RCE constituents, the Panel is of the opinion that the margin between the intended as well as the estimated maximum possible intake of RCE in relation to the highest dose administered to rats without adverse effects in a subchronic oral toxicity study is sufficient. The Panel concludes that the novel food ingredient, Rooster Comb Extract, is safe under the proposed uses and use levels.

EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2013. Scientific Opinion on Rooster Combs Extract

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to carry out the additional assessment for „Rooster Combs Extract“ (RCE) as a food ingredient in the context of Regulation (EC) No 258/97, taking into account the comments and objections of a scientific nature raised by Member States. Rooster combs extract results from a production process involving enzymatic hydrolysis of rooster combs and subsequent filtration, concentration and precipitation steps. The principle constituents of RCE are the glycosaminoglycans hyaluronic acid, chondroitin sulphate A and dermatan sulphate. The applicant intends to add RCE to a number of dairy products with a recommended maximum intake of 80 mg RCE per portion and per day. The target population is the general population, with the exception of pregnant women, children and people with adverse reactions to sodium hyaluronate and/or avian protein. In the high intake scenario for “consumers only”, the highest daily intake would occur in adults in Belgium (0.788 g). The highest intake scenario for “all subjects” was estimated for adolescents in Denmark (0.427 g/day). The Panel notes that no adverse effects were observed at the highest tested dose of 600 mg/kg bw per day in a 90-day oral toxicity study in rats. Considering the nature, the natural occurrence and previous consumption of RCE constituents, the Panel is of the opinion that the margin between the intended as well as the estimated maximum possible intake of RCE in relation to the highest dose administered to rats without adverse effects in a subchronic oral toxicity study is sufficient. The Panel concludes that the novel food ingredient, Rooster Comb Extract, is safe under the proposed uses and use levels.

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EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2013. Scientific Opinion on the safety of "coriander seed oil" as a Novel Food ingredient.

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on "coriander seed oil (CSO)" as a novel food ingredient (NFI) in the context of Regulation (EC) No 258/97. Petroselinic acid (PA) is the major fatty acid in CSO. Conventional edible oil technologies are used to manufacture the NFI. The NFI is intended to be marketed as a food supplement for healthy adults, at a maximum level of 600 mg per day (i.e. 8.6 mg/kg bw per day for a 70 kg person), which would lead to significantly higher intakes of CSO and PA than current background intakes. There are no safety concerns regarding genotoxicity. In rats fed high amounts of CSO, increased liver weight, marked to severe fat infiltration in the liver, and lower tissue arachidonic acid concentrations were observed. In the same study, similar affects were observed when feeding other vegetable oils, although not as severe as that seen for CSO. The dose level of CSO was more than a thousand fold higher than the proposed use level. In a subchronic study using 150, 450 or 1 000 mg/kg bw per day of CSO, a treatment-related effect was observed on blood glucose concentrations of male rats. Although this effect was not accompanied by any toxicological findings, its biological relevance is unclear and therefore the Panel considers the dose level of 450 mg/kg bw per day to be the NOAEL in rats. This is more than 50 fold higher than the proposed use level. No treatment-related adverse effect was observed in one human study using the NFI at the proposed use level for six months. The Panel concludes that the novel food ingredient, CSO, is safe under the proposed uses and use levels.

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Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on the safety of "methyl vinyl ether-maleic anhydride copolymer (Gantrez SF)" as a novel food ingredient in the context of Regulation (EC) No 258/97. The novel food ingredient Gantrez SF is an anhydrous copolymer formed by the reaction of methyl vinyl ether (MVE) and maleic anhydride (MAN) under appropriate conditions. The Panel considers that the information provided on the specifications, stability and production process do not raise safety concerns. An estimated daily intake (EDI) for Gantrez SF associated with its use in chewing gum may be calculated based on the maximum concentration (2 %) of Gantrez SF in finished chewing gum, and on the level at which chewing gum is consumed. Based on data from the United Kingdom, a high intake estimate of 280 mg Gantrez SF per day was derived. The Panel notes that the NOAEL of 1.8 and 2.1 g/kg bw per day Gantrez SF for male and female rats, respectively, which was derived from a 90-day subchronic toxicity study, is about 500-fold above this conservative intake estimate. The Panel has no safety concerns regarding genotoxicity and the low molecular weight components. The Panel concludes that the novel food ingredient, methyl vinyl ether-maleic anhydride copolymer (Gantrez SF), is safe under the proposed uses and use levels.

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Organisations: National Food Institute, Division of Nutrition, Research Group for Risk-Benefit
Authors: EFSA Publication
EFSA NDA Panel (EFSA Panel on Dietetic Products, Nutrition and Allergies), 2013. Scientific Opinion on the safety of *r apeseed protein isolate* *as a Novel Food ingredient.*

Following a request from the European Commission, the EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) was asked to deliver a scientific opinion on the safety of a "rapeseed protein isolate" (Isolex™) as a novel food ingredient (NF) in the context of Regulation (EC) No 258/97. The NF is an aqueous extract with at least 90% protein, isolated from rapeseed press cake originating from so-called canola varieties. The applicant intends to market the NF for the same food products, at similar concentrations and for corresponding purposes, as soy protein isolates. Total protein intake of "heavy" adult consumer may be estimated as the mean + 2 SD, i.e. 2.2 g/kg bw per day. The age group of 4 - 6 years is estimated to have the highest protein intake on a per kg bw basis with a mean and 95th percentile intake of up to 3 and up to 4.73 g/kg bw per day, respectively. A significant part of these estimated intakes could come from rapeseed protein. The Panel considers that the risk of sensitisation to rapeseed cannot be excluded and that it is likely that rapeseed trigger can allergic reactions in mustard allergic subjects. The biological value of rapeseed and soy protein, determined by the PDCAAS, appears to be similar. The Panel notes the source and nature of the novel food, the absence of a nutritional disadvantage at the proposed uses and use levels, the low concentrations of potentially adverse components in the NF, and the absence of toxicologically relevant effects in subchronic studies with rats conducted with rapeseed protein isolates with similar compositions. The Panel concludes that rapeseed protein isolate is safe under the proposed uses and use levels.
Projects:

**Risk Benefit 4 EU**

National Food Institute  
Research Group for Risk-Benefit  
Period: 17/01/2018 → 17/10/2019  
Number of participants: 1  
Acronym: RB4EU  
Project participant:  
Jakobsen, Lea Sletting (Intern)

**Risikovurdering af planter og andre råvarer fra den danske natur i forhold til anvendelse som fødevarer samt videnskabelig og populær formidling af den indsamlede viden**

National Food Institute  
Research Group for Risk-Benefit  
Division of Risk Assessment and Nutrition  
Period: 31/12/2016 → 28/02/2018  
Number of participants: 6  
Project participant:  
Pilegaard, Kirsten (Intern)  
Ravn-Haren, Gitte (Intern)  
Eriksen, Folmer Damsted (Intern)  
Olesen, Pelle Thonning (Intern)  
Egebjerg, Mikael Mandrup (Intern)  
Bredsdorff, Lea (Intern)

**Financing sources**  
Source: Other public support (public)  
Name of research programme: Miljø- og Fødevareministeriet  
Year of approval: 2016

**Meat and colorectal cancer**

To investigate the effect of minced red meat on the microflora and inflammation in Abcb1a knockout and wild type mice

National Food Institute  
Research Group for Risk-Benefit  
Division of Risk Assessment and Nutrition  
Period: 01/08/2013 → 30/11/2014  
Number of participants: 3  
Project participant:  
Ravn-Haren, Gitte (Intern)  
Mortensen, Alicja (Intern)  
Vogel, Ulla Birgitte (Intern)

**Financing sources**  
Source: Private funding (private)  
Name of research programme: Family Erichsens Mindefond  
Amount: 200,000.00 Danish Kroner
The role of dairy products in future healthy and sustainable diets
The project aims at modeling Danish dietary patterns following the food based dietary guidelines from 2013 and the Nordic Nutrition Recommendations 2012, and at the same time are optimized with regard to the climate impact in terms of the Carbon Footprint (CO2 equivalents) of the diets.

The project will describe the combination of foods of these future sustainable diets, especially focusing on the role of various dairy products.

National Food Institute
Division of Risk Assessment and Nutrition
Research Group for Risk-Benefit

Period: 01/01/2013 → 31/12/2014
Number of participants: 6
Project participant:
Trolle, Ellen (Intern)
Knudsen, Vibeke Klidegaard (Intern)
Thorsen, Anne Vibeke (Intern)
Christensen, Tue (Intern)
Ygil, Karin Hess (Intern)
Mogensen, Lisbeth (Ekstern)

Financing sources
Source: Private funding (private)
Name of research programme: The Danish Dairy Research Foundation
Amount: 960,000.00 Danish Kroner

Activities:

Consumer preferences for coffee in Denmark
Period: 2018
Gitte Ravn-Haren (External examiner)

National Food Institute
Research Group for Risk-Benefit

Description
Master Thesis
Degree of recognition: Local
Activity: Examinations and supervision › Supervisor activities

Intake of food supplements among female fitness athletes and their possible harmful effects - with a focus on green tea
Period: 2018
Gitte Ravn-Haren (Main supervisor)
Kirsten Pilegaard (Supervisor)

National Food Institute
Research Group for Risk-Benefit

Description
Diplomingenierprojekt
Degree of recognition: Local
Activity: Examinations and supervision › Supervisor activities

Risks and benefits associated with a moderate alcohol intake
Period: 2018
Gitte Ravn-Haren (Main supervisor)

National Food Institute
**Salt and risk of cardiovascular disease**  
Period: 2018  
Gitte Ravn-Haren (Main supervisor)  
National Food Institute  
Research Group for Risk-Benefit

**The benefits of salt reduction and the associated microbiological risks in soups**  
Period: 2018  
Gitte Ravn-Haren (Supervisor)  
National Food Institute  
Research Group for Risk-Benefit

**The effects of β-glucan consumption on colonic fermentation, measured by exhaled gases and short chain fatty acids in a randomized, parallel, controlled trial**  
Period: 2018  
Gitte Ravn-Haren (External examiner)  
National Food Institute  
Research Group for Risk-Benefit

**EFSA expert panel on Biological Hazard (External organisation)**  
Period: 1 Jul 2018 → 30 Jun 2021  
Maarten Nauta (Member)  
National Food Institute  
Research Group for Risk-Benefit

**Related external organisation**

EFSA expert panel on Biological Hazard
Risk-benefit assessment of foods
Period: 1 Jun 2018
Maarten Nauta (Guest lecturer)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related external organisation
Unilever R&D
Netherlands
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Risk-Benefit assessment of a moderate alcohol intake
Period: Feb 2018 → Jun 2018
Gitte Ravn-Haren (Main supervisor)
National Food Institute
Research Group for Risk-Benefit

Description
Master Thesis
Degree of recognition: Local
Activity: Examinations and supervision › Supervisor activities

Moderate alcohol intake and blood pressure
Period: 2017
Gitte Ravn-Haren (External examiner)
National Food Institute
Research Group for Risk-Benefit

Description
Bachelor project
Degree of recognition: Local
Activity: Examinations and supervision › Supervisor activities

The effect of a moderate alcohol consumption on biomarkers for Type 2 Diabetes
Period: 2017
Gitte Ravn-Haren (External examiner)
National Food Institute
Research Group for Risk-Benefit

Description
Bachelor project
Degree of recognition: Local
Activity: Examinations and supervision › Supervisor activities

Challenges in Communicating the Results of Public Health Benefit-risk Assessments
Period: 13 Dec 2017
Maarten Nauta (Panel member)
National Food Institute
Research Group for Risk-Benefit
**Description**
Roundtable discussion
Degree of recognition: International

**Related event**

**Society for Risk Analysis Annual Meeting**
10/12/2017 → 13/12/2017
Arlington, United States
Activity: Talks and presentations › Conference presentations

**Lessons from developing ICRA, a catalogue for risk assessments**
Period: 7 Dec 2017
Maarten Nauta (Invited speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

**Related event**

**Approaches to Connecting, Sustaining and Advancing FDA-iRISK and a Community of Risk Assessment and Predictive Modeling Resources**
07/12/2017 → 08/12/2017
Greenbelt, United States
Activity: Talks and presentations › Conference presentations

**Risk-Benefit Assessment of foods**
Period: 30 Nov 2017
Maarten Nauta (Invited speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

**Related event**

**Joint International Symposium: Global Past, Present and Future Challenges in Risk Assessment – Strengthening Consumer Health Protection**
30/11/2017 → 01/12/2017
Berlin, Germany
Activity: Talks and presentations › Conference presentations

**How Quantitative Risk Assessment makes criteria risk-based**
Period: 27 Nov 2017
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit

**Description**
Presentation Institute Network for Microbiological Modelling, Epidemiology and Risk Assessment, theme: Does Risk Assessment make a difference? The case of the Campylobacter criterion
Degree of recognition: Local

**Related organisation**

**How Quantitative Risk Assessment makes criteria risk-based**
Nauta, M. (Speaker)
27 Nov 2017
Activity: Talks and presentations › Conference presentations
Uncertainty and variability are different. This is of crucial importance for risk assessment
Period: 17 Nov 2017
Maarten Nauta (Lecturer)
National Food Institute
Research Group for Risk-Benefit

Description
Seminar for GDSI
Degree of recognition: Local

Related organisation

Uncertainty and variability are different. This is of crucial importance for risk assessment
Nauta, M. (Lecturer)
17 Nov 2017
Activity: Talks and presentations › Conference presentations

Better Training for Safer Food - Risk Assessment in Nutrition (Tallinn, Estonia)
Period: Sep 2017
Gitte Ravn-Haren (Lecturer)
National Food Institute
Research Group for Risk-Benefit

Related event

Better Training for Safer Foods
11/09/2017 → 15/09/2017
Tallinn, Estonia
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

International Committee for Predictive Modelling Food (ICPMF) (External organisation)
Period: 29 Sep 2017 → …
Maarten Nauta (Member)
National Food Institute
Research Group for Risk-Benefit

Description
Member of committee
Degree of recognition: International
Links:
http://www.icpmf.org

Related external organisation

International Committee for Predictive Modelling Food (ICPMF)
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Can stochastic Consumer Phase Models in Microbial Risk Assessment be simplified to a single factor?
Period: 28 Sep 2017
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related event
Ernæring 23732
Period: 31 Aug 2017 → 28 Nov 2017
Gitte Ravn-Haren (Lecturer)
National Food Institute
Research Group for Risk-Benefit
Description
Course
Degree of recognition: Local
Activity: Other

The use of Risk Assessment to support control of Salmonella in pork
Period: 23 Aug 2017
Maarten Nauta (Keynote speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International
Links:

Related event
SAFEPORK 2017
21/08/2017 → 24/08/2017
Foz do Iguacu, Brazil
Activity: Talks and presentations › Conference presentations

Toxoplasma gondii and the role of pork
Period: 21 Aug 2017
Sara Monteiro Pires (Speaker)
National Food Institute
Research Group for Risk-Benefit
Description
Overview of the global and regional burden of disease of toxoplasmosis and the need for studies estimating the relative role of the most important sources of infection
Degree of recognition: International

Related event
12th SafePork: 12th International Symposium on the Epidemiology and Control of Biological, Chemical and Physical Hazards in Pigs and Pork
21/08/2017 → 24/08/2017
Foz de Iguacu, Brazil
Activity: Talks and presentations › Conference presentations

INRA Institut National de La Recherche Agronomique (External organisation)
Period: 4 Jul 2017
Maarten Nauta (Participant)
National Food Institute
Research Group for Risk-Benefit
**Description**
Jury Member PhD examination committee (rapporteur) Geraldine Boue, Nantes, France. Thesis "Public Health Risk-Benefit Assessments of Foods"
Degree of recognition: International

**Related external organisation**
INRA Institut National de La Recherche Agronomique
France
Activity: Membership › Membership in review committee

**Estimating the burden of foodborne diseases: an integrated approach**
Period: 2 Jun 2017
Sara Monteiro Pires (Speaker)
National Food Institute
Research Group for Risk-Benefit

**Related event**
GoFood 2017
31/05/2017 → 02/06/2017
Lund, Sweden
Activity: Talks and presentations › Conference presentations

**Consumers as risk managers: The benefit of quantification of food related health effects.**
Period: 31 May 2017
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

**Related event**
GoFood 2017
31/05/2017 → 02/06/2017
Lund, Sweden
Activity: Talks and presentations › Conference presentations

**BTSF course in Microbiological Risk Assessment**
Period: 8 May 2017 → 12 May 2017
Maarten Nauta (Lecturer)
National Food Institute
Research Group for Risk-Benefit

**Description**
One week training course in the EU program better training for safer food

**Training coordinator**
Degree of recognition: International

**Related event**
Better Training for Safer Food (BTSF): Microbiological Risk Assessment
08/05/2017 → 12/05/2017
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

**Reflections on a case study, an RBA on nuts**
Period: 4 May 2017
Maarten Nauta (Speaker)
Burden of disease of barbecued meat - who's at risk?
Period: 31 Mar 2017
Lea Sletting Jakobsen (Guest lecturer)
Stylianos Georgiadis (Guest lecturer)
Bo Friis Nielsen (Guest lecturer)
Anders Stockmarr (Guest lecturer)
Elena Boriani (Guest lecturer)
Lene Duedahl-Olesen (Guest lecturer)
Tine Hald (Guest lecturer)
Sara Monteiro Pires (Guest lecturer)

Related external organisation
International Association for Food Protection
6200 Aurora Avenue, IA 50322-2864, Des Moines, United States
Activity: Talks and presentations › Conference presentations

Better Training for Safer Food - Risk Assessment in Nutrition (Rome, Italy)
Period: Feb 2017
Gitte Ravn-Haren (Lecturer)
**Related event**

**Better Training for Safer Foods**  
06/02/2017 → 10/02/2017  
Rome, Italy  
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

**DanThyr steering group (External organisation)**  
Period: 2016 → ...  
Gitte Ravn-Haren (Member)

**Related external organisation**

**DanThyr steering group**  
Activity: Membership › Membership of research networks or expert groups

**Effect of Meat and Potatoes on Short-Term Appetite Feeling and Ad Libitum Energy Intake**  
Period: 2016  
Gitte Ravn-Haren (External examiner)

**Description**  
Master's Thesis  
Degree of recognition: Local  
Activity: Examinations and supervision › Supervisor activities

**Investigation of the consume of dietary supplements among male fitness athletes and the dietary supplements possible harmful effects**  
Period: 2016  
Gitte Ravn-Haren (Main supervisor)  
Kirsten Pilegaard (Supervisor)

**Description**  
Bachelor project  
Degree of recognition: Local  
Activity: Examinations and supervision › Supervisor activities

**Microbial Risk Analysis 2-3 2016 (Journal)**  
Period: 2016  
Maarten Nauta (Editor)

**Description**  
Special issue Campylobacter  
Links:
The effect of folate intake on risk of cardiovascular diseases
Period: 2016
Gitte Ravn-Haren (Main supervisor)
National Food Institute
Research Group for Risk-Benefit

Improve conceptual understanding by inductive teaching: An example of its success
Period: 17 Nov 2016
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit
Documents:
abstract Maarten Nauta 2.0

The use of risk assessment to support control of Salmonella in pork
Period: 10 Nov 2016
Maarten Nauta (Invited speaker)
National Food Institute
Research Group for Risk-Benefit
Documents:
The use of risk assessment to support control of Salmonella in pork
Related event

**BfR Symposium Zoonosen und Lebensmittelsicherheit**
Berlin, Germany
Activity: Talks and presentations › Conference presentations

*The consumer as risk and benefit manager: the need for quantification*
Period: 22 Sep 2016
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit

Related event

**Nordic Risk Benefit Assessment Workshop**
Uppsala, Sweden
Activity: Talks and presentations › Conference presentations

*Emäring 23732*
Period: 30 Aug 2016 → 29 Nov 2016
Gitte Ravn-Haren (Lecturer)
National Food Institute
Research Group for Risk-Benefit

**Description**
Course
Degree of recognition: Local
Activity: Other

*Campylobacter: Can we solve the problem?*
Period: 3 Aug 2016
Maarten Nauta (Panel member)
National Food Institute
Research Group for Risk-Benefit

**Description**
Round table discussion

Related event

**IAFP Annual meeting 2016**
31/07/2016 → 03/08/2016
St. Louis, United States
Activity: Talks and presentations › Conference presentations

*Food Safety and Nutrition: Consumers as Risk and Benefit Managers: The need for quantification*
Period: 2 Aug 2016
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit

**Description**
30 min presentation in Risk Benefit Symposium
Also co-organizer and convenor of the symposium
A Generic Model for Cross-contamination during Meat Processing and Its Application in Risk Assessments

Period: 1 Aug 2016
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit

Description
30 min presentation in symposium on cross contamination and transfer
Also co-organizer of the symposium

Burden of Disease of Dietary Exposure to Acrylamide in Denmark

Period: 1 Aug 2016
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit

Description
presentation given on behalf of Lea Jakobsen

Burden of foodborne diseases: an integrated food safety approach

Period: 13 Apr 2016
Sara Monteiro Pires (Speaker)
National Food Institute
Research Group for Risk-Benefit

Description
Overview of the Danish integrated food safety approach and of how it can be adapted to other countries
Degree of recognition: National

3rd Annual Meeting Coimbra Health School

Period: 07/04/2016 → 17/04/2016
Coimbra, Portugal
Activity: Talks and presentations › Conference presentations
UDTU Teaching and Learning, Module 1
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: National

Related event

UDTU Teaching and Learning, Module 1
08/03/2016 → 11/03/2016
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Estimating the burden of foodborne diseases
Period: 3 Feb 2016
Sara Monteiro Pires (Speaker)
National Food Institute
Research Group for Risk-Benefit

Description
Overview of the National Food Institute's integrated approach to estimate the burden of foodborne diseases caused by microbiological and chemical hazards.
Degree of recognition: International

Related organisation

Estimating the burden of foodborne diseases
Pires, S. M. (Speaker)
3 Feb 2016
Activity: Talks and presentations › Conference presentations

Acute postprandial effect of Nordic and Asian seaweed on subjective appetite sensation, appetite regulating hormone GLP-1, gastric emptying and ad libitum energy intake
Period: 2015
Gitte Ravn-Haren (External examiner)
National Food Institute
Research Group for Risk-Benefit

Description
Master's Thesis
Degree of recognition: Local
Activity: Examinations and supervision › Supervisor activities

"Common genetic variation in CYP2R1 and GC predicts vitamin D status in late summer, after food-fortification and after UVB irradiation in the Danish population".
Period: 2015
Ioanna Nissen (Lecturer)
National Food Institute
Research Group for Risk-Benefit

Description
Yearly meeting at the Danish Nutrition Society, Copenhagen, Denmark

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations
Lipid malabsorption among gastric bypass patients – focusing on vitamin A and carotenoids
Period: 2015
Gitte Ravn-Haren (External examiner)
National Food Institute
Research Group for Risk-Benefit

Description
Bachelor project
Degree of recognition: Local
Activity: Examinations and supervision › Supervisor activities

Microbial Risk Analysis (Journal)
Period: 2015 → 2019
Maarten Nauta (Editor)
National Food Institute
Research Group for Risk-Benefit

Description
Associate Editor since 2015
Links:
http://www.journals.elsevier.com/microbial-risk-analysis/

Related journal
Microbial Risk Analysis
2352-3522
Scopus rating (2017): CiteScore 1.17
Local database
Activity: Research › Journal editor

The effect of advanced glycation end products on type 2 diabetes mellitus etiology and diabetic nephropathy
Period: 2015
Gitte Ravn-Haren (External examiner)
National Food Institute
Research Group for Risk-Benefit

Description
Bachelor project
Degree of recognition: Local
Activity: Examinations and supervision › Supervisor activities

Risk Benefit: What's Next?
Period: 9 Dec 2015
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit

Description
Lecture in Risk Benefit symposium
Links:

Related event
Society for Risk Analysis Annual meeting
08/12/2015 → 09/12/2015
Arlington, United States
Activity: Talks and presentations › Conference presentations

**12th European Nutrition Conference (FENS)**
Rikke Andersen (Participant)
National Food Institute
Research Group for Risk-Benefit

**Description**
Oral presentation: Vitamin D intake-status relationship among Danes aged 4-60 years during winter

FENS 2015

**Related event**

**12th European Nutrition Conference (FENS)**
20/10/2015 → 23/10/2015
Berlin, Germany
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Better Traing for Safer Food - Risk Assessment in Nutrition (Berlin, Germany)**
Period: Sep 2015
Gitte Ravn-Haren (Lecturer)
National Food Institute
Research Group for Risk-Benefit

**Description**
Berlin 14-18. september

**Related organisation**

**Better Traing for Safer Food - Risk Assessment in Nutrition (Berlin, Germany)**
Ravn-Haren, G. (Lecturer)
Sep 2015
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

**TRiMiCri. A Tool for Risk Based Microbiological criteria**
Period: 10 Sep 2015
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit

**Description**
Introduction to contribution software fair

**Related event**

**9th International Conference on Predictive Modelling in Food**
08/09/2015 → 12/09/2015
Rio de Janeiro, Brazil
Activity: Talks and presentations › Conference presentations

**Assessing the effect of risk mitigation by concentration reduction: Linear regression vs. process risk model**
Period: 9 Sep 2015
Maarten Nauta (Speaker)
National Food Institute
Research Group for Risk-Benefit

Related event

9th International Conference on Predictive Modelling in Food
08/09/2015 → 12/09/2015
Rio de Janeiro, Brazil
Activity: Talks and presentations › Conference presentations

Ernæring 23732
Period: 1 Sep 2015 → 1 Dec 2015
Gitte Ravn-Haren (Lecturer)
National Food Institute
Research Group for Risk-Benefit

Description
Course
Degree of recognition: Local
Activity: Other

Global and Regional Incidence and Mortality of Diarrheal Diseases Commonly Transmitted through Food: Estimates from the WHO Foodborne Epidemiology Reference Group
Period: 28 Jul 2015
Sara Monteiro Pires (Speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related event

International Association for Food Protection 2015
25/07/2015 → 28/07/2015
Portland, United States
Activity: Talks and presentations › Conference presentations

Source attribution of foodborne diseases: applicability of available methods
Period: 26 Jul 2015
Sara Monteiro Pires (Speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related event

International Association for Food Protection 2015
25/07/2015 → 28/07/2015
Portland, United States
Activity: Talks and presentations › Conference presentations

Interventions with vitamin D in Denmark
Rikke Andersen (Invited speaker)
National Food Institute
Research Group for Risk-Benefit

Description
Oral presentation: Interventions with vitamin D in Denmark

Symposium at the 19th Nordic Congress of General Practice 16-18 June 2015

Related event

The 19th Nordic Congress of General Practice
16/06/2015 → 18/12/2015
Göteborg, Sweden
Activity: Talks and presentations › Conference presentations

Seminar om Cocktail effekter
Period: 19 Mar 2015
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: Local

Related event

Seminar om Cocktail effekter
19/03/2015 → …
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Seminar om Danskernes Kostvaner
Period: 12 Mar 2015
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: Local

Related event

Seminar om Danskernes Kostvaner
12/03/2015 → …
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Better Training for Safer Food - Risk Assessment in Nutrition (Lisbon, Portugal)
Period: Feb 2015
Gitte Ravn-Haren (Lecturer)
National Food Institute
Research Group for Risk-Benefit

Description
Lisbon, Portugal 2015

Related organisation

Better Training for Safer Food - Risk Assessment in Nutrition (Lisbon, Portugal)
Ravn-Haren, G. (Lecturer)
Feb 2015
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

“Genetic variation and vitamin D status - The VitmaD study with a genetic perspective”
Period: 2014
Ioanna Nissen (Invited speaker)
National Food Institute
Research Group for Risk-Benefit

**Description**
Seminar, Vitamin D status and intake in Nordic countries – what is recommended and how to meet recommendations?
Helsinki, Finland

**Related external organisation**
Unknown external organisation
Activity: Talks and presentations › Conference presentations

**Samspillet mellem kost faktorer og genetiske polymorfier i antioxidant gener i forhold til risiko for brystkræft**
Period: 2014 → …
Gitte Ravn-Haren (Main supervisor)

National Food Institute
Research Group for Risk-Benefit

**Description**
Specialkursus
Degree of recognition: Local
Activity: Examinations and supervision › Supervisor activities

**Source attribution methods: typing of antibiotic resistant bacteria and surveillance data modelling**
Sara Monteiro Pires (Speaker)

National Food Institute
Research Group for Risk-Benefit

**Related event**
The European College for Veterinary Public Health Annual Scientific Meeting
07/10/2014 → 10/10/2015
Copenhagen, Denmark
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

**Uncovering the real burden of foodborne diseases: Integrating burden of disease and source attribution**
Period: 30 Jun 2014 → 3 Jul 2014
Sara Monteiro Pires (Speaker)

National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

**Related event**
The Society for Applied Microbiology’s Summer Conference 2014
30/06/2014 → 03/07/2014
Brighton, United Kingdom
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

**Genes, Diet and Body Weight**
Period: 27 Feb 2014
Gitte Ravn-Haren (Participant)

National Food Institute
Research Group for Risk-Benefit
Related event

Genes, Diet and Body Weight
27/02/2014 → …
Frederiksberg, Denmark
Activity: Attending an event › Participating in or organising a conference

European Journal of Nutrition (Journal)
Period: 2013 → …
Gitte Ravn-Haren (Reviewer)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related journal

European Journal of Nutrition
1436-6207
BFI (2018): BFI-level 1, Scopus rating (2017): CiteScore 3.36 SJR 1.408 SNIP 1.076, ISI indexed (2013): ISI indexed yes,
Web of Science (2018): Indexed yes
Central database
Activity: Research › Journal editor

Nutrition Research (Journal)
Period: 2013 → …
Gitte Ravn-Haren (Reviewer)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related journal

Nutrition Research
0271-5317
BFI (2018): BFI-level 1, Scopus rating (2017): CiteScore 2.95 SJR 1.135 SNIP 0.938, ISI indexed (2013): ISI indexed yes,
Web of Science (2018): Indexed yes
Central database
Activity: Research › Journal editor

"Polymorfer i GC og CYP2R1 generne dikterer D-vitamin koncentrationen i raske danske børn og voksne".
Period: 2013
Ioanna Nissen (Invited speaker)
National Food Institute
Research Group for Risk-Benefit

Description
Dansk Vitamin Netværk, Copenhagen, Denmark

Related external organisation

Unknown external organisation
Activity: Talks and presentations › Conference presentations

Dansk VitaminNetværk 2013
Period: 28 Nov 2013
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit

Related event

**Dansk VitaminNetværk 2013**
28/11/2013 → …
Søborg, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Better Training for Safer Food - Risk Assessment in Nutrition (Berlin, Germany)**
Period: Apr 2013
Gitte Ravn-Haren (Lecturer)
National Food Institute
Research Group for Risk-Benefit

**Description**
Berlin, Germany 2013

**Related organisation**

**Better Training for Safer Food - Risk Assessment in Nutrition (Berlin, Germany)**
Ravn-Haren, G. (Lecturer)
Apr 2013
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

**Kursus, Myndighedsbetjening, Modul II**
Period: 15 Jan 2013
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit

**Related event**

**Kursus, Myndighedsbetjening, Modul II**
15/01/2013 → …
Mørkhøj, Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Arbejdsmiljøseminar "Krop og Job"**
Period: 3 Dec 2012
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit

**Related event**

**Arbejdsmiljøseminar "Krop og Job"**
03/12/2012 → …
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Better Training for Safer Food - Risk Assessment in Nutrition (Vilnius, Lithuania)**
Period: Nov 2012
Gitte Ravn-Haren (Lecturer)
National Food Institute
Related event

**Research Group for Risk-Benefit**

**Better Training Safer Food: Risk Assessment in Nutrition**
19/11/2012 → 23/11/2012
Vilnius, Lithuania
Activity: Talks and presentations › Guest lectures, external teaching and course activities at other universities

**Projektlederuddannelse for forskere**
Period: 18 Sep 2012 → 21 Nov 2012
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit

**Projektlederuddannelse for forskere**
18/09/2012 → 21/11/2012
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Kursus: Myndighedsbetjening, Modul I**
Period: 27 Aug 2012
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit

**Kursus: Myndighedsbetjening, Modul I**
27/08/2012 → …
Lyngby
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Sundhedsanprisninger**
Period: 26 Jun 2012
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit

**Sundhedsanprisninger**
26/06/2012 → …
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**2nd International Vitamin Conference**
Period: 23 May 2012 → 25 May 2012
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

**Related event**
2nd International Vitamin Conference: Vitamins in Foods and Supplement - Analytical Challenges in Human Nutrition
23/05/2012 → 25/05/2012
Copenhagen, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Dansk VitaminNetværk 2012
Period: 11 Jan 2012
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: National

Related event
Dansk VitaminNetværk 2012
11/01/2012 → …
Søborg, Denmark
Activity: Attending an event › Participating in or organising a conference

Genes & Nutrition (Journal)
Period: 2011 → …
Gitte Ravn-Haren (Reviewer)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related journal
Genes & Nutrition
1555-8932
Indexed in DOAJ
Central database
Activity: Research › Journal editor

International Journal for Vitamin and Nutrition Research (Journal)
Period: 2011 → …
Gitte Ravn-Haren (Reviewer)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related journal
International Journal for Vitamin and Nutrition Research
0300-9831
Central database
Activity: Research › Journal editor

Microbial risk assessment and the control of foodborne diseases: the Danish example.
Period: 21 Oct 2011
Sara Monteiro Pires (Speaker)
National Food Institute
Zoonosis: Common Protection of Human and Animal Health. 3rd Scientific Congress
21/10/2011 → ...
Bratislava, Slovakia
Activity: Talks and presentations › Conference presentations

Attributing human salmonellosis to sources in the European Union using a microbial subtyping approach
Period: 13 Sep 2011 → 15 Sep 2011
Sara Monteiro Pires (Speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

AHVLA International Conference 2011
13/09/2011 → 15/09/2011
London, United Kingdom
Activity: Talks and presentations › Conference presentations

Dansk VitaminNetværk 2011
Period: 16 May 2011
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: National

Dansk VitaminNetværk 2011
16/05/2011 → …
Søborg, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Hvordan påvirker æbler og æbleprodukter vores sundhed? Resultater fra humanstudier i ISAFRUIT projektet
Period: 28 Apr 2011
Gitte Ravn-Haren (Speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: National

Selskab for Ernæringsforskning - Temadage 2011
28/04/2011 → 29/04/2011
Slagelse, Denmark
Activity: Talks and presentations › Talks and presentations in private or public companies and organisations

Food & Nutrition Research (Journal)
Period: 2010 → …
Gitte Ravn-Haren (Reviewer)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

**Related journal**

**Food & Nutrition Research**
1654-6628
Indexed in DOAJ
Central database
Activity: Research › Journal editor

**Trends in Food Science and Technology (Journal)**
Period: 2010 → …
Gitte Ravn-Haren (Reviewer)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

**Related journal**

**Trends in Food Science and Technology**
0924-2244
Central database
Activity: Research › Journal editor

**PhD supervision**
Period: 1 Oct 2010
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: Local

**Related event**

**PhD supervision**
01/10/2010 → …
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

**Kursus i Pressehåndtering**
Period: 14 Sep 2010
Gitte Ravn-Haren (Participant)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: Local

**Related event**

**Kursus i Pressehåndtering**
14/09/2010 → …
Søborg, Denmark
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.
First International Vitamin Conference
Period: 19 May 2010 → 21 May 2010
Gitte Ravn-Haren (Participant)

National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related event
First International Vitamin Conference
19/05/2010 → 21/05/2010
Copenhagen
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Characterization of the ficolin genes (FCNs) in primates
Period: 2009
Ioanna Nissen (Invited speaker)
National Food Institute
Research Group for Risk-Benefit

Related event
12th European Meeting on Complement in Human Disease
05/09/2009 → 08/09/2009
Viségrad, Hungary
Activity: Talks and presentations › Conference presentations

Analysis of outbreak data for source attribution of human salmonellosis and campylobacteriosis in Europe
Sara Monteiro Pires (Speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related event
12th Conference of the International Society for Veterinary Epidemiology and Economics
10/08/2009 → 14/08/2009
Durban, South Africa
Activity: Talks and presentations › Conference presentations

Estimating differences in public health impact between Salmonella subtypes.
Sara Monteiro Pires (Speaker)
National Food Institute
Research Group for Risk-Benefit
Degree of recognition: International

Related event
12th Conference of the International Society for Veterinary Epidemiology and Economics
10/08/2009 → 14/08/2009
Durban, South Africa
Activity: Talks and presentations › Conference presentations

Mutation Research (Journal)
Period: 2005
Estimating the burden of foodborne disease at the national level: an integrated approach
Period: 30 Jun 2002
Sara Monteiro Pires (Speaker)
National Food Institute
Research Group for Risk-Benefit
Description
Overview of the National Food Institute’s approach for estimating the burden of foodborne diseases and foods, and preliminary estimates
Degree of recognition: International
Related organisation
Estimating the burden of foodborne disease at the national level: an integrated approach
Pires, S. M. (Speaker)
30 Jun 2002
Activity: Talks and presentations › Conference presentations

Prizes:
Winner of Abstract award held by Danish Nutrition Society
Ioanna Nissen (Recipient)
National Food Institute, Research Group for Risk-Benefit
Description
“Common genetic variation in CYP2R1 and GC predicts vitamin D status in late summer, after food-fortification and after UVB irradiation in the Danish population”
Details
Awarded date: 2015
Granting Organisations: SFE
Winner of The Young Investigator Award at the 2014 Vitamin D and Human Health meeting –from the gamete to the grave
Ioanna Nissen (Recipient)
National Food Institute, Research Group for Risk-Benefit

Description
“Real-life use of Vitamin D3-fortified bread and milk during winter season: The effect of CYP2R1 and GC genes on 25-Hydroxyvitamin D concentrations in Danish families”

Details
Awarded date: 2014

Winner of Trainee Travel Award for the 18th Workshop on Vitamin D
Ioanna Nissen (Recipient)
National Food Institute, Research Group for Risk-Benefit

Description
“Common CYP2R1 and GC gene variants are determinants of 25-hydroxyvitamin D concentration after ultraviolet-B irradiation and after vitamin D3-fortification”.

Details
Awarded date: 2015

Press clippings:

Energidrikken Cult
Gitte Ravn-Haren
04/05/2018
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)

Energidrikken Cult
04/05/2018
DR Kontakt (National), Denmark, Television
Sofie Skød Mortensen
Gitte Ravn-Haren
National Food Institute, Research Group for Risk-Benefit
Press / Media

Risikovurdering af bog (frugt fra bøgetræer)
Kirsten Pilegaard
16/10/2017
National Food Institute, Research Group for Risk-Benefit

Media coverage (1)

Risikovurdering af bog (frugt fra bøgetræer)
16/10/2017
Ritzau (National), Denmark, Other
Christina Råbæk
Kirsten Pilegaard
National Food Institute, Research Group for Risk-Benefit
Press / Media

Spiselige blomster
Kirsten Pilegaard
04/10/2017
National Food Institute, Research Group for Risk-Benefit
Media coverage (1)

Spiselige blomster
04/10/2017
Freelancer, Denmark
Marianne Steffensen
Kirsten Pilegaard
National Food Institute, Research Group for Risk-Benefit
Press / Media

Vilde planter
Kirsten Pilegaard
04/07/2017
National Food Institute, Research Group for Risk-Benefit

Media coverage (1)

Risikovurdering af vilde planter
04/07/2017
DTU Avisen, Denmark, Print
Marianne Vang Ryde
Kirsten Pilegaard
National Food Institute, Research Group for Risk-Benefit
Press / Media

Vilde planter
Kirsten Pilegaard
22/06/2017
National Food Institute, Research Group for Risk-Benefit

Media coverage (1)

Processen for risikovurdering af vilde planter
22/06/2017
Ingeniøren, Denmark
Hanne Kokkegaard
Kirsten Pilegaard
National Food Institute, Research Group for Risk-Benefit
Press / Media

Sødemidlet Stevia
Kirsten Pilegaard
07/03/2017
National Food Institute, Research Group for Risk-Benefit

Media coverage (1)

Sødemidlet Stevia
07/03/2017
Fit Living (National), Denmark, Print
Lene Roe Rasmussen
Kirsten Pilegaard
National Food Institute, Research Group for Risk-Benefit
Press / Media

Mælk og laktose intolerans
Inge Tetens
08/12/2016
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)

Mælk og laktose intolerans
08/12/2016
Media contribution (1)

Den fødevarebårne sygdomsbyrde
12/10/2016
Radio TSF, Radio
Isabel Meira
Sara Monteiro Pires
National Food Institute, Research Group for Risk-Benefit
Press / Media

Proteiners mæthed
Inge Tetens
27/09/2016

Subject
Proteiners mæthed
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)

Proteiners mæthed
27/09/2016
DR Detektor, Television
Jakob Bang Schmidt
Inge Tetens
National Food Institute, Research Group for Risk-Benefit
Press / Media

Om mikrobølgeovne og hvad der sker med mad, der opvarmes i en mikrobølgeovn
Morten Poulsen
27/09/2016

Subject
Mikrobølgeovne
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)

Om mikrobølgeovne og hvad der sker med mad, der opvarmes i en mikrobølgeovn
27/09/2016
DR P1 Videnskabens Verden, Radio
Ida Kellemann
Morten Poulsen
National Food Institute, Research Group for Risk-Benefit
Press / Media

D-vitamin
Inge Tetens
07/09/2016

Subject
D-vitamin
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)

D-vitamin
07/09/2016
Søndagsavisen, Print
Lene Jæger Klausen
Inge Tetens
National Food Institute, Research Group for Risk-Benefit
Press / Media
indholdsstoffer i kosttilskud
Kirsten Pilegaard
12/08/2016

Subject
Analyse af indholdsstoffer i kosttilskud (svar på e-mail), samt efterfølgende telefonsamtale om bivirkningsindberetninger af kosttilskud, kinesiske urter m.m.
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)

indholdsstoffer i kosttilskud
12/08/2016
DR, Sundhedsmagasinet, Television
Asger Mow
Kirsten Pilegaard
National Food Institute, Research Group for Risk-Benefit
Press / Media

citronsyrebehandling af nye kartofler
Kirsten Pilegaard
16/06/2016

Subject
Et EU-Kommissionsforslag om citronsyrebehandling af nye kartofler for at undgå at de bliver grønne.
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)
citronsyrebehandling af nye kartofler
16/06/2016
BT, Web
Michala Rosendahl
Kirsten Pilegaard
National Food Institute, Research Group for Risk-Benefit
Press / Media

Ramsløg, hvordan kender man forskel på ramsløgblade m.m. Hvad sker der hvis man tager fejl?
Kirsten Pilegaard
20/04/2016
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)
Ramsløg, hvordan kender man forskel på ramsløgblade m.m. Hvad sker der hvis man tager fejl?
20/04/2016
Netavisen, Web
Michelle Levstrup
Kirsten Pilegaard
National Food Institute, Research Group for Risk-Benefit
Press / Media

PAA vask af kyllinger
Louise Boysen
15/04/2016
National Food Institute, Division of Risk Assessment and Nutrition , Research Group for Risk-Benefit

Media contribution (1)
PAA vask af kyllinger
15/04/2016
Tænk, Print
Rasmus Thirup Beck
Spørgsmål om Stevia-planten og ADI for sødestoffer
Kirsten Pilegaard
11/04/2016
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)

Ingefær
Inge Tetens
17/03/2016
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)

følfod
Kirsten Pilegaard
14/03/2016
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)

Avocadosten
Kirsten Pilegaard
07/03/2016

Subject
Avocadosten har været omtalt som en sundhedseksplosion og fuld af antioxidanter i Søndagsavisen og MetroXpress. FVST har en facebooknyhed skrevet på baggrund af et notat fra os, hvor vi fraråder anvendelse af stenen.
National Food Institute, Research Group for Risk-Benefit

Media contribution (1)
Campylobacter kontrol
Louise Boysen
04/03/2016

Subject
Mail-korrespondance
Har kort beskrevet de primære danske kontroltiltag for Campylobacter i primærproduktion og på slagterier. Har henvist til GUS i FVST for mere detaljeret beskrivelse af nyeste tiltag.
National Food Institute, Division of Risk Assessment and Nutrition, Research Group for Risk-Benefit

Avocadosten
Kirsten Pilegaard
03/03/2016

Subject
Avocadosten har været omtalt som en sundhedseksplosion og fuld af antioxidanter i Søndagsavisen og MetroXpress. FVST har en facebooknyhed skrevet på baggrund af et notat fra os, hvor vi fraråder anvendelse af stenen.
National Food Institute, Research Group for Risk-Benefit

Skolebørns morgenmad
Inge Tetens
16/02/2016
National Food Institute, Research Group for Risk-Benefit

Det store D-vitamin-paradoks
Inge Tetens
25/01/2016

Subject
Det store D-vitamin-paradoks
National Food Institute, Research Group for Risk-Benefit
Gener, D-vitamin  
Ioanna Nissen  
01/12/2015

**Subject**  
Gener, D-vitamin  
National Food Institute, Research Group for Risk-Benefit

**Media contribution (1)**  
Gener, D-vitamin  
01/12/2015  
videnskab.dk, Web  
Susanne Vigsø Grøn  
Ioanna Nissen  
National Food Institute, Research Group for Risk-Benefit

Research om abrikoskerner  
Kirsten Pilegaard  
06/11/2015

**Subject**  
Research om abrikoskerner. Der er kommet chokoladeovertrukne abrikoskerner i handlen (helsebutikker). De kan også købes på Nettet fra UK. Journalisten kender til en person, der har været på skadestue med symptomer på HCN-fogiftning. Om det er med de chokoladeovertrukne eller om det er med andre abrikoskerner, der er i handlen er uvist  
National Food Institute, Research Group for Risk-Benefit

**Media contribution (1)**  
Research om abrikoskerner  
06/11/2015  
MetroXpress, Print  
Christian Hansen  
Kirsten Pilegaard  
National Food Institute, Research Group for Risk-Benefit

Hvor finder du dine vitaminer og mineraler  
Inge Tetens  
26/10/2015

**Subject**  
Hvor finder du dine vitaminer og mineraler  
National Food Institute, Research Group for Risk-Benefit

**Media contribution (1)**  
Hvor finder du dine vitaminer og mineraler  
26/10/2015  
DR, Television  
Dorthe Boss Kyhn  
Inge Tetens  
National Food Institute, Research Group for Risk-Benefit

Indsamling af planter fra naturen, hvilke muligheder er der for at komme galt afsted.  
Kirsten Pilegaard  
05/10/2015

**Subject**  
Indsamling af planter fra naturen, hvilke muligheder er der for at komme galt afsted.  
National Food Institute, Research Group for Risk-Benefit
Indsamling af planter fra naturen, hvilke muligheder er der for at komme galt afsted.
05/10/2015
Ekstrabladet, Print
Amalie Larsen
Kirsten Pilegaard
National Food Institute, Research Group for Risk-Benefit

Sundhedsværdien af at drikke eller spise en frugt eller grøntsag
Inge Tetens
09/07/2015

Farlige slankekosttilskud
Kirsten Pilegaard
15/05/2015

Problemet ved at bruge bregner som mad
Kirsten Pilegaard
06/05/2015