**Intake of whole apples or clear apple juice has contrasting effects on plasma lipids in healthy volunteers**

**PURPOSE:**
Fruit consumption is associated with a decreased risk of CVD in cohort studies and is therefore endorsed by health authorities as part of the '5 or more a day' campaigns. A glass of fruit juice is generally counted as one serving. Fruit may cause protection by affecting common risk factors of CVD.

**METHODS:**
Apples are among the most commonly consumed fruits and were chosen for a comprehensive 5 × 4 weeks dietary crossover study to assess the effects of whole apples (550 g/day), apple pomace (22 g/day), clear and cloudy apple juices (500 ml/day), or no supplement on lipoproteins and blood pressure in a group of 23 healthy volunteers.

**RESULTS:**
The intervention significantly affected serum total and LDL-cholesterol. Trends towards a lower serum LDL-concentration were observed after whole apple (6.7 %), pomace (7.9 %) and cloudy juice (2.2 %) intake. On the other hand, LDL-cholesterol concentrations increased by 6.9 % with clear juice compared to whole apples and pomace. There was no effect on HDL-cholesterol, TAG, weight, waist-to-hip ratio, blood pressure, inflammation (hs-CRP), composition of the gut microbiota or markers of glucose metabolism (insulin, IGF1 and IGFBP3).

**CONCLUSIONS:**
Apples are rich in polyphenols and pectin, two potentially bioactive constituents; however, these constituents segregate differently during processing into juice products and clear juice is free of pectin and other cell wall components. We conclude that the fibre component is necessary for the cholesterol-lowering effect of apples in healthy humans and that clear apple juice may not be a suitable surrogate for the whole fruit in nutritional recommendations.
Mono-colonization with *Lactobacillus acidophilus NCFM* affects the intestinal metabolome as compared to germ-free mice

Every single species of the gut microbiota produce low-molecular-weight compounds that are absorbed constantly from the intestinal lumen and carried to systemic circulation where they play a direct role in health and disease. However, very few studies address the host metabolome as a function of colonizing bacteria. In this study the effect of the *Lactobacillus acidophilus NCFM* strain was investigated by comparing the metabolome of mono-colonized and germ-free mice in several compartments. By liquid-chromatography coupled to mass spectrometry, we were able to show that the metabolome differed between the mono-colonized and germ-free mice, not only in ileum, caecum and colon, but also in plasma and liver. These observations suggest that *L. acidophilus NCFM* highly influence the metabolism in multiple compartments, underlying that the gut microbiota metabolism affects the host systemic metabolism.

**General information**

State: Published
Organisations: National Food Institute, Division of Food Microbiology, Division of Food Chemistry, University of Auckland, University of Copenhagen
Mono-colonization with Lactobacillus acidophilus NCFM affects the intestinal metabolome in mice

Mono-colonization of germ-free (GF) mice enables the study of specific bacterial species in vivo. Lactobacillus acidophilus is a probiotic strain, however many of the mechanisms behind its health-promoting effect remain unsolved. Here, we studied the effects of Lactobacillus acidophilus NCFMTM (NCFM) on the intestinal metabolome (jejunum, caecum, and colon) in mice by comparing NCFM mono-colonized (MC) mice with GF mice using liquid chromatography coupled to mass-spectrometry (LC-MS). The study adds to existing evidence that NCFM in vivo affects the bile acid signature of mice by deconjugation and dehydroxylation of bile acids. Furthermore, we confirmed that carbohydrate metabolism is affected by NCFM in the mouse intestine. Especially, the digestion of larger carbohydrates (penta- and tetrasaccharides) was increased in MC mice. Interestingly, we also found vitamin E (α-tocopherol acetate) in higher levels in the intestine of GF mice compared to MC mice, suggesting that NCFM either metabolizes the compound or indirectly affects the absorption by changing the metabolome in the intestine. The use of NCFM to increase the uptake of vitamin E supplements in humans and animals is a highly relevant topic for further research.

General information
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Organisations: National Food Institute, Division of Food Microbiology, Division of Food Chemistry, University of Auckland, University of Copenhagen
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Event: Abstract from 4th Danish Symposium on Metabolomics, Copenhagen, Denmark.
Main Research Area: Technical/natural sciences
Electronic versions: 11.pdf
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Source-ID: u::9560
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2013

Bacterial Impact on the Gut Metabolome

General information
State: Published
Organisations: National Food Institute, Division of Food Microbiology, Division of Food Chemistry
Authors: Sulek, K. (Intern), Licht, T. R. (Intern), Wilcks, A. (Intern), Skov, T. H. (Intern), Smedsgaard, J. (Intern)
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Original language: English
Main Research Area: Technical/natural sciences
Electronic versions: phdafhandling_karolinasulek.pdf
Publication: Research › Ph.D. thesis – Annual report year: 2013

Gram-negative bacteria account for main differences between faecal microbiota from patients with ulcerative colitis and healthy controls

General information
State: Published
Introducing GUt Low-Density Array (GULDA) - a validated approach for qPCR-based intestinal microbial community analysis

Alterations in the human gut microbiota caused, for example, by diet, functional foods, antibiotics, or occurring as a function of age are now known to be of relevance for host health. Therefore, there is a strong need for methods to detect such alterations in a rapid and comprehensive manner. In the present study, we developed and validated a high-throughput real-time quantitative PCR-based analysis platform, termed ‘GUt Low-Density Array’ (GULDA). The platform was designed for simultaneous analysis of the change in the abundance of 31 different microbial 16S rRNA gene targets in fecal samples obtained from individuals at various points in time. The target genes represent important phyla, genera, species, or other taxonomic groups within the five predominant bacterial phyla of the gut, Firmicutes, Bacteroidetes, Actinobacteria, Proteobacteria, and Verrucomicrobia and also Euryarchaeota. To demonstrate the applicability of GULDA, analysis of fecal samples obtained from six healthy infants at both 9 and 18 months of age was performed and showed a significant increase over time of the relative abundance of bacteria belonging to Clostridial cluster IV (Clostridia leptum group) and Bifidobacterium bifidum and concurrent decrease in the abundance of Clostridium butyricum and a tendency for decrease in Enterobacteriaceae over the 9-month period.
qPCR, Microbiota, Gut microbiology, LinRegPCR

DOI: 10.1111/1574-6968.12004
Metabolic footprint of Lactobacillus acidophilus NCFM at different pH

Lactobacillus acidophilus NCFM is a well known microorganism from the genomic and probiotic point of view. In order to analyze the potential interactions of NCFM with the surrounding environment, in vitro tests with the metabolic footprinting approach were performed. It was found that NCFM increased the concentration of lactic acid, succinic acid, adenine and arginine in the medium. The metabolism of NCFM did not change significantly between pH 5 and 7, suggesting that other environmental factors than pH might have bigger impact on its colonization throughout the gastrointestinal tract.

General information
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Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Food Chemistry
Authors: Sulek, K. (Intern), Frandsen, H. L. (Intern), Smedsgaard, J. (Intern), Skov, T. H. (Intern), Wilcks, A. (Intern), Licht, T. R. (Intern)
Pages: 244-252
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Main Research Area: Technical/natural sciences

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Journal: Metabolomics
Volume: 8
Issue number: 2
ISSN (Print): 1573-3882
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): SNIP 0.841 SJR 1.122 CiteScore 3.19
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.66 SJR 1.186 SNIP 1.054
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.318 SNIP 1.113 CiteScore 3.49
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.309 SNIP 1.142 CiteScore 3.74
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.133 SNIP 1.017 CiteScore 4.03
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.225 SNIP 1.19 CiteScore 4.37
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.372 SNIP 1.166 CiteScore 4.48
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.165 SNIP 0.925
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.279 SNIP 0.819
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.223 SNIP 0.782
Metabolic footprint of Lactobacillus acidophilus NCFM at different pH

General information
State: Published
Organisations: National Food Institute, Division of Microbiology and Risk Assessment, Division of Food Chemistry
Authors: Sulek, K. (Intern), Frandsen, H. L. (Intern), Skov, T. H. (Intern), Wilcks, A. (Intern), Smedsgaard, J. (Intern), Licht, T. R. (Intern)
Number of pages: 1
Publication date: 2012
Event: Abstract from 7th International Conference of the Metabolomics Society, Cairns, Australia.
Main Research Area: Technical/natural sciences
Source: dtu
Source-ID: u::3886
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2012

Subacute oral toxicity investigation of nanoparticulate and ionic silver in rats
Subacute toxicity of 14 nm nanoparticulate silver (Ag-NP) stabilised with polyvinylpyrrolidone and ionic silver in the form of silver acetate (Ag-acetate) was investigated in four-week-old Wistar rats. Animals received orally by gavage the following: vehicle control (10 $, 6 #); Ag-NP at doses: 2.25 (8 $), 4.5 (8 $) or 9 mg/kg bw/day (10 $, 6 #); or Ag-acetate 9 mg silver/kg bw/day (8 $) for 28 days. Clinical, haematological and biochemical parameters, organ weights, macro- and microscopic pathological changes were investigated. Caecal bacterial phyla and their silver resistance genes were quantified. For the Ag-NP groups, no toxicological effects were recorded. For Ag-acetate, lower body weight gain (day 4–7, 11–14, 14–16, P<0.05; overall, day 1–28, P<0.01), increased plasma alkaline phosphatase (P<0.05), decreased plasma urea (P<0.05) and lower absolute (P<0.01) and relative (P<0.05) thymus weight were recorded. In conclusion, these findings indicate toxicity of 9 mg/kg bw/day ionic silver but not of an equimolar Ag-NP dose. This is in accordance with previously reported data showing that oral Ag-acetate, in comparison with an equimolar dose of Ag-NP, resulted in higher silver plasma and organ concentrations.

General information
State: Published
Organisations: Division of Toxicology and Risk Assessment, National Food Institute, Division of Food Chemistry, Division of Microbiology and Risk Assessment, Chinese Academy of Sciences, DHI Denmark
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Publication date: 2012
Main Research Area: Technical/natural sciences
Publication information
Journal: Archives of Toxicology
Volume: 86
Issue number: 4
ISSN (Print): 0340-5761
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 1.62 SJR 1.541 CiteScore 4.79
Web of Science (2017): Indexed yes
Daily Intake of apples decrease total cholesterol

General information
State: Published
Organisations: Division of Toxicology and Risk Assessment, National Food Institute, Division of Microbiology and Risk Assessment, Research Institute of Pomology and Floriculture, Technical University of Denmark, University of Copenhagen
Pages: 272-272
Publication date: 2011
Analysis of the intestinal microbiota of oligo-saccharide fed mice exhibiting reduced resistance to Salmonella infection

Certain indigestible carbohydrates, known as prebiotics, are claimed to be beneficial for gut health through a selective stimulation of certain gut microbes including bifidobacteria. However, stimulation of such microbes does not necessarily imply a preventive effect against pathogen infection. We recently demonstrated a reduced resistance to Salmonella infection in mice fed diets containing fructo-oligosaccharides (FOS) or xylo-oligosaccharides (XOS). In the present study, faecal and caecal samples from the same mice were analysed in order to study microbial changes potentially explaining the observed effects on the pathogenesis of Salmonella. Denaturing gradient gel electrophoresis revealed that the microbiota in faecal samples from mice fed FOS or XOS were different from faecal samples collected before the feeding trial as well as from faecal profiles generated from control animals. This difference was not seen for caecal profiles.

Further analysis of faecal samples by real-time PCR demonstrated a significant increase in the Bacteroidetes phylum and in Bifidobacterium spp. in mice fed FOS or XOS. The observed bifidogenic effect was more pronounced for XOS than for FOS. The Firmicutes phylum and the Clostridium cocoides group were reduced by both FOS and XOS. Surprisingly, no significant differences were detected between faecal samples collected before and after pathogen challenge in any of the groups. Furthermore, no effect of diets on caecal concentrations of short-chain fatty acids was recorded. In conclusion, diets supplemented with FOS or XOS induced a number of microbial changes in the faecal microbiota of mice. The observed effects of XOS were qualitatively similar to those of FOS, but the most prominent bifidogenic effect was seen for FOS. An increased level of bifidobacteria is thus not in itself preventive against Salmonella infection, since the same XOS or FOS-fed mice were previously reported to be more severely affected by Salmonella than control animals.

General information
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Organisations: National Food Institute, Division of Microbiology and Risk Assessment, Division of Toxicology and Risk Assessment
Authors: Petersen, A. (Intern), Bergström, A. (Intern), Andersen, J. B. (Intern), Hansen, M. (Intern), Lahtinen, S. J. (Ekstern), Wilcks, A. (Intern), Licht, T. R. (Intern)
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Publication date: 2010
Main Research Area: Technical/natural sciences

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Journal: Beneficial Microbes
Volume: 3
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ISSN (Print): 1876-2883
Ratings:
Web of Science (2018): Indexed yes
Scopus rating (2017): SNIP 0.79 SJR 0.962 CiteScore 2.63
Web of Science (2017): Indexed Yes
Scopus rating (2016): SJR 0.95 SNIP 0.787 CiteScore 2.72
Scopus rating (2015): SJR 1.028 SNIP 0.867 CiteScore 2.94
Scopus rating (2014): SJR 0.837 SNIP 0.574 CiteScore 2.05
Scopus rating (2013): SJR 0.763 SNIP 0.66 CiteScore 1.71
ISI indexed (2013): ISI indexed yes
Scopus rating (2012): SJR 0.602 SNIP 0.523 CiteScore 1
ISI indexed (2012): ISI indexed no
Scopus rating (2011): SJR 0.251 SNIP 0.346
ISI indexed (2011): ISI indexed no
Original language: English
DOIs:
10.3920/BM2010.0016
Source: orbit
Source-ID: 270632
Publication: Research - peer-review › Journal article – Annual report year: 2010

Bacterial Impact on the Gut Metabolome

During the last decade, it has become evident that the complex ecosystem of microbes inhabiting the human gut plays an important role for human health. An increasing number of publications have shown that the composition and activity of our intestinal microbiota affects a number of different so-called lifestyle diseases including allergy, obesity, and colorectal cancer, as well as our susceptibility to intestinal infections and inflammation. Additionally, it has become evident that the intestinal microbiota can be modulated by intake of pre- and probiotics. A large number of studies have addressed the effects of dietary interventions on the presence of specific bacterial metabolites, which are anticipated to play a role for gut health.
health. However, such data evidently provide only small parts of the complex puzzle constituting the interactions between diet, microbiota, and mammalian host. This project’s objective is to elucidate the mechanism behind the beneficial effects of pre- and probiotics. This will lead to development of new pre- and probiotics targeting specific lifestyle related disorders. The innovative design of pre- and probiotics will lead to increased value for Danish companies. The major hypotheses to be addressed in the project are as follows: Specific probiotic bacteria growing in an intestinal environment produce metabolites, which are qualitatively and quantitatively different from those produced by the same bacteria in vitro. The production of metabolites by specific probiotic bacteria can be affected by prebiotic substances. The presence of specific prebiotics and/or probiotic bacteria in the intestine induces production of specific metabolites from the host epithelium. These effects will be altered by the presence of other specific bacteria in the gnotobiotic gut. The effects will be different in different gut compartments (e.g. ileum versus colon and mucosa versus lumen). Also metabolites in blood will be affected by probiotic colonization and/or prebiotic administration. To map metabolites, gnotobiotic animal models and in vitro fermentation tests in an anaerobic chamber are used, which allow studies of a simple well-defined intestinal microbiota – in this case Lactobacillus acidophilus NCFM. Usage of Mass Spectrometry makes it possible to measure metabolites in intestinal and other mammalian samples as well as in vitro samples. Newly developed advanced ('omics-) methodologies are used for analysis of biological interactions.

General information
State: Published
Organisations: National Food Institute, Division of Microbiology and Risk Assessment, Division of Food Chemistry
Authors: Sulek, K. (Intern), Wilcks, A. (Intern), Licht, T. R. (Intern), Smedsgaard, J. (Intern), Skov, T. H. (Intern), Frandsen, H. L. (Intern)
Publication date: 2010
Event: Abstract from 1st International Metabolomics Symposium in Germany, Freising-Weihenstephan, Germany.
Main Research Area: Technical/natural sciences

Effects of apples and specific apple components on the cecal environment of conventional rats: Role of apple pectin
Background: Our study was part of the large European project ISAFRUIT aiming to reveal the biological explanations for the epidemiologically well-established health effects of fruits. The objective was to identify effects of apple and apple product consumption on the composition of the cecal microbial community in rats, as well as on a number of cecal parameters, which may be influenced by a changed microbiota. Results: Principal Component Analysis (PCA) of cecal microbiota profiles obtained by PCR-DGGE targeting bacterial 16S rRNA genes showed an effect of whole apples in a long-term feeding study (14 weeks), while no effects of apple juice, puree or pomace on microbial composition in cecum were observed. Administration of either 0.33 or 3.3% apple pectin in the diet resulted in considerable changes in the DGGE profiles. A 2-fold increase in the activity of beta-glucuronidase was observed in animals fed with pectin (7% in the diet) for four weeks, as compared to control animals (P <0.01). Additionally, the level of butyrate measured in these pectin-fed animal was more than double of the corresponding level in control animals (P <0.01). Sequencing revealed that DGGE bands, which were suppressed in pectin-fed rats, represented Gram-negative anaerobic rods belonging to the phylum Bacteroidetes, whereas bands that became more prominent represented mainly Gram-positive anaerobic rods belonging to the phylum Firmicutes, and specific species belonging to the Clostridium Cluster XIVa. Quantitative real-time PCR confirmed a lower amount of given Bacteroidetes species in the pectin-fed rats as well as in the apple-fed rats in the four-week study (P <0.05). Additionally, a more than four-fold increase in the amount of Clostridium cocoides (belonging to Cluster XIVa), as well as of genes encoding butyryl-coenzyme A CoA transferase, which is involved in butyrate production, was detected by quantitative PCR in fecal samples from the pectin-fed animals. Conclusions: Our findings show that consumption of apple pectin (7% in the diet) increases the population of butyrate- and beta-glucuronidase producing Clostridiales, and decreases the population of specific species within the Bacteroidetes group in the rat gut. Similar changes were not caused by consumption of whole apples, apple juice, puree or pomace.

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment
Authors: Licht, T. R. (Intern), Hansen, M. (Intern), Bergström, A. (Intern), Poulsen, M. (Intern), Krath, B. (Intern), Markowski, J. (Ekstern), Dragsted, L. (Ekstern), Wilcks, A. (Intern)
Publication date: 2010
Main Research Area: Technical/natural sciences

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BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.953 SJR 1.242 CiteScore 2.95
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.82 SJR 1.282 SNIP 0.993
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.42 SNIP 0.994 CiteScore 2.93
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.519 SNIP 1.069 CiteScore 2.95
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.571 SNIP 1.179 CiteScore 3.32
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.507 SNIP 1.146 CiteScore 3.38
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.487 SNIP 1.125 CiteScore 3.4
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.433 SNIP 1.034
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.474 SNIP 0.964
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.398 SNIP 0.979
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.388 SNIP 0.949
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.304 SNIP 0.834
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.931 SNIP 0.803
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.891 SNIP 0.68
Scopus rating (2003): SJR 0.937 SNIP 0.671
Scopus rating (2002): SJR 0.69 SNIP 0.305
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DOIs:
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Effects of specific carbohydrates on the intestinal microbiota

The current screening study aimed at testing a set of well-characterized carbohydrates derived from pectic oligosaccharides (POS) from sugar beet for their specific effect on intestinal microbiotas derived from healthy people and from patients suffering from the inflammatory bowel disease designated Ulcerative Colitis (UC). Two such oligosaccharides having different degrees of polymerization, in the following designated S1 and S2, respectively, were tested. Small scale anaerobic fermentation studies were performed to test the effect of S1 and S2 on the composition of the intestinal microbiotas. Changes in the microbial composition were addressed by Denaturing Gradient Gel Electrophoresis, DGGE, using Fructo- Oligosaccharides (FOS, a goldenstandard prebiotic) and glucose as reference substrates. Comparison between the DGGE profiles obtained by fermentations of S1, S2 and FOS showed that S2 produced a DGGE profile different from fermentations of S1 and the control substrate FOS in a Pearson correlation cluster analysis, indicating that the degree of polymerization (DP) was decisive for which bacteria were stimulated by the oligosaccharides. Additionally, DGGE results of this screening study showed that there were no significant differences between the numbers of bands in the fermentations of all four substrates, indicating that S1, S2 and FOS had similar degrees of selectivity.

General information
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Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Center for BioProcess Engineering, Department of Chemical and Biochemical Engineering
Authors: Hemmingsen, L. (Intern), Holck, J. (Intern), Meyer, A. S. (Intern), Wilcks, A. (Intern), Licht, T. R. (Intern)
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Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 260170
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2010

Faecal Bacterial Communities in Healthy Controls and Ulcerative Colitis Patients

Ulcerative colitis (UC) is an idiopathic inflammatory bowel disease (IBD) that is characterized by chronic inflammation of the colonic mucosa. The aetiology of IBD is not well understood, however the commensal intestinal microbiota is thought to play an important pathogenetic role. Hence, a detailed knowledge about the composition of the intestinal microbiota may be critical to unravel the pathogenesis of IBD. The aim of this study was to examine if the faecal microbiota of patients with UC differs from that of healthy subjects. Faecal samples were collected from healthy subjects and from UC patients with either clinically inactive or active disease. To analyse the composition of the faecal microbiota, we performed quantitative PCR (qPCR) using species and group-specific primers targeting Bifidobacterium spp., Lactobacillus spp., Firmicutes, Bacteroidetes and Faecalibacterium prausnitzii. Denaturing Gradient Gel Electrophoresis (DGGE) analysis using a universal primer targeting bacterial 16S rRNA genes were carried out in order to identify differences in species composition. The results obtained from the qPCR showed that the UC patients, irrespective of the stage of disease activity had a significantly lower amount of Bacteroidetes compared to the healthy controls (p

General information
State: Published
Organisations: National Food Institute, Copenhagen University Hospital
Authors: Vigsnaes, L. K. (Intern), Wilcks, A. (Intern), Brynskov, J. (Ekstern), Licht, T. R. (Intern)
Publication date: 2010
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 259525
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2010

Lack of detectable DNA uptake by transmission of selected recipients in mono-associated rats

An important concern revealed in the public discussion of the use of genetically modified (GM) plants for human consumption, is the potential transfer of DNA from these plants to bacteria present in the gastrointestinal tract. Especially, there is a concern that antibiotic resistance genes used for the construction of GM plants end up in pathogenic bacteria, eventually leading to untreatable disease. Three different bacterial species (Escherichia coli, Bacillus subtilis, Streptococcus gordonii), all natural inhabitants of the food and intestinal tract environment were used as recipients for uptake of DNA. As source of DNA both plasmid and genomic DNA from GM plants were used in vitro and in vivo transformation studies. Mono-associated rats, creating a worst-case scenario, did not give rise to any detectable transfer
of DNA. Although we were unable to detect any transformation events in our experiment, it cannot be ruled out that this could happen in the GI tract. However, since several steps are required before expression of plant-derived DNA in intestinal bacteria, we believe this is unlikely, and antibiotic resistance development in this environment is more in danger by the massive use of antibiotics than the consumption of GM food harbouring antibiotic resistance genes.

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Wilcks, A. (Intern), Jacobsen, B. B. L. (Ekstern)
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Main Research Area: Technical/natural sciences

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Journal: BMC Research Notes
Volume: 3
ISSN (Print): 1756-0500
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.801 SJR 0.691 CiteScore 1.54
Web of Science (2017): Indexed yes
Scopus rating (2016): CiteScore 1.29 SJR 0.662 SNIP 0.7
Web of Science (2016): Indexed yes
Scopus rating (2015): SJR 0.74 SNIP 0.757 CiteScore 1.5
Scopus rating (2014): SJR 0.669 SNIP 0.787 CiteScore 1.43
Web of Science (2014): Indexed yes
Scopus rating (2013): SJR 0.654 SNIP 0.759 CiteScore 1.55
ISI indexed (2013): ISI indexed no
Scopus rating (2012): SJR 0.616 SNIP 0.656 CiteScore 1.55
ISI indexed (2012): ISI indexed no
Web of Science (2012): Indexed yes
Scopus rating (2011): SJR 0.66 SNIP 0.652 CiteScore 1.67
ISI indexed (2011): ISI indexed no
Scopus rating (2010): SJR 0.536 SNIP 0.629
Scopus rating (2009): SJR 0.398 SNIP 0.317
Original language: English
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Links:
http://www.biomedcentral.com/1756-0500/3/49
Source: orbit
Source-ID: 259057
Publication: Research - peer-review › Journal article – Annual report year: 2010

New Insights on the Apple and Health
Regular consumption of fruits and vegetables is associated with reduced risks of certain cancers, cardiovascular diseases, stroke, Alzheimer disease etc. In this project, we focused on apples as a model fruit for some of this research due to its high contents of soluble and insoluble fibers, flavonoids and phenolic acids and because of the high intakes of apples in northern parts of Europe. A series of 4-16 w rat feeding studies with fresh whole apples, dried apple, apple puree, clear and cloudy apple juices, apple pomace, and apple pectins have been conducted. A human cross-over dietary intervention study in 24 healthy volunteers with apple and apple products has also been performed. They supplemented a polyphenol and pectin restricted diet with whole apples, apple pomace, cloudy or clear apple juices or nothing for 4 weeks. Feeding rats with 10g apple/d reduced plasma total, HDL cholesterol, and VLDL cholesterol at 4w and 16w without significantly affecting cholesterol ratios, plasma triacylglycerols, or gastrointestinal transit times. Screening the genes coding for 16s RNA in the intestinal flora and applying multivariate statistics revealed significant changes in the flora related to feeding with apple or apple pectin. This was also reflected in changed gut flora enzymatic activities, whereas caecum short chain fatty acid concentrations were unaffected by feeding with all apple products, except high doses of apple pectins. In the
human study the whole apple had the strongest hypocholesterolemic effect, followed by apple pomace and cloudy apple juice. The clear apple juice, which is free of cell wall components showed adverse effect on serum cholesterol concentration and the effect differed markedly compared to the other apple products. There was no effect on HDL-cholesterol, triacylglycerol, bile acid excretion, weight, waist-to-hip circumference or blood pressure. We conclude that the cholesterol-lowering effect of apples is most likely due to the content of soluble fibre in combination with other cell wall components.

General information
State: Published
Organisations: National Food Institute, Division of Toxicology and Risk Assessment, Division of Microbiology and Risk Assessment
Publication date: 2010
Event: Abstract from INTERPOMA, Bolzano, .
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 265715
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2010

The effect of different in vitro conditions on the metabolic footprint of Lactobacillus acidophilus NCFM

General information
State: Published
Organisations: National Food Institute, Division of Microbiology and Risk Assessment, Division of Food Chemistry
Authors: Sulek, K. (Intern), Wilcks, A. (Intern), Licht, T. R. (Intern), Smødesgaard, J. (Intern), Skov, T. H. (Intern), Frandsen, H. L. (Intern)
Number of pages: 2
Publication date: 2010
Main Research Area: Technical/natural sciences
Electronic versions: prod2138281751865_Abstract_IPC2010_new_type.pdf
Source: dtu
Source-ID: u::3885
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2010

The Influence of Different Apple Based Supplements on the Intestinal Microbiota of Humans.
Background and objective: The present project is part of the large ISAFRUIT project, where one of the objectives is to identify effects of apple and apple product on parameters related to gut health. In a previous rat study we observed changes in the intestinal microbiota of rats fed whole apples, pomace or apple pectin ([1], and we were interested in finding out if the same effect can be observed in humans. Method: The study was conducted as a randomized, controlled 5 x 28 days cross-over study with 24 healthy persons of both genders. The persons were following a pectin- and polyphenol free restriction diet during the control period, and in the four other periods it was supplied with four different apple based supplements. Between the diets there was a 2-week wash-out period still on the restriction diet. The four apple based supplements were: 1) whole apples, 2) clear apple juice (pectin-free), 3) cloudy juice (apple juice with pulp), and 4) pomace (press cake from the cloudy juice production process). Fecal samples were taken before and after each diet period. After DNA extraction, Denaturing Gradient Gel Electrophoresis (DGGE) with universal primers and specific primers for bifidobacteria and Clostridium cluster XIVa was performed. Bands differing between the periods were sequenced, and qPCR was performed to verify the changes observed by DGGE. Results: Changes in the microbiota was observed by DGGE in persons consuming whole apples and pomace. In contrast, the two juice supplements did not show any effect on the microbiota by DGGE. Conclusion: Consumption of whole apples or pomace is able to modify the intestinal microbiota of humans.

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment, Research Institute of Pomology and Floriculture, University of Copenhagen
Number of pages: 150
Publication date: 2010
Host publication information
The Influence of Different Apple Based Supplements on the Intestinal Microbiota of Humans.

Background and objective: The present project is part of the large ISAFRUIT project, where one of the objectives is to identify effects of apple and apple product on parameters related to gut health. In a previous rat study we observed changes in the intestinal microbiota of rats fed whole apples, pomace or apple pectin ([1]), and we were interested in finding out if the same effect can be observed in humans. Method: The study was conducted as a randomized, controlled 5 x 28 days cross-over study with 24 healthy persons of both genders. The persons were following a pectin- and polyphenol free restriction diet during the control period, and in the four other periods it was supplied with four different apple based supplements. Between the diets there was a 2-week wash-out period still on the restriction diet. The four apple based supplements were: 1) whole apples, 2) clear apple juice (pectin-free), 3) cloudy juice (apple juice with pulp), and 4) pomace (press cake from the cloudy juice production process). Fecal samples were taken before and after each diet period. After DNA extraction, Denaturing Gradient Gel Electrophoresis (DGGE) with universal primers and specific primers for bifidobacteria and Clostridium cluster XIVa was performed. Bands differing between the periods were sequenced, and qPCR was performed to verify the changes observed by DGGE. Results: Changes in the microbiota was observed by DGGE in persons consuming whole apples and pomace. In contrast, the two juice supplements did not show any effect on the microbiota by DGGE. Conclusion: Consumption of whole apples or pomace is able to modify the intestinal microbiota of humans.

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment, Research Institute of Pomology and Floriculture, University of Copenhagen
Publication date: 2010
Event: Poster session presented at 28th International Horticultural Congress, Lisabon, Portugal.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 271172
Publication: Research - peer-review › Poster – Annual report year: 2010

Alternative models based on invertebrates and mammalian cell lines for risk assessment of microbial pest control agents

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, National Environmental Research Institute, University of Copenhagen, INRA Institut National de La Recherche Agronomique
Authors: Hansen, B. M. (Ekstern), Thorsen, L. (Ekstern), Nielsen-LeRoux, C. (Ekstern), Wilcks, A. (Intern), Hendriksen, N. B. (Ekstern)
Publication date: 2009

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 250176
Publication: Research › Sound/Visual production (digital) – Annual report year: 2009

Can temperature profiling and resistance to intestinal conditions be used to distinguish between pathogenic and non-pathogenic species of the Bacillus cereus group?

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Wilcks, A. (Intern), Madsen, B. (Intern)
Publication date: 2009
Characterization of a small erythromycin resistance plasmid pLFE1 from the food-isolate Lactobacillus plantarum M345

This paper reports the complete 4031 bp nucleotide sequence of the small erythromycin resistance plasmid pLFE1 isolated from the raw-milk cheese isolate Lactobacillus plantarum M345. Analysis of the sequence revealed the coding regions for the erythromycin resistance determinant Erm(B). A replication initiation protein RepB was identified belonging to the RepB proteins of the pMV158 family of rolling-circle replicating plasmids. The transcriptional repressor protein CopG and a small counter transcribed RNA, two elements typically involved in replication control within this family were also found. A putative replication initiation site including a single-strand origin (sso) -like region succeeded by a characteristic pMV158 family double-strand origin (dso) was located upstream of the replication region. An open reading frame following a typical origin of transfer (oriT) site and coding for a putative truncated mobilization (Mob) protein with a size of 83 aa was detected. The product of the putative mob gene showed large similarity to the N-terminal region of the pMV158 family of Pre/Mob proteins, but was much smaller than other proteins of this family. We therefore suggest that the Mob function in pLFE1 is supplied in trans from another plasmid present in L plantarum M345. Filter-mating experiments showed that pLFE1 has a broad host-range with transconjugants obtained from Lactobacillus rhamnosus, Lactococcus lactis, Listeria innocua, the opportunistic pathogen Enterococcus faecalis and the pathogen Listeria monocytogenes.
Effect of apple pectin on gut microbiota - qPCR in applied microbiology

This study was part of the large European project ISAFRUIT aiming to reveal the biological explanations for the epidemiologically well-established health effects of fruits. The objective was to identify effects of apple and apple product consumption on the composition of the cecal microbial community in rats, as well as on a number of cecal parameters, which could be influenced by a changed microbiota. Principal Component Analysis (PCA) of cecal microbiota profiles obtained by PCR-DGGE targeting bacterial 16S rRNA genes showed an effect of whole apples in a long-term feeding study (14 weeks), while no effects of apple juice, purée or pomace on microbial composition in cecum were observed. Administration of pectin derived from apples resulted in considerable changes of these DGGE profiles. A 2-fold increase in the activity of beta-glucuronidase was observed in animals fed with pectin (7% in the diet) for four weeks, as compared to control animals (P...
Handling and describing metabolomics data more rationally

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, University of Copenhagen
Authors: Skov, T. H. (Intern), Kristensen, M. (Intern), Dragsted, L. (Ekstern), Wilcks, A. (Intern), Licht, T. R. (Intern)
Publication date: 2009
Event: Abstract from NuGO and SYSDIET Metabolomics workshop, Copenhagen, Denmark.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 245616
Publication: Research › Conference abstract for conference – Annual report year: 2009

Horizontal Gene Transfer of an IncP-1 plasmid in the gut of streptomycin treated rats

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, University of Copenhagen
Authors: Lund, A. (Intern), Wilcks, A. (Intern), Hansen, L. H. (Ekstern), Sørensen, S. J. (Ekstern)
Publication date: 2009
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 245943
Publication: Research › Poster – Annual report year: 2009

Intra- and interspecies conjugal transfer of Tn916-like elements from Lactococcus lactis in vitro and in vivo

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Boguslawska, J. (Ekstern), Życka-Krzesinska, J. (Ekstern), Wilcks, A. (Intern), Bardowski, J. (Ekstern)
Pages: 6352-6360
Publication date: 2009
Main Research Area: Technical/natural sciences
Publication information
Journal: Applied and Environmental Microbiology
Volume: 75
Issue number: 19
ISSN (Print): 0099-2240
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 3.99
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.08
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.891 SNIP 1.308 CiteScore 4.14
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.857 SNIP 1.384 CiteScore 4.02
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): SJR 1.899 SNIP 1.414 CiteScore 4.25
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): SJR 1.975 SNIP 1.429 CiteScore 4.29
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): SJR 1.914 SNIP 1.455 CiteScore 4.12
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.887 SNIP 1.436
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.972 SNIP 1.528
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 2.156 SNIP 1.572
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 2.043 SNIP 1.647
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 2.054 SNIP 1.602
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 2.074 SNIP 1.653
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 2.108 SNIP 1.648
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 2.097 SNIP 1.821
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 2.046 SNIP 1.754
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.989 SNIP 1.736
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.957 SNIP 1.758
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 2.3 SNIP 1.732
Original language: English
DOIs:
10.1128/AEM.00470-09
Source: orbit
Source-ID: 250349
Publication: Research - peer-review › Journal article – Annual report year: 2009
Transfer of Wild-Type Plasmids Harbouring Tetracycline or Erythromycin Resistance Genes from Native Strains of Lactobacillus plantarum to other Bacteria in a Gastrointestinal Environment

General information
State: Published
Organisations: Division of Seafood Research, National Food Institute, Center for Systems Microbiology, Department of Systems Biology
Authors: Feld, L. (Intern), Wilcks, A. (Intern), Hammer, K. (Intern)
Number of pages: 113
Publication date: Jun 2008

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions: ph.d rapport.pdf
Source: orbit
Source-ID: 263829
Publication: Research › Conference abstract in journal – Annual report year: 2009

A standardized conjugation protocol to asses antibiotic resistance transfer between lactococcal species

Optimal conditions and a standardized method for conjugation between two model lactococcal strains, Lactococcus lactis SH4174 (pAM beta 1-containing, erythromycin resistant donor) and L. lactis Bu2-60 (plasmid-free, erythromycin sensitive recipient), were developed and tested in an inter-laboratory experiments involving five laboratories from different countries. The ultimate goal of the study was to assess the microbial potential of antibiotic resistance transfer among Lactic Acid Bacteria (LAB). The influence of culture age (various OD values) and ratios of donor and recipient cultures as well as filter, solid and liquid mating techniques, were examined in order to optimize the conjugation protocol. In the result of these studies, we concluded that the donor-to-recipient ratio appear to be important: the most efficient technique for conjugation was filter mating and the optimal conditions for gene transfer were observed when late logarithmic Cultures of both donor and recipient were used. Comparison of conjugal transfer frequencies between five partner laboratories showed that results are sufficiently inter-laboratory repeatable and inter-laboratory comparable. This is the first study of this kind, in which a standardized protocol of conjugal mating for testing antibiotic resistance dissemination among LAB was established and validated. (C) 2008 Elsevier B.V. All rights reserved.

General information
State: Published
Effect of apple pectin consumption on the rat caecal microbiota

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment, University of Copenhagen
Publication date: 2008

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 233720
Publication: Research - peer-review › Journal article – Annual report year: 2008

Effects of apple pectin consumption on the rat caecal microbiota

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment
Authors: Licht, T. R. (Intern), Poulsen, M. (Ekstern), Hansen, M. (Ekstern), Krath, B. (Intern), Dragsted, L. O. (Ekstern), Wilcks, A. (Intern)
Publication date: 2008
Event: Abstract from 6th Joint INRA-RRI Symposium on Gut Microbiome, Functionality, Interaction with the host and Impact on the environment, Clermont-Ferrand, France.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 234073
Publication: Research › Conference abstract for conference – Annual report year: 2008

Effects of apple pectin consumption on the rat caecal microbiota

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment
Authors: Licht, T. R. (Intern), Poulsen, M. (Ekstern), Hansen, M. (Ekstern), Krath, B. (Intern), Dragsted, L. O. (Ekstern), Wilcks, A. (Intern)
Publication date: 2008
Event: Poster session presented at 6th Joint INRA-RRI Symposium on Gut Microbiome, Functionality, Interaction with the host and Impact on the environment, Clermont-Ferrand, France.
Germination and conjugation of Bacillus thuringiensis subsp. israelensis in the intestine of gnotobiotic rats

Aims: To study the ability of Bacillus thuringiensis subsp. israelensis spores to germinate and subsequently transfer a conjugative plasmid in the intestinal tract of gnotobiotic rats. Methods and Results: Germination was studied by feeding germ-free rats with spores of a B. thuringiensis strain harbouring a plasmid encoding green fluorescent protein (GFP), which enabled quantification of germinated bacteria by flow cytometry. To study in vivo conjugation, germ-free rats were first associated with a B. thuringiensis recipient strain and after 1 week an isogenic donor strain harbouring the conjugative plasmid pXO16 was introduced. Both strains were given as spores and transfer of pXO16 was observed from the donor to the recipient strain. Conclusions: Bacillus thuringiensis is able to have a full life cycle in the intestine of gnotobiotic rats including germination of spores, several cycles of growth and sporulation of vegetative cells. For the first time conjugative plasmid transfer in a mammalian intestinal tract was shown between two B. thuringiensis strains. Significance and Impact of the Study: Strains of B. thuringiensis are used worldwide to combat insect pests, and this study brings new insights into the nature of B. thuringiensis showing the potential of the bacteria to germinate and transfer DNA in the mammalian intestinal tract.
Prebiotics for prevention of Salmonella infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment
Authors: Petersen, A. (Intern), Wilcks, A. (Intern), Poulsen, M. (Intern), Licht, T. R. (Intern)
Publication date: 2008
Event: Abstract from 6th Joint INRA-RRI Symposium on Gut Microbiome, Functionality, Interaction with the host and Impact on the environment, Clermont-Ferrand, France.
Prebiotics for prevention of Salmonella infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment
Authors: Petersen, A. (Intern), Wilcks, A. (Intern), Poulsen, M. (Intern), Licht, T. R. (Intern)
Publication date: 2008
Event: Poster session presented at 6th Joint INRA-RRI Symposium on Gut Microbiome, Functionality, Interaction with the host and Impact on the environment, Clermont-Ferrand, France.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 234133
Publication: Research › peer-review › Conference abstract for conference – Annual report year: 2008

Prebiotics for Prevention of Salmonella Infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment
Authors: Petersen, A. (Intern), Lahtinen, S. (Ekstern), Poulsen, M. (Intern), Wilcks, A. (Intern), Licht, T. R. (Intern)
Publication date: 2008
Event: Abstract from 2nd ASM Conference on Beneficial Microbes, San Diego, CA, United States.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 234134
Publication: Research › Poster – Annual report year: 2008

Prebiotics for Prevention of Salmonella Infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment
Authors: Petersen, A. (Intern), Lahtinen, S. (Ekstern), Poulsen, M. (Intern), Wilcks, A. (Intern), Licht, T. R. (Intern)
Publication date: 2008
Event: Abstract from Symposium for Biotech Research, Lyngby, Denmark.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 234125
Publication: Research › peer-review › Conference abstract for conference – Annual report year: 2008

Prebiotics for Prevention of Salmonella Infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Petersen, A. (Intern), Lahtinen, S. (Ekstern), Poulsen, M. (Ekstern), Wilcks, A. (Intern), Licht, T. R. (Intern)
Publication date: 2008
Event: Poster session presented at Symposium for Biotech Research, Lyngby, Denmark.
Main Research Area: Technical/natural sciences
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Source-ID: 234131
Publication: Research › Conference abstract for conference – Annual report year: 2008

Prebiotics for Prevention of Salmonella Infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Petersen, A. (Intern), Lahtinen, S. (Ekstern), Poulsen, M. (Ekstern), Wilcks, A. (Intern), Licht, T. R. (Intern)
Publication date: 2008
Event: Poster session presented at Symposium for Biotech Research, Lyngby, Denmark.
Main Research Area: Technical/natural sciences
Source: orbit
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Publication: Research › Poster – Annual report year: 2008
Prebiotics for Prevention of Salmonella Infections

**General information**
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Petersen, A. (Intern), Lahtinen, S. (Ekstern), Poulsen, M. (Ekstern), Wicks, A. (Intern), Licht, T. R. (Intern)
Publication date: 2008
Event: Poster session presented at 2nd ASM Conference on Beneficial Microbes, San Diego, CA, United States.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 234126
Publication: Research › Poster – Annual report year: 2008

Selective pressure affects transfer and establishment of a Lactobacillus plantarum resistance plasmid in the gastrointestinal environment

Objectives and methods: A Lactobacillus plantarum strain recently isolated from French raw-milk cheese was tested for its ability to transfer a small plasmid pLFE1 harbouring the erythromycin resistance gene erm(B) to Enterococcus faecalis. Mating was studied in vitro and in different gastrointestinal environments using gnotobiotic rats as a simple in vivo model and streptomycin-treated mice as a more complex model. Transfer and establishment of transconjugants in the intestine were investigated with and without selective pressure. Results: Compared with the relatively low transfer frequency of similar to 5.7 x 10^(-8) transconjugants/recipient obtained in vitro by filter mating, a surprisingly high number of transconjugants (10^(-4) transconjugants/recipient) was observed in gnotobiotic rats even without antibiotic treatment. When erythromycin was administered, a transfer rate of similar to 100% was observed, i.e. the recipient population turned completely into transconjugants (3 x 10^9 cfu/g faeces). Additionally, the time to reach a stable transconjugant population level was much faster in the erythromycin-treated gnotobiotic rats (1 day) than in the untreated animals (4-5 days). Transconjugants persisted in the gut in relatively stable numbers at least 12 days after termination of antibiotic treatment. In the streptomycin-treated mice, no transfer was observed either with or without erythromycin treatment. Conclusions: The overall results imply that the gastrointestinal tract may comprise a more favourable environment for antibiotic resistance transfer than conditions provided in vitro. However, the indigenous gut microbiota severely restricts transfer, thus minimizing the number of detectable transfer events. Treatment with erythromycin strongly favoured transfer and establishment of pLFE1.

**General information**
State: Published
Organisations: National Food Institute, Center for Systems Microbiology, Department of Systems Biology
Authors: Feld, L. (Intern), Schjorring, S. (Ekstern), Hammer, K. (Intern), Licht, T. R. (Intern), Danielsen, M. (Intern), Krogfelt, K. (Intern), Wicks, A. (Intern)
Pages: 845-852
Publication date: 2008
Main Research Area: Technical/natural sciences

**Publication information**
Journal: Journal of Antimicrobial Chemotherapy
Volume: 61
Issue number: 4
ISSN (Print): 0305-7453
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Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SJR 2.419 SNIP 1.568 CiteScore 4.34
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 4.21 SJR 2.283 SNIP 1.521
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.259 SNIP 1.516 CiteScore 4.06
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.298 SNIP 1.765 CiteScore 4.61
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Sequence and analysis of pLFE1, a small transferable erythromycin resistance plasmid from the food isolate Lactobacillus plantarum M345

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Feld, L. (Ekstern), Bielak, E. (Intern), Hammer, K. (Ekstern), Wilcks, A. (Intern)
Publication date: 2008
Event: Abstract from 6th Joint INRA-RRI Symposium on Gut Microbiome, Functionality, Interaction with the host and Impact on the environment, Clermont-Ferrand, France.
Main Research Area: Technical/natural sciences
Source: orbit
A 90-day safety study in Wistar rats fed genetically modified rice expressing snowdrop lectin Galanthus nivalis (GNA)

Genetically modified plants expressing insecticidal traits offer a new strategy for crop protection, but at the same time present a challenge in terms of food safety assessment. The present 90-day feeding study was designed to assess the safety of a rice variety expressing the snowdrop Galanthus nivalis lectin (GNA lectin), and forms part of a EU-funded project where the objective has been to develop and validate sensitive and specific methods to assess the safety of genetically modified foods. Mate and female Wistar rats were given a purified diet containing either 60% genetically modified or parental rice for 90 days. This corresponds to a mean daily GNA lectin intake of approximately 58 and 67 mg/kg body weight for males and females, respectively. Prior to the animal study comprehensive analytical characterization of both rice materials was performed. The chemical analyses showed a number of statistically significant differences, with the majority being within the ranges reported in the literature. In the animal study a range of clinical, biological, immunological, microbiological and pathological parameters were examined. A number of significant differences were seen between groups fed the two diets, but none of them were considered to be adverse. In conclusion, the design of the present animal study did not enable us to conclude on the safety of the GM food. Additional group(s) where the expressed gene products have been spiked to the diet should be included in order to be able to distinguish whether the observed effects were due to the GNA lectin per se or to secondary changes in the GM rice.
A 90-day safety study of genetically modified rice expressing Cry1Ab protein (Bacillus thuringiensis toxin) in Wistar rats

An animal model for safety assessment of genetically modified foods was tested as part of the SAFOTEST project. In a 90-day feeding study on Wistar rats, the transgenic KMD1 rice expressing Cry1Ab protein was compared to its non-transgenic parental wild type, Xiushui 11. The KMD1 rice contained 15 mg Bt toxin/kg and based on the average feed consumption the daily intake was 0.54 mg Bt toxin/kg body weight. No adverse effects on animal behaviour or weight gain were observed during the study. Blood samples collected one week prior to sacrifice were analyzed and compared for standard haematological and biochemical parameters. A few parameters were significantly different, but all within the normal reference intervals for rats of this breed and age and not in relation to any other findings, thus not considered treatment related. Upon sacrifice a large number of organs were weighed, macroscopic and histopathological examinations were performed with only minor changes to report. The aim of the study was to use a known animal model in performance of safety assessment of a GM crop, in this case KMD1 rice. The results show no adverse or toxic effects of KMD1 rice when tested in the design used in this 90-day study. Nevertheless the experiences from this study lead to the overall conclusion that safety assessment for unintended effects of a GM crop cannot be done without additional test group(s).

General information
State: Published
Organisations: Division of Toxicology and Risk Assessment, National Food Institute, Division of Microbiology and Risk Assessment
Pages: 339-349
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: Food and Chemical Toxicology
Volume: 45
Issue number: 3
ISSN (Print): 0278-6915
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 3.99 SJR 1.144 SNIP 1.427
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.96 SJR 1.351 SNIP 1.58
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.202 SNIP 1.415 CiteScore 3.44
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.038 SNIP 1.369 CiteScore 3.12
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.02 SNIP 1.506 CiteScore 3.26
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.126 SNIP 1.748 CiteScore 3.52
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.124 SNIP 1.58 CiteScore 3.36
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Apples and apple pectin change the rat caecal microbiota. Second ISAFRUIT General Assembly

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Wilcks, A. (Intern), Poulsen, M. (Ekstern), Madsen, B. (Ekstern), Dragsted, L. O. (Ekstern), Licht, T. R. (Intern)
Publication date: 2007
Event: Poster session presented at 5th Symposium on Food Microbiology, Helsingør, Denmark.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 237716
Publication: Research › Poster – Annual report year: 2007

Apples and pectin change the rat caecal microbiota

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment
Authors: Wilcks, A. (Intern), Poulsen, M. (Intern), Madsen, B. (Ekstern), Dragsted, L. O. (Ekstern), Licht, T. R. (Intern)
Publication date: 2007
Event: Poster session presented at XXX International Congress on Microbial Ecology and Disease Joint with the 4th Probiotics, Prebiotics and New Foods, Rome, Italy.
Main Research Area: Technical/natural sciences
Links:
http://www.somed.nu
Source: orbit
Source-ID: 245270
Horizontal transfer of tet(M) and erm(B) resistance plasmids from food strains of Lactobacillus plantarum to Enterococcus faecalis JH2-2 in the gastrointestinal tract of gnotobiotic rats

Two wild-type strains of Lactobacillus plantarum previously isolated from fermented dry sausages were analysed for their ability to transfer antibiotic resistance plasmids in the gastrointestinal tract. For this purpose, we used gnotobiotic rats as an in vivo model. Rats were initially inoculated with the recipient Enterococcus faecalis JH2-2 at a concentration of 10(10) CFU mL(-1). After a week, either of the two donors L. plantarum DG 522 (harbouring a tet(M)-containing plasmid of c. 40 kb) or L. plantarum DG 507 [harbouring a tet(M)-containing plasmid of c. 10 kb and an erm(B)-containing plasmid of c. 8.5 kb] was introduced at concentrations in the range of 10(8)-10(10) CFU mL(-1). Two days after donor introduction, the first transconjugants (TCs) were detected in faecal samples. The detected numbers of tet(M)-TCs were comparable for the two donors. In both cases, this number increased to c. 5 x 10(2) CFU g(-1) faeces towards the end of the experiment. For erm(B)-TCs, the number was significantly higher and increased to c. 10(3) CFU g(-1) faeces. To our knowledge, this is the first study showing in vivo transfer of wild-type antibiotic resistance plasmids from L. plantarum to E. faecalis.
ISAFRUIT health research: Integrating experimental and observational studies on fruit and health with nutrigenomics

General information
State: Published
Organisations: Division of Toxicology and Risk Assessment, National Food Institute, Division of Microbiology and Risk Assessment, Technical University of Denmark
Publication date: 2007
Event: Abstract from The International meeting in FAV, Houston, Texas, .
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 211351
Publication: Research › Journal article – Annual report year: 2007

Prebiotics for prevention of Listeria infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Ebersbach, T. (Intern), Wilcks, A. (Intern), Poulsen, M. (Ekstern), Licht, T. R. (Intern)
Publication date: 2007
Event: Abstract from 4th Probiotics, Prebiotics and New food, Rome, Italy, .
Main Research Area: Technical/natural sciences
Source: orbit
Prebiotics for prevention of Listeria infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Ebersbach, T. (Intern), Wilcks, A. (Intern), Poulsen, M. (Ekstern), Licht, T. R. (Intern)
Publication date: 2007
Event: Poster session presented at The 4th Probiotics, Prebiotics and New food, Rome, Italy
Main Research Area: Technical/natural sciences
Source: orbit

Prebiotics for prevention of salmonella infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Petersen, A. (Ekstern), Wilcks, A. (Intern), Poulsen, M. (Ekstern), Licht, T. R. (Intern)
Publication date: 2007
Main Research Area: Technical/natural sciences
Source: orbit
Prebiotics for prevention of Salmonella infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment
Authors: Petersen, A. (Intern), Wilcks, A. (Intern), Poulsen, M. (Intern), Licht, T. R. (Intern)
Publication date: 2007
Event: Poster session presented at The 4th meeting on Probiotics, Prebiotics and New Foods jointly with the XXX International Congress on Microbial Ecology and Disease, Rome, Italy.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 245273
Publication: Research › Poster – Annual report year: 2007

Prebiotics for Prevention of Salmonella Infections

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Division of Toxicology and Risk Assessment
Authors: Petersen, A. (Intern), Wilcks, A. (Intern), Poulsen, M. (Intern), Licht, T. R. (Intern)
Publication date: 2007
Event: Abstract from The 4th meeting on Probiotics, Prebiotics and New Foods jointly with the XXX International Congress on Microbial Ecology and Disease, Rome, Italy.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 234788
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2007

Safety testing of GM-rice expressing PHA-E lectin using a new animal test design

The 90-day animal study is the core study for the safety assessment of genetically modified foods in the SAFOTEST project. The model compound tested in the 90-day study was a rice variety expressing the kidney bean Phaseolus vulgaris lectin agglutinin E-form (PHA-E lectin). Female Wistar rats were given a nutritionally balanced purified diet with 60% parental rice, 60% PHA-E rice or 60% PHA-E rice spiked with 0.1% recombinant PHA-E lectin for 90 days. This corresponded to a mean daily PHA-E lectin intake of approximately 0, 30 and 100 mg/kg body weight for each group, respectively. The spiking was used to increase the specificity and to demonstrate the sensitivity of the study. A range of biological, biochemical, microbiological and pathological parameters were examined and significant differences in weight of small intestine, stomach and pancreas and plasma biochemistry were seen between groups. Included in this paper are also data from the molecular characterisation and chemical analysis of the PHA-E rice, from the construction and production of the PHA-E lectin, and from the preceding 28-day in vivo study where the toxicity of the pure PHA-E lectin was determined. In conclusion, the combined use of information from the compositional analysis, the 28-day study and the characterisation of the PHA-E rice and the PHA-E lectin has improved the design of the 90-day study. The spiking procedure has facilitated the interpretation of the results of the study and transferred it into a valuable tool for the future safety testing of genetically modified foods.

General information
State: Published
Organisations: Division of Toxicology and Risk Assessment, National Food Institute, Division of Microbiology and Risk Assessment
Pages: 364-377
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: Food and Chemical Toxicology
Volume: 45
Issue number: 3
ISSN (Print): 0278-6915
Ratings:
spiking, animal study, GMO, genetically modified rice, PHA-E lectin, SAFOTEST, safety assessment

DOIs:
10.1016/j.fct.2006.09.003
Selection of bacteria originating from a human intestinal microbiota in the gut of previously germ-free rats

Denaturing gradient gel electrophoresis (DGGE) was applied to separate PCR-amplified 16S rRNA genes originating from human microbiota associated (HMA) rat faeces as well as from the human faecal sample used for inoculation of the animals. Subsequently, a total of 15 dominant bands were excised from the DGGE gels, cloned and sequenced. Comparison of the obtained sequences with the Ribosomal Database revealed that species of Bacteroides/Prevotella and Faecalibacterium gave rise to the majority of the dominant bands in the human sample and in the HMA rats. In the HMA rats, two dominant bands, which were not present in the human DGGE profile, originated from species of Ruminococcus. With the exception of the Ruminococcus sequences, sequences originating from both rats and human samples were represented in all major branches of a maximum parsimony tree, indicating that the rat feed and gut environment allows colonization of the dominant taxonomic units from the human microbiota, but additionally selects for Ruminococci. Bands representing Prevotella and Faecalibacterium, which were found in identical positions of the DGGE gels originating from human and HMA rat faecal samples, originated from completely identical sequences, indicating that the same strains of these species were dominating in the human and rat samples.

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Licht, T. R. (Intern), Madsen, B. (Intern), Wilcks, A. (Intern)
Pages: 205-209
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: Fems Microbiology Letters
Volume: 277
Issue number: 2
ISSN (Print): 0378-1097
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.8 SJR 0.79 SNIP 0.58
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.76 SJR 0.842 SNIP 0.615
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.156 SNIP 0.756 CiteScore 2.08
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.136 SNIP 0.767 CiteScore 2.17
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.053 SNIP 0.719 CiteScore 2.25
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.073 SNIP 0.804 CiteScore 2.25
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.105 SNIP 0.764 CiteScore 2.26
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
The Human Biota Associated Rat as a Model for the Human Intestinal Microbiota

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Licht, T. R. (Intern), Wilcks, A. (Intern)
Publication date: 2007
Event: Abstract from XXX International Congress on Microbial Ecology and Disease Joint with the 4th Probiotics, Prebiotics and New Foods, Rome, Italy.
Main Research Area: Technical/natural sciences

Links:
http://www.somed.nu
Source-ID: 245274
Publication: Research › Conference abstract for conference – Annual report year: 2007

The Human Biota Associated Rat as a Model for the Human Intestinal Microbiota

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Licht, T. R. (Intern), Wilcks, A. (Intern)
Publication date: 2007
Event: Abstract from 5th Symposium on Food Microbiology, Helsingør, Denmark.
Main Research Area: Technical/natural sciences
Source-ID: 245280
Publication: Research › Conference abstract for conference – Annual report year: 2007
The Human Biota Associated Rat as a Model for the Human Intestinal Microbiota

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Licht, T. R. (Intern), Wilcks, A. (Intern)
Publication date: 2007
Event: Poster session presented at 5th Symposium on Food Microbiology, Helsingør, Denmark.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 247767
Publication: Research › Poster – Annual report year: 2007

The Human Biota Associated Rat as a Model for the Human Intestinal Microbiota. 4th Probiotics, Prebiotics and New Foods

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Licht, T. R. (Intern), Wilcks, A. (Intern)
Publication date: 2007
Event: Poster session presented at XXX Somed Meeting, Rome, Italy.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 237718
Publication: Research › Poster – Annual report year: 2007

Transfer of ermB-plasmid from Lactobacillus to Enterococcus faecalis in the intestine of gnotobiotic rats

General information
State: Published
Organisations: National Food Institute, Center for Systems Microbiology, Department of Systems Biology, Division of Microbiology and Risk Assessment
Authors: Feld, L. (Intern), Danielsen, M. (Ekstern), Hammer, K. (Intern), Wilcks, A. (Intern)
Publication date: 2007

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 237720
Publication: Research › Sound/Visual production (digital) – Annual report year: 2007

Bakterier anvendt til biologisk insektbekæmpelse – Kan de give diarré?

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Wilcks, A. (Intern), Hansen, B. M. (Ekstern), Hendriksen, N. B. (Ekstern), Smidt, L. (Ekstern), Andrup, L. (Ekstern), Licht, T. R. (Intern)
Publication date: 2006
Main Research Area: Technical/natural sciences

Publication information
Journal: Ny viden til miljøstyrelsen
Original language: Danish
Source: orbit
Source-ID: 245254
Publication: Communication › Journal article – Annual report year: 2006
Conjugative gene transfer in the gastrointestinal environment

Fate and effect of ingested Bacillus cereus spores and vegetative cells in the intestinal tract of human-flora-associated rats

The fate and effect of Bacillus cereus F4433/73R in the intestine of human-flora-associated rats was studied using bacteriological culturing techniques and PCR-denaturing gradient gel electrophoresis in combination with cell assays and immunoassays for detection of enterotoxins. In faecal samples from animals receiving vegetative cells, only few B. cereus cells were detected. Spores survived the gastric barrier well, and were in some cases detected up to 2 weeks after ingestion. Selective growing revealed no major changes in the intestinal flora during passage of B. cereus. However, denaturing gradient gel electrophoresis analysis with universal 16S rRNA gene primers revealed significant changes in the intestinal microbiota of animals dosed with spores. Vero cell assays and a commercial kit (BCET-RPLA) did not reveal any enterotoxin production from B. cereus F4433/73R in the intestinal tract.
Germination and conjugation of Bacillus thuringiensis in the gut of gnotobiotic rats

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Department of Microbiology
Authors: Wilcks, A. (Intern), Ørum-Smidt, L. (Intern), Andrup, L. (Ekstern), Bahl, M. (Ekstern), Hansen, B. M. (Ekstern), Hendriksen, N. B. (Ekstern), Licht, T. R. (Intern)
Pages: 121-121
Publication date: 2006
Conference: The 5th joint RRI INRA Symposium "Gut Microbiology: research to improve health, immune response and nutrition", Aberdeen, United Kingdom, 21/06/2006 - 21/06/2006
Main Research Area: Technical/natural sciences

Publication information
Journal: Reproduction Nutrition Development
Volume: 46
ISSN (Print): 0926-5287
Ratings:
Scopus rating (2009): SJR 0.776 SNIP 2.395
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.778 SNIP 1.497
Scopus rating (2007): SJR 0.572 SNIP 1.293
Scopus rating (2006): SJR 0.587 SNIP 0.862
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 0.428 SNIP 0.823
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.476 SNIP 0.849
Germination and conjugation of Bacillus thuringiensis in the gut of gnotobiotic rats

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Wilcks, A. (Intern), Ørum-Smidt, L. (Intern), Andrup, L. (Ekstern), Bahl, M. (Ekstern), Hansen, B. M. (Ekstern), Hendriksen, N. B. (Ekstern), Licht, T. R. (Intern)
Publication date: 2006
Event: Abstract from Ecology of Bacteria used for Insect Control. The COST action 862 Workshop, Goniadz, Poland.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 245224
Publication: Research › Conference article – Annual report year: 2006

Germination and conjugation of Bacillus thuringiensis in the gut of gnotobiotic rats

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Wilcks, A. (Intern), Ørum-Smidt, L. (Intern), Andrup, L. (Ekstern), Bahl, M. (Ekstern), Hansen, B. M. (Ekstern), Hendriksen, N. B. (Ekstern), Licht, T. R. (Intern)
Publication date: 2006
Event: Poster session presented at The 5th joint RRI INRA Symposium "Gut Microbiology: research to improve health, immune response and nutrition", Aberdeen, United Kingdom.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 247924
Publication: Research › Poster – Annual report year: 2006
Occurrence of natural Bacillus thuringiensis contaminants and residues of Bacillus thuringiensis-based insecticides on fresh fruits and vegetables

A total of 128 Bacillus cereus-like strains isolated from fresh fruits and vegetables for sale in retail shops in Denmark were characterized. Of these strains, 39% (50/128) were classified as Bacillus thuringiensis on the basis of their content of cry genes determined by PCR or crystal proteins visualized by microscopy. Random amplified polymorphic DNA analysis and plasmid profiling indicated that 23 of the 50 B. thuringiensis strains were of the same subtype as B. thuringiensis strains used as commercial bioinsecticides. Fourteen isolates were indistinguishable from B. thuringiensis subsp. kurstaki HD1 present in the products Dipel, Biobit, and Foray, and nine isolates grouped with B. thuringiensis subsp. aizawai present in Turex. The commercial strains were primarily isolated from samples of tomatoes, cucumbers, and peppers. A multiplex PCR method was developed to simultaneously detect all three genes in the enterotoxin hemolysin BL (HBL) and the nonhemolytic enterotoxin (NHE), respectively. This revealed that the frequency of these enterotoxin genes was higher among the strains indistinguishable from the commercial strains than among the other B. thuringiensis and B. cereus-like strains isolated from fruits and vegetables. The same was seen for a third enterotoxin, CytK. In conclusion, the present study strongly indicates that residues of B. thuringiensis-based insecticides can be found on fresh fruits and vegetables and that these are potentially enterotoxigenic.
Persistence of Bacillus thuringiensis bioinsecticides in the gut of human-flora-associated rats

The capability of two bioinsecticide strains of Bacillus thuringiensis (ssp. israelensis and ssp. kurstaki) to germinate and persist in vivo in the gastrointestinal tract of human-flora-associated rats was studied. Rats were dosed either with vegetative cells or spores of the bacteria for 4 consecutive days. In animals fed spores, B. thuringiensis cells were detected in faecal and intestinal samples of all animals, whereas vegetative cells only poorly survived the gastric passage. Heat-treatment of intestinal samples, which kills vegetative cells, revealed that B. thuringiensis spores were capable of germination in the gastrointestinal tract. In one animal fed spores of B. thuringiensis ssp. kurstaki, these bacteria were detected at high density (10^3-10^4 CFU g^{-1} faecal and intestinal samples) even 2 weeks after the last dosage. In the same animal, passage of B. thuringiensis ssp. kurstaki to the spleen was observed; however, no other adverse effects were observed. Denaturing gradient gel electrophoresis of PCR-amplified bacterial 16S rRNA genes in faecal samples revealed no major effect of B. thuringiensis on the composition of the indigenous gut bacteria. Additionally, no cytotoxic effect was detectable in gut samples by Vero cell assay.

General information

State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Wilcks, A. (Intern), Hansen, B. M. (Ekstern), Hendriksen, N. B. (Ekstern), Licht, T. R. (Intern)
Pages: 410-418
The Human Biota Associated Rat as a Model for the Human Intestinal Microbiota

General information
State: Published
Characterization of transferable tetracycline resistance genes in Enterococcus faecalis isolated from raw food

The prevalence of tetracycline resistance, and of specific genetic determinants for this resistance was investigated in 1003 strains of Enterococcus faecalis isolated from various raw food products originating from five categories including chicken meat, other poultry meat, beef, pork, and 'other'. For the 238 resistant isolates identified, the ability to transfer the resistant phenotype to a given recipient in vitro was investigated. New and interesting observations were that the tet(L) resistance determinant was more readily transferred than tet(M), and that the presence of Tn916-like elements known to encode tet(M) did not correlate with increased transferability of the resistant phenotype.
Conjugative gene transfer in the gastro-intestinal environment

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Licht, T. R. (Intern), Wilcks, A. (Intern)
Pages: 77-95
Publication date: 2005
Main Research Area: Technical/natural sciences

Publication information
Journal: Advances in Applied Microbiology
Volume: 58
ISSN (Print): 0065-2164
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes

Original language: English
food, Enterococcus faecalis, resistance, horizontal gene transfer, tetracycline

DOIs:
10.1016/j.femsle.2004.11.028
Source: orbit
Source-ID: 230316
Publication: Research - peer-review » Journal article – Annual report year: 2005
Occurrence and significance of Bacillus cereus and Bacillus thuringiensis in ready-to-eat food

Among 48,901 samples of ready-to-eat food products at the Danish retail market, 0.5% had counts of Bacillus cereus-like bacteria above 10⁴ cfu g⁻¹. The high counts were most frequently found in starchy, cooked products, but also in fresh cucumbers and tomatoes. Forty randomly selected strains had at least one gene or component involved in human diarrhoeal disease, while emetic toxin was related to only one B. cereus strain. A new observation was that 31 out of the 40 randomly selected B. cereus-like strains could be classified as Bacillus thuringiensis due to crystal production and/or content of cry genes. Thus, a large proportion of the B. cereus-like organisms present in food may belong to B. thuringiensis.

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Technical University of Denmark
Authors: Rosenquist, H. (Intern), Ørum-Smidt, L. (Intern), Andersen, S. R. (Ekstern), Jensen, G. B. (Ekstern), Wilcks, A. (Intern)
Pages: 129-136
Publication date: 2005
Occurrence and significance of Bacillus cereus and Bacillus thuringiensis in ready-to-eat food

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Rosenquist, H. (Intern), Andersen, S. R. (Ekstern), Wilcks, A. (Intern)
Publication date: 2005
Event: Abstract from The 3rd Symposium on Food Microbiology, Gl. Avernæs, Ebberup, Denmark.
Main Research Area: Technical/natural sciences
Source: orbit
Publication: Research - peer-review › Journal article – Annual report year: 2005

Transferability of drug resistance genes harboured by lactic acid bacteria

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Wilcks, A. (Intern)
Publication date: 2005
Event: Abstract from Probiotics & Prebiotics, Rome, Italy.
Main Research Area: Technical/natural sciences
Source: orbit
Publication: Research › Conference abstract for conference – Annual report year: 2005

Fate and effect of B. thuringiensis in rats

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Wilcks, A. (Intern), Licht, T. R. (Intern)
Publication date: 2004
Event: Abstract from International Workshop on Health and Environmental Risks by the Use of Organisms for Biological Control of Pests and Diseases in Agriculture.
Main Research Area: Technical/natural sciences
Source: orbit
Publication: Research › Conference abstract for conference – Annual report year: 2004

Fate and effect of B. thuringiensis in rats

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Wilcks, A. (Intern), Licht, T. R. (Intern)
Publication date: 2004
Event: Poster session presented at International Workshop on Health and Environmental Risks by the Use of Organisms for Biological Control of Pests and Diseases in Agriculture.
Main Research Area: Technical/natural sciences
Source: orbit
Persistence of DNA studied in different ex vivo and in vivo rat models simulating the human gut situation

This study aimed to evaluate the possibility of DNA sequences from genetically modified plants to persist in the gastrointestinal (GI) tract. PCR analysis and transformation assays were used to study DNA persistence and integrity in various ex vivo and in vivo systems using gnotobiotic rats. DNA studied was either plasmid DNA, naked plant DNA or plant DNA embedded in maize flour. Ex vivo experiments performed by incubating plant DNA in intestinal samples, showed that DNA is rapidly degraded in the upper part of the GI tract whereas degradation is less severe in the lower part. In contrast, plasmid DNA could be recovered throughout the GI tract when intestinal samples were taken up to 5 h after feeding rats with plasmid. Furthermore, DNA isolated from these intestinal samples was able to transform electro-competent Escherichia coli, showing that the plasmid was still biologically active. The results indicate that ingested DNA may persist in the GI tract and consequently may be present for uptake by intestinal bacteria.

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute, Technical University of Denmark
Authors: Wilcks, A. (Intern), van Hoek, A. (Ekstern), Joosten, R. (Ekstern), Jacobsen, B. (Ekstern), Aarts, H. (Ekstern)
Pages: 493-502
Publication date: 2004
Main Research Area: Technical/natural sciences

Publication information
Journal: Food and Chemical Toxicology
Volume: 42
Issue number: 3
ISSN (Print): 0278-6915
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 3.99 SJR 1.144 SNIP 1.427
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.96 SJR 1.351 SNIP 1.58
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.202 SNIP 1.415 CiteScore 3.44
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.038 SNIP 1.369 CiteScore 3.12
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.02 SNIP 1.506 CiteScore 3.26
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 1.126 SNIP 1.748 CiteScore 3.52
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 1.124 SNIP 1.58 CiteScore 3.36
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.93 SNIP 1.221
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.833 SNIP 1.056
The relevance of gene transfer to the safety of food and feed derived from genetically modified (GM) plants

In 2000, the thematic network ENTRANSFOOD was launched to assess four different topics that are all related to the testing or assessment of food containing or produced from genetically modified organisms (GMOs). Each of the topics was linked to a European Commission (EC)-funded large shared cost action (see http://www.entransfood.com). Since the exchange of genetic information through horizontal (lateral) gene transfer (HGT) might play a more important role, in quantity and quality, than hitherto imagined, a working group dealing with HGT in the context of food and feed safety was established. This working group was linked to the GMOBILITY project (GMOBILITY, 2003) and the results of the deliberations are laid down in this review paper. HGT is reviewed in relation to the potential risks of consuming food or feed derived from transgenic crops. First, the mechanisms for obtaining transgenic crops are described. Next, HGT mechanisms and its possible evolutionary role are described. The use of marker genes is presented in detail as a special case for genes that may pose a risk. Furthermore, the exposure to GMOs and in particular to genetically modified (GM) deoxyribonucleic acid (DNA) is discussed as part of the total risk assessment. The review finishes off with a number of conclusions related to GM food and feed safety. The aim of this paper is to provide a comprehensive overview to assist risk assessors as well as regulators and the general public in understanding the safety issues related to these mechanisms.

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Pages: 1127-1156
Publication date: 2004
Main Research Area: Technical/natural sciences

Publication Information
Journal: Food and Chemical Toxicology
Volume: 42
Issue number: 7
ISSN (Print): 0278-6915
Ratings:
BFI (2018): BFI-level 1
Enterococci in food products constitute a reservoir for transferable tetracycline resistance genes

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Andersen, S. R. (Ekstern), Wilcks, A. (Intern), Licht, T. R. (Intern)
Publication date: 2003
Event: Abstract from 1st FEMS Congress of European Microbiologists, Ljubliana, Slovenia.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 245457
Publication: Research › Conference abstract for conference – Annual report year: 2003

Presentation of a future project: The fate of biopesticides in the human gut

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Licht, T. R. (Intern), Wilcks, A. (Intern), Rosenquist, H. (Intern), Andersen, S. R. (Ekstern), Hendriksen, N. B. (Ekstern), Hansen, B. M. (Ekstern), Ørum-Smidt, L. (Intern), Andrup, L. (Ekstern)
Publication date: 2003
Event: Abstract from Workshop on Biological pest control arranged by the National Institute of Occupational Health, Copenhagen, Denmark.
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 245452
Publication: Research › Conference abstract for conference – Annual report year: 2003

The patchwork nature of rolling-circle plasmids: comparison of six plasmids from two distinct Bacillus thuringiensis serotypes

Bacillus thuringiensis, the entomopathogenic bacteria from the Bacillus cereus group, harbors numerous extrachromosomal molecules whose sizes vary from 2 to more than 200 kb. Apart from the genes coding for the biopesticide delta-endotoxins located on large plasmids, little information has been obtained on these plasmids and their contribution to the biology of their host. In this paper, we embarked on a detailed comparison of six small rolling-circle
replicating (RCR) plasmids originating from two major B. thuringiensis strains. The complete nucleotide sequences of plasmid pGIl, pGI2, pGI3, pTX14-1, pTX14-2, and pTX14-3 have been obtained and compared. Replication functions, comprising, for each plasmid, the gene encoding the Rep-protein, double-strand origin of replication (dso), single-strand origin of replication (ssO), have been identified and analyzed. Two new families, or homology groups, of RCR plasmids originated from the studies of these plasmids (Group VI based on pGI3 and Group VII based on pTX14-3). On five of the six plasmids, loci involved in conjugative mobilization (Mob-genes and origin of transfer (oriT)) were identified. Plasmids pTX14-1, pTX14-2, and pTX14-3 each harbor an ORF encoding a polypeptide containing a central domain with repetitive elements similar to eukaryotic collagen (Gly-X-Y triplets). These genes were termed bcol for Bacillus-collagen-like genes. (C) 2003 Elsevier Science (USA). All rights reserved.

General information
State: Published
Organisations: National Institute of Occupational Health, Laboratory of Food and Environmental Microbiology
Authors: Andrup, L. (Ekstern), Jensen, G. B. (Ekstern), Wilcks, A. (Intern), Ørum-Smidt, L. (Intern), Hoflack, L. (Ekstern), Mahillon, J. (Ekstern)
Pages: 205-232
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Journal: Plasmid
Volume: 49
Issue number: 3
ISSN (Print): 0147-619X
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.6 SJR 0.906 CiteScore 1.92
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.911 SNIP 0.523 CiteScore 1.48
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.849 SNIP 0.645 CiteScore 1.83
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.773 SNIP 0.546 CiteScore 1.42
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 1.012 SNIP 0.64 CiteScore 1.91
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.759 SNIP 0.623 CiteScore 1.53
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.848 SNIP 0.629 CiteScore 1.72
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 1.064 SNIP 0.626
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.039 SNIP 0.637
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 1.077 SNIP 0.588
Scopus rating (2007): SJR 1.23 SNIP 0.841
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.187 SNIP 0.774
Scopus rating (2005): SJR 0.818 SNIP 0.576
Scopus rating (2004): SJR 0.793 SNIP 0.505
Isolation and characterization of Bacillus cereus like bacteria from faecal samples from greenhouse workers who are using Bacillus thuringiensis based insecticides

Objectives: Since the discovery of the insecticidal activity of Bacillus thuringiensis at the beginning of the twentieth century, this bacterium has been used increasingly against various insect pests. In spite of the extensive use of B. thuringiensis, only sporadic clinical case reports have been published. In recent years, the close relationship between B. thuringiensis and the human pathogen Bacillus cereus has been confirmed. In practice, only the insecticidal activity of B. thuringiensis distinguishes the two species. However, both species are composed of thousands of isolates with varying potential for causing adverse effects in humans. The aim of this study was to employ molecular biology methods for assessment of occupational exposure to B. thuringiensis-based biopesticides by determination of specific genetic information including plasmid profiles and random amplified polymorphic DNA (RAPD). Methods: Faecal samples from 12 persons, working in Danish greenhouses, were collected for microbial analysis. Seven persons were using B. thuringiensis-based insecticides, whereas five persons were employed at greenhouses that did not use B. thuringiensis. The bacteria were isolated on B. cereus-specific solid substrate, and colonies were further identified using the polymerase chain reaction (PCR). The PCR method was used for the identification of the enterotoxin genes HblA and BoeT. The expression of enterotoxins was detected with two commercial serological kits. Primers specific for 16S-23S spacer region were used to identify the bacteria as members of the B. cereus group. Several primers towards insecticidal genes have been used in order to further characterize the isolates as subspecies of B. thuringiensis. Results: Two faecal samples from the B. thuringiensis-exposed greenhouse workers were positive for B. cereus-like bacteria. One isolate displayed intracellular crystalline inclusions characteristic of B. thuringiensis, production of and genes for B. cereus enterotoxins and it was PCR-positive for an insecticidal toxin primer set. RAPD profiles of the faecal isolate were identical to that of strains isolated from a commercial product. Conclusions: The methods applied have verified that the faecal isolate was identical to the B. thuringiensis isolate found in the biopesticide used. This is the first reported case of isolation of a bacterial biopesticide from human faeces. The biopesticide was shown to harbour and express enterotoxin genes. However, there is no evidence that this caused any adverse effects to the person from whom these bacteria were isolated.
Risk Assessment of Genetically Modified Microorganisms: Report from Nordic Workshop National Veterinary and Food Administration, Denmark, November 23-24, 2000

The rapid development of recombinant DNA techniques for food organisms urges for an ongoing discussion on the risk assessment of both new as traditional use of microorganisms in food production. This report, supported by the Nordic Council of Ministers, is the result of a workshop where people from the industry, national administration and research institutions were gathered to discuss which elements should be considered in a risk assessment of genetically modified microorganisms used as food or food ingredients. The existing EU and national regulations were presented, together with the experiences with risk assessment of these organisms in each Nordic country.

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Authors: Jacobsen, B. L. (Ekstern), Wilcks, A. (Intern)
Number of pages: 49
Publication date: 2001

Publication information
ISBN (Print): 92-89-30712-9
Conjugation in Bacillus thuringiensis and Bacillus cereus

General information
State: Published
Organisations: National Institute of Occupational Health, University of Copenhagen
Authors: Wilcks, A. (Intern), Andrup, L. (Ekstern), Norrild, B. (Ekstern)
Publication date: Jun 2000

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 247389
Publication: Research › Report – Annual report year: 2001

Risk assessment of genetically modified microorganisms: Report from Nordic workshop

General information
State: Published
Organisations: National Food Institute
Authors: Wilcks, A. (ed.) (Intern)
Publication date: 2000

Publication information
Original language: English
Series: TemaNord
ISSN: 0908-6692
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 245957
Publication: Research › Report – Annual report year: 2000

Functional insights into pGI2, a cryptic rolling-circle replicating plasmid from Bacillus thuringiensis

General information
State: Published
Organisations: Universiteit Gent, National Institute of Occupational Health, Universite Catholique de Louvain
Authors: Hoflack, L. (Ekstern), Wilcks, A. (Intern), Andrup, L. (Ekstern), Mahillon, J. (Ekstern)
Pages: 1519-1530
Publication date: 1999
Main Research Area: Technical/natural sciences

Publication information
Journal: Microbiology
Volume: 145
ISSN (Print): 1350-0872
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.6 SJR 0.924 CiteScore 1.78
Web of Science (2017): Indexed yes
Replication mechanism and sequence analysis of the replicon of pAW63, a conjugative plasmid from Bacillus thuringiensis

A 5.8-kb fragment of the large conjugative plasmid pAW63 from Bacillus thuringiensis subsp. kurstaki HD73 containing all the information for autonomous replication was cloned and sequenced. By deletion analysis, the pAW63 replicon was
reduced to a 4.1-kb fragment harboring four open reading frames (ORFs). Rep63A (513 amino acids [aa]), encoded by the largest ORF, displayed strong similarity (40% identity) to the replication proteins from plasmids pAM beta 1, pIP501, and pSM19035, indicating that the pAW63 replicon belongs to the pAM beta 1 family of gram-positive theta-replicating plasmids. This was confirmed by the facts that no single-stranded DNA replication intermediates could be detected and that replication was found to be dependent on host-gene-encoded DNA polymerase I. An 85-bp region downstream of Rep63A was also shown to have strong similarity to the origins of replication of pAM beta 1 and pIP501, and it is suggested that this region contains the bona fide pAW63 ori. The protein encoded by the second large ORF, Rep63B (308 aa), was shown to display similarity to RepB (34% identity over 281 aa) and PrgP (32% identity over 310 aa), involved in copy control of the Enterococcus faecalis plasmids pAD1 and pCF10, respectively. No significant similarity to known proteins or DNA sequences could be detected for the two smallest ORFs. However, the location, size, hydrophilicity, and orientation of ORF6 (107 codons) were analogous to those features of the putative genes repC and prgO, which encode stability functions on plasmids pAD1 and pCF10, respectively. The cloned replicon of plasmid pAW63 was stably maintained in Bacillus subtilis and B. thuringiensis and displayed incompatibility with the native pAW63. Hybridization experiments using the cloned replicon as a probe showed that pAW63 has similarity to large plasmids from other B. thuringiensis subsp. kurstaki strains and to a strain of B. thuringiensis subsp. alesti.

**General information**

State: Published
Organisations: National Institute of Occupational Health
Authors: Wilcks, A. (Intern), Ørum-Smidt, L. (Ekstern), Økstad, O. A. (Ekstern), Kolstø, A. B. (Ekstern), Mahillon, J. (Ekstern), Andrup, L. (Ekstern)
Pages: 3193-3200
Publication date: 1999
Main Research Area: Technical/natural sciences

**Publication information**

Journal: Journal of Bacteriology
Volume: 181
Issue number: 10
ISSN (Print): 0021-9193
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.903 SJR 1.885 CiteScore 2.94
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.08 SJR 1.943 SNIP 0.877
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.154 SNIP 0.95 CiteScore 2.84
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.084 SNIP 0.931 CiteScore 2.72
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 2.151 SNIP 1.013 CiteScore 3
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.125 SNIP 1.085 CiteScore 3.42
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.471 SNIP 1.154 CiteScore 3.83
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.64 SNIP 1.144
Web of Science (2010): Indexed yes
Characterization of plasmid pAW63; a second self-transmissible plasmid in Bacillus thuringiensis subsp. kurstaki HD-73

General information
State: Published
Organisations: Pasteur Institute, National Institute of Occupational Health
Authors: Wilcks, A. (Intern), Jayaswal, N. (Ekstern), Lereclus, D. (Ekstern), Andrup, L. (Ekstern)
Pages: 1263-1270
Publication date: 1998
Main Research Area: Technical/natural sciences

Publication information
Journal: Microbiology
Volume: 144
ISSN (Print): 1350-0872
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): SNIP 0.6 SJR 0.924 CiteScore 1.78
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 1.56 SJR 1.035 SNIP 0.663
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 1.352 SNIP 0.859 CiteScore 2.05
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 1.461 SNIP 0.97 CiteScore 2.69
Web of Science (2014): Indexed yes
Mobilization of "non-mobilizable" plasmids by the aggregation-mediated conjugation system of Bacillus thuringiensis

The aggregation-mediated conjugation system of Bacillus thuringiensis subsp. israelensis (Bti), encoded by the 200-kb plasmid pXO16, is highly potent in transferring itself and efficient in mobilizing other nonconjugative plasmids. In the present study we have analyzed the native Bacillus cereus plasmid pBC16. This plasmid has previously been shown to harbor a mob gene (ORF beta) and a locus functioning as an oriT site in plasmid pLS20-mediated conjugation in Bacillus subtilis. However, in the conjugation system of Bti we found that a derivative of pBC16 deleted for both these loci was mobilizable, although at a reduced frequency. Another derivative of pBC16, containing a deletion spanning the Brst half of the coding region of the mob gene, was found to be nearly as mobilizable as the intact pBC16, suggesting its dispensability in the transfer process. Other plasmids based on the theta-replicating origins, pAM beta 1, pLS20, ori43, ori44, and ori60, were also consistently mobilized in the conjugation system encoded by Bti plasmid pXO16. Analyzing the conjugation process by the use of scanning electron microscopy revealed the presence of connections between cells in the mating mixtures. These connections did not appear in monocultures of the donor strain or the recipient strain and may be conjugal junctions. (C) 1996 Academic Press, Inc.
The aggregation-mediated conjugation system of Bacillus thuringiensis subsp. israelensis: host range and kinetics of transfer

General information
State: Published
Organisations: Unknown
Authors: Jensen, G. B. (Ekstern), Andrup, L. (Ekstern), Wilcks, A. (Intern), Ørum-Smidt, L. (Ekstern), Poulsen, O. M. (Ekstern)
Publication date: 1996
Main Research Area: Technical/natural sciences

Publication information
Journal: Current Microbiology
ISSN (Print): 0343-8651
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.48 SJR 0.562 SNIP 0.565
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): SJR 0.627 SNIP 0.652 CiteScore 1.54
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.618 SNIP 0.626 CiteScore 1.37
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.66 SNIP 0.862 CiteScore 1.64
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.632 SNIP 0.842 CiteScore 1.62
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.685 SNIP 0.851 CiteScore 1.68
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.711 SNIP 0.958 CiteScore 1.82
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.647 SNIP 0.715
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.648 SNIP 0.765
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 0.674 SNIP 0.813
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 0.598 SNIP 0.67
Scopus rating (2006): SJR 0.581 SNIP 0.611
Scopus rating (2005): SJR 0.597 SNIP 0.627
Scopus rating (2004): SJR 0.653 SNIP 0.708
Scopus rating (2003): SJR 0.658 SNIP 0.754
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 0.664 SNIP 0.719
Scopus rating (2001): SJR 0.632 SNIP 0.686
The genetic basis of the aggregation system in Bacillus thuringiensis subsp. israelensis is located on the large conjugative plasmid pXO16

General information
State: Published
Organisations: Ecogen Inc., National Institute of Occupational Health
Authors: Jensen, G. B. (Ekstern), Wilcks, A. (Intern), Petersen, S. S. (Ekstern), Damgaard, J. (Ekstern), Baum, J. A. (Ekstern), Andrup, L. (Ekstern)
Publication date: 1995
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Bacteriology
ISSN (Print): 0021-9193
Ratings:
BFI (2018): BFI-level 1
Scopus rating (2017): SNIP 0.903 SJR 1.885 CiteScore 2.94
Web of Science (2017): Indexed Yes
Scopus rating (2016): CiteScore 3.08 SJR 1.943 SNIP 0.877
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 2.154 SNIP 0.95 CiteScore 2.84
Web of Science (2015): Indexed Yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 2.084 SNIP 0.931 CiteScore 2.72
Web of Science (2014): Indexed Yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 2.151 SNIP 1.013 CiteScore 3
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 2.125 SNIP 1.085 CiteScore 3.42
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 2.471 SNIP 1.154 CiteScore 3.83
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 2.64 SNIP 1.144
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 2.71 SNIP 1.181
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 2.639 SNIP 1.088
Projects:

Effect of bovine milk oligosaccharides on infant microbiota
Division of Microbiology and Risk Assessment
National Food Institute
Period: 01/01/2010 → 31/12/2012
Number of participants: 2
Project ID: 12436 X2
Project participant:
Andersen, Jens Bo (Intern)
Project Manager, organisational:
Wilcks, Andrea (Intern)

Financing sources
Source: Sam.arb.aftaler, Private danske - Andre virksomheder
Name of research programme: Sam.arb.aftaler, Private danske - Andre virksomheder
Source: Forsk. Andre statslige danske i øvrigt
Name of research programme: Forsk. Andre statslige danske i øvrigt

Bacterial Impact on Gut Metabolomics
The complex ecosystem of microbes inhabiting the human gut plays an important role for human health. An increasing number of publications show that the composition and activity of our intestinal microbiota affects a number of so-called lifestyle diseases including allergy, obesity, colorectal cancer, and susceptibility to intestinal infections. Additionally, it has become evident that the intestinal microbiota can be modulated by intake of probiotic bacteria or prebiotic carbohydrates. Recently developed approaches allow simultaneous mapping of multiple bacterial metabolites present in gut contents. Our intention is to use these stage-of-the-art approaches to elucidate the impact of selected bacteria and carbohydrates, which will be supplied by dietary interventions, on the intestinal metabolome. For this purpose, we will use gnotobiotic animal models, which allow establishment of a simple, well-defined intestinal microbiota.

National Food Institute
Period: 01/08/2009 → 31/07/2011
Number of participants: 4
Project participant:
Sulek, Karolina (Intern)
Bacterial Impact on Gut Metabolomics
The complex ecosystem of microbes inhabiting the human gut plays an important role for human health. An increasing number of publications show that the composition and activity of our intestinal microbiota affects a number of so-called lifestyle diseases including allergy, obesity, colorectal cancer, and susceptibility to intestinal infections. Additionally, it has become evident that the intestinal microbiota can be modulated by intake of probiotic bacteria or prebiotic carbohydrates. Recently developed approaches allow simultaneous mapping of multiple bacterial metabolites present in gut contents. Our intention is to use these stage-of-the-art approaches to elucidate the impact of selected bacteria and carbohydrates, which will be supplied by dietary interventions, on the intestinal metabolome. For this purpose, we will use gnotobiotic animal models, which allow establishment of a simple, well-defined intestinal microbiota.

Division of Microbiology and Risk Assessment
National Food Institute
Period: 01/08/2009 → 31/07/2011
Number of participants: 4
Phd Student:
Hemmingsen, Lene (Intern)
Supervisor:
Meyer, Anne S. (Intern)
Main Supervisor:
Licht, Tine Rask (Intern)
Financing sources
Source: Internal funding (public)
Name of research programme: Forskningsrådsfinansiering
Project: PhD

Alternative modeller baseret på invertebrater og funktionelle mammale cellemodeller til risikovurdering af mikrobiologiske bekæmpesemidler

Division of Microbiology and Risk Assessment
National Food Institute
Aarhus University
University of Copenhagen
INRA Institut National de La Recherche Agronomique
Period: 01/04/2008 → 30/11/2010
Number of participants: 6
Acronym: RiskModels
Project ID: 12251
Project participant:
Nutritional Immunology
This project runs under the FoodDTU umbrella, and one of its purposes is to create new collaborations between different DTU institutes with ongoing research related to food science. The participating institutes are DTU-Food, DTU-Biosys and DTU-Aqua. The purpose is to elucidate the impact of specific dietary components including e.g. fish oil on the intestinal microbiota and thereby on the development of the immune system in early life. The results are expected to create a basis for better nutritional advice for pregnant women.

National Food Institute
Department of Systems Biology
University of Copenhagen
Number of participants: 14
Project participant:
Kristensen, Matilde Bylov (Intern)
Wilcks, Andrea (Intern)
Bergström, Anders (Intern)
Nellemann, Christine (Intern)
Kølln, Charlotte (Intern)
Jacobsen, Charlotte (Intern)
Nielsen, Nina Skall (Intern)
Horn, Anna Frisenfeldt (Intern)
Mathiassen, Jakob Hovalt (Intern)
Hellgren, Lars (Intern)
Fink, Lisbeth Nielsen (Intern)
Frøkjær, Hanne (Ekstern)
Broeng Metzdorf, Stine (Ekstern)
Project Manager, organisational:
Licht, Tine Rask (Intern)

Nutritional Immunology
This project runs under the FoodDTU umbrella, and one of its purposes is to create new collaborations between different DTU institutes with ongoing research related to food science. The participating institutes are DTU-Food, DTU-Biosys and DTU-Aqua. The purpose is to elucidate the impact of specific dietary components including e.g. fish oil on the intestinal microbiota and thereby on the development of the immune system in early life. The results are expected to create a basis for better nutritional advice for pregnant women.

National Food Institute
Department of Systems Biology
Period: 01/08/2007 → 31/12/2011
Number of participants: 13
Project participant:
Kristensen, Matilde Bylov (Intern)
Wilcks, Andrea (Intern)
Nutritional Immunology
National Food Institute
Department of Systems Biology
National Institute of Aquatic Resources
Period: 04/01/2007 → 31/12/2011
Number of participants: 10
Project participant:
Wilcks, Andrea (Intern)
Bergström, Anders (Intern)
Andersen, Jens Bo (Intern)
Metzdorff, Stine Broeng (Intern)
Fink, Lisbeth Nielsen (Intern)
Nielsen, Nina Skall (Intern)
Project Manager, organisational:
Licht, Tine Rask (Intern)

Financing sources
Source: [Ordinær drift UK 10]
Name of research programme: [Ordinær drift UK 10]
Amount: 3,250,000.00 Danish Kroner

Prebiotics for Prevention of Gastrointestinal Infections
National Food Institute
Department of Systems Biology
Period: 01/01/2007 → 01/09/2011
Number of participants: 7
Acronym: PreGI
Project participant:
Wilcks, Andrea (Intern)
Bergström, Anders (Intern)
Andersen, Jens Bo (Intern)
Poulsen, Morten (Intern)
Poulsen, Morten (Intern)
Project Manager, organisational:
Licht, Tine Rask (Intern)
Frøkiær, Hanne (Intern)
Pedersen, Susanne Brix (Intern)
PreGI - Prebiotics for Prevention of Gut Infections

There is increasing evidence that (i) intestinal beneficial bacteria are selectively stimulated by ingestion of specific (prebiotic) carbohydrates, and that (ii) beneficial bacteria ingested as probiotics are capable of suppression of bacterial pathogens in the gut. The idea of this project is to utilize existing animal models to identify dietary (prebiotic) carbohydrates that inhibit infection with selected pathogenic bacterial challengers. Carbohydrates with the best potential for pathogen inhibition will then be further studied with respect to effects on beneficial gut bacteria, production of short-chain fatty acids (SCFAs), and immune modulation in the host animals. Visualization of pathogenic challengers as well as of prebiotic-stimulated beneficial species in the intestinal environment will reveal whether an observed inhibition of a given pathogen results e.g. from competition for adhesion sites. The results obtained will be analyzed in a multivariate approach, in order to determine which of the above-mentioned factors have important impact on the anti-pathogen effect of prebiotics.

Division of Microbiology and Risk Assessment

National Food Institute

Department of Systems Biology

University of Copenhagen

Danisco AS

Period: 01/01/2007 → 30/11/2010

Number of participants: 11

Project participant:

Poulsen, Morten (Intern)
Wilcks, Andrea (Intern)
Bergström, Anders (Intern)
Petersen, Anne (Intern)
Ebersbach, Tine (Intern)
Frøkjær, Hanne (Ekstern)
Pedersen, Susanne Brix (Intern)
Serensen, Rikke Brandt (Intern)
Ouwehand, Arthur (Ekstern)
Lahtinen, Sampo (Ekstern)

Project Manager, organisational:

Licht, Tine Rask (Intern)

Project

Workpackage 2 in Prebiotic Center: Gut microbiota and Immune Response Effects

The Prebiotic Center is a large research effort aiming to develop, synthesize and characterize new carbohydrates with beneficial effects on human health (e.g. prebiotics). This offers new possibilities for use of biological waste products. The Role of WP2 in Prebiotic Center is to reveal effects of putatively prebiotic carbohydrates on gut microbiota and immune function. We collaborate with Danisco and Herlev Hospital within this WP.

National Food Institute

Department of Chemical and Biochemical Engineering

University of Copenhagen

Danisco AS

Period: 01/01/2007 → 31/12/2011

Number of participants: 9

Project participant:

Wilcks, Andrea (Intern)
Hemmingsen, Lene (Intern)
Vigsnæs, Louise Kristine (Intern)
Sulek, Karolina (Intern)
Workpackage 2 in Prebiotic Center: Gut microbiota and Immune Response Effects

The Prebiotic Center is a large research effort aiming to develop, synthesize and characterize new carbohydrates with beneficial effects on human health (e.g. prebiotics). This offers new possibilities for use of biological waste products. The Role of WP2 in Prebiotic Center is to reveal effects of putatively prebiotic carbohydrates on gut microbiota and immune function. We collaborate with Danisco and Herlev Hospital within this WP.

National Food Institute
University of Copenhagen
Danisco AS
Period: 01/01/2007 → 31/12/2011
Number of participants: 8
Project participant:
Wilcks, Andrea (Intern)
Hemmingsen, Lene (Intern)
Vigsnæs, Louise Kristine (Intern)
Sulek, Karolina (Intern)
Brynskov, Jørn (Ekstern)
Steenholdt, Casper (Ekstern)
Lahtinen, Sampo (Ekstern)
Project Manager, organisational:
Licht, Tine Rask (Intern)
Meyer, Anne S. (Intern)

Antibiotic Resistance Transferability from Lactic Acid Bacteria in the Food Chain

Department of Systems Biology
Period: 01/04/2004 → 02/06/2008
Number of participants: 6
Phd Student:
Feld, Louise (Intern)
Supervisor:
Wilcks, Andrea (Intern)
Fate of Bacillus thuringiensis bacteria, applied for biological pest control, in the gastro-intestinal tract.

Bacillus thuringiensis (Bt), which forms specific insecticidal toxins during sporulation, constitutes the active organism in many products used for biological control of insects. Bt is therefore often present on treated fruits and vegetables sold for consumption. The aim of the project is to assess specific putative risks associated with ingestion of Bt spores. The project seeks to answer the following questions: (i) Do Bt spores germinate in the intestinal tract, (ii) does heat treatment prior to ingestion induce the germination, (iii) do they influence the composition of the intestinal microflora, (iv) do they produce enterotoxins in the gut, and (v) are they capable of exchanging genetic material with the indigenous gut microorganisms?

National Food Institute
Aarhus University

National Research Center for Working Environment
Period: 01/12/2003 → 01/12/2006
Number of participants: 2
Project participant:
Wilcks, Andrea (Intern)
Project Manager, organisational:
Licht, Tine Rask (Intern)

Mikrobiologiske plantebeskyttelsesmidlers skæbne i mave-tarmkanalen

Division of Microbiology and Risk Assessment
National Food Institute
Period: 01/12/2003 → 01/01/2006
Number of participants: 2
Project participant:
Wilcks, Andrea (Intern)
Project Manager, organisational:
Licht, Tine Rask (Intern)

Assessment and Critical Evaluation of Antibiotic Resistance Transferability in the Food Chain

ACE-ART is a EU STREP project under the 6th framework programme. The main aim of the project is to generate knowledge on the source of food-related antibiotic resistant bacteria, their genetic composition and potential for resistance transfer. The bacteria of interest include Lactobacillus, Bifidobacterium, Lactococcus and Streptococcus thermophilus. The National Food Institute (Andrea Wilcks) is coordinator for WP2: Transfer of antibiotic resistance genes in non-pathogenic bacteria associated with the food chain.

National Food Institute
Università Cattolica del Sacro Cuore
Chr. Hansen A/S
Assessment and Critical Evaluation of Antibiotic Resistance Transferability in the Food Chain

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National Food Institute

Universita Cattolica del Sacro Cuore

Chr. Hansen A/S

Statens Serum Institut

IBB

TEAGASC

RIKILT

Activities:
Mikrobiologiske plantebeskyttelsesmidlers skæbne i mave-tarmkanaalen  
Andrea Wilcks (Speaker)  
National Food Institute  
Division of Microbiology and Risk Assessment  

Description  
Place: Miljøstyrelsens Pesticidforskningsseminar, Kolding, Danmark

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

Germination and conjugation of Bacillus thuringiensis in the gut of gnotobiotic rats  
Andrea Wilcks (Speaker)  
National Food Institute  
Division of Microbiology and Risk Assessment  

Description  
Place: The COST action 862 Workshop, Goniads, Poland

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

Germination and conjugation of Bacillus thuringiensis in the gut of gnotobiotic rats  
Andrea Wilcks (Speaker)  
National Food Institute  
Division of Microbiology and Risk Assessment  

Description  
Place: The 4th Symposium on Food Microbiology, Gl. Avernæs, Ebberup, Fyn, Denmark

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

Bacillus thuringiensis: fate and effect in human flora associated rats: Workshop: Health and Environmental Risks by the use of Organisms for Biological Control of Pests and Diseases in Agriculture  
Period: 16 Nov 2004 → 17 Nov 2004  
Andrea Wilcks (Speaker)  
National Food Institute  
Division of Microbiology and Risk Assessment  

Description  
Place: LO-skolen, Helsingør, Denmark

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