7th Euro Global Summit on

Clinical Microbiology and Mycotoxins

February 27-28, 2017 Amsterdam, Netherlands

Scientific Tracks & Abstracts

Day 1

Sessions

Microbial Biofilms | Host Pathogen Interactions | Disease and Mycotoxins monitoring Environmental Mycology

Session Chair
Robert Russell Monteith Paterson
University of Minho, Portugal

Session Introduction

Title: **Clinical findings after indoor micro-fungal and trichothecene exposure**
Irene H Grant, New York Medical College, USA

Title: **Stability of masked mycotoxins in the human gut**
Silvia W. Gratz, University of Aberdeen, UK

Title: **Early proteomic changes induced by fusariotoxin single and combined exposures on human hepatocytes**
Marie-Caroline Smith, Laboratoire Universitaire de Biodiversité et Ecologie Microbienne, France

Title: **Analysis of more than 380 mycotoxins in 829 feed and raw material samples in 2016**
Simone Schaumberger, Biomin Holding GmbH, Austria

Title: **Development and validation of a pressurized hot water extraction method for the extraction of aflatoxin B1 in maize**
Sefater Gbashi, University of Johannesburg, South Africa

Title: **Determination of mycotoxins in foods and feeds in Africa: The role of Pegasus-HRT for mycotoxin exposure assessment**
Patrick Njobeh, University of Johannesburg, South Africa

Irene H Grant et al., Clin Microbiol 2017, 6:1(Suppl)
http://dx.doi.org/10.4172/2327-5073.C1.027

Clinical findings after indoor micro-fungal and trichothecene exposure

Irene H Grant, Jack D Thrasher and **Jake Geller**
New York Medical College, USA

Trichothecenes (Ts) remain toxic despite disinfection, bind dust, damage skin/mucosa/phagocytes/neurons. Monitoring 45 patients (adults, children, embryos) exposed to 18 Ts-contaminated indoor-environments, fungal IgGs, urine mycotoxins (MCTs) [Ts, ochratoxin (OTA), aflatoxin (A)], immune parameters (neutrophils, lymphocyte subsets, monocytes, IgG, IgA, IgM, IgE and subclasses), immunosuppressant medications, nutritional deficiencies (protein, Vitamin D, zinc), genetic MTHFR single-nucleotide-polymorphisms C677T&A1298C, environmental contamination severity (ECS), hazardous activity severity (HAS), exposure duration (ED) and clinical findings were rated sorting by disease severity (DS). Bio-statistical analysis correlated DS, ECS, HAS and ED by using Pearson correlation coefficients. *Aspergillus/Penicillium* (A/P) detected in all 18 Ts-contaminated environments (56% A. *niger*), *Chaetomium* 94%, *Stachybotrys* (St) 67%, *Mucor* 61%, *Alternaria* 44% and 33% *P. brevicompactum*. None had *Fusarium*. Patient outcomes were: Disabled 54% (23% permanently), neurologic 67% (female predominance), ear/nose/throat 30%, pulmonary 21% (male predominance) and dermatologic 12%. IgG titers: A/P+93% (91% of the moderately-to-extremely ill, females predominant). None of the mildly-ill had elevated *A. fumigatus* IgG, P-IgG titers+86% *(P. notatum/P. chrysogenum* 74% tested); St 59% (St-IgG+61% and St-IgA+22% of the moderate-extremely-ill and none of the mildly-ill). *Phoma, Trichoderma* IGGs were elevated and more in males; *A. fumigatus* IgG, A antigen EIA and *P. notatum* IGG were more in females. Urinary MCTs (91% tested): detectable Ts 97% (trace 38%, elevated 46%); 31% OTA, 6% A. All extremely-ill excreted Ts; none excreted A. Higher Ts predominated in females (46% vs. 24%), trace in males (38% vs. 18%). Overall, disease severity strongly correlated with ECS (p=0.00000001) and HAS (p=0.0000001). Surprisingly, ED had insignificant correlation. The strongest DS vs. ECS predictors were mucosal injury (p=0.00000003), any detection of urinary Ts (p=0.0000001) and the development of fungal IGGs (p=.0000009). DS also strongly correlated with HAS, particularly with genetic MTHFR detoxification defects (p=0.00000008).

Biography

Irene H Grant is an Infectious Disease Specialist trained by Donald Armstrong at Memorial Sloan Kettering. She is a Clinical Assistant Professor of Medicine at NY Medical College. She has a large practice of treating mold-exposure illness. She is an Albert Einstein College of Medicine graduate. She is knowledgeable and experienced in the complexities and limitations in microbiologic diagnostic Mycological testing, Microbiology-Mycology reporting, as well as the failure on the part of physicians to request the Microbiology and/or Pathology Laboratories to perform non-routine specialty studies.

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Stability of masked mycotoxins in the human gut

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Cereal grains are commonly contaminated with a range of mycotoxins and their plant-derived masked metabolites. These conjugated metabolites are present in food and their contribution to toxicity either directly or indirectly through release of the parent mycotoxins is unknown. This study aims to assess the fate of common masked mycotoxins under conditions prevailing in the gut. The work assesses the metabolism and transport of glucoside metabolites of common trichothecenes and zearalenone compounds in the human gut in vitro. All masked mycotoxins were stable under conditions prevailing in the upper GI tract and were not absorbed intact through epithelial monolayers. Unabsorbed mycotoxins are likely to be delivered to the colon where they will be subject to microbial activity. We found that human gut microbiota efficiently hydrolyzed all masked mycotoxins. Trichothecenes were fully released as parent mycotoxins whereas zearalenone compounds were fully hydrolyzed and then further metabolized to unknown metabolites. Our results demonstrate that masked mycotoxins will reach the colon intact to be released as parent mycotoxins by gut microbiota and are therefore, contribute to mycotoxin exposure in humans. Furthermore, masked zearalenone compounds are metabolized by gut microbiota and the identity and toxicity of metabolites are yet unknown.

Biography

Silvia W Gratz holds an MSc in Human Nutrition (University Vienna, Austria) and a PhD in Food Toxicology (University of Kuopio, Finland). She has been working as a Research Fellow at Rowett Institute of Nutrition and Health since 2007. Her research work focuses on "The role of diet in gut health, intestinal toxicity and gut microbiology". She has published 15 original articles as well as four reviews and three book chapters and acts as Editorial Board Member of *Frontiers in Predictive Toxicology.*

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Notes:

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Marie-Caroline Smith, Clin Microbiol 2017, 6:1(Suppl)
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Early proteomic changes induced by fusariotoxin single and combined exposures on human hepatocytes

Marie-Caroline Smith
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While the reality of mycotoxin co-contamination of food commodities is now well-established, the assessment of the toxicological impact of mycotoxin mixtures is still rare. Moreover, studies concerning the mechanistic cellular response to mycotoxins (alone or in mixture) are lacking. Among the infinite number of possible mycotoxin mixtures found, combinations of toxins from *Fusarium* spp. (called fusariotoxins) are particularly widespread in the North temperate zone of the world and therefore of interest. In this context, our main objective was to compare the cellular mechanisms involved in response to single and combined exposures of the human hepatocyte cell line HepaRG to two relevant fusariotoxins, deoxynivalenol and zearalenone. After 1 h of exposure with deoxynivalenol and/or zearalenone at low cytotoxic doses (IC10), proteomes of HepaRG cells were analyzed by LC-MS/MS and compared to the control condition without mycotoxin. Among the 3000 identified proteins per sample, 55 showed a significant enhanced or reduced abundance compared to the non-exposed cells. Interestingly, none of these 55 proteins were in common between the cells exposed to deoxynivalenol and those exposed to zearalenone. Noteworthy, very few proteins were common between the mixture and the toxins alone. Cells exposed to deoxynivalenol showed an increased expression of proteins involved in DNA topological changes, chromosome segregation and proteolysis, whereas zearalenone mainly induced changes for proteins involved in response to steroid hormone stimulus. Concerning the mixture, the main affected biological processes were, among others, cell cycle phase, DNA packaging and cell division. Thus, these results highlighted different cellular pathways responded to different single and combined mycotoxins exposures.

Biography

Marie-Caroline Smith completed her Engineering Degree in Biochemistry and she is currently pursuing PhD at University of Brest, France. She is working on "The impact of fusariotoxins co-exposure on human cells". More specifically, she is studying the cellular mechanisms of the human monocytic cell line THP-1 as well as the human hepatic cell line HepaRG, involved in the response to the exposure of one or more Fusarium mycotoxins in acute and chronic exposure conditions through toxicology and proteomic approaches. She recently published a review article entitled 'Natural co-occurrence of mycotoxins in foods and feeds and their *in vitro* combined toxicological effects'.

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Notes:

Simone Schaumberger et al., Clin Microbiol 2017, 6:1(Suppl)
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Analysis of more than 380 mycotoxins in 829 feed and raw material samples in 2016

Simone Schaumberger[1], **Paula Kovalsky**[1], **Ines Taschl**[1] and **Michael Sulyok**[2]
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[2]University of Natural Resources and Life Sciences, Austria

More than 45,000 feed samples including corn, wheat, barley, soy as well as finished feed were analyzed within the Biomin Mycotoxin Survey since 2004. The results presented here include data from samples sourced worldwide from January to September 2016. These samples were analyzed using Liquid Chromatography-Mass Spectrometry/Mass Spectrometry (LC-MS/MS, Spectrum 380®) screening for more than 380 mycotoxins and other secondary metabolites. For practical relevance, a cut-off level for all mycotoxins was established at >1 ppb (except aflatoxin at >0.5 ppb). The aim of this study was to obtain information on the occurrence and contamination level of multiple mycotoxins in feed and feed raw materials. A total of 829 samples were collected worldwide and screened for the presence of multiple mycotoxins and other secondary metabolites using Spectrum 380®. Up to 60 different mycotoxins and metabolites were found per sample. Only 4% of all analyzed samples contained less than 10 fungal metabolites. On average, 25 different metabolites were detected per sample. 93% of the analyzed samples tested positive for cyclo(L-Pro-L-Val) and cyclo(L-Pro-L-Tyr), 80% for aurofusarin and tryptophol and 76% for moniliformin. Beside these fungal metabolites, main mycotoxins such as zearalenone and fumonisin B1 occurred in 64% and 55% of the samples, respectively. The sensitivity of mycotoxin analysis increased by 200-fold in the last 10 years leading to the fact that more mycotoxins are found. Performing multi-mycotoxin analysis is leading to the need for more research to evaluate the practical impact of most of these new mycotoxins on animal and human.

Biography

Simone Schaumberger studied at Veterinary University of Vienna and completed her Diploma studies in 2007. She worked at BIOMIN Research Center, where she was responsible for the Endotoxin project. Within this research project, she completed her PhD in the field of Swine Medicine (endotoxin binding) at Veterinary University of Vienna. Besides the research tasks, main focus of her work was on “Feeding/experimental trials in swine and poultry”.

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Development and validation of a pressurized hot water extraction method for the extraction of aflatoxin B1 in maize

Sefater Gbashi, Ntakadzeni Madala, Oluwafemi Ayodeji Adebo and **Patrick Berka Njobeh**
University of Johannesburg, South Africa

Aflatoxin B1 (AFB1), the most potent naturally occurring carcinogen has become increasingly worrisome because of its proliferated contamination of various agricultural commodities worldwide. To quantify it like other mycotoxins in various food and feed commodities, many techniques applied in its extraction have the demerits of being time consuming, expensive and involving large volumes of organic solvents that are often toxic and environmentally unfriendly. It was therefore imperative to look for an alternative method that addresses these mishaps, and pressurized hot water extraction (PHWE) seem very promising in this regard. In this study, we developed and validated a PHWE method for the extraction of AFB1 from maize and subsequent analysis on HPLC. Results obtained revealed that PHWE is suitable for the efficient extraction of AFB1 from maize, with recovery rates ranging from 37 to 128%. Variation of the extraction temperature (50, 100 and 150°C) and solvent composition (0, 20, 40 and 60% methanol) positively enhanced the extractability of AFB1 as both temperature and solvent composition increased. Multivariate statistical modeling of our data using the central composite design response surface methodology (CCD-RSM) generated a model that fits the data well (R2=0.9746). Accordingly, it was possible to establish the optimum extraction conditions for the recovery of AFB1. The optimized conditions (based on acceptable recovery rate, minimal temperature and methanol composition) was 100°C and 40% methanol at a recovery rate of 116%. The recovery rates of the optimized PHWE method compared favorably with conventional extraction methods. Subsequent validation of the optimized method showed acceptable values for accuracy or recovery rate (1167%), linearity (%RSD 0.93) and repeatability (%RSD 1.63). In overall, prospects of PHWE as a suitable, cost-effective and greener alternative to traditional techniques of AFB1 extraction is highly promising.

Biography

Sefater Gbashi is a PhD student in Department of Biotechnology and Food Technology at University of Johannesburg, South Africa where he completed his MTech with a distinction. He has been awarded various scholarships based on his academic achievments and has published seven scientific papers in reputed journals. He is also a Senior Staff of University of Mkar, Nigeria.

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Determination of mycotoxins in foods and feeds in Africa: The role of Pegasus-HRT for mycotoxin exposure assessment

Patrick Njobeh[1], **Sefeter Gbashi**[1], **Oluwafemi Adebo**[1], **Mark Pieters**[2] and **Alexander Whaley**[2]
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[2]Leco Africa (pty) Ltd., South Africa

Increased occurrence of mycotoxins in various food and feed commodities continues to impact negatively on animal and human health and the economy. This is typical in the case of Africa, where environmental conditions for the proliferation of mycotoxigenic fungi exists. Therefore, exposure to mycotoxins in this part of the world is alarming and cases of mycotoxin poisoning with lethal consequences among humans and animals resulting from exposure to them at extremely high levels have been reported (particularly in Kenya and South Africa) driving the need for effective and proper routine analysis of food and feeds and to estimate exposure levels among humans and animals of these naturally occurring toxicants. With this in mind, the Pegasus-HRT 4D gas chromatography time-of-flight mass spectrometry (Pegasus-HRT 4D GC×GC-TOF-MS) can provide adequate analysis of mycotoxins and their biotransformation products in foods, feeds and other biological materials where applicable. Its exceptional speed (200 spectra/sec), accurate molecular mass determination, full mass range acquisition, ultra-high resolution (50, 000 FWHM) and low detection limits positions makes it as an effective tool for mycotoxin analysis in food and feeds. Its rich analytical capacity and high confidence-analyte identification also makes it a viable option for exposure studies and identification of mycotoxin metabolites. This presentation will provide up-to-date data on mycotoxin contamination of food and feeds as well as the degree with which humans and animals are exposed to them in Africa. It also provides some detailed information on the applicability of Pegasus-HRT in assessing exposure.

Biography

Patrick Njobeh is a Senior Lecturer in Department of Biotechnology and Food Technology at University of Johannesburg. Currently, he is supervising more than 18 post-graduates. He serves at Joint FAO/WHO Expert Committee on Food Additives (JECFA) and has received some grants amounting over 1,200,000 Euros. He has also established research collaborations both nationally and internationally and has been part of the EU Framework 6 Biotracer project and currently the FP7 Marie Curie International Research Staff Exchange Scheme (FP7-PEOPLE-2012-IRSES–316067 of EU). He has been invited to deliver public lectures at various universities. He serves as an Editorial Board Member and a regular Reviewer for over 14 journals and various funding bodies.

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Video Presentation

Day I

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Sheela Ramamoorthy, Clin Microbiol 2017, 6:1(Suppl)
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Innovations in the serological analysis of infectious agents

Sheela Ramamoorthy
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Antibody-based detection methods remain a mainstay for the diagnosis of infectious diseases and the evaluation of protection against them. There is a substantial increase in the emergence of new viral agents in the last few decades, possibly due to changing patterns in global travel, trade, farming and life styles. The length of time between the emergence of an infectious agent and the availability of a diagnostic test can inversely influence the extent of spread and damage, due to the delay in the instituting rational interventions. Despite the obvious need for advancement, conventional serological test development still requires the biological identification of immunogenic targets and their production, generally by recombinant technology, both of which are laborious processes. Using a combination of novel computational and wet lab methods, we have developed methods for the rapid identification and synthesis of diagnostic targets; thus, reducing the lead development time and cost of serological assays significantly. Successful integration of a commercial platform technology to multiplex targets resulted in further reduction of the cost and time required for optimal testing. The results are presented in the context of a polymicrobial respiratory disease complex of swine. The described methods have wide application to a variety of pathogens. They enhance the clinical functions of diagnostic laboratories and are useful for infectious disease research.

Biography

Sheela Ramamoorthy is a Veterinarian and Virologist, who obtained her Bachelors in Veterinary Medicine (BVSc) from the Madras Veterinary College in India, MS in Microbiology and Molecular Genetics from the Oklahoma State University, followed by a PhD in Biomedical Sciences from Virginia Tech. She served as the Section Head of Diagnostic Virology and Serology at the University of Georgia Tifton Veterinary Diagnostic Laboratory, before moving to N Dakota State University, where her research is focused on studying vaccine-mediated immunity against viral infections. Her well-funded research group works on translating basic findings into novel vaccines and diagnostics, for agents involved in the porcine respiratory disease syndrome. She had authored over 40 peer-reviewed publications, is a Board Member of the American Association of Veterinary Immunology, she serves as a Reviewer for reputed journals and as a Grant Reviewer for several agencies including the United States Department of Agriculture and National Institutes of Health.

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Scientific Tracks & Abstracts

Day 2

Chromatography of Mycotoxins | Disease Diagnosis and Prevention
Food and Nutrition Toxicology | Microbial Pathogenesis

Session Chair
Mahasin Wadi
Princess Nourah Bint Abdul Rahman University, Saudi Arabia

Session Introduction

Title: Effects of low concentrations of individuial mycotoxins and their combinations on immune cells
Gunnar Sundstøl Eriksen, Norwegian Veterinary Institute, Norway

Title: Fungal diversity in traditional maize varieties and potential mycotoxins production
Beatriz Reis Oliveira, iBET - Instituto de Biologia Experimental e Tecnológica, Portugal

Title: Glow discharge plasma efficiently degrades T-2 toxin and patulin
Lumei Pu, Gansu Agricultural University, China

Title: Simultaneous identification of Mycoplasma gallisepticum and Mycoplasma synoviae by duplex PCR assay
Golbarg Malekhoseini, Islamic Azad University of Arak, Iran

Title: Association between multi-mycotoxin exposure and birth anthropometric growth of mothers and their infants in rural Eastern Cape, South Africa
Martani J Lombard, North-West University, South Africa

Gunnar Sundstøl Eriksen et al., Clin Microbiol 2017, 6:1(Suppl)
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Effects of low concentrations of individuial mycotoxins and their combinations on immune cells

Gunnar Sundstøl Eriksen[1], **Line M Karlsøen**[1], **Anita Solhaug**[1] and **Jørn Holme**[2]
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Toxin-producing fungi are widespread contaminants in food and feed. Since many fungal species produce many toxins, fungal species frequently occur together and a diet is composed of multiple food items, humans and anmals are exposed to a mixture of mycotoxins. Mycotoxins have diverse chemical and toxicological properties, and they may have similar or dissimilar toxicological mode of action and identical or different target organs. The immune system is particularly sensitive towards several mycotoxins. Humans and animals are normally exposed to low levels of mycotoxins, while many studies of the effects of mycotoxins have focussed on rather high exposures. We therefore investigated the effects of exposure to low levels of selected mycotoxins alone and in combination on the immune cells in vitro. We studied the effects of the mycotoxins 2-amino-14,16-dimethyloctadecan-3-ol (AOD), alternariol (AOH), enniatin B (ENNB), deoxynivalenol (DON), sterigmatocystin (ST) and zearalenone (ZEN) on the differentiation of THP-1 cells from monocytes to macrophages alone and in combinations. At non-cytotoxic concentrations, AOH, ZEN and DON inhibited the differentiation process, while the differentiation was unaltered by AOD and ST. The effects of the binary combinations of AOH, ZEN and DON were predicted according to models for independent action (IA) and concentration addition (CA) and compared with the experimental findings. Deviations from the predicted models would indicate that there were some interactions. In order to simulate a realistic exposure scenario, we focussed on the interactions at low effect concentrations (EC20) in the interaction studies. The combinations of AOH with DON and DON with ZEA had additive effects, while the combination of AOH and ZEA apparently had synergistic effects at these low concentrations.

Biography

Gunnar Sundstøl Eriksen has completed his PhD at Swedish University of Agricultural Sciences. He is currently a Senior Scientist at Norwegian Veterinary Institute. He is also a member of Norwegian Scientific Committee for Food (VKM).

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Fungal diversity in traditional maize varieties and potential mycotoxins production

Beatriz Reis Oliveira[1,2], **J P Ferreira**[3], **M T Barreto Crespo**[1,2], **M R Bronze**[3,1] and **M C Vaz Patto**[2]
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Maize is one of the most important crops worldwide that can be used as food, feed and fuel. The cultivation of maize is spread all over the world and highly consumed and processed into other foodstuffs and industrial applications. The contamination of maize crops by filamentous fungi and consequently mycotoxins has been intensively reported along the years being fumonisins, aflatoxins, zearalenone and deoxynivalenol the most reported mycotoxins in maize grains. The aim of this study was to evaluate the occurrence of filamentous fungi in maize samples collected from different regions of Portugal and whether these isolates were able to produce mycotoxins in maize substrates. Therefore, two Portuguese maize traditional open pollinated varieties ('Fandango' and 'Pigarro') harvested from four different regions of Portugal (Alvarenga, Caldeirão, Lousada and Vouzela) and were screened for the presence of filamentous fungi on its surface and inside the grains. Isolated fungi were then evaluated for their potential ability to produce mycotoxins. Since the production of mycotoxins by filamentous fungi is matrix specific, all the fungi that were isolated from the maize samples were grown in a maize substrate and only the isolates able to produce mycotoxins were identified at the species level. This is an important study to enrich the knowledge on which species of filamentous fungi are most prone to contaminate and produce mycotoxins in Portuguese traditional maize varieties.

Biography

Beatriz Reis Oliveira has been performing research with fungi for six years. The main areas of research are "Morphological, metabolic and molecular biology characterization of fungi isolated from cork, different water sources and food matrices". He has three papers published in international peer-reviewed journals. He is pursuing his PhD at iBET and ITQB. He has participated in four European projects and has 12 participations in national and international conferences with four oral presentations and eight posters.

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Notes:

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Glow discharge plasma efficiently degrades T-2 toxin and patulin

Lumei Pu, Huali Xue, Yuanyuan Zong, Haitao Long and **Yang Bi**
Gansu Agricultural University, China

Glow discharge plasma (GDP) is a novel kind of electrochemical process in which plasma is sustained by dc glow discharges between a pointed electrode and the surface of the liquid electrolyte. The feature of GDP is that various active species such as hydrogen peroxide and hydroxyl radicals are formed when discharges take place and degrade most organic molecules. T-2 is one of the most toxic trichothecenes mycotoxins produced by different *Fusarium* species. Patulin is a mycotoxin produced by species in the fungal genera Aspergillus and Penicillium. P. expansum, caused blue mold of pome fruits and grape berries is a major fungal produced patulin. Although much attentions have been focused on the degradation of T-2 toxin and patulin; however, the information of how GDP degrade them is unavailable. In this study, the effects of GDP on the degradation of T-2 toxin and patulin in aqueous solution were investigated at different conditions. The degradation kinetic curves, kinetic models and the optimum process conditions were evaluated. In order to investigate the efficiency and to get the highest degradation rate of patulin in apple juice by GDP, the work voltage, degradation time and initial concentration of patulin in apple juice were taken as single factors and the orthogonal design experiments were carried out. Meanwhile, the quality of apple juice was evaluated during the treatment. The results showed that GDP treatment rapidly and effectively degraded T-2 toxin and patulin in aqueous solution. The higher toxin initial concentration, the higher treatment efficiency would be. The faster toxin removal rate was achieved at a relatively higher acidity and basify. The Fe2+ and H2O2 exhibited strongly catalysis ability to the degradation reactions, but nano ZnO inhibited the catalysis. The dynamics equation curve fitted well and belonged to the first order kinetics reaction. The values of pH in the degraded solution were rapidly decreased due to the carboxylic acids formed, then the values increased because carboxylic acids was decomposed into CO2 and H2O. Moreover, GDP treatment completely degraded patulin in apple juice, the degradation rate was considerably affected ($p<0.05$) and reached 96.63% for 5 min of the treatment. Based on single factor and orthogonal array design experiments, the influence degree of various factors followed the descending orders of voltage>treatment time>initial concentration. The optimal conditions were voltage at 550 V, treatment time for 3 minutes, initial concentration of toxin at 7 mg·L-1. Quality evaluation of apple juice indicated that GDP treatment within 10 minutes did not affect the content of total soluble solid and the total acid, pH, viscosity, conductivity, turbidity and browning degree of the juice. The content of flavonoids and flavonols increased with the increasing of treatment time, the total phenol content had noticeably enhanced. It is suggested that GDP could rapidly and effectively degrade T-2 toxin and patulin in aqueous solution. GDP treatment has almost no remarkable effects on quality of apple juice.

Biography

Lumei Pu has completed her PhD in Chemistry department at Northwest Normal University of China. She works at College of Science of Gansu Agricultural University, China. She teaches Chemistry and is engaged in the research of Natural Product Chemistry. She has published more than 20 papers in reputed journals.

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Simultaneous identification of *Mycoplasma gallisepticum* and *Mycoplasma synoviae* by duplex PCR assay

Golbarg Malekhoseini, Seyed Ali Pourbakhsh, Ali Reza Homayounimehr, Mohammad Reza zolfeghari, Abass Ashtari and **Ali Reza Abtin**
Islamic Azad University of Arak, Iran

Mycoplasma gallisepticum (M.G) and *Mycoplasma synoviae* (M.S) have been recognized as common respiratory pathogens especially in chickens causing lots of economic losses in poultry industries. The aim of this study was to develop and validate duplex polymerase chain reaction (PCR) for simultaneous detection of MG & MS. A total of 50 samples from tracheas, lungs and air sacs were taken from commercial broiler chicken farms in Iran. The samples were cultured in PPLO broth supplemented for M.S and M.G isolation and bacteria DNA were extracted by phenol/chloroform extraction method. The conserved region of *16S rRNA* gene was applied for the detection of Mycoplasma genus in 163bp fragment and MG in 183 bp fragment and *vlhA* gene was also employed for detection of MS in 350 bp fragment. Hence, duplex PCR amplified the conserved region of 16S *rRNA* and *vlhA* genes which were then applied for detection of MG & MS. 20 samples in Mycoplasma genus, and 7 samples in MG & MS were positive in the single PCR; whereas in 3 samples, MG & MS were simultaneously positive in the duplex PCR method. The results showed that duplex PCR was successful to simultaneous identification of MG & MS and suggested that duplex PCR is more rapid and inexpensive method than the single PCR for detection of MG & MS.

Biography

Golbarg Malekhoseini has finished her MSc in 2011 from Qom University. Currently, she is Assistant Professor at Islamic Azad University of Arak. Also, she is working as a Manager of Quality Control in ice factory of Arak. His group simultaneously identified *Mycoplasma gallisepticum* and Mycoplasma synovia by duplex PCR assay at Vaccine Institute of Karaj.

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Association between multi-mycotoxin exposure and birth anthropometric growth of mothers and their infants in rural Eastern Cape, South Africa

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Infant intra uterine growth depends on maternal prenatal dietary intake. Research indicate maternal exposure of Aflatoxin negatively influence growth birth outcomes. However, no research has been done on maternal Femonisins (FB) and Deoxynivalenol (DON) exposure and birth growth. In rural South Africa, home-grown maize is the staple food and contains high levels of FB and DON. The aim was to determine the association between maternal FB and DON exposure and birth growth outcomes. Maternal FB and DON exposure levels were calculated based on raw maize intake. Probable daily intake (PDI) (µg/kg body weight) was calculated by multiplying total raw maize intake (g/dag) with mycotoxin concentration (µg/kg) devided by body weight (kg). Exposure was correlated with infant anthropometric measures (length, weight, head circumference (HC) and gestational age (GA)). 110 mothers participated but 8 were excluded. Mean and SD of FB exposure was 554.37 (392.14) and for DON 0.05 (0.37) µg/kg body weight respectively. Possitive Spearman correlations were observed for birth weight (r=0.05) and length (r=0.05) when correlated with FB exposure and negative correlations for HC (r=-0.150) and GA (r=0.78). Weak negative correlations were observed for birth weight (r=-0.045) and length (r=-0.48) and possitive correlations for HC (r=0.15) and GA (r=0.078) when correlated with DON exposure. These correlations were weak and not significant. Thus according to this study there is no significant association between maternal mycotoxin exposure and infant birth outcomes however due to the small sample size more research is needed. Results should be interpreted with caution.

Biography

Martani Lombard has completed her PhD at the age of 35 years from the University of Cape Town (UCT) in South Africa. She is currently a senior lecturer in infant and young child therapeutic nutrition at the Health Sciences Facutly (School for Physiology, Nutrition and Consumer Sciences) at North-West University (NWU), South Africa. She is also conducting infant and young child nutrition research (focussing on mycotoxin exposure) at the Centre of Excellence for Nutrition (CEN) at NWU. She has published more than 20 papers in reputed journals and has been serving as an editorial board member of BMC Nutrition.

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