IUMS Outreach Program on Food Safety and International Conference on Mycotoxin

Report

November 14-15, 2014

Kamarijani-Soenjoto Auditorium

Faculty of Agricultural Technology
Universitas Gadjah Mada
Yogyakarta, Indonesia

Organized by:

Faculty of Agricultural Technology, Universitas Gadjah Mada

International Union of Microbiological Societies

In collaboration with:

Perhimpunan Mikrobiologi Indonesia

Indonesian Association of Food Technologists
Patpi
Perhimpunan Ahli Teknologi Pangan Indonesia

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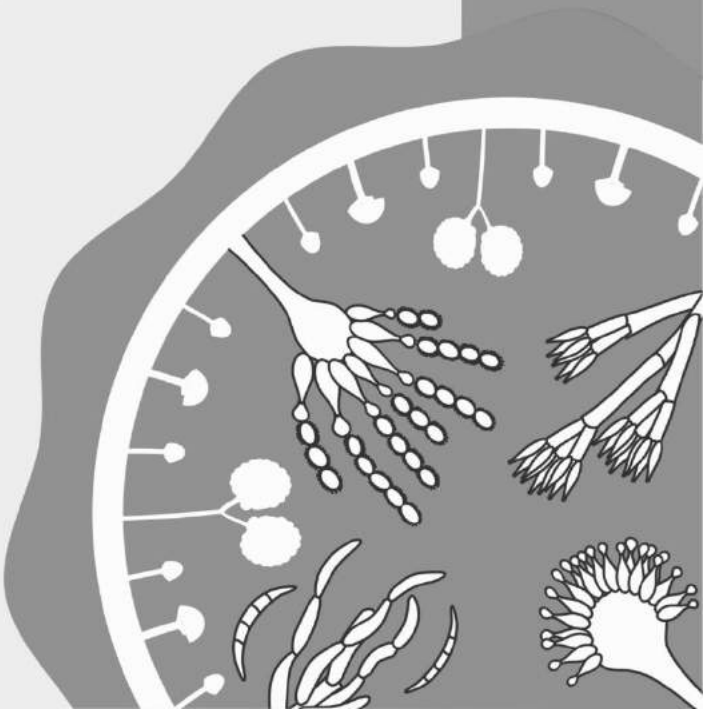

REPORT: IUMS OUTREACH PROGRAM ON FOOD SAFETY AND INTERNATIONAL CONFERENCE ON MYCOTOXIN

Introduction

In support of its mission to enhance the scientific background and professional effectiveness of basic and applied microbiologists, the International Union of Microbiological Societies (IUMS) is embarking on a program of educational outreach to developing countries and their microbiologists. The Union envisions an IUMS series of courses that will be offered to groups of microbiologists that may include graduate students, postdoctoral fellows, and practicing professionals from developing countries within a given geographic region. These will be offered periodically in various regions and on different topics of interest and importance.

The first IUMS Regional Course was offered in Singapore during June 14-16, 2010, and served microbiologists from the surrounding Asian countries. Singapore was chosen as the site, because of its proximity to the countries of Asia. IUMS made a contribution to the subsistence of the successful applicants as far as the finances allow. It is expected that this experience will boost the capability of the attendees in their microbiologic work after they return home, and we shall endeavor to forge a network of the attendees, so they can continue to communicate with each other and the instructors by e-mail.

The second IUMS Regional Course on Food Safety was offered in Bali (Indonesia) 22 - 24 June 2011 and organized in collaboration with the Indonesian Society for Microbiology (PERMI), the International Commission on Food Mycology (ICFM) and the International Committee on Food Microbiology and Hygiene (ICFHM). The third IUMS outreach conference on Antimicrobial Resistance took place in Havana, Cuba on November 14-16, 2013. The fourth course in Yogyakarta will focus on food safety and mycotoxins.

Objectives

The objectives of this conferences was to share the latest science and updates, as well as to review, discuss and address important issues concerning to mycology and mycotoxins and their relation to food and feed safety aspects.

IUMS Outreach Program on Food Safety and International Conference on Mycotoxin
14-15 November 2014, at Faculty of Agricultural Technology, Universitas Gadjah Mada, Yogyakarta, Indonesia

PROGRAM

Friday (14 November 2014)	
07.00 – 07.45	Registration, Breakfast, and Coffee Morning
07.45 – 08.15	Opening Ceremony • Coordinator of CEMycoS (Suparmo) • Dean of the Faculty of Agricultural Technology UGM (Lilik Sutiarso) • Indonesian Society for Microbiology (PERMI) (Fedik Abdul Rantam) • International Union of Microbiological Societies (IUMS) (Robert A Samson)
08.15 – 08.25	Balinese Dance (Margapati Dance)
08.25 – 08.30	Introduction of speakers and participants (Endang S. Rahayu)
	Lecture 1 Moderator: Suparmo / Endang S. Rahayu
08.30 – 09.00	1. Rindit Pambayun – *Current research and technological application in food safety in Indonesia*
09.00 – 09.30	2. Warapa Mahakarnchanakul – *Mycotoxins regulations in Thailand*
09.30 – 10.00	3. Ulf Thrane – *Are all fungal metabolites toxic?*
10.00 – 10.30	4. Jens C Frisvad – *Mycotoxins and exometabolites in foods*
	Lecture 2 Moderator: AA Rahmianna / Nanik Suhartatik
10.30 – 11.00	5. Naresh Magan – *Mycotoxin regulations, sampling issues: The global context*
11.00 – 11.30	6. Su-Lin Leong – *Biocontrol of mycotoxins: Strategies and obstacles*
11.30 – 12.00	7. Emilia Rico – *Good Sanitation Practices (GSP) and Environmental Monitoring Program (EMP) to prevent pathogen contamination and mold spoilage of Ready-to-Eat (RTE) foods*
12.00 – 13.00	Break
13.00 – 13.50	Poster Session
13.50 – 14.00	Group photo session
	Lecture 3 Moderator: Latiffah Zakaria / Winiati P. Rahayu
14.00 – 14.30	8. Ludwig Niessen – *Application of molecular biological methods for detection of mycotoxin producing fungi in food*
14.30 – 15.00	9. Giancarlo Perrone – *Mycotoxigenic fungi and mycotoxins in corn*
15.00 – 15.30	10. Naresh Magan – *Ecology of mycotoxigenic fungi and possible prevention strategies*
15.30 – 16.00	11. FMC Sigit Setyabudi – *CEMycoS: Current, prospect of research & community outreach*
16.00 – 18.15	Technical Session for Mycotoxin Presentation I Moderator: Sardjono / Heni Adhianata
18.15 – 19.00	Welcome Dinner and Gathering
19.00 – 20.00	Traditional Performance (*Gathutkaca Gandrung*)

Saturday, 15 November 2014	
07.00 – 08.00	Registration, Breakfast, and Coffee Morning
08.00 – 10.00	Technical Session for Mycotoxin Presentation II Moderator: Harsi Dewantari Kusumaningrum/ Tyas Utami
10.00 – 10.30	Break
	Lecture 4 Moderator: Warapa Mahakarnchanakul / Gayuh Rahayu
10.30 – 11.00	12. Su-Lin Leong – *Identification of foodborne yeasts and moulds: A guide for users*
11.00 – 11.30	13. Jens C Frisvad – *How do we secure correct identification of mycotoxins and the fungi which produce them?*
11.30 – 12.00	14. Ludwig Niessen – *Detection of mycotoxins using affinity-based technologies*
12.00 – 12.30	15. Ulf Thrane – *Fusarium toxins*
12.30 – 13.30	Break
	Lecture 5 Moderator : Sigit Setyabudi / Nampiah Sukarno
13.30 – 14.00	16. Emilia Rico – *Molds isolated from the processing environment and their significance in spoilage of heat-processed beverages and juices*
14.00 – 14.30	17. Endang S. Rahayu – *Traditional fermented foods and their safety*
14.30 – 15.00	18. Giancarlo Perrone – *Black aspergilli and their mycotoxin production*
15.00 – 15.30	Break
	Lecture 6 Moderator: Endang S. Rahayu / Chusnul Hidayat
15.30 – 16.00	19. Latiffah Zakaria – *Mycotoxins in Malaysia*
16.00 – 16.30	20. Naresh Magan – *Climate change, food security and mycotoxins: do we know enough?*
16.30 – 17.00	21. Roy Sparringa – *Indonesian food safety: Regulation and challenge*
17.00	Wrap up and Closing: Robert A. Samson (IUMS)
17.30	Heading to Purawisata
19.00 – 20.00	Dinner at Purawisata
20.00 – 21.30	Ramayana Performance

PROGRAM FOR TECHNICAL SESSION

Friday (14 November 2014)	
16.00 – 18.00	Technical Session for Mycotoxin Presentation I Moderator: Sardjono / Heni Adhianata
16.00 – 16.15	1.1. Nampiah Sukarno – *Toxigenic Aspergillus flavus population detected by its aflatoxin genes in peanut kernel*
16.15 – 16.30	1.2. Okky Setyawati Dharmaputra – *Aspergillus flavus infection and aflatoxin contamination in stored nutmeg (Myristica fragrans) at various stages of the delivery chain in North Sulawesi Province*
16.30 – 16.45	1.3. Nova Wahyu Pratiwi – *Airbone fungi and aflatoxin-producing Aspergillus flavus group on Gaplek storage warehouse in Gunung Kidul, Yogyakarta, Indonesia*
16.45 – 17.00	1.4. Yeyen Wanita – *Aflatoxin content in some peanut (Arachis hypogaea L.) post-harvest handling in Gunung Kidul, DIY*

17.00 – 17.15	1.5. Ani Widiastuti – *Molecular identification of Fusarium species from maize kernels in several maize production area in Central and East Java, Indonesia*
17.15 – 17.30	1.6. Yunika Mayangsari – *Occurrence of ochratoxin A in cocoa powder and method validation*
17.30 – 17.45	1.7. Fitri Nadifah – *Identification of potatoes-contaminating fungi in traditional market of Condong Catur, District of Sleman, Yogyakarta*
17.45 – 18.00	1.8. Vita Meylani – *Mould, bacteria and heavy metals contamination in ground coffee*
18.00 – 18.15	1.9. Heru Susanto – *Evaluation of reduction fumonisin contamination in corn in the stage of making Sekelan that soaked with lime water and lactic acid bacteria*
Saturday, 15 November 2014	
08.00 – 10.00	Technical Session for Mycotoxin Presentation II Moderator: Harsi Dewantari Kusumaningrum / Tyas Utami
08.00 – 08.15	2.1. Betty Nurhayati – *Anticandida activities of ethyl acetate extract, fractions and compounds from Lactobacillus plantarum IBL-2 fermentation product*
08.15 – 08.30	2.2. Dadik Pantaya – *Low pH enhances rumen absorption of aflatoxin B1 and ochratoxin A in sheep*
08.30 – 08.45	2.3. Jessil Ann Pajar – *Within-host interactions between Metarhizium anisopliae and two Aspergillus spp. : evaluation of constructive implications on biocontrol strategies*
08.45 – 09.00	2.4. Hoa Bui Thi Quynh – *Efficacy on elimination of Listeria spp., Salmonella spp. and Pseudomonas spp. in single and mixed biofilms by hydrogen peroxide pre-treatment and cleaning process*
09.00 – 09.15	2.5. Betty Sri Laksmi Suryaatmadja Jenie – *Effect of co-culturing of Endomycopsis burtonii in angkak fermentation by Monascus purpureus on citrinin and red pigment production*
09.15 – 09.30	2.6. Endang Kusdiyantini – *Pigment production of Monascus sp. isolated from angkak in Semarang Region, Central Java, Indonesia*
09.30 – 09.45	2.7. Isworo Rukmi*, Kempong – a traditional fermented food in Karangpucung Kidul Village, Linggapura Bumiayu, Central Java: Fermentation agent and their roles*
09.45 – 10.00	2.8. Gayuh Rahayu – *Does microbial diversity of Indonesian tempeh determine its safety?*
10.00 – 10.15	2.9. Annytha Detha – *Natural Antimicrobial Compound in Sumba Mare's Milk*

LIST OF ABSTRACTS

No.	Speaker (Authors)	Address	Title	Note
INVITED SPEAKER				
1	Giancarlo Perrone	ISPA, Bari, Italy	Black Aspergili and Their Mycotoxin Production	IS-18
			Toxigenic Fungi and Mycotoxin in Corn	IS-9
2	Jens C. Frisvad	Technical University of Denmark	Mycotoxin and Exometaboities in Foods	IS-4
			How do We Secure Correct Identification of Mycotoxin and The Fungi which Product Them?	IS-13
3	Latiffah Zakaria	Universiti Sains Malaysia	Mycotoxin in Malaysia	IS-19
4	Ludwig Niessen	Technische Univ. Munchen Freising, Germany	Application of Molecular Biological Methods for Detection of Mycotoxin Producing Fungi in Food	IS-8
			Detection of Mycotoxins Using Affinity-Based Technologiest	IS-14
5	Naresh Magan	Cranfield University, Crandfield, Bedford, UK	Mycotoxin Regulations, Sampling Issues – The Global Context	IS-5
			Climate Change, Food Security ang Mycotoxins: Do We Know Enough?	IS-20
			Ecology of Mycotoxigenic Fungi and Possible Prevention Strategies	IS-10
6	Rico Emilia	International Commision on Food Mycology, USA	Good Sanitation Practices (GSP) and Environtment Monitoring Program (EMP) to Prevent Pathogen Contamination and Mold Spoilage of Ready to Eat (RTE) Foods	IS-7
			Mold Isolated from The Processing Environment and Their Significance in Spoilage of Heat Processed Beverages and Juices	IS-16
7	Rindit Pambayun	Universitas Sriwijaya, Indonesia	Current Research and Technological Application in Food Safety in Indonesia	IS-1
8	Roy Sparringa	National Agency of Drug and Food Control, Indonesia	Indonesian Food Safety: Regulation and Challenge	IS-21

9	Su-Lin Leong	Swedish University of Agricultural Sciences, Sweden	Biocontrol-Strategies and Obtacles	IS-6
			Identification o Foodborn Yeast and Molds- a Guide for Users	IS-12
10	Ulf Thrane	Technical University of Denmark	*Fusarium* Toxin	IS-15
			Are All Fungal Metabolities Toxic?	IS-3
11	Warapa Mahakarnchanakul	Kasetsart University, Thailand	Mycotoxin Regulation in Thailand	IS-2
12	Endang S. Rahayu	Universitas Gadjah Mada, Indonesia	Traditional Fermented Food and Their Safety	IS-17
13	FMC Sigit Setyabudi	Universitas Gadjah Mada, Indonesia	CEMycoS: Current, Prospect of Research & Community Outreach	IS-11
ORAL PRESENTATION				
1	Nampiah Sukarno	Departement of Biology, Faculty of Mathematics and Natural Science, Bogor Agricultural University Indonesia	Toxigenic *Aspergillus flavus* Population Detected by Its Aflatoxin Genes in Peanut Kernel	O-1.1
2	Okky Setyawati Dharmaputra	SEAMEO BIOTROP, Indonesia	*Aspergillus flavus* Infection and Aflatoxin Contamination in Stored Nutmeg (*Myristica fragrans*) at Various Stages of The Delivery Chain in North Sulawesi Province	O-1.2
3	Nova Wahyu Pratiwi	Universitas Riau, Indonesia	Airbone Fungi and Aflatoxin-Producing *Aspergillus flavus* Group on *Gaplek* Storage Warehouse in Gunung Kidul, Yogyakarta, Indonesia	O-1.3
4	Yeyen Wanita	Balai Pengkajian Teknologi Pertanian, Yogyakarta, Indonesia	Aflatoxin Content in Some Peanut (*Arachis hypogaea* L.) Post-Harvest Handling in The Gunungkidul, DIY	O-1.4
5	Ani Widiastuti	Departement of Plant Protection, Faculty of Agriculture, Universitas Gadjah Mada, Indonesia	Molecular Identification of *Fusarium* Species from Maize Kernels in Several Maize Production Area in Central and East Java, Indonesia	O-1.5
6	Yunika Mayangsari	Faculty of Agricultural Technology, Universitas Gadjah Mada, Indonesia	Occurrence of Ochratoxin A in Cocoa Powder and Method Validation	O-1.6

7	Fitri Nadifah	Study Program Diploma of Health Analyst, Health Science College Guna Bangsa, Indonesia	Identification of Potatoes-contaminating Fungi in Traditional Market of Condong Catur, District of Sleman, Yogyakarta	O-1.7
8	Vita Meylani	Siliwangi University, Indonesia	Mould, Bacteria and Heavy Metals Contamination in Ground Coffee	O-1.8
9	Heru Susanto	Departement of Food Technology and Agricultural Product, Faculty of Agricultural Technology, Universitas Gadjah Mada, Indonesia	Evaluation of Reduction Fumonisin Contamination in Corn in The Stage of Making *Sekelan* That Soaked with Lime Water And Lactid Acid Bacteria	O-1.9
10	Betty Nurhayati	Institut Teknologi Bandung, Indonesia	Anticandida Activities of Ethyl Acetate Extract, Fractions and Compounds from *Lactobacillus plantarum* IBL-2 Fermentation Product	O-2.1
11	Dadik Pantaya	France and Clermont Universite, France and Departement of Animal Science, State Polytechnic Jember, Indonesia	Low pH Enhances Rumen Absorption of Aflatoxin B1 and Ochratoxin A in Sheep	O-2.2
12	Jessil Ann Pajar	MSU-Iligan Institute of Technology	Within-Host Interactions Between *Metarhizium anisopliae* and Two *Aspergillus spp. :* Evaluation o Constructive Implications on Biocontrol Strategies	O-2.3
13	Hoa Bui Thi Quynh	Departement of Food Science and Technology, Agro-Industry Faculty, Kasetsart University, Thailand	Efficacy on Elimination of *Listeria Spp., Salmonella Spp*. and *Pseudomonas Spp*. in Single and Mixed Biofilms by Hydrogen Peroxide Pre-Treatment and Cleaning Process	O-2.4
14	Betty Sri Laksmi Suryaatmadja Jenie	Departement of Food Science and Technology, Bogor Agricultural University, Indonesia	Effect of Co-culturing of *Endomycopsis burtonii in* Angkak Fermentation by *Monascus purpureus* on Citrinin and Red Pigment Production	O-2.5
15	Endang Kusdiyantini	Departement of Biology, Faculty of Science & Mathematics, Diponegoro University, Indonesia	Pigment Production of *Monascus* sp. Isolated From Angkak in Semarang Region, Central Java, Indonesia	O-2.6

16	Isworo Rukmi	Departement of Biology, Diponegoro University, Indonesia	*Kempong*, a Traditional Fermented Food in Karangpucung Kidul Village, Linggapura Bumiayu, Central Java: Fermentation Agent and Their Roles	O-2.7
17	Gayuh Rahayu	Departement of Biology, Faculty of Mathematics and Natural Science, Bogor Agricultural University, Indonesia	Does Microbial Diversity of Indonesian Tempeh Determine Its Safety?	O-2.8
18	Annytha Detha	Faculty of Veterinary Medicine, Nusa Cendana University, Indonesia	Natural Antimicrobial Compound in Sumba Mare's Milk	O-2.9
19	Sukumar Debnath	Rural Based Preventive Oncology Research Centre	Studies on Mycroflora Associated with Dried Areca Nut in Assam	cancelled
POSTER PRESENTATION				
1	Harsi Dewantari Kusumaningrum, Danik Dania Asadayanti, Betty Sri Laksmi Suryaatmadja Jenie, Novie Nurhidayat	Department of Food Science and Technology, Bogor Agricultural University, Indonesia	Citrinin and Pigment Production by Indigenous *Monascus purpureus* strains	P-1
2	Heni Adhianata, Warapa Mahakarnchanakul, FMC Sigit Setyabudi, Sardjono	Department of Food and Agricultural Product Technology, Faculty of Agricultural Technology, Universitas Gadjah Mada, Indonesia	Mycoflora of Fermented and Unfermented Cocoa Beans and Their Susceptibility Difference of Ochratoxin A and Aflatoxins Production in High Relative Humidity Storage	P-2
3	Jiratchaya Kuanpan, Parichat Narongplain, Kanin Suksomsak, Pichitpon Mungkasem, Saowalak Adunphatcharaphon, Awanwee Petchkongkaew	Princess Chulabhorn's College, Thailand	Survey of Aflatoxin B_1 Contamination in Rice from Thailand	P-3

4	Panrapee Iamtaweejaroen, Warapa Mahakarnchanakul, Thanapoom Maneeboon, Chananya Chuaysrinule	The Graduate School, Kasetsart University, Thailand	Isolation of *Aspergillus spp.* from Thai Husked Rice and Their Ability to Produce Aflatoxin B1	P-4
5	Tyas Utami, Angga P. Nugroho Hutapea, Endang S. Rahayu	Faculty of Agricultural Technology, Universitas Gadjah Mada, Yogyakarta, Indonesia	Reduction of Aflatoxin B1 by *Lactobacillus paracasei* SNP-2 during Peanut Milk Fermentation	P-5
6	Rohula Utami, Tyas Utami, Suparmo, Endang S Rahayu	Departement of Food Science and Technology, Faculty of Agriculture, Universitas Sebelas Maret, Surakarta, Indonesia	Binding of Aflatoxin B1 *Lactobacillus paracasei* SNP-2 and The Stabilitaty of Bacteria/AFB1 Complex	P-6
7	Hanim Z. Amanah, Tyas Utami, Endang S.Rahayu	Faculty of Agricultural Technology, Universitas Gadjah Mada, Yogyakarta, Indonesia	Study on Factors Binding Aflatoxin B1 by Lactic Acid Bacteria *Lactobacillus paracasei* SNP-2	P-7
8	Karen Ong, Norasidah A. Rashit, Georg Haeubl and Michael Z. Zheng	Romer Labs Malaysia Sdn. Bhd., Universiti Sains Malaysia, Malaysia	A Rapid ELISA Test for the Detection of T-2 Toxin in Grain Samples	P-8
9	Phakpoom Kooprasertying, Warapa Mahakarnchanakul, Thanapoom Maneeboon, Chananya Chuaysrinule	Department of Food Scinece and Technology, Faculty of Agro-Industry, Kasetsart University Thailand	Using in-House Immuno Affinity Column (KU-AF2) to Assess The Risk of Aflatoxin in Peanut in Thai Consumption	P-9
10	Poh Hong Goh, Michael Zheng and Alois Schiessl	Romer Labs Singapore Pte Ltd, Singapore	Rapid Lateral Flow Test for Quantification of Aflatoxin M1 in Milk	P-10
11	Andika Sidar, Jaka Widada, Latifah Zakaria, Endang S. Rahayu	Graduate school of Biotechnology, Universitas Gadjah Mada, Indonesia	Detection and Cluser Analysis of Gene Encoding *vacuolar serine protease* Allergen in *Penicillium* Species isolated from Hospital Indoor Air in Yogyakarta Indonesia	P-11

12	Lilis Suryani	Departement of Microbiology, Faculty of Medicine and Health Science, Muhamadiyah Yogyakarta University, Indonesia	Identification of Fungus Caused Otomycosis	P-12
13	Marlia Singgih Wibowo, Isra Muzaqiyah, Betty Nurhayati, Tjokorde I. Armina, Padmasawitri, Yantyati Widyastuti, Tutus Gusdinar	School of Pharmacy, Institut Teknologi Bandung, Indonesia	Production and Utilization of *Lactobacillus plantarum* IBL-2 Bacteriocins as Meat Product Biopreservatives	P-13
14	Gener Gregorio	Central Luzon State University, Science City of Muñoz, Philippines	Shelf-Life Analysis of Soft Cheese Stored at Ambient and Refrigerated Temperatures	P-14
15	Elisabet Tangkoda	Faculty of Veterinary, Universitas Nusa Cendana, Indonesia	The Comparison of Sensitivity of Aminoglycoside and Beta Lactam Antibiotics to *Avibacterium paragallinarum*	P-15
15	Indun Dewi Puspita, Ustadi, Mgs. Muhammad Prima Putra	Departement Fisheries, Faculty of Agriculture, Universitas Gadjah Mada, Indonesia	Isolation of Chitinolytic Bacteria from Fermented Shrimp Product and Screening for Antifungal Activity	P-16
17	Tutus Gusdinar Kartawinata, Betty Nurhayati, Tjokorde I. Armina Padmasawitri, Aniendha D. Ramadhani, Yantyati Widyastuti, Marlia Singgih Wibowo	School of Pharmacy, Institut Teknologi Bandung, Indonesia	Used in the Growth Inhibition of Foodborne Pathogenic Bacteria	P-17
18	Rohmatussolihat, Mika Miyashita, Yopi, Puspita Lisdiyanti, Hiroko Kawasaki and Ken-Ichiro Suzuki	Research Center for Biotechnology-LIPI, Indonesia	Isolation of Lactic Acid Bacteria from Indonesian Fermented Food	P-18
19	Unnop Tassanaudom, Warapa Mahakarnchanakul, Chidchom Hiraga	Institute of Food Research and Product Development, Kasetsart University, Thailand	Lactic Acid Bacteria Co-Culture Induction to Enhance the Activity of Antimicrobial Compounds Inactivation of *C. perfringens* on Dried Pepper by Washing with Oxidizing Agents	P-19

20	Susana Ristiarini, M. Nur Cahyanto, Jaka Widada, Latiffah Zakaria, Endang S Rahayu	Universitas Gadjah Mada, Indonesia	Color Value, Citrinin Content and Genetic Variation of from *Monascus purpureus* Angkak in Indonesia	P-20
21	Deni Pranowo, Romsyah Maryam, Nuryono, Ali Agus, FMC Sigit Setyabudi	Department of Chemistry, Faculty of Mathematic and Natural Sciences, Universitas Gadjah Mada	Application of Silica from Rice Hull Ash in Immobilization of Polyclonal AFB1-Antibody for Immunoaffinity Column Clean-Up	P-21
22	Hasim Munawar, Veronica Lattanzio, Biancamaria Ciasca, Giuseppe Panzarini, Sri Rachmawati, Michelangelo Pascale	IRCVS, IAARD, Ministry of Agriculture	Simultaneous Determination of Co-occurring Mycotoxins in Maize from West Java by Liquid Chromatography/Tandem Mass Spectrometry	P-22
23	Ma. Aussielita L. Lit	Analytical Solutions and Technical Services, General Santos City, Phillipines	Aflatoxin Levels of Foods and Feeds in the Philippines	P-23

First day Conference Friday, November 14, 2014

MC : Claudia Chastolia Nalaputi

Greeting : Coordinator of CEMycoS, Suparmo
Dean of Faculty Agricultural Technology UGM, Lilik Soetiarso
Indonesian Society for Microbiology (PERMI), Fedik A. Rantam
International Union of Microbiological Societies (IUMS), Robert A. Samson

Opening : Margapati Dance

Suparmo

Lilik Soetiarso

Fedik A. Rantam

Robert A. Samson

Margapati Dance

LECTURE 1

Moderator : Suparmo and Endang S. Rahayu

Speaker :

1. **Rindit Pambayun (08.30-09.00)**

   Current Research and Technological Application in Food Safety in Indonesia

   Synopsis :

   Foods are considered to have a high quality if they are safe, nutritious, palatable, and healthy. For these factors, safety is the most important factor of foods. Regarding the safety of food, the food has been correlated with mycotoxin. Some tropical foods of Indonesian origin have high risk with mycotoxin. Common foods that contain the mycotoxins include groundnuts (peanuts), maize (corn), rice, yams, cassava, soyabeans, fruits, vegetables, spices, cacao, and coffee. The importance of the safety of raw cassava is more pronounced due to the food diversification program launched by the Government. Therefore, the safety of cassava either chemically or microbiologically should be controlled. In the other hand, the safety of peanut which is often consumed in Indonesian traditional food and coffee as Indonesian export commodity is an issue to be addressed as well.

   All of these food stocks have a serious health risks when they are heavily contaminated by mycotoxin. It will be happened when those foods are storaged under warm and humid conditions, which served as a natural challenge in tropical country. In terms of food safety, the mycotoxins include aflatoxins (B1, B2, G1, G2, and M1), ochratoxin A, patulin,

and toxins produced by Fusarium molds such as fumonisins (B1, B2, and B3), trichothecenes (nivalenol and deoxynivaleonol, T-2 and HT-2 toxin) and zearalenone can be exist in some daily foods. In Indonesia, the recent researches are focused on the safety of foods including in the raw materials, the technology of processes as well as the storage of food products.

Discussion :

No discussion.

2. Warapa Mahakarnchanakul (09.00-09.30)

Mycotoxin regulation in Thailand

Synopsis :

Prevention and control of mycotoxins in food and agricultural products in Thailand are managed by three major agencies. Local food products including imported goods are regulated by the Food and Drug Administration under the Ministry of Health. Department of Medical Sciences will be in charge of mycotoxins analysis in suspected foods. According to Thai Food Act or law (1979) if total amount of aflatoxins exceed the limit at 20 ppb, food will be classified as contaminated food. Meanwhile, the agricultural products focusing on fruit and vegetables, either domestic and for export, fresh or processed, will be controlled by the Ministry of Agriculture and Cooperative. Laboratory Central Thai company which is the certified Laboratory under this ministry will be in charge of health certification for exporting. Bureau of Food and Agricultural Commodity and Food Standards (ACFS) also set voluntary standard for risky product as peanut in order to encourage industry to implement. While mandatory standard on pet foods and animal feeds are regulated by the Department of Livestock and certified by the Bureau of Quality Control of Livestock. The last agency involved with Thai community products standard, so called one tumbon (=city) one product (OTOP) voluntary standards, these are set by Ministry of Industry in order to support the development of quality and safety of food community products. In this present in term of national food law only amount of total aflatoxin is limited in food for human consume, however many mycotoxins in foods and raw materials are determined and monitored upon the requirement of each buyers or customers. Although many potentially contaminated foods have not been regulated such as coffee, wine, wheat and corn derived food, but setting of mycotoxins limit for regulate and control safety in food, based on Thai food safety risk assessment studies, to establish national standards is in progress.

Discussion

i. Question : The mycotoxin of the slide is kind of high. Where it comes from?

Answer : From Europe, maybe.

3. Ulf Thrane (09.30-10.00)

Are all Fungal Metabolites Toxic?

Synopsis :

Filamentous fungi have a significant impact on human life as spoilers of food and feed by degradation and toxin production. Mycotoxins and other exo-metabolites are part of the exo-metabolome in filamentous fungi, which comprises more than 30,000 known metabolites. Are they all toxic or otherwise undesirable? No! Filamentous fungi are well known for their production of many biotechnological products such as enzymes (Aspergillus niger, Aspergillus oryzae, Trichoderma reesei, etc.), and primary and secondary metabolites being organic acids (e.g. citric acid by mainly Aspergillus niger), pigments (Blakeslera, Monascus, Talaromyces), fragrances, pharmaceuticals (e.g. statins by Monascus; apicidins by Fusarium fujikuroi), polyunsaturated fatty acids (Mortierella, Mucor) and many more. Many of these compounds are used as food ingredients; however, despite the huge chemical diversity among species of filamentous fungi only a few species are used by industry as cell factories. In some cases the fungus in itself is used as food or as part of fermented food. A careful chemical profiling of the exo-metabolome at species level is an important part of the phenotypic characterization of fungi. This has resulted in a palette of fungal strains from several species producing many different food ingredients. In addition to the useful compounds, many fungal species, including known production strains used in biotech industry, also produce undesired compounds such as mycotoxins; however, through the chemotaxonomy it is possible to select fungal strains with no known production of mycotoxins. All together, a multidisciplinary approach in fungal systematics with focus on the exo-metabolome and incorporation of information on the origin of the fungal cultures, their cultural and physiological characteristics as well as the genotypic information gives a complete picture of the organisms with the very best opportunities to explore and exploit the fungi as safe cell factories of the future.

Disscussion

i. Question : Is it possible the toxin also served as medicine? I.e., angkak is widely used as a medicine to cure dengue fever.

Answer : No, it (the beneficial health effect) is definitely not because of the cytrinine. The effect may come from another compounds. As example, something that is poisonous for us might be also poisonous for cancer cells, which made it as a potential medicine for cancer.

ii. Question : Rice is our main food. About the low-quality rice which is being eaten by the poor, how we can tell whether that rice is poisonous or not?

Answer : Not just the low quality rice, it just any food product has risks of being poisonous.

iii. Question : Refers to your saying about the importance of name and morphology in fungi. In tempe production, we use Rhizopus oligosporus. There was a name changes in fungus, such as Rhizopus oligosporus to pathogenic Rhizopus microsporus.

Answer : Find in the literature for the R. oligosporus, for ascertain the safety of it. I have no right to say it is right or wrong, just be careful.

Rindit Pambayun

Warapa Mahakarnchanakul

Ulf Thrane

4. Jens C.Frisvad (10.00-10.30)

Mycotoxin and Exometabolites in foods.

Synopsis :

Profiles of extrolites are highly species specific and fungal species are specifically associated to types of food, and therefore extrolite production can be qualitatively predicted, and pave the way for the optimal analytical techniques to use when analyzing foods chemically. All species in the major toxigenic genera produce a significant number of families of exometabolites (Ems) and it is possible that some of these EMs act synergistically or show the "Gulliver effect", i.e. that they may be less toxic alone, but would give a toxic response if ingested at the same time. Some of these extrolites are toxic to vertebrates (mycotoxins),

other have bioactivities that may influence human and animal health in alternative ways. The most important mycotoxins are in general aflatoxins, fumonisins, ochratoxins, patulin, trichothecenes, zearalenone, sterigmatocystin, 3-nitropropionic acid, cyclopiazonic acid, penitrem A, verrucosidin and penicillic acid. However other extrolites may be important. Penicillin, produced by Penicillium rubens, P. chrysogenum, P. nalgiovense and P. griseofulvum, may be produced in foods and may make a contribution to penicillin resistance in bacteria. Mycophenolic acid, produced by the common food-borne fungi P. brevicompactum, P. bialowiezense, P. roqueforti and P. carneum, is a very efficient immune-system inhibitor, and thus pave the way for bacterial infections if accumulated in foods. Compactin, produced by P. solitum is a very effective cholesterol-lowering compound. These may be seen as positive contributions to healthy foods, but they are not under medical control, as they would be if prescribed by a general practitioner. All these extrolites can be produced on standard media such as Czapek Yeast Autolysate (CYA) agar and Yeast Extract Aucrose (YES) agar, and these mycotoxins are often also produced on the foods the fungi are associated with. However mycotoxin/extrolite production on CYA and YES is only qualitatively indicative for what could be produced on foods, so examples will be given on how to optimally analyze for mycotoxins in pure culture and in foods using combinations of UHPLC-DAD-fluorescence, UHPLC-triple Quad MS and UHPLC-QTOF.

Disscussion :

i. Question : Refers to the “host-jump” terminology you have used, in what state fungus can be told as a “host-jump”?

   Answer : For example, the domesticated bacteria which found in pomasceous fruit, is also found lately in meat.

ii. Question : Could penicillin (antibiotics) spontaneously produced in fermented food? (In Indonesia) we used Rhizopus sp. to produce many traditional fermented food.

   Answer : No, it is save.

LECTURE 2

Moderator : A.A. Rahmianna and Nanik Suhartatik

Speaker :

5. **Naresh Magan (10.30-11.00)**

   Mycotoxin regulations, sampling issues – the global context.

   Synopsis :

   One of the key drivers of research on mycotoxins is the strict legislation which exists in different regions of the world, especially the EU. Indeed, in the EU, the RASFF system at its borders shows that 30% of commodities are rejected because of contamination with mycotoxins (e.g., cereals, nuts, spices, juices, dried fruits). Unfortunately, while the EU has the strictest limits world-wide, this is not the same in other regions of the world. I will show that relative types of legislation in different continents and discuss these issues. The other key problem area is with regard to taking representative samples. The EU has specific sampling plans for different types of commodities and this must be implemented for importing commodities into the EU. Because mycotoxins may be spatially present in grain in pockets or uniformly it is difficult to obtain a true representative sample. This paper will discuss representative sampling issues and where errors occur in the process and some of the problems associated with sampling.

   Discussion :

   i. Question : After sampling, at the laboratory and the assay was done. How's the explanation of the nature of the sample and how's the control.

      Answer : The most important is the way the sample taking. Is it in the right way? We should consider about the size of the lot and the representativeness of the sample taken, since the sampling is critical for all the down-processing. May be it is different with your situation.

6. **Su Lin Leong (11.00-11.30)**

   Biocontrol of mycotoxins – Strategies and Obstacles.

   Synopsis :

   Micro-organisms have the potential to prevent or ameliorate the effects of mycotoxins, by acting at multiple stages of the food or feed chain, e.g. by preventing mycotoxin formation in the field or during storage, or by binding or degrading toxins during processing or even in the gut. Yet, despite hundreds of scientific publications on the topic, and

much continuing research activity, few products are in commercial use. The drivers, regulatory aspects, and commercialization models for uptake of biocontrol agents to control mycotoxins will be discussed, using as examples the Afla-guard® (USA) / Aflasafe™ system (Nigeria, Kenya, and other African countries), and biopreservation of moist-stored cereals using the yeast Wickerhamomyces anomalus (Sweden, Cameroon). At the end of the session, participants are invited to give a snapshot of the Asian situation regarding implemention of biocontrol for mycotoxins.

Discussion :

i. Question : I think the biocontrol is a good system model. But how is the cost? And how about the development of another specific toxin.

Answer : The biological control is very important, and for biocontrol production in a large scale, we has to be prepared all thing first, or the culture will be died first.

7. Emilia Rico-Munoz (11.30-12.00)

Good Sanitation Practices (GSP) and Environment Monitoring Program (EMP) to prevent pathogen contamination and mold spoilage of ready to eat (RTE) foods

Synopsis :

Good Sanitation Practices (GSP) and an effective Environmental Monitoring Program (EMP) are essential to prevent pathogen contamination of ready-to-eat (RTE) foods. They are also essential to prevent mold spoilage of these foods. A strict sanitation program and the use of the right sanitizer is necessary to keep food safe and to prevent spoilage. Molds spoiling foods can produce mycotoxins, thus becoming a food safety issue. Environmental monitoring is an evaluation of the effectiveness of the microbial controls (pathogens and spoilage organisms) to prevent contamination of food products. It is not only a validation of the sanitation program, but an evaluation of multiple programs, including but not limited to sanitary design, personnel practices, and operational methods among others. The best practice is to use the four-zone system when determining what areas to take samples from. The four-zone system begins at the product-contact surfaces and extends to areas outside of rooms in which product is exposed. When monitoring for pathogens, the least amount or no testing should be done in Zone 1. If pathogens are found in Zone 1, it is likely a recall situation and it is too late. When monitoring for spoilage microorganisms, most of the sampling takes place in Zone 1. Establishing GSP and an effective EMP will be discussed in this presentation.

Disscussion :

i. Question : The production of Indonesian tempe. is way far from what you talking about and we have no report of people become sick because of eating Tempeh. Tempe is Indonesian heritage which we give to the world. There's one report of US about Salmonella in our tempeh, but we never has any report of gastroentritic because of tempe. We produce it without your method.

Answer : Yeah, you know, in the US, we're too clean. Way too clean. When I leave the country (US), i.e. to Mexico, I've become sick. But you know, some people are not that lucky (with their immunity) : young people, children, old people. You know we (US) have a bad job for our immunity.


Naresh Magan


Jens C. Frisvad


Emilia Rico

LECTURE 3

Moderator : Latifah Zakaria and Winiati P. Rahayu

Speaker :

8. **Ludwig Niessen (14.00-14.30)**

Application of Molecular Biological for detection of mycotoxin producing fungi in food

Synopsis :

The polymerase chain reaction (PCR) can be used to spesifically amplify the DNA squence positioned between two primer binding sites in the target DNA. Amplification events can be analyzed using agarose gel electrophoresis. Using intercalacting fluorescent dyes or fluorescently labelled probes, the signal can be quantified to determaine spesifically the concentration of target DNA in sample.

Loop-mediated isothermal amplification (LAMP) has been developed as an alternative technology for DNA amplification. Operation condition: temperature 65oC. This method use Mg2+ to make it more fluororescent at λ 365. Mg is water insoluble material, high turbidity, will precipitate. PCR is a gold standart in molecular biology. LAMP is an alternative to PCR based method for diagnosis of fungi in pure culture and sample material. LAMP proved rapid, robust, user friendly with minimal laboratory equipment needed. LAMP has a highly spesificity. LAMP can be use for detection of trichotecene producers in cereals. LAMP can be performed after very simple sample processing and is therefore ideally suited for on-site screening applications in quarantine, agriculture and in the food and feed industry

Discussion :

i. Question : What the clasification reaction do you prefer, or do you use both methods?

Answer : We can use both method. It is not really different soo

9. Giancarlo Perrone (14.30-15.00)

Mycotoxigenic Fungi and Mycotoxin in corn

Synopsis :

Mycotoxin in corn caused by storage fungi and field fungi. Mycotoxins in corn were Zearalone, Fumonisin, Trichothecene (2 type of trichothecene are Type A trichothecene and Type B trichothecene), Beauvericin (less known mycotoxin among the others and toxic for human and animal), Fusaproliferin and its derivative, Moniliformin, and Aflatoxin.

Fumonisin is usually produced by Fusarium, marked by the presence of maize ear rot such as pink ear rot and red ear rot. Pink aer rot refers to prensence of Fusarium proliferatum, Red ear rot refers to presence of Fusarium graminaticum and Fusarium culmorum. Flowering is time for fusarium infection in corn, and helped by insect.

Aflatoxin usually produced by aflatocigenic fungi (Aspergillus flavus and Aspergillus parasiticus). Aflatoxin synthesis, the optimum condition : T 28-32oC and aw: ?. Aspergillus flavus comes from soil, contaminating corn by wind and insect, and spread trough the silk of the corn. Some hybrid corn are aflatoxin resistant. Aspergillus niger group in corn can produce fumonisin. Corn with lower water activity is more susceptible to fumonisin (FB1) with the presence of A. Niger. Maize with pink ear rot and Black aspergilly are susceptible to fumonisin contamination.

Discussion :

i. Question : What is the role of the mycotoxin in fungi, do they make toxigenic strain having a reproductive advantage over the non toxigenic strain ? if the toxigenic strain have evolutionary advantage practically they will grow better than non toxigenic

Answer : Sometimes some fungi also produce mycotoxin. If the toxigenic strain have a reproductive advantage than non toxigenic strain, there will be competition between toxigenic and non toxigenic strain. So it will be difficult to control the contamination

ii. Question : Global warming in Europe, do they make aflatoxin infection advance in Europe?

Answer : Yes, they do. We have change the data. Since the climate changes, the world temperature increase, so do in Europe

iii. Question : Monocultural or polycultural plantation (small and large scale plantation), do they have different effect on the toxigenic strain's growth?

Answer : Yes they do, so it is important to do crop rotation.

10. Naresh Magan (15.00-15.30)

Ecology of mycotoxigenic fungi and prevention strategies

Synopsis :

Water activity and temperature for growth and mycotoxin production of fungi are the important factor that we have to understand. This information is very important in understanding the relative risk of contamintaion of staple commodities with mycotoxin in each spesific food chain. This also helps where to target the prevention of control strategies in the food chains. The production flow of some commodities (cereal, nut, cofee, etc) were need to understand. So we can determine the critical cotrol point (CCP), then we can control it. Developing some preventing strategy for food product contamination is needed.

Water activity and temperature required for growth and mycotoxin production were need to understand for each food product and each mycotoxigenic strain. These are the key component which need to be controlled to minimize mycotoxin production and contamination in different food product. By understanding the ecology and life cycle of the key mycotoxigenic fungi it is possible to develope minimization/prevention strategies.

Discussion :

There is no discussion.

11. FMC Sigit Setyabudi (15.30-16.00)

CEMycoS: Current, Prospect of Research & Community Outreach

Synopsis :

A research group in the Faculty of Agricultural Technology (FAT) namely Center Excellence on Mycotoxins Studies (CEMycoS) has been established in 2011. Nevertheless, the research and community service on mycotoxins subject were already initiated by Department of Food and Agricultural Technology - FAT within continuous collaboration of national and abroad institution partners since year of 2000's. During 14 years, this research group has mostly studied on the occurrence of mycotoxins in agricultural product supply chain from farmers to users and their fate during post harvest and processing of the corresponding derived products. The estimation of mycotoxin ingestion in corn-based staple food and tracing in human urine samples were done. Several efforts of toxin decontamination under physical, mild chemical and biological treatments were also studied in traditional food process and indigenous fermented products. Studies of a non-destructive toxin detecton method under vision instrument and support material for solid phase extraction using immunoassay were also developed for mycotoxins analysis. Moreover, the mycological studies have been performed to isolate the fungi producing toxins from agricultural and crop estate as well as their derived products. The identification of fungi producing toxins were also conducted by morphologycal and bio-molecular methods.

This research group is also focused in community outreach through development of academician, business, government and community network. Those stakeholders hold important role in the dissemination and application of science and technology in the context of sustainable community empowerment. CEMycoS observes that elaboration among researches and community service should be a backbone for the future activities. The outcome of research activities will emerge when CEMycoS provide research outputs to community with problem solving and benefit for community in term of knowledge-based development.

Since 2011, CEMycoS Laboratory have initiated inter-laboratory networks dealing with mycotoxins analysis in national level. CEMycoS already developed mycotoxins testing laboratory and achieved ISO 17025 certification for aflatoxin analysis in maize and maize-based products in 2013. Currently, we already extend scope of analysis to other mycotoxins. CEMycoS opens opportunity to collaborate with quarantine laboratory around country in strengthening their capacity in SPS contaminants analysis, especially for mycotoxin analysis.

Discussion :

There is no discussion.

Ludwig Niessen

Giancarlo Perrone

TECHNICAL SESSION FOR MYCOTOXIN PRESENTATION I

Moderator : Sardjono

Speaker :

1. **Yeyen Prestyaning Wanita and Sri Wahyuni Budiarti (16.45-17.00)**

   Aflatoxin Content in Some Peanut (Arachis hypogaea L.) Post-Harvest Handling in Gunungkidul, DIY

   Synopsis :

   Gunungkidul is the largest producer of peanuts (Arachis hypogaea L.), in Yogyakarta. The problem was poor farmer's post-harvest handling, resulting in a reduction in quality, especially the increase of aflatoxin content. The research was carried out in January-December 2014. Research conducted at Sediyo Mulyo Farmers Group, Sogo Hamlet, Candirejo Village, Semanu, Gunung Kidul and Post Harvest Laboratory and Agricultural Machinery, Yogyakarta IAIT. The experimental design used in this study is completely randomized design with two treatments and seven replications. The treatment used were farmer post-harvest handling peanut and the introduction. The difference of the two treatments were in the process of sorting, drying, and storage. The results showed that the peanuts improvement of post-harvest handling: 1) could suppress the aflatoxin content of the third month of storage, ie from 360 ppb to 20 ppb, making it safe for consumption. 2) improved the quality of peanuts into a quality II which is in accordance with SNI 01 3021 1995.

Discussion :

There is no discussion.

2. **Ani Widiastuti, Tri Joko, and Kurnia Ritma Dhanti (17.00-17.15)**

Molecular Identification of Fusarium Species From Maize Kernels in Several Maize Production Area in Central and East Java, Indonesia

Synopsis :

Fusarium spp. which impact maize in the field will continue its infection in the post harvest period. Some Fusarium spp. produce mycotoxin, while different species of Fusarium can produce different toxin. The mycotoxins couse harmful effect on human and animal health. Research focus on Fusarium mycotoxin of maize is still limited in Indonesia. Therefore, this research aims to reveal the presence of Fusarium spp. from maize and identify them based on molecular analysis. Samples of maize were collected from several production areas in Central and East Java. Fusarium spp. were isolated and ground in potato dextrose agar (PDA) medium and molecular identification was conducted by PCR assay using species specific premiere of estimated Fusarium spp. spesies. The result showed that from twenty sample isolates, there were ten isolates Fusarium verticilloides, two isolates F.proliferatum, three isolates F.graminearum and five isolates were not identified yet. Those unidentified isolates are now being prepared for sequencing-based analysis.

Discussion :

There is no discussion.

3. **Fitri Nadifah, Yuliana Prasetyaningsih and Sri Rahayu (17.30-17.45)**

Identification of Potatoes-Contaminating Fungi in Traditional Market of Condong Catur, District of Sleman, Yogyakarta

Synopsis :

Potato (Solanum tuberosum L.) is one of the five basic sources of carbohydrates. It consumed by many people in the world. One of the constraints in potato production is the presence of fungal diseases. Fungi that cause diseases in potato crops include Phytophthora infestans which causes late blight, Fusarium oxysporum which cause fusarium wilt, Alternaria solani Sor. Which caused brown spot disease, and Aspergillus niger which infect bulbs and produce aflatoxin. Identification of potatoes-contaminating fungi can lead the farmers to get a better potatoes production. This research goal was to

identify potatoes-contaminating fungi in Traditional Market of Condong Catur, District of Sleman, Yogyakarta. This research used descriptive method with laboratory examination. We took 30 defected potatoes which was suspected of being infected by fungi. Samples were taken from each potato aseptically and then cultured in Saboraud's Dextrose Agar (SDA) media. Fungal identification was held after 24 hours incubation. Based on the laboratory examination, there were fungal infections on all potatoes. These were identified as Phytopthora infestans (26.67%), Fusarium oxysporum (86.67%), Alternaria solani Sor. (6.67%), and Aspergillus niger (13.33%). Phytophthora infestans, Fusarium oxysporum, Alternaria solani Sor., and Aspergillus niger were identified as potatoes-contaminating fungi in Traditional Market of Condong Catur, District of Sleman, Yogyakarta.

Discussion :

There is no discussion.

4. Annytha Detha (18.15-18.30)

A Review Article : Natural Antimicrobial Campound In Sumba Mare's Milk

Synopsis :

Mare's milk has long been used as a health drink and has a therapeutic effect. Sumba horses is the original horse in Indonesia, has a high number of population. According to statistics, the population of Sumba horses reach one – eight of the total population of horse in Indonesia. Sumba horse are typically use in cultural ceremonies, transportation equipment, agriculture equipment, and horserace, but Sumba Mare's milk have not been utilized. The aim of this study were to assessed the potential utilization of Sumba Mare's milk associated with horse care system maintenance, the condition of the area in population of Sumba horse; to determine the composition of Sumba Mare's milk; and to identify and fractionate antimicrobial activity. The study was conducted through collection of journal and data about the Sumba Mare's milk. The result of the review showed that maintenance system and horse population in large numbers on the Sumba island, became an indication of the utilization of Mare's milk as a nutrious food source. Sumba Mare's milk can also be a new revenue source as a food that improves the economy of the community. Based on the data, can be conclude that Sumba horse had a great potential in producing Mare's milk. The average of Sumba Mare's milk contained protein, fat, lactose, and total solids in respectively 1,82%, 1,67%, 6,48% and 11,37%. Identification of antimicrobial compounds using HPLC method, there are six main peaks

with different polarities and retention time. Fractination result of six fractions with different conclusions of present study showed that utilization of Sumba Mare's milk have the potential to be developed Sumba area. Sumba Mare's milk nutritional value, namely protein, fat, lactose, and total solid were balanced and compounds in whey protein had antimicrobial activity against causative agent of subclinical mastitis.

Discussion :

There is no discussion.

Seminar and discussion

Second Day Conference Saturday, November 15, 2014

MC : Claudia Chastolia
Nalaputi

TECHNICAL SESSION FOR MYCOTOXIN PRESENTATION II

Moderator : Harsi D. Kusumaningrum and Tyas Utami

Speaker :

1. **Yunika Mayangsari (08.00-08.15)**

   Occurrence of Ochratoxin A in Cocoa Powder and Method Validation

   Synopsis :

   The purpose of this research was to determine the occurrence of Ochratoxin A (OTA) in cocoa powder which are marketed in Indonesia and also to perform a single laboratory validation for the analysis of OTA. Spiked samples with levels from 10.00 to 50.00 µg/kg for cocoa powder had an average recovery rate of 86.67%. The limits of detection and quantification in cocoa powder were 0.16 µg/kg and 0.54 µg/kg respectively. A good correlation (r = 0.9987) was found for this method. Three Indonesian markets of cocoa powder products were investigated to determine the presence of OTA, which was extracted by Ochraprep® immunoaffinity columns for cleaning up and analysed by high performance liquid chromatography (HPLC). The results showed that allof the cocoa powder products were contaminated with OTA at different levels and the average level of OTA contamination was 3.08 µg/kg.

   Discussion :

   i. Question : Why you didn't analyze ochratoxin A in coffee bean but in cocoa bean?

      Answer : We choose analyze ochratoxin A in cocoa powder because it's a consume product, actually we can export this product into many several product.

2. **Heru Susanto (08.15-08.30)**

   Evaluation of Reduction Fumonisin Contamination in Corn in the Stages of Making Sekelan That Soaked With Lime Water and Lactic Acid Bacteria

   Synopsis :

   Corn as the main ingredient in the making sekelan (alternative food) in its storage are susceptible to mycotoxin contamination which reducing the corn quality. Fumonisin is one

of mycotoxins that could potentially cause disease in humans and animals. Fumonisin produced mainly by Fusarium verticilloides, Fusarium proliferatum and other genera were often found in corn. The recommended maximum levels for fumonisins in human foods and in animal feeds regulated by Food and Drug Administration (FDA). For human foods, the maximum levels for fumonisins are 2-4 ppm. This study aims to determine the level of fumonisin contamination in corn as an ingredient sekelan and reduction at every stage of making sekelan marinated with lime water and lactic acid bacteria. Corn was inoculated with Fusarium verticiloides then made sekelan with three soaking treatments using water, with lime water and lactic acid bacteria (Lactobacillus plantarum). The content of fumonisin in each stage were analyzed using HPLC. The results showed that the milling process was able to reduce the contamination of fumonisin B1 from 14.47 µg/g to 0.69 µg/g and the largest part of fumonisin B1 content was in the skin and corn bran. In the milling process, followed by soaking with water, lime water, and lactic acid bacteria decreased fumonisin B1 97.72%, 100% and 98.67%, respectively and was not found fumonisin B2.

Discussion :

There is no discussion.

3. Betty Nurhayati (08.30-08.45)

Anticandida Activities of Ethyl Acetate Extract, Fractions and Compounds from Lactobacillus plantarum IBL-2 Fermentation Product

Synopsis :

Candida albicans is one of the causes of opportunistic infection in human. The bio-therapeutic development from antimicrobial compounds of Lactic Acid Bacteria (LAB), such as Lactobacillus plantarum, is targeted to be one of the alternatives for effective and non-toxic candidiasis therapy. This study was aimed to identify the anticandida compounds derived from L. plantarum IBL-2. The method used in the production process was fermentation of L. plantarum IBL-2 under optimal condition. For further study, extract of acid and cell-free supernatant was prepared using liquid-liquid extraction and column vacuum chromatography. Anticandida compounds were identified from the hexane: EtOAc (4 : 6) fraction, utilizing GC-MS. Anticandida activity of the compounds was measured using agar diffusion and microdilution method. The optimum incubation period for anticandida compounds production from L. plantarum IBL-2 was 72 hours, which produce acid and cell-free supernatant with inhibitor zone diameter against C. albicans of

9 mm. Ethyl acetate fraction from the liquid-liquid extraction produced the highest anticandida activity, with inhibitor zone diameter of 14 mm. Column vacuum chromatography was resulted in anticandida compounds which produced inhibitor zone diameter of 17 mm using diffusion agar method and 16 titer using microdilution method. Utilizing the GC-MS, several organic acids from anticandida compounds were identified. Identification of anticandida compound derived from L. plantarum IBL-2 showed that the compound consisted of several organic acids such as propanoic acid, 2-hydroxycaproic acid, pentanoic acid 4-metil, pentanoic acid 3- metil, lactic acid dimer, benzene propanoic acid, 3-ureidopropionic acid, hexadecanoic acid, oleic acid,octadecanoic acid and 1,2 benzenedicarboxylic acid.

Discussion :

There is no discussion.

4. Dadik Pantaya (08.45-09.00)

Low pH Enhances Rumen Absorption of Aflatoxin B1 and Ochratoxin A in Sheep

Synopsis :

The objective of this study was to determine whether the ruminal disappearance rate of aflatoxin B1 (AFB1), ochratoxin A (OTA) and fumonisin B1 (FB1) is affected by acidic rumen pH conditions. Disappearance was measured using a temporally isolated rumen model. A buffered solution containing AFB1, OTA and FB1 at pH 5 or 7 was incubated for up to 2 h in the rumen of three adult rumen-cannulated sheep. The mean pH of the solution during the 2-h incubation in the rumen was 6.8±0.15 and 5.7±0.25 for the neutral and acid conditions, respectively. AFB1 and OTA were readily absorbed in the rumen, particularly at acid pH. The fractional disappearance rates at acid and neutral pH for AFB1 were, respectively, 1.98±0.52 and 1.42±0.57/h ($p<0.019$) and for OTA were 0.16±0.10 and 0.06±0.03/h ($p<0.058$). OTA disappearance from the rumen was followed by a

concomitant increase of OTA concentration in plasma throughout the 2-h incubation. In contrast, FB1 was not absorbed in the rumen. In conclusion, acid pH in the rumen increases the absorption of AFB1 and OTA, potentially contributing to an exacerbated toxic risk.

Discussion :

There is no discussion.

5. **Bui Thi Quynh Hoa (09.00-09.15)**

Efficacy on Elimination of Listeria spp., Salmonella spp. and Pseudomonas spp. in Single and Mixed Biofilms by Hydrogen Peroxide Pre-Treatment and Cleaning Process

Synopsis :

Prevention and control of biofilm formation in food processing environment has remained a challenge for food industry in term of food safety. This study was designed to investigate the efficacy of hydrogen peroxide pre-treatment combination with the regular procedure using daily cleaning in shrimp plant. Single and mixed species biofilm of Listeria spp., Salmonella spp. and Pseudomonas spp. were used as the model. In laboratory single biofilm on stainless steel coupons (SS) were formed under nutrient stress and harvested at 3 days and 7 days to assess the 4 cleaning procedures. The result showed that single biofilms of Listeria and Salmonella were completely eliminated by using 2% alkaline detergent 10 min following with 2 type of QUAT based sanitizers. However this procedure could eliminate Pseudomonas, high potential biofilm formation, by 3-4 log reduction but 5 log reduction was obtained when replaced with acid detergent. Then mixed species biofilm study was done on 3 materials, stainless steel, Teflon and rubber. The condition was simulated as continuously 7 days process conditions. H2O2 concentration of 1 and 2% at 5 and 10 min as pre-treatments were subjected to mixed biofilm prior to the regular cleaning procedure. Hydrogen peroxide 2% as pre-treatment reduced population of bacteria by 6 log (CFU/cm2). No significant different in pre-treatment with cleaning process between 5 min of 2% H2O2 and 10 min of 1% H2O2, and mixed biofilm on stainless steel was removed the easiest compare to the others. Applying hydrogen peroxide as the pre-treatment following with the regular cleaning process in plants needed in removing and controlling biofilm, particular mixed species biofilm.

Discussion :

i. Question : Do you test the mixture combined biofilm considering the composition of the combination? Do you consider the composition before mixture? Any difficulties in cleaning with that combined biofilm ?

Answer : Yes, we do. With the mixture used, they need different cleaning process.

6. Betty Sri Laksmi Suryaatmadja Jenie (09.15-09.30)

Effect of Co-culturing of Endomycopsis burtonii in Angkak Fermentation by Monascus purpureus on Citrinin and Red Pigment Production

Synopsis :

Monascus purpureus are commonly used in angkak fermentation to produce the red pigment (angkak). During angkak fermentation, this mold can also form a mycotoxin called citrinin. The objectives of this study were to increase the red pigment production and to reduce the citrinin formation by co-culturing M. purpureus strains with an indigenous isolate of Endomycopsis burtonii during angkak fermentation at different time of inoculation. Sterilized rice was used as substrate and three strains of M. purpureus (JmbA, TOS and AID) at concentration of 107 CFU/ml were used for angkak fermentation performed at room temperature. Suspension of E. burtonii was added at three different concentrations (103, 104 and 105 CFU/ml) at day 2, 4, and 6 of fermentation period of 14 days. Citrinin were detected after 14 days of angkak fermentation analyzed by HPLC with Nucleosil 100-5 C-18 column and fluorescent detector. The intensity of red pigment was measured by spectrophotometry at 500nm. The results showed that the highest production of red pigment was achieved by strain M. purpureus TOS that co-cultured with 104CFU/ml of E. burtonii added at day 6. The intensity of red pigment by this co-culturing procedure was 1.75 times higher than that without co-culturing. Furthermore, strain TOS formed relatively less citrinin after co-culturing with 104 CFU/ml of E. burtonii added at day 6, i.e. from 0.54 ppm to 0.47 ppm. Although, the other strains (JmbA and AID) also indicated an increasing trend of red pigment intensity by co-culturing with E. burtonii, however, the formation of citrinin was also increase. These results suggested that co-culturing with E. burtonii can improve the red pigment production and reduce the citrinin formation. However, the effect of co-culturing with E. burtonii was varied, likely depending on the M. purpureus strain involved.

Discussion :

i. Question : Do you have any information why does citrinine exist in the rice that have been colored by monascus?

Answer : Actually Monascus purpureus produce red pigmen in rice and also produce citrinine, but the citrinine is in the small amount. Angkak is red pigmen soluble in water and citrinine is not soluble in water.

ii. Question : Is it possible to separate the substances in angkak?

Answer : Yes, It is possible.

7. Endang Kusdiyantini (09.30-09.45)

Pigment Production of Monascus sp. Isolated From Angkak in Semarang Region, Central Java, Indonesia

Synopsis :

The development of the food processing industry led to the highly used of dyes, especially the type of synthetic dyes that can be harmful to consumers because of its toxicity. Natural dyes to be one of the alternatives used in the field of food. One of the natural dyes is widely used as a food coloring that is red yeast rice. Red yeast rice is rice that is overgrown by the mold Monascus sp. that produces pigment. This study aims to obtain pure isolates of red fungus rice from angkak in Semarang. The growth and the red pigment production of the fungal isolates in the different source of N and pH were evaluated. The treatment was done by inoculating fungal isolates in PDB (potato dextrose broth) medium which was treated at pH 3, 5, 7, 9 and added with nitrogen source Ammonium Chloride 1%, Ammonium Nitrate 1%, as well as Peptone 1% for optimization. Analysis of pigments was conducted using a spectrophotometer with a wavelength (λ) of 500 nm and analysis of dry cell was done based on mycelia weight (g/l). The results showed that the highest pigment concentration occured at treatment of pH 7 with 0.812 absorbance value and the highest value of the cell dry weight at pH 7 was 1.232 g/l. Results of optimization with different nitrogen sources showed the highest pigment levels occurred in the addition of a nitrogen source Ammonium Chloride 1% with 0.821 absorbance valve and the dry weight of most cells in Ammonium Nitrate was 2.556 g/l.

Discussion :

i. Question : What about the species of monascus in your identification result, is it monascus purpureus or the other monascus?

Answer : We don't know yet about the species.

ii. Question : Did you use submerge fermentation? if we compare the sub merged and liquid fermentation, what about the result of submerge fermentation and liquid fermentation?

Answer : Yes, we use submerge fermentation. if we use liquid fermentation, it's produce more citrinine than submerge fermentation.

8. Isworo Rukmi (09.45-10.00)

Kempong, a Traditional Fermented Food in Karangpucung Kidul Village, Linggapura Bumiayu, Central Java: Fermentation Agent and Their Roles

Synopsis :

Kempong is a traditional fermented food found in South Karangpucung Linggapura Bumiayu village, Central Java prepared from palm kernel cake. This is traditional fermented food which exclusively found in that region, and consumed mostly everyday by the people in the village. To examine the important mold and their roles in kempong fermentation. Mold isolation was done by direct isolation on PDA medium from kempong product. The proteolytic, amylolitic, lipolytic activity of the isolates were also observed by hydrolysis assay on agar media. Proximat analysis of kempong were also conducted. R. oryzae, A. chevalieri, and A. tamarii have been isolated from kempong product. All isolates showed good enzyme activities, particularly proteolytic and amylolytic. The proximate analysis of kempong showed that the carbohydrate, protein, fat, ash, and water content were 16.67%, 5.77%, 2.80%, 0.75%, 74.03% d.w respectively. R. oryzae isolate showed a high proteolytic activity, which indicates that this species might be the main agent in kempong fermentation. The nutritional value of kempong was lower than the raw substrate.

Discussion :

i. Question : What is the different between kempong and tempe bongkrek?

Answer : Kempong is made from palm cernel cake and tempe bongkrek is made from coconut waste, so it is different.

ii. Question : Is kempong safety for people that it is use rhyzopus for fermentate the palm kernel cake since it is known that rhyzopus produces toxin?

Answer : There are no any information yet that confirm about toxication in Bumiayu caused by this product.

9. Gayuh Rahayu (10.00-10.15)

Does Microbial Diversity of Indonesian Tempeh Determine Its Safety?

Synopsis :

Tempeh is a popular Indonesian traditional fermented food that can be used as source of macro and micronutrient, isoflavon and dietary fibers. Tempeh is mainly made from soybean and fermented by Rhizopus spp. to produce soybean cake. Recent findings on Rhizopus on tempeh from Indonesia indicated that the diversity of Rhizopus associated with tempeh was reduced to only R. microsporus and R. delemar. Further, phylogenetic study based on the ITS sequence indicated that the R. microsporus from Indonesian tempeh nested in the same clade with clinical strains R. microsporus. While R. microsporus may harbour endosymbiotic Burkholderia rhizoxinica and B. endofungorum, which the toxin is harmful for human. Nevertheless, no report on toxicated people in Indonesia due to consuming tempeh. This raise the question whether R. microsporus of Indonesian tempeh hosted toxin producing bacteria and thus correlate with tempeh safety. This study find out that tempeh samples from Bogor were free from Salmonella and aflatoxin, but contain E. coli. Hyphal washing method indicated no bacteria exists both within and on the surface of the hyphae of R. microsporus isolated from fresh tempeh. This result was supported by PCR amplification of 16S RNA of the crude extract of some R. microsporus isolates. A hyphothetical answer to tempeh safety based on metagenomic approach is discussed.

Discussion :

i. Question : About food cooking contamination, as we know recontamination can take place, what about consume tempe as raw food?
   Answer : Maybe we can make salad from tempe

ii. Question : We eat tempe from long ago (ancient people) so it was a proof that tempe is safe to eat, so may be we can register it in GRAS (Generally Recognized as Safe)? Additional information about tempe, tempe can cure diarhea problem in child.

Answer : Yes, we know that so don't be afraid to eat tempe, and if we want to export our inokulum so we need build a procedure to make sure that our product is free from contamination, and we can try to do it.

LECTURE 4

Moderator : Warapa Mahakarnchanakul and Gayuh Rahayu

Speaker :

12. Su-lin Leong (10.30-11.00)

Identification of foodborne yeasts and moulds – a user's guide

Synopsis :

Identification is required to provide information about foodborne yeasts and moulds. The stages for polyphasic identification of foodborne fungi described, from isolation, purification of cultures, selection of media and incubation conditions for morphological identification, DNA extraction, selection of primers for sequencing, sequence matching in databases, and finally, weighing up molecular and morphological results to come to a final conclusion. The first step is purification of cultures then initial microscopy for enactive yeast or mould after that isolat will be identification from Macro and micro morphology and finally weighing up molecular and morphological results.

Discussion :

i. Question : how to identification spore from the environment?

Answer : The spore must be inoculation in media and can be identification after grow up.

13. Jens C. Frisvad (11.00-11.30)

How do we secure correct identification of mycotoxins and the fungi which produce them?

Synopsis :

Correct identification concerning fungal identification, concerning mycotoxins and other exometabolites. Identification mycotoxins and other exometabolites use more than one method at least 3 different methods to secure it. Identification should be based on different types of phenotypic features. Concerning fungal identification use polyphasic identification and compare to authentic isolates from culture collections. Polythetic approach is used in taxonomy Penicillium, Aspergillus and Talaromyces are such polythetic classes based on morphology, ecophysiology and exometabolites.

Discussion :

There is no discussion.

14. Ludwig Niessen (11.30-12.00)

Detection of Mycotoxins Using Affinity-Based Technologies

Synopsis :

Detection of Mycotoxins is important. Analysis of mycotoxins and other small molecules is routinely based on chemical detection and identification using lab-based high tech equipment, e.g. HPLC, GC, TLC. In order to speed up and simplify detection a variety of affinity based assay formats have been developed. Recently the detection of new affinity molecules and mechanisms has opened attractive opportunities for the development of new and highly sensitive assay formats that have also been applied to the analysis of mycotoxins. Affinity is a thermodynamic expression of the strength of the interaction between a binding site and a determinant and thus of the stereochemical compatibility between them.

Discussion :

i. Question : How can we know about the exact fragments?

Answer : we can know the fragment by using antigens and aptomer

ii. Question : How to application this for reduce citrinin in Indonesia?

Answer : Detection using affinity for measurement, to reduce must use a very stong binding but could damage the column.

15. Ulf Thrane (12.00-12.30)

Fusarium toxins

Synopsis :

Fusarium species are very well known for their ability to produce biologically active metabolites including mycotoxins, such as the trichothecenes, zearalenones, fumonisins, moniliformin, and beauvericins and other cyclic peptides. The metabolite production is highly influenced by the growth conditions and this information is of high value to feed and food safety, as mycotoxins are unwanted in agricultural crops. Fusariummycotoxins are chemically altered by growing plants in the field as part of plants'defence against fungal invasion and harmful xenobiotics. Plants often detoxify mycotoxins by forming a conjugation between the toxins and one or more sugar molecules. The occurring metabolites are less or not toxic and are sometimes referred to as "masked mycotoxins", which partly may explain the mode of action of plant resistance. The masked mycotoxins are transferred into food and it is of

concern that thehydrolysis of these metabolites back to their toxic parents seems to occur during mammalian digestion. Another concern is new mycotoxin-commodity combinations due to climate changes and the increasing worldwide trading of agricultural seeds and crops that together will impact the mycobiota. Long-term surveys have provided evidence that Fusarium has a great plasticity and capability to continuously select new genotypes demonstrating higher aggressiveness and mycotoxin production. Today more and more genes coding for biosynthetic pathways of non-household products are sequenced that add to the increasing information on the genetics behind metabolite productions.

Discussion :

i. Question : Indonesia has many traditional medicine, are many fusarium toxins?

Answer : Many toxins from plants not only fusarium, traditional medicine can be consumed if no cause poisoning case.

Su Lin-Leong Ludwig Niessen Ulf Thrane

LECTURE 5

Moderator : Sigit Setyabudi and Nampiah Sukarno

Speaker :

16. **Emilia Rico-Munoz (13.30-14.00)**

Molds Isolated From the Processing Environment and Their Significance in Spoilage of Heat-processed Beverages and Juices

Synopsis :

Heat-processed beverages and juices can be spoiled by heat-resistant fungi (HRM) and spore forming bacteria. They can also be environmentally contaminated by a variety of non-heat resistant microorganisms such as Fusarium oxyporum, Exophiala sp., Cladosporium sp.,

Aureobasidium pullulans, yeast, lactic acid bacteria (LAB) and acetic acid bacteria (AAB) at the filler, capper, cooling tunnel and other areas of the processing environment. Heat-resistant molds produce ascospores that can not only survive the heat treatment given to these beverages and juices, but can also be activated and grow during storage. It is known that HRM ascospores are found in ingredients and in empty PET bottles. There is not much information on the role that the processing environment plays on the spoilage of these beverages and juices. This study was undertaken to determine the extent of the contamination by HRM ascospores of the beverage processing environment. More than 2,000 environmental samples were taken in 15 beverage/juice processing plants and tested for HRM ascospores. The areas with the highest counts of ascospores were the palletizer area, fork lifts/pallet jacks, pallets and the stretch wrap around the empty bottle pallets. Ascospores were also found at the depalletizers, slip sheets in between layers of empty bottles, the airveyors, the fillers, the batching areas, cooling tunnel areas, conveyors, rinsers and even at the cap tracks. The most common HRM isolated was Byssochlamys spectabilis followed by Neosartorya fischeri. Ascospores of Neosartorya spp., Byssochlamys spp., Talaromyces spp., Hamigera avellanea, Thermoascus spp., Humicula fuscroata and Eurotium spp. were also isolated. The significance of these molds in the spoilage of heat-processed beverages and juices and their safety will be discussed in this presentation.

Discussion :

i. Question : How about the heat shock time?

Answer : 15 minute, if you think that time enough, turn off that. The important thing are the consentration of water must under 68%.

17. Endang S. Rahayu (14.00-14.30)

Traditional Fermented Foods and Their Safety

Synopsis :

Fermentation of foods have been done centuries ago and considered as simple method for preservation. However, since organoleptic properties and nutritional value of the products are enhanced, as well as, functionality, fermentation foods remain developed in line with the development of science and technology. In developing countries, fermentation of foods are carried out by small scale (home) industry using conventional method, spontaneous (without addition of starter cultures), simple, based on local materials. Traditional fermentation has several disadvantages, such as, quality is inconsistent and safety is not assured. There are at least three causes why traditional fermented food become unsafe. (1)

Raw material contain hazard material that still exist in the product; (2) Contamination by pathogenic bacteria during processing; (3) Toxin produced by important microorganisms during fermentation. Many fermented foods are produced using molds (i.e., tempeh, oncom, soy-sauce, angkak), therefore, the risk of mycotoxin contamination should be considered. There are several questions to be discussed in this paper. Why is tempeh produced by fermentation using Rhizopus oligosporus and other Rhizopus claimed as safe food? Why are Aspergillus oryzae and A. sojae the closed related species with the well-known aflatoxin producers A. flavus and A. parasiticus considered as safe when used for koji making? Aspergillus oryzae and A. sojae were believed to be domesticated strains of A. oryzae and A. sojae, respectively and capability in synthesizing of aflatoxin loss in domesticated strains. On the other hand, why was citrinine still detected in angkak (rice fermented product based on Monascus purpureus)? In this paper, traditional fermented foods based on molds and their safety will be presented.

Discussion :

i. Question : Why you import angkak?
   Answer : Because Indonesia haven't angkak

ii. Question : Suggestion for try using citric acid
   Answer : Ya, we'll try

iii. Question : Why Indonesian not exported tempe?
   Answer : Codex for tempe will be arrange, so we can export freez it but that idea will make tempe expensive. Tempe not should be export, because we know that tempe must fresh product, and vegetarian can consume tempe too.

18. Giancarlo Perrone (14.30-15.00)

Black Aspergilli and Their Mycotoxin Production

Synopsis :

Black Aspergilli, which comprise 27 accepted species belonging to Aspergillus Sect. Nigri, are spread worldwide with significant impact on food and feed both for beneficial and harmful effects. Many species cause food spoilage, and several are used in the fermentation industry, or candidate in the biotechnology industries. However, this group of fungi represent one of the most important source of mycotoxins contamination of foods and feeds. Major mycotoxins produced by this group of filamentous fungi are ochratoxin A (OTA) and fumonisins of the B series, in particular FB2. OTA is a potent nephrotoxic and carcinogenic toxin produced by different species belonging to the genus Aspergillus and Penicillium, in

particular within black aspergilli the OTA producing species are A. carbonarius, A. sclerotioniger, and a low percentage of A. niger, A. welwitschiae and, A. lacticoffeatus. Fumonisins are carcinogenic mycotoxins originally produced by Fusarium species (F. verticillioides and F. proliferatum) and recently (2007) identified in cultures of A. niger group. Only the two closely related phylogenetic species of A. niger and, A. welwitschiae out of the 11 species of the A. niger "aggregate" complex are able to produce fumonisins. A brief overview on the occurrence, biodiversity, ecology and their toxigenic potential is here presented.

Discussion :

i. Question : Are alphatoxin can inhibit by Aspergillus?
   Answer : We don't know because that no evidence about that

ii. Question : Can A.niger produce fumonicin?
   Answer : Yes A.niger can produce fumonicin.

LECTURE 6

Moderator : Sigit Setyabudi and Nampiah Sukarno

Speaker :

19. Latiffah Zakaria (15.30-16.00)

Mycotoxin Research and Food Safety in Malaysia

Synopsis :

Research on mycotoxin in Malaysia started in 1960s which was mainly focussed on aflatoxins contamination due to disease outbreak of pig farms caused by contaminated feed. Another hazard of aflatoxins contamination was around 1988 of which contaminated flour used to make noodles caused death of 13 children. Since then, studies on aflatoxins and other mycotoxins have been conducted extensively especially on food and feed commodities. In Malaysia, research on mycotoxin are carried out by research institutions such as Institute of Medical Research and Malaysian Agricultural Research Development Institute, and several local universities. Important mycotoxins that have been reported in different types of food and feed are aflatoxins (AF), ochratoxin A (OTA), fumonisins (FUMs), deoxynivalenol (DON) and zearalenon (ZEN). Among the food and feed commodities analyzed were cereal grains such as rice, corn and barley, peanuts and peanuts products, spices and herbal medicines. Due to high temperatures (27 – 31oC) dan high relative humidity (70 – 90%), food and feed

commodities are easily contaminated by mycotoxin producing fungi if the commodities are not properly stored. Contamination can also occurred by improper processing techniques. Food safety issues in Malaysia are handled by Food Safety and Quality Division, Ministry of Health which deal all matters relating to food safety and nutrition as well as strengthen the efforts of all agencies involved in food safety

Discussion :

i. Question : Are you rejected the food that contaminated by mycotoxin?

Answer : Yes, we are rejected in ppb concetration (mg/L).

20. Naresh Magan (16.00-16.30)

Climate change, food security and mycotoxins: do we know enough?

Synopsis :

Climate change is important issues especially context for spoilage moulds and mycotoxins in crops. Food security is a global issue and prices of staple grains have soared in the last 5 years. Climate change contribute in put pressure on food supply, quality, and sustainability world-wide. There is interest in how the change in climate change will affect mycotoxigenic fungi and mycotoxin contamination of staple food. There is a relationship between changes in rainfall, drought, temperature and CO2 on staple food production systems pre- and post-harvest. The potential impact of climate change on food security could be significant. It is known that changes in water availability drought stress, temperature and existing CO2 will occur in different regions of the world. Interaction between plant stress and fungal/pest infections will impact on fungal spoilage and mycotoxin contamination. The most recent data which we have done on the effect of interacting climate change factor on growth and aflatoxin to growth and ochratoxin.

Discussion :

i. Question : Your reseacrh is very creepy when imagine that, how can we face it?

Answer : You must know it is predicted and not all decrease, in rice will have increased.

21. Roy Sparringa (16.30-17.00)

Indonesian Food Safety: Regulation and Challange for Mycotoxins

Synopsis :

Everyone has the right to access a safe, quality and nutritious food for the health and well-being of himself and of his family. Mycotoxin is one of major contributors for foodborne disease, which cause significance loss not only in agriculture area, but also public health sector. Approximately 25% of world food crops, mainly in developing countries, affected by the mycotoxins each year. Aflatoxins, one of mycotoxins, are estimated to cause 4.6-28.2% of total annual hepatocellular carcinoma (HCC) cases worldwide. Regulation and standard of mycotoxins are adopted to limit consumers' exposure to the mycotoxins. The permitted maximum levels as Food Safety Objective (FSO) of mycotoxins vary greatly among countries which are influenced by various factors, such as level of exposure, sociological, political and economic factors. Risk-based regulation on mycotoxins control along the food chain is of importance to assure the acceptable risk to the consumers' health. However to achieve the FSO is a great challenge. One of the major challenges to control mycotoxins is a fact that Indonesia lies in equator line where the climate is favorable for the growth of mycotoxin producing fungi. Several assessments showed high aflatoxin B1 (AFB1), mainly in peanut and corn along food chain. A case study of risk assessment of aflatoxin (AFB1) in peanut and corn and their products using the consumption data of the National Socio-Economic Survey (2011) and the AFB1 concentration of peanut and corn and its respective products reported by The National Agency of Drug and Food Control (2014) showed that the AFB1 dietary exposure mean was about 38.32 ng AFB1/kg bw/day, and estimated of HCC in Indonesia was more than 3500 cases annually. This figure is likely to be lower estimate, because the consumption data of staple foods (e.g. rice) which may be attributable to AFB1 contamination is not considered in the calculation. It is recommended that mycotoxin control should be in a single national integrated food policy. Food safety practices must be implemented along food chain based on risk management program through partnership alignment including Public Private Partnership Programs.

Discussion :

i. Question : How about the safety of Indonesian program RASKIN (Beras untuk rakyat miskin)?

Answer : That's Indonesian private bussines so we will discuss that at another conference.

Jens C. Frisvad

Roy Sparringa

Concession of award for poster presenter (left) and doorprize (right)


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