

REPORT

ORGANIZING COMMITTEE



The 4th International Conference of Indonesian Society for Lactic Acid Bacteria (4th IC-ISLAB)

Kamarijani - Soenjoto Auditorium
Faculty of Agricultural Technology
Universitas Gadjah Mada
Yogyakarta

In collaboration with



Perhimpunan Mikrobiologi
Indonesia (PERMI)

Organized by



Indonesian Society
for Lactic Acid Bacteria
(ISLAB)



Faculty of Agricultural Technology,
Universitas Gadjah Mada,
Yogyakarta, INDONESIA

January 25-26
2013



Secretariat:

Dept. of Food and Agricultural
Product Technology
Faculty of Agricultural Technology,
Universitas Gadjah Mada
Yogyakarta Indonesia
55281.

Phone/Fax.: +62-274-549650

Full Report 4th IC-ISLAB, 25-26 January 2013

Introduction

Indonesia as a mega-diversity country has diverse microorganisms, including lactic acid bacteria. These bacteria which have varied physiological functions have been isolated and investigated associated with the benefit of human life. The utilizations of lactic acid bacteria expand into many areas of food, health, and industries. Lactic acid bacteria play many roles in traditional Indonesian fermented foods such as *tape*, *kecap*, and *asinan*. Many species and strains of lactic acid bacteria have been suggested to have many beneficial effects on the health of the digestive tract of humans. Many strains of lactic acid bacteria have been applied into probiotic products. Administration of specific strains of lactobacilli and/or bifidobacteria was found to be effective in the treatment/prevention of rotavirus, antibiotic-associated, and pathogenic diarrhea. The ability of specific probiotics to enhance immune function in infant has also been reported.

Research has been carried related to the development of science and technology in microbiological area. Lactic acid bacteria could be explored for novel function, particularly to support the health benefit for human being and other life. To support the preservation of potential microorganisms, culture collection should be managed in a good management system. Therefore, it is necessary to disseminate these research findings and experiences as well as how to manage culture collection among researcher, pediatrician, students, industries and other stake holders

The conference was organized by the Indonesian Society for Lactic Acid Bacteria (ISLAB) in cooperation with the Indonesian Society for Microbiology (PERMI) and the Faculty of Agricultural Technology, Gadjah Mada University, Yogyakarta, Indonesia.

Various speakers from inside and outside the country those have expertise in this field were present as the main speakers. Therefore, conference was attended by researchers, lecturers, doctors, students, industrial society, from local and abroad.

Objectives

1. To disseminate the research achievement among the researchers;
2. To explore novel functions of lactic acid bacteria;
3. To strengthen the network among the international and national researchers as well as industrial partner.

Preparation

Becoming Steering Committee and Organizing Committee.

First announcement - website and hardcopy (leaflet) of PATPI Conference, October 2012 & send email for all member of ISLAB

Second announcement - website and hardcopy (leaflet) of Conference in Japan, Singapore and Annual Meeting of Permi October 2012

Third announcement - website and hardcopy (mail and leaflet for universities and institutions) in November 2012

Final Announcement - website, e-mail, and hardcopy (leaflet and poster) in December 2012

Online media use is a website (<http://islab.tp.ugm.ac.id/>) and email (ic_islab4@yahoo.com). Dissemination of information through the website is very effective and can reach the entire world. Announcement 4th IC-ISLAB activities through the website includes information on the theme, background and objectives of the activity, the main speaker (invited speaker), program activities, registration fee payment information, receipt information and abstracts for poster presenters. Leaflets and proposal activities are also uploaded on the website. Participants are given the opportunity to provide comments to the leaflet in question and proposal activity, making it easier for participants to get full information.

On Line Registration

On line registration could be done by fullfill the registration form in the website. The number of participants who registered by on line are 130 participants. By on line registration, participants was altered into three categories, such as oral presenter, poster presenter, or as a participant (only attending the conference, but not included both oral and poster presenter).

Register online have many benefits, including: ease of charging participants in personal data, ease the administrative committee participant data, as well as the ease of communication between the participants and the organizers. Participants are required to fill out a form that includes your full name, email, address, city, province, postal code, telephone, organizations /institutions, categories of participants(oral/poster/participant), title of paper. In addition to online registration, the committee also facilitated participants with registration via fax or place at the conference registration (on-site registration). It is intended for participants who are less familiar with online media. The number of participants who enroll directly is relatively small when compared to online registrants.

Abstract received

Total of abstracts received were 13 from distinguish speaker, 34 from oral participant and 59 from poster presenter. Abstract could be sent by participants via email or fax. Abstract was revised by reviewer team consists of: Prof. Dr. Sardjono, Dr. Tyas Utami, Dr. Suparmo, and Prof. Endang S. Rahayu. Revised abstract and then sent back to the participants via email for approval of revisions.

PROGRAM – 4th IC-ISLAB

FRIDAY, January 25 th , 2013		
07:00 – 08:15	REGISTRATION, WELCOME DRINK, AND BREAKFAST	
08:15 – 08:30	Welcome Saman Dance	
08:30 – 08:45	Opening Ceremony	
	Chairperson of Organizing Committee	
	Dean Faculty of Agricultural Technology, Universitas Gadjah Mada	
08:45 – 09:00	Chairperson of ISLAB (Where is ISLAB heading for?)	
09:00 – 09:30	1. Dr. Roy Sparringa (Probiotic Prospect and Regulation in Indonesia)	Moderator: Dr. Tyas Utami
09:30 – 10:00	2. Aliah Abdul Wahab (Overview on Global Regulations: Microbial Food Cultures)	
10:00 – 10:15	PT. YAKULT Indonesia Persada	
10:15 – 10:45	3. Prof. Dr. Lilis Nuraida (Potency of Local Acid Bacteria: Health Benefit and Product Development)	Moderator: Dr. I Nengah Sujaya
10:45 – 11:15	4. Prof. Dr. Hardinsyah (Effects of Synbiotic of <i>Lactobacillus</i> , <i>Bifidobacterium</i> , and Fructo-oligosaccharide on Imune Response of IFN- γ and sIgA)	
11:15 – 11:45	5. Prof. M. Juffrie SpAK, PhD (Role of Probiotic in Diarrhea)	
PHOTO – SESSION		
11:45 – 13:30	BREAK	
PARALLEL SESSION		
13:30 – 17:45	Room A: Technical Session	
	Room B: Technical Session	
17:45 – 18.30	BREAK	
18:30 – 22:00	DINNER AND CULTURAL NIGHT (Acoustic, Javanese, Balinese Dance Performances, others)	

SATURDAY, January 26th, 2013		
07:00 – 08:00	MORNING DRINK AND BREAKFAST	
08:00 – 08:30	6. Prof. Dr. Anang M. Legowo (Utilization of Lactic Acid Bacteria in The Development of Animal Products-Based Functional Foods)	Moderator: Prof. Dr. Eni Harmayani
08:30 – 09:00	7. Prof. Dr. Jyoti Prakash Tamang (Lactic Acid Bacteria in Ethnic Fermented Foods and Beverages: Functionality and Health-Promoting Benefits)	
09:00 – 09:30	8. Dr. Francisco Elegado (Bench-scale Growth Optimization of Selected Probiotic and Bacteriocinogenic LAB Using Response Surface Methodology)	
09:30 – 09:45	PT. DIPA PUSPA LABSAINS	
09:45 – 10:30	POSTER SESSION	
10:30 – 11:00	9. Ass. Prof. Anil K. Anal (Encapsulation of Probiotics to Enhance Physical Stability and for Colon Targeted Delivery)	Moderator: Dr. Yudi Pranoto
11:00 – 11:30	10. Ass. Prof. Rosfarizan (Bioprocessing Strategies for Improvement of Folate and Hyaluronan Synthesis by Lactic Acid Bacteria)	
11:30 – 12:00	11. Dr. Mahendran Ratha (Developing Vaccines for Bladder Cancer Therapy)	Moderator: Prof. Dr. Jyoti Prakash T
12:00 – 12:30	12. Dr. Kaouther Ben Amor (A New Synbiotic Mixture of scGOS/lcFOS and <i>Bifidobacterium breve</i> M-16V Improves Gut Microbiota, Gut Health, and Allergic Symptoms in Infants with Atopic Dermatitis)	
12:30 – 13:00	13. Dr. Koichi Watanabe (Asian Microbiome Project: A Pilot Study on the Diversity of Fecal Microbiota of Healthy Asian Children)	
13:00 – 13:15	BEST POSTER ANNOUNCEMENT AND DOORPRIZE SESSION	
13:15 – 13:30	Closing Ceremony Chairperson of PERMI	
	PHOTO SESSION	
13:30 – 14:00	LUNCH	

Technical Session Room A Friday at R. 102 (13.30 – 17.45)

Time and Moderator	Note	Speaker	Title
13.30 – 14.30 (Sigit Setyabudi)	A1	Rindit Pambayun	Some Constrains in Developing Probiotic Products of Indonesian Origin
	A2	Agus Wijaya	The Biodiversity of Lactic Acid Bacteria in Indonesian Indigenous Fermented Foods
	A3	Helen Joan Lawalata	Amplified Ribosomal DNA Restriction Analysis (ARDRA) for The Characterization of Lactic Acid Bacteria Producing Antimicrobial Compound from <i>Bakasang</i>
	A4	Takahiro Matsuki	Quantitative PCR Detection of Bifidobacterial Species and Viable Probiotic Strain in Human Feces
14.30 – 15.30 (Agus Wijaya)	A5	Lindayani	The Mapping of Lactic Acid Bacteria from Fermentation of Local Foods (Semarang): <i>Tempoyak</i> , <i>Mandai</i> and Yellow Bamboo Shoot Pickles
	A6	Heni Astuti	The Isolation of <i>Bifidobacterium</i> spp. from Faeces of Infant Born by Normal Birth and Its Potential Against <i>Eschericia coli</i>
	A7	Prima Retno Wikandari	Improvement of the Quality and the Functionality as An Angiotensin Converting Enzyme Inhibitor of <i>Bekasam</i> by Using <i>Lactobacillus plantarum</i> B1765 as Starter Culture
	A8	Titiek F. Djaafar	Effect Of Indigenous Lactic Acid Bacteria Fermentation on Enrichment of Isoflavone and Antioxidant Properties In Crude Extract of <i>Kerandang</i> (<i>Canavalia virosa</i>)
15.30 – 16.30 (M.Nur Cahyanto)	A9	Tri Marwati	Amino Acid Sequence of Pediocin PaF-11 from <i>Pediococcus acidilactici</i> F-11
	A10	Lismayana Hansur	Isolation of Lactic Acid Bacteria as Biopreservative in Corn Fermented Milk
	A11	Tri Wardani Widowati	Antibacterial Activities of Lactic Acid Bacteria Isolated From <i>Tempoyak</i> During Low Temperature

			Fermentation Against <i>Staphylococcus aureus</i>
	A12	Arya Widinatha	Isolation and Characterization of Lactic Acid Bacteria Producing Antimicrobial Compounds from Small Intestine of Chicken
16.30 – 17.45	A13	Widodo	Studies on The Quality of Fermented Goat and Cow Milk Produced By Different Starters of Lactic Acid Bacteria
(Lindayani)	A14	Evy Rossi	Evaluation of Fermented Beverage Made From Pumpkin with Various Concentration of Skim Milk
	A15	N. Azizah	Study of The Growth of Lactic Acid Bacteria Viability on Yogurt Drink Added by Jackfruit Extract
	A16	A.M. Jannah	The Physical and Microbiological Properties of Yogurt Drink added by Starfruit Extract
	A17	Rinawidiastuti	The Effect of Solid Part Level of Fermented Vegetable Garbage to The Number of Lactic Acid Bacteria and The Presence of Gram (+/-) Bacteria of Foodcourt Waste's Pellet

Technical Session Room B Friday at R. 102 (13.30 – 17.45)

Time and Moderator	Note	Speaker	Title
13.30 – 14.30 (Yoyok B. Pramono)	B1	Agustin Krisna Wardani	Isolation and Characterization of Bacteriophage from Chicken Intestine for Improving Food Safety
	B2	Nyoman Semadi Antara	Application of Lactic Acid Bacteria Inoculum Powder on Fermentation of <i>Urutan</i> : Study on Microbiological, Organoleptic Characteristic, and Aroma Compounds Profiles
	B3	Happy Nursyam	Physicochemical and Microbiological Evaluation of <i>Clarias catfish</i> Fermented Sausage Manufactured by <i>Pediococcus acidilactici</i> 0110<TAT-1 Starter Culture at Different Level of NaCl Concentration
	B4	Nursilawaty	Nitrite Reduction In Fermented Sausage (<i>Pepperoni</i>) By Lactic Acid Bacteria
14.30 – 15.30 (Ingrid S. Surono)	B5	Achmad Dinoto	Spray Dried Encapsulation of <i>Lactobacillus</i> spp. Cells with Coconut Milk
	B6	Widya Dwi Rukmi Putri	Application of Dried Mixed Culture (<i>Lactobacillus plantarum</i> FNCC 0027, <i>Lactobacillus fermentum</i> FNCC 0030 and <i>Sacchromyces cereviceae</i> s) in Maize and Sorghum Fermentation
	B7	Amelia Juwana	Non-Dairy Probiotic Beverage : Application of <i>Lactobacillus plantarum</i> EM1 and <i>Lactobacillus pentosus</i> EM1 Cultures as Inoculum in Fermented Legumes and Sweet Corn Milk
	B8	Usman Pato	Probiotic Properties of <i>Tempoyak</i> Lactic Acid Bacteria and Its Application for Making Probiotic Beverage from Pineapple Skin Extract
15.30 – 16.30 (Achmad)	B9	Siti Suryaningsih	Effect of Orange Juice and Lactic Acid Bacteria Addition on the Quality of Soyghurt
	B10	Ahmad N Al-Baarri	The Effect of Selected Indonesian Fruit Extract on The Survival of Lactic Acid Bacteria
	B11	Eka Ruriani	Viability of <i>Lactobacillus acidophilus</i> NH on The

Dinoto)			Dietary Fiber Flour Made from Unripe Fruit, Corm, and Tender Core Pseudo-Stem of Banana
	B12	Yoyok B. Pramono	Probiotic Viability and Carbohydrates Compound in Selected Tropical Fruits from Indonesia
16.30 – 17.45 (Nyoman S. Antara)	B13	Indah Kuswardani	The Viability of Alginate Entrapped <i>Lactobacillus plantarum</i> 12A2 in Soy Corn Milk Ice Cream During Frozen Storage
	B14	Sri Hastuti	Characteristics of Java Plum Juice (<i>Eugenia cumini</i>) Fermented With <i>Lactobacillus acidophilus</i> IFO 13951
	B15	Febby J. Polnaya	Prebiotic Potential of Resistant Starch derived from Phosphorylated and Cross Linked Sago Starches
	B16	Nurhayati	Improving of Banana Flour Resistant Starch by Using Fermentation of <i>Lactobacillus salivarius</i> FSnh1 with Two Cycles of Autoclaving-Cooling
	B17	Prima Interpares	The Effect of Retrogradation Step on The Properties and Prebiotic Potential of Maize Starch Noodle

LIST OF POSTER - The 4th IC-ISLAB (January 25-26, 2013)

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1	I N Sujaya , NP. Desy Aryantini, W. Nursini, Yan Ramona, KA Nocianitri, W. Redi Aryanta ⁴ , Yoshitake Orikasa, Fukuda Kenji, Tadashu Urashima, and Yuji Oda	Identification of Lactic Acid Bacteria Isolated from Bali Cattle by Partial Sequencing of The 16s rDNA and Their Putative Probiotic Properties	P-1
2	Yong Su Ting, Wan Zuhainis Saad, Sieo Chin Chin, and Ho YinWan	Molecular Identification of Potential Probiotic Bacteria Isolated from Chicken and Their Production of Lactic Acid and Acetic Acid	P-2
3	Gladys Delarosa Purnomo, Lindayani, and Laksmie Hartayanie	Isolation and Identification of Microorganism from Fermented Glutinous Rice Using Black Bamboo (<i>Gigantochloa atroviolacea</i>) and Sweet Bamboo (<i>Gigantochloa atter</i>)	P-3
4	Fifi Lia Rahardjo, Lindayani, and Laksmie Hartayanie	Isolation and Identification of Microorganism from Fermented Glutinous Rice Wrapped by Mango Leaf (<i>Mangifera indica</i>) and Cashew Leaf (<i>Anacardium occidentale</i>) Fermented with Local Ragi (Na Kok Liong, Gedang, and Sidojoyo)	P-4
5	Kurniawan Eka Saputra, Nanik Suhartatik, Tyas Utami, and Endang S. Rahayu	Isolation, Identification and Characterization of Lactic Acid Bacteria from Salted Egg: An Indonesian Traditional Food	P-5
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6	Eny Sri Lestari, Dyah Fitri Kusharyati, and P. Maria Hendrati	Isolation of <i>Bifidobacterium</i> spp. from Feces of Infant Born by Caesar Birth and Their Potential Against <i>Escherichia coli</i>	P-6
7	Amelia Wulandari, Dyah Fitri Kusharyati, and P. Maria Hendrati	Isolation of <i>Bifidobacterium</i> spp. from Feces of Infant Born by Caesar Birth and Their Potential Against <i>Salmonella typhi</i>	P-7
8	Ni Nyoman Puspawati, Ni Luh Ari Yusasrini, Komang Ayu Nocianitri, I Nengah Sujaya, and Ni Luh Putu Oggi Yulianti	Inhibition of Lactic Acid Bacteria Isolated from Bali Cattle's Milk to The Growth of Bacteria Pathogens <i>Vibrio cholerae</i> O1 El Tor Biotype	P-8
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21	Sri Hartati, A. Intan Niken Tari, Catur Budi Handayani, Eni Harmayani, and Marsono	Formulation of Guava (<i>Psidium guajava</i>) Fruit Powder Drink and Probiotic <i>Lactobacillus plantarum</i> Dad 13 Dried Cell Potentially Reducing Cholesterol	P-21
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Program Report

The 4th IC-ISLAB was held on 25-26 January 2013.

As many 270 participants attended this conference, there are:

A. Based on profession:

1. Lecturer/researcher
2. Undergraduate students, post graduate students, and doctoral students
3. Industry
4. Overseas (Open University Japan, Universiti Putra Malaysia; National Yang-Ming University, Taiwan; National University of Singapore, Research Danone Singapore, Yakult Honsha Japan, NITE Biological Resource Center, Japan; Sikkim University, India; AIT, Thailand; University of the Philippines; Chr Hansen Asean Plus and Other societies)

B. Based on organization of participants:

1. University (Universitas Gadjah Mada; University of Indonesia; University State of Surabaya; Bogor Agricultural Institute; Samratulangi University, Manado; Sriwijaya University; University of Brawijaya; Bantara University Sukoharjo; Diponegoro University, Semarang; Universiti Putra Malaysia; Soegijapranata Catholic University, Semarang; Asian Institutes of Technology, Thailand; Sebelas Maret University; Institute of Bandung Technology; Christian University Satya Wacana, Salatiga; Jenderal Soedirman University, Purwokerto; University of Jember; University of Riau; Pattimura University; University of the Philippines; Udayana University; University of Lambung Mangkurat; Widya Mandala Catholic University Surabaya; Sunan Kalijaga Islamic State University; Andalas University; Sikkim University; Polytechnic State Pontianak; Slamet Riyadi University; Hang Tuah University, Surabaya; Institutes of Health Sciences Jenderal Achmad Yani, Cimahi; National University of Singapore; Pattimura University, Ambon; Islamic University Sunan Gunung Jati, Bandung; Mercubuana University)
2. Research Center (Research Center for Biology, Indonesian Institute of Sciences; Technical Implementation Unit for Development of Chemical Engineering Processes, Indonesian Institute of Sciences; Serpong research Center for Sciences and Technology; Patir Batan; Seameo Biotrop; Seafast Center; National Agricultural Training Center of Ketindan; BPOM Indonesia)
3. Industri (PT. Yakult Indonesia Persada, PT. Yummy Food Utama, PT DIPA Puspa Labsains, PT. Indolakto, PT. Charoen Pokphand, PT. Heavenly Blush, PT Sri Husada Generasi Mahardhika, PT Wijaya (Chr Hansen reps. in Indonesia), Prodia the CRO, Bioterra, T Combiphar, Agarindo Biological Laboratory, Food Review Indonesia, Foodfezt, Kopi Oey Jogja).
4. Others

First Day of Conference

In Friday, 25 January 2013 conference opening by Saman Dance (Figure 1). Program of conference was begun with welcome speech by chairman of committee, Dr. Tyas Utami, M.Sc (Figure2). Continued with report speech by chairperson of ISLAB, Prof. Dr. Endang S. Rahayu (Figure3). The last speech was given by Dean of FTP UGM, Dr.Ir.Lilik Soetiarso, M.Eng (Figure4),he also officially opened the conference.



Figure 1. Saman Dance



Figure 2. Chairman of Committee



Figure 3. Chairperson of ISLAB



Figure 4. Dean of FTP UGM

Scientific Meeting

The first day of plenary session (Figure 5) consisted of two sessions and five invited speakers.

Session 1

Moderator : Dr. Tyas Utami, M.Sc

Invited Speaker :

1. Dr. Roy Sparringa from BPOM Indonesia with topic entitled “Probiotic Prospect And Regulation In Indonesia”
2. Aliah Abdul Wahab from Chr Hansen, Singapore with topic entitled “Overview On Global Regulations-Microbial Food Cultures (Mfc)”.



Figure 5. Plenary Session 1

1. Dr Roy Sparringa (Probiotic Prospect and Its Regulation in Indonesia)

Synopsis :

Probiotics have received extensive attention from public, business and research communities due to potential benefits in health sectors. National Agency for Drug and Food Control (NADFC/Badan POM) provides attention to safeguard the safety, quality, efficacy and label of the probiotic products marketed in Indonesia. Probiotic Foods marketed in Indonesia are mostly manufactured in Indonesia (MD), but they are produced under international licensed, probiotic strains/technology from the mother company. Academician and business communities should follow regulation and its guidance in early stage of development of probiotics in Indonesia to obtain registration approval easily.

2. Alia Abdul Wahab (Overview on Global Regulation in Indonesia)

Synopsis :

Microbial food cultures (MFC) are the living bacteria, yeasts or mold used in food production (European Food and Feed Association, EFFCA). MFC in many cases determine the characteristics of the fermented food, e.g. acidity, flavor and texture, as well as health benefits that go beyond the simple nutrition. These microorganisms may be presented naturally in a food or intentionally added to a food as starter cultures in an industrial food fermentation process. (International Food Additives Council, IFAC USA)

Microbial food cultures have a long, safe history of use in food and have been generally considered as safe. In addition, microbial cultures without a history of use in food may be discovered to have health benefits to consumers. It is essential for the food industry to insure that these newly discovered microbial food cultures are safe, as well as to insure that new applications of cultures with a safe history of use in food are safe.

Discussion :

1. Q (Agus Wijaya):In your presentation, it was stated that the probiotic *Enterococcus* is a bacteria, whereas in 1999 it was found that these bacteria are pathogenic bacteria. how your explanation?

A (Dr.Roy Sparringa) : BPOM using ISO standard characterization, but it has a lot of research on the effects of the *Enterococcus* isolates for food products.

2. Q (Dr. Kaouther Ben Amor) : For the development of probiotics, do those things have to be adjusted to the conditions and environments of the surrounding community?

A (Dr. Roy Sparringa) :Yes, the regulation should be relevant to the society

3. Q (Dr. I Nengah Sujaya) : What do you think about the role of the society product in Indonesia?

A (Dr. Roy Sparringa) : It needs communication between the regulator and the researcher, also the industries. ISLAB is a part for communicating the result of research to regulator and food and drug industries. So, we need to organize special workshop for its discussion.

Before we started to session 2 of planary (Figure 6), we had presentation from PT Yakult Indonesia Persada by Mr. Jimmy Hariantono. It was presented by showing the video which

explained about the beneficial effect of drinking YAKULT toward human immune system and presented about *Lactobacillus casei* Shirota strain and immunity



Figure 6. Presentation by PT. YAKULT Indonesia Persada

Session 2

Moderator: Dr. I Nengah Sujaya

Invited speaker:

1. Prof. Dr. Lilis Nuraida from South East Asia Food and Agricultural Science and Technology /SEAFST CENTER with topic entitled “Potency Of Local Lactic Acid Bacteria: Health Benefit And Product Development”.
2. Prof. Dr. Hardinsyah from Bogor Agricultural Institutewith topic entitled “Effects of Synbiotic of *Lactobacillus*, *Bifidobacterium*, and Fructo-oligosaccharide on Immune Response of IFN- γ and sIgA”.
3. Dr. Kaouther Ben Amor from Research Danone Singapore with topic entitled “A New Synbiotic Mixture of scGOS/lcFOS and *Bifidobacterium breve* M-16V Improves Gut Microbiota, Gut Health, and Allergic Symptoms in Infants with Atopic Dermatitis”.



Figure 7. Plenary Session 2

1. Prof. Dr. Lilis Nuraida (Potency of Local Acid Bacteria: Health Benefit and Product Development)

Synopsis :

Human breast milk has also been known as source of lactic acid bacteria with probiotic properties. Evaluation on lactic acid bacteria isolated from 28 lactating mothers in Bogor area showed that some isolates were having probiotic characteristics. *Lactobacillus rhamnosus* R23 was the best isolates for preventing diarrhoea caused by infection of EPEC, while *Pediococcus pentosaceus* A-38 was potentials to be used as probiotic that have beneficial effect in reducing cholesterol. *L. rhamnosus* was able to be used as a single starter culture for milk fermentation. Stirred yoghurt was the best methods in preparing fermented milk containing both lactic acid bacteria.

2. Prof. Dr. Hardinsyah (Effects of Synbiotic of *Lactobacillus*, *Bifidobacterium*, and Fructo-oligosaccharide on Immune Response of IFN γ - and sIgA)

Synopsis :

Communicable disease and non-communicable disease are the main cause of death in Indonesia, with tuberculosis (TB) has the highest percentage of it (27,8%). TB patients usually have an impaired immune response, suffered from underweight and micronutrient deficiency, especially zinc. One of the methods to prevent the communicable diseases is balance diet and optimum immunity. In this case, synbiotic is the best choice to improve the health of TB patients.

Synbiotic is a supplement containing probiotics and prebiotics which has synergism health benefits. Probiotic is a good viable bacteria, such as *Lactobacillus* and *Bifidobacterium*. A prebiotic is non-digestible food ingredients such as fructose oligosaccharide (FOS) and galactose oligosaccharide (GOS) that beneficially affect the host by stimulating the growth and/or activity of beneficial microflora (bacteria) in the colon. While prebiotic is an indigestible dietary component such as oligosaccharide, that feeds bacteria. Studies showed prebiotics could improve gut health and reduce infection incidence.

For future challenges and studies of synbiotics, both prebiotic and probiotics will be the major and growing sector in the functional foods industries and health with their applications ranging across a large number of different products. The use of prebiotics and probiotics in food facing: 1) Technical & scientific challenges to the product developer, ensuring the ingredients are the best for the formulation, the best doses & formulation, the efficacy trial, the ways to deliver and promote to the market target; 2) Government regulations in labeling and claims.

3. Dr. Kaouther Ben Amor (A New Synbiotic Mixture of scGOS/InFOS and *Bifidobacterium breve* M-16V Improves Gut Microbiota, Gut Health, and Allergic Symptoms in Infants with Atopic Dermatitis)

Synopsis :

Atopic dermatitis (AD) is the most common chronic skin disease in children. Atopic dermatitis has relevance in sensitisation and asthma development, which 17- 45% of the children develop asthma at age 4-8 years and severe AD leads to the increased risk for asthma. Sixty percent of sensitised infants with AD developing asthma in school age compared with 14% of the non-sensitized infants with AD. Sensitisation and IgE-associated eczema in infancy seem to be the most reliable predictors for subsequent respiratory allergic disease in school age.

Allergic infants have an altered intestinal microbiota composition, which dominated by pathogenic microorganism (*E. coli*, *S. aureus*, etc.). Conversely, healthy infants containing probiotic as dominant bacteria. Probiotics seems to be a good strategy to restore and maintain the gut microbiota composition. Early nutrition (e.g. probiotics/prebiotics/synbiotics) is likely to influence both colonisation and priming of immune system in early life. Danone has specific prebiotic mixture, namely 90 % scGOS, 10% InFOS and *Bifidobacterium breve* M-16V strain. This strain is chosen because: it can safely be administered to extremely premature infants and neonates in an intensive care unit; it has been shown to reduce allergic symptoms in infants with atopic

dermatitis; it has an anti-allergic effect by showing suppressive effects on T-helper type 2 immune responses in a murine mouse model; In house screening *in vivo* (4 *Bifidobacterium* + 2 *Lactobacillus*; selected from 400 strains). This mixture is used to investigate the therapeutic effect of it on the severity of AD infants .

For the conclusion, this specific synbiotic mixture did not show a significant effect on the severity of AD in all infants; however, results of subgroup analysis revealed a beneficial effect in infants with IgE-associated AD. Additionally, the newly developed formula successfully modulated the composition and the metabolic activity of the intestinal microbiota of infants with AD. It has beneficial effects on constipation, diaper dermatitis, asthma-like symptoms and possibly an effect on subsequent development of asthma.

Discussion :

1. Q Usman Pato (Univ. Riau): Is there any difference in probiotics that comes from different mothers? Are the genes of the mother will affect the resultant probiotics?
A: It's still less understanding of that. However, there are three factors that influence (depending on the condition of the mother):
 - a. The process of normal birth
 - b. The diet
 - c. Genetic factors. Genetic allows for the presence of probiotic milk.Dr.Kaouther Ben Amor (*She also answered another question about source of lab in breast milk*): Possibility of the translocation of gut mothers. Microbiota in the digestive tract do affect the amount of microbiota in mother's milk. It may contain lactic acid bacteria in breast milk within 3 months.
2. Q: In the market, there are products stored aerobically bifidobacteria, whereas microaerophilic bacteria included. What do you think?
A: There is a technology that can stabilize it, so it can be stored in aerophilic conditions.
3. Q Yoyok: Are there differences in the effects of FOS and GOS composition for Indonesia? How to influence the composition of 9 and 1 of synbiotik? Is it possible to be applied in each country? As we know, each process can produce different specifications, how your standards in treating these patients?
A: Impossible same effect for the tropics, and it is in the step of ongoing research. It allows to be applied in each country, as it has a diversity of prebiotics sources. We use the last formula that can cure allergies, then made it back to the same formula.

After 5 invited speakers delivered their presentation, participants had lunch break, then continued with poster session (Figure 7). The number of displayed posters in the conference are 59 posters.



Figure 8. Poster Session

In poster session, participants were asked for choosing 3 favourite posters in order to be decided only 1 as favourite poster according to participant. Beside that, Jury of poster also decided 3 posters as three best poster based on the criteria they made. The number of participants who gave assessment are 100 people.

In the first day, after poster session, the program continued with parallel session which present 17 oral speakers in room A and room B.

Parallel Session

Room A

Presentation divided into four session. Each session consisted of 4-5 oral speakers.

Session 1

Moderator : Titiek F. Djaafar

Oral Speaker :

1. Rindit Pambayun
2. Agus Wijaya
3. Helen J. Lawalata
4. Takahiro Matsuki



Figure 9. Session 1 in Room A

Session 2

Moderator : Agus Wijaya

Oral Speaker :

1. Heni Astuti
2. Laksmi Hartajanie
3. Prima Retno Wikandari
4. Titiek F. Djaafar



Figure 10. Session 2 in Room A

Session3

Moderator : Mr. Muhammad Nur Cahyanto

Oral Speaker :

1. Tri Marwati
2. Lismayana Hansur
3. Tri Wardani Widowati
4. Arya Widinatha



Figure 11. Session 3 in Room A

Session 4

Moderator : Laksmi Hartajani

Oral Speaker :

1. Widodo
2. Evy Rossi
3. N. Azizah
4. A. M. Jannah
5. Rinawidiastuti



Figure 12. Session 4 in Room AA

Resume and Discussion:

Speaker A1 : Rindit Pambayun

Title : Some Constrains in Developing Probiotic Products of Indonesian Origin

Summary of Presentation :

Probiotics have a role as functional foods if they are Safe, Nutritious, Health, Palatable. *Bekasam* is fermented fish. There are 180 isolated strains of acid producing bacteria, among

them 150 strains were lactic acid bacteria, and 84 strains showed their proteolytic activity (Wikandari *et al*, 2012. *Rusip* is like salad from fermented fish. The microorganisms involved in the fermentation for *rusip* depend on the source of carbohydrates (roasted rice or coconut sugar) used. For roasted rice rusip, the microorganism predominant was *Streptococcus* and *Lactobacillus* (Pambayun *et al*, 2005. *Tempoyak* is Fermented Durian From South Sumatera. Tempoyak fermentation involves some lactic acid bacteria, including *Lactobacillus plantarum*, *L. brevis*, *L. mali*, *L. fermentum*, *L. casei*, *L.corynebacterium*,*L. lactis*, *Leuconostoc mesenteroides*, *Pediococcus acidilactici*, and *Lactobacillus durianis*. Lactid acid bacteria can inhibit the growth of *Staphylococcus aureus*. One “*Colek*” of Tempoyak contain 6,5 billion lactid acid bacteria’s and one bottle of yakult also contain 6,5 billion lactid acid bacteria’s. Some of LAB fermented foods frm Indonesia have potency as probiotic such as *bekasam*, *rusip*, *tempoyak*, etc. There are some constrains of the food for probiotic production, especially concerning with contamination, taste and some harmful substances. Among *bekasam*, *rusip*, and *tempoyak*, *tempoyak* is the most preferably product for probiotic production.

Report of Discussion:

- Sri Luwihana (Mercubuana University, Yogyakarta)

Question:

Is there any negative substance for hipertension patient from durian remain in tempoyak?

Answer:

There’s no negative substance in durian. It’s a delicious food. For the ethanol, it will evaporate during fermentation Have you ever finded the case in Indonesia?

- Rini Yanti (Faculty of Agricultural Technology, Gadjah Mada University)

Question:

You take many data from many sources, is there any data which you used as control for your accurate data source about probiotic for those products?

Answer:

There were researches done related to this study. You can find it at my presentation for ISLAB since in Bali.

Speaker A2 : Agus Wijaya

Title : The Biodiversity of Lactic Acid Bacteria in Indonesian Indigenous Fermented Foods

Summary of Presentation :

Most of LAB have GRAS status based on long history of safe food use and are therefore determined as food-grade organisms. The species of *Lactobacillus* isolated in almost all product was *Lactobacillus plantarum-pentosus*. The Genus *Pediococcus* ocured in 14 types of Indonesian fermented foods, including in fermented fruit (mandai cempedak), fermented vegetables (asinan sawi and sayur asin), raw cassava tuber (gatot), cooked cassava tuber (tape ubi), soybeans (tempe), microbial starter culture (*ragi tape* and *ragi tempe*) and fermented fish products (*pakasam*, *pindang*, *wadi*, *terasi*, *rusip* and *bekasam*). Spesies *P. pentosaceus* was a dominant isolate in *ragi* since it has high resistance to dryness and heat. *Streptococcus* showed its role only in salted product fermentation, except *tempe*. The mentioned products were including

mandai nangka, tempoyak and all fermented fish products like *pakasam, peda, terasi* and *wadi*. The Genus *Leuconostoc* played important roles in these following 6 fermented products, including *gatot, tape, fermented vegetables (sayur asin)* and some fermented fish products, including *pakasam, peda* and salted fish. There were 2 species of this genus playing important roles, namely *L. mesenteroides* dan *L. paramesenteroides*. *Acar buah* and some fermented fish products like *pindang, wadi, terasi, bekasam* and *rusip*) were the products in which the genus *Enterococcus* was the dominant population. Furthermore, important species of this genus were *E. faecium* and *E. casseliflavus-flavescens*. Finally, *Weissella confusa* was the only member of the genus *Weissella* which has role in fermentation of *acar buah, sayur asin, tape ubi* and *terasi*. From all of the explanation, it can be conclude that *Lactobacillus* was the dominant genus of lactic acid bacteria in Indonesian indigenous fermented foods with the dominant species *L. plantarum*. This genus was observed in all fermented foods discussed in this paper and followed by *Pediococcus* (with dominant species *P. pentosaceus*), *Streptococcus* (with dominant species *S. thermophilus*), *Leuconostoc* (with dominant species *L. mesenteroides*) , *Enterococcus* (with dominant species *E. faecium*) and *Weissella* (with dominant species *W. confusa*).

Report of Discussion :

- Abinubli Tariswafi Marawid (University of Indonesia)

Question:

I see that the most of the bacteria found from your samples are *Lactobacillus plantarum*. What is the special characteristic of *L. plantarum* in traditional Indonesian fermented food?

Answer:

There are many reasons why *L. plantarum* was found in traditional Indonesian fermented food. One of them is because *L. plantarum* has a good tolerance at high concentration of salt.

- Jyoti Prakash Tamang (Sikkim University, India)

Question:

Do you have all the cultures that you've said in this presentation? Because you said that most of them are indigenous bacteria, so it's important to keep them all. And how far you've done your research to differentiate them?

Answer:

Yes, we have it in FNCC, UI, and UGM. For the characteristic, they were only analyzed by fenotype test, not until genotype test. Maybe we can do it for further research.

Speaker A3 : Helen J. Lawalata

Title : Amplified Ribosomal DNA Restriction Analysis (ARDRA) for the Characterization of Lactic Acid Bacteria Producing Antimicrobial Activity from Bakasang

Summary of Presentation :

Bakasang is fermented fish products traditionally made from the guts of big fish (*Katsuwonus pelamis* L.), small fish, and eggs fish which is the typical food of North Sulawesi (Manado). ARDRA (Amplified Ribosomal DNA Restriction Analysis) is One of PCR methods

to differentiate the species which involves amplification 16S rRNA gene using specific primer followed by digestion selected restriction enzyme. The objectives of this research are to isolate lactic acid bacteria (LAB) from *bakasang*, to test the inhibitory activity against pathogenic bacteria and putrefying bacteria by using well-diffusion method, and to identify LAB producing-antimicrobial based on phenotypic and genotypic characteristics including ARDRA (Amplified Ribosomal DNA Restriction Analysis). A total number of 200 isolates of LAB in which production clear zone around their colonies were obtained from *bakasang*. By Generic Assignment, gained 125 isolates of LAB (5 genus), they are *Lactobacillus*, *Pediococcus*, *Enterococcus* or *Streptococcus*, *Leuconostoc*. For Identification of Lactic Acid Bacteria Antimicrobial Producing, the result showed that isolates BksC24, BksJ21, BksJ43 and BksK25 which have highest antimicrobial activity was done based on phenotypic and genotypic characterization. Based on these characteristics, the isolates were phenotypically identified as member of species *Pediococcus acidilactici*. The results of genotypic characterization based on DNA fingerprinting (ARDRA) showed that all of these four strains have the similarity relationship with *Pediococcus acidilactici* FNCC 0110

Report of Discussion:

- Achmad Dinoto (Research Center for Biology, Indonesian Institute of Science)

Question:

Why you choose ARDRA method rather than 16S rDNA or RFLP?

Answer:

Because ARDRA is very simple, quick, and reproducible. RFLP was not chosen because this method uses resistant enzyme.

Speaker A4 : Takahiro Matsuki

Title : Quantitative PCR Detection of Bifidobacterial Species and Viable Probiotics Strain in Human Feces

Summary of Presentation :

A highly sensitive quantitative PCR detection method has been developed and applied to the distribution analysis of human intestinal bifidobacteria by combining real-time PCR with *Bifidobacterium* genus and species –specific primers. Concerning the distribution of *Bifidobacterium* species in intestinal flora, the *Bifidobacterium adolescents* group, the *Bifidobacterium catenulatum* group, and *Bifidobacterium longum* were found to be the three predominant species by examination of DNA extracted from the faeces of 46 healthy adults. Changes in population and composition of *Bifidobacterium* species in human intestinal flora of six healthy adults over 8-month period also examined. The results showed that the composition of bifidobacterial flora was basically stable throughout the test period. *B. breve* strain Yakult (abbrev. BbrY) is probiotic bifidobacteria and fermented dairy products including the strain are on the market in Japan. Using propidium monoazide (PMA) treatment, which combined a DNA-intercalating dye for covalently linking DNA in dead cells and photoactivation, only viable BbrY in the faeces highly and significantly correlated with the number of viable BbrY added to faecal samples within the range of 10^5 – 10^9 cells per g of faeces was enumerated. After 11 healthy subjects ingested 10^7 log CFU of BbrY daily for 10 days, $6.9 (\pm 1.5)$ log CFU g^{-1} [mean (\pm SD)] of BbrY was detected in faeces by using strain-specific transgalactosylated oligosaccharide–carbenicillin (T-CBPC) selective agar medium. Viable BbrY detected by qPCR with PMA

treatment was 7.5 (± 1.0) log cells per g and the total number (viable and dead) of BbrY detected by qPCR without PMA treatment was 8.1 (± 0.8) log cells per g. It can be concluded that the viable BbrY detection method was applied to human trials. There are BbrY which have intact membrane but unable to grow on agar plate.

Report of Discussion: no question

2nd Session (Moderator : Agus Wijaya)

Speaker A5 : Laksmi Hartajanie

Title : The Mapping of Lactic Acid Bacteria from Fermentation of Local Foods (Semarang): Tempoyak, Mandai, and Yellow Bamboo Shoot Pickles

Summary of Presentation :

The aim of this research is to obtain the map of LAB derived from raw materials (local from Semarang). This research will be used as an embryo data base of LAB from fermented local food (Indonesia). There are three methods (Fermentation, then isolation and purification, and the last is identification). The result showed that from Tempoyak, gained 17 isolates of Enterococcus. From Mandai, gained 15 isolates of Lactobacillus. From Yellow bamboo shoot pickle, gained 21 isolates of Lactobacillus. It can be concluded that the lactic acid bacteria in tempoyak from Gunung Pati (Semarang) consisted of *Enterococcus faecium*. In mandai and yellow bamboo shoot pickles were *Lactobacillus pentosus* and in yellow bamboo shoot pickles were *Lactobacillus plantarum*.

Report of Discussion

- Jyoti Prakash Tamang (Sikkim University, India)
Question : Why do you use 'mapping' on your title? And actually, natural fermentation not only contains lactic acid bacteria but also other bacteria. You must find the percentage of all the microbes in your sample first. Then, you can conclude either you will research for lactic acid bacteria, bacillus, etc, depend on the biggest percentage of microbes in the food which can give the health effect for human.
Answer: In this study, 'mapping' means exploration of the microbes in Indonesian traditional food, because this is a preliminary study. And thanks for your suggestion.
- Kouchi Watanabe (Yakult Central Institute, Japan)
Question : Why did you only get *L. plantarum* and *L. pentosus* in your research? Did you use MRS media with calcium carbonate, 1% concentration? I think you must use higher concentration of calcium carbonate, hence, the separation of colonies better. Then, you have to take all the colonies, not only 17 or 15 isolates.
Answer:
It's because of isolates identified as those species. Thanks for your suggestion.

Speaker A6 : Heni Astuti

(DID NOT PERFORM)

Speaker A7 : Prima Retno Wikandari

Title : Improvement of The Quality and The Functionality as an Angiotensin Converting Enzyme Inhibitor of Bekasam by Using *Lactobacillus plantarum* B1765 as Starter Culture

Summary of Presentation :

Bekasam is A Traditional fish fermented product (Mix of fish, salt and boiled rice), consumed by frying directly or mix with some spices, pack on banana leaf and boiled. *Bekasam*, was known has ACEI activity (Angiotensin Converting Enzyme Inhibitor), which is thought to be the activity of bioactive peptides, the product of proteolytic lactic acid bacteria (LAB) during the *bekasam* fermentation. The researcher had isolated 150 strains of LAB and 56% among that had proteolytic activity and were identified belong to species of *Lactobacillus plantarum* B1765, *L. plantarum* T2565, *L. plantarum* N2352, *L. plantarum* B1465, *L. pentosus* B2555, and *Pediococcus pentosaseus* B1661. The objective of this study are to know the potency of *L.plantarum* B1765 as a culture starter to improve the quality of *bekasam* and potency of *L.plantarum* B1765 as a culture starter to improve the functionality of *bekasam* as an Angiotensin Converting Enzyme Inhibitor. The result showed that the highest ACE inhibitor activity (67.18%) was produced by *L.plantarum* B1765, which correlated to the highest producing peptides in *bekasam* “like product” fermentation process. *L.plantarum* B1765 showed some characteristics of starter culture due to growth well in the *bekasam like product* medium (10^9 CFU/g), tolerance at the (pH 4), and tolerance at concentrated salt (10%).*L.plantarum*B1765 as a culture starter can improve flavor and texture of *bekasam* on 3 to 4 hours of fermentation. It can be conclude that *L.plantarum* B1765 as a culture starter can improve quality of *bekasam* and *L.plantarum* B1765 as a culture starter can improve the functionality of *bekasam* as an Angiotensin Converting Enzyme Inhibitor (ACEI).

Report of Discussion:

(No question)

Speaker A8 : Titiek F. Djaafar

Title : Effect of Indigenous Lactic Acid Bacteria Fermentation on Enrichment of Isoflavone and Antioxidant Properties in Crude Extract of *Kerandang* (*Canavalia virosa*)

Summary of Presentation :

Kerandang (*Canavalia virosa*) seeds are known to contain certain bioactive compounds, such as isoflavones whose beneficial effects need to be explored. The objective of this research was to examine whether the levels isoflavone aglycones and antioxidant activity could increase in fermented *kerandang* by indigenous lactic acid bacteria-producing β -glucosidase. There are 5 cultures of lactic acid bacteria, such as *Lactobacillus plantarum-pentosus* T14, *Lactobacillus plantarum-pentosus* T20, *Lactobacillus plantarum* T32, *Lactobacillus plantarum* T33, *Lactobacillus plantarum-pentosus* T35. The result showed that β -glucosidase activity of indigenous lactic acid bacteria increase during 12 hours of fermentation in crude extract of *kerandang* at 37 °C. Isoflavon concentration, antioxidant activity, and Ferrous ion-chelating Ability of *Kerandang* extract fermented at 37 °C for 12 hours increase significantly. It can be conclude that all of strains of indigenous lactic acid bacteria showed relatively to have a good

growth in the *kerandang* extract and acid production. Hydrolysis of the glycoside moiety depended on the strain of lactic acid bacteria. Overall, *L. plantarum-pentosus* T14 showed the best growth rate, acid production, β -glucosidase activity and isoflavone hydrolysis. *L. plantarum-pentosus* T14 seems to be a promising strain as a starter for production of bioactive fermented *kerandang* based on its growth rate, acid production and isoflavone transformation capabilities in a short time. Effect of the usage of mixed culture with different organisms and establishment of the optimum fermentation condition in terms of production of desirable isoflavone compounds are some valuables that worth for further investigation in the future.

Report of Discussion :

- Laksmi Hartajani (Soegijapranata Catholic University)

Question:

Why is the antioxidant activity increase during fermentation?

Answer:

It is because isoflavone glycoside has low antioxidant activity. In this case, lactic acid bacteria has activity to increase daidzein and genistein. These compounds has been shown to provide protection against oxidative modification of low density lipoprotein (LDL).

- Heryan (Unsoed)

Question:

Actually, we do not know too much about *kerandang*. Why is the future prospect of that research, especially for *kerandang*?

Answer:

Kerandang (*Canavalia virosa*) seeds are known to contain certain bioactive compounds, such as isoflavones whose beneficial effects need to be explored. They can grow at dry land, and the productivity is until 900-1000 kg/ha.

3rd Session (Moderator :Mr. Muhammad Nur Cahyanto)

Speaker A9 : Tri Marwati

Title : Amino Acid Sequence of Pediocin PaF-11 from *Pediococcus acidilactici* F-11

Summary of Presentation :

Pediocin PaF-11 has potential uses as food preservatives because of its ability in controlling the growth of food spoilage and pathogene bacteria, but its use is still limited. To support the application development of pediocin PaF-11, research that aim to sequence the amino acid of pediocin PaF-11 was conducted. Plasmid DNA of *P. acidilactici* F-11 isolated then used as templates for the gene pediocin (*papA*) amplification through the PCR analysis (Huang *et al.*, 2009; Todorov and Dick, 2009). The Primer is designed based on the sequence of *papA* gene in the GenBank database uses the program primer3 online (<http://frodo.wi.mit.edu/primer3/>), there were : PF 5'-GCGCGTATTAAGGATAATTT-3' and PR 5'-TTTATTGATGCCAGCTCAGC-3'. The result showed that pediocin PaF-11 is belong to class IIa bacteriocin. The sequence of pediocin PaF-11 has a high homology (100%) with pediocin PA-1 (from *P. acidilactici* PAC 1.0 and *P. pentosaceus* IE-3); prepediocin PA-1 (from *P.*

acidilactici K10); pediocin AcH (from *P. acidilactici* H; *P. acidilactici* LB42-923; *P. parvulus* ATO77 and *P. pentosaceus* S34) and prepediocin CP2 from *P. acidilactici* MTCC 5101 and pediocin from *P. acidilactici* CFR K7 and *P. acidilactici* PED 01.

Report of Discussion:

- Muhammad Nur Cahyanto

Question:

What is the characteristic of pediocin?

Answer:

The characteristics are high stability in high temperature and high range of pH.

- NN Muhammad Nur Cahyanto

Question:

What is the source of bacteria you've got?

Answer:

From frozen beef food.

Speaker A10 : Lismayana Hansur

Title : Isolation of Lactic Acid Bacteria as Biopreservative in Corn Fermented Milk

Summary of Presentation :

Diversified corn product like corn milk has several problems : still traditionally produced, the nutritional become a breeding ground for microorganisms, and food spoilage due to bacterial contamination. The objective of this research is use a corn as a source of lactic acid bacteria that can preserve corn milk and then use isolated lactic acid bacteria as biopreservative agent in corn fermented milk. The results showed that Inoculation of LAB bacteria showed different characteristics to corn milk after 24 hours fermentation. The characteristic (Viscosity, color and flavour) was measured and the bacteria give the significant effect to corn fermented milk. The researcher obtained 16 isolates able to agglutinate corn milk and capable making good flavor. There were 7 LAB producing bacteriocin. 5 LAB was chosen based on organoleptic test results and antibacterial activity. Sixteen isolates were able to agglutinate corn milk and capable making good flavor. There were 7 LAB producing bacteriocin. 5 LAB was chosen based on organoleptic test results and antibacterial activity.

Report of Discussion:

- M. Nur Cahyanto (Universitas Gadjah Mada)

Question:

Did you get good flavor from this product?

Answer:

Yes, sixteen isolates were able to agglutinate corn milk and capable in making good flavor.

- NN

Question:

How long lactic acid bacteria can preserve the fermented corn milk?

Answer:

I think it's quite long because the six months old fermented corn milk, kept in the refrigerator, hasn't changed in flavor. But for the specific measure, I just did it for 2 months old sample.

Speaker A11 : Tri Wardani Widowati

Title : Antibacterial Activities of Lactic Acid Bacteria Isolated from Tempoyak during Low Temperature Fermentation Against *Staphylococcus aureus*

Summary of Presentation :

Lactid acid bacteria was known can be Bio-preservative agent, because of preventing spoilage bacteria, and can decrease the growth of *Staphylococcus aureus* as pathogenic bacteria. The objective of this research is to know Antibacterial Activities of Lactic Acid Bacteria Isolated from Tempoyak during Low Temperature Fermentation Against *Staphylococcus aureus*. There are *S.aureus* and Lactid acid bacteria colonies on the agar. The inhibition effect is signed by clear zone on agar. Eight species of lactid acid bacteria was isolated from fermented tempoyak. They are *Lactococcus* sp. I446, *Lactococcus* sp. II045, *Lactococcus* sp. C044, *Leuconostoc* sp. C042, *Leuconostoc* sp. C043, *Lactobacillus* sp. II442, *Lactobacillus* sp. C425, and *Lactobacillus* sp. C426. There was clear zone on agar with various diameter (mm). Colonies of *S. aureus* decrease. It was indicated that lactid acid bacteria isolated from Tempoyak has Antibacterial Activities. It was caused lactid acid bacteria produce metabolits like organic acid, alcohol, H₂O₂, diacetyl, reuterin, and bacteriocins can inhibit the growth of *Staphylococcus aureus*. The coclusion of this study are Eight isolates from tempoyak have antibacterial activities against *S. aureus* namely, *Lactococcus* sp. I446, *Lactococcus* sp. II045, *Lactococcus* sp. C044, *Leuconostoc* sp. C042, *Leuconostoc* sp. C043, *Lactobacillus* sp. II442, *Lactobacillus* sp. C425, and *Lactobacillus* sp. C426. The lactic acid bacteria have bacterisidaleffect toward *Staphylococcus aureus*.

Report of Discussion

- Laksmi Hartajani (Soegijapranata Catholic University)
Question:
Why Palembang's tempoyak has different genus of bacteria from Semarang's tempoyak?
Answer:
It's because Palembang's tempoyak is incubated at low temperature ($\pm 20^{\circ}\text{C}$), different from Enterococcus which live in medium temperature. Low temperature will increase the lactic acid bacteria and decrease the contaminant.
- Siska Yuliana Sari (University of Indonesia)
Question:
Do you think your isolate belong to psychrofillic bacteria?
Answer:
I don't think so because it was incubated at 20°C .
- Titiek F. Djafaar (Sriwijaya University)
Question:
How about the characteristic of tempoyak?

Answer:

I didn't do the sensory analysis, but I think it will not have a strong flavor because in lower temperature the fermentation is heterogeneous fermentation instead of homogenous fermentation which produces ethanol.

Speaker A12 : Arya Widinatha

Title : Isolation and Characterization of Lactic Acid Bacteria Producing Antimicrobial Compounds from Small Intestine of Chicken

Summary of Presentation :

Lactic Acid Bacteria (LAB) has important role for food preservation by producing antimicrobial activity. LAB commonly found in the gastrointestinal tract of various endothermic animal and human. LAB can inhibit the growth of enteric pathogenic bacteria (i.e. *Staphylococcus aureus*, *Escherichia coli*, *Listeria monocytogenes*, and *Salmonella* sp.). The aim of this study is to Isolate and characterize LAB from small intestine of chickens that have antimicrobial activity against enteric pathogenic i.e. *Staphylococcus aureus* and *Escherichia coli* bacteria. The results showed that 19 isolates of lactic acid bacteria are Gram-positive, non-sporulating, non-motile, catalase negative, and non-gas producing. From 19 isolates, 3 rod-shape isolates growth at 10°C, 45°C; pH 4,4; 6,5% NaCl classified as *Lactobacillus*. And 16 cocci-shape isolates growth at 10°C, 45°C; pH 9,6; 6,5% NaCl classified as *Enterococcus*. In antimicrobial testing, all isolates produced antimicrobial compounds which were active against pathogenic bacteria, indicated by the formation of clear zones around the well. Isolate number 411 had the highest inhibitory ability towards *S. aureus* (clear zone = 24.17mm) and *E. coli* (clear zone = 15.50 mm) among all isolates. Conclusion of this work are 19 strains of LAB were isolated from gastrointestinal chicken intestines, sixteen isolates are included in genera of *Enterococcus*, three isolates are included in genera of *Lactobacillus*. *S. aureus* was more sensitive towards antimicrobial compounds produced by LAB isolates in gastrointestinal tract of chickens compared with *E. coli*

Report of Discussion :

- Agus Wijaya (Sriwijaya University)
Question: I think the clear zone it's not really clear. Maybe it can be happened because of another reason, e.g. pH, or something else.
Answer: In this study we didn't do further research.
- Ema Damayanti (Indonesian Institute of Science)
Question:
What kind of chicken that you used? Because, I think, different chicken can contain different lactic acid bacteria.
Answer:
We used the native chicken because broiler chicken is fed from unnatural feed, so we could get natural isolates.

4th Session (Moderator : Laksmi Hartajani)

Speaker A13 : Widodo

Title : Studies on the Quality of Fermented Goat and Cow Milk Produces by Different Starters of Lactic Acid Bacteria

Summary of Presentation :

Milk is lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cow which contains not less than 8.25% of milk solids-non fat and not less than 3.25% milk fat (United States Code of Federal Regulations). Nutritional Composition of goat milk is more than cow milk. Fermented milk is produce to get particular benefits such as to increase flavor, nutritional value, and quality. Fermented milk products are yogurt, kefir, buttermilk, and acidophilus milk. yogurt culture contains *Streptococcus thermophilus* (ST) and *Lactobacillus delbrueckii* subsp. *bulgaricus* (LB). The optional organisms include *L. acidophilus*, *L. casei*, bifidobacteria, and other lactobacilli that are often referred to as probiotic bacteria. The aim of this experiments was to investigate the quality of fermented goat and cow milk, as well as viability of LAB during storage of the products at refrigerated temperature. The results showed that Raw goat milk has Total solid, fat, and protein content in graet quantities compared with cow milk. Acidity of goat milk is lower than cow milk after fermentation. Fat content of fermented goat milk is lower than fermented cow milk, meanwhile lactose content of fermented cow milk is lower than fermented goat milk. Lower lactose content will decrease lactose intolerance risk. The conclusion of this study are, Quality of fermented cow and goat milk products was partially affected by source of raw milk, bacterial starters and the amount of skim milk powder added. During fermentation, pH decreased whereas acidity increased gradually due to accumulation of organic (lactic) acid. Viability of yoghurt bacterial cultures during storage was affected by storage temperature and acidity of products.

Report of Discussion:

- Ema Damayanti (Indonesian Institute of Science)

Question:

Why did lactose contains in sample after fermentation was higher than in the sample before fermentation?

Answer:

I think the addition of skim milk caused the increase of lactose contain.

Speaker A14 : Evy Rossi

Title : Evaluation of Fermented Beverage Made From Pumpkin with Various Concentration of Skim Milk

Summary of Presentation :

Pumpkin contain high carbohydrates so it can be used as an energy source, while nitrogen is needed for the growth of LAB. as a source of skim milk. The objective of this study was to obtain the best concentration of the pumpkin and skim milk that could be used to produce fermented beverages that met requirement of the fermented beverage standard. The research

was carried out experimentally by using Completely Randomized Design (CRD) with factorial arrangement (2 x 3 x 2) consisting of two factors. The result showed that the best pumpkin fermented beverage derived from the treatment P2S12 (pumpkin ratio: water, 1:2, and the addition of skim milk 12%) with pH 4.1, total LAB 11.65 log CFU / ml, total solids 18.82%, total lactic acid 1.05% and crude fiber 0.81%.

Report of Discussion:

- Titik J. Djafaar (Sriwijaya University)

Question:

How is the characteristic of your beverage, because concentration of lactic acid bacteria on the final product is not different between all variables.

Answer:

Although the lactic acid concentration is not really different, there're another differences between the products.

- Fracisco B. Elegado (University of Philipines)

Question:

I think your research is not success because there's no different between lactic acid contained on before and after fermentation. What do you think? Did you do some research for the effect of your variable on growth of lactic acid bacteria or you just count the total number of the bacteria?

Answer:

I think I can call my research as a failure because the aim of this research is to find the best treatment. For your second question, I just counted the total number of the lactic acid bacteria.

Speaker A15 : N. Azizah

Title : Study of the Growth Lactic Acid Bacteria on Yoghurt Drink Added by Jackfruit Extract

Summary of Presentation :

Jackfruit contains high saccharides. The aim of this study are to evaluate the growth of LAB on yogurt drink added by jackfruit extract and a success of such jackfruit utilization could potentially promote an economical benefit this local potential. The result showed that Incorporation of jackfruit's extract to the incubation of yogurt-drink mix supported the growth of LAB. The highest five-percent jackfruit extract addition resulted in the highest LAB population. The high monosaccharides-content in the jackfruit extracts is presumably as significant factor influencing the LAB growth.

Report of Discussion:

- Laksmi Hartajani (Soegijapranata Catholic University)

Question:

Did you measure your sucrose content in your initial media? I suggest you to measure the content of the initial media and the final media, so you can know the sugar consumption during the fermentation.

Answer:

I did measure the sucrose content of the jackfruit and the final concentration of sample.

Speaker A16 : A. M. Jannah

Title : The Physical and Microbiological Properties of Yogurt Drink Added by Starfruit Extract

Summary of Presentation :

Starfruit is a good medium for microbes because contains high carbohydrates (0.75% of glucose, 4.84% of fructose and 2.31% of sucrose). The aim of this study was to analyze the physical and microbiological properties of yogurt drink added by starfruit extract. The result showed that the higher of starfruit extract addition will increased the total of LAB and the pH value during fermentation (with or without extract starfruit addition) is decreased. In other word, it was not affected the pH value.

Report of Discussion:

- Siska Yuliana Sari (University of Indonesia)

Question:

why most of yogurt productions use skimmed milk? Why didn't you choose another material, e.g. whole milk. I see in your result, you said that the pH decrease from 6.81 to 4.1, but why in the conclusion, you said that there is no difference on the pH level?

Answer:

The goal of the fermentation is to produce smooth and thick product. If you use whole milk, the texture will not turn so good. There were pH decrease during fermentation, but it's not significant.

Speaker A17 : Rinawidiastuti

Title : The Effect of Solid Part Level of Fermented Vegetable Garbage to the Number of Lactic Acid Bacteria and the Presence of Gram (+/-) Bacteria of Foodcourt Waste's Pellet

Summary of Presentation :

Food waste has a high water content. If it processed with drying and acid additives then added by solid component of fermented vegetable garbage (SFVG) as LAB then became probiotic pellet, it can improved the efficiency of the feed products to be a functional feed as well as easy to handling. This study was conducted to develop functional feedstuff of poultry feed from pellet of food waste from food court enriched by solid component of fermented vegetable garbage (SFVG). The result showed that pellet of food waste from foodcourt that which enriched with 50% SFVG could be recommended as a potential probiotic feedstuff, because of high number of LAB and the ability to control Gram negative bacteria.

Report of Discussion:

- Abinubli Tariswafi Marawid (University of Indonesia)

Question:

Have you ever tried to give your product to the animal? Is there any negative effect to the animal? Because there is a potential that waste food contains dangerous bacteria. How about the nutritional value of vegetables wasted food from food court restaurant? Did you measure it? Because it's good for business plan.

Answer:

I've tried it, and actually the lactic acid bacteria reduce the potential occurrence of pathogenic bacteria. For the nutritional value of the vegetables wasted food, I didn't measure it.

Room B

Presentation divided into two session. Each session consisted of 5 oral speakers.

Session 1

Moderator : **Yoyok B. Pramono**

Oral speaker :

1. **Agustin Krisna Wardani**
2. **Nyoman Semadi Antara**
3. **Happy Nursyam**
4. **Nursilawaty**



Figure 13. The First Session in Room B

Session 2

Moderator : **Yoyok B. Pramono**

Oral speaker :

1. **Achmad Dinoto**
2. **Widya Dwi Rukmi Putri**
3. **Amelia Juwana**
4. **Usman Pato**



Figure 14. Session 2 in Room B

Session 3

Moderator : Achmad Dinoto

Oral speaker :

1. Siti Suryaningsih
2. Ahmad N. Al-Baarri
3. Eka Ruriani
4. Yoyok B. Pramono



Figure 15. Session3 in Room B

Session 4

Moderator : Nyoman S. Antara

Oral speaker :

1. Siti Suryaningsih
2. Indah Kuswandari
3. Sri Hastuti
4. Febby J. Polnaya
5. Nurhayati



Figure 16. Session 4 in Room B

Resume and Discussion:

1st Session (Moderator : Yoyok B. Pramono)

Speaker B1 : Agustin Krisna Wardani

Title : Isolation and Characterization of Bacteriophage from Chicken Intestine for Improving Food Safety

Summary of Presentation :

Several food-borne disease cases has been rising continuously in developing countries. Bacteriophages should be a solution to control food-borne disease due to their specificity to overcome the problem. The aims of this study were to isolate the phage from chicken intestine, to investigate the spectrum inhibition of isolated phage, and to identify the bacteriophage. Bacteriophages were isolated from chicken intestine using soft agar overlays containing indicator bacteria and assessed with regard to their potential to control food-boorne bacteria. Some pathogenic bacteria were used as indicator bacteria such as *Salmonella thypimurium*, *Bacillus cereus*, *Listeria monocytogenes*, *Shigella flexneri*, *Escherichia coli*, and *Staphylococcus aureus*. The result showed that isolated virulent bacteriophages was obtained from intestine. It was shown that Φ U14 with concentration of 1×10^9 PFU/ml effectively inhibited the growth of pathogenic bacteria of *Salmonella thypimurium*, *Bacillus cereus*, and *Listeria monocytogenes*.

Identification by using TEM indicated the phages have hexagonal shape and classified as podoviridae type.

Report of Discussion :

- Lukitawesa

Question :

If we look at the title, you said that 'Improving Food Safety'. How do you assure that bacteriophage safe to be applied?

Answer :

The result showed that the bacteriophages had ability to inhibited the growth of pathogenic bacteria of *Salmonella thypimurium*, *Bacillus cereus*, and *Listeria monocytogenes*. Those pathogenic bacteria is hazard in food safety relation. The bacteriophages could inhibit the hazard. It means that bacteriophage had a role on improving food safety. In addition, FDA has recommended LISTEX (bacteriophage) as food additive

- Usman Pato

Question :

Due to their specificity, is it possible to apply in fermented food?

Answer :

It's possible to apply in fermented food. But you should remember that bacteriophage could not inhibit pathogenic bacteria more than two species even in same genus. Bacteriophage

Speaker B2 : Nyoman Semadi Antara

Title : Application of Lactic Acid Bacteria Inoculum Powder on Fermentation of *Urutan*: Study on Microbiological, Organoleptic Characteristic, and Aroma Compounds Profiles

Summary of Presentation :

Urutan is Balinese fermented sausage which is one of the fermented food produced in Bali. Six species were involved during fermentation process of *urutan*, and three of them were dominantly existed during fermentation, namely *Lb. plantarum*, *P. acidilactici*, and *Lb. farciminis*. Using of two strains of lactic acid bacteria (LAB), *P. acidilactici* U318 (PAU318) and *Lb. plantarum* U201 (LPU201) as culture starter. The aims of study were to find out the influences of lactic acid bacteria (LAB) inoculum powder used in *urutan* fermentation on microbiological and organoleptical characteristic of *urutan*. The addition of LAB inoculum powder accelerated the degradation of proteins into simpler proteins in fermented *urutan*. Three kinds of organic acids (lactic acid, acetic acid and propionic acid) were produced during fermentation and conditioning period with lactic acid was found to dominate the other two types of acids. The dominating compounds were eucalyptol and caryophyllene. This type of compounds were detected in the conditioning phase generally exceeds the amount at the initial of fermentation and after 24 hours fermentation.

Report of Discussion :

- Usman Pato

Question :

Urutan is new food, how if it consume without cooking?"

Answer :

Urutan is traditional sausage and usually served in holy day. It was slaughter animal and used intestine as casing. Nowadays, *urutan* is rare in Bali, it only made in fresh condition"

Speaker B3 : Happy Nursyam

Title : Physicochemical and Microbiological Evaluation of *Clarias catfish* Fermented Sausage Manufactured by *Pediococcus acidilactici* 0110<TAT-1 Starter Culture at Different Level of NaCl Concentration

Summary of Presentation :

Fish sausage is a product, where fresh fish meat mixed with some additives, and then inserted into the casing and processed by heating. The used of NaCl as preservation also maintain the stability of micro-organisms during fermentation, it is also able to reduce the discharge of water activity. The aim of this study was to obtain the best level of NaCl concentration with emphasis on the physico-chemical of *Clarias* fermented sausage. Different concentration of NaCl added were 1%, 2%, and 3%. The physico-chemical characters of sausages were affected by NaCl addition, NaCl content, water activity, pH, weight loss, water content, water holding capacity, and the level of protein and fat content. While microbiology was assessed by aerobic plate count, total pathogen bacteria, and lactic acid bacteria. Total pathogen bacteria was effectively inhibited on sausage with addition of 1 % NaCl after 7 days storage, however sausage with addition of 2 and 3 % NaCl was effectively inhibited before 7 days. Sensory evaluation indicated that addition of 2 % NaCl was acceptable to all parameters.

Report of Discussion : no question

Speaker B4 : Nursilawaty

Title : Nitrite Reduction In Fermented Sausage (*Pepperoni*) by Lactic Acid Bacteria

Summary of Presentation:

Nitrite is commonly additive used in curing of meat. Nitrite also indicated as carcinogenic material, for example N-nitrosamine. It was necessary to reduce nitrite in cured meat by using lactic acid bacteria (LAB). The aim of this study was to determine the best LAB for *Pepperoni* production with low level of residual nitrite while maintaining the desirable cured meat characteristic. *Lb. plantarum* 1167, *Lb. pentosus* 3G3 and *Pc. acidilactici* AA5a were used as starter culture. The result showed that *Lb. plantarum* 1167, *Lb. pentosus* 3G3 and *Pc. acidilactici* AA5a grew in meat mixture and showed nitrite reduction in *Pepperoni* (98.93 ± 0.53 to 98.77% ± 0.51). It significantly higher than the control (94.29% ± 2.93) or uninoculated sample. *Pc. acidilactici* AA5a showed the highest nitrite reduction (98.94% ± 0.53) and lowest final pH (5.17±0.15) among the treatments.

Report of Discussion:

- Lukitawesa

Question:

How was the nitrite reducing mechanism by LAB?"

Answer:

Nitrite reducing by indigenous LAB present in meat. It happen in two mechanisms through enzymatic reaction (nitrite reductase) and decreasing of pH. Decreasing of pH made chemical reaction more active"

2nd Session (Moderator: Yoyok B. Pramono)

Speaker B5 : Achmad Dinoto

Title : Spray Dried Encapsulation of *Lactobacillus spp.* Cells with Coconut Milk

Summary of Presentation:

Natural encapsulation using coconut milk consisted of carbohydrate, oil, protein had O₂ scavenging activity properties as barrier. Emulsion of coconut milk is more effective than using capsules due to its hard cover, cause difficulty of bacteria get into intestine. *L.plantarum* is more tolerant to low pH indicated from less cell reduction. cProcess parameter decreased viable cells the most, compared to pH, bile salts, or storage.

Report of Discussion:

- Question:

The coconut milk encapsulation use combination of spray drying and freeze drying technology. Is it applicable to use these combination, regarding to its high cost?"

Answer:

Yes, it is possible. For freeze drying, it doesn't take long time, so can minimize the production cost. Spray drying used high temperature, reached 160⁰C, it was hot but very fast. Then combined with freeze drying to allow the cell recover from heating process".

Speaker B6 : Widya Dwi Rukmi Putri

Title : Application of Dried Mixed Culture (*Lactobacillus plantarum* FNCC 0027, *Lactobacillus fermentum* FNCC 0030 and *Saccharomyces cerevisiae* s) in Maize and Sorghum Fermentation

Summary of Presentation:

Local commodities had high productivity, especially for maize and sorghum. It contains phytic acid as anti-nutritional factor which cause low digestibility of some food compounds. Phytic acid had high affinity to some minerals, like Zn or Ca. Thus lactic acid bacteria fermentation can reduce phytic acid content. Microorganisms involved: *L.plantarum*, *L.*

fermentum, s.cerevisiae. Results showed that after fermentation process, digestibility was increased and tannin content was reduced.

Report of Discussion :

Q : “Mixed cultures (*L.plantarum L. fermentum, and S.cerevisiae*) are used in fermentation of shorgum flour. Is there any synergistic effect?”

A : “There is synergistic effect, which *S. cerevisiae* would stimulate the growth of two other kinds of bacteria. Then LAB grew and ferment sugar.”

Speaker B7 : Amelia Juwana

Title : Non-Dairy Probiotic Beverage : Application of *Lactobacillus plantarum* EM1and *Lactobacillus pentosus* EM1 Cultures as Inoculum in Fermented Legumes and sweet Corn Milk

Summary of Presentation :

Probiotics are living microorganisms that possess health benefit, mainly from *lactobacilli* and *bifido bacteria*. During 40 days storage, total LAB was decreased, but at day 30, it still meet CODEX. *L.plantarum* had highest viability among others. Total acid was increased, on the other hand, sugar content was decreased.

Report of Discussion : No Question

Speaker B8 : Usman Pato

Title : Probiotic Properties of *Tempoyak* Lactic Acid Bacteria and its Application for Making Probiotic Beverage from Pineapple Skin Extract

Summary of Presentation :

West Sumatran foods had diet high of cholesterol and fat, which most of its ingredients made of coconut milk. LAB can lower cholesterol, with 2 mechanisms proposed : - by binding cholesterol and by conjugation of bile salts. Tempoyak is a kind of traditional fermented food,made of durian pulp. Since the process doesn't use any heat, it's safe and contain no pathogenic bacteria. Tempoyak is regarded to had health promoting effect. Addition of skim milk and sucrose influenced total bacteria count.

Report of Discussion : No question

3rd Session (Moderator : Achmad Dinoto)

Speaker B9 : Siti Suryaningsih

Title : Effect of Orange Juice and Skim Milk Addition on The Quality of Soyghurt

Summary of Presentation :

Soyghurt is a fermentation product of soybean milk produced by using *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. The aim of this study was to produce soyghurt drink and fermentation process expected to change and improve the flavor of soy milk. Soymilk made from local soybean (Wilis variety) relatively had higher protein, carbohydrate and fat contents than soymilk made from imported soybean (Americana variety). Soyghurt made from local soybean had higher lactic acid content and so Lower pH value and more viscous compared with imported soybean, and no whey was formed. Higher orange juice concentration added, can lower the pH value and lactic acid bacteria count but can higher citric acid content of soyghurts and tended to increase fat content of soyghurt. Higher the concentration of skim milk added, can higher the pH, citric acid content, and higher fat content of soyghurts, but can lower lactic acid bacteria count in soyghurt. Statistical analysis showed that only skim milk concentrations added significantly affect fat content of soyghurt while orange juice addition did not. The highest concentration of skim milk added tended to increase protein content of soyghurt.

Report of Discussion : no question

Speaker B10 : Ahmad N. Al-Baarri

Title : The Effect of Selected Indonesian Tropical Fruit Extract on The Survival of Lactic Acid Bacteria

Summary of Presentation :

Tropical fruits have received widespread attention as food additive to increase the consumer preference of food product. The objective of this study was observed to determine the survival of lactic acid bacteria in the Indonesian fruit extracts. The fruit extracts (starfruit and mangoes) were added to the MRS broth medium (*L. delbrueckii subsp. Bulgaricus* (ATCC 11842), *S. thermophilus* (ATCC 19258), and *B. bifidum* (ATCC 29521) were inoculated) when the incubation reached three hour. The pH was analyzed and survival of total lactic acid bacteria were counted using MRS agar plate. Higher of incubation time, higher of LAB total (Log CFU/ml) for all of tropical fruit samples. Higher concentration, lower pH of yoghurts for almost all of tropical fruits samples. The growth of lactic acid bacteria remarkably inhibited by selected tropical fruits. There was no notable decrease on pH value after addition of fruit extract.

Report of Discussion :

- Nyoman

Question :

Using extract starfruit and mangoes to control LAB in your result, there;s no decrease in pH. In my mind, in extract fruits there's capability for buffering system. Why there's no decrease in pH?

Answer :

The decrease of pH is connected with the control, which there is o difference between cintrol and treatment because the buffering system. We still can't find the best answer, but if we try to find out the phenomena in literature, it's because the buffering so the pH didn't change. And maybe inside of the fruits there's an enzyme, so i think the enzyme

change the solution because if we purified or sterilized the fruits, there is no contamination and the enzyme still can pass the filter. Maybe we can compare to find out the phenomena. We also can find tannin in salak which can not post the probiotics.

Speaker B11 : Eka Ruriani
Title : Viability of *Lactobacillus acidophilus* on the Dietary Fiber Made from Unripe Banana Fruit, Corm, and Pseudo-Stem Tender Core Flour

Summary of Presentation :

Banana/plantain was cultivated as one of mayor comodityin Indonesia which contain dietary fiber. Dietary fiber known as non-digestable carbohydrate which contain insoluble and soluble dietary fiber. The aim of the research was to evaluate viability of *L. acidophilus* NH in the medium contain banana IDF isolated from unripe fruit (UF), corm (C) and pseudo-stem tender core (PSTC) flour. The result showed that the insoluble dietary fiber higher than soluble dietary fiber content of native and fermented unripe banana flour, pseudostem tendercore banana flour, and corm banana flour for all of samples. The highest viability of *L. acidophilus* NH on native and fermented unripe fruit, corm and pseudostem tendercore banana flour is BAPT. Controlled fermentation decreased DF content. The highest viability of *L. acidophilus* was in fermented unripe banana flour and the lowest one was in pseudostem tender-core banana flour.

Report of Discussion : no question

Speaker B12 : Yoyok B. Pramono
Title : Probiotic Viability and Carbohydrates Compound In Selected Tropical Fruits from Indonesia

Summary of Presentation :

Probiotic products become popular now, because it can give benefit health effect to our life. The problem is probiotic products made from animal based, but how about the vegetarims? It means that we have a chance to make probiotic fruit product – based, so the vegetarisms can improve their health. The materials are starter *L. bulgaricus* and *S. Thermophilus*, MRS broth, glass ware, and Indonesian tropical fruit extracts (longan, mangoes, salak, and starfruit extract. The pH value of precipitate and supernatan shows that pH of longan > salak > starfruit > mangoes. There's no increase on pH value, because many extract juices can able to LAB systems. All of fruit have a chance to supporting *L. bulgaricus* life, and Indonesian tropical fruits have a chance to supporting *S. thermophilus* life in the medium solution containing tropical fruits in a range 0 – 3% v/v. Before and after incubation at 27°C for 5h with *L. bulgaricus* and *S. thermophilus*, have sucrose, glucose, and fructose carbon source to using of maintenance their life make a metabolite product such as lactic acid and other to improve their count.

Report of Discussion

- Indah Kuswandari
Question :

In Mr Baari research, the subject about the decrease of viability in mixed inhibition of the tropical fruit. And in Mr yoyok research, showed about the contain of the tropical fruit extract. So, there is a relation. Explain about the phenomena of decrease on mixed inhibition o the growth viability of the bacteria. In several research, mangoes contain another component like lactic acid. Please show about it.

Answer :

In our research just to know in five hours. It means that to keep in refrigeration condition and keep the lab to maintain their life. For examples, the decrease of LAB.

4th Session (Moderator : Nyoman S. Antara)

Speaker B13 : Indah Kuswandari

Title : Viability of *Lactobacillus plantarum* 12A2 in Calcium-Alginate Beads during Frozen Storage of Soy Corn Milk Ice Cream

Summary of Presentation :

The soy milk is popular as dairy milk substitute since it contains protein and functional compound, such as isoflavon. Its beany flavor restricting the acceptability. Combination with sweet corn milk will improve the acceptability of the non dairy ice cream. Soy-corn milk ice cream as carrier of as probiotic bacteria *L. plantarum* 12A2 will give benefit for consumer. The free cells viability of *L. plantarum* 12A2 decreased almost 2 log cycles during 21 days frozen storage.

Using *L. plantarum* 12A2

Soy milk : corn milk S1 (S : C = 7:3), S2 (5:5), S3 (3:7)

Result S3 > s2 > s1 overrun

S1 > s2 > s3 total solid

Alginate concentration 4% > 6% > 8%, the higher concentration, the higher cell can be entrapped

Structure higher alginate have more ... , and

Proportion soy and corn can improve the texture and taste, affected the overrun and total solid ice cream

Report of Discussion : no question

Speaker 14 : Sri Hastuti

Title : Characteristic of Java Plum Juice (*Eugenia cumini*) Fermented With *Lactobacillus acidophilus* IFO 13951

Summary of Presentation :

Java plum has negative effect for people with lactose intolerance. *Lactobacillus acidophilus* IFO 13951 is one probiotics that are resistant to extreme conditions of stomach acid. The aim of this research was to determine the characteristics of java plum juice fermented with *Lactobacillus acidophilus* IFO 13951, java plum juice fermented with *Lactobacillus acidophilus* IFO 13951 that made from various java plum concentrations and bacterial count, pH, lactic acid

content, reducing sugar, antioxidant activity and sensory quality. The results showed that probiotic bacteria of all fermented juice reached 10^8 - 10^9 cfu/ml. The lactic acid content and the pH of fermented juice ranged from 0.07% to 0.23% and 3.52 to 3.64, respectively. The highest lactic acid content was shown by the 24 h incubated pure java plum juice sample. Reducing sugar content retained from 23.33 mg/ml to 79.77 mg/ml. The 12 h incubated of pure java plum juices sample showed the highest antioxidant activity. Furthermore fermented pure juice samples also revealed greater panelist acceptance level at sensory analysis.

Report of Discussion : no question

Speaker 15 : Febby J. Polnaya

Title : Prebiotic Potential of Resistant Starch Derived from Phosphorylated and Cross-Linked Sago Starches

Summary of Presentation :

Resistant Starch has an ability to promote beneficial bacteria (function of prebiotic). There are 4 kinds of resistant starch (RS1,RS2, RS3, RS4), but only two kinds (RS3 and RS4) that is used in this study. The objectives of this study were to find out the prebiotic index (PI) and short chain fatty acid (SCFA) level of the RS type 4 determined by fermentation method, and to clarify the effect of phosphate linkage on the prebiotic potential. In this study, faecal sample was used as source of inoculum. Basal nutrient medium was prepared as previously described Vulevic *et al.* (2004). The bacterial was enumerated by using slight modified method of Vardakou *et al.*, (2008). The SCFA was determined according to the method of Hernot *et al.* (2009). The result showed that PI value among samples were different each other. It was said that the difference of structural of phosphate linkage that affect the value. Result of SCFA level indicated that RS3 and RS4 from MSP and DSP did function as prebiotics. RS4 from DSP showed prebiotic potential similar to inulin.

Report of Discussion : no question

Speaker 16 : Nurhayati

Title : Improving Banana Flour Resistant Starch by Using Fermentation of *Lactobacillus salivarius* FSnh1 with Two Cycles of Autoclaving-Cooling Process

Summary of Presentation:

Some strain of amylolytic lactic acid bacteria can destroy granule starch structure and increase amylose content (Reddy *et al.*, 2006). The aim of this study is to Improve banana flour resistant starch by using fermentation of *L. salivarius* FSnh1 (indigenous LAB) with two cycles of autoclaving-cooling process. There are three steps of method. Preparation of native and modified banana flour with 6 kinds of treatments (native,12h fermentation, 24h fermentation, two cycles of autoclaving cooling, 12h fermentation with two cycles of autoclaving cooling, 24h fermentation with two cycles of autoclaving cooling), isolation of resistant starch (Englyst *et al.*, 1992). Result showed that the data of Population of *L. salivarius* FSnh1, pH and lactic acid concentration during banana slices fermentation for 12 hours are similar with the result of

spontaneous fermentation for 24 hours. In other words, controlled fermentation by *L. salivarius* FSnh1 can reduce fermentation time up to 12h and the high amylose-banana flour than spontaneous fermentation. From all of treatments, the highest RS were achieved by two cycles of autoclaving-cooling process (without or with fermentation) treatment.

Report of Discussion :

Question :

there's no difference between two, is it right? I need the confirmation

Answer :

Statistically results full cycle process without fermentation. When the banana flour applicate that RS2 that not stable at hydrothermal

After poster session participants had dinner. Participants were entertained at dinner by Bali dance, Student batik carnival, acoustic music

Second Day of Conference

Second day of conference of plenary session (Figure 17) consisted of three session and eight invited speakers.

Session 1

Moderator : Prof. Dr. Eni Hermayani, M.Sc

Speaker :

1. Prof. Dr. Anang M Legowo from Department of Food Technology, Faculty of Animal and Agriculture Sciences, Diponegoro University, Semarang with the topic “Utilization of Lactic Acid Bacteria in The Development of Animal Products-Based Functional Foods”
2. Prof. Dr. Jyoti Prakash Tamang from Department of Microbiology, Sikkim University, School of Life Sciences, India with the topic “Lactic Acid Bacterias in Ethnic Fermented Foods and Beverages : Functionality and Health-Promoting Benefits”.
3. Dr. Fransisco Elegado from National Institute of Molecular Biology and Biotechnology University of the Philippines Los Baños, College, Laguna, Philippines with the topic “Bench-scale Growth Optimization of Selected Probiotic and Bacteriocinogenic LAB Using Response Surface Methodology”.

1. Prof. Dr. Anang M Legowo (Utilization of Lactic Acid Bacteria in The Development of Animal Products-Based Functional Foods)

Synopsis:

There are many challenges and opportunities for the development of functional foods containing probiotics, such as the exploration and characterization of indigenous LAB isolates, and the technological innovation approaches. Recently, the global market for functional foods is growing rapidly with an annual 8-16% growth rate. The idea using LAB-fermented animal products for health purposes and not merely as source of nutrients opens up a whole new field in the food industry.

2. Prof. Dr. Jyoti Prakash Tamang (Lactic Acid Bacterias in Ethnic Fermented Foods and Beverages : Functionality and Health-Promoting Benefits)

Synopsis :

LAB genera isolated from various fermented foods are *Lactobacillus*, *Pediococcus*, *Enterococcus*, *Lactococcus*, *Leuconostoc*, *Oenococcus*, *Streptococcus*, *Tetragenococcus*, *Carnobacterium*, *Vagococcus* and *Weissella*. *Propionibacterium* and *Bifidobacterium* species, commonly presented in fermented milks and also considered among the LAB. Diversity within the species of lactic acid bacteria has created the ethnic foods with different sensory characteristics. Functional LAB presented in ethnic fermented foods have many biological functions enhancing the health-promoting benefits, bio-preservation of perishable foods, bio-enrichment of nutritional value, enrichment of diet, protective properties, therapeutic values, antioxidants, etc.

3. Dr. Fransisco Elegado (Bench-scale Growth Optimization of Selected Probiotic and Bacteriocinogenic LAB Using Response Surface Methodology)

Synopsis :

The results derived for growth optimization of *L. plantarum* BS suggested statistically that skim milk interaction terms had the positive effect on viable cell count whereas brown sugar had the negative effect. The optimal amounts of skim milk, brown sugar and prepared liquid extract from 10% (w/v) baker's yeast suspension were found to be 5% (w/v), 1% (w/v) and 10% (v/v), respectively, that yielded the highest cell growth of 10.4 log₁₀ CFU/mL. All criteria settings were in range and the response (cell count) was maximized. These results shall be tested in pilot-scale production.

Discussion :

1. Q Raha (university Putra):

Some of fermented foods contain LAB pathogenic, could you tell about it?

A Prof. Jyoti:

There are some LAB pathogenic, or Non GRAS Microorganism in Fermented Product. All of fermented Products must be examined before its consume.

2. Kumar Anal suggested for 1st Question:

Fermented food contains of mixed culture, as we know *Clabsiella* is a pathogenic Lab in fermented food, better, we do molecular test to know the species of LAB that we get from its fermented foods.

3. Q Prof. Endang S R:

The quality of coconut water is unstable, do you have any solutions for solving that problem ?

A by Dr. Fransisco Elegado :

if you collect from small scale it's unstable and if we stored it for a long time, the sugar content will be decreased. So we have to use immediately as a substrate.



Figure 17. Plenary Session 1

Before we started to session 2 of plenary (Figure 18), we had presentation from PT DIPA Puspa Labsains by Mrs. Citra. It was presented about Introduction of **Rapid™ Systems**



Figure 17. PT DIPA PUSPA LABSAINS

Session 2

Moderator : Dr. Yudi Pranoto, STP,MP

Speaker :

1. Ass. Prof. Anil K Anal from Food Engineering and Bioprocess Technology, Asian Institute of Technology Bangkok, Thailand with the topic “Encapsulation of Probiotics to Enhance Physical Stability and for Colon Targeted Delivery”
2. Dr. Mahendran Ratha from National University of Singapore with the topic “Developing Vaccines for Bladder Cancer Therapy”

1. Ass. Prof. Anil K Anal (Encapsulation of Probiotics to Enhance Physical Stability and for Colon Targeted Delivery)

Synopsis:

Microencapsulation of probiotic bacterial cells has the potential effect to protect these organisms from harsh conditions and ensure the smaller log reduction in viability of cells the products than free cells. One approach is to entrapment of the microorganisms in a polymer matrix. The polymer could be biopolymers such as alginate, chitosan, carboxymethyl cellulose (CMC), hydroxylpropyl-methyl cellulose (HPMC), proteins, carrageenan, pectin etc. Entrapment of probiotics in biodegradable polymer matrix has a number of advantages. Once entrapped in matrix beads or in microcapsules, the cells are easier to handle than in a suspension or in slurry. The number of cells in each beads or microparticles can be quantified allowing dosage to be readily controlled. A further surface coating as the outer layer can be used to alter the aesthetic and sensory properties of the product and may also be functional, providing an extra level of protection to the cells. In addition, the coating layer can have desirable dissolution properties which permit delayed release of the cells or release upon for example, change in pH.

2. Dr. Mahendran Ratha (Developing Vaccines for Bladder Cancer Therapy)

Synopsis :

Lactobacillus rhamnosus GG (LGG) are lactic acid bacteria, which were found to be better than BCG at inducing cell death in human bladder cancer cell lines. LGG was also as effective as BCG in curing mice with orthotopic bladder cancers after intravesical therapy. The discovery of bladder tumour antigens coupled with the ability of LGG secreting antigens to induce both humoral and CTL responses to the antigen in mice led to us to evaluate the potential of recombinant LGG secreting an antigen as a cancer vaccine. LGG secreting tumor antigens and cytokines could be used to activate DC in vitro for DC therapy in patients or used as intravesical therapy. Further analysis of the bladder tumour microenvironment also identified possible mechanisms of tumour induced immunosuppression and we are exploring ways to counter these strategies using LGG.

Discussion

1. Q Nurhayati (jember univ): Which one More effective probiotic encapsulation based on lipid or protein stabilization of low pH?
A: For applications, the coating material is generally used for microorganisms is saccharide.
2. Q Nyoman : Inoculum using kasein and starch at vacuum condition. Viability decreased till 2 log cycle. Using carbohydrate link is effective. How to increase the viability of it's inoculum at room temperature decreased?
A: Casein much better, mixing at low temperature. And it depends on coating formula.
3. Q: Jyoti : It costs effective for using probiotic. The developing if encapsulation which have low cost you must make the collaboration for developing the research of Dr. Mahendran.
A: It can be commercialized, chocolate bar with the encapsulation LAB using spray drying is not too effective cause the temperature is too high.





Figure 19. Plenary Session 2

Session 3

Moderator : Prof. Dr. Jyoti Prakash Tamang

Speaker :

1. Ass. Prof. Rosfarizan from Biotechnology & Biomolecular Sciences, Universiti Putra Malaysia, Malaysia with the topic "Bioprocessing Strategies for Improvement of Folate and Hyanuloran Synthesis by Lactic Acid Bacteria"
2. Prof. M. Juffrie SpAK, Ph.D from Medical Faculty, Universitas Gadjah Mada with the topic "Role of Probiotic in Diarrhea"
3. Dr. Koichi Watanabe from Yakult Central Institute, Japan with the topic "Asian Microbiome Project: A Pilot Study on the Diversity of Fecal Microbia of Healthy Asian Children"

1. Ass. Prof. Rosfarizan (Bioprocessing Strategies for Improvement of Folate and Hyanuloran Synthesis by Lactic Acid Bacteria)

Synopsis:

Bioprocessing via lactic acid bacteria of folate and hyanuloran which are both commercially used in cosmetic, medical and food were tried to be improved and optimized. Medium formulation approach of *Lactobacillus plantarum* ULA and a recombinant strain *Lactococcus lactis* M4KEpSTag1 growth were used to improve folate biosynthesis based on response surface methodology. On the other hand, physical and chemical approaches (impeller design and oxygen vector addition) were conducted to improve hyanuloran biosynthesis by *Streptococcus zooepidemicus* ATCC 39920. As the results, those bioprocessing strategies applied were able to significantly improve the biosynthesis of folate and hyanuloran in stirred tank bioreactor.

2. Prof. M.Juffrie SpAK,Ph.D (Role of Probiotic in Diarrhea)

Synopsis :

Probiotic has beneficial effects for human. Efficacy of Probiotic on diarrheal disease especially in children is proven according to some studies and metaanalysis.

3. Dr.Koichi Watanabe (Asian Microbiome Project: A Pilot Study on the Diversity of Fecal Microbia of Healthy Asian Children)

Synopsis:

Gastrointestinal microbes play important roles in the health and disease of the host. There is a lot of documented evidence which demonstrates that disturbance of intestinal microbiota is linked to the risk of developing infectious, inflammatory and allergic diseases. It is of great interest to characterize both composition and succession of the intestinal microbiota. We have been conducting an Asian Microbiome Project as part of activities of the Asian Federation of Societies for Lactic Acid Bacteria (AFSLAB) since 2009 to examine the microbiota profile among healthy children in Asian cities as the pilot study to provide the background for further perspective studies of disease population and age groups.

As a result, we found that the microbial profiles of 298 children from 10 cities of 5 Asian countries indicated the presence of two distinctive enterotypes: *Bacteroides* and *Bifidobacterium* were the dominant bacterial components in children of China, Taiwan and Japan (Fukuoka), whereas *Prevotella* was the dominant component in those of Indonesia and Thailand (Khon Kaen). The difference in dietary habit among these countries may cause difference in fecal microbiota profiles.

Discussion :

1. Q Mr. Suparmo (UGM): Calorific value of the diet is very significant to the role of probiotics. What if a person consumes a dietaryresistance starch? Is there any effects on the role of probiotics?

A Dr. Koichi Watanabe: The composition of the diet (nutrition) is essential to the role of probiotics. In this case, first we have to know first whether probiotics has specific genomic clusters is beneficial in its ability to split the sources of nutrients from the food we eat with one of them being resistant starch.

2. Q Dr.Kaouther Ben Amor: whether there is a significant difference from each subject were used in the study of several countries.

A Dr. Koichi Watanabe: there was no significant difference between each subject. The difference in dietary habit among these countries may cause the two distinctive enterotypes in their intestinal microbiota.The further studies are required to understand the relationship between the dietary habit and intestinal microbiota.



Figure 20. Plenary Session3

After that, it was time to announce the winner of three best posters and favourite poster chosen by participant (Figure 20)

The winner of best poster are:

1. Yong Su Ting
Poster nomor P-2 with poster entitled “Molecular Identification of Potential Probiotic Bacteria Isolated from Chicken and Their Production of Lactic Acid and Acetic Acid”.
2. Nanik Suhartatik
Poster nomor P-15 with poster entitled “Isolation and identification of Lactic Acid Bacteria Producing

β -Glucosidase from Indonesian Fermented Food”.

3. Andri Frediansyah

Poster nomor P-35 with poster entitled “The Effect of Consumption of Milk Fermented by *Lactobacillus casei* Shirota (Commercial Yakult Drink) on The Decrease of Student Anxiety Level”.



The first winner



The second winner



The third winner



Favourite poster

Figure 21. winner of best and favourite poster

The winner of favourite poster is:

Prima Nanda Fuziah

Poster nomor P-13 with poster entitled “The Effectiveness of Lactic Acid Filtrate and Bacteriocins of *Lactobacillus bulgaricus* KS1 Strain Against The Growth of *Klebsiella pneumoniae* ATCC 700603, CT1538 and S941 Strains”



Figure 17. All Participants and All Committees

Addition :

Social gathering, dinner, music and dance performance (Figure 18) were held in the first day of conference after parallel session.





Figure 18. Social Gathering and Music Performance

Summary

Overall, this conference got a high response and much attentions from scientific societies. It was showed with a lot of International or National participants who were attended, a lot of questions they gave, and also a lot of participants who submitted the poster assesment form in poster session. Moreover, There were 107 forms of ISLAB new member update were submitted. It was revealed high anthusiasm of participants toward this conference. Therefore, we hope that this conference was able to facilitated dissemination of new research achievement and exploration of novel function of lactic acid bacteria for all concerning directions, such as researcher, doctor, student, industry, and others scientific societies.

Report by ISLAB Coordinator

