Transformation Towards The Ultimate

Host in collaboration: Patpi, Kampus Merdeka Indonesia Jaya, IUFoST Strengthening Global Food Science and Technology for Humanity

International Conference on Food Technology, Nutrition and Sustainable Agriculture

FTNSA 2021

Virtual Conference, 30 September 2021

"Towards a Competitive Food Industry 4.0 on Food Technology, Nutrition and Sustainable Agriculture"

Welcome speech:

Dr. Muryanto Amin, S.Sos., M.Si
Rector of Universitas Sumatera Utara
Indonesia

Opening speech:

Prof. Dr. Ir. Umar Santoso, M.Sc
President of IAFT (PATPI)
Indonesia

Prof. Dr. Aman Wirakartakusumah
President-elect of IUFoST
Presiding Officer IAFoST
Indonesia

Lake Toba

Prof. Shyam S. Sablani, Ph.D.
Washington State University
United States

Prof. Claire Gaiani
University of Lorraine
France

Assoc. Prof. Dr. Santad Wichienchot
Prince Songkla University
Thailand

Prof. Benu Adhikari
RMIT University
Australia

Scopes

Food Process and Technology,
Food Safety, Food Security,
Food Engineering,
Food Product Development,
Food Biotechnology,
Halal Food, Functional Food,
Nutrition and Health,
Biosystem and Bioprocess,
Other Related Subjects.

Registration Rate

Status	Category	Rate
Local	Students	1,750,123 IDR*
	Researcher	2,250,123 IDR*
International	Students	150 USD*
	Researcher	200 USD*
Participant	Public	200,123 IDR

*include publication fee

Patpi

Special Events**

Annual Meeting IAFT/PATPI
IAFT/PATPI Award 2021
***for member only*

Virtual Account

For author payment guideline, please visit our website in the menu **Registration Fee**

Important Dates

Full Paper Submission Deadline : 19 September 2021
Full Paper Acceptence Notification : 23 September 2021
Full fee paid before : 25 September 2021
Camera Ready Submission : 25 September 2021
Conference Date : 30 September 2021

Contact

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TALENTA Conference Series: Agricultural and Natural Resources (ANR)

Local Organizing Committee

Virtual Conference by: ZOOM Cloud Meeting

Patpi

IUFoST
Strengthening Global Food Science and Technology for Humanity

Transformation Towards The Ultimate

Kampus Merdeka
INDONESIA JAYA

International Conference on Food Technology, Nutrition and Sustainable Agriculture

FTNSA 2021

Towards a Competitive Food Industry 4.0 on Food Technology, Nutrition and Sustainable Agriculture

Virtual Conference, 30 September 2021
Medan, Indonesia

ZOOM Cloud Meeting

E3S Web of Conferences
*indexed by Scopus

Local Organizing Committee

STIPAP

Organized by:
Indonesian Association of Food Technologists (PATPI) Medan
Department of Food Science and Technology, USU
Magister of Food Science, USU
Magister of Animal Science, USU

FOREWORD

Chair of International Conference Food Technology, Nutrition, and Sustainable Agriculture (ICFTNSA) 2021

Good morning, good afternoon, good evening.

We are very pleased to be able to welcome those of you to the 1st International Conference on Food Technology, Nutrition and Sustainable Agriculture (ICFTNSA). ICFTNSA is held with the collaboration of Indonesian Association of Food technologist (IAFT) and Department of Food Science and Technology, Universitas Sumatera Utara Medan. This international conference aims to provide opportunities for academics, scientists, researchers and parties involved in determining policies, especially in the fields of food technology, nutrition and sustainable agriculture. The theme at this conference is "Towards a Competitive Food Industry 4.0 on Food Technology, Nutrition and Sustainable Agriculture". The topics to be discussed focus on Food Processes and Technology, Food Safety, Food Security, Food Engineering, Food Product Development, Food Biotechnology, Halal Food, Functional Foods, Nutrition and Health and other topics related to Food Science.

It is my pleasure to introduce you to the outstanding keynote speakers that have come from USA, France, Australia, Thailand and Indonesia, to share their knowledge and enhance our mental horizon. Today's conference has about 55 participants from over the country and overseas, namely:

1. Washington State University, USA
2. University of Lorraine, France
3. Royal Melbourne Institute of Technology (RMIT) University, Australia
4. Prince Songkla University, Thailand
5. Wroclaw University of Environmental and Life Sciences, Poland
6. University of Tetova, North Macedonia
7. University of Zagreb, Croatia
8. University of Turku, Finland

9. Fraunhofer Institut, Germany
10. Center of Food and Fermentation Technologies (TFTAK), Estonia
11. National Academy of Sciences, Yerevan, Republic of Armenia
12. Agriculture University, Rawalpindi, Pakistan
13. National Chung Hsing University, Taiwan
14. Nong Lam University, Vietnam
15. Can Tho University, Vietnam
16. Nguyen Tat Thanh University, Vietnam
17. Vietnam Academy of Science and Technology, Hanoi, Vietnam
18. University of Natural Resources and Environment, Vietnam
19. The University of Education, Danang, Vietnam
20. Ho Chi Minh University of Food Industry, Ho Chi Minh City, Vietnam
21. Asian Institute of Technology, Pathum Thani, Thailand
22. Thailand National Sports University, Yala, Thailand
23. Agency for the Assessment and Application of Technology (BPPT), Indonesia
24. Universitas Sumatera Utara, Medan, Indonesia
25. Universitas Prima Indonesia, Medan, Indonesia
26. University Katolik Santo Thomas, Medan, Indonesia
27. Universitas Negeri Padang, West Sumatera, Indonesia
28. IPB University, Bogor, West Java, Indonesia
29. Riau University, Pekanbaru, Indonesia
30. Universitas Gadjah Mada, Yogyakarta, Indonesia
31. Universitas Sebelas Maret, Surakarta, Indonesia
32. Universitas Diponegoro, Semarang, Indonesia
33. University of Brawijaya, Malang, Indonesia
34. Jenderal Soedirman University, Purwokerto, Indonesia
35. Halu Oleo University, Kendari, Indonesia
36. STIKES Karya Kesehatan, Kendari, Indonesia
37. Padjajaran University, Jatinangor, West Java, Indonesia

38. Christian University of Indonesia Toraja, Tana Toraja, Indonesia
39. University of HKBP Nommensen, Medan, Indonesia
40. Institut Teknologi Surabaya, East Java, Indonesia

I would also like to express my sincere appreciation to all of you the local committee in Medan who gave their time and generously helped us make this event come together to become a success. Thank you for Committee from:

1. Universitas Katolik Santo Thomas
2. Universitas HKBP Nommensen
3. Universitas Muhammadiyah Sumatera Utara
4. Universitas Islam Sumatera Utara
5. Sekolah Tinggi Ilmu Pertanian Agrobisnis Perkebunan Medan
6. Politeknik Teknologi Kimia Industri Medan
7. Politeknik Kesehatan Kemenkes Medan
8. Politeknik Pembangunan Pertanian Medan
9. Universitas Nahdlatul Ulama Sumatera Utara Medan
10. Universitas Negeri Medan

We firstly expected that this conference can be held on site in Medan, so that we can also promote the beauty of our city. However, due to the Covid-19 pandemic, this virtual meeting is the best alternative to facilitate the communication among the scientists and make this event a truly international conference in spirit.

The major outcomes that we expect from this conference is a national and international framework for sharing knowledge and establishing collaborations to be able to develop innovations in food technology, nutrition and sustainable agriculture.

I would like to conclude my speech by encouraging the delegates to participate with all the activities and discussions through this digital platform. I wish everyone a successful, safe and fruitful conference.

Sincerely,

Dr. Ir. Hotnida Sinaga, M.Phil
Chair of ICFTNSA 2021

Rector of Universitas Sumatera Utara

Welcome to the first **International Conference on Food Technology, Nutrition, and Sustainable Agriculture,** organized by Indonesian Association of Food Technologists Medan, Department of Food Science and Technology; Magister of Food Science and Magister of Animal Science, Faculty of Agriculture, Universitas Sumatera Utara, North Sumatera, Medan.

Medan city is the capital city of North Sumatera consisting of people with different cultural and religious backgrounds. North Sumatra is located in the northern part of Sumatra Island, the province with the fourth largest population in Indonesia, after the provinces of West Java, East Java and Central Java. North Sumatra is also famous for its large plantations. The plantations are managed by private and state companies, producing rubber, cocoa, tea, oil palm, coffee, cloves, coconut, cinnamon and tobacco. These commodities have been exported to various countries and contributed greatly to Indonesia's foreign exchange. In addition to plantation commodities, North Sumatra is also known as a producer of horticultural commodities (vegetables and fruits).

Universitas Sumatera Utara campus is located in the center of Medan City, with an area of 120 ha. Currently, USU has more than one hundred and fifty study programs consisting of various levels of higher education, which are covered in 15 faculties and postgraduate programs. In addition, a new 300 ha campus is being developed which is located in Kuala Bekala, 15 km from the Padang Bulan Campus. The campus is used to support various research and experiments in agriculture, forestry, plantations, and animal husbandry. In an effort to develop itself as a wide-reaching university, Universitas Sumatera Utara manages an experimental garden covering an area of approximately 550 ha in Langkat.

ICFTNSA aims to provide opportunities for academics, and researchers to share knowledge and form networks and collaborations in the fields of agriculture, socio-economics, biosystem engineering, and food technology.

This meeting is then expected to increase awareness of the importance of sustainable agricultural systems, food technology and nutrition in facing the industrial era 4.0. Thus, ICFTNSA International Conference 2021 can bring together scientists and academics, and students to exchange research and knowledge, especially in the field of food, and can help create new innovations on an international scale. Then, the activities of this conference are very in accordance with the vision of Universitas Sumatera Utara, namely as *Being a university that has academic excellence as a barometer of scientific progress that can compete in the global world level*. In addition, this international conference is also in accordance with the strategic plan Universitas Sumatera Utara, namely carrying out teaching, research, and community service with the academic excellence of TALENTA, in the fields of Tropical Science and Medicine, Agroindustry, Local Wisdom, Energy (sustainable), Natural Resources (biodiversity, forest, marine, mine, tourism), Technology (appropriate), and Arts (ethnic).

I look forward to meeting you all in the next 2022 ICFTNSA conference. Hopefully the pandemic situation will subside, so that in the future we can meet in person. I wish you all the best and have a useful meeting.

Sincerely,

Dr. Muryanto Amin, S.Sos, M.Si
Rector of Universitas Sumatera Utara

President of Indonesian Association of Food Technologists (IAFT)

Distinguished guests, ladies and gentlemen…

First of all, I would like to welcome you all in this **International Conference on Food Technology Nutrition and Sustainable Agriculture (ICFTNSA) 2021.** This Virtual Conference is held by The **Indonesian Association of Food Technologists (IAFT)** hosted by the **IAFT Medan Branch** in collaboration with University of Sumatera Utara (USU), Medan. The purpose of this Conference is to provide a platform for exchanging experience and achievements in food research and development performed by researchers from IAFT members as well as non-members from domestic and other countries in the world. The outcome of this Conference is expected to be able to enhance the collaboration among researchers and between researcher or academician, industry and government and other stakeholders, and able to follow up their findings or invention to commercially success which in turn can contribute in strengthening national as well as global food security.

The theme of this Conference set by the Committee is *"Towards a Competitive Food Industry 4.0 on Food Technology, Nutrition and Sustainable Agriculture",* this theme is highly relevant with the current era of Industry 4.0 where food industry in our country is expected to steadily grow and can contribute in achieving national goal of food and nutrition security with sustainable agriculture. Industry 4.0 that emphasis on digital technology can empower business players to better control and understand every aspect of their operation, and allows them to leverage instant data to boost productivity, and drive growth.

This Conference is held on September 30th, 2021 completed with plenary and technical parallel sessions. Along with this Event, a Pre-Conference Workshop is held on September 29th , 2021 with a Topic of the Processing Technology of *Porang*. Also, in conjunction with this Conference, there is a program of the *Annual Meeting of IAFT (PATPI*) which is intended to provide a forum for direct communication and coordination between IAFT National and IAFT Branches around Indonesia.

May I take this opportunity to express my sincere gratitude to Rector of Universitas Sumatera Utara (Dr. Muryanto Amin, S.Sos, M.Si) for a great collaboration, and to invited speakers from abroad as well as Indonesia , moderators, steering committee, paper presenters, sponsors and all participants. High appreciation is awarded to Chairperson of IAFT (PATPI) Medan Branch (Prof. Dr. Elisa Julianti, M.Si), and to the Organizing Committee (Chaired by Dr. Ir. Hotnida Sinaga, M.Phil) and all committee members for their hard work to perform this enormous International Conference successful.

Finally, again, may I take this opportunity to extend my warm welcome to you all, I wish you have a fruitful success from this Conference.

Thank you.

Sincerely,

Prof. Dr. Umar Santoso, M.Sc
President of IAFT (*PATPI*)

President-Elect The International Union of Food Science and Technology

Rector University of Sumatera Utara
President of IAFST,
Chair of ICFTNSA
Dear participants, ladies and gentlemen,

Assallamualaikum wr wb,

Let me first thanks the organizer for inviting me to represent IAFoST and IUFoST in the opening ceremony of the International Conference of Food Technology Nutrition and Sustainable Agriculture 2021 Co hosted by USU and IAFST. It is indeed a great honor and pleasure to give this opening remarks. On behalf of IAFoST and IUFoST, I would like to congratulate you all for this conference. The conference is highly relevant with the global event where UN was holding a Sustainable Food System Summit last week, on September 23-24, 2021 in NY.

IAFoST is an International Academy of Food Science and Technology under the auspices of IUFoST, International Union of Food Science and Technology. Currently, I am the Presiding Officer or President of the Academy as well as the President-Elect of IUFoST.

The International Union of Food Science and Technology (IUFoST), a country-membership organisation, is the global voice of food science and technology. It is the only representative for the discipline of Food Science and Technology elected into the International Science Council (ISC) by its interdisciplinary peers. IAFST is a member of IUFoST and we call it as Adhering Body.

IUFoST **promotes the advancement of global food science and technology** through its education programmes, leadership opportunities, encouragement of young scientists, Industry innovation, workshops, regional symposia, international engagement with other global bodies.

IUFoST **fosters the worldwide exchange of scientific knowledge and ideas** through the biennial World Congress, IAFoST, books, proceedings, scientific journals, an on-line journal, regular Scientific Information Bulletins, monthly News Briefs, a newsletter and social media.

IUFoST aims to **strengthen food science and technology's role** in helping secure the world's food supply and eliminate world hunger by delivering programmes such as distance assisting training, workshops, and integrated food systems targeted to these needs.

The **International Academy of Food Science and Technology (IAFoST)** is an internationally recognised group of elected distinguished food scientists and technologists who collectively form a pool of scientific expertise in food science and technology from which IUFoST may draw non-aligned expert advice on scientific matters.

This is an honor for IUFoST and IAFoST to get involved in USU and IAFST International Conference. We are happy and proud to see how IAFST and Indonesia Food Science and Technologists active in various IUFoST programs and activities. The most recent participations are in the Early Career Scientists, and PhD Pitch Competition among young scientist held this month. From around 12 countries representing Africa, Asia, Europe, Latin America and North America, Indonesia was well represented by Dr Azis Sitanggang (IPB) and Miss Lilis Suryani (UGM), congratulations, we are very proud for you both.

Ladies and gentlemen,

The theme of the conference is very relevant with the issues on how food science technology and nutrition contribute to sustainable agriculture development as part of Sustainable Development Goals 2030. This is the reasons of Why UN was holding the summit meeting last week which was prepared since 2020. As FST organization IUFoST and IAFoST have been actively engaged in the various symposium, workshops, webinars, roundtables discussions in relation with the summit since end of 2019 until now.

There are several important and strategic events held by IUFoST and IAFoST in relation with UNFSS 2021. IUFoST held its 2nd Global Food Summit, in September 2020, to inform FS&T interventions in the lead up to the UNFSS and beyond.

IUFoST since March 2021 was accepted as an official partner of the Scientific Group of the UNFSS. IUFoST and IAFoST were invited to present in a special session during UNFSS SCIENCE DAYS DIALOGUE in July 2021.

Topics discussed in this events were: (1) Global Governance and the Role of Food Science and Technology for Sustainable Food Systems; (2) Food and Nutrition Security: Traditional Foods and Processes - Towards a Healthy Diet for all; (3) Food Science and Technology Education and Training for Capacity Building.

In addition to this, back in December 2019, IUFoST held a series of Round Table Discussions that covering several strategic issues such as: Climate Change and Food; Food Losses and Waste; China and Food Safety; Focus on Africa and the Near East; Strengthening and enabling food industry, Food Processing, and Food Packaging; Food Culture and Traditional Food; and Consumer Behaviour and the Healthy Diet.

After UN FSS 2021, for the next six months the follow up actions are in the hands of UN member countries and various supporting stakeholders including professional organizations such as IUFoST and IAFST. IUFoST itself will organize an International Forum on October 7, in which IUFoST members are presenting on their work specific to the SDGs and actions to compare and strengthen global food science and technology response and promote further action and policy attention.

Ladies and gentlemen,
As a reference on how are we going to move forward after the UNFSS? The UN Secretary General in his statements provide several agenda for actions: (1) Use an *Inclusive and Transformative Food Systems Nourish Progress to Achieve Zero Hunger where a People's Summit Focused on Solutions for People, Planet and Prosperity. (2) In Transforming Food Systems*, we need to *Stepping up and Going Further to Implement the Transformations Needed to Achieve the SDGs by 2030. (3) There are* Five action areas to help inform the transitions needed: Nourish all People; Boost Nature-based Solutions and Production; Advance Equitable livelihoods, Decent Works, and Empowered Communities; Build Resilience to Vulnerabilities, Shocks and Stresses; Support Means of Implementation (Finance; Governance; Science and knowledge; Innovation, Technology, and Data; Capacity, Human Rights).

Now, where is our role as science and technology organization? We are focusing on activities that produce innovation—science-driven innovation. The UNFSS Scientific Group recommending the following: (1) Innovations to end hunger and increase availability and affordability of healthy diets and nutritious foods;

(2) Innovations to de-risk food systems and strengthen resilience, in particular for negative emission farming and drawing on both, advanced science as well as traditional food system knowledge; (3) Innovations to overcome inefficient and unfair land, credit, labour, and natural resource use arrangements, and to facilitate inclusion of and empowerment and rights of women and youth and Indigenous Peoples; (4) Bioscience and related digital innovations for peoples' health, systems' productivity, and ecological wellbeing; (5) Innovations to keep – and where needed, regenerate – productive soils, land and water, and to protect the agricultural genetic base and biodiversity; (6) Innovations for sustainable fisheries, aquatic foods, and protection of coastal areas and oceans; (7) Engineering and digital innovations for efficiency and inclusiveness of food systems and empowerment of the youth and rural communities.

Specifically, on the role of FST, my observation suggests that as Food scientists and technologists we need to address several cross cutting issues in creating innovative solutions that also compliment to the above suggested innovations, such as (1) capitalizing culture for behavioral change on food diversification as a demand pull; (2) cascading Education and Food literacy to the right targets such as youth and gender; (3) focus for innovation to avoid and curb Food loss and Waste while safeguarding safety and nutrition values; (4) enabling and assuring for Local access and availability; (5) strengthening role of food science and technology in providing diversified foods throughout food chains system; (6) Institutional innovation for Incentives and disincentives on healthy diets; (7) innovation that create value added and circular economy in food industry.

Finally, let me once again thanks for this opportunity, it has been a great pleasure and honor for me to be with you this morning.

Wassallamualaikum wr wb,

Aman Wirakartakusumah
Jakarta, September 30th, 2021
Presiding Officer IAFoST, President-Elect IUFoST
Professor (Em) IPB University, IPMI International Business School

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SCHEDULE

Thursday, 30 September 2021		
Join Zoom Meeting **https://us02web.zoom.us/j/84717326873?pwd=eWtDN1cwdkRodDdMcFZYeU1BMG5jZz09** **Zoom Meeting ID : 847 1732 6873** **Passcode : 749770**		
Time (Indonesia WIB)	**Activity**	**Person in Charge**
Opening- MAIN MEETING ROOM		
07.30	Registration	Committee
08.00	MC Opening	Siti Basyariah P.L. and Nehemia A.Silalahi
08.05	Sing Indonesia Raya	Yulisa Utami
08.15	The Holy Prayers	Muhammad Dadi Irwansyah
08.25	Welcome Speech	**Dr. Ir. Hotnida Sinaga, M.Phil.** *Chair of ICFTNSA 2021*
08.31		**Dr Muryanto Amin S.Sos, M.Si** *Rector of Universitas Sumatera Utara*
08.41	Opening Speech	**Prof. Dr. Ir. Umar Santoso, M.Sc**. *President of Perhimpunan Ahli Teknologi Pangan Indonesia (PATPI))*
08.48		**Prof. Dr. Aman Wirakartakusumah** *President Elect of International Union of Food Science and Technology (IUFoST)and Presiding Officer of International Academy of Food Science and Technology (IAFoST)*
08.55	Book Launch	PATPI
Keynote Speeches and Discussion **(Session 1) Moderator : Prof. Dr. Yuli Witono, STP, MP**		
09.00	"Designing Microcapsules for Enhanced Oxidative Stability of Micronutrients"	**Prof. Shyam S.Sablani** (*Washington State University, USA)*
09.30	"The role of food technology in strengthening food security"	**Prof. Dr. Ir. Umar Santoso, M.Sc**. *(President of Perhimpunan Ahli Teknologi Pangan Indonesia (PATPI))*
10.00	"Starch-polyurethane hybrid as new biodegradable materials for food packaging application"	**Prof. Benu Adhikari** *(RMIT University, Melbourne, Australia)*
10.30 - 11.00	Discussion	
Technical Sessions 1 – Presenter based on the abstract number – BREAKOUT ROOM		

Technical Sessions 1 – Presenter based on the abstract number – BREAKOUT ROOM (11.00 – 12.10 WIB)					
Time (WIB)	**Room 1**	**Room 2**	**Room 3**	**Room 4**	**Room 5**
	Moderator: Mimi Nurminah, STP,M.Si	**Moderator: Prof.Ir. Usman Pato,M.Sc.,Ph.D**	**Moderator: Prof. Dr. Umi Purwandari,P.hD**	**Moderator: Dr. Ir. Satrijo Saloko, M.P.**	**Moderator: Era Yusraini, S.TP,M.Si**
	PIC: - **Amalia E. Wajhani** - **Naufal Hisyam**	**PIC:** - **Eka Y. Elfryani** - **Fahrul Azmi**	**PIC:** - **Audira Yasmin Afra** - **Irvan rajagukguk**	**PIC:** - **Michael Gunawan** - **Riza Dwi Ulfah**	**PIC:** - **Handy Kuwangga** - **Yulisa Utami**
11.01 - 11.08	14355	14967	14260	14197	14925
11.10 - 11.17	15103	14278	15130	14386	15160
11.19 - 11.26	14577	14632	15145	14349	15185
11.26 - 11.35 Discussion					
11.35 - 11.42	14237	14173	15155	14265	14939
11.44 - 11.51	14240	15173	14964	14357	15187
11.53 - 12.00	14629	14354	15049	14141	14171
12.00 - 12.09 Discussion					
12.10 - 13.30	Break				
Keynote Speeches and Discussion **(Session 2) Moderator : Prof. Dr. Ir. Zulkifli Lubis, M.App.Sc**					
13.30	"Functional Food: Probiotics and Prebiotics"		**Assoc. Prof. Santad Wichienchot** (Prince of Songkla University, Thailand)		
14.00	"Crossing the bridge between food powders properties and processes (drying, transport and storage)"		**Prof. Claire Gaiani** (University of Lorraine, Nancy, Lorraine, France)		
14.30 – 15.00	Discussion				
Technical Sessions 2 – Presenter based on the abstract number – BREAKOUT ROOM					

Technical Sessions 2 – Presenter based on the abstract number – BREAKOUT ROOM (15.01 – 16.10 WIB)				
Time (WIB)	**Room 6**	**Room 7**	**Room 8**	**Room 9**
	Moderator: Dr.-Ing Azis Boing Sitanggang	**Moderator: Dr. Ir. Erika Pardede,M.App.Sc.**	**Moderator: Dr. Nauas D.M.Romauli, STP,M.Eng**	**Moderator: Dr. techn. Marini Damanik, M.Si**
	PIC: - **Wahyu M. Fathan** - **Giorina S. A. Sirait**	**PIC:** - **Michael P. J. Ricardo** - **Putri Rahmadhani**	**PIC:** - **M. Dadi Irwansyah** - **Anastasya R. Erde**	**PIC:** - **Syahdinda Barokah** - **Taufik Akbar Saragih**
15.01 - 15.08	15179	14896	14110	14151
15.10 - 15.17	14230	14712	15146	14377
15.19 - 15.26	15112	14469	14348	14928
15.26 - 15.35 Discussion				
15.35 - 15.42	14813	15295	14325	15264
15.44 - 15.51	14704	15213	15252	15039
15.53 - 16.00	15156	15297	15263	15261
16.00 – 16.09 Discussion				
16.10 – 17.00	MAIN MEETING ROOM			
	Presenter's Testimony			
	Conference Best Presenters Award Announcement		**Dr. Ir. Hotnida Sinaga, M.Phil.**	
	PATPI Award Announcement		**Prof. Dr. Ir. Giyatmi, MSi** and **Prof. Dr. Yuli Witono, STP, MP**	
	Closing Ceremony		**Prof. Dr. Yuli Witono, STP, MP**	

KEYNOTE SPEAKER

Prof. Shyam Sablani
Washington State University
USA

Shyam Sablani is a Professor of Food Engineering at Washington State University. He received his B.E. from National Institute of Technology, Raipur and M.S. from Indian Institute of Technology, Madras in Mechanical Engineering, and Ph.D. from McGill University, Montreal in Food Engineering. His current research interests include developing high barrier polymer packaging, and applications of materials science principles for understanding physical and chemical changes in dehydrated and frozen foods. His research contributed to improved understanding of the relationship between state/phase transitions and physico-chemical stability in order to design and formulate dehydrated and frozen foods with a higher nutritional content and longer shelf life. Dr. Sablani's research has informed the development of next-generation barrier packaging, which incorporate ethylene vinyl alcohol, metal oxide coated polyethylene terephthalate and oxygen scavengers. Dr. Sablani is a member of the Institute of Food Technologists, Society of Food Engineering, International Association of Food Protection, and Flexible Packaging Association. He has received US$3.5M of direct competitive extramural funds to support his research program, authored and coauthored more than 250-refereed journal papers and book chapters, and coedited a Handbook of Food and Bioprocess Modeling techniques. Dr. Sablani is a recipient of 2021 Frozen Food Foundation Freezing Research Award and 2016 Institute of Food Technologists Marcel Loncin Research Prize. He is currently Scientific Editor of Journal of Food Engineering.

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Designing microcapsules for enhanced oxidative stability of micronutrients

Shyam S Sablani

Biological Systems Engineering, Washington State University, Pullman, USA
Email: ssablani@wsu.edu

Abstract. Consumption of essential micronutrients and fatty acids is vital for healthy human development; however, these bioactive compounds can easily degrade upon exposure to oxygen, light, and moisture. Microencapsulation of these compounds could reduce their exposure to negatively influencing environmental stresses. Currently, selection of microcapsule wall materials and processing conditions are determined through a trial-and-error approach, consisting of lengthy storage studies and indirect evaluation methods. This research will discuss the development of a methodology to quantify the oxygen barrier properties of microcapsules. Flaxseed oil stained with a reversible, oxygen-quenching ruthenium dye was encapsulated using a variety of carbohydrate wall materials. The observed fluorescence decay was related to oxygen concentration and coupled to Fick's 2nd law for a sphere, whereby a material-specific effective oxygen diffusion coefficient was determined. This methodology provides both academic researchers and industrial manufacturers with a much-needed tool to evaluate their encapsulation materials and design encapsulated systems for maximum protection of micronutrients.

KEYNOTE SPEAKER

Prof. Claire Gaiani

University of Lorraine
France

Claire Gaiani is a Professor of food science at LIBio (Laboratoire d'Ingénierie des Biomolécules), University of Lorraine, France. She received her M.Sc from ENSAIA Nancy (Engineering School in Agricultural and Food Sciences), University of Lorraine and Ph.D in Food Science, Polytechnic National Institute of Lorraine, University of Lorraine. Her current research interests include physicochemistry (structure, targeting, formulation…) of food and more specifically the development of "functional foods". Her actual scientific activity addresses the stabilization of natural bioactive compounds (probiotics, glycans, polyunsaturated fatty acids, flavonoids…) into dairy powder vehicles through the mastering of various processes (namely, spray-drying, encapsulation, emulsification, gelification, coating or freeze-drying). Reverse engineering is performed for the implementation of powders with the desired functional properties. Prof. Gaiani is the author of more than 98 peer-reviewed articles, 8 book chapters and 1 patent, and she have given 59 international lectures (including 7 invited). Her hindex is 34 with 4400 citations. She was recognized as an IUF Junior Member for five years and the first junior member (under 40 years old) at the IUF coming from the field of food research since its establishment in 1991. She was also received for thirteen months as a Marie Curie Fellow at the University of Queensland (Brisbane, Australia) as part of the famous Prof. Bhesh Bhandari team, Marcel Loncin award (2011): food researcher prize awarded once a year by the ACIA (French Association for Engineers in the Food and Chemistry field), Research Award of the Lorraine Region (2015), and manage many industrial partnerships with leading international food companies (including Nestle, Lactalis, Bel, Bongrain, and Senoble).

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Crossing the bridge between dairy powders properties and processes (drying, transport and storage)

Claire Gaiani

LIBio (Laboratoire d'Ingénierie des Biomolécules), Université de Lorraine, France
Email: claire.gaiani@univ-lorraine.fr

Abstract. Biologically-derived powdered materials are involved in the manufacturing of many products available in the industry (cosmetics, food, pharmaceutics, etc.). They originate either from liquid conversion into powder by various techniques such as spray-, freeze-, drum-, belt-drying, or crystallization, or from size reduction of solid materials induced by grinding, milling or attrition. Among them, dairy powders are ingredients added to a large variety of products in order to improve nutritional, functional and sensory properties. However, drying, transport and storage conditions can strongly affect powder functional properties (i.e. reconstitution ability, flowability, caking, crystallisation, oxidation…). To explain these phenomena observed at the macroscopic scale, an exploration on a molecular scale with the use of Atomic Force Microscopy (AFM) may be particularly interesting. Powder surface is of upmost importance considering that the surface is the first layer in contact with water, air or steel. Therefore, most dairy powders properties are related to surface properties. It was shown that powder surface undergoes various local modifications of structure and molecular composition during processes and these changes may be responsible for the alteration of powder functional properties. Understanding these phenomena should allow to determine the optimal process conditions for preserving the original quality of milk powders. Therefore, I'll cross the bridge between dairy powders properties, processes parameters, transport and storage to highlight the latest insights.

KEYNOTE SPEAKER

Assoc. Prof. Santad Wichienchot, PhD.
Prince of Songkla University (PSU)
Thailand

Santad Wichienchot ia an associate Professor, Director of Center of Excellence in Functional Foods and Gastronomy, and Vice Dean for Research and Innovation, Faculty of Agro-Industry, Prince of Songkla University (PSU), Thailand. His research focuses on prebiotics, gut microbiota and functional foods. He is research program administrator, principal investigator and co-investigator of 35 completed research projects in last 13 years. He holds 12 patents and research collaboration with 8 companies. He has published 50 articles in peer-reviewed and internationally referred Food Science and Life Science Journals. He published 5 book chapters. Two book chapters entitled “Polyphenols from food processing by-products and their microbiota-gut-brain axis based health benefits” and “Dietary fibers: structural aspects and nutritional implications”, have been published this year 2021 by Elsevier and Springer Nature. He is invited speaker and participate in international conferences. He is currently serving as reviewer in several International Journals in Food and Health Science. Dr.Santad Wichienchot received his PhD. in Biotechnology with Food Science and Technology background. He had experience in research work on prebiotics and gut microbiota at University of Reading, UK during he was studying in PhD. and postdoctoral fellows.

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Functional Foods: Probiotics and Prebiotics

Santad Wichienchot

Center of Excellence in Functional Foods and Gastronomy, Faculty of Agro-Industry, Prince of Songkla University, Hat Yai, Songkhla, Thailand 90110
Email: santad.w@psu.ac.th

Abstract. Nutraceuticals, functional foods & drinks are rapidly growth according to the demand driven by consumers worldwide. Consumption of foods & drinks and dietary supplements containing bioactive compounds or active ingredients could improve on health beyond basic nutrition. Probiotic is live microorganisms that, when administered in adequate amounts, confer health benefits on the host. The most common probiotics are Bifidobacterium and Lactobacillus. Prebiotic is a non-viable food component that confers a health benefit on the host associated with modulation of the microbiota. A non-viable food component is mostly non-digestible and fermentable oligosaccharides or polysaccharides which have been shown on modulation of gut microbiome and improve gut health and well-being. Human gut microbiome revealed the relationship of human gut microbes, diet and health impact to non-communicable diseases (NCDs) such as obesity, diabetes, chronic kidney and degenerative diseases (NDs) such as Alzheimer's and Parkinson's. Bioactive compounds impact to gut health such as functional carbohydrates (including dietary fibre, resistant starch (RS), prebiotics), probiotics (beneficial microbes), and polyphenols. These bioactive compounds improve gut health by balancing of gut microbiota, production of short chain fatty acids (SCFA), vitamins, and useful metabolites and improve gastrointestinal physiology. Bifidobacterium animalis subsp. lactis (BB-12®), Lactobacillus rhamnosus (LGG®) and Lactobacillus casei strain Shirota are most common strains used in foods and nutraceuticals. The most common known prebiotics are inulin & oligofructose, fructooligosaccharide (FOS) and galactooligosaccharide (GOS). These prebiotics and probiotics could improve gut health by balancing microbiota, stimulation of immune system and improve regular bowel movement. During pandemic of Covid-19, probiotics, prebiotics and prebiotic-like polyphenols are potential active ingredients for immune boosting. Our research center has been extensively studied on prebiotics and gut health. These works included sources of prebiotics from fruits & vegetables and byproducts, novel production and purification methods and food applications. Some fruits and vegetables in Thailand showed potential source of prebiotics. Novel methods for production of GOS, FOS, IMO, XOS, DFO, KOG, GFO and oligoglucan have been published and patented. Prebiotic properties of these functional ingredients had been studied in fecal batch fermentation, colon model, animal model and clinical trial.

KEYNOTE SPEAKER

Prof. Benu Adhikari
Royal Melbourne Institute of Technology (RMIT) University
Australia

Benu Adhikari is Professor of Food Technology/Engineering at Royal Melbourne Institute of Technology (RMIT) University, Australia. He undertakes research in broad themes of food engineering including material science, processing and engineering including food packaging. He is also Manager of Higher Degree by Research (HDR) of Food Technology stream at RMIT. He has strong record of industry engagement in Australia and academic collaboration internationally. He has authored (co-authored) >340 scholarly publications and has H-index of 63 (Google Scholar). He also as continuous luck of teaching gifted Indonesian undergrad and postgrad students who undertake his Food Packaging and labelling course.

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Starch-polyurethane hybrids as new biodegradable materials for food packaging applications

Benu Adhikari

STEM|School of Science, STEM College, RMIT University, Melbourne, Australia
Email: benu.adhikari@rmit.edu.au

Abstract. Food packaging consumes about 70% of packaging materials of which about 42% is synthetic plastics. To date, the post-consumer-recycling of plastics stands 16% (Australia) which is not sustainable and also causes severe environmental issues. Increased application of natural biodegradable materials for packaging is also constrained due to their sensitivity to water, environmental moisture and underwhelming mechanical properties. In particular, natural bio-based packaging materials are currently unsuitable to be used as primary packaging in liquid and semi-solids foods. Thus, hybridising natural biopolymers with synthetic (yet biodegradable) materials can be suitable strategy in developing newer class of packaging materials for food packaging application. This presentation reports the outcome of research carried out in our laboratory in which both isocyanate and non-isocyanate polyurethanes (PUs) were chemically grafted with and/or physically incorporated into starch to produce starch-PU hybrid packaging materials. The process of synthesis, physicochemical properties including water repellence and biodegradability aspects of these hybrids will be presented in a snapshot manner.

KEYNOTE SPEAKER

Prof. Dr. Ir. Umar Santoso, M.Sc
Universitas Gadjah Mada
Indonesia

Umar Santoso is a professor at the Department of Food & Agricultural Product Technology, Faculty of Agricultural Technology, University of Gadjah Mada (UGM) Yogyakarta Indonesia. He was graduated BS from UGM in 1983, and got Master and Ph.D degree in food science & technology from Tokyo University of Agriculture, Japan in 1990 and 1996, respectively. His major is food chemistry with specific research interests of food antioxidant and halal food. He also concerns to food security and safety issues as well as traditional foods. He was a former Director of the Center for Food and Nutrition Studies (CFNS) UGM. Umar Santoso joined the ***Indonesian Association of Food Technologists (IAFT/ PATPI)*** since 1996 and experienced as a Chairman of PATPI Yogyakarta Branch. Currently, he is the President of IAFT. He has actively involved in scientific forum, some books have been written and many articles have been published in scientific international journals.

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The role of food technology in strengthening food security

Umar Santoso

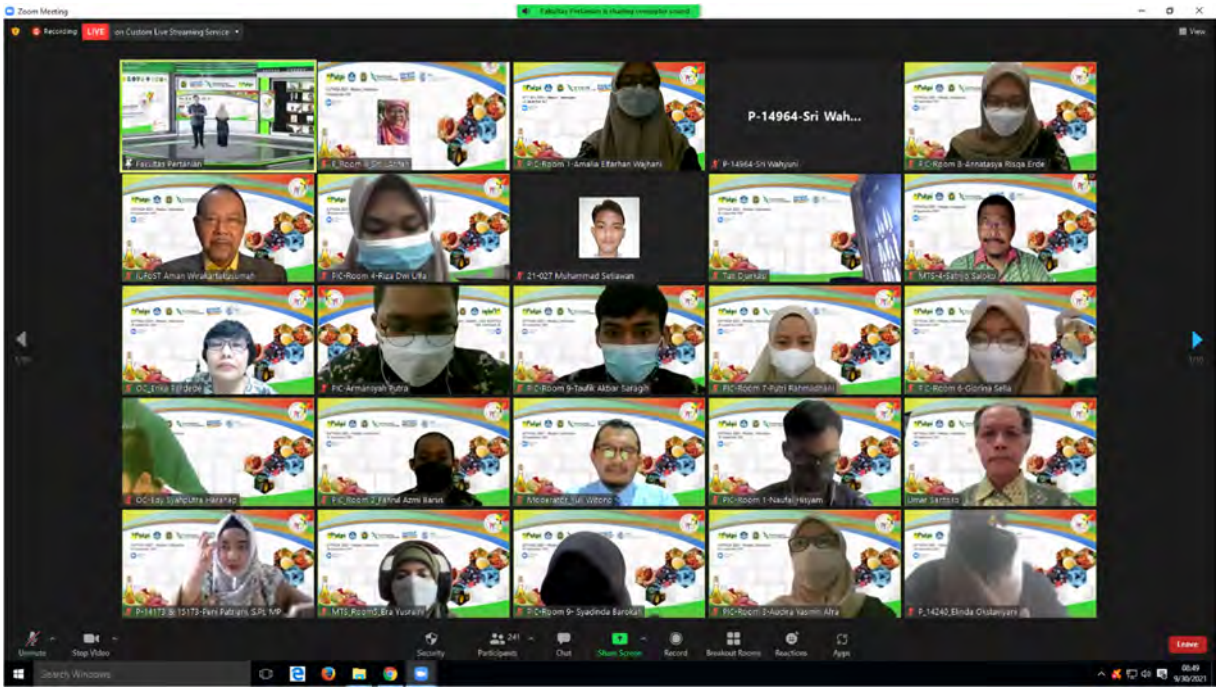
Department of Food & Agricultural Product Technology, Faculty of Agricultural Technology, Universitas Gadjah Mada, Yogyakarta, Indonesia
Email: umar_s@ugm.ac.id

According to FAO World Food Summit 1996, *food security* exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs for an active and healthy life. The main challenges in global food security today are the increasing of global food demand as the increase of population, diet changes, climate changes, clean water scarcity, decreasing land area and fertility, and the high food loss and food waste. An unpredictable situation due to natural disaster or severe outbreak like Covid-19 pandemic is also a big challenge to be anticipated. The global food need is huge and always increases as the population increases year by year. The current global population is recorded at 7,884,607,982 billion as of 2 October 2021, and in 2050 it will reach more than 9 billion people, meaning higher demand for available food, water, arable land and environmental impacts. An increased population and income growth in next 30 years is set to require an increase in food production by at least 70 per cent more than today. Food safety issues, nutrition deficiencies, postharvest losses, and consumer attitudes are all striking challenges which must be met in maintaining food security and sustainability. Indonesia is the greatest number four of the world population. The current population of this country is 277,209,043 as of Saturday, October 2, 2021, based on Worldometer elaboration of the latest United Nations data. It is predicted that in 2050 Indonesia population will reach more than 318 billion, it means that a heavy efforts must be exerted to cope this challenge. Possible solution for this gigantic challenge is by utilizing the food production in more efficient and by innovation especially technologically innovation in food security endeavours including in the production, distribution, and consumption/utilization aspects. Innovations in the food production to improve the availability including agricultural innovation, aquaculture, vertical farming, urban farming, GMO, high yield crops, new and unconventional food sources, and advanced biotechnology.

That of the distribution aspect are supply food chain technology that strengthening marketing and distribution channels to optimizing the food industry worldwide, technology to optimize and simplify food delivery mechanisms and systems, and online platforms to emerge in the food distribution network. Innovation in the utilization aspect including postharvest management system, fortification, advancements in food processing technologies (HiPEF, Ohmic, HPP), smart packaging, minimizing and valorization of food waste and so on. Some recent advancements in food science and technology including IoT based 3 Food Printing technology, Automated Grading Systems Like Aris' AQS-System, novel food resources including insect protein, Robo Chefs, laboratory grown meat, blockchain technology, and personalized nutrition system. Here food technology is essentially needed to support the technological innovation, and therefore it must be continually developed in this country. It is obvious that the advancements in food technology is able to strengthen food security. Food technology can also offer solutions to malnutrition. However, developing food technology should be prudent, and this must be accompanied by considering the possible undesirable impacts such as encountering to bioethics, humanity, belief, and social problem with destroying labour and increasing unemployment people.


INOVASI
TEKNOLOGI
PANGAN
MENUJU
INDONESIA EMAS
Kumpulan
Pemikiran Anggota PATPI
Patpi
IPB Press


Kampus Merdeka
Transformation Towards the Ultimate
Patpi
Sustainable Agriculture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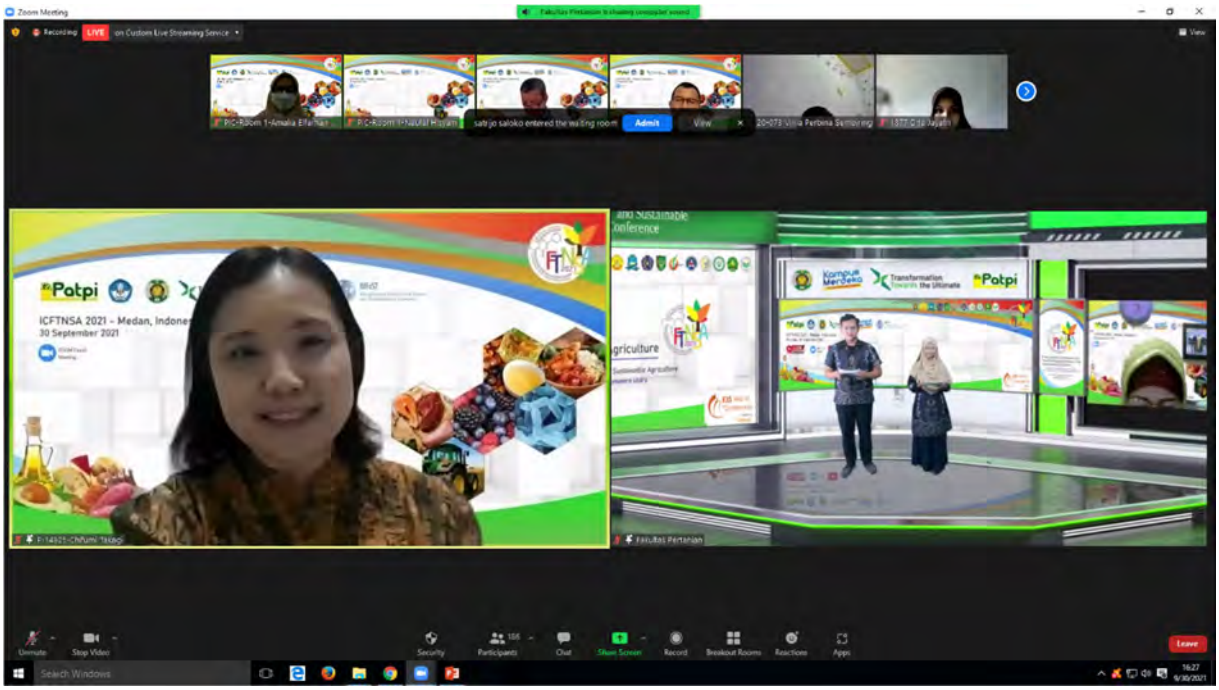
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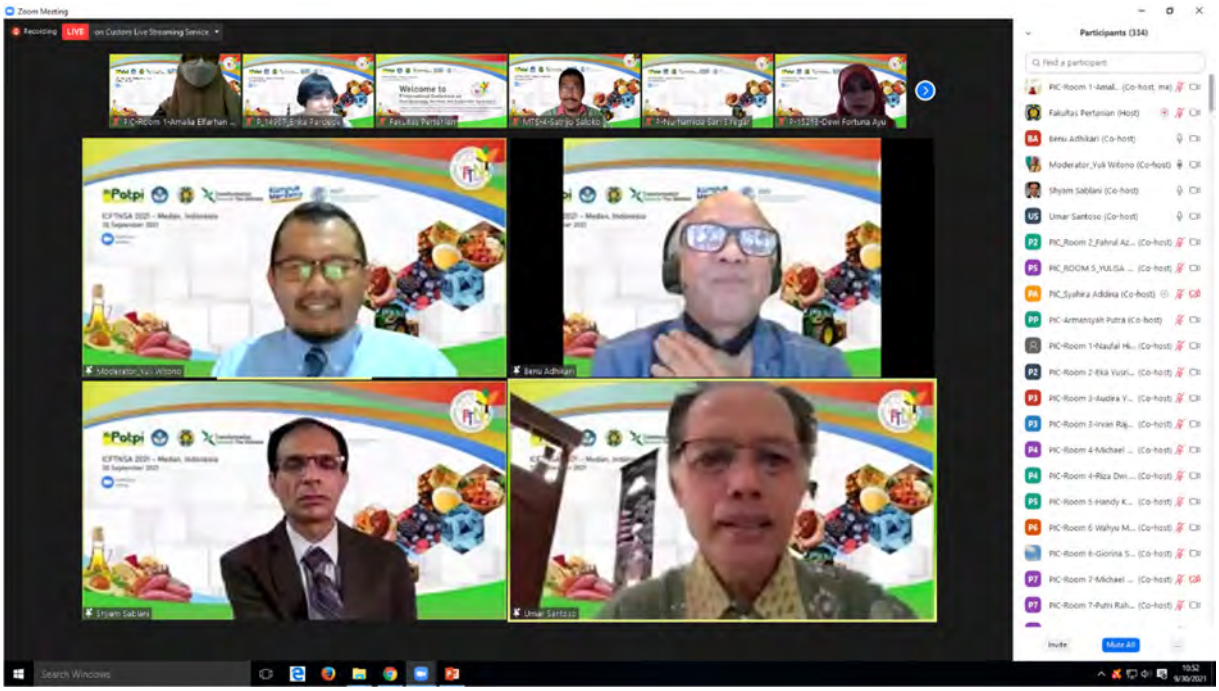
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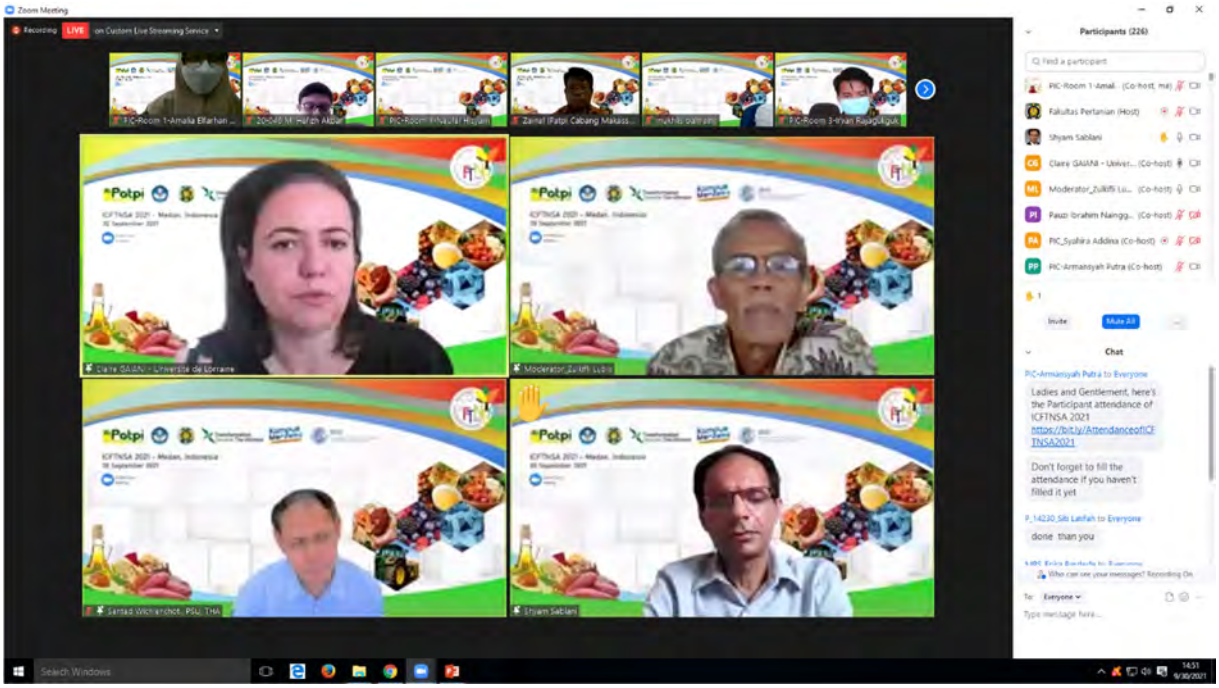
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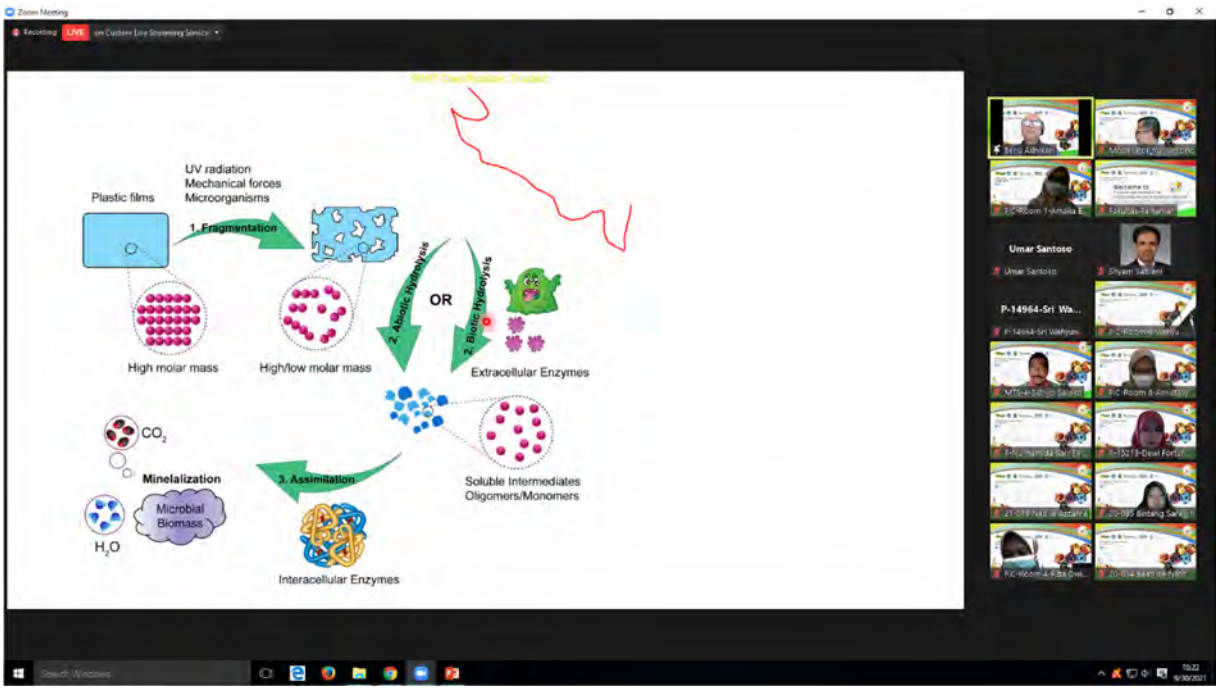
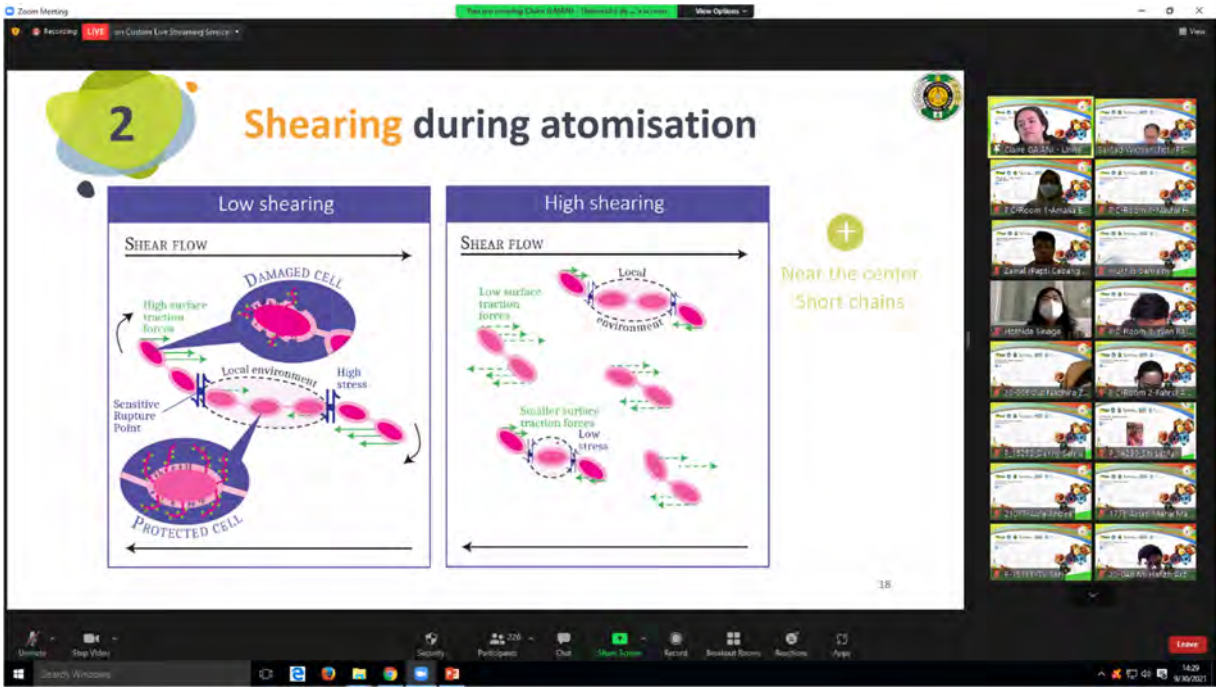
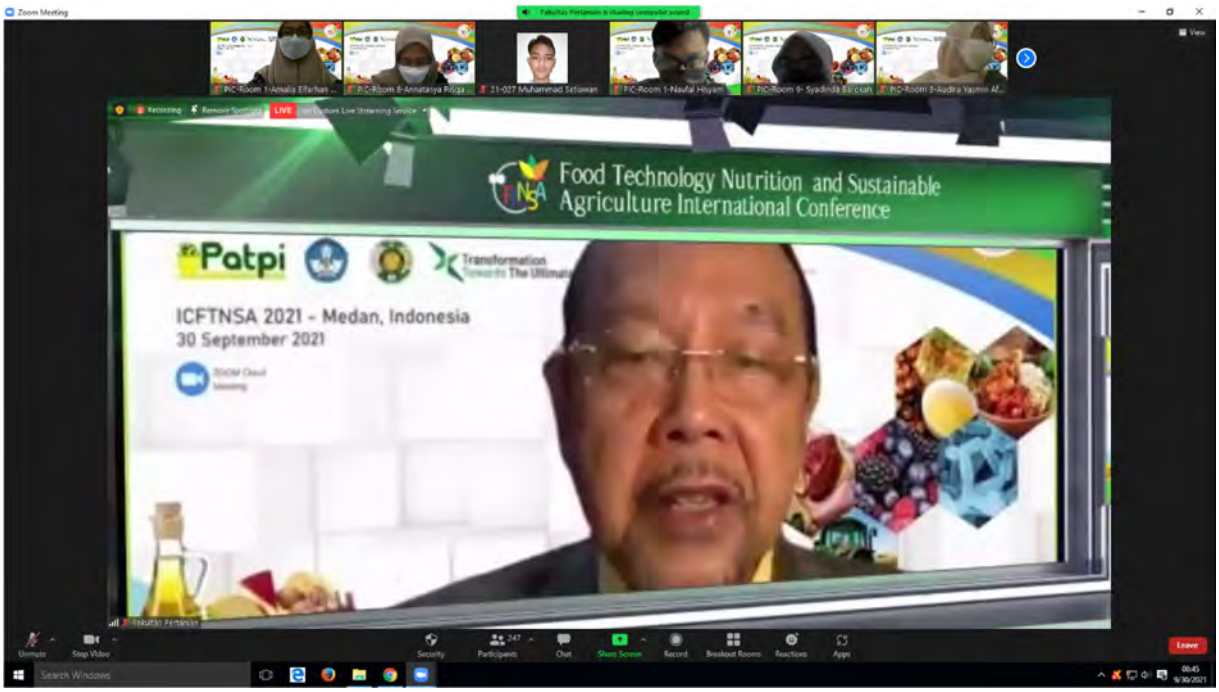
10
Trend of Research on Prebiotic
Inulin
Oligofructose
FOS
GOS
MOS
IMO
XOS
HMO (2' Fucosyllactose)
Digestive health
Metabolic syndrome
Immunity
Renal functions
Sport and athletic
Gut microbiome
Gut brain-axis
Neurodegenerative disease (Alzheimer, Parkinson)
Participants (213)


Plastic films
UV radiation
Mechanical forces
Microorganisms
1. Fragmentation
High molar mass
High/low molar mass
2. Abiotic Hydrolysis
OR
2. Biotic Hydrolysis
Extracellular Enzymes
Soluble Intermediates
Oligomers/Monomers
3. Assimilation
Interacellular Enzymes
Minelalization
Microbial Biomass
Umar Santoso


2
Shearing during atomisation
Low shearing
SHEAR FLOW
DAMAGED CELL
High surface traction forces
Local environment
High stress
Sensitive Rupture Point
PROTECTED CELL
High shearing
SHEAR FLOW
Local environment
Low surface traction forces
Smaller surface traction forces
Low stress
Near the center
Short chains
18


Designing Microcapsules for Enhanced Oxidative Stability of Micronutrients
ENCAPSULATION MATRIX
Carbohydrate, protein or a combination
ACTIVE INGREDIENTS
Micronutrients: vitamins, ω-3 or ω-6, flavors, etc. fatty acids
Shyam Sablani
Washington State University
Pullman, WA
International Conference on Food Technology, Nutrition and Sustainable Agriculture
Virtual Conference, 30 September 2021
INTERNATIONAL CONFERENCE
ICFTNSA 2021
Food Technology, Nutrition, and Sustainable Agriculture
1


Designing Microcapsules for Enhanced Oxidative Stability of Micronutrients
ENCAPSULATION MATRIX
ACTIVE INGREDIENTS
Shyam Sablani
Washington State University
Pullman, WA
International Conference on Food Technology, Nutrition and Sustainable Agriculture
Virtual Conference, 30 September 2021
1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30 September 2021


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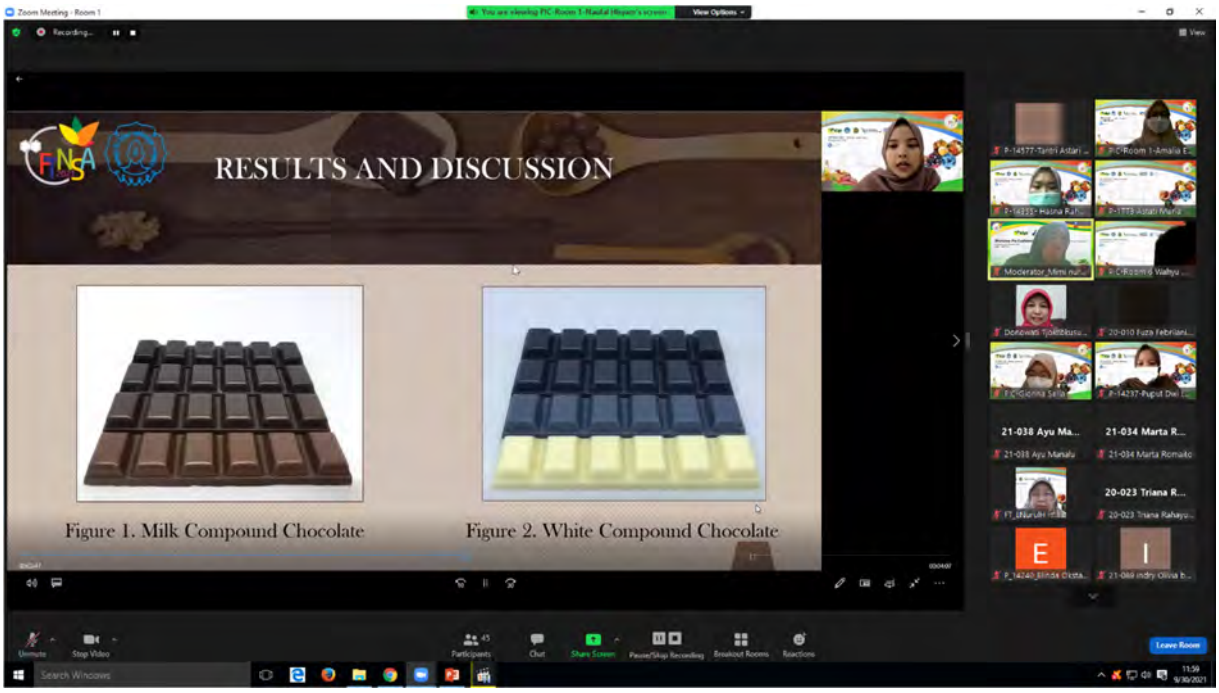
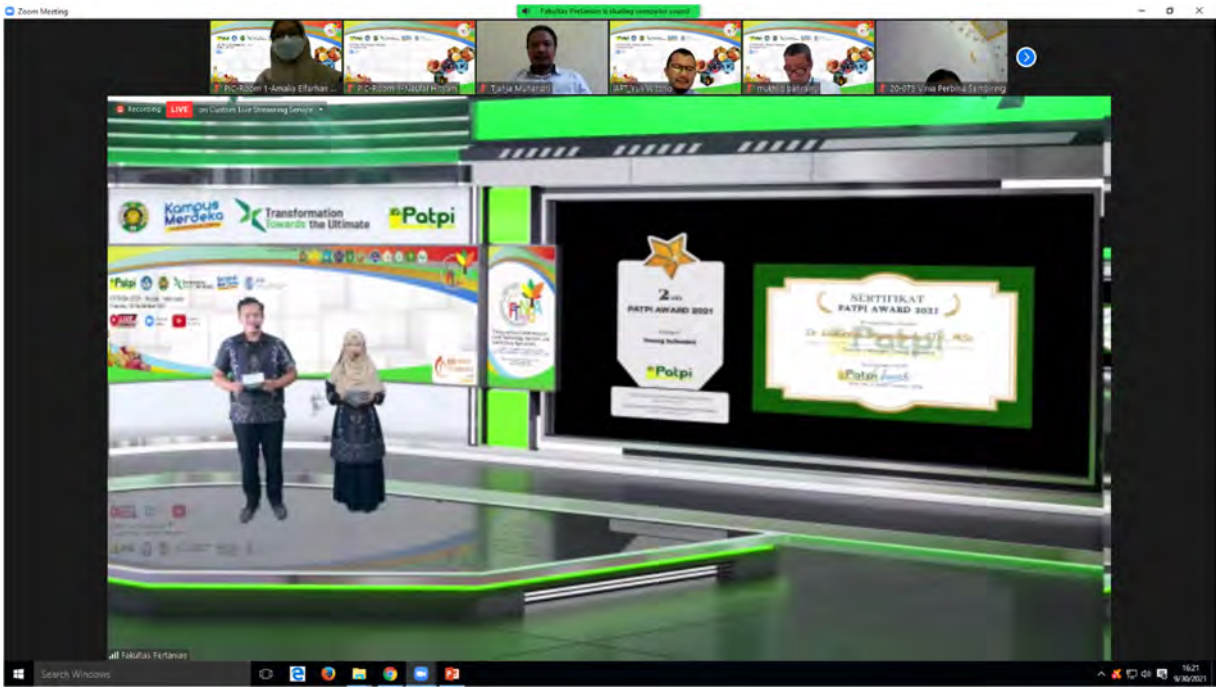

RESULTS AND DISCUSSION
Figure 1. Milk Compound Chocolate
Figure 2. White Compound Chocolate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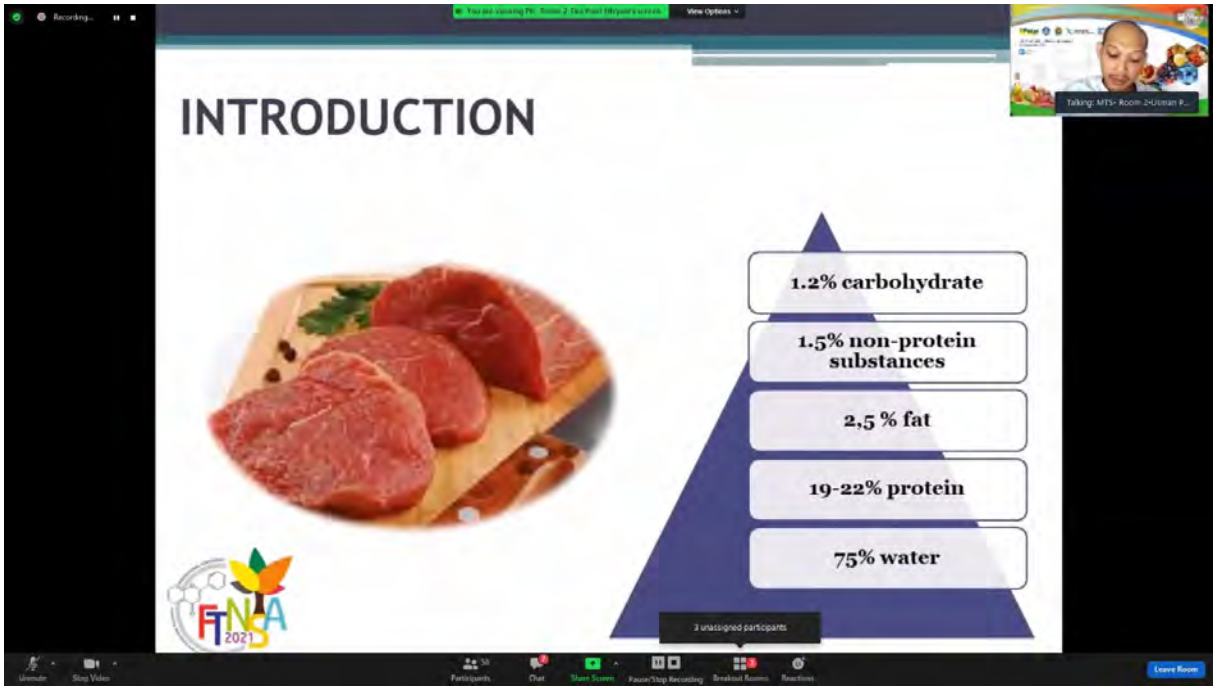
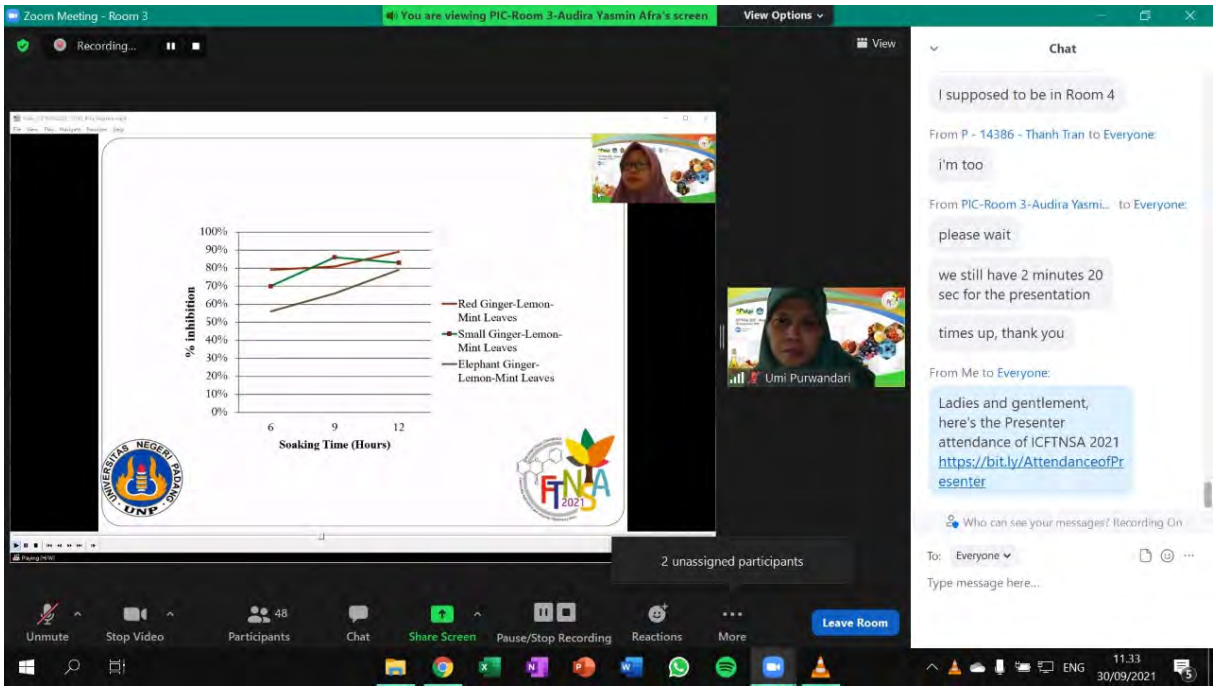
Kampus Merdeka
Transformation towards the Ultimate
Patpi
2nd
PATPI AWARD 2021
SERTIFIKAT
PATPI AWARD 2021


INTRODUCTION
1.2% carbohydrate
1.5% non-protein substances
2,5 % fat
19-22% protein
75% water
FTNA 2021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9
12
Soaking Time (Hours)
Red Ginger-Lemon-Mint Leaves
Small Ginger-Lemon-Mint Leaves
Elephant Ginger-Lemon-Mint Leaves
Umi Purwandari
2 unassigned participants
Chat
I supposed to be in Room 4
From P - 14386 - Thanh Tran to Everyone:
i'm too
From PIC-Room 3-Audira Yasmi... to Everyone:
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From Me to Everyone:
Ladies and gentlement, here's the Presenter attendance of ICFTNSA 2021 https://bit.ly/AttendanceofPresenter
Who can see your messages? Recording On
To: Everyone
Type message here...
Unmute
Stop Video
Participants
48
Chat
Share Screen
Pause/Stop Recording
Reactions
More
Leave Room
ENG
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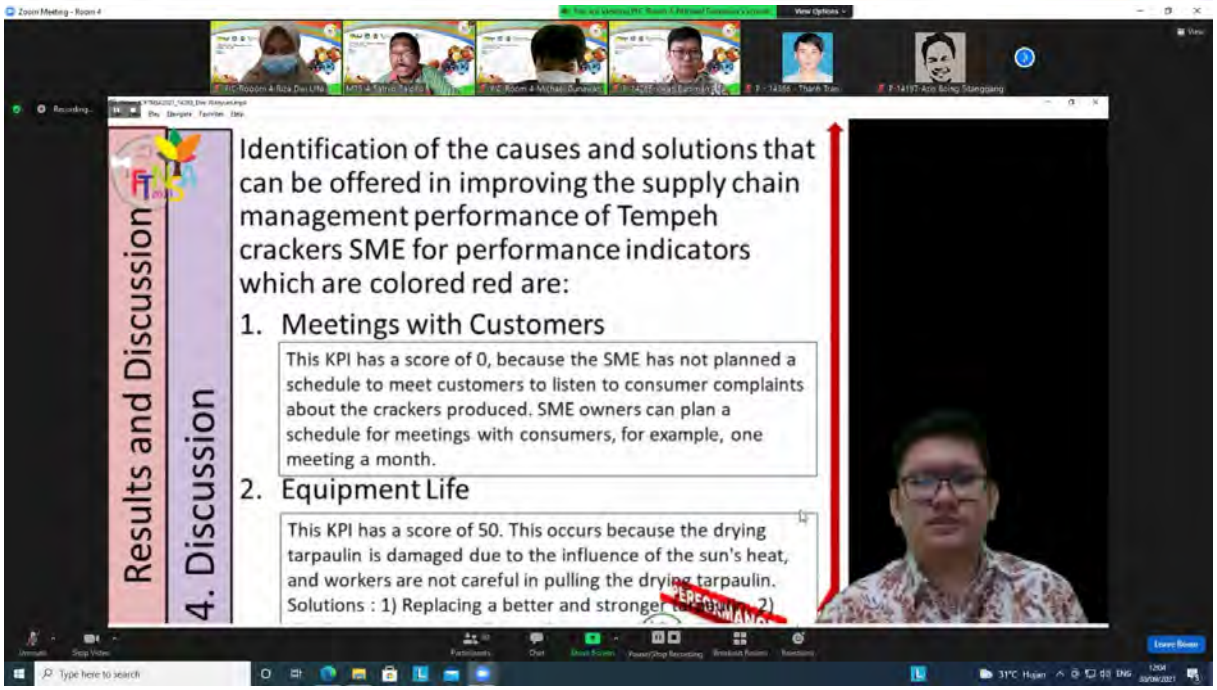
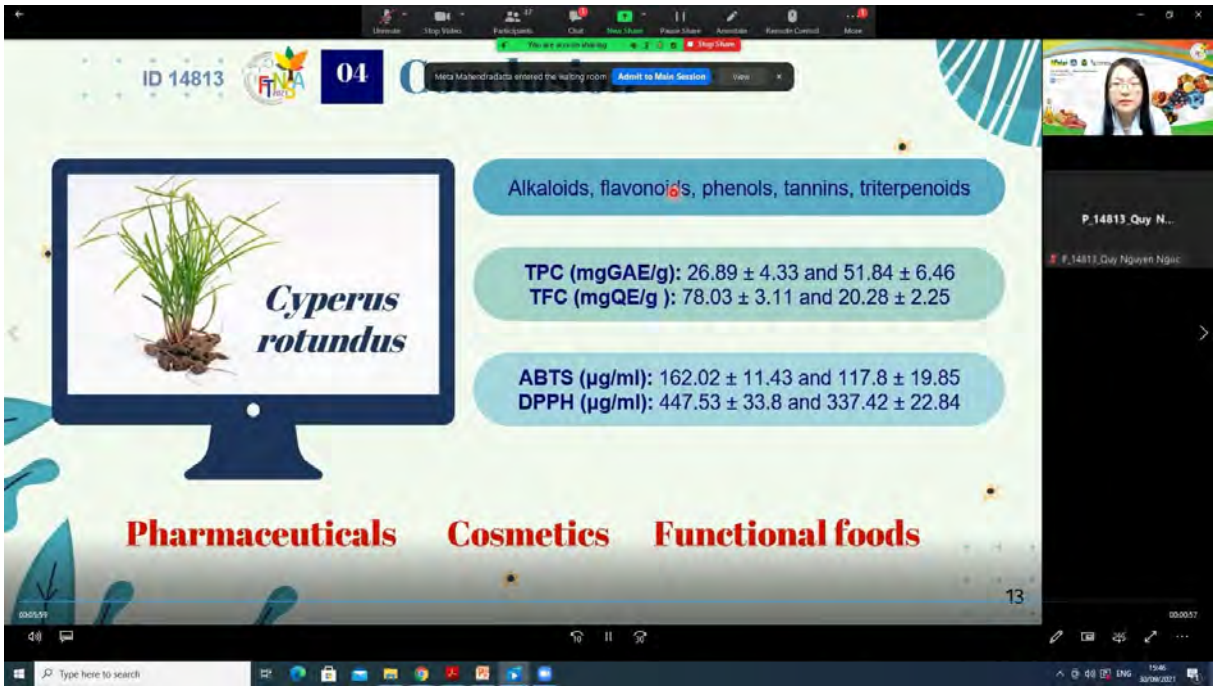
30/09/2021


Background
• Food certification is the method to ensure the safe and sustainable food
• Beneficial to both consumers (what, how and where food is produced) [
and producers (higher prices, access to global market, reputation, etc.) [
• In Taiwan, food labels are released by Taiwan Government Agriculture Ex
Yuan. First introduced on organic products in 1986.
• Food choice is affected by quality and price. [7, 8, 9]
• Previous studies was conducted in China, EU countries and USA. [10, 11]
• In Taiwan, studies evaluated foreign certification (USDA organic or UTZ) [
Taiwan local food certifications is limited


4. Discussion
Results and Discussion
Identification of the causes and solutions that can be offered in improving the supply chain management performance of Tempeh crackers SME for performance indicators which are colored red are:
1. Meetings with Customers
This KPI has a score of 0, because the SME has not planned a schedule to meet customers to listen to consumer complaints about the crackers produced. SME owners can plan a schedule for meetings with consumers, for example, one meeting a month.
2. Equipment Life
This KPI has a score of 50. This occurs because the drying tarpaulin is damaged due to the influence of the sun's heat, and workers are not careful in pulling the drying tarpaulin. Solutions : 1) Replacing a better and stronger
PERCOBAAN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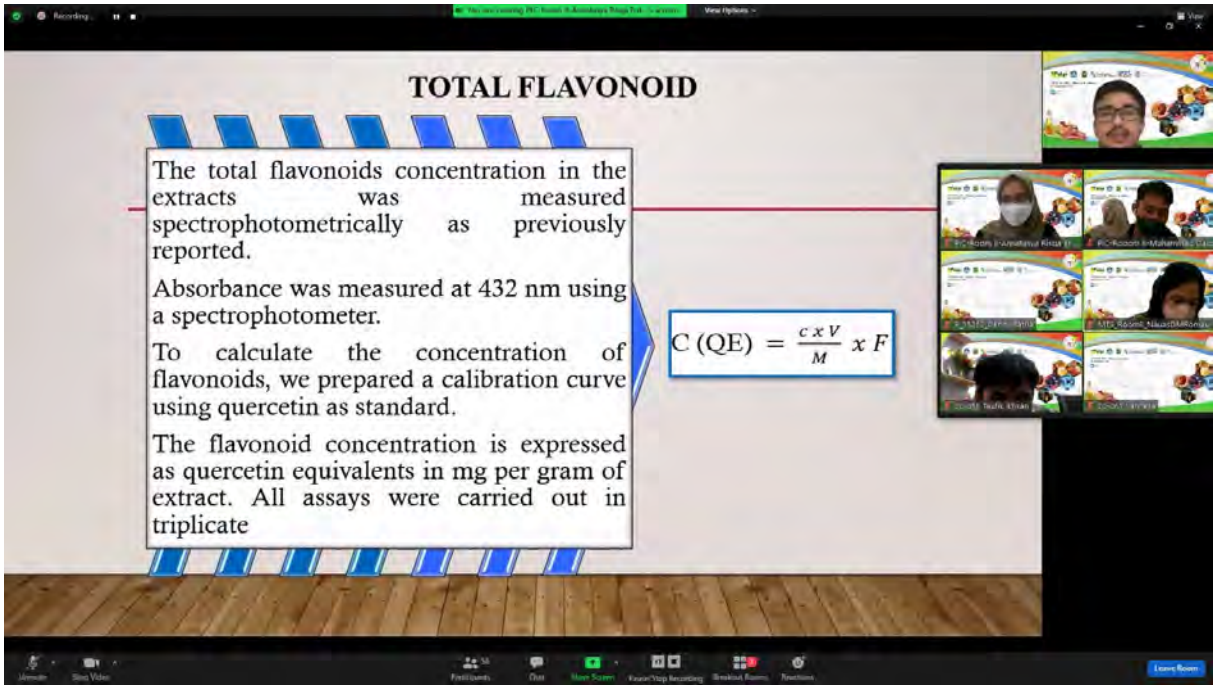
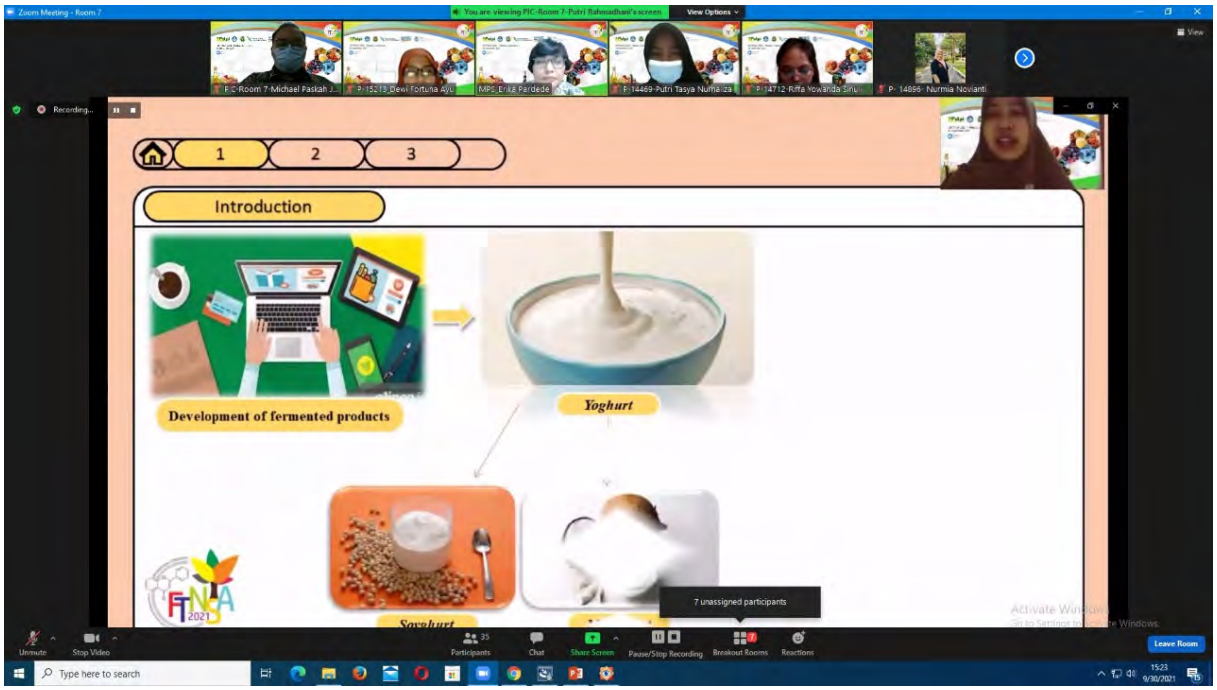
04
Admit to Main Session
Cyperus rotundus
Alkaloids, flavonoids, phenols, tannins, triterpenoids
TPC (mgGAE/g): 26.89 ± 4.33 and 51.84 ± 6.46
TFC (mgQE/g): 78.03 ± 3.11 and 20.28 ± 2.25
ABTS (µg/ml): 162.02 ± 11.43 and 117.8 ± 19.85
DPPH (µg/ml): 447.53 ± 33.8 and 337.42 ± 22.84
Pharmaceuticals
Cosmetics
Functional foods
13


TOTAL FLAVONOID
The total flavonoids concentration in the extracts was measured spectrophotometrically as previously reported.
Absorbance was measured at 432 nm using a spectrophotometer.
To calculate the concentration of flavonoids, we prepared a calibration curve using quercetin as standard.
The flavonoid concentration is expressed as quercetin equivalents in mg per gram of extract. All assays were carried out in triplicate
C (QE) = $\frac{c\,x\,V}{M}\,x\,F$


Zoom Meeting - Room 9
You are viewing PIC-Room 9-Taufik Akbar Saragi...'s screen
View Options
Participants (37)
Introduction
CANTHO UNIVERSITY
Sweet corn
• Starch base food
• high-energy
• micronutrient rich value-added food
• Main composition
✓ 5-6% sugar
✓ 10-11% starch
✓ 3% water-soluble polysaccharides
✓ protein and vitamin
Lactobacillus casei
- lactic acid bacteria
- GRAS
- health promotion effects
- yogurts, fermented milk, cheese,
12 unassigned participants
Chat
Mute All
Leave Room


Asma Sohail
Aids digestion
They reach the intestine alive.
It improves bowel movement
ProBioticS
They can be ingested as food.
They produce beneficial effect on health.
Prevent harmful bacteria from multiplying in the intestine.
13 unassigned participants
Leave Room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1
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Introduction
Development of fermented products
Yoghurt
Soyghurt
7 unassigned participants
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Participants
Chat
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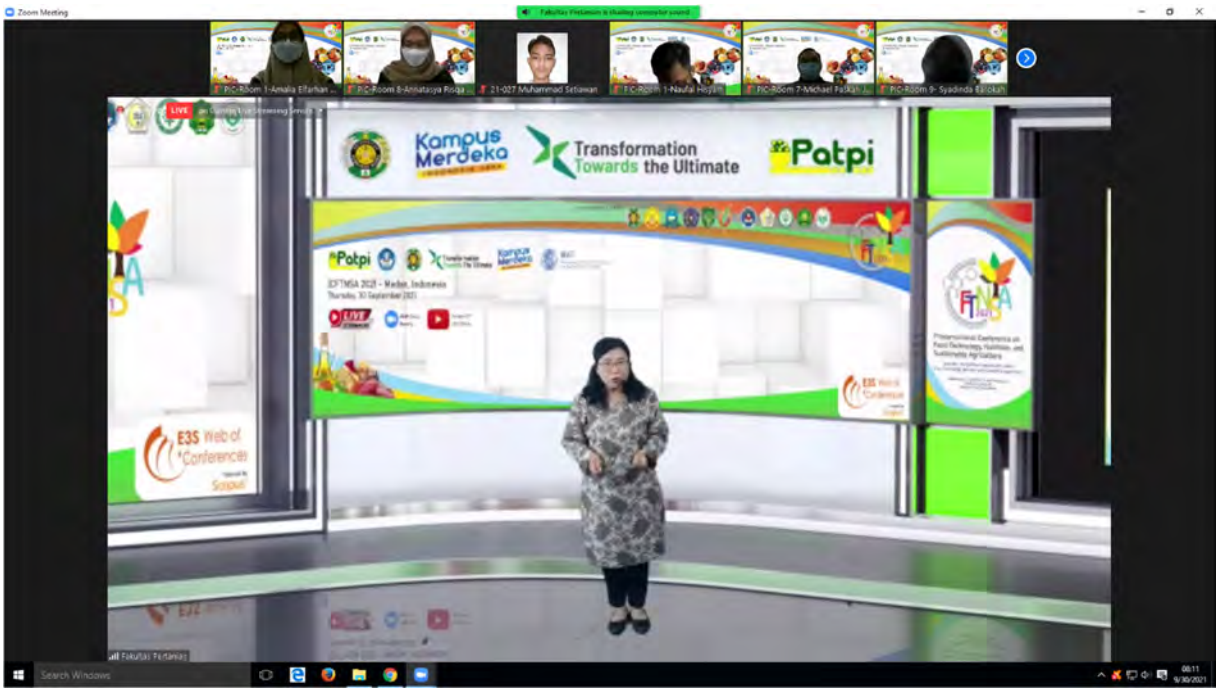
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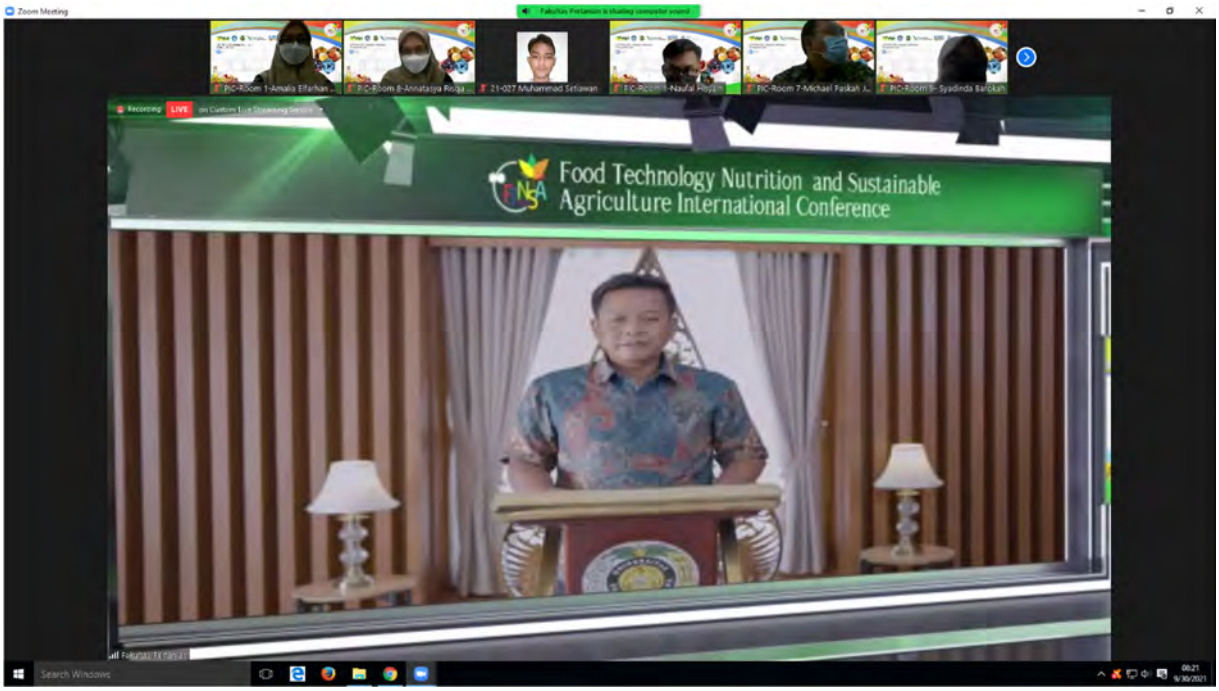
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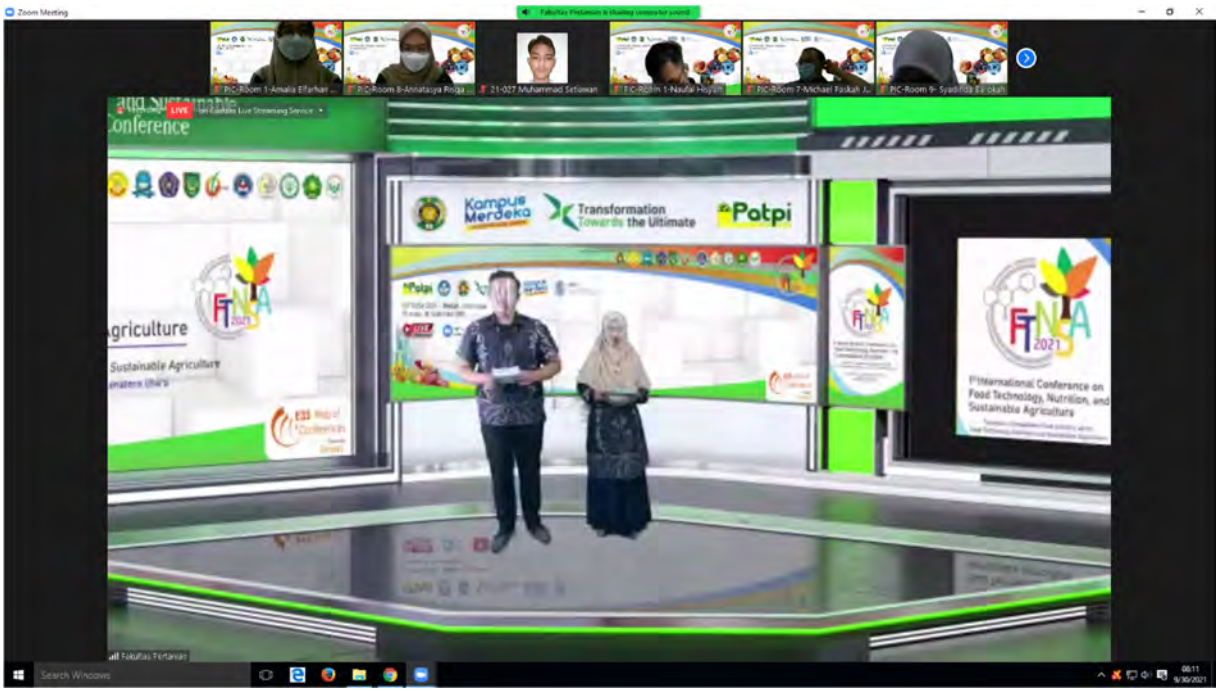
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International Conference on Food Technology, Nutrition, and Sustainable Agriculture

Youtube link

https://www.youtube.com/watch?v=5kkpFCg2Bcw

https://www.youtube.com/watch?v=YS3dgzRW-bU