

International Conference on Bioscience and Biorefinery 2021

Book of Abstracts



Valorization of Bioresources to
Create a Sustainable World

13-14 October 2021

Organized by:



PUSAT PENELITIAN
BIOSAINS & BIOTEKNOLOGI
INSTITUT TEKNOLOGI BANDUNG

SITH
Sekolah Ilmu dan Teknologi Hayati

WELCOMING REMARKS

On behalf of the Organizing Committee, I am very much honoured and delighted to welcome all honourable speakers and participants to the 1st International Conference of Bioscience and Biorefinery (IC2B) organized by Bioscience and Biotechnology Research Centre, ITB supported by School of Life Sciences and Technology, ITB and co-supported by International Islamic University Malaysia and University of Malaysia Terengganu. It is wonderful to have more than 300 speakers and participants from various universities, research institutes, government agencies and industries from Indonesia, Malaysia, Taiwan, Korea, Japan, Australia, The Netherlands, Switzerland, United Kingdom and United State of America.

We would like to express our sincere gratitude to all honourable keynote and plenary speakers who will share their vast knowledge and experience of frontiers research and recent developments in the field of agriculture, food and post-harvest technology, biodiversity and forestry, bioenergy, bioengineering and chemical engineering, bioinformatics and technology 4.0, biomaterial, biomedical science and engineering, biotechnology, nanotechnology, nutraceuticals and natural materials.

We are very grateful to the Steering Committee for great supports that allow the Organizing Committee to develop an engaging conference that feature keynote sessions, plenary sessions, parallel sessions, and creative poster sessions. We are also very thankful to the Scientific Committee we have helped a lot to review all the abstracts, full papers and creative posters. Our special appreciation to all moderators for their valuable contribution to chair all the sessions in this conference. We are also very much thankful to Institute of Research and Community Service of ITB, PT BUCHI Indonesia and PT Elo Karsa Utama for their generous supports to sponsor this conference. Last but not least, out utmost and sincere gratitude to all the participants that make this conference memorable.

Although this conference has to be carried out virtually due to the Covid-19 pandemic, we hope that the participants will be dazzled by all presentations and creative posters. We also hope that all of us can have stimulating and engaging discussions as well as creating new networks for future collaboration. Let's valorise to create a sustainable world.

Chairperson, IC2B 2021

Assoc. Prof. Dr. Muhammad Yusuf Abduh

WELCOMING REMARKS

Dear Distinguished speakers, participants, and guest

Ladies and Gentlemen,

It is our great pleasure to welcome you in the international conferences of bioscience and biorefinery (IC2B) which is organized by University Center of Excellence Nutraceutical, (PUI-PT Nutraceutical) Bioscience and Biotechnology Research Center (BBRC) Bandung Institute of Technology (ITB), Indonesia. We, in the BBRC are glad to host IC2B after successfully organized The Bandung International Conferences on Food and Health (BICFH 2019) attended by many scientists from around the world. In the IC2B, many prominent researchers from several countries in the field of bioscience, biorefinery and the related knowledges also join. Due to the pandemic covid-19, this year we are not able to host the conference offline. I believe this IC2B online conference will give speakers and participant great opportunities to share the knowledge and expertise as well as research experiences in related fields. In addition, this conference will strengthen collaboration network in bioscience and biorefinery research among participants.

Fast development of sciences and technology has provided good challenges to utilize natural sources for human welfare such as food, nutraceutical, medicine, and other health related products. Sophisticated and good quality of research have contributed to improve the quality of natural based products that could be continuously improve the quality of life. In this conference, we will learn from the speakers about the research finding and discovery.

PUI-PT Nutraceutical is one of University Centers of Excellence in Indonesia that would like to contribute to development of sciences in technology as well as the natural base products. The center has conducted researches; share knowledge and technology through conference, seminar, workshop, training; human research development, continuously learn from many other institutions, initiate and strengthen collaboration and other activities. Several scientists, researchers and students have been involving in the center. I do would like to invite the IC2B participants too.

IC2B has well prepared by the committee, I would like to thank all committee members and other contribution from partner institutions. Your contribution from beginning to arrange the conference is much appreciated. I believe all effort from the committee will makes the conferences extremely important.

I sincerely wish the IC2B 2021 will bring all participants to great scientific moment with fruitful discussion during the talks in keynote, parallel, invited, oral and poster session. We

do hope that the conference will be successful and your participation and contribution in the conference memorable and productive.

Sincerely yours,

Head of University Center of Excellence, Nutraceutical, Bioscience and Biotechnology
Research Center, Bandung Institute of Technology

Vice Dean of Academic Affair, The School of Pharmacy, Bandung Institute of Technology

Dr. apt. Elfahmi, M.Si

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PROGRAM SCHEDULE

Day 1, Wednesday, 13 October 2021

Time (GMT+7)	Event	Speaker
08.00 - 08.30	Registration	
08.30 - 08.40	Opening	Host
08.40 - 08.50	Welcoming remarks by Chief Organizer	Dr. Muhammad Yusuf Abduh
08.50 - 09.00	Welcoming remarks by The Head of Bioscience and Biotechnology Research Center (BBRC), ITB	Ir. Sri Harjati Suhardi, Ph.D
09.00 - 09.30	Keynote Speech 1	Prof. Ir. Nizam, M.Sc., DIC, Ph.D., IPU, Asean Eng - Director General of Higher Education, Research, and Technology
09.30 - 10.00	Keynote Speech 2	Dr. Ir. Fadry Djufry, M.Si - Head of Agricultural Research and Development Agency
10.00 - 10.25	Panel Discussion	Moderator: Dr. Ahmad Faizal
10.25 - 10.50	Plenary Speech 1	Prof. Dr. Robert Manurung (Indonesia)
10.50 - 11.15	Plenary Speech 2	Prof. Gil Garnier (Australia)
11.15 - 11.40	Plenary Speech 3	Prof. Dr, Ir. Hero Jan Heeres (Netherland)
11.40 - 12.05	Panel Discussion	Moderator: Dr. M. Yusuf Abduh
12.05 - 13.00	Break (Poster Exhibition)	
13.00 - 13.20	Plenary Speech 4	Prof. Hak Lae Lee (South Korea)
13.20 - 13.40	Plenary Speech 5	Prof. Wilhelm Gruissem (Switzerland)
13.40 - 14.00	Panel Discussion	Moderator: Dr. Ima Mulyama Z
14.00 - 16.00	Parallel Session	Oral Presenter
16.00 - 16.15	Closing	Host

Day 2, Thursday, 14 October 2021

Time (GMT+7)	Event	Speaker
08.20 - 08.35	Registration	
08.35 - 08.40	Opening	Host
08.40 - 08.50	Welcoming remarks by The Head of Science and Technology Center of Excellence	Dr. apt. Elfahmi
08.50 - 09.00	Welcoming remarks by Dean of School of Life Sciences and Technology	Dr. Endah Sulistyawati
09.00 - 09.30	Keynote Speech 3	Ir. Budi Gunadi Sadikin, CHFC, CLU - Minister of Health Affair Indonesia
09.30 - 10.00	Keynote Speech 4	Adriansjah Azhari, M.M. - Senior Executive Vice President R&D, PT. Biofarma
10.00 - 10.25	Panel Discussion	Moderator: Dr. Agus Dana P
10.25 - 10.50	Plenary Speech 6	Prof. Yoshiharu Matsuura (Japan)
10.50 - 11.15	Plenary Speech 7	Dr. Ernawati Giri Rachman (Indonesia)
11.15 - 11.40	Plenary Speech 8	Dr. Husna Nugrahapraja (Indonesia)
11.40 - 12.05	Panel Discussion	Moderator: Dr. Marselina Tan
12.05 - 13.00	Break (Poster Exhibition)	
13.00 - 13.20	Plenary Speech 9	Prof. Dr. Azura Amid, (Malaysia)
13.20 - 13.40	Plenary Speech 10	Prof. Chin Kun Wang (Taiwan)
13.40 - 14.00	Panel Discussion	Moderator: Dr. apt. Elfahmi
14.00 - 16.00	Parallel Session	Oral Presenter
16.00 - 16.15	Announcement and Closing	Host

KEYNOTE SPEECH

Day 1, Wednesday, 13 October 2021

Time (GMT+7)	Moderator	Event	Speaker	Topic
09.00 - 09.30	Dr. Ahmad Faizal	Keynote Speech 1	Prof. Ir. Nizam, M.Sc., DIC, Ph.D., IPU, Asean Eng (Director General of Higher Education, Research, and Technology)	Strategies for research and technology development to produce high value bioproducts for the development of a circular economy in Indonesia
09.30 - 10.00		Keynote Speech 2	Dr. Ir. Fadry Djufry, M.Si (Head of Agricultural Research and Development Agency)	Application of smart agricultural technology and innovation in the development of an integrated and sustainable agricultural sector
10.00 - 10.25		Panel Discussion		

Day 2, Thursday, 14 October 2021

Time (GMT+7)	Moderator	Event	Speaker	Topic
09.00 - 09.30	Dr. Agus Dana P.	Keynote Speech 3	Ir. Budi Gunadi Sadikin, CHFC, CLU (Minister of Health Affair Indonesia)	Collaboration between government, universities and industries to develop health technologies that can improve the quality of lives
09.30 - 10.00		Keynote Speech 4	Adriansjah Azhari, M.M. (Senior Executive Vice President R&D, PT. Biofarma)	Synergy between industries and universities in the development of an integrated and sustainable pharmaceutical sector
10.00 - 10.25		Panel Discussion		

PLENARY SPEECH

Day 1, Wednesday, 13 October 2021

Time (GMT+7)	Moderator	Event	Speaker	Topic
10.25 - 10.50	Dr. M. Yusuf Abduh	Plenary Speech 1	Prof. Dr. Robert Manurung (Institut Teknologi Bandung, Indonesia)	Valorization of Indonesian bioresources towards industrial symbiosis and circular bioeconomy
10.50 - 11.15		Plenary Speech 2	Prof. Gil Garnier (Monash University, Australia)	BioProducts, here, there, everywhere!
11.15 - 11.40		Plenary Speech 3	Prof. Dr, Ir. Hero Jan Heeres (University of Groningen, The Netherlands)	Valorization of biomass to produce biofuels and platform chemicals using the biorefinery concept
11.40 - 12.05		Panel Discussion		
13.00 - 13.20	Dr. Ima Mulyama Z	Plenary Speech 4	Prof. Hak Lae Lee (Seoul National University, Republic of Korea)	Nanocelluloses: New bioresource materials for future society
13.20 - 13.40		Plenary Speech 5	Prof. Wilhelm Gruissem (ETH Zurich, Switzerland and NCHU, Taiwan)	Improving nutritional qualities of rice and cassava for human health and industrial applications
13.40 - 14.00		Panel discussion		

Day 2, Thursday, 14 October 2021

Time (GMT+7)	Moderator	Event	Speaker	Topic Description
10.25 - 10.50	Dr. rer nat Marselina Tan	Plenary Speech 6	Prof. Yoshiharu Matsuura (Osaka University, Japan)	Challenges and opportunities in the development of Covid- 19 vaccine
10.50 - 11.15		Plenary Speech 7	Dr. Ernawati Giri Rachman (Institut Teknologi Bandung, Indonesia)	The development of Indonesian local COVID-19 vaccine in ITB
11.15 - 11.40		Plenary Speech 8	Dr. Husna Nugrahapraja (Institut Teknologi Bandung, Indonesia)	Reverse Vaccinology: A bioinformatics approach to accelerate the biomedical research
11.40 - 12.05		Panel Discussion		
13.00 - 13.20	Dr. Elfahmi	Plenary Speech 9	Prof. Dr. Azura Amid (International Islamic University Malaysia, Malaysia)	Development of high value natural products from tropical plants
13.20 - 13.40		Plenary Speech 10	Prof. Chin Kun Wang (Chung Sang Medical School, Taiwan)	Natural based nutraceuticals for improving human health
13.40 - 14.00		Panel discussion		

PARALLEL SESSIONS

Day 1, Wednesday, 13 October 2021

Breakout room	Paper ID	Time (GMT+7)	Title	Authors
1	71	14.00 - 14.15	Production of propolis and honey by <i>Tetragonula laeviceps</i>	Muhammad Yusuf Abdub, Annisa Shabrina, Andreas Raden Caman, Arsy Elia Pertiwi and Muhammad Insanu
	33	14.15 - 14.30	Effects of pH, dosage and contact time on phenol removal using baobab fruit shell activated carbon	Radhia Nedjai, Nasserdeen Ahmed Kabbashi, Md Zahangir Alam and Ma'an Fahmi Rashid Alkhatib
	45	14.30 - 14.45	Optimization of culture medium for bacteria cellulose production using <i>Komagataeibacter intermedius</i>	Katherine Kho, Putu Virginia Partha Devanti, Ferren Pratama, Mohammad J Taherzadeh and Solmaz Aslanzadeh
	29	14.45 - 15.00	Rhizomicrobiome engineering using the halotolerant N-Fixer-PGPR inoculant for increasing the N-fixers biodiversity, N-update and rice agronomic traits on saline soils	Tualar Simarmata, Toto Bustomi, Fiqriah Khumairah, Betty N Fitriatin and Mieke R Setiawati
	62	15.00 - 15.15	In vitro callus induction of <i>Plukenetia volubilis</i> (Sacha Inchi), a PUFA-Rich plant	Jasrina Mohd Jalil, Widya Abdul Wahab and Tamil Chelvan Meenakshi Sundram
	49	15.15 - 15.30	Hydrolytic enzyme producing bacteria from the gut of <i>Oryctes rhinoceros</i> larvae inhabiting household waste compost	Ni'Matuzahroh Ni'Matuzahroh, Moch. Affandi, Fatimah Fatimah, Ana Mariatul Khiftiyah, Silvia Kurnia Sari, Miftahul Jannah, Nastiti Trikurniadewi, Achmad Zainal Abidin, Nurul Wahyuni and Rizki Amaliah Zain
	47	15.30 - 15.45	Kinetic model of phytochemical compounds extraction from <i>Orthosiphon aristatus</i> using hydrothermal method	Nadya Rizkita, Daniel Jananto, Ferrel Hamonangan, Siti Machmudah, Sugeng Winardi, Wahyudiono and Motonobu Goto

	13	15.45 - 16.00	Nonthermal plasma over an aqueous solution surface for lignin valorization at atmospheric pressure	Wahyu Diono, Machmudah Siti, Hideki Kanda, Yaping Zhao and Motonobu Goto
2	Paper ID	Time (GMT+7)	Title	Authors
	14	14.00 - 14.15	Isolation of active compounds from propolis produced by stingless bees cultivated in a monitored environment using a reflux extraction method	Albert Setiawan, Ima Mulyama Zainuddin and Muhammad Yusuf Abduh
	16	14.15 - 14.30	Production of cellulase enzyme by solid state fermentation of groundnut shell (<i>Arachis hypogaea</i>) Using <i>Trichoderma</i> sp. and Tempeh yeast	Sitti Dhiffah Nabilah Abdul, Muhammad Yusuf Abduh and Khairul Hadi Burhan
	17	14.30 - 14.45	Cellulase production by solid state fermentation of groundnut shell (<i>Arachis hypogaea</i>) waste by <i>Trichoderma</i> sp.	Alfanny Putri Fadhilah, Khairul Hadi Burhan and Muhammad Yusuf Abduh
	2	14.45 - 15.00	Pectin extraction optimization using closed vessel microwave assisted extraction to synthesize amidated pectin polymeric surfactant of Pacitan Sweet Orange Peel (<i>Citrus sinensis</i> L. Osbeck cv. Pacitan)	Widya Dwi Rukmi Putri, Margaretha Hanna Tiffani, Aditya Wardana, Nisa Alfiasari, Elok Zubaidah and Kiki Fibrianto
	19	15.00 - 15.15	Lignocellulose degradation of cinnamon bark (<i>Cinnamomum burmannii</i>) by <i>Aspergillus awamori</i> to increase cinnamon oil yield	Dennis Avima, Abednego Kurio Widianto, Ravelian Yulianto, Rika Alfianny and Muhammad Yusuf Abduh
	22	15.15 - 15.30	Cellulase production by fungal mixed culture in solid state fermentation of groundnut shell (<i>Arachis hypogaea</i>) waste	Chalil Rizqullah Ramadhan, Khairul Hadi Burhan and Muhammad Yusuf Abduh
	24	15.30 - 15.45	Isolation of essential oil from <i>Zingiber officinale</i> through hydrodistillation and pre-treatment with <i>Aspergillus niger</i>	Izzatunnisaa, Khalilan Lambangsari and Muhammad Yusuf Abduh
	28	15.45 - 16.00	Isolation of essential oil from <i>Zingiber officinale</i> through steam distillation and pre-treatment with <i>Aspergillus niger</i>	Raihannisa Rizqi Meutia, Khalilan Lambangsari and Muhammad Yusuf Abduh

Breakout room	Paper ID	Time (GMT+7)	Title	Authors
3	3	14.00 - 14.15	Enhancement of turmeric oil extraction by solid-state rhizome fermentation using <i>Aspergillus</i> sp.	Yohanes Theda, Asri Ifani Rahmawati, Tinta Komariyah and Muhammad Yusuf Abduh
	37	14.15 - 14.30	Pre-treatment of spearmint leaves (<i>Mentha spicata</i> L.) with <i>Aspergillus awamori</i> to increase essential oil yield	Tjokorda Istri Indira, Mochamad Firmansyah, Agus Dana Permana, Robert Manurung, Ula Aulia Fitriani and Muhammad Yusuf Abduh
	41	14.30 - 14.45	Optimization of maceration conditions for ethanolic extract of <i>Moringa oleifera</i> leaves applying Box-Behnken design of experiment	Dyah Nurasri Darmastuti Purboyo, Mochamad Firmansyah, Lili Melani, Marselina Iraseonia Tan, Anggraini Barlian, Popi Septiani, Husna Nugrahapraja, Nayla Majeda Alfarafisa and Ahmad Faizal
	42	14.45 - 15.00	Recovery of ammonium nitrogen from urea fertilizer plant wastewater using struvite crystallization stirred tank reactor modification	Raudhatul Ulfa, Izarul Machdar, Suhendrayatna Suhendrayatna and Yunardi Yunardi
	12	15.00 - 15.15	Isolation of active compounds from propolis produced by stingless bees cultivated in a monitored environment using a maceration method	Fahmi Ramdhani, Ima Mulyama Zainuddin and Muhammad Yusuf Abduh
	11	15.15 - 15.30	Isolation of essential oil from <i>Zingiber officinale</i> through maceration and pre-treatment with <i>Aspergillus niger</i>	Adrian Sinaga, Khalilian Lambangsari and Muhammad Abduh
	58	15.30 - 15.45	Lipid content and morphology of <i>Skeletonema costatum</i> on nutrient N and Si stress	Tutik Nurhidayati, Wahyu Osi Diana Putri, Hery Purnobasuki, Wirdatul Muslihatin and Kristanti Indah Purwani
	59	15.45 - 16.00	Cultivation of black soldier fly larvae to produce fishmeal and fertilizer	Rian Fiqraini, Kelvin Alfianza, Yasrizza Nanda, Rijanti Rahaju Maulani and Muhammad Yusuf Abduh

Breakout room	Paper ID	Time (GMT+7)	Title	Authors
4	60	14.00 - 14.15	Integrated cultivation of tomato with <i>Tetragonula laeviceps</i>	Tjokorda Istri Indira, Robert Manurung, Rijanti Rahaju Maulani, Aep Supriyadi, Khairul Hadi Burhan, Mochamad Firmansyah, Diah Nofitasari and Muhammad Yusuf Abduh
	25	14.15 - 14.30	Enrichment of growing media using biochar, compost, and nano-silica for the cultivation of <i>Oryza sativa</i> L. at Sumedang, Indonesia	Elizabeth Widiasri, Diah Nofitasari, Rijanti Rahaju Maulani, Khalilan Lambangsari, Robert Manurung and Muhammad Yusuf Abduh
	90	14.30 - 14.45	Phytoremediation of chromium using napier grass (<i>Pennisetum purpureum</i>) in horizontal subsurface flow constructed wetland	Taufik Taufikurahman, Lili Melani, Natasha Lumongga Hugo Sianturi, Ni Komang Devi Amrita Wirawan and Aisyah Fairuz Saifullah
	91	14.45 - 15.00	A comparison on growth of <i>Spirulina platensis</i> and <i>Nannochloropsis</i> sp. in mixed culture and monoculture using aquaculture wastewater as growth medium	Fathan Assabiqi, Isna Annisa, Muhammad Prawira, Taufik Taufikurahman and Lili Melani
	73	15.00 - 15.15	Effect of drying on the yield of essential oil extracted from the peel of Rimau Gerga Lebong	Rian Figraini, Khalilan Lambangsari and Muhammad Yusuf Abduh
	74	15.15 - 15.30	Drying of vanilla (<i>Vanilla planifolia</i> Andrews) in a simple drying system with incandescent light treatment and air circulation	Isti Kamahsari, Agus Dana Permana and Khalilan Lambangsari
	9	15.30 - 15.45	Development of modular cage for controlled cultivation of black soldier fly	Tjokorda Istri Indira, Robert Manurung, Agus Dana Permana and Muhammad Yusuf Abduh
	18	15.45 - 16.00	Valorization of lower grade resin, bark, and fruit of <i>Styrax sumatrana</i>	Muhammad Yusuf Abduh, Ananda Teli Rahmanita, Elga Ridho Maulana, Valenikhe Fitri Nadhira, Tjokorda Istri Indira and Robert Manurung

Breakout room	Paper ID	Time (GMT+7)	Title	Authors
	94	14.00 - 14.15	Liquid-liquid equilibrium for eugenol + acetic acid + water systems at 303.15 K and atmospheric pressure	Retno Kumala Hesti Sucipto, Kuswandi Kuswandi and Gede Wibawa
	75	14.15 - 14.30	Drying vanilla (<i>Vanilla planifolia</i> Andrews) using infrared heat and air circulation	Puji Rahayu, Khalilan Lambangsari and Agus Dana Permana
	76	14.30 - 14.45	Measurement of isobaric vapor-liquid equilibrium, data correlation and prediction for methanol - glycerol system at 61.3 and 100.8 kPa	Rizky Tetrisyanda, Moh. Arif Batutah, Kuswandi and Gede Wibawa
	79	14.45 - 15.00	Mitragynine: A review of its extraction, identification, and purification methods	Amrianto Amrianto, Sumail Sidik Ode Ishak, Nanda Putra, Syefira Salsabila and Laode M.R. Al Muqarrabun
	95	15.00 - 15.15	Assessment phytochemical profile as indicator of oil palm plants with stem rots caused by <i>Ganoderma boninense</i> in Peatlands	Ellia Septiarahma Rumambi, Jones P. Silitonga, Ulfa Salsabila and Cico Jhon Karunia Simamora
	97	15.15 - 15.30	Valorization of empty palm bunch waste (<i>Elaeis guineensis</i>) into lyocell fibre using environmentally friendly solvent N-Methylmorpholine N-Oxide (NMMO)	Febrita Siregar, Imelda Magdalena and Kevin Manurung
	72	15.30 - 15.45	A review on stingless bees as pollinators for agricultural crops	Muhamad Aldi Nurdiansyah, Agus Dana Permana and Muhammad Yusuf Abduh
	70	15.45 - 16.00	The effect of coffee skin waste (<i>Coffea</i> sp.) with ammoniation process as alternative feed mixture on growth, feed conversion, and meat quality of Cobb broiler chicken	Abdul Halim, Muh Dimas Erdo Kusuma, Asep Hidayat and Yeyet Setiawat

Breakout room	Paper ID	Time (GMT+7)	Title	Authors
6	68	14.00 - 14.15	The effect of endophytic Bacteria <i>Bacillus amyloliquifaciens</i> and <i>Bacillus subtilis</i> on changes the composition of sugar post-harvest of Cilembu Sweet Potato (<i>Ipomoea batatas</i> L. var. cilembu)	Agustina M. Tangapo, Dea I. Astuti and Pingkan Aditiawati
	61	14.15 - 14.30	Red kidney bean as soybean alternative in Tempeh milk powder processing with antioxidant properties	Widya Agustinah and Sheriena Cendana
	7	14.30 - 14.45	Black soldier fly (<i>Hermetia illucens</i> L.) larvae cultivation with coconut endosperm waste and soybean curd residue using modular fly hive	Marcelino Putra Perdana, Muhammad Arifuddin Bara, Lela Wahyu Anggraeni, Ramadhani Eka Putra and Muhammad Yusuf Abduh
	69	14.45 - 15.00	Comparison of cassava major diseases occurrence between sweet and bitter cultivars in Regency of Gunungkidul, Special Region of Yogyakarta	Siti Nur Aisyah
	86	15.00 - 15.15	Abundance of halotolerant nitrogen fixing <i>Rhizobacteria</i> , C-organic of Soil, chlorophyll content and growth of rice plants due to different composition and dosage of organic ameliorant on saline ecosystems	Fiqriah Hanum Khumairah, Tualar Simarmata, Mieke Rochimi Setiawati and Betty Natalie Fitriatin
	87	15.15 - 15.30	Application of raised bed multilayered media on production of red bean (<i>Phaseolus vulgaris</i> L.) and corn (<i>Zea mays</i> L.) in monocropping and intercropping systems	Miftahul Jannah, Sherin Hidayat, Tasnim Aina, Taufik Taufikurrahman and Andira Rahmawati
	57	15.30 - 15.45	Development of a Bee Technopark in Bukit Sandy, Bandung	Gina Meliana Sabila, Rika Alfianny and Muhammad Yusuf Abduh

Day 2, Thursday, 14 October 2021

Breakout room	Paper ID	Time (GMT+7)	Title	Authors
1	5	14.00 - 14.15	Guided bone regeneration membrane from bio-resource with tailored properties	Bidhari Pidhatika
	39	14.15 - 14.30	Computer-aided detection of lung cancer from CT-scan images with visual insights using deep convolutional neural network	Renard Elyon Imawanto, Ghiffary Rifqaldi, Amadhea Yudith and Adrian Rinaldo
	15	14.30 - 14.45	The effect of chitosan: polycaprolactone ratio for microencapsulation of <i>Acalypha indica</i> Linn extracts	Maizatul Akmal Johari, Azlin Suhaida Azmi, Jamarosiza Jamaluddin, Rosnani Hasham and Fathilah Ali
	85	14.45 - 15.00	The effectiveness of chitosan soaking in polyester-cellulose Dayak Woven as in vitro antimicrobial mask	Erni Yupita Febila Sari Br Sembiring, Velyn Claristhya, Putri Adiba Resky and Cico Jhon Karunia Simamora
	44	15.00 - 15.15	The effect of acetic acid/formic acid pulping on pulp properties of empty fruit branches	Lili Melani, Ihak Sumardi, Anne Hadiyane, Alfi Rumidatul and Hyoung-Jin Kim
	21	15.15 - 15.30	Extraction of lignin from oil palm empty fruit bunches as filler in polylactic acid (PLA)bio-composite for 3D printing application	Mohammad Shahrizad Pairon, Fathilah Ali, Hazleen Anuar, Farah Ahmad, Jonghwan Suhr and Mohamed Elwathig Saeed Mirghani
	30	15.30 - 15.45	The ability of hydrocarbon degrading bacterial isolates from Paotere Harbor Waters in producing biosurfactants	Adiputra Rahman and Dirayah Rauf Husain
	20	15.45 - 16.00	Enhanced modified graphene oxide antifouling membrane for lead removal from wastewater	Nik Rashida Nik Abdul Ghani, Mohammed Saedi Jami, Nurul Sakinah Engliman, Md. Zahangir Alam, Wan Wardatul Amani Wan Salim and Ebrahim Mahmoudi

Breakout room	Paper ID	Time (GMT+7)	Title	Authors
2	80	14.00 - 14.15	Isolation of compounds with tyrosinase inhibitory activity from the methanol extract of <i>Meniran</i> Herbs (<i>Phyllanthus niruri</i> Linn.)	Syefira Salsabila, Rika Hartati, Ariranur Haniffadli, Nurinanda Prisky Qomaladewi, Laode M.R. Al Muqarrabun, Andi Rifki Rosandy, Agus Chahyadi and Elfahmi
	81	14.15 - 14.30	Method development of quercitrin enrichment from Asthma-Plant (<i>Euphorbia hirta</i> L.) using aromatic macroporous resin	Sumail Sidik Ode Ishak, Rika Hartati, Ariranur Haniffadli, Nurinanda Prisky Qomaladewi, Laode M.R. Al-Muqarrabun, Andi Rifki Rosandy, Agus Chahyadi and Elfahmi
	82	14.30 - 14.45	Implementation of dimer-based screening system in <i>Escherichia coli</i> BL21(DE3) for selection of hiv protease inhibitor	Miftahul Faridl, Marchia Stefania, Jeremia Oktavian, Yana Maolana Syah and Azzania Fibriani
	83	14.45 - 15.00	Metagenomics analysis of microbial co-infection in SARS-CoV-2 patients from West Java, Indonesia	Miftahul Faridl, Popi Septiani, Husna Nugrahapraja, Karimatu Khoirunnisa, Ema Rahmawati, Cut Nur Cinthia Alamanda, Rifky Walujayati Rachman, Ryan Bayusantika, Rini Robiani and Azzania Fibriani
	52	15.00 - 15.15	Amelioration of diabetes parameters in rats model treated with mixture of andrographolide and gallic acid	Tet Soon Wong, Fatahiyah Mohamad Tap, Zanariah Hashim, Hassan Fahmi Ismail and Fadzillah Adibah Abdul Majid
	53	15.15 - 15.30	Anti-inflammatory and anticancer activity of sea cucumber compounds as NF- κ B inhibitor	Teresa L. Wargasetia, Hana Ratnawati, Nashi Widodo and Jantje W. Souhaly
	67	15.30 - 15.45	Identification and characterization of plasma protein types of COVID-19 patients that have been confirmed negative PCR for <1 month with SDS-PAGE method	Sri Anggarini Rasyid, Titi Purnama and Nining Asriani
	63	15.45 - 16.00	Ethnopharmacology, phytochemistry and toxicity activity of ten medicinal plant from Central Sulawesi	Lisna Efiyanti and Gunawan Pasaribu

Breakout room	Paper ID	Time (GMT+7)	Title	Authors
3	36	14.00 - 14.15	Antioxidant capacity and total phenols of wild poinsettia (<i>Euphorbia heterophylla</i>) as tea infusion	R. Amilia Destryana, Dyah Ayu Fajariningtyas, Aryo Wibisono, Edo Hariyanto, Yuli Witono and Iwan Taruna
	40	14.15 - 14.30	Effect of propolis addition, brewing time and temperature on total phenolic content, antioxidant activity and sensory properties of cascara	Muhammad Yusuf Abdul, Diah Nofitasari, Amadhea Yudith Eryanti and Mia Rosmiati
	48	14.30 - 14.45	Correlation of microclimate with the concentration of caffeine and chlorogenic acid in robusta coffee from five different cultivation areas in West Java	Suci Awaliyah, Erly Marwani and Sri Nanan B. Widiyanto
	50	14.45 - 15.00	Isolation of active compounds from propolis produced by stingless bees cultivated in a monitored environment using a soxhlet extraction method	Ghiffary Rifqaldi, Ima Mulyama Zainuddin and Muhammad Yusuf Abdul
	77	15.00 - 15.15	Bioassay-guided isolation of α -glucosidase Inhibitor from Katuk (<i>Sauropus androgynus</i> Linn.)	Nanda Putra, Muhamad Insanu, Ariranur Haniffadli, Nurinanda Prisky Qomaladewi, Laode M.R. Al Muqarrabun, Andi Rifki Rosandy, Agus Chahyadi and Elfahmi
	78	15.15 - 15.30	The selection of Indonesian medicinal plant natural compounds as Akt inhibitor candidates by using molecular docking study approach	Aisyah and Azzania Fibriani
	66	15.30 - 15.45	Pregnancy outcome and mammary development of gravis mice treated with ethanolic extract of bitter melon (<i>Momordica charantia</i>) leaf	Gratiana E. Wijayanti, Rakhma S Brayantami, Ine Nurmala, Priyo Susatyo and Sorta Bi Simanjuntak
	99	15.45 - 16.00	Analysis of the potential of flavonoid and xanthone compounds from various Indonesian plant extracts as MEK1 and ERK2 inhibitors: A molecular docking approach	Nadila Fitri Aniza, Marselina Irasonia Tan and Reza Aditama

Breakout room	Paper ID	Time (GMT+7)	Title	Authors
4	88	14.00 - 14.15	In silico drug repurposing study: Computational screening for drug compounds candidate that are potentially used as SARS-CoV-2 Main Protease (Mpro) dimerization inhibitor	Muhammad Hamzah S. Azmi, Audrey A. P. Taharuddin, Azzania Fibriani, Yana M. Syah, Reza Aditama and Ernawati A. Giri-Rachman
	89	14.15 - 14.30	In silico screening of Indonesian natural active compounds as dimerization inhibitor of C-Terminal domain of SARS-CoV-2 nucleocapsid protein by molecular docking study	Audrey A. P. Taharuddin, Riyanti W. Syavitri, Muhammad Hamzah S. Azmi, Ernawati A. Giri-Rachman and Azzania Fibriani
	3	14.30 - 14.45	Prediction of SARS CoV-2 non structural genes (3C Like Protease) as a Covid-19 peptide vaccine candidate	Yani Suryani, Isma Dwi Kurniawan, Salsabila Aliansi and Opik Taupiqurrohman
	26	14.45 - 15.00	Modified pectin-chitosan composite as potential biomaterials for mucoadhesive drug delivery system	Theodore E. Leonard, Alvaro F. Liko and Pietradewi Hartrianti
	98	15.00 - 15.15	Inhibition potential analysis of flavonoid and xanthone compounds from various Indonesian plants against Bcl-2 and Bcl-xL with molecular docking	Muhammad Rayhan Akbar Bunyamin, Marselina Irationia Tan and Reza Aditama
	92	15.15 - 15.30	Multi-epitope vaccine design against SARS-CoV-2 for Indonesia population using reverse vaccinology approach	Brigitta Claudia, Husna Nugrahapraja and Ernawati Arifin Giri-Rachman
	93	15.30 - 15.45	Multi-epitope vaccine design against dengue virus for Indonesian population with reverse vaccinology approach	Kelvina Gemilang, Ernawati Arifin Giri-Rachman and Husna Nugrahapraja
	96	15.45 - 16.00	Dengue Diagnostic Kit "DENVIT Real-Time PCR" for early detection of dengue in Indonesia	Azzania Fibriani, Karimatu Khoirunnisa and Denti Rizki Kinanti

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	23	14.00 - 14.15	Cellulolytic and amylolytic activity of <i>Actinobacteria</i> -like isolates from litter in the Galunggung Hot Springs Area, West Java	Ami Setianingsih
	27	14.15 - 14.30	Peatland microbial diversity from Sinar Wajo Village, Jambi by Culture-Dependent and Culture-Independent	Alma C. Aristia and Pingkan Aditiawati
	31	14.30 - 14.45	The viability test of phosphate solubilizing microbes on various carriers during storage	Betty Natalie Fitriatin, Mega Kartika Hermawan and Nabila Syifa Ariani
	32	14.45 - 15.00	Expression of seven key enzymes for artemisinin biosynthesis in <i>Escherichia coli</i>	Tresna Lestari, Elfahmi Elfahmi, Asep Gana S and Catur Riani
5	84	15.00 - 15.15	Development of screening system for compounds that potentially inhibit dimerization of cytoplasmic domain of PhoR in <i>Mycobacterium tuberculosis</i>	Nathanael Steven, Mellysa Rahmita, Yana Maolana Syah, Azzania Fibrani and Ernawati Arifin Giri-Rachman
	43	15.15 - 15.30	The immune system of the decomposer insect <i>Hermetia illucens</i>	Allegra Phelia Amadea Manurung, Shanty Rahayu Kusumawardani, Agus Dana Permana and Tjandra Anggraeni
	6	15.30 - 15.45	Optimization of extraction process and determination of bioactive compounds from Indonesian Coffee Cherry Husk	Sophie A. Raharjani, Arlene, Jessica Angelia, Angela Justina Kumalaputri, Agus Cahyadi and Muhammad Yusuf Abduh
	64	15.45 - 16.00	Optimisation of culture condition for Sacha Inchi (<i>Plukenetia volubilis</i>) callus induction	Norsyahira Rosle, Widya Abdul Wahab, Muhamad Fahmi Yunus and Tamil Chelvan Meenakshi Sundram

Breakout room	Paper ID	Time (GMT+7)	Title	Authors
6	35	14.00 - 14.15	Antibacterial property of non-crustacean based chitosan from selected fungi and insect larvae	Tri Ramadianti Shafitri, Maryam Jamilah, Mochamad Firmansyah, Robert Manurung and Muhammad Yusuf Abduh
	34	14.15 - 14.30	Formulation & evaluation of reconstituted dry yogurt from Whole Cow's Milk	Ira Rum, Elis Lisnawati and Garnadi Jafar
	65	14.30 - 14.45	Formulation of sol-gel coating with addition of spora <i>Bacillus</i> sp. and biosurfactant as an inhibition agent for the biocorrosion of St-37 steel in sea water	Ahdina Karima, Isty Adhitya Adhitya Purwasena and Lia Amelia Tresna Wulan Asri
	38	14.45 - 15.00	Microwave-assisted synthesis of polyurethane and its application - a Review	Nur Izzati Binti Mohd Razali, Fathilah Binti Ali, Azlin Suhaida Binti Azmi and Tuan Noor Maznee Binti Tuan Ismail
	46	15.00 - 15.15	Effect of shipping container modification and different types of packaging system on banana quality after transportation simulation	Putri Adielia Agson-Gani, Abryanto Siliwangi, Setiawan, Agus Dana Permana and Khalilan Lambangsari
	56	15.15 - 15.30	Bio-management analysis for integrated cultivation stingless bees with citrus plantation at Bukit Sandy, Bandung	Jessica Gita Adjani, Rijanti Rahaju Maulani and Muhammad Yusuf Abduh
	55	15.30 - 15.45	Factors behind variation in litter decomposition rates between two broadleaf secondary forests and pine forests in the Tropical Region of South Sulawesi, Indonesia	Supadma Putra, Putu Oka Ngakan, Amran Achmad and Toshihiro Yamada

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In vitro callus induction of *Plukenetia volubilis* (Sacha Inchi), a PUFA-Rich Plant

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Abstract

In vitro micropropagation through callus induction has been established on *Plukenetia volubilis*. Different treatments of 2,4-dichlorophenoxyacetic acid (2,4-D) and 6-benzylaminopurine (BAP) have influenced the propagation either incubated at 24 hours of light exposure or 24 hours in dark. The young leaves explants deemed promising in developing callus in media supplemented with both plant growth regulators of 0.1 mg L⁻¹ 2,4-D + 0.05 mg L⁻¹ BAP and 1.0 mg L⁻¹ 2,4-D + 0.05 mg L⁻¹ BAP. Interestingly, similar concentration was found to be the most suitable to induce callus from ovule which was MS media supplemented with 0.1 mg L⁻¹ 2,4-D + 0.05 mg L⁻¹ BAP in both light and dark conditions compared to the single use of 2,4-D. In addition, all other treatments also demonstrated callus induction from ovule. This is the first report attempted on using ovules as explant. The reported result shows intriguing possibilities for the utilization of sacha inchi's parts other than leaves as an alternative source of callus culture to scale up the micropropagation for pharmaceutical applications.

Keywords: in vitro, callus, sacha inchi, young leaves, ovules

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