



Certificate of Participation



Awarded to:

SUKANDA HUSIN

as:

ORAL PRESENTER

in

International Conference on Interdisciplinarity in Natural Drugs Research (ICIND 2017)

Organized by Institute for Research and Community Service, Andalas University
on August 29-30, 2017 in Padang, West Sumatra, Indonesia

Dr. Ing. Uyung Gatot S. Dinata, M.T.
Head of Institute for Research and Community Service, UNAND



Prof. Dr. Akmal Djamaan, MS, Apt
Chairman of ICIND 2017



Program Book

INTERNATIONAL CONFERENCE ON INTERDISCIPLINARITY IN NATURAL DRUGS RESEARCH (ICIND 2017)

August 29-30, 2017

Andalas University, Padang, West Sumatra, Indonesia

Greeting from the Chairman of Organizing Committee

It is a great pleasure for me to welcoming you at the International Conference on Interdisciplinary Natural Drugs Research (ICIND) 2017. The conference is organized by Institute of Research and Community Service, Andalas University.

As we know, Indonesia has diverse natural resources that have been widely used by people for food and traditional medicines. Traditional medicines could be prepared from plants, animals, or mineral materials, galenic preparations, even in mixtures of these materials, which have traditionally been used for treatment based on experience. Within decades, the use of folk medicines have been increasing continuously, resulting in many types of research for its development. It includes the herbs, scientific based herbal medicine and phytopharmaca. The purpose of the conference is to discuss some recent progresses in the field of drugs discovery, molecular biology and biotechnology, marine natural drugs, pharmacology and clinical applications, ethno-botany, ethno-medicines, drugs design, medicinal and pharmaceutical chemistry.

I hope that these two-day conferences will challenge all participants to contribute more about the use of natural drugs as well as to collaborate research networks from our honorable keynotes and invited speakers. By the end of this conference, we would like to publish the International Proceeding or in International Journal indexed by Scopus that will give some positive impact both to the researches and the institution.

I would like to say special thanks to our keynote and invited speakers that will share their expertise, knowledge and experiences to all of us. Thank you very much to the Governor of West Sumatra province for welcoming and opening ceremony. Last but not least, thanks to all members of Steering and Organizing Committee for the cooperation and hard work to organize this conference.

Padang, August 28, 2017

Sincerely,

Prof. Akmal Djamaan, PhD. Apt.



Schedule ICIND 2017

Day 1 Tuesday, August 29, 2017		
08.30– 09.00	Registration	
Session I		
09.00 – 12.00	<p>Plenary Lecture I Dr. rer.nat. Ru Angelie Edrada-Ebel Strathclyde Institute of Pharmacy and Biomedical Sciences University of Strathclyde-Glasgow, United Kingdom</p> <p>Plenary Lecture II Prof. Dr. M. Hanafi Research Centre for Chemistry (RC Chem) – Indonesian Institute of Sciences (LIPI)</p> <p>Plenary Lecture III Prof. Dr. Fumio Hashimoto Faculty of Agriculture, University of Kagoshima, Japan</p>	<p>Moderator Prof.Dr. Henny Lucida, Apt</p>
12.00 – 13.30	Lunch break Poster Presentation	
13.30 – 15.00	Invited speakers	Room: 1,2
15.00 – 17.00	Oral presentation and Discussion	Room: 1,2

Day 1 Tuesday, August 29, 2017	
Room 1	Room 2
Invited Speaker	
Hilwan Yuda Teruna "Plectranthus amboinicus: An Herbal Medicine or Else"	Armenia Nazar "Study of Liver Toxicity and Its Reversibility of Cassytha filiformis Defatted Ethanolic Extract on Mice"
Harrizul Rivai "Optimization of production and characterization of homolog vivacel from rice straw"	Abdi Dharma "Exploring Indonesian Microalgae as The Source of Biomass for Food, Bioenrgy, Nutraceutical and Pharmaceutical"
Oral Presentation	
Rika Yulia	Almurdani
Adriani Susanty	Helmi Arifin
Dedy Almasdy	Irma Badarina
Syukria Ikhsan Zam	Lili Fitriani
Ridho Asra	Suryani Suryani
Muhammad Fadli	Deni Noviza
Ibtisamatul Aminah	Yufri Aldi
Refsya Azanti Putri	Muhammad Yanis Musdja
Retno Amilia	Evi Guslianti
Vivi Ramadani	M. Ade Artasata



Schedule ICIND 2017

Day 2 Wednesday, August 30, 2017		
Session II		
09.00 – 12.00	<p>Plenary Lecture IV Prof. Dr. Dian Handayani, Apt. (Andalas University)</p> <p>Plenary Lecture V Prof. Dr. Taifo Mahmud (Oregon State University, USA)</p> <p>Plenary Lecture VI Prof. Dr. Amirul Al-Ashraf Abdullah School of Biological Science, Universiti Sains Malaysia</p>	Moderator: Lili Fitriani, M.Sc., Apt
11.30 – 13.00	Lunch break Poster Presentation	
13.30 – 15.00	Invited speakers	Room: 1,2
15.00 – 17.00	Oral presentation and Discussion	Room: 1,2
17.00 – 17.30	Closing Ceremony Rector, Univ. of Andalas	



Day 2 Wednesday, August 30, 2017	
Room 1	Room 2
Invited Speaker	
Elfahmi "An update of research on artemisinin production: cloning of aldehyde dehydrogenase (aldh1) into Agrobacterium tumefaciens"	Nur Indrawaty Lipoeto "The Role of Catechin from Uncaria gambir [Hunter] Roxb as a Neuroprotective agent"
Nasril Nasir "A Resume: Wild Zingiberaceae Elettariopsis Slahmong Ck Lim As Biopesticide Against Pests And Pathogens Of Important Crops In West Sumatra Indonesia"	Muslim Suardi "Conversion of Biopolymers from Waste and Implementation of Pharmaceutical Technology in Pharmaceutical, Medical, Agricultural, Animal Husbandry and Packaging Sectors"
Oral Presentation	
Yohannes Alen	Henny Lucida
Biomechy Oktomalioputri	Nelly Suryani
Damsar Damsar	Netty Suharti
Ofa Suzanti Betha	Darwin Amir
Yuni Anggraeni	Putri Ramadheni
Azrifitria Azrifitria	Irda Sayuti
Dwisari Dillasamola	Syamsurizaldi Syamsurizaldi
Sukanda Husin	Silvy Arundita
Riki Ranova	Ririn Mayarni
Rauza Sukma Rita	Sanubari Rela Tobat



KEYNOTE SPEAKERS



Using Concatenated Analytical Data for Metabolomic Guided Production and Isolation of Bioactive Natural Product

RuAngelie Edrada-Ebel

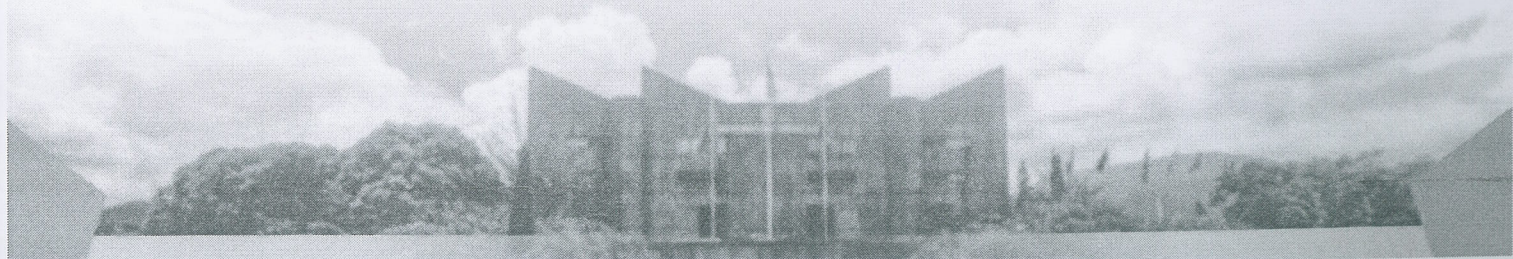
Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde The John Arbuthnott Building, 161 Cathedral Street, Glasgow G4 0RE United Kingdom

High resolution Fourier transform mass spectrometry (HRFTMS) and nuclear magnetic resonance (NMR) spectroscopy were employed as complimentary metabolomic tools to dereplicate chemical profiles of Bioactive Natural Products from their sources.

The innovative strategy involved targeted cultivation, harvest, and isolation of biologically active compounds. Principal Component (PCA), Hierarchical Clustering (HCA), and Orthogonal Partial Least Square-Discriminant (OPLS-DA) analyses were used to evaluate HRFTMS and NMR spectral data of culture extracts. The results of the statistical analysis identified and validated the best culture conditions and extraction procedure which optimized the isolation of novel bioactive metabolites.

Production of secondary metabolites were investigated in several of the bacterial symbionts that were isolated from marine sponges. Novel secondary metabolites were screened using high resolution mass spectrometry and NMR-based metabolomics approaches. Metabolomic profiling using 2D-NMR and HR-ESIFTMS were done at different stages of the growth phase for both solid and liquid culture media. Dereplication studies were accomplished by utilizing the Mzmine software with Antibase and DNP databases. The optimised method in terms of media, incubation time, and maximum production bioactive compounds are taken into account for the scale-up. Metabolomic- and bioassay-guided isolation were carried out to target the compound(s) of interest.

With the metabolomics approach, it was possible to predict and optimise the biosynthetic pathway involved in the production of the target secondary metabolite.



Microbial synthesis of bioactive compounds through fermentation technology

A.A. Amirul^{1,2,3}, K.-H. Huong¹, A.K.S.N. Fatin³, L.F. Hanim³

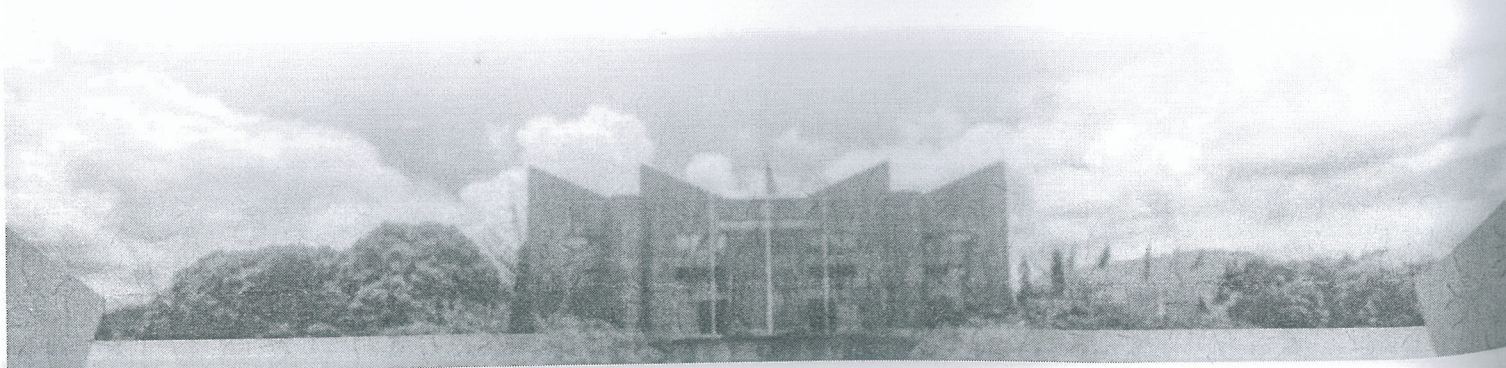
¹School of Biological Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia

²Malaysian Institute of Pharmaceuticals and Nutraceuticals, NIBM, Malaysia

³Centre for Chemical Biology, Universiti Sains Malaysia, 11900 Penang, Malaysia

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Bioactive compounds are extra-nutritional constituents that naturally found in plant and lipid-rich food products, which are also referred to as nutraceuticals due to their biological activity in promoting benefits for human health. Bioactive compounds are usually secondary metabolites such as antibiotics, mycotoxins, alkaloids, pigments, phenolic compounds etc. Microorganisms, in particularly the marine bacteria and fungi have also been the considerable and promising sources of biologically active products. In microbial physiology, the secondary metabolites are usually accumulated at the later stage of fermentation process when the microbial growth is completed. Fermentation technology provides a promising biotechnological platform, not only to develop an effective and enhanced production yield of bioactive metabolites, but also to ensure successful large-scale operation in industrial setting. The microbial fermentation of the secondary metabolites can be divided into two processes: submerged fermentation (SmF) whereby the cultivation is performed in liquid state medium; and solid-state fermentation (SSF), which is based on the cultivation on solid support (solid state condition), with a low moisture content but sufficient to allow the growth and metabolism of microorganisms to produce bioactive compounds. SmF strategy ensures the simplification of the scale up process since the liquid state fermentation allows better control of various parameters. However, SSF has gained more interest in recent years as it has been demonstrated that SSF strategy could results in higher yields and stable product characteristics as compared with SmF. SSF provides a more ideal choice for utilization of agricultural and agro-industrial waste as substrates. SSF also has contributed towards easier downstream processing, reduced stirring and sterilization cost. The overall capital and operating cost for SSF are greatly reduced. Although the SSF suffers from the drawbacks such as culture homogeneity and heat transfer, the increasing trend of using SSF to produce secondary metabolites is still observable in the last decades. This is because SSF represents a low cost, ease-to-operate system which has shown to be more efficient than SmF.



Botanical Insecticide of Wild Zingiberaceae Isolation and Structures of Insecticide

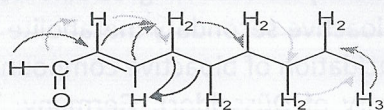
Fumio Hashimoto¹, Nasril Nasir²

¹Faculty of Agriculture and United Graduate School of Agricultural Sciences, Kagoshima University, Kagoshima, Japan.

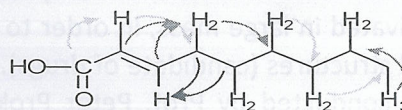
²Faculty of Mathematics and Natural Sciences, Andalas University, Padang, Indonesia.

This research focuses on active components of wild Zingiberaceae *Elettariopsis slahmong* to kill the vector insect 'Trigona minangkabau' causing Banana Blood Disease. *Trigona* mediates a crucial bacterium that is only found in Indonesia called 'Ralstonia solanacearum', when once banana is infected by this bacterium the banana will not produce the normal fruits. This year, a publication has been submitted to *Der Pharmacia Lettre* entitled 'The prospects of wild Zingiberaceae *Elettariopsis slahmong* to be developed as green pesticide' [Ref.], in which the internal components, specifically the essential oils have been specified, in each of the fraction separated by glass column silica gel open chromatography. By gas-chromatography several essential oils such to have C8, C10 and C13 with aldehyde, carboxylic acid and/or a 2-olefin have been identified in the extract of its roots and leaves.

The chromatograph was successful to separate the extract of wild Zingiberaceae *E. slahmong* into seven fractions, using n-hexane-benzene-EtOAc solvent system. Among them, the fraction No. 3 has been revealed to have potent activity to terminate the vector insect 'Trigona minangkabau'. The fraction No. 3 has been further subjected to the measurements of nuclear magnetic resonance (NMR) spectra, such as 1-D spectra (1H- and 13C-) and 2-D spectra (HMQC, Heteronuclear Multiple Quantum Correlation spectrum and HMBC, Heteronuclear Multiple Bond Correlation spectrum) to know the chemical structure. In addition, the gas-chromatography-mass-spectrometry (GC-MS) analysis was performed to know its molecular weight. As a result, the components of fraction No. 3 were a mixture of unsaturated fatty aldehyde and acid, 2-nonenal and 2-nonenic acid and it has been estimated that these two essential oils are included up to 43 % of all the extracted oils (Fig.). In this presentation, we would like to discuss about the future promising green pesticide from wild Zingiberaceae *E. slahmong*.



2-nonenal



2-nonenic acid

Figure Structures of essential oils found in roots and leaves of wild Zingiberaceae *E. slahmong*. The correlations over longer ranges of 2-3 bonds are observed based on HMBC spectra.

Reference: N. Nasir, *Der Pharmacia Lettre*, 2017, 9 (2):21-28.

Biosynthetic Studies and Engineered Production of Bioactive Natural Products

Taifo Mahmud

Department of Pharmaceutical Sciences, Oregon State University, Corvallis, OR 97331, U.S.A.

Natural products continue to play an important role in drug discovery. About two-thirds of recently approved pharmaceuticals are natural product-derived or nature-inspired chemical entities. Despite their enormous potential, the number of new bioactive natural products identified in recent years has significantly declined. Conventional approaches to natural product discovery are becoming less effective, calling for new ways of drug discovery and development. To this end, we have employed a combination of biosynthetic engineering, enzymology, X-ray crystallography, and organic synthesis to generate new analogues of bioactive natural products. Some of these analogues exhibit excellent biological properties, presenting hope in their development as new arsenals to combat diseases.



Protection and Management of Genetic Resources as Traditional Medicines Based on the Norms Derived from International and Indonesian Biodiversity Laws

Sukanda Husin

Faculty of Law, Andalas University

As a country which is blessed with rich biodiversity, Indonesia has enormous genetic resources. If the genetic resources have been wisely utilized, it should have been able to bring about welfare for its people. However, before the enactment of the 1992 United Nations Convention On Biological Diversity (CBD), Indonesia has suffered enormous economic loss because its genetic resources have been utilized by developed countries for their own economic advantage without willing to share the gained profit with Indonesia. CBD is concluded for the purpose to create sustainable fair, and equitable sharing of the benefits arising out of the utilization of genetic resources. More specific norms is stipulated in the Nagoya Protocol On Access To Genetic Resources. Nevertheless, the issues of benefit sharing remain unresolved. Indonesia still becomes the lost state in the cooperation of resources utilization with developed countries. This Article is intended to search for the causes why Indonesia still can not gain the benefits of genetic resources utilization and to find out legal solutions to the existing issues.