C33 Turnitin L. R. Telly Savalas

by Lalu Rudyat Telly Savalas C33

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ASEAN MICROBIAL BIOTECHNOLOGY CONFERENCE 2016

3-4 AUGUST 2016
Sanur Paradise Plaza,
Bali, Indonesia

SITH-ITB
School Of Life Sciences and Technology

BIOTEC
a member of NSTDA

AFOB
Asian Federation of Biotechnology

AnMicro
ASEAN Network on Microbial Utilization

BBRC
BIOSCIENCES AND BIOTECHNOLOGY RESEARCH CENTER - ITB

Time Schedule AMBC 2016

Time	Day 1 : Wednesday, August 3rd, 2016		
07:30 - 08:30	Registration		
08:30 - 09:30	Opening Ceremony		
	Organizing Committee (Sri Harjati Suhardi)		
	Lily Eurwilachitr (BIOTECH - AnMicro)		
	Dean of School of Life Science and Technology, ITB		
	Rector of Institut Teknologi Bandung (ITB)		
	Bali Dance		
09:30 - 10:00	Biswaruph Mukhopadhyay (Metabolic Engineering) Moderator: Toto Subroto		
10:00 - 10:15	Discussion		
10:15 - 10:45	Coffee Break		
10:45 - 11:15	Ida Parwati (Tropical Disease TB) Moderator: Endang Purwantini		
11:15 - 11:30	Discussion		
11:30 - 12:00	Ocky Karnaradjasa (Biodiversity) Moderator: Lily Eurwilachitr		
12:00 - 12:15	Discussion		
12:30 - 13:30	Lunch		
Paralel Session			
	Group I	Group II	Group III
	Agricultural Biotechnology: Kustariyah Tarman	Industrial Biotechnology and Biobusiness: Siswa Setyahadi	AFOB & AnMicro (Biocatalyst): Ihsanawati
13:30 - 14:00	Herry Utomo	Tim Hirst	Teruyuki Nagamune (The University of Tokyo)
14:00 - 14:30	Anan Jongkaewwattana	Neni Nurainy	Kenji Okano (Osaka University)
14:30 - 14:40	Sudarsono Sudarsono	Linawati Hardjito	Verawat Champreda (BIOTEC, Thailand)
14:40 - 14:50	Wisnu Adi Wicaksono		
14:50 - 15:00	Purwanto		
15:00 - 15:10	Anto Budiharjo	Chanikul Chutrakul	Wen-Chien Lee (National Chung Cheng University)
15:10 - 15:20	Wardono Niloperbowo	Sutipa Tanapongpipat	
15:20 - 15:30	Siti Nur Aisyah	Purwanto	
15:30 - 15:45	Coffee break		

Time	Day 2: Thursday, August 4th, 2016		
08:30 - 09:00	Chiaki Imada (Marine Science and Technology) Moderator : Biswarup Mukhopadhyay		
09:00 - 09:15	Discussion		
09:15 - 09:45	Yuichi Sugai (Microbial Enhanced Oil Recovery) Moderator: Isty Adhitya Purwasena		
09:45 - 10:00	Discussion		
10:00 - 10:30	Tjandra Setiadi (Production of Biodegradable Polymers) Moderator : Ramaraj Bootpathy		
10:30 - 10:45	Discussion		
10:45 - 11:00	Coffee Break		
11:00 - 12:15	Poster Session		
12:15 - 13:15	Lunch		
Paralel Session			
	Group I	Group II	Group III
13:15 - 13:25	**Medical & Pharmaceuticals : Marselina I Tan** Sabrina	**Medical & Pharmaceuticals : Astutiati** Chairat Uthaipibull	The 3rd Meeting of ASEAN Network on Microbial Utilization (AnMicro)
13:25 - 13:35	Much. Yunus		
13:35 - 13:45	Agustinus Robert Uria		
13:45 – 13:55	Kartika Senjarini	Thomas Edison Dela Cruz	
13:55 – 14:05	**Bioinformatics & Data Management : Intan Taufik**	Yosephine Sri Wulan Manuhara	
14:05 - 14:15	Supawadee Ingsriswang	Dian Handayani	
14:15 - 14:25		Latri Rahmah	
14:25 - 14:35	Trina Tallei	Marselina Irasonia Tan	
14:35 - 14:45	Fachry Ichsan Putra	Kustiyariah Tarman	
14:45 - 14:55	**Biodiversity**	Muktiningsih Nurjayadi	
14:55 - 15:05	Jariya Sakayaroj	Kuntalee Rangnoi	
15:05 - 15:15		Erman Tritama	
15:15 - 15:25	Satinee Suetrong	Sriwidodo	
15:25 - 15:35	Elmar Jon. R Lactaoen	Chaidir	
15:35 - 15:50	Coffee break		
15:50 – 16:00	Pindi Patana	Fadhlillah	The 3rd Meeting of ASEAN Network on Microbial Utilization (AnMicro)
16:00 – 16:10	Fadilatul Laela Insan	Yusuf Sofyan Efendi	
16:10 - 16:20	Thoettiatikul	RR Indry Examinati	
16:20 - 16:30	Maria Elena Tanabe		
16:30 - 17:30	Closing Ceremony (Dr. Nyoman /Dean of SITH) & Poster Award		

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INVITED SPEAKERS

ORAL PRESENTATION

POSTER PRESENTATION

FOREWORD FROM RECTOR OF ITB

OPENING SPEECH

Distinguished Guests,
Ladies and Gentlemen,

It is an honor for me to welcome all of you here in Bali for the important ASEAN Microbial Biotechnology Conference 2016. This meeting is important not only because of so many prominent researchers with microbiology and biotechnology background are present, but because all of you, are experts in these particular fields that ready to discuss various topics looking for solutions to the problems that we share or to the advancement of science and technology that we all work for.

In this oportunity I would like to make a remark on globalisation that we are so clearly experiencing today. As we all know globalisation is the process of integration of nations through the spread of ideas, sharing of technological advances, international trade, movement of people and capital across national boundaries. I would speculate that the course of globalisation was started since the dawn of human being. Perhaps the "out of Africa" when our ancestor migrating out of Africa to inhabitate the rest of the world is the first notable process of globalisation. The second wave of globalisation came much later when the world enter the industrial revolution. We can see that the advance of transportation technology and industrial processes make the movement of people faster that make parts of the world connected. The third big wave is what we are experiencing today. The advance of information technology makes people are connected almost instantly without barrier. The world become more and more borderless.

This makes me wonder, if the urge to meet and interact with other people regardless of distance is written in our chromosome. That the globalisation is in our gene and the process is natural and unstopable.

We might think that the globalisation is another tool for the advance capitalist to dominate and take advantage of another countries. But I believe that colonialism is of a past paradigm. Learning from biology, perhaps this time closer to the the theme of the conference today, microbiology. Parasitic interaction of a virus with its host that makes the host to perish, will eventualy makes the virus cease to exist.

I believe that the key to existence and success is through the spread of ideas and sharing. That makes this conference important.

I close these remarks with a wish that you have a fruitful discussion in the ASEAN Microbial Biotechnology Conference 2016.

Prof. Dr.Ir. Kadarsah Suryadi
Rector of the Institut Teknologi Bandung

FOREWORD FROM ORGANIZING COMMITTEE

It is my great pleasure to welcome you, on behalf of the Organizing Committee, at the ASEAN Microbiology Biotechnology Conference 2016 held in Denpasar Bali, under honorary patronage of the Rector of Institut Teknologi Bandung. The Conference is organized by the School of Life Science and Technology ITB in cooperation with the National Center for Genetic Engineering and Biotechnology – Thailand.

The Conference is aimed to provide the participants with the high quality scientific program covering the wide range of topics in microbial biotechnology. Moreover, in this AMBC2016, this conference is emphasizing on tropical disease, renewable energy and marine based product.

The lectures will be given by outstanding scientists from ASEAN Countries and abroad and will be devoted to such important and strategic themes for research development and collaboration.

An international character of the AMBC2016 will create an excellent platform for presentation of recent achievements and future trends of microbial biotechnology in ASEAN and in other countries.

The accompanying exhibition will gather companies from different sectors of biotechnology, creating an opportunity for scientists and industry working in different fields of biotechnology to present and discuss recent developments, exchange ideas and to establish cooperation between business and science.

We are convinced that the Conference of such a high importance to the ASEAN science creates the perfect conditions for promoting the long-term relationships between science and business represented by companies that are leaders in their field.

I am certain that the conference will be fruitfull and in the spirit of ASEAN Economic Comunity, this conference will be a catalist for a greater cooperation not only between ASEAN, but also cooperation with other regions.

We warmly welcome you at the conference and we hope that you will also spend an enjoyable time in Bali, the unique place where thriving science and splendid island meet.

On behalf of the Conference Organizing Committee
Sri Harjati Suhardi

Conference Chair
Bali, August 2016

FOREWORD FROM BIOTEC

Dear colleagues,

On behalf of the National Center for Genetic Engineering and Biotechnology (BIOTEC), Thailand, I am pleased to congratulate the Bandung Institute of Technology (ITB), Indonesia on hosting the 2nd ASEAN Microbial Biotechnology Conference (AMBC) and the 3rd ASEAN Network on Microbial Utilization (AnMicro) Annual Meeting.

ASEAN Microbial Biotechnology Conference (AMBC) as well as the ASEAN Network on Microbial Utilization (AnMicro) Annual Meeting aim to share research experiences and bring us up to date on technologies related to utilization of microbes for biotechnological applications. In particular for AMBC, we anticipate to strengthen collaborative network in microbial biotechnology research among ASEAN countries with their international partners. With over two hundred speakers and participants from 17 countries such as Thailand, Indonesia, Malaysia, Australia, USA, Canada, China, and Japan, the 1st AMBC held in Thailand successfully showed the commitment of the ASEAN research community towards sustainable utilization of biological resources.

BIOTEC's Thailand Bioresource Research Center (TBRC), serving as the Secretariat, realizes that the number of the AnMicro members is continually expanding. Most, if not all, countries in ASEAN have been increasingly recognizing the importance of biodiversity as an asset that can be developed to propel economic growth. The rich natural environment effectively enables ASEAN member countries to generate economic potential from biological resources and further augment its values through emerging biotechnological research and development.

I sincerely wish the AMCB2016 and the 3rd AnMicro Annual Meeting a great success and fruitful discussion during the talk and poster sessions.

We are dedicated to making your participation memorable and productive.

Sincerely yours,

Lily Eurwilaichitr, PhD.
Deputy Executive Director of BIOTEC
Director of TBRC, BIOTEC, Thailand

P.015.

Indispensable roles of phosphatases in latent Mycobacterium tuberculosis infection

Lalu Rudyat Telly Savalas

University of Mataram

Latent Mycobacterium tuberculosis infection involves complex mechanisms and successfully established with the help of an array of modulator proteins secreted by the bacteria into the cytoplasm of infected macrophages. Of notable importance are proteins belonging to phosphatases such as PtpA, PtpB and SapM. It is of general knowledge that M. tuberculosis is able to escape phagolysosomes degradation by preventing the fusion even between bacteriacontaining phagosomes with lysosomes. Those phosphatases have independently been shown to be responsible for the so-called phagosomes maturation arrest which subsequently leads the bacteria to enter dormant phase. In this paper, our current knowledge of M. Tuberculosis phosphatases are discussed and opportunities to prevent latent Mtb infection are highlighted.

Key words: M. tuberculosis, latent infection, phosphatase, phagolysosome

CERTIFICATE

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ASEAN MICROBIAL BIOTECHNOLOGY CONFERENCE 2016

This is to certify that

Lalu Rudyat Telly Savalas

has participated in the 2016 ASEAN Microbial Biotechnology Conference
as

Poster Presenter

Bali, 3-4 August 2016

INSTITUT TEKNOLOGI BANDUNG

Dr. I Nyoman P. Aryantha
Dean School of Life Sciences & Technology,
Institut Teknologi Bandung

Dr. Lily Eurwilaichitr
Deputy Executive Director,
The National Center for Genetic Engineering
and Biotechnology of Thailand

AMBC 2016 ASEAN MICROBIAL BIOTECHNOLOGY CONFERENCE

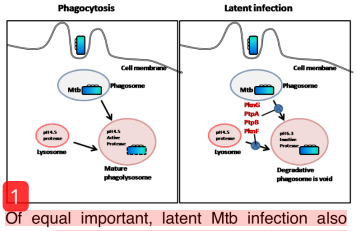
Dr. Sri Harjati Suhardi
Coordinator of
Organizing Committee

Inhibition of *Mycobacterium tuberculosis* Tyrosine Phosphatase A (PtpA) by Eicosenoic acid derivatives

Lalu Rudyat Telly Savalas*, Prapti Sedijani and Jannatin 'Ardhuha
FKIP Universitas Mataram, Jl. Majapahit No. 62 Mataram 83125; telly@unram.ac.id

Introduction

Mycobacterium tuberculosis (Mtb), the causative agent of TB cases are estimated to infect a third of world population. Although not all infections develop into TB cases, TB cases is still top killer that responsible for 1.7 Million deaths annually (Pieters, 2008). Strategies to combat Mtb are basically performed by 1) vaccination, especially for infants, and 2) curative by antibiotics for TB cases. Both approaches encounter new challenges: BCG, the only accredited vaccination has decrease protective effect for adult, and drug administration for TB cases is challenged by the presence of drug resistant strains of Mtb. This is also worsened by HIV/AIDS case.



Of equal important, latent Mtb infection also needs more attention, since it is not clear when and how infected persons will develop TB case. Some modulator proteins are secreted by *M. tuberculosis* that facilitate the bacteria to survive phgoysosome degradation and enter domant phase (upper figure). Present knowledge of such proteins provide opportunities to prevent latent Mtb, i.e. by inhibiting any of those protein. In this study, we attempt to inhibit Protein tyrosine phosphatase A (PtpA) of Mtb by eicosenoic acid derivatives.

Materials and methods

Expression and production of PtpA
PtpA gene inserted in pET30a vector was overexpressed in *Escherichia coli* BL21(DE) under 0.5 mM *iso*-Propyl beta-tiogalactose (IPTG). Cell lysate was harvested 4 hours after induction and expression of PtpA was analyzed by SDS-PAGE.

Activity Assay
PtpA activity was tested against phosphatase artificial substrate *para*-Nitrophenyl phosphate substrate as described elsewhere (Chiaradia et al, 2013). Activity was measured by reading absorbance of Nitrophenyl released by PtpA at 410 nm.

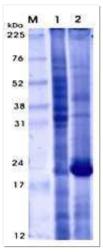
Inhibition Assay
Inhibition of PtpA by *cis*- and *trans*-2-eicosenoic acid was performed by including either inhibitor within reaction mixture for activity assay.

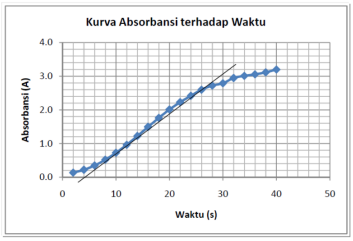
Docking
Inhibition of PtpA by eicosenoic acid derivative was analysis by Autodock Viena docking platform.

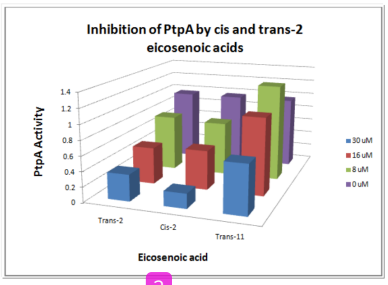
Results and Discussion

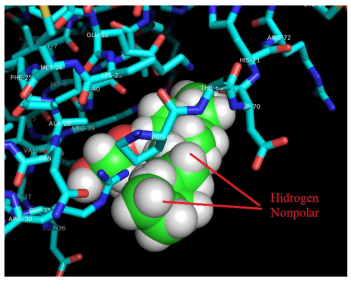
PtpA has been successfully overexpressed in *E. coli*, as shown on line 2 in the right figure.

Activity of PtpA was tested by using 1000xdiluted crude lysate, and it is shown that PtpA has a very high activity against *p*NPP (right most figure).









Inhibition of PtpA by *cis*- and *trans*-2-eicosenoic acid shows that both fatty acid have significant inhibitory effect on PtpA activity (upper left figure). Both fatty acid are uncommon type of fatty acids initially proposed to be potential PtpB inhibitor (Dhanjal *et al*, 2014). As comparison, *trans*-11-eicosenoic only slightly reduces PtpA activity.

Binding of PtpA with *trans*-2-eicosenoic acid is shown by docking analysis (upper right). When perfomed in sticks, *trans*-2-eicosenoic acid is fragmented (not shown here), which indicates that the algorithm used is unable to depict the binding in sufficient detail. However, this fatty acid binds to PtpA in close proximity to PtpA which is less than 2 Angstrom (not shown here), a distance that indicates a strong interaction.

Conclusions

Protein tyrosine phosphatase A (PtpA) of *Mycobacterium tuberculosis* has been overexpressed in *E. coli* in active form, as shown by its ability to hydrolyse *para*-Nitrophenyl phosphate (pNPP). Inhibition study has shown for the first time that PtpA can be inhibited by *cis* and *trans*-2-eicosenoic acid. This study highlights an example of interdisciplinary approach where bioinformatics study followed by wet lab experiment helps in searching of active compound. Furthermore, the fatty acid derivatives here my also be tested for their inhibitory effect on PtpB. Chemical modification of these fatty acids may also a strategy of choice to find effective inhibitors for Mtb phosphatases.

Literature cited

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Acknowledgments

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