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This is to certify that

**Dr. Rina Herowati**

has attended as  
POSTER PRESENTER

in the  
*6<sup>th</sup> Asian Network for Natural & Unnatural Materials  
(ANNUM VI) 2018*

held on July 27<sup>st</sup> -28<sup>th</sup>, 2018  
in Nagaragawa Convention Center  
and Gifu University Satellite Campus, JAPAN

Organized by  
Faculty of Engineering, Gifu University, JAPAN



**Chairperson: Prof. Mamoru Koketsu**  
Department of Chemistry and Biomolecular Science  
Faculty of Engineering, Gifu University  
1-1 Yanagido, Gifu 501-1193, JAPAN

# $\alpha$ -Glucosidase Inhibitory Activity of *Luffa acutangula* Seeds Extract

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*Luffa acutangula* (L) Roxb. seeds have been proved to be effective in the management of diabetes. Inhibition of  $\alpha$ -glucosidase is a useful treatment to reduce the absorption of glucose. This research aims to study the  $\alpha$ -glucosidase inhibitory activity of *L. acutangula* seeds extract and predict the chemical constituents which play a role in this inhibitory activity. Ethanol extract of *L. acutangula* seeds was assayed for in vitro and in vivo  $\alpha$ -glucosidase inhibitory activity using acarbose as a positive control. Molecular docking analysis was conducted against a  $\alpha$ -glucosidase complexed with acarbose (PDB ID: 2QMJ) using chemical constituents of *L. acutangula* seeds as ligands. Our results indicated that *L. acutangula* seeds showed alpha-glucosidase inhibitory action with an IC<sub>50</sub> value of 47.17 mg/ml while IC<sub>50</sub> value of acarbose was 4.5 mg/ml. Luteolin 7-O-glucoside exhibited the lowest binding energy, indicated the highest affinity to the enzyme.

Keywords:  $\alpha$ -glucosidase inhibitory activity, *L. acutangula*, molecular docking,

## INTRODUCTION:

Diabetes mellitus (DM) is a chronic metabolic disorder characterized by the increasing of blood glucose level due to reduction of insulin secretion and/or performance. Type 2 DM is caused by decreasing of insulin secretion or insulin receptor sensitivity that is typically occurred in people who are obese or overweight due to their lifestyle. Oral antidiabetic drugs that are widely used include sulfonylureas, biguanides, tiazolidindion and glinide. The side effects and expense of these drugs often leads to patient non-compliance in the administration of medications that can cause uncontrolled blood glucose levels lead to complications. One of the effective managements of non-insulin dependent DM is to inhibit the absorption of glucose by inhibition of carbohydrate hydrolyzing enzymes, such as  $\alpha$ -glucosidase and  $\alpha$ -amylase in the intestinal track [1].

In Indonesia *Luffa acutangula* (L) Roxb fruit is not only used as vegetables, but also empirically used as traditional drug for treatment of diabetes [2]. Both the methanolic and aqueous extract of *L. acutangula* had the potential to significantly reduced the elevated blood glucose level in streptozotocin induced diabetic rats [3]. Chloroform and ethyl acetate extract of *L. acutangula* fruit was reported to show  $\alpha$ -glucosidase inhibitory activity with the

percentage of inhibition activity was 50.8 and 43.9% respectively [4]. *L. acutangula* seed infusion was reported to decrease the blood glucose level on mice by glucose tolerance test [5]. This plant contains carbohydrate, carotene, protein, pyridine, amino acids (alanine, arginine, cysteine, glutamic acid, glycine, hydroxyproline, leucine, serine, and tryptophan), pipercolic acid, flavonoid and saponin. The fruit contains fiber, various vitamins and mineral, and lutein, while glyceride (palmitic acid, stearic acid, myristic acid), cucurbitacin B, luffangulin, saponin, and oleanolic acid were successfully isolated from the seed [6].

Research on the  $\alpha$ -glucosidase inhibitory activity of *L. acutangula* seed needs to be conducted. The aim of this research is to obtain the data of in vitro, in vivo and in silico  $\alpha$ -glucosidase inhibitory activity of *L. acutangula* seeds. In vivo study was conducted on mouse by oral glucose tolerance test, while the in silico study was performed by molecular docking analysis with Autodock Vina software.

## 17 MATERIALS AND METHODS:

**Plant Materials.** The *L. acutangula* seeds were obtained from traditional market in Solo and were determined at Biological Pharmacy Division, Faculty of Pharmacy, Gadjah Mada University. The seeds were cleaned and cut into small pieces prior to drying and were ground to fine powders (40 mesh) in a mechanical grinder. The powders were kept at room temperature prior to extraction.

**Chemicals.** The chemicals used in this study were of analytical grade. Sodium phosphate, sodium acetate, 4-nitrophenyl- $\alpha$ -glucopyranoside (PNPG),  $\alpha$ -glucosidase, acetic acid, and acarbose were purchased from Sigma-Aldrich.

**Animals.** Health male mice, weight of 18 to 22 g, were used in this research. The animals were adapted for 1 weeks, maintained with free access to food and water and kept at room temperature.

## EXPERIMENTAL:

### Preparation of *L. acutangula* seeds extract

Two hundred and fifty grams of air-dried *L. acutangula* seeds was extracted using 96% aqueous ethanol (2.5 L) with frequent shaking, in room temperature. The extraction was performed for 5 days. The extract then was filtered and the solvent was evaporated by vacuum rotavapory.

## 1 In Vitro $\alpha$ -Glucosidase Inhibition Assays

$\alpha$ -glucosidase enzyme inhibition assays were carried out on 96-well microplates in accordance with the method described by Elya et al. [7] using pNPG as a substrate. Briefly,  $\alpha$ -glucosidase (10  $\mu$ L, 1.0 unit/mL) was mixed 10  $\mu$ L of the extract with different concentrations (1, 2, 5 10 and 20  $\mu$ g/mL) in a 96-well plate for 10 min at 37 °C. The same

volume of 0.1 mM phosphate buffer (pH 6.8) was used as a negative control, and 200 µg/mL acarbose was used as a positive control. The same volume of 0.1 mM phosphate buffer with a same concentration of extract was used as blank control. After incubation for 5 min, 2 mM pNPG solution in 0.1 mM phosphate-nitrophenol buffer (pH 6.8) (30 µL) was added to quickly initiate the enzyme reaction. The activity was determined by measuring the solution absorbance at 405 nm. The enzyme inhibitory activity was determined by calculating the area under the curve for each sample and comparing this value with that of the negative control.

### **In vivo glucose tolerance test.**

The in vivo enzyme inhibitory activity test was conducted using mice as animal model using the method of glucose tolerance test in rats based on previous method [8]. The test was conducted in two different loading compounds, i.e. starch and sucrose. Table 1 represented the desain of the in vivo glucose tolerance test.

Table 1 Desain of the in vivo glucose tolerance test.

Group	Sucrose loadiiing	Starch loading
Positive control	Acarbose + sucrose	Acarbose + starch
Test group	LASE + sucrose	LASE + starch
Negative control	Sucrose	Starch

The animals ware fasted for 16 hours before the measurement of initial blood sugar level (T<sub>0</sub>). Five minutes after orally administration of test compounds, sucrose or starch wwa orally loaded. The blood glucose level were measured after 30 (T<sub>1</sub>), 60 (T<sub>2</sub>), 120 (T<sub>3</sub>), and 180 (T<sub>4</sub>) minutes.

### **Molecular Docking Analysis**

**Ligand Preparation.** The eight structures of chemical constituents of *L. acutangula* were obtained from published literatures. Molview a web-based chemical sketching software was used to sketch the two-dimensional (2D) chemical structures of each ligands. The energy minimization were also carried out with Molview using MMFF94 energy minimization, the prepared structure then were saved in pdb format.

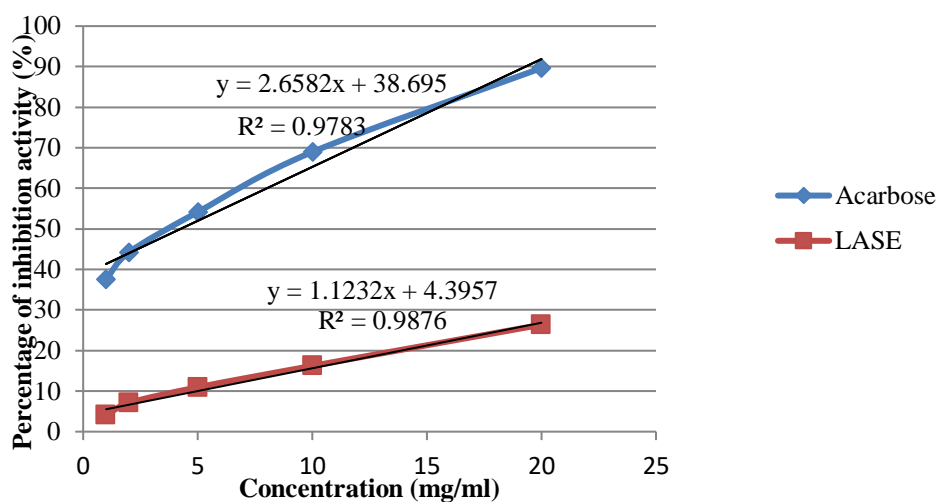
**Target Preparation.** RCBI protein data bank was used to obtain the three dimensional structure of  $\alpha$ -glucosidase with PDB ID: 2QMJ [9]. Target preparation was done by UCSF CHIMERA software. All nonstandard residues were deleted from target molecules. The validation of  $\alpha$ -glucosidase wasre performed using Autodock Vina in PyRx 0.8. The RMSD value was calculated using Pymol.

**Docking.** Docking was performed using the grid of size 15.0551 Å along X, Y, Z axis. The grid centers were set at x=20.22, y=5.33 and z=22.22. The results were analyzed their binding mode and interaction to respective target using Discovery Studio Visualizer.

## RESULTS AND DISCUSSION:

### In vitro $\alpha$ -glucosidase inhibitory activity

Enzyme  $\alpha$ -glucosidase<sup>20</sup> is a digestive enzyme that plays a role in the process of breaking the carbohydrates into a simple form to be absorbed. The  $\alpha$ -glucosidase enzyme catalyzes the breakdown of  $\alpha$ -1,6-glycoside bonds. Inhibition of this enzyme reduce the absorption of glucose. In this study the  $\alpha$ -glucosidase enzyme will hydrolyze the *p*-nitrophenyl- $\alpha$ -D-glucopyranose into yellow *p*-nitrophenol and glucose. The inhibitory test of  $\alpha$ -glucosidase enzyme activity was performed by using  $\alpha$ -glucosidase enzyme solution derived from *Saccharomyces cereviciaese* many 0.2 UI / ml diluted with buffer solution up to 1000  $\mu$ l, to control the stability of enzymes. The enzymatic reaction takes place at 37 ° C and works optimally at pH 6.0-9.0. The enzyme will remain stable at pH 5.0-10.0 [10]. The enzyme inhibition activity could be observed from the product of the reaction.<sup>11</sup> The *p*-nitrophenyl- $\alpha$ -D-glucopyranoside (pNPG) substrate was hydrolyzed by the  $\alpha$ -glucosidase enzyme, resulting *p*-nitrofenol (yellow).<sup>14</sup> The activity of the enzyme was measured based on the absorbance of *p*-nitrophenol. The higher inhibitory activity will be preseted as the reduction of the absorbance. Figure 1 presented the inhibitory activity of *L. acutangula* seed extract (LASE) and acarbose as drug control.<sup>23</sup>



**Figure 1. In vitro  $\alpha$ -glucosidase inhibitory activity**

The  $IC_{50}$  of acarbose was 4.45 mg/ml, while  $IC_{50}$  of LASE was 40.17 mg/ml. This resulted was in line with other researchs. Triadisti [11] reported that the  $\alpha$ -glucosidase  $IC_{50}$  of acarbose was 3.9 mg/ml, while Liu [12] reported that the  $\alpha$ -glucosidase  $IC_{50}$  of acarbose was 4.64 mg/ml. Although the inhibitory activity of LASE was not comparable to acarbose, however it was still show medium activity. Flavonoid content of LASE was predicted to play a role in this activity.

### **In vivo $\alpha$ -glucosidase inhibitory activity**

This study used the orally loading of 40% b/v sucrose as well as starch to obtain the significant increasing of blood glucose level. Tabel 2 figured out the mean of blood glucose level after administration of acarbose and LASE compare to negative control after sucrose and starch loading, The increasing of blood glucose level in acarbose group after loading of sucrose as well as starch was lowest among all groups. Acarbose is potent  $\alpha$ -glucosidase inhibitor that inhibit the degradation of acarbose to glucose and fructose resulting the decreasing of glucose absorption. Administration of LASE after loading of sucrose as well as starch was also significantly reduced the blood glucose level.

**13 Table 2. Blood glucose level after loading of sucrose and starch**

Group	Blood glucose level (mg/dL)					AUC (mg/dl)/ hour
	T <sub>0</sub>	T <sub>0.5</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	
Acarbose + sucrose	91.4	101.8	111.0	107.4	96.6	35.90
LASE + sucrose	90.6	106.8	120.4	108.0	96.2	46.10
Sucrose	92.2	119.8	140.4	118.0	104.8	75.16

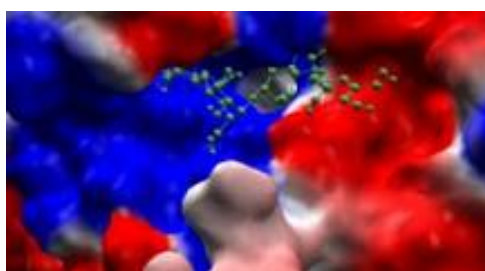


Acarbose + starch	93.2	96.0	109.6	107.0	95.8	28.10
LASE + starch	91.4	99.6	117.2	107.6	94.4	39.00
Starch	90.2	100.2	137.0	105.0	99.0	57.55

The activity of LASE was predicted in correlation with the chemical constituent, including flavonoid. Some flavonoids were reported to inhibit  $\alpha$ -glucosidase in vitro [13]. The aforementioned results showed LASE had the medium inhibitory effect on  $\alpha$ -glucosidase activity in vitro and in silico, and thus it was further studied in silico to predict the chemical constituent in LASE which was predicted to play a role in the activity.

### Docking Results.

Validation of docking parameters can be conducted by redocking the native ligand to its protein. The parameters regarded as valid if all atom root mean square deviation (RMSD) between the docked ligand and ligand from X-ray crystal structure is less than 2Å. Docking results were sorted by the lowest binding energy of the most populated cluster in the cases of convergence. The best docking conformation was chosen based on the lowest binding energy in the cluster with the greatest number of members. Computational docking analysis was generated using PyMOL (<http://www.pymol.org>). The Ligplot analyses were introduced to find the interaction pattern between the docked ligands and the active site residues. Ligplot is an essential tool to understand hydrophobic interactions as well as hydrogen bonding pattern. The docking analysis predicted that acarbose, as a competitive inhibitor [14] was surrounded by residues Glu277, His351 and Asp352 and these residues are believed to play critical roles in the catalytic mechanism as the corresponding residue of Glu276, His348 and Asp 349 in  $\alpha$ -glucosidase. in the case of acarbose. it can be seen that a hydrophobic patch comprising of Tyr71. Phe177 along with Phe157 surround and hold the terminal ring of acarbose.



**Figure 2. Docking acarbose to binding site of  $\alpha$ -glucosidase**

The chemical constituents in *L. acutangula* herbs and seed are Acutoside (A-I), luteolin 7-O-glucoside, amino acids (alanine, arginine, cysteine, glutamic acid, glycine, hydroxyproline, leucine, serine, and tryptophan), pipercolic acid, lufein, cucurbitacin B, and luffangulin. Table 3 presented the docking results of this compounds to  $\alpha$ -glucosidase.



**Tabel 3. Docking result of *L. acutangula* chemical constituents**

Compounds	$\Delta G$ (kcal/mol)	$\Sigma$ H bond
12 Acutoside A	-6.54	3
Acutoside B	-2.34	2
Acutoside C	-5.44	3
Acutoside D	-6.56	4
Acutoside E	-2.23	1
Acutoside F	-1.46	1
Acutoside G	-1.22	2
Acutoside H	-4.65	1
Acutoside I	-2.66	4
4 Luteolin 7-O-glucoside	-7.42	5
Alanine	2.32	1
Arginine	1.34	2
Cystein	0.87	1
glutamic acid	-1.56	2
glycine	-2.90	1
hydroxyproline	1.93	2
Leucine	2.66	2
serine	2.54	2
Tryptophan	-1.45	1
pipecolic acid	-3.21	3
lufein	-4.00	3
cucurbitacin B	-2.45	3
luffangulin	-2.12	4
acarbose	-7.65	5

This docking results indicated that amino acids have not good interaction to  $\alpha$ -glucosidase. The highest affinity was showed by luteolin 7-O-glucoside. It was predicted that this glycoside flavonoid have similar structure as acarbose.

### CONCLUSION:

*L. acutangula* seeds showed alpha-glucosidase inhibitory action with an IC<sub>50</sub> value of 47.17 mg/ml while IC<sub>50</sub> value of acarbose was 4.5 mg/ml. Luteolin 7-O-glucoside exhibited the lowest binding energy. indicated the highest affinity to the enzyme.

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## 6th Asian Network for Natural & Unnatural Materials (ANNUM VI)

Venue : Gifu, Japan

Date : July 27-28, 2018

### Program at a Glance

July 27 (Fri)

Venue: International Conference Room, **Nagaragawa Conventional Center** near Mt. Kinka

	Program	No.	Speaker	Moderator
10:00-10:30	Welcoming & Opening Ceremony (group photo)		President of Gifu University, Prof. H. Moriwaki	Dr. Lim
10:30-11:05	Plenary Lecture	PL-1	Professor Naresh Kumar (UNSW-Sydney)	Professor David StC. Black
11:05-11:17	Research Presentation I	OL-1	Zaher M A Judeh	Prof. Z. Judeh & Dr. V. Suryanti
11:17-11:29		OL-2	Purwantiningsih Sugita	
11:29-11:41		OL-3	Venty Suryanti	
11:41-11:53		OL-4	Harlinda Kuspradini	
11:53-12:05		OL-5	Taridaporn Buajareern	
12:05-12:17		OL-6	Hiroshi Takemori	
12:17-13:20		Lunch & Poster Presentation		
13:20-13:32	Research Presentation II	OL-7	Azhar Fatawi	Prof. Rakesh Kumar & Dr. Dinesh R. Garud
13:32-13:44		OL-8	Agmi Sinta Putri	
13:44-13:56		OL-9	Amol D. Sonawane	
13:56-14:08		OL-10	Afolabi Saheed	
14:08-14:20		OL-11	Daniel Wenholz	
14:20-14:32		OL-12	Vina R. Aldilla	
14:32-14:40		Coffee Break		
14:40-15:10	Keynote Lecture I	KN-1	Dr. Suresh Valiyaveettil (NUS-Singapore)	Prof. B. M. Yamin
15:10-15:22	Research Presentation III	OL-13	Sri Sugiarti	Dr. Hakim & Prof. Bora
15:22-15:34		OL-14	Aulia Sukma Hutama	
15:34-15:46		OL-15	Lukman Hakim	
15:46-15:58		OL-16	Ahmad Marzuki	
15:58-16:10		OL-17	Kazuhiro Manseki	
16:10-16:22		OL-18	Utpal Bora	
16:22-16:34		OL-19	Bohari Mohd Yamin	
16:34-		<i>(Move for UKAI: cormorant fishing) (within walking distance)</i>		
18:00-21:00	UKAI & dinner			

July 28 (Sat) Venue: Multipurpose Room, **Gifu University Satellite Campus** near JR Gifu station

	Program	No.	Speaker	Moderator	Program	No.	Speaker	Moderator
9:00-9:15	Welcome Message (Group photo)			Vice President of Gifu University (International Affairs), Prof. F. Suzuki				
	Venue 1: Multipurpose Room (Large)				Venue 1: Multipurpose Room (Middle)			
9:15-9:45	Keynote Lecture II	KN-2	Dr. Xue-Wei Liu (NTU-Singapore)	Prof. Willcox				
9:45-9:57	Research Presentation IV	OL-20	Irishi N. N. Namboothiri	Prof. Namboothiri & Prof. Olorundare	Research Presentation IV	OL-35	Yessie Widya Sari	Prof. Othaman & Prof. Nitta
9:57-10:09		OL-21	Olorundare Olufunke			OL-36	Akhmad Sabarudin	
10:09-10:21		OL-22	Muhammad Idham Darussalam Mardjan			OL-37	Rizafizah Othaman	
10:21-10:33		OL-23	Asmiyenti Djaliasrin Djali			OL-38	Takahiro Nitta	
10:33-10:50	Coffee Break							
10:50-11:02	Research Presentation V	OL-24	Roderick W. Bates	Prof. Bates & Prof. Thongpanchang	Research Presentation V	OL-39	Mark Willcox	Prof. Mudasir & Prof. Ikeda
11:02-11:14		OL-25	Tienthong Thongpanchang			OL-40	Mudasir Mudasir	
11:14-11:26		OL-26	Nurul Izzaty Hassan			OL-41	Masato Ikeda	
11:26-11:38		OL-27	Jyh-Tsung Lee			OL-42	Suminar Setiati Achmadi	
11:38-11:50		OL-28	Irmanida Batubara			OL-43	Refilda Suhaili	
11:50-13:00	Lunch							
13:00-13:30	Keynote Lecture III	KN-3	Dr. Tutik Dwi Wahyuningsih (UGM-Indonesia)	Prof. Zein				
13:30-13:42	Research Presentation VI	OL-29	Siti Mariyah Ulfa	Prof. Balagurunathan & Prof. Teramoto	Research Presentation VI	OL-44	Indrawati Usman	Dr. Abd Karim & Dr. Tutik D. W
13:42-13:54		OL-30	Mohamed E. Khalifa			OL-45	Radhia Putri	
13:54-14:06		OL-31	Rakesh Kumar			OL-46	Nurul Huda Abd Karim	
14:06-14:18		OL-32	Rahmiana Zein			OL-47	Tiny A. Koesmawati	
14:18-14:30		OL-33	Kuberan Balagurunathan			OL-48	Eti Rohaeti	
14:30-14:42		OL-34	Yoshikuni Teramoto			OL-49	Md. Serajul Haque Faizi	
14:45-15:20	Closing Ceremony & Poster Award Ceremony							
15:30-	Move to UKAI Museum (Bus will be provided)							
-18:00	UKAI Museum ( <i>within walking distance to the fireworks venue</i> )							
18:00-21:00	Nagara River Fireworks sponsored by Chunichi Shinbun (Chunichi Newspaper)							

6<sup>th</sup> Asian Network for Natural & Unnatural Materials (ANNUM VI)  
**Scientific Program**

**Friday, July 27, 2018**

*Venue: International Conference Room, Nagaragawa Convention Center*

**10:00-10:30**      **Welcome & Opening ceremony (group photo with the President)**  
President of Gifu University, Prof. Hisataka Moriwaki

**10:30-11:05**      **Plenary Lecture**                      [Moderator: Prof. David StC. Black]

**PL-1**

**p.27**

**Design and Synthesis of Short Amphiphilic Cationic Peptidomimetics Based on *N*-phenylacetyl glyoxamide and Biphenyl Backbones as Antibacterial Agents**

Naresh Kumar<sup>a,\*</sup>, Shashidhar Nizalapur<sup>a</sup>, Rajesh Kuppusamy<sup>a</sup>, Mark Willcox<sup>b</sup> and David StC Black<sup>a</sup>

<sup>a</sup>*School of Chemistry, UNSW Sydney, NSW 2052 Australia*

<sup>b</sup>*School of Optometry and Vision Science, UNSW Sydney, NSW 2052 Australia*

**11:05-12:17**      **Research Presentation I (12 min including Q&A)**

[Moderators: Prof. Zaher Judeh and Dr. Venty Suryanti]

**OL-1**

**p.35**

**Synthesis of Phenylpropanoid Sucrose Esters**

Judeh, Z. M. A.,<sup>1\*</sup> Ong, L. L.<sup>1,2</sup>, Khong, D. T.<sup>1</sup>

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**OL-2**

**p.36**

**Curcumenol, a Guaiane-Type Sesquiterpene from Indonesian *Curcuma heyneana***

**Rhizome And it's Antibacterial Activity Towards *Staphylococcus aureus* and *Escherichia coli***

P. Sugita<sup>a,\*</sup>, S. O. Firdaus<sup>a</sup>, A. Ilmiawati<sup>a</sup>, and D. U. C. Rahayu<sup>b</sup>

<sup>a</sup>*Department of Chemistry, Institut Pertanian Bogor, Kampus IPB Dramaga Bogor-16680, (West Java) Indonesia*

<sup>b</sup>*Department of Chemistry, Universitas Indonesia, Kampus UI Depok 16424, (West Java) Indonesia*

**OL-3** **p.37**

**Carotenoids as Natural Antioxidant and Sun Protection Agents**

Venty Suryanti<sup>\*</sup>, Fajar R. Wibowo, and Rahmadian A.S.T Haqqi

*Department of Chemistry, Faculty of Mathematics and Natural Sciences, Sebelas Maret University, Jl. Ir. Sutami 36A Surakarta 57126 Indonesia*

**OL-4** **p.38**

**The Potential Essential Oils of Three Plant Species in the Genus *Litsea* from East Kalimantan, Indonesia**

Harlinda Kuspradini<sup>a\*</sup>, Agmi Sinta Putri,<sup>a</sup> Sinta,<sup>a</sup> Edi Sukaton,<sup>a</sup>

*<sup>a</sup>Department Faculty of Forestry, Mulawarman University, Jl. Ki Hajar Dewantara Kampus Gunung Kelua Samarinda, Kalimantan Timur, Indonesia*

**OL-5** **p.39**

**Bioactive Secondary Metabolites from Thai Microorganisms**

Taridaporn Buajarern, Seangaroon Yoiprommarat, Supichar Chokpaiboon, Chanwit Suriyachadkun and Vanicha Vichai

*National Center for Genetic Engineering and Biotechnology (BIOTEC), National Science and Technology Development Agency (NSTDA), Pathum Thani 12120, Thailand*

**OL-6** **p.40**

**Pterosin B, an ingredient in *Pteridium aquilinum*, is helpful for the treatment of osteoarthritis**

Hiroshi Takemori

*Department of Chemistry and Biomolecular Science, Faculty of Engineering, Gifu University, Yanagido 1-1, Gifu, 501-1193, Japan*

**12:17-13:20 Lunch and Poster Presentation**



**13:20-14:32      Research Presentation II (12 min including Q&A)**  
[Moderator: Prof. Rakesh Kumar and Dr. Dinesh R. Garud]

**OL-7** **p.41**

**Secondary Metabolites of Turmeric and Ginger on Various Altitudes and Soil Characteristics**

Azhar Fatawi<sup>a</sup>, Komariah<sup>b\*</sup>, Bambang Pujiasmanto<sup>c</sup>, Irmanida Batubara<sup>d,e</sup>

<sup>a</sup>*Lab. Station for Environmental Analysis (collaborative laboratory of Sebelas Maret University – The UGSAS, Gifu University), Sebelas Maret University (UNS), Jl. Ir. Sutami No. 36A, Kentingan, Surakarta, Indonesia, 57126*

<sup>b</sup>*Soil Science Dept., Fac. of Agriculture, UNS, Jl. Ir. Sutami No. 36A, Kentingan, Surakarta, 57126, Indonesia*

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<sup>d</sup>*Tropical Biopharmaca Research Center, Bogor Agricultural University, Jl. Taman Kencana No. 3, Bogor 16128, Indonesia*

<sup>e</sup>*Dept. of Chemistry, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Darmaga Campus, Bogor 16680, Indonesia*

**OL-8** **p.42**

**Biological Activity of *Dryobalanops lanceolata* Burck. Leaves Oil Grown in East Kalimantan, Indonesia**

Agmi Sinta Putri,<sup>a</sup> and Harlinda Kuspradini<sup>a\*</sup>

<sup>a</sup>*Department Faculty of Forestry, Mulawarman University, Jl. Ki Hajar Dewantara Kampus Gunung Kelua Samarinda, Kalimantan Timur, Indonesia*

**OL-9** **p.43**

**Iron-Promoted Cascade Cyclization for the Synthesis of Selenopheno[2',3':4,5]thieno/seleno [2,3-*b*]quinoline: DFT Mechanistic Study and Fluorescence Properties**

Amol D. Sonawane,<sup>a</sup> and Mamoru Koketsu<sup>a</sup>

<sup>a</sup>*Department of Chemistry and Biomolecular Science, Faculty of Engineering, Gifu University, Gifu 501-1193 Japan*

**OL-10** **p.44**

**Anti-Proliferative and ER Stress Triggering Potentials of *Polyalthia longifolia* extract against Prostate Cancer Cells Using *in-Vitro* and *in-Vivo* Models**

Afolabi Saheed<sup>a</sup>, Olorundare Olufunke<sup>a\*</sup>, Syed Deeba<sup>b</sup>, Mukhtar Hasan<sup>b</sup> and Mamoru Koketsu<sup>c</sup>

<sup>a</sup> *Department of Pharmacology and Therapeutics, Faculty of Basic Medical Sciences, University of Ilorin, Ilorin, Kwara, Nigeria*

<sup>b</sup> *Department of Dermatology, University of Wisconsin, Madison, WI 53706, USA*

<sup>c</sup> *Department of Chemistry and Biomolecular Science, Faculty of Engineering, Gifu University (1-1 Yanagido, Gifu 501-1193, JAPAN)*

**OL-11**

**p.45**

**Discovery and Development of Novel Bacterial RNA Polymerase Holoenzyme Formation Inhibitors**

D. Wenholz<sup>a</sup>, M. Miller<sup>b</sup>, P. Lewis<sup>b</sup>, R. Griffith<sup>a</sup>, N. Kumar<sup>a</sup>

<sup>a</sup>*School of Chemistry, UNSW Sydney, Kensington, Australia*

<sup>b</sup>*School of Environmental and Life Sciences, University of Newcastle, Callaghan, Australia*

**OL-12**

**p.46**

**Glyoxylamide Based Peptide-Mimics as Self-Assembled Gels for Drug Delivery**

Vina R. Aldilla, Nizalapur, S., Martin, A., Yee, E., Ho, K., Thordarson, P., Black, D., Kumar, N\*

*School of Chemistry, UNSW Sydney, Kensington, Australia*

**14:32-14:40 Coffee break**

**14:40-15:10 Keynote Lecture I** [Moderator: Prof. Bohari Mohd Yamin]

**KN-1**

**p.29**

**Synthesis and characterisation of oligo- and polyamines**

Suresh Valiyaveetil

*Department of Chemistry, National University of Singapore, 3 Science Drive 3, Singapore 117543*

**15:10-16:34 Research Presentation III** (12 min including Q&A)

[Moderators: Dr. Lukman Hakim and Prof. Utpal Bora]

**OL-13**

**p.47**

**A Study on the Corrosion Inhibition Properties of Carbon Nanoparticle on Copper**

Sri Sugiarti<sup>\*</sup>, Noviyana Darmawan, and Wulan Suci Ambarwati

*Department of Chemistry, Bogor Agricultural University, Gedung Kimia 1 Lantai 3, Jl Tanjung Kampus IPB Dramaga, Bogor 16680, Indonesia*

**OL-14** **p.48**

**Third-order Density-functional Tight-binding Parameters for Description of Zirconium-containing Systems**

Aulia Sukma Hutama<sup>a,\*</sup>

*<sup>a</sup>Department of Chemistry, Faculty of Mathematics and Natural Sciences, Universitas Gadjah Mada, Sekip Utara, Bulaksumur, Yogyakarta 55281 Indonesia*

**OL-15** **p.49**

**Thermodynamic Stability and Negative Thermal Expansion of EDI Zeolitic-framework Ice**

Lukman Hakim<sup>a,\*</sup>, Masakazu Matsumoto<sup>b</sup>, and Hideki Tanaka<sup>b</sup>

*<sup>a</sup>Department of Chemistry, Brawijaya University, Jl. Veteran, Malang, Indonesia 65145*

*<sup>b</sup>Research Institute of Interdisciplinary Science, Okayama University, Tsushima-naka 3-1-1, Okayama, Japan 700-8530*

**OL-16** **p.50**

**Optical and Thermal Properties of Ag<sup>+</sup>-Doped Tellurite Glasses**

Ahmad Marzuki

*Department of Physics, Sebelas Maret University, Jl. Ir. Sutami 36 A, Surakarta 57126 Indonesia*

**OL-17** **p.51**

**Creation of Organic-inorganic Nanocomposites for Molecular Based Solar Cells**

Kazuhiro Manseki<sup>a,\*</sup> and Takashi Sugiura<sup>a</sup>

*<sup>a</sup>The Graduate School of Natural Science and Technology, Gifu University, 1-1 Yanagido, Gifu, 501-1193, Japan*

**OL-18** **p.52**

**In situ Derived Palladium Nanoparticles for Suzuki and Sonogashira Cross-coupling Reaction**

Utpal Bora

*Department of Chemical Sciences, Tezpur University, Tezpur 784 028, India*

OL-19

p.53

**How Tolerance the Ruthenium Catalysts for the Metathesis of Olefin Bearing Oxygen and Sulfur Functionalities**

Bohari M Yamin<sup>a,\*</sup>, N.W. Awang<sup>a</sup>, M.N.M.A.G.Rasa Astiti<sup>b</sup> and K. Nomura<sup>c</sup>

<sup>a</sup>*Faculty of Science and Technology, Universiti Sains Islam Malaysia, Nilai 71800, Negeri Sembilan, Malaysia*

<sup>b</sup>*Department of Chemistry, Faculty of Science and Engineering, Tokyo Metropolitan University, 1-1 Minami Osawa, Hachioji, Tokyo 192-0397. Japan*

**18:00-20:00 UKAI (cormorant fishing) & Dinner**

**Saturday, July 28, 2018**

*Venue: Multipurpose Room, Gifu University Satellite Campus near JR Gifu station*

*Venue 1: Multipurpose Room (Large)*

**9:00-9:15 Welcome message (group photo with the Vice President)**  
Vice President of Gifu University, Prof. Fumiaki Suzuki

**9:15-9:45 Keynote Lecture II** [Moderator: Prof. Mark Willcox]

**KN-2**

**p.31**

**Glycosciences: The Next Biomolecular Frontiers**

Xue-Wei Liu

*Division of Chemistry and Biological Chemistry, Nanyang Technological University, Singapore 637371*

**9:45-10:33 Research Presentation IV** (12 min including Q&A)

[Moderators: Prof. Irishi N. N. Namboothiri and Prof. Olorundare Olufunke]

**OL-20**

**p.54**

**Polycyclic Cage Compounds as Prospective High Energy Density Materials**

Irishi N. N. Namboothiri<sup>a,\*</sup> Arindrajit Chowdhury<sup>b</sup> and Neeraj Kumbhakarna<sup>b</sup>

<sup>a</sup>*Department of Chemistry, Indian Institute of Technology Bombay, Mumbai 400076*

<sup>b</sup>*Department of Mechanical Engineering, Indian Institute of Technology Bombay, Mumbai 400076*

**OL-21** **p.55**

**Cytotoxic Potentials of Clerodendrum volubile extract and its Possible Proteomic Targets**

Olorundare Olufunke<sup>a\*</sup>, Afolabi Saheed<sup>a</sup>, Gyebi Gideon<sup>c</sup>, Syed Deeba<sup>b</sup>, Mukhtar Hasan<sup>b</sup> and Koketsu Mamoru<sup>d</sup>

<sup>a</sup> *Department of Pharmacology and Therapeutics, Faculty of Basic Medical Sciences, University of Ilorin, Ilorin, Kwara, Nigeria*

<sup>b</sup> *Department of Dermatology, University of Wisconsin, Madison, WI 53706, USA*

<sup>c</sup> *Department of Biochemistry, University of Ilorin, Ilorin, Kwara, Nigeria*

<sup>d</sup> *Department of Chemistry and Biomolecular Science, Faculty of Engineering, Gifu University (1-1 Yanagido, Gifu 501-1193, JAPAN)*

**OL-22** **p.56**

**Photo-induced-synthesis of 3-Hydroxyisoindolinones**

Muhammad Idham Darussalam Mardjan<sup>a\*</sup>, Bambang Purwono<sup>a</sup>, Priatmoko<sup>a</sup>, Akhmad Syoufian<sup>a</sup>, Jean-Luc Parrain<sup>b</sup> and Laurent Commeiras<sup>b</sup>

<sup>a</sup> *Department of Chemistry, Faculty of Mathematics and Natural Sciences, Universitas Gadjah Mada, Indonesia*

<sup>b</sup> *Institut des Sciences Moléculaires de Marseille, Campus Scientifique de St. Jérôme, Université d'Aix-Marseille, France*

**OL-23** **p.57**

**Sun Protection Effect of New Benzophenone Derivatives in Sunscreens Cream**

**Formulations**

Asmiyenti Djaliasrin Djaliil<sup>\*</sup>, Edo Hary Wibowo, Indah Ulil Afwa, Tri Ambarwati, and Erza Genatrika

*Faculty of Pharmacy, Universitas Muhammadiyah Purwokerto, Jl. Raya Dukuwaluh PO. Box 202 Purwokerto, Indonesia, 53182*

**10:33-10:50**      **Coffee break**

**10:50-11:50**      **Research Presentation V** (12 min including Q&A)

[Moderators: Prof. Roderick W. Bates and Prof. Tienthong Thongpanchang]

**OL-24** **p.58**

**Recent Progress in the Synthesis of Natural and Unnatural Products**

Roderick W. Bates

*Division of Chemistry and Biological Chemistry, School of Physical and Mathematical Sciences, Nanyang Technological University, 21 Nanyang Link, Singapore 637371*

**OL-25** **p.59**

**Chiral Derivatizing Agents with Constrained Aromatic Residue for NMR Shift Difference Method**

K. Dolsophon,<sup>a</sup> J. Sophonpong,<sup>a</sup> S. Sungsuwan,<sup>a</sup> N. Ruangsupapichart,<sup>a</sup> J. Kornsakulkarn,<sup>b</sup> C. Thongpanchang<sup>b</sup> and T. Thongpanchang<sup>a,b\*</sup>

<sup>a</sup>*Department of Chemistry and Center for Innovation in Chemistry, Faculty of Science, Mahidol University, Rama 6 Road, Bangkok 10400 Thailand*

<sup>b</sup>*National Center for Genetic Engineering and Biotechnology, Thailand Science Park, Klong Luang, Patumthani 12130 Thailand*

**OL-26** **p.60**

**Synthesis, In Silico, Antioxidant and Anticholinesterase Activities of Coumaryl 1,3-Selenazole Derivative**

Nurul Izzaty Hassan<sup>a,\*</sup>, Nurul Zawani Alias<sup>a,b</sup>, Muhd Hanis Md Idris and Wan Yaacob Wan Ahmad

<sup>a</sup>*School of Chemical Sciences and Food Technology, Faculty of Science & Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia*

<sup>b</sup>*Faculty of Applied Science, Universiti Teknologi MARA Perlis, Arau Campus, 02600 Arau, Perlis, Malaysia*

<sup>c</sup>*Integrative Pharmacogenomics Institute (iPROMISE), Universiti Teknologi MARA Selangor, Puncak Alam Campus, 42300 Bandar Puncak Alam, Selangor, Malaysia*

**OL-27** **p.61**

**Mechanochemical Activation of Nitroxide-mediated Polymerization**

Ting-Wei Liu, Jia-Xuan Chen, Meng-Hsien Wang, and Jyh-Tsung Lee<sup>\*</sup>

*Department of Chemistry, National Sun Yat-sen University, 70 Lienu-hai Rd, Kaohsiung 80424, Taiwan*

**OL-28** **p.62**

**Leaves, Stem, and Fruits *Xylocarpus granatum* for Cosmetics Raw Materials**

Irmanida Batubara<sup>a,b\*</sup> Muhamad Nursid<sup>c</sup>, Wulan Tri Wahyuni<sup>a,b</sup>

<sup>a</sup>*Dept. of Chemistry, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Darmaga Campus, Bogor 16680, Indonesia*

<sup>b</sup>*Tropical Biopharmaca Research Center, Bogor Agricultural University, Jl. Taman Kencana No. 3, Bogor 16128, Indonesia*

<sup>c</sup>*Research Center for Marine and Fisheries Product Processing and Biotechnology, Agency of Marine and Fisheries Research, Jalan KS. Tubun Petamburan VI Jakarta, Indonesia*

**11:50-13:00 Lunch**

**13:00-13:30 Keynote Lecture III** [Moderator: Prof. Rahmiana Zein]

**KN-3**

**p.33**

**The Synthesis and Biological Evaluation of Hydroxy(s) Chalcone and N-Acetyl Pyrazoline Series as Sunscreen and Antioxidant Agents**

Tutik Dwi Wahyuningsih<sup>a</sup>, Yehezkiel Steven Kurniawan<sup>a</sup> and Kiki Rizki Pinasti<sup>a</sup>

<sup>a</sup>*Departement of Chemistry, Faculty of Mathematics and Natural Sciences, Universitas Gadjah Mada, Sekip Utara Yogyakarta 55185, Indonesia*

**13:30-14:42 Research Presentation VI** (12 min including Q&A)

[Moderators: Prof. Kuberan Balagurunathan and Prof. Yoshikuni Teramoto]

**OL-29**

**p.63**

**Selective Formation of 2-Cyclohexene-1-one from Hydrogenation Reaction of Phenol using M/SiO<sub>2</sub>-ZrO<sub>2</sub> [M = Ni, Cu]**

Siti Mariyah Ulfa<sup>a,\*</sup> Ilham Permana<sup>a</sup>, and Quarina Febrially P.<sup>a</sup>

<sup>a</sup>*Chemistry Department, Faculty of Science, Brawijaya University, Jl. Veteran Malang, East Java, INDONESIA 65145*

**OL-30**

**p.64**

**Potential Bioactivity of 2-Mercaptomethyl- Benzimidazole Derivatives**

Mohamed E. Khalifa<sup>\*</sup> Adil A. Gobouri and Fahad M. Kabli

*Department of Chemistry, Faculty of Science, Taif University, Al-Hawieyah P.O. Box 888, Taif 21974, Saudi Arabia*

**OL-31**

**p.65**

**Design and synthesis of extended Isatin and 1,4-dihydropyridine derivatives as anticancer agents**

Rakesh Kumar

*Department of Chemistry, University of Delhi, Delhi-110007*



**OL-32** **p.66**

**Exploration and Exploitation of Agricultural and Marine Solid Waste for Removal of Heavy Metals and Dye from Aqueous Solution**

Rahmiana Zein<sup>a,\*</sup>, Hermansyah Aziz<sup>b</sup>, Refilda<sup>c</sup>, DewiNofita<sup>a</sup>, NovrizaldiWardana<sup>a</sup>, PutriRamadhani<sup>a</sup>

<sup>a</sup>*Laboratory of Analytical Environmental Chemistry, Department of Chemistry, Andalas University, Padang, Indonesia*

<sup>b</sup>*Laboratory of Physical Chemistry, Department of Chemistry, Andalas University, Padang, Indonesia*

<sup>c</sup>*Laboratory of Applied Chemistry, Department of Chemistry, Andalas University, Padang, Indonesia*

**OL-33** **p.67**

**Glycosaminoglycans: Biosynthesis, Structures, and Functions**

Kuberan Balagurunathan

*Departments of Biology, Bioengineering, and Medicinal Chemistry, University of Utah, Skaggs Hall RM 307, 30 South 2000 East, Salt Lake City, UT 84112, USA*

**OL-34** **p.68**

**Cellulose Nanofibers as a Module for Paper-based Microfluidic Analytical Devices**

Yoshikuni Teramoto

*Department of Applied Life Science, Faculty of Applied Biological Sciences, Gifu University, 1-1 Yanagido, Gifu 5011193, Japan*

*Center for Highly Advanced Integration of Nano and Life Sciences (G-CHAIN), Gifu University, 1-1 Yanagido, Gifu 5011193, Japan*

*Venue 2: Multipurpose Room (Middle)*

**9:45-10:33**      **Research Presentation IV** (12 min including Q&A)

[Moderators: Prof. Rizafizah Othaman and Prof. Takahiro Nitta]

**OL-35** **p.69**

**Eggshell Nanocalcium to Improve Biogas Production**

Yessie Widya Sari<sup>a,\*</sup>, Eka Lestari<sup>a</sup>, Utami Dyah Syafitri<sup>b</sup> and Zaenal Abidin<sup>c</sup>

<sup>a</sup>*Biophysics Research Group, Department of Physics, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Indonesia*

<sup>b</sup>*Department of Statistics, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Indonesia*

<sup>c</sup>*Department of Chemistry, Faculty of Mathematics and Natural Sciences Bogor Agricultural University, Indonesia*

**OL-36** **p.70**

**Application of Nanomaterials in Bioanalytical Chemistry**

Akhmad Sabarudin

*Department of Chemistry, Faculty of Science, Brawijaya University, Jl Veteran 65145, Malang, Indonesia*

**OL-37** **p.71**

**Confinement of Choline Chloride:Urea into Nanoporous Silica for Capturing Carbon Dioxide**

Rizafizah Othaman<sup>a,b\*</sup>, Zaitun Ghazali<sup>b</sup>, Nur Hasyareeda Hassan<sup>a, b</sup>, The Lee Peng<sup>b</sup> and Mohd Ambar Yarmo<sup>b</sup>

<sup>a</sup>*Polymer Research Center*

<sup>b</sup>*School of Chemical Sciences and Food Technology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia*

**OL-38** **p.72**

**Understanding movements of molecular shuttles driven by biomolecular machines**

Takahiro Nitta\*

*Applied Physics Course, Faculty of Engineering, Gifu University, 501-1193, Japan*

**10:33-10:50**      **Coffee break**

**10:50-11:50**      **Research Presentation V** (12 min including Q&A)

[Moderators: Prof. Mudasir Mudasir and Prof. Masato Ikeda]

**OL-39** **p.73**

**Reduction in Contact Lens-induced Adverse Events by Antimicrobial Contact Lenses**

Parthasarathi Kalaiselvan,<sup>a</sup> Debarun Dutta,<sup>a</sup> Nagaraju Konda,<sup>b,c</sup> Savitri Sharma,<sup>b</sup> Pravin Krishnan,<sup>b</sup> Naresh Kumar,<sup>d</sup> Fiona Stapleton<sup>a</sup> and Mark Willcox<sup>a</sup>

<sup>a</sup>*School of Optometry and Vision Science, University of New South Wales, Sydney, Australia*

<sup>b</sup>*LV Prasad Eye Institute, Hyderabad, India*

<sup>c</sup> School of Medical Sciences, University of Hyderabad, Hyderabad, India

<sup>d</sup> School of Chemistry, University of New South Wales, Sydney, Australia

**OL-40**

**p.74**

**Spectroscopic Studies on the Binding of Cationic Dye of Methyl Green to Calf-thymus DNA**

Mudasir Mudasir<sup>a,\*</sup>, Endang Tri Wahyuni<sup>a</sup>, Suherman Suherman<sup>a</sup> and Naoki Yoshioka<sup>b</sup>

<sup>a</sup>Department of Chemistry, Faculty of Mathematics and Natural Sciences, Gadjah Mada University, Sekip Utara, P.O. Box Bls. 21, Yogyakarta 55281, Indonesia

<sup>b</sup>Department of Applied Chemistry, Faculty of Science and Technology, Keio University, 3-14-1 Hiyoshi, Kohoku-ku, Yokohama 223-8522, Japan

**OL-41**

**p.75**

**Stimuli-responsive Supramolecular Nanofibers**

Masato Ikeda<sup>a,b,c,d,\*</sup>

<sup>a</sup>Department of Life Science and Chemistry, Graduate School of Natural Science and Technology, Gifu University, 1-1 Yanagido, Gifu 501-1193, Japan

<sup>b</sup>United Graduate School of Drug Discovery and Medical Information Sciences, Gifu University, 1-1 Yanagido, Gifu 501-1193, Japan

<sup>c</sup>Center for Highly Advanced Integration of Nano and Life Sciences, Gifu University (G-CHAIN), Gifu 501-1193, Japan

<sup>d</sup>Gu composite Center, Gifu University, 1-1 Yanagido, Gifu 501-1193, Japan

**OL-42**

**p.76**

**Triterpenoids of Avocado (*Persea americana*) Seeds: Findings the Potency as Anticancer Agent**

Suminar Setiati Achmadi

Department of Chemistry, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Dramaga Campus, Bogor 16680, Indonesia

**OL-43**

**p.77**

**Characterization and Utilization of Young Coconut Waste (*Cocos nucifera* L) for Manufacturing Fermented Plant Extracts that Potential as Natural Fertilizer and Pesticides**

Refilda Suhaili<sup>\*</sup>, Sabrina Yasmine, and Zilfa

Department of Chemistry, Faculty of Mathematics and Natural Sciences,

Andalas University, Padang, Indonesia

**OL-44** **p.78**

**Optimization Ultrasonic Extraction of *Peperomia pellucida* L. Kunth to Determine Total Antioxidant by DPPH Method**

Indrawati Usman, Vika Samila, F , Refilda Suhaili\*

*Department of Chemistry, Faculty of Mathematics and Natural Sciences, Andalas University, Padang, Indonesia*

**OL-45** **p.79**

**Immobilization of Enzymatic Trypsin Microreactor on Polymeric Monoliths for Biocatalytic Reactions in Capillary Liquid Chromatography**

Radhia Putri\*, Lee Wah Lim, and Toyohide Takeuchi

*Department of Chemistry and Biomolecular Science, Faculty of Engineering, Gifu University, 1-1 Yanagido, Gifu 501-1193, JAPAN*

**13:30-14:42**      **Research Presentation VI** (12 min including Q&A)

[Moderators: Dr. Nurul Huda Abd Karim and Dr. Tutik Dwi Wahyuningsih]

**OL-46** **p.80**

**Metal Salphen Complexes as Potential Optical DNA Sensing Material**

Nurul Huda Abd Karim<sup>a,\*</sup>, Norhidayah Selamat, Lee Yook Heng and Nurul Izzaty Hassan

*School of Chemical Sciences & Food Technology, Faculty of Science & Technology, Universiti Kebangsaan Malaysia, 43000 Bangi, Selangor, Malaysia*

**OL-47** **p.81**

**Total Arsenic Measurement in Blue Mussel Samples Using Extraction Method Followed by GF-AAS**

T. A. Koesmawati<sup>a,\*</sup>, S. Tanuwidjaja<sup>b</sup>, M. F. Solihat<sup>b</sup>, N. Fitria<sup>b</sup> and T. Purwanti<sup>c</sup>

<sup>a</sup>*Research Unit for Clean Technology, Indonesian Institute of Sciences (LIPI), Jalan Sangkuriang, Bandung 40135, Indonesia*

<sup>b</sup>*Bakti Asih Higher Education for Analyst (STABA), Jalan Padasuka Atas No. 233, Bandung, Indonesia*

<sup>c</sup>*Departemen Technical, Laboratory and Environment Control Section, PT Badak NGL, Jl Mulawarman, Bontang 75325, Indonesia*

**OL-48** **p.82**

**Screening of Flesh and Peel Extracts of Snake Fruits Varieties for Antioxidant and Anti-Glycation Activities**

Eti Rohaeti<sup>a,b,\*</sup>, Irmanida Batubara<sup>a,b</sup>, Sumaiyah<sup>a</sup>

*<sup>a</sup>Dept. of Chemistry, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Darmaga Campus, Bogor 16680, Indonesia*

*<sup>b</sup>Tropical Biopharmaca Research Center, Bogor Agricultural University, Jl. Taman Kencana No. 3, Bogor 16128, Indonesia*

**OL-49** **p.83**

**Highly Selective Visual Detection of Fe<sup>3+</sup> at ppm Level**

Md. Serajul Haque Faizi

*P. G. Department of Chemistry, L. S. College, B. R. A. Bihar University, Muzaffarpur, Bihar, India*

## **Poster Presentation**

*Venue: International Conference Room, Nagarakawa Convention Center*

**Friday, July 27, 2018 12:17-13:10**

**Introduction of Gu Composites Center (GCC)** **p.84**

**PO-1** **p.85**

**Simple Modification of Carbon Fiber by N<sub>2</sub> Bubble**

Daiki Ishida<sup>a</sup>, Shinya Takahashi<sup>a,b</sup> and Akiyoshi Takeno<sup>a,b,\*</sup>

*<sup>a</sup>Chemistry and Biomolecular Science, Gifu University, 1-1Yanagido, Gifu-shi, Gifu, 501-1193, Japan*

*<sup>b</sup>Gu composites center, Gifu University, 1-1Yanagido, Gifu-shi, Gifu, 501-1193, Japan*

**PO-2** **p.86**

**Augmented Nuclease Resistance and Gene Silencing with 3'-end modified small interfering RNAs**

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**Synthesis of Quinoxaline Derivatives and Their Evaluation of Cytotoxic Activity against HL-60 Cells**

Yukari Ono, Amol. D. Sonawane, Daiki Kaneko, Masayuki Ninomiya and Mamoru Koketsu\*  
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H. Sugiyama, M. Ninomiya, T. Udagawa K. Tanaka and M. Koketsu  
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Daiki Kaneko, Amol D.Sonawane, Yukari Ohno, Masayuki Ninomiya and Mamoru Koketsu  
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M. Nagumo<sup>a</sup>, M. Ninomiya<sup>a</sup>, K. Tanaka<sup>b,c</sup>, and M. Koketsu<sup>a,\*</sup>

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N. Suematsu<sup>a</sup>, M. Ninomiya<sup>a</sup>, K. Tanaka<sup>b,c</sup>, and M. Koketsu<sup>a,\*</sup>

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A. Shimozuma<sup>a,b</sup> and O. Niyomura<sup>b</sup>

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Dini Hanifa, Erizal, Salman\*

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Mochammad Fauzan, Reno Saktian, Venty Suryanti, and Fajar Rakhman Wibowo\*



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Keita Sugiura<sup>a</sup>, Masanori Tachikawa<sup>b</sup> and Taro Udagawa<sup>a,\*</sup>

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<sup>b</sup>*Quantum Chemistry Division, Graduate School of NanoBioScience, Yokohama City University, Japan*

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Hideya Sugimoto<sup>a</sup>, Masanori Tachikawa<sup>b</sup> and Taro Udagawa<sup>a,\*</sup>

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<sup>b</sup>*Quantum Chemistry Division, Graduate School of NanoBioScience, Yokohama City University, Japan*

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Sonosuke Tsuchiya and Taro Udagawa<sup>\*</sup>

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<sup>c</sup>*Reseach Unit for Clean technology, Indonesian Institute of Sciences (LIPI), Jl. Sangkuriang, Bandung 40135, Indonesia*

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David Marikah, Lee Wah Lim and Toyohide Takeuchi

*Division of Materials Engineering, Graduate School of Engineering, Gifu University, Gifu 501-1193, Japan*

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*Divisions of Materials Engineering, Graduate School of Engineering, Gifu University, 1-1 Yanagido, Gifu 501-1193, Japan*

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Maya Imaeda, Lee Wah Lim and Toyohide Takeuchi

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Tetty Kemala<sup>a</sup>, Haris Darmawan<sup>a</sup> and Ahmad Sjahriza<sup>a</sup>

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Trivadila<sup>a, b\*</sup> and Kazutaka Maeyama<sup>b</sup>

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<sup>a</sup>*Faculty of Pharmacy, Setia Budi University, Jalan Letjen Sutoyo, Solo, Indonesia*  
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<sup>a</sup> *Department of Chemistry, Bogor Agricultural University, Bogor-16680, Indonesia*  
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<sup>a</sup>*Department of Chemistry, Faculty of Mathematic and Natural Sciences, Udayana University, Kampus Bukit Jimbaran Bali 80361 Indonesia*  
<sup>b</sup>*Marine Ecology Research Center, School of Environment, Science, and Engineering, Southern Cross University, Lismore, NSW, Australia*
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<sup>1</sup>*Dr. T. R. Ingle Research Laboratory, Department of Chemistry, Sir Parashurambhau College, Pune 411030, Maharashtra, INDIA*  
<sup>2</sup>*Department of Chemistry, Sir Parashurambhau College, Pune 411030, Maharashtra, INDIA*
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Pravin C. Mhaske<sup>a</sup>, Yogita K. Abhale<sup>b</sup>, Dhiman Sarkar<sup>c</sup>

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Cecilia Nthabiseng<sup>a</sup>, Miranda Seopa<sup>a</sup>, Samson Mashela<sup>a,\*</sup>, Deepak Salunke<sup>b</sup>, Chandrashakher Kulkarni<sup>c</sup>, Dr. Glen Taylor<sup>d</sup> and Pravin Kendrekar<sup>a,\*</sup>

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