



Certificate of Attendance

This is to certify that

Dr. Rina Herowati

has attended as
POSTER PRESENTER

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

held on July 27st -28th, 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
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α -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 α -glucosidase is a useful treatment to reduce the absorption of glucose. This research aims to study the α -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 α -glucosidase inhibitory activity using acarbose as a positive control. Molecular docking analysis was conducted against a α -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 IC₅₀ value of 47.17 mg/ml while IC₅₀ 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: α -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 α -glucosidase and α -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 α -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 α -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 α -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.

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- α -glucopyranoside (PNPG), α -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 rotavapour.

In Vitro α -Glucosidase Inhibition Assays

α -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, α -glucosidase (10 μ L, 1.0 unit/mL) was mixed 10 μ L of the extract with different concentrations (1, 2, 5, 10 and 20 μ 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 (T₀). Five minutes after orally administration of test compounds, sucrose or starch wwa orally loaded. The blood glucose level were measured after 30 (T₁), 60 (T₂), 120 (T₃), and 180 (T₄) 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 α -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 α -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 α -glucosidase inhibitory activity

Enzyme α -glucosidase is a digestive enzyme that plays a role in the process of breaking the carbohydrates into a simple form to be absorbed. The α -glucosidase enzyme catalyzes the breakdown of α -1,6-glycoside bonds. Inhibition of this enzyme reduce the absorption of glucose. In this study the α -glucosidase enzyme will hydrolyze the *p*-nitrophenyl- α -D-glucopyranose into yellow *p*-nitrophenol and glucose. The inhibitory test of α -glucosidase enzyme activity was performed by using α -glucosidase enzyme solution derived from *Saccharomyces cereviciaese* many 0.2 UI / ml diluted with buffer solution up to 1000 μ 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. The *p*-nitrophenyl- α -D-glucopyranoside (pNPG) substrate was hydrolyzed by the α -glucosidase enzyme, resulting *p*-nitrofenol (yellow). 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.

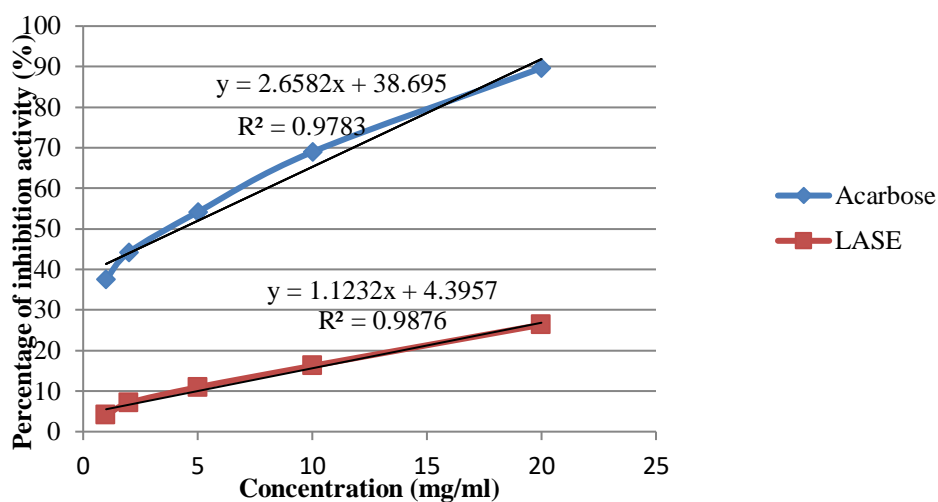


Figure 1. In vitro α -glucosidase inhibitory activity

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 α -glucosidase IC_{50} of acarbose was 3.9 mg/ml, while Liu [12] reported that the α -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 α -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 α -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.

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

Group	Blood glucose level (mg/dL)					AUC (mg/dl)/hour
	T ₀	T _{0.5}	T ₁	T ₂	T ₃	
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 α -glucosidase in vitro [13]. The aforementioned results showed LASE had the medium inhibitory effect on α -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 α -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.

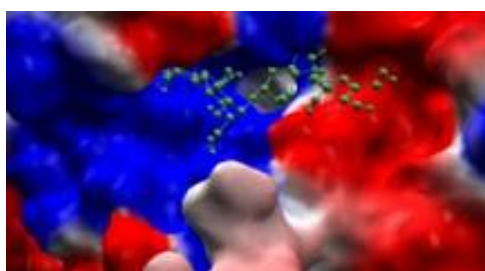


Figure 2. Docking acarbose to binding site of α -glucosidase

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

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

Compounds	ΔG (kcal/mol)	Σ H bond
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
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 α -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 IC₅₀ value of 47.17 mg/ml while IC₅₀ value of acarbose was 4.5 mg/ml. Luteolin 7-O-glucoside exhibited the lowest binding energy. indicated the highest affinity to the enzyme.

References

- [1] Bosenberg. L. H. The mechanism of action of oral antidiabetic drug : a review of recent literature. *The Journal of Endocrinology, Metabolims and Diabetes of South Africa*. **2008**. 13,3, 80-88.
- [2] Hazra M *et al.*. Evaluation of hypoglycemic and antihyperglycemic effect of *Luffa cylindrica* fruit extract in rat. *Journal of Advanced Pharmacy Education and Reseach* **2011**. 2: 138-146.

- [3] Pimple, B.P., Kadam P.V. dan Patil, M.J. Antidiabetic and antihyperlipidemia activity of *Luffa acutangula* fruit extract in streptozotocin induce NIDDM rats. *Asian Journal of Pharmaceutical and Clinical Research* , **2011**, 4, 156-163
- [4] Sulaiman, S.F., Ooi, K.L., Supriatno. Antioxidant and α -Glucosidase Inhibitory Activities of Cucurbit Fruit Vegetables and Identification of Active and Major Constituents from Phenolic-rich Extracts of *Lagenaria siceraria* and *Sechium edule*, *J. of Agric. and Food Chem.*, **2013**.
- [5] Herowati R, Widodo GP, Sulistyani PW, Hapsari, Antidiabetic Activity of *Luffa acutangula* L.Roxb seed extract in combination with Metformin and Glibenclamide. *Indonesian Pharmacy Journal*, **2013**. 6 (4): 211-217.
- [6] Dashora, N., Chauhan, L.S., Kumar. N., *Luffa acutangula* (Linn) Roxb: A Consensus Review. *Int. J. Pharm. Bio. Sci.*, **2013**. 4 (2): 835-846.
- [7] Elya, B., Handayani, R., Sauriasari, R., Azizahwati, Hasyati, U.S., Permana, I.T., Antidiabetic activity and phytochemical screening of extracts from Indonesian plants by inhibition of alpha amylase, alpha glucosidase and dipeptidyl peptidase IV. *Pak. J. Biol. Sci.* **2015**;18(6):279-284.
- [8] Sugiwati, S., Setiasi, S., Afifah, E. 2009, Antihyperglycemic Activity Of The *Mahkota Dewa* [*Phaleria Macrocarpa* (Scheff.) Boerl.] Leaf Extracts A An Alpha-Glucosidase Inhibitor, *MAKARA, KESEHATAN*, 13 (2): 74-78
- [9] Sim, L., Quezada-Calvillo, R., Sterchii, E.E., Nichols, B.S., Rose, D.R., Human intestinal maltase-glucoamylase: crystal structure of the N-terminal catalytic subunit and basis of inhibition and substrate specificity, **2008**. *J. Mol. Bio.* 375, 782-293.
- [10] Kikkoma Corporation, α -Glucosidase (α GLS-SE), **2001**.
- [11] Triadisti, N., Sauriasari, R., Elya, B., Fractionation and α -glucosidase Inhibitory Activity of Fractions from *Garcinia hombroniana* Pierre Leaves Extracts, **2017**, *Pharmacogn. J.* 9(4),488-492.
- [12] Liu, S., Yu, S., Zhu, H., Zhang, W. and Chen, Y., In vitro α -glucosidase inhibitory activity of isolated fractions from water extract of Qingzhuan dark tea, *BMC Complementary and Alternative Medicine*. **2016**, 16:378
- [13] Kim, J.S., Kwon, C.S., Son, K.H. Inhibition of α -glucosidase and amylase by Luteolin a flavonoid, *Biosci. Biotech. Biochem.*, **2000**. 64: 2458–2461.
- [14] Nakamura, S., Shimada, K., Tanabe, G., Muraoka, O., Nakanishi, I. Computational study on the comparative differences in the activity of inhibitors of human versus rat alpha glucosidase. *Open J. Med. Chem.* **2017**. 7:19-28.
- [15] Nagao, T., Tanaka, R., Iwase, Y., Hanazono, H., and Okabe, H., Studies on the Constituents of *Luffa acutangula* ROXB. I. Structure of Acutoside A-G, oleanane type triterpene saponin isolated from the herb, *Chem. Pharm. Bull.* **1991**, 39(3): 599-606.
- [16] Nagao, T., Tanaka, R., and Okabe, H., Studies on the constituents of *Luffa acutangula* ROXB. I. Structure of Acutoside H and I, Oleanic acid saponin isolated from the seed., *Chem. Pharm. Bull.* **1991**, 39(4); 889-893.

[17] Sandhar, H.K., Kumar B., Prashes, B., Tiwari, P., Salhan, M., Sharma, P., A Review Of Phytochemistry And Pharmacology Of Flavonoids. *Internationale Pharmaceutica Scienta*, **2011**, 1 (1).

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 Djilil			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)							

6th 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*-phenylacylglyoxamide and Biphenyl Backbones as Antibacterial Agents

Naresh Kumar^{a,*}, Shashidhar Nizalapur^a, Rajesh Kuppusamy^a, Mark Willcox^b and David StC Black^a

^a*School of Chemistry, UNSW Sydney, NSW 2052 Australia*

^b*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.,^{1*} Ong, L. L.^{1,2}, Khong, D. T.¹

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² *Nanyang Institute of Technology in Health and Medicine, Interdisciplinary Graduate School, Nanyang Technological University, Singapore*

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^{a,*}, S. O. Firdaus^a, A. Ilmiawati^a, and D. U. C. Rahayu^b

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^b*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^{*}, 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^{a*}, Agmi Sinta Putri,^a Sinta,^a Edi Sukaton,^a

^aDepartment 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^a, Komariah^{b*}, Bambang Pujiasmanto^c, Irmanida Batubara^{d,e}

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^e*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,^a and Harlinda Kuspradini^{a*}

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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,^a and Mamoru Koketsu^a

^a*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^a, Olorundare Olufunke^{a*}, Syed Deeba^b, Mukhtar Hasan^b and Mamoru Koketsu^c

^a *Department of Pharmacology and Therapeutics, Faculty of Basic Medical Sciences, University of Ilorin, Ilorin, Kwara, Nigeria*

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OL-11

p.45

Discovery and Development of Novel Bacterial RNA Polymerase Holoenzyme Formation Inhibitors

D. Wenholz^a, M. Miller^b, P. Lewis^b, R. Griffith^a, N. Kumar^a

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

^b*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]

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p.47

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

Sri Sugiarti^{*}, 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^{a,*}

^aDepartment 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^{a,*}, Masakazu Matsumoto^b, and Hideki Tanaka^b

^aDepartment of Chemistry, Brawijaya University, Jl. Veteran, Malang, Indonesia 65145

^bResearch 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⁺-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^{a,*} and Takashi Sugiura^a

^aThe 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^{a,*}, N.W. Awang^a, M.N.M.A.G.Rasa Astiti^b and K. Nomura^c

^a*Faculty of Science and Technology, Universiti Sains Islam Malaysia, Nilai 71800, Negeri Sembilan, Malaysia*

^b*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^{a,*} Arindrajit Chowdhury^b and Neeraj Kumbhakarna^b

^a*Department of Chemistry, Indian Institute of Technology Bombay, Mumbai 400076*

^b*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^{a*}, Afolabi Saheed^a, Gyebi Gideon^c, Syed Deeba^b, Mukhtar Hasan^b and Koketsu Mamoru^d

^a *Department of Pharmacology and Therapeutics, Faculty of Basic Medical Sciences, University of Ilorin, Ilorin, Kwara, Nigeria*

^b *Department of Dermatology, University of Wisconsin, Madison, WI 53706, USA*

^c *Department of Biochemistry, University of Ilorin, Ilorin, Kwara, Nigeria*

^d *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^{a*}, Bambang Purwono^a, Priatmoko^a, Akhmad Syoufian^a, Jean-Luc Parrain^b and Laurent Commeiras^b

^a *Department of Chemistry, Faculty of Mathematics and Natural Sciences, Universitas Gadjah Mada, Indonesia*

^b *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^{*}, 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,^a J. Sophonpong,^a S. Sungsuwan,^a N. Ruangsapapichart,^a J. Kornsakulkarn,^b C. Thongpanchang^b and T. Thongpanchang^{a,b*}

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

^b*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^{a,*}, Nurul Zawani Alias^{a,b}, Muhd Hanis Md Idris and Wan Yaacob Wan Ahmad

^a*School of Chemical Sciences and Food Technology, Faculty of Science & Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia*

^b*Faculty of Applied Science, Universiti Teknologi MARA Perlis, Arau Campus, 02600 Arau, Perlis, Malaysia*

^c*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^{*}

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^{a,b*} Muhamad Nursid^c, Wulan Tri Wahyuni^{a,b}

^a*Dept. of Chemistry, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Darmaga Campus, Bogor 16680, Indonesia*

^b*Tropical Biopharmaca Research Center, Bogor Agricultural University, Jl. Taman Kencana No. 3, Bogor 16128, Indonesia*

^c*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^a, Yehezkiel Steven Kurniawan^a and Kiki Rizki Pinasti^a

^a*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/SiO₂-ZrO₂ [M = Ni, Cu]

Siti Mariyah Ulfa^{a,*} Ilham Permana^a, and Quarina Febrially P.^a

^a*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^{*} 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

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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^{a,*}, Hermansyah Aziz^b, Refilda^c, DewiNofita^a, NovrizaldiWardana^a, PutriRamadhani^a

^a*Laboratory of Analytical Environmental Chemistry, Department of Chemistry, Andalas University, Padang, Indonesia*

^b*Laboratory of Physical Chemistry, Department of Chemistry, Andalas University, Padang, Indonesia*

^c*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^{a,*}, Eka Lestari^a, Utami Dyah Syafitri^b and Zaenal Abidin^c

^a*Biophysics Research Group, Department of Physics, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Indonesia*

^b*Department of Statistics, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Indonesia*

^c*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^{a,b*}, Zaitun Ghazali^b, Nur Hasyareeda Hassan^{a, b}, The Lee Peng^b and Mohd Ambar Yarmo^b

^a*Polymer Research Center*

^b*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,^a Debarun Dutta,^a Nagaraju Konda,^{b,c} Savitri Sharma,^b Pravin Krishnan,^b Naresh Kumar,^d Fiona Stapleton^a and Mark Willcox^a

^a*School of Optometry and Vision Science, University of New South Wales, Sydney, Australia*

^b*LV Prasad Eye Institute, Hyderabad, India*

^c School of Medical Sciences, University of Hyderabad, Hyderabad, India

^d 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^{a,*}, Endang Tri Wahyuni^a, Suherman Suherman^a and Naoki Yoshioka^b

^aDepartment of Chemistry, Faculty of Mathematics and Natural Sciences, Gadjah Mada University, Sekip Utara, P.O. Box Bls. 21, Yogyakarta 55281, Indonesia

^bDepartment 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^{a,b,c,d,*}

^aDepartment of Life Science and Chemistry, Graduate School of Natural Science and Technology, Gifu University, 1-1 Yanagido, Gifu 501-1193, Japan

^bUnited Graduate School of Drug Discovery and Medical Information Sciences, Gifu University, 1-1 Yanagido, Gifu 501-1193, Japan

^cCenter for Highly Advanced Integration of Nano and Life Sciences, Gifu University (G-CHAIN), Gifu 501-1193, Japan

^dGu 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^{*}, 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^{a,*}, 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^{a,*}, S. Tanuwidjaja^b, M. F. Solihat^b, N. Fitria^b and T. Purwanti^c

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

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

^c*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^{a,b,*}, Irmanida Batubara^{a,b}, Sumaiyah^a

^a*Dept. of Chemistry, Faculty of Mathematics and Natural Sciences, Bogor Agricultural University, Darmaga Campus, Bogor 16680, Indonesia*

^b*Tropical Biopharmaca Research Center, Bogor Agricultural University, Jl. Taman Kencana No. 3, Bogor 16128, Indonesia*

OL-49 **p.83**

Highly Selective Visual Detection of Fe³⁺ 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 N₂ Bubble

Daiki Ishida^a, Shinya Takahashi^{a,b} and Akiyoshi Takeno^{a,b,*}

^a*Chemistry and Biomolecular Science, Gifu University, 1-1Yanagido, Gifu-shi, Gifu, 501-1193, Japan*

^b*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

Akash Chandela^a, Yoshihito Ueno^{a,b,*}

^a *United Graduate School of Agricultural Science, Gifu University, 1-1 Yanagido, Gifu 501-1193, Japan*

^b *Course of Applied Life Science, Faculty of Applied Biological Sciences, Gifu University, 1-1 Yanagido, Gifu 501-1193, Japan*

PO-3 **p.87**

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*
Department of Graduate School of Natural Science and Technology, Gifu University, 1-1 Yanagido, Gifu, Japan

PO-4 **p.88**

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

H. Sugiyama, M. Ninomiya, T. Udagawa K. Tanaka and M. Koketsu
Department of Graduate School of Natural Science and Technology, Gifu University, 1-1 Yanagido, Gifu, Japan

PO-5 **p.89**

Synthesis of Quinoxaline Derivatives and Their Inhibitory Effect on α -Glucosidase

Daiki Kaneko, Amol D.Sonawane, Yukari Ohno, Masayuki Ninomiya and Mamoru Koketsu
Department of Graduate School of Natural Science and Technology, Gifu University, 1-1 Yanagido, Gifu, Japan

PO-6 **p.90**

Synthesis of Naturally Occurring Stilbene Derivatives and Their Acetylcholinesterase Inhibitory Effects

M. Nagumo^a, M. Ninomiya^a, K. Tanaka^{b,c}, and M. Koketsu^{a,*}

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

^b*Division of Anaerobe Research, Life Science Research Center, Gifu University, 1-1 Yanagido, Gifu 501-1194, Japan*

^c*United Graduate School of Drug Discovery and Medicinal Information Sciences, Gifu University, 1-1 Yanagido, Gifu 501-1194, Japan*

PO-7 **p.91**

Synthesis and Antileukemic Properties of Carbazoloquinone Alkaloid Derivatives

N. Suematsu^a, M. Ninomiya^a, K. Tanaka^{b,c}, and M. Koketsu^{a,*}

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

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^c*United Graduate School of Drug Discovery and Medicinal Information Sciences, Gifu University, 1-1 Yanagido, Gifu 501-1194, Japan*

PO-8 **p.92**

Synthesis and Structure of Selenothiocarbamates

A. Shimozuma^{a,b} and O. Niyomura^b

^a*Department of Graduate School of Natural Science and Technology, Gifu University, 1-1 Yanagido, Gifu, Japan*

^b*Department of Applied Chemistry, Chubu University, 1200 Matsumoto-cho, Kasugai-shi, Aichi, Japan*

PO-9 **p.93**

Nutrients and Antioxidant Properties of Gamma Irradiated Black Rice (*Oryza sativa* L. cv. Cempo ireng)

Gracia L Rohana¹, Riyatun², Sutarno³, Ozi A Saputra¹ and Venty Suryanti^{1,*}

¹*Department of Chemistry, ²Department of Physics, ³Department of Biology, Faculty of Mathematics and Natural Sciences, Sebelas Maret University, Jl. Ir. Sutami 36A Surakarta 57126 Indonesia*

PO-10 **p.94**

Solid Dispersion Studies of Valsartan Polyvinyl pyrrolidone K-30 (PVP K-30) by Co-Grinding Method

Dini Hanifa, Erizal, Salman*

Faculty of Pharmacy, Andalas University, Padang, Indonesia

PO-11 **p.95**

Modelling of Methyl-3-(2-hydroxy-5-nitrophenylamino)-3-phenylpropanoate as Anionic Sensors

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

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

PO-12 **p.96**

Nuclear Quantum Effect and H/D Isotope Effect on $\text{Cl}\cdot + (\text{H}_2\text{O})_n \rightarrow \text{HCl} + \text{OH}\cdot (\text{H}_2\text{O})_{n-1}$ ($n = 1-3$) Reactions

Keita Sugiura^a, Masanori Tachikawa^b and Taro Udagawa^{a,*}

^a*Department of Chemistry and Biomolecular Science, Faculty of Engineering, Gifu University, Japan*

^b*Quantum Chemistry Division, Graduate School of NanoBioScience, Yokohama City University, Japan*

PO-13 **p.97**

A MC_QM-ONIOM-NEB Method for Analyzing Isotope Effect in Chemical Reactions in Large Systems

Hideya Sugimoto^a, Masanori Tachikawa^b and Taro Udagawa^{a,*}

^a*Department of Chemistry and Biomolecular Science, Faculty of Engineering, Gifu University, Japan*

^b*Quantum Chemistry Division, Graduate School of NanoBioScience, Yokohama City University, Japan*

PO-14 **p.98**

Theoretical Investigation on Structures of $[\text{Li}(\text{H}_2\text{O})_n]^+$ ($n = 1-5$) Clusters: A GRRM Study

Sonosuke Tsuchiya and Taro Udagawa^{*}

Department of Chemistry and Biomolecular Science, Faculty of Engineering, Gifu University

PO-15 **p.99**

Degradation of Organic Waste Selected by Pyrolysis Reactor

M. Taufik^{a*}, A.M. Trihaksami^b, T. Purwanti^c, and D. Susrini^d

^a*Institution of Development and Regional Planning, District Government Paser, Kesuma Bangsa Street, Office Complex, Tanah Grogot 76211, Indonesia*

^b*Agribusiness, Muhammadiyah Higher Education for agricultural (STIPER), H.O.S. Cokroaminoto Street, Tanah Grogot 76211, Indonesia*

^c*Departement Technical, Laboratory and Environment Control, PT Badak NGL, Mulawarman Street, Bontang 75325, Indonesia*

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PO-16 **p.100**

The Ability of Single and Mixture Species in Degradating Hydrocarbon Substance in Petroleum Waste

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