



# CERTIFICATE

*This is to certify that*

Eti Yerizel

*as*

**Poster Presenter**

**The 6<sup>th</sup> Asia - Pacific Symposium on Ion Analysis  
" Chemistry, From Ion to Green Environment "**

*Held in The Axana Hotel, Padang - Indonesia*

*on November 26<sup>th</sup> - 28<sup>th</sup>, 2012*



Chairperson

Prof. Dr. Edison Munaf



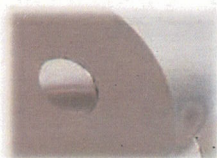
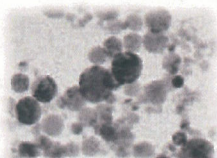


# THE INDONESIAN SOCIETY FOR BIOMATERIAL CHEMISTRY

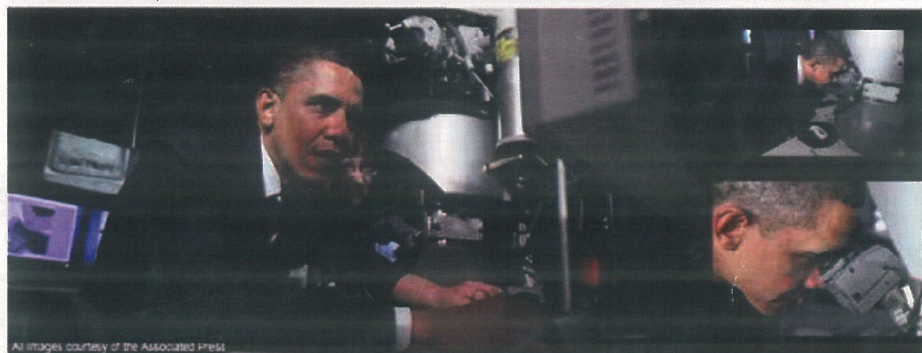
## The 6th Asia-Pacific Symposium on Ion Analysis



Padang, 26-28 November 2018  
FMIPA Andalas University



President Obama Sees Atoms through an FEI Titan™ S/TEM



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Prof. Daniel Shechtman Wins Nobel Prize in Chemistry with Titan TEM



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# The 6<sup>th</sup> Asia-Pacific Symposium on Ion Analysis

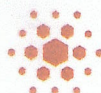
## CHEMISTRY, FROM ION TO GREEN ENVIRONMENT



### The Axana Hotel Padang, 26-28 November 2012



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**Important Date**

November 25 -26<sup>th</sup>, whole day for symposium registration  
 November 27<sup>th</sup>, symposium registration until 10:00 am  
 November 26<sup>th</sup>-28<sup>th</sup>, Symposium

**SCIENTIFIC PROGRAM**

<b>NOVEMBER 26, 2012</b>	
<b>OPENING REMARK</b>	
<b>VENUE : GOVERNOR OF WEST SUMATRA PROVINCE HOUSE</b>	
19:00-19:45	Dinner
19:45-20:00	Welcoming dance, tari pasambahan (Pasambahan Dance)
20:00-20:05	Opening remark by Prof. Dr. Edison Munaf, Chairperson of the symposium
20:05-20:10	Welcome speech by Dr. Werry Dartha Taifur, Rector of Andalas University
20:10-20:20	Welcome speech and opening remark by Prof. Dr. Irwan Prayitno, Governor of West Sumatera Province
20:20-21:00	PL-1: Durain Parmanoan (Head of Department of Research and Development PT. Semen Padang: Cement Padang Industry, "The Way forward to the Green Industry")
21:00-21:15	Photo session

<b>NOVEMBER 27, 2012</b>			
<b>MORNING SESSION</b>			
Chairpersons : Prof. Abdi Dharma and Prof. Kwang Pill Lee			
Venue : Axana Ball Room			
08:30-09:10	PL-2 ✓	Bobby Fachrizal Assidiq, Ph.D (PT. Alphasains Dinamika, Jakarta, Indonesia)	Mass spectrometer-based analysis for food safety and natural products
09:10-09:40	KL-1 ✓	Prof. Baharuddin Saad (Universiti Sain Malaysia, Malaysia)	Capillary electrophoresis: From ions to chiral drug analysis
09:40-10:10	KL-2 ✓	Prof. Leena Suntornsuk (Mahidol University, Thailand)	Highlights of a decade experience in capillary electrophoresis
10:10-10:25		Break	Coffee and tea break
10:25-10:55	KL-3	Prof. Masanobu Mori (Gunma University, Japan)	Ion chromatography of inorganic ions using water eluent
10:55-11:25	KL-4	Prof. Yong Nam Park (Korea National University of Education, Korea)	Separation and accurate determination of selenium species in Korean human serum
11:25-11:55	KL-5	Prof. Narumol Vachirapattana (Thammasat University, Thailand)	Gamma-aminobutyric acid in rice by capillary electrophoresis
11:55-13:00		OC	Lunch
<b>AFTERNOON SESSION</b>			



Chairpersons : Prof. Yong Nam Park and Prof. Narumol Vachirapatama			
Venue : Ball room the Axana Hotel			
13:00-14:00	-	Poster Presentation (All of the presenter standing beside the poster)	
14:00-14:15	CP-01	Eka Angasa, Ghufira, Devi Ratnawati, Kenny Serety, Albert (Bengkulu University, Indonesia)	Synthesis and characterization of Cu nanoparticles supported ZnAl <sub>2</sub> O <sub>4</sub> (Cu/ZnAl <sub>2</sub> O <sub>4</sub> )
14:15-14:30	CP-02	Bertha Oktharina, N.H. Subramanian, T. Hartmann, and A. Wille (PT. Methrom, Indonesia)	Automated ion chromatographic determinations over six orders of magnitude
14:30-14:45	CP-03	Sumaryati Syukur (Andalas University, Indonesia)	Bioremediation for environmental contamination
14:45-15:00	CP-04	Holis A. Holik, Herlianda Bianti, Mutakin, Rizky Abdulah (Pajajaran University, Indonesia)	Determination of selenium concentration in different species of rice consumed in Bandung city, Indonesia
15:00-15:15		OC	Coffee and tea break
Chairpersons : Prof. Leena Suntornsuk and Dr Refilda			
15:15-15:30	CP-05	Renny Indrawati, Matiss Ozols, Indriatmoko, Heriyan to, Tatas H. P. Brotosudarmo, Leenawaty Limantara (Machung University, Indonesia)	Re-evaluation on multi chromatogram approach of 3D-chromatographic data
15:30-15:45	CP-06	Noor Fitri, Gita Nurmalasari, Krisna Merdekawati (Islamic University of Indonesia, Yogyakarta, Indonesia)	Extraction of arsenic species in tailing from the small-scale gold mining in Selogiri, Wonogiri regency, Central Java, Indonesia
15:45-16:00	CP-07	Muhammad Taufik Ekapradasa (College of Industrial Technology, Padang)	Antibacterial activity of methylgallate isolated from the leaves of <i>Toona sureni</i>
16:00-16:15	CP-08	Jong Hae Lee (Korea Research Institute of Standards and Science, Korea)	
16:15-16:30	CP-09	Femmi Earnestly, Lee Wah Lim, Toyohide Takeuchi (Gifu University, Japan)	Eluent induced separation of inorganic cations in capillary liquid chromatography
16:30-16:45	CP-10	Emriadi, Yeni Stiadi, Dwi Kulama, Yulia Risandi (Andalas University, Indonesia)	Extract of <i>Carica papaya</i> leaves as an eco-friendly inhibitor for the corrosion of mild steel in acidic media
16:45-17:00	CP-11	Riskiono Slamet (State	The properties of vitamin C



		University of Jakarta, Indonesia)	encapsulate with hydrogen bead chitosan via response surface methodology
17:00-17:15	CP-12	Rahmiana Zein, Yati Maryati and Edison Munaf (Andalas University, Indonesia)	Palm Pressed Fiber As Biosorbent For Removal Of Heavy Metals From Wastewater

**NOVEMBER 28, 2012**

**MORNING SESSION**

Chairperson : Prof. Masanobu Mori and Bobbi Fachrizal Assidiq, PhD

Venue : Axana Ball Room

08:30-09:00	KL-6	Prof. Kazuaki Ito (Kinki University, Japan)	Ion chromatography for simultaneous determination of inorganic nitrogen species in seawater samples
09:10-09:40	KL-7	Prof. Kwang Pill Lee (Kyungpook National University, South Korea)	Establishment of new methodologies for the selective recovery of uranium and lithium ions using nanomaterials
09:40-10:10	KL-8	Dr. Yan Zhen (Methrom Applikon B.V, China)	Online continuous monitoring of aerosols and gases in ambient air
10:10-10:25		Break	Coffee and tea break
10:25-11:00	KL-9	Dr. Christian Emmenegger, (Methrom International Headquarters, Switzerland)	Beyond the horizon of liquid samples: Combustion ion chromatography
11:00-11:30	KL-10	Ass Prof. Lee Wah Lim, Tomomi Aono, Kiyotaka Oshima, Toyohide Takeuchi (Gifu University, Japan)	Zwitterionic monolithic stationary phases for capillary ion chromatography
11:30-12:00	KL-11	Prof. Edison Munaf (Faculty of Mathematics and Natural Sciences, Andalas University, Indonesia)	Biosorption of cations using typical Indonesia agricultural by product
12:00-13:00		OC	Lunch

**AFTERNOON SESSION**

Chairpersons : Prof. Rahmiana Zein and Ass. Prof. Lim Lee Wah

Venue : Ball room the Axana Hotel

13:00-14:00	-	Poster Presentation (All of the presenter standing beside the poster)	
14:00-14:15	CP-13	Nasril Nasir, Abdi Dharma, Mai Efdi, Yuhendra, Fredrika Eliesti (Andalas University, Indonesia)	Natural product of wild Zingiberaceae Elettariopsisslahmong for biopesticide to control the vector of banana blood disease bacterium in West Sumatra, Indonesia



	Indonesia)	
PP-30	Gustini Syahbirin and Djoko Prijono	The insecticidal activity of rotenoid from <i>Tephrosia vogelli</i> leaves extract on <i>Crocidolomia pavonana</i> as cabbage pest
PP-31	Ariadi Hazmi, Reni Desmiarti, Yenni Trianda, Eka Marhaeni (Andalas University, Indonesia)	Behaviour of microorganism in Radio Frequency Plasma System
PP-32	Trisna Kumala Sari, Rahmiana Zein, Edison Munaf, Jiye Jin (Andalas University, Indonesia Shinshu University, Indonesia)	Characterization interaction of xanthone compound with Cr(VI) metal studied by Spectrophotometric and Voltammetric Method
PP-33	Sri Mulyati, Jin Ye Jin, Rahmiana Zein, Hamzar Suyani, Edison Munaf (Andalas University, Indonesia)	Gold Electrode Application On Anodic Stripping Voltammetry for determination of trace copper
PP-34	Arfiyanti Anwar (University of Indonesia, Indonesia)	Macro-, micronutrient and dietary ligand fortification of cookies in women during second trimester of pregnancy
PP-35	Purwantiningsih Sugita, Laksmi Ambarsari and Lidiniyah (IPB, Indonesia)	Synthesis of ketoprofen loaded chitosan nanoparticles used polaxamer 188 as a surfactant base on ultrasonication condition
PP-36	Yefrida, Novina Yuliana, Indrawati, Refilda (Andalas University, Indonesia)	Preparation, characterization, and determination antimicrobial and antioxidant activity of liquid smoke from Guava steam ( <i>Psidium guava</i> )
PP-37	Yulia Yesti, Refinel, Emdeniz (Andalas University, Indonesia)	Effect of surfactant sodium dodecyl sulfate on phenol transport through chloroform membrane with bulk liquid
PP-38	Dini Fatmi, Zamzibar Zuki, Ihsan Safari (Andalas University, Indonesia)	Measurement of amida compound as an additive slip agent in plastic film with a fourier transform infra red and analyse the value coefficient of friction
PP-39	Bayu Gita Bernama, Safni, Syukri Darajat (Andalas University, Indonesia)	Degradation of Methanil Yellow by Photolysis, Sonolysis and Sunlighting with Addition of TiO <sub>2</sub> – SnO <sub>2</sub>
PP-40	Marniati Salim, Elida Mardiah, Daniel De Idral (Andalas University, Indonesia)	Pretreatment with Acid Hydrolysis of Sago Waste ( <i>Metroxylan</i> Sp) to Produce Bioethanol Using <i>Sacharamyces cerevicae</i>
PP-41	Etiyerizal (Andalas University, Indonesia)	Effect of Increasing Blood Glucose Concentration into Nitrit Oxide (NO) in Diabetes Millitus Type 2 Patients
PP-42	Norman Ferdinal,	Phytochemical screening and fractionation of



## EFFECT OF INCREASING BLOOD GLUCOSE CONCENTRATION INTO NITRIT OXIDE (NO) IN DIABETES MELLITUS TYPE 2 PATIENTS

Eti Yerizel

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### ABSTRACT

Type 2 diabetes mellitus was a degeneration disease which become health problem in Indonesia as well as in the world because of that DM type 2 cases have increased year by years. There are some risk of diabetes such as increasing welfare, change of food habit & less physical activity that factor to predisposition of increase incidence DM type 2. Laboratory finding of DM type 2 were uncontrolled hyperglycemia as glucotoxicity which the level of HbA1c > 7% and two hours blood glucose PP  $\geq$  200 mg/dl. Therefore it will cause macro-microvascular disorders and tissues damage. Insulin Resistance & beta cell dysfunction were as etiology of hyperglycemia in DM type 2 patients. Then high intracellular glucose and excessive mitochondrial superoxyde production will also cause DNA damage, Poly-ADP Ribose Polymerase (PARP) activation, Glyceraldehyde Phosphat dehydrogenase (GAPDH) inhibition. Therefore GAPDH pathway disorders reaction mechanism of complication in DM type 2 such as: Polyol pathway, PKC (via DAG) activation, and increasing hexokinase pathway flux then molecular affect his express such as Nitrit Oxide (NO), Intracellular Adhesive molecule-1 (ICAM-1), glutathion peroxidase (GPX), finally this process will be endothel disfunction.

Research design was cross sectional comparative study with location at Internal Medicine Dr. M Jamil Hospital and Biochemistry Laboratory Faculty of Medicine Unand. The amount of samples taken 70 people consisting of 35 people with type 2 DM and 35 people who non DM. Examination of nitrit oxide concentration using by enzyme linked Assay (ELISA), Date were analyzed statistically by using t-test & chi square test,

It was found that the mean value of NO concentration among DM type 2 group were  $19.26 \pm 9.16 \mu\text{mol/L}$ . while NO concentration in non DM were  $44.10 \pm 19.84 \mu\text{mol/L}$ . The result showed that there was a significant difference between DM type 2 group and non DM group.

*Key words: DM tipe 2..glucose, NO, endothel*



## EFFECT OF INCREASING BLOOD GLUCOSE CONCENTRATION INTO NITRIT OXIDE (NO) IN DIABETES MELLITUS TYPE 2 PATIENTS

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### **ABSTRACT**

Type 2 diabetes mellitus was a degeneration disease which become health problem in Indonesia as well as in the world because of that DM type 2 cases have increased year by years. There are some risk of diabetes such as increasing welfare, change of food habit & less physical activity that factor to predisposition of increase incidence DM type 2. Laboratory finding of DM type 2 were uncontrolled hyperglycemia as glucotoxicity which the level of HbA1c > 7% and two hours blood glucose PP  $\geq$  200 mg/dl. Therefore it will cause macro-microvascular disorders and tissues damage. Insulin Resistance & beta cell dysfunction were as etiology of hyperglycemia in DM type 2 patients. Then high intracellular glucose and excessive mitochondrial superoxyde production will also cause DNA damage, Poly-ADP Ribose Polymerase (PARP) activation, Glyceraldehyde Phosphat dehydrogenase (GAPDH) inhibition. Therefore GAPDH pathway disorders reaction mechanism of complication in DM type 2 such as: Polyol pathway. PKC (via DAG) activation. and increasing hexokinase pathway flux then molecular affect his express such as Nitrit Oxide (NO), Intracellular Adhesive molecule-1 (ICAM-1), glutathion peroxidase (GPX), finally this process will be endothel disfunction.

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## Introduction

Type 2 diabetes mellitus was a degeneration disease which become health problem in Indonesia as well as in the world. because of that DM type 2 cases have increased year by years, There are some risk increasing welfare. change of food habit & less physical activity that factor to predisposition of increase incidence DM type 2. Laboratory finding of DM type 2 were uncontrolled hyperglycemia as glucotoxicity, Therefore it will cause macro-microvascular disorders. and tissues damage, Insulin Resistance & beta cell dysfunction were as etiology of hyperglycemia in DM type 2 patien. Diabetes mellitus that uncontrolled well can cause oxidative stress, there's increasing reactive oxygen species and hydroxyl radical.

## Method

Research design was Observation research with cross sectional study comparative approach to the 30-60 years old patients of DM type 2 have been done. Its population was all patients DM type 2 whose level of blood glucose post prandial  $\geq 200$  mg/dl for in-patient care and out-patient care of Internal Medicine Department RSUP M.Djamil Padang, Sample was part of the population that is patients of DM type 2 who have inclusion and exclusion characteristics. The control aspect was undiagnosed DM type 2 range of age was 30 – 60 years old. Total sample were 70 people, 35 patients were classified as DM type 2 and another 35 people were non DM type 2 (control).

## Objective

The aims of the study to effect of increasing blood glucose concentration correlation of glycosylated of haemoglobin (HbA1c) with NO serum



## Result & Discussion

Table 1. subject Characteristic

Characteristic of subject	DM type 2 Mean ± SD	Non DM Mean ± SD	p
Age (years)	51.66 ± 5.06	49.77 ± 5.27	0.13
IMT (kg/m <sup>2</sup> )	25.00 ± 2.31	24.21 ± 2.69	0.19
Blood glucose puasa (mg/dl)	191.60 ± 35.47	93.37 ± 7.18	< 0.001
Blood glucose 2 jam PP (mg/dl)	367.77 ± 70.68	125.06 ± 16.01	< 0.001
HbA1c(%)	11.19 ± 2.04	6.02 ± 0.56	< 0.001

Table 2. Nitrit Oxide Serum concentration in DM type 2 group and Non DM group

Group	n	NO (µmol/L) Mean ± SD	p
DM type 2	35	19,26 ± 9,16	< 0,001
Non DM	35	44,10 ± 19,84	



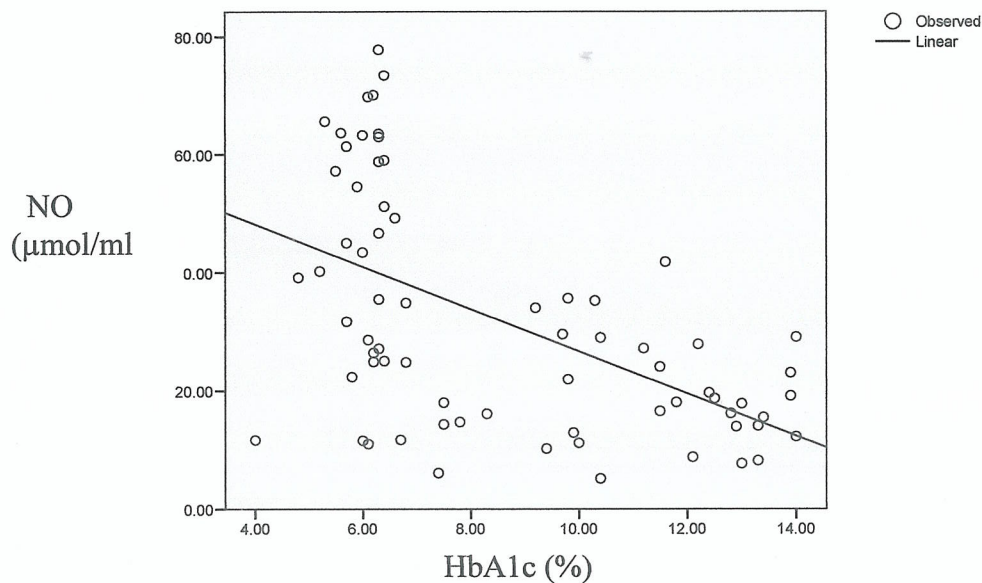


Fig1. Correlation between HbA1c concentration and Nitrite oxide (NO) serum

There were obvious correlation between group of DM type 2 and non DM type 2, the increasing of HbA1c to the cause decrease NO serum concentration ( $r = -0,54$ )

#### Discussion

Formation of excessive inactivate synthesis of nitrite okside (NO) which cause molecular expression whose roles are to damage vascular tissue, molecular expression intracellular Adhesive Molecules-1 (ICAM-1), and to inactive NO and Gluthation peroxidase (GPX). These process cause the endotel disfunction.

#### Acknowledgements

Special thanks to Department of medicine M.Jamil hospital & Department of Biochemistry Andalas university.



## Conclusion

The conclusion research was a decrease NO concentration in patients with type 2 DM and increased NO concentration in non DM. The result showed that there was a significant difference between DM type 2 group and non DM group.

## References

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