5th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application

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5th ISNPINSA Programme Booklet

5th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application

7-8 October 2015
Semarang, Indonesia

Programme Booklet

Hosted by:
Faculty of Sciences and Mathematics
Diponegoro University

5th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application (5th ISNPINSA)

7-8 October 2015

ICT Centre, Diponegoro University

Semarang Indonesia

Welcome Letter from the 5th ISNPINSA Chair

Assalamualaikum warahmatullahi wa barakatuhu.

We are pleased to be hosting the 5th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application (ISNPINSA), to be held from October 7 (Wednesday) to 8 (Thursday) 2015 in ICT Center, Diponegoro University. ISNPINSA is an annual conferences organized by Faculty of Sciences and Mathematics (FSM), Diponegoro University (UNDIP), Semarang, Indonesia. The theme of 5th INSPINSA is "Food and Energy Security: Integrated Science for Sustainability".

This conference will provide an interactive international forum to provide for sharing and exchange information on the latest research on Food, Energy and related sciences, to enhance the capacities for creating innovation system, to contribute in the formulation of global strategies in advancing science role as well as developing policy initiatives in community, to stimulate future collaborations among industries, researchers, governments and other stakeholders who apply science and technology for better live. The participants of the 5th ISNPINSA are up to 100 coming from Indonesia, South Korea, Germany, Saudi Arabia and Iran.

I would like take this opportunity to thank for the hard work of committee from faculty member of FSM, UNDIP. In addition, the conference committee acknowledges the technical and financial support of Science and Mathematics Faculty.

I look forward to meeting you all at the 5th ISNPINSA in UNDIP, Semarang, and encourage you to engage with those presenting their work as oral and poster presentations. Should you have extra time, I hope that you can extend your stay and enjoy the exotic of Central Java. Central Java is the island's cultural, geographic, and historic heartland.

Thank you for your participation,

Dr. Agustina L. N. Aminin

5th ISNPINSA Chair

Chemistry Department, Faculty of Science and Mathematics, Diponegoro University

Welcome from the Dean of Faculty of Sciences and Mathematics, Diponegoro University

On behalf of Faculty of Science and Mathematics, Diponegoro University, I am delighted to welcome delegates from all over the world to the International seminar on new paradigm and innovation on natural sciences and its application (ISNPINSA). Each year, the Faculty of Science and Mathematics, Diponegoro University, organized this conference, giving researchers, policy makers, scientists, scholars and students the opportunity to meet, learn from one another, and share their work with each other. This conference succesfully conducted since 2011 and therefore becoming annual event since then.

As previous conferences, the theme has always been concerned on the actual topics in applied sciences for sustainable development and human welfare. In this year, the theme of 5th ISNPINSA is "**Food and Energy Security: Integrated Science and Sustainability**". Energy and food have been the most important resources that directly influence the socioeconomic development of any country. Food is essential for human existence and energy is the key to human development. Access to these resources and their sustainable management are the basis for sustainable development. Recognizing that efficient use of these limited or declining resources is essential to sustainability, the global community has turned its attention to the concept of the integrated science of food and energy security for sustainable social, economic and environmental development.

The objectives of the 5th ISNPINSA are to be a space to disseminate updated knowledge regarding the food and energy security in the frame of sustainability, to facilitate brain storming and state of the art information in field of sciences and mathematics; to increase innovation of technology that can be applied in industries; to contribute in formulating strategy to increase the role of science for community; and to stimulate collaboration between industries, researchers and government to increase community welfare.

In addition, the conference will also lead to future research collaborations and strengthening of common network with over hundreds participants both from local and overseas. The presentations and deliberations will bring up great opportunity to gain insightful knowledge about the projects being conducted in

the region. Through the interaction, we expect to stimulate an active research environment that is relevant to our communities

My very sincere gratitude to invited speakers and participants for their great contributions, to all advisory boards, reviewers, colleagues and staffs for putting tremendous efforts and their contribution to the organisation of this conference. I hope this conference will prove to be an inspiring and truly transformative experience for you. Enjoy your stay in Semarang, the capital city of Central Java, Indonesia.

We look forward to work with you and getting to know you in the years ahead. Thank you

Yours Sincerely,

Prof. Dr. Widowati, M.Si

Dean, Faculty of Science and Mathematics

Diponegoro University

Welcome from the Rector of Diponegoro University

It is our great pleasure to welcome you to the 5th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application (ISNPINSA 2015) which will be held from October 7 to 8, 2015 in Diponegoro University, Semarang, Indonesia.

ISNPINSA 2015 continues its annual tradition of being the premier international forum to present and discuss progress in research, development, innovation, and applications of the topics related to the natural sciences. This forum will offer high quality scientific sharing, including oral presentation sessions and poster sessions.

ISNPINSA 2015 will be a great seminar for sharing the latest insights of academic and industrial research as well as to experience the unique environment of Semarang, a city which has been at the heart of the artistic, cultural, and scientific development since many centuries.

The conference committee as well as countless volunteers, has been working tirelessly to create a rich experience and thought-provoking program. We are grateful for their dedication! I hope that you as an ISNPINSA attendee will be able to take advantage of what all of this hard work has produced. Experience and be inspired by the excellent program; reconnect with old friends and meet new ones.

We thank you for your participation and look forward to seeing you in Diponegoro University, Semarang.

Have a great seminar experience.

Sincerely,

Prof. Dr. Yos Johan Utama, SH, M.Hum

Rector, Diponegoro University

Conference Organisers

Steering Committee

Widowati, Dean of Faculty of Sciences and Mathematics, Diponegoro University
Muhammad Nur, Physics Department, Diponegoro University
Sapto Purnomo Putro, Biology Department, Diponegoro University
Khairul Anam, Head of Chemistry Department, Diponegoro University
Rahmat Gernowo, Head of Physics Department, Diponegoro University
Munifatul Izzati, Head of Biology Department, Diponegoro University
Solikhin Zaki, Head of Mathematics Department, Diponegoro University
Dwi Ispriyanti, Head of Statistics Department, Diponegoro University
Nurdin Bahtiar, Head of Informatics Department, Diponegoro University

Organising Committee:

Agustina L. N. Aminin (Chair), Chemistry Department, Diponegoro University
Adi Darmawan (Secretary), Chemistry Department, Diponegoro University
Purbowatiningrum R. Sardjono (Treasury), Chemistry Department, Diponegoro University
Alik Maulidiyah

Scientific Committee:

Rully Rahadian, Biology Department, Diponegoro University
Anto Budiharjo, Biology Department, Diponegoro University
Yayuk Astuti, Chemistry Department, Diponegoro University
Hendri Widiyandari, Physics Department, Diponegoro University
Retno Kusumaningrum, Informatics Department, Diponegoro University

Onsite Information

Registration Desk

The conference registration desk will be located in the Ground Floor of the ICT Centre Diponegoro University. The registration desk will be open from 7.00 on Wednesday, 7 October and will remain open for queries and registration for the duration of the conference.

Badges and Security

For security reasons and for catering purposes, please wear your conference badge throughout the conference. The colour coding for the badge-holder strips is as follows:

Blue : Plenary and Invited Speakers

Green : Organising Committee

Clear : Delegates

Replacements for lost badges are available from the registration desk. Please write your name in your program booklet, and do not leave either your booklet or your delegate bag unattended at the conference at any time—for example, on your seat in the meeting room during breaks. Replacements for lost booklets or bags will unfortunately not be available.

Conference Session Locations

The conference sessions will be held in the Ballroom, and Meeting rooms. Please see the full program for individual session, presentation, poster session, and catering times.

Lunch, Dinner and Refreshments

The registration fee includes the following catering arrangements:

Catering Arrangements	Dates	Times
Refreshment Breaks	7-8 October 2015	Please see the full program for timings
Lunch	7-8 October 2015	Please see the full program for timings
Gala Dinner	7 October 2015	18.30 – 21.00

Mid-session refreshments and lunch will be served in the foyer with the posters. There will be the opportunity to view the posters and meet with the presenters during the refreshment breaks and lunch breaks.

Gala Dinner

The Gala Dinner will take place on Wednesday, 7 October 2015 from 18:30 at Resto Alam Indah

Poster Sessions

The poster sessions will take place in the conference foyer. Poster presenters should refer to the program booklet which poster number has been allocated to them. The organisers request that poster presenters stand by their boards during the poster presentation session for queries and discussion. Please see scheduled times in the full program.

Language

The language of the conference will be English.

Speakers

Please upload your presentation in the room you are speaking in. Please ensure all presentations are loaded in the meeting room by the end of the break prior to the session you are due to present in at the very latest.

Certificates of Attendance and Presentation

Certificates of Attendance and Presentation are available in the closing time of conference.

Conference Project Lead

Agustina Lulustyaningati Nurul Aminin, 5th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application

email: agustina_lna@undip.ac.id

5th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application
5th ISNPINSA Programme
Semarang, 7-8 October 2015

Wednesday, 7 October 2015		
07.00	Registration Opens	
07.45	Registration Closed	
07.45-08.00	Opening ceremony preparation	
08.00-08.30	Opening ceremony	
08.30-09.10	Plenary Speaker 1 **[Plen-1]** **Prof. Akhmaloka** Exploration and Characterization of Lipolytic Producing Micobes and Its Enzyme for Production of Extreme Lipase **Chair: Agustina L. N. Aminin**	
09.10-09.30	**Coffeebreak**	
09.30-10.15	Plenary Speaker 2 **[Plen-2]** **Dr. Ralf Greiner** Innovations in Food Preservation: Emerging Technologies and their Potential Chair: **Anto Budiharjo**	
10.15-11.00	Plenary Speaker 3 **[Plen-3]** **Prof. Ocky Karna Radjasa** Exploitation of marine microbial symbionts for sustainable use of marine resources Chair: **Rully Rahadian**	
11.00-11.45	Parallel Invited Speakers – 1 Chair: **Hendry Widiandari**	
	[Inv-1] Methyl tert-butyl ether (MTBE) Induced Structural Changes in Human Hemoglobin by Hemolytic Activity **Parvaneh Maghami**	**[Inv-2]** Soy Whey Potential as Functional Food and Driving Microbial Fuel Cell **Agustina L. N. Aminin**
11.45-12.45	**Lunch Break**	

	Parallel session		
	Parallel session 1 **Chair: Prof. Se Kwon Kim**	**Parallel session 2** **Chair: Prof. Akhmaloka**	**Parallel session 3** **Chair: Parvaneh Maghami**
12.45-13.00	**[O-1]** Formalin Exposure on The Rats Feeding Diet on Antioxidant Enzymatic Activity and Oxidative Damage of Rats Liver Tissue **Chanif Mahdi**	**[O-2]** Characterization of Local Coloured Rice from Java Island: Attempt on Searching Drought Resistance Rice **Hermin Pancasakti Kusumaningrum**	**[O-3]** Diversity and Abundance of Fish in The Border Waters of Coral Unarang, Kabupaten Nunukan, Kalimantan Utara **Jafron W. Hidayat**
13.00-13.15	**[O-4]** Synthesis Optimization of L-Aspartic Acid B-Hydroxamate by A Novel Enzyme, B-Aspartyl-Γ-Glutamyl Transferase **Asep Awaludin Prihanto**	**[O-5]** Ultrastructure and Nutrient Content of Waste Sago and The Potential as Compost Block for Plant Growth Media **Erma Prihastanti**	**[O-6]** Biological Soil Quality Index of Soil Microarthropods as Soil Quality Indicator of Organic and Inorganic Farming **Rully Rahadian**
13.15-13.30	**[O-7]** Bioavailibility of Cd, Pb, Cu, Zn in Sediment in Garapan, Cibungur, and CilimanRivermouth **Noverita Dian Takarina**	**[O-8]** Riparian Vegetation of Suhuyon River, North Sulawesi **Ratna Siahaan**	**[O-9]** Enhancement LPOS Activity Against *Staphylococcus Aureus* in Lactose-Free-Bovine Milk and Whey Using Carrot Extract **Ahmad Ni'matullah Al-Baarri**
13.30-13.45	**[O-10]** Terminalia Catappa L. Leaves Extract Enhance The Survival and Blood Profile of Ornamental Fish (Betta Sp) **Rudy Agung Nugroho**	**[O-11]** Makroozobentos Mangrove Forest Succession in The Natural and Rehabilitation in Sinjai District, South Sulawesi **Ernawati Syahruddin Kaseng**	**[O-12]** Biological Study on Potential Use of Macroalgae Sargassum Sp and Gracillaria Sp as Fish Diet on Freshwater Fish **Endang Linirin Widiastuti**
13.45-14.00	**[O-13]** In Vitro Antioxidant Activity of Methanolic Extract of Piper RetrofractumVahl **Nurul Jadid**	**[O-14]** Stakeholders Analysis on The Mangrove Forest Management in Lampung Province; a Case from Indonesia **Asihing Kustanti**	**[O-15]** Oil Biodegradation and Synergisms of Oil Degrading Bacteria as Spent Bleaching Earth (SBE) Bioremediation Agent **Hary Widjajanti**

14.00-14.15	**[O-16]** Potential of Bacillus as Siderophore Bacteria and Iron (Fe) Bioremoval **Enny Zulaika**	**[O-17]** Agroforest Could Enhance Soil Moisture and Fertility in Farmlands **I Gede Ketut Adiputra**	**[O-18]** Dynamics of Greenhouse Gas Emission and Their Soil Bacteria Diversity After Application of Compost Into The Oil Palm Root Zone: A Research Study in Wetland **Hasrul Satria Nur**
14.15-14.30	**[O-19]** Bacillus Resistance and Potential as Chromium (Cr) Bioremoval **Adisya Prima Nurmalita Sari**	**[O-20]** Description New Species and Biogeographical Analysis of Indonesian Xestoleberis **Insafitri**	**[O-21]** Diatoms and Water Quality of Toba Lake **Tri Retnaningsih Soeprobowati**
14.30-14.45	**[O-22]** Iron Bioavailability in Vitro Digestion using Ferrous Fumarate and NaFeEDTA on Soy-Based Food **Agustino Zulys**	**[O-23]** Drought Resistance Analysis of The North Sulawesi Local Rice Based on The Root Characters **Nio Song Ai**	**[O-24]** Relationship of Physical and Chemical Conditions to Mean Growth Rate of Barramundi in Brackish Water and Sea Water **Arin Maulana Muttaqien**
14.45-15.00	**[O-25]** Antimicrobial Activity of The Saponin Extract of SansevieriaTrifasciata Var. Golden Hahnii with Gel Diffusion Method **Whika Febria Dewatisari**	**[O-26]** Carbon Sinks of Tree Vegetation in Bandung City Green Space: Case Study Taman Balai Kota, KebunBinatang, and Taman Lalu Lintas Ade Irma SuryaniNasution. **Nurvita Cundaningsih**	**[O-27]** Water Hyacinth Infusion (EichhorniaCrassipes [Mart.] Solms) as Oviposition Atractant of Gravid AedesAegypti (L.) **Dheanda Absharina**
15.00-15.30	**Poster session and Coffee break**		
	Parallel session 4 **Chair: Retno Ariadi L**	**Parallel session 5** **Chair: Adi Darmawan**	**Parallel session 6** **Chair: Hendry Widiandari**
15.30-15.45	**[O-28]** Identification of Local Lipolitic Isolate from Domestic Compost **Syifa F. Syihab**	**[O-29]** Emic and Ethic Knowledge of Bamboo's Characteristic in Process of Making Angklung **Syaima Rima Saputri**	**[O-30]** Ester Compounds from Seeds Entada Phaseoloides **Jismi Mubarrak**

15.45-16.00	**[O-31]** Antioxidant and Qualitative Phytochemical of *Alpinia Purpurata* Fermented with *Saccharomyces Cerevisiae* **Martina Widhi Hapsari**	**[O-32]** Status of Heavy Metal Pollution Within Sediment in Mangrove Forest of Semarang City and Demak Municipal Coastal Area **Endah Dwi Hastuti**	**[O-33]** Optimization of Reaction Conditions in The Production of Gadolinium Diethylene triamine Pentaacetate-Folate Using The Placket Burman Design and The Response Surface Methodology **Retna Putri Fauzia**
16.30-16.15	**[O-34]** Antioxidant Capacity and Phytochemical of *Alpinia Purpurata* Extracts Fermented by *Lactobacillus Plantarum* **Bestari Trianisanti**	**[O-35]** The Growth of Seaweeds, Gracilaria Verrucosa in Brackish Water Pond Polyculture System with Chanos Chanos **Riche Hariyati**	**[O-36]** Comparative Study of Encapsulated Rhizome Extract of *Alpinia Purpurata* (Zingeberaceae) in Alginate and Alginate-Chitosan **Meiny Suzery**
16.15-16.30	**[O-37]** Temperature Profile of Cellulase and Xylanase Activity from Thermostable Lignocellulolitic Enzyme Complex of Sago Waste **Anthonius Tulus Mangisi**	**[O-38]** Diversity and Regeneration of Mangvove in PulauPanjang, Jepara Central Java **Sri Utami**	**[O-39]** Identification and Antioxidant Activity of Terpenoid from Terminalia Muelleri Benth. Bark **Khairul Anam**
18.30-21.00	**Gala Dinner : RESTO ALAM INDAH, Gombel**		

Thursday, 8 October 2015		
08.00-08.45	Parallel Invited Speakers – 2 Chair: **Yayuk Astuti**	
	[Inv-3] The Application of Integrated Multi Trophic Aquaculture Using Stratified Double Net Cage for Aquaculture Sustainability **Sapto Purnomo Putro**	**[Inv-4]** Nitrogen Doped Titanium Dioxide as A Photoanode for Improving the Performance of Dye Sensitised Solar Cells (DSSCs) **Hendri Widiyandari**

08.45-09.30	Plenary Speaker 4 **[Plen-4]** **Prof. Se-Kwon Kim** "Development and Applications of Bioactives and Pharmaceuticals from Marine Bioresources" **Chair: Sapto Purnomo Putro**		
09.30-09.45	Coffeebreak		
09.45-10.30	Plenary Speaker 5**[Plen-5]** **Dr. Anwar Usman** Chair: **Adi Darmawan**		
10.30-11.15	Plenary Speaker 6 **[Plen-6]** **Speaker from Industrial** Chair: **Retno Kusumaningrum**		
11.15-12.15	**Lunch Break**		
	Parallel session 7 **Chair: Anto Budiharjo**	**Parallel session 8** **Chair: Ralf Greiner**	**Parallel session 9** **Chair: Anwar Usman**
12.15-12.30	**[O-40]** Bacterial Silver Colloids from Slurry of Silver Craft Industry and Its Activity as an Antibacteria **Endang Sutariningsih Soetarto**	**[O-41]** Identification Geothermal Reservoir of Telomoyo Mount from Anomaly Magnetic Data Using 3D Magnetic Inversion **Hiska Anggit Maulana**	**[O-42]** Proximate Composition and Cholesterol Content of Coconut (*Cocos Nucifera* L.), Sesame (*Sesamum Indicum* L. Syn), Candlenut (*Aleurites Moluccana Willd*) and Jack Bean (*Canavalia Ensiformis* L.) **Dwi Hudiyanti**
12.30-12.45	**[O-43]** Water Quality of Cilaja Catchment Area (Bandung) in Three Different Land Uses **Hertien Koosbandiah Surtikanti**	**[O-44]** Magnetic Modeling of The Diwak-Derekan Geothermal Area with Extension to Bawen, Central Java **Udi Harmoko**	**[O-45]** Computational Study of The Affinity Between Gd-DTPA-Folate and Folate Receptor Alpha for The Development of Cancer-Specific Mri Contrast Agent **Rukiah**
12.45-13.00	**[O-46]** Phytochemical Screening and Antibacterial Activity of Leaves Extract Balangla (Litsea Cubeba (Lour) Pers.) from Malinau, East Borneo **Hetty Manurung**	**[O-47]** Characterization of Dye-Sensitized Solar Cells (DSSC) with Improvement Absorption Visible Spectrum of Sunlight Using Multicolors Dye **Jatmiko Endro Suseno**	**[O-48]** The Effect of Configuration to Interaction Energy Between The Segments of Chitosan and Ascorbic Acid Molecule: Theoretical Study of Drug Release Control **Suci Zulaikha Hildayani**

13.00-13.15	**[O-49]** Probiotic and Antioxidant Activities of Filamentous Fungi Isolated from The Indonesian Fermented Dried Cassava **Isroli**	**[O-50]** A Simple Polarization for Powerful Preliminary Test of Oil Quality Level **K. Sofjan Firdausi**	**[O-51]** Effectivity of Komposit Chitosan-ZnO to Decolorize The DyeRemazole Golden Yellow **Khabibi**
13.15-13.30	**[O-52]** The Effects of Temulawak Extract and Yoghurt on Hdl-Ldl Mice Blood Exposed Waste Cooking Oil **Kartiawati Alipin**	**[O-53]** Applicationof Laser Induced Chlorophyll FluorescenceImaging to Detect Environmental Effect on Spinach Plant **Minarni Shiddiq**	**[O-54]** Synthesis of MIP Glucose, Characterisation and Selectivity **Muhammad Cholid Djunaidi**
13.30-13.45	**[O-55]** The Effectivity of Subculture *Helicoverpa armigera* Nuclear Polyhedrosis Virus (Hanpv1) in Variety Formulation on Body Weight of Target Insect Pests **Mia Miranti**	**[O-56]** Acetone Gas Detection of Type 2 Diabetes Mellitus Patient's Breath Using Laser Photoacoustic Spectrometer **Mitrayana**	**[O-57]** Fabrication Material Zeolite Modified by Fe with Treatment and Without High Energy Milling on Zeolite Materials **Pardoyo**
13.45-14.00	**[O-58]** Evaluation of Heat-Treatment At Pasteurisation Temperature on Farmers' Bovine Milk Considering The National Standard and The Heat-Property of Coxiella Burnetii **Setya Budi Muhammad Abduh**	**[O-59]** The Influence of Iron Sand Quantity in Ararei Village, Regent of Sarmi on The Application of Mortar as Radiation Shield **Endang Haryati**	**[O-60]** Transport of Urea Through A Crosslinked Poly(Vinyl Alcohol)-Poly(Ethylene Glycol) Diglycidyl Ether/Chitosan Blend Membranes **Retno Ariadi Lusiana**
14.00-14.15	**[O-61]** Potency of Probiotic Bacteria from Noni Fruit (Morinda Citrifolia) as AntiHelicobacter Pylori Agent **Sri Rejeki Rahayuningsih**	**[O-62]** The Influence of Additional Lead Plate to Mortar with A Various Quantity of Iron Sand from Ararei Village in Sarmi as Radiation Shield **Khaeriah Dahlan**	**[O-63]** Surface Modification of Nanodiamond and Its Interaction to The Doxorubicin **Yayuk Astuti**

14.15-14.30	**[O-64]** Phytochemicals Analysis, Antioxidant Capacities and Antimicrobial Properties of BarksExtract of Garlic Tree (Scorodocarpus Borneensis Becc.) **Sudrajat**	**[O-65]** Analysis of Oil Pollution in Soil by Using Nd:Yag Laser-Induced Plasma Spectroscopy **Ali Khumaeni**	**[O-66]** Synthesis of SiO_2/TiO_2 Pillared Clays and Its Activity for Photocatalytic Degradation of Rhodamine **Adi Darmawan**
14.30-15.00	**Poster session and Coffee break**		
	Parallel session 10 **Chair: Rully Rahadian**	**Parallel session 11** **Chair: Yayuk Astuti**	**Parallel session 12** **Chair: Sapto P. Putro**
15.00-15.15	**[O-67]** Discrimination of Dengue Based on Epidemiologic and Laboratory Parameters in Adult and Child Patients in Semarang 2015 **Anto Budiharjo**	**[O-68]** Analyse of Classification Acceptance Subsidy Food Using Discriminant Kernel Method **Alan Prahutama**	**[O-69]** Automatic Speech Recognition for Indonesian Using Linear Predictive Coding (LPC) and Hidden Markov Model (HMM) **Sukmawati Nur Endah**
15.15-15.30	**[O-70]** Applications Bioactive Material from The Snake Head Fish (*Channa Striata*) for Repair of Motor Activity and Learning and Memory Capability: A Case Study in Rats with Aging Physiological and Aging Due to Oxidative Stress **Sunarno**	**[O-71]** Quality Function Deployment and Fuzzy Topsis Methods in Decision Support System for Internet Service Provider Selection **Novianto Dwi Prasongko**	**[O-72]** A Model of Langerhans and Tcd4+ Cells Infection During Early Hiv-1 Infection with Multiple Dose Rtis and Pis Treatments **Sutimin**
15.30-15.45	**[O-73]** Utilization of Channels Digestion Golden Snail (Pomacea Canaliculata) as Lytic Enzyme and Application on Yeast Pichia Manshurica Ducc-Y15 **Wijanarka**	**[O-74]** Volatility Modelling Using Hybrid Autoregressive Conditional Hetero scedasticity (ARCH) - Support Vector Regression (SVR) **Hasbi Yasin**	**[O-75]** The Effect of Hydrothermal Temperature on The Detergency Properties of Rice Husk Based Zeolite **Alfiansyah**

15.45-16.00	**[O-76]** The Improvement of Protein Content by The Use of Oreochromis Niloticus in Tempeh as Aquaculture Product Diversification for Sustainable Aquaculture **Lusiawati Dewi**	**[O-77]** The Design of Cuda Parallel Processing for Accelerating Artificial Neural Network'S Computational Time **Ozalif Routing B.S.**	**[O-78]** Modification of Rice Husk-Based Activated Carbon Using Sodium Lauryl Sulphate (SLS) for Lead (Pb) Ions Removal **Dewi Reskiandini**
16.00-16.15	**[O-79]** Isolation and Characterization Pure Phospholipids Compounds of Coconut (*Cocos Nucifera*) and Its Application as Cancer Drug Carrier Systems **Ira Eka Fatmawati**	**[O-80]** The Information System of Accident Prone Locations Mapping in Polrestabes Semarang **Ragil Saputra**	
16.15-16.30	Closing		

Poster Presentation, 7-8 October 2015	
[P-01]	The Yield Comparison of Purified Curcuminoids Using Vacuum Column Chromatography with Silica Gel and Its Regenerated As Stationary Phase **Bambang Cahyono**
[P-02]	Histological Structure of Mice (Mus Musculus L.) Liver After Administration of Ethanol Extract and Spinasterol from Senggugu (ClerodendronSerratum L.) Leaves **Desak Made Malini**
[P-03]	Diversification of Cassava Starch in producing Flakes Enriched by Dietary Fiber from Coconut Residue Flour **Diana Widiastuti**
[P-04]	The Capability of Streptomyces Sp. Isolated from Segara Anakan In Producing Pigment Substance **Dini Ryandini**
[P-05]	Glucose Content of Sago Waste After Chloride Acid Pre-Treatment Hydrolysis for Bioethanol Production **Erma Prihastanti**
[P-06]	Growth Optimization of Thermophilic Bacteria Bacillus Thermo amylovoran sand Brevibacillus Sp. In Producing Keratinolytic Enzyme **Heni Yohandini**
[P-07]	Potency of Bioarang Briquette with Materials from Leather Cassava Tubers and Sludge of Wastewater Treatment Plant **Nita Citrasari**
[P-08]	Novel Archaeal Dna Polymerase B from Domas Hot Spring West Java **Suharti**
[P-09]	Growth Improvement of Mung Bean (VignaRadiata(L.) Wilczek R.) by Application of Mycofer and Phosphate Fertilizer **Tia Setiawati**
[P-10]	The Use of Endomycorhiza Propagules and Liquid Organic Fertilizer To Increase The Growth and Fresh Weight Caisim (Brassica Juncea L.) and Chinese Cabbage (B.Chinensis L) Plant **Titin Supriatun**
[P-11]	Identification of Sarang Semut Plant and Its Host Tree In Tanjung Palas, Bulungan District, North Borneo **Yanti Puspita Sari**
[P-12]	Utilization of Coconut Residue Flour as Source Dietary Fiber for Functional Food Production **Ade Heri Mulyati**
[P-13]	Analysis Stability of Mathematic Model of Worm Infection on Computer in A Network **Nurfitriani Solekha**

[P-14]	Study of Three Additive Compounds Expected as Reactive Oxygen Species **Agustina L. N. Aminin**
[P-15]	Implementation of ARIMA Model to Predict the Waters Quality Based on Macrobenthos Abundance **Widowati**
[P-16]	Effect of Growing Season on Growth and Relation of Height and Above Ground Biomass of Avicennia Marina **Rini Budihastuti**

Plenary Speaker Abstracts

[Plen-1]
Exploration and Characterization of Lipolytic Producing Micobes and Its Enzyme for Production of Extreme Lipase

Prof. Akhmaloka

Institut Teknologi Bandung

Abstract

Lipase is one of the enzyme that are widely used in industry, such as, food, chemical, detergent, cosmetic, biomedical, biopolymer, biodiesel and pharmaceutical industries. Nowadays, thermostable lipase are widely needed especially for the industry required high temperature. Enzymatic reaction at high temperature has some advantages such as increasing reaction rate, reducing contamination, and reducing cost of operation. Therefore, a number of research to discover a new variant of thermostable lipase which have a unique properties are still carried out. In this paper we would like to present the isolation and characterisation of lipolytic producing extremophiles, cloning and characterisation of lipase gene through conventional and metagenome approach, heterologous expression of the genes and characterisation of the lipases.

[Plen-2]
Innovations in Food Preservation: Emerging Technologies and their Potential

Ralf Greiner

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Abstract

Thermal treatments such as cooking, pasteurization and sterilization have been used traditionally to ensure food safety and shelf life. A new trend in food preservation is to minimize or replace thermal treatments in order to maintain the "freshness" as well as the nutritional and bioactive properties of foods. Thus today, preservation of fresh characteristics combined with shelf-life and safety is the main goal of food processing. Application of mild preservation technologies that is food processing at reduced temperature is seen as a promising way to reach that goal. Because these processing techniques have little or no thermal effects on foods, they are commonly referred to as non-thermal preservation technologies. Examples of non-thermal processing technologies are high pressure processing, pulsed electric field treatment, pulsed light treatment, UV treatment, irradiation, dense phase carbon dioxide, cold plasma, radio frequency treatment, ohmic heating, and ultrasonic treatment. Among these emerging technologies, the most promising ones for food application are high-pressure processing, use of pulsed-electric fields, and application of pulsed light. This presentation provides a technical description of each of these technologies, along with a discussion of their applications in food processing.

[Plen-3]

Exploitation of Marine Microbial Symbionts for Sustainable Use of Marine Resources

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Abstract

The recognition that marine organisms provide a rich potential source of bioactive substances support the intensive exploration of new substances from marine organisms especially marine invertebrates. Many marine invertebrates such as sponges, softcorals, bryozoans, tunicates and mollusks are known as the prolific producers of marine natural products with various industrial and pharmacological activities and have been the target of marine bioprospecting.

One of the most serious bottlenecks in developing natural products from marine sources during the past decades has been the availability of biomass to gain sufficient amounts of substances for preclinical and clinical studies. Exploitation is further complicated by the fact that most of these metabolites possess highly complex structures, making them difficult to be produced economically via chemical synthesis.

Most of the marine invertebrates contain a great variety and considerable amounts of associated microorganisms, thus, the importance of studying the ability of these microbial symbionts to produce secondary metabolites is now recognised. Many studies have confirmed the potentials of microbial symbionts as the alternative sources of sustainable marine natural products.

Key words: Exploitation, marine microbial symbionts, bioprospecting, marine resources, sustainable

[Plen-4]
Development and Applications of Bioactives and Pharmaceuticals from Marine Bioresources

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Abstract

Over several decades, the marine ecosystem has been used as an important resource for the discovery of bioactive compounds to cure many diseases. Traditional Chinese Medicine (TCM) have great values and potential impact to develop several pharmaceuticals. However, at the present moment, it is explored very less. The important marine resource-algae (*Ecklonia cava),* which is widely used in China, Korea and Japan areas have huge medicinal properties due to the presence of highly valuable chemical compounds. *Ecklonia cava* derived chemical constituents showed excellent biological activities towards matrix metalloproteinase (MMP) inhibition, anti-inflammatory, anti-HIV, anti-asthma and anti-allergy activities. In the current presentation, biological effects of algal bioactive compounds will first be discussed. In addition, development of nutraceuticals from fish and crab to produce polymers, proteins, lipids, carbohydrates, enzymes and minerals will be presented. The continuous production of chitooligosaccharides (COS) using an enzymes membrane bioreactor system, and biological activities of COS such as antimicrobial, antitumor, antioxidant and enzyme inhibitory activities will be discussed. COS as promising nutraceuticals and dependence of their properties on molecular weight will also be demonstrated. Finally, the role of marine algal compounds on hair growth and erectile dysfunction will be discussed. The *in vivo* experiments of marine algal compounds for latter cases are promising and ready for commercial exploitation. Thus, marine ecosystem has huge potential for developing nutraceuticals, pharmaceuticals and cosmeceuticals.

Invited Speaker Abstracts

[Inv-1]
Methyl *tert*-butyl ether (MTBE) Induced Structural Changes in Human Hemoglobin by Hemolytic Activity

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Abstract

Methyl *tertiary*-butyl ether (MTBE) is widely used in gasoline as oxygenate and octane enhancer and reduce emissions of carbon monoxide. Despite some benefits of using MTBE as a fuel additive (up to 15%) to meet clean air standards, the widespread use of MTBE, combined with its chemical and physical characteristics, has raised another serious environmental problem on water quality. MTBE is producing largely and being used worldwide, so there is increasing concern that human exposure to MTBE may cause adverse effects. The number of people

exposed to gasoline is large and includes mainly employees in gasoline companies and gasoline station and also the general public. Acute effects, such as headache, nausea, and nasal and ocular irritation, have been associated with the exposure to gasoline containing MTBE. In spite of large number of reported animal studies about toxic effects of MTBE there is no study at molecular level. Since MTBE can quickly enter the blood, it is of great importance to detect its interaction with Hb. Hemoglobin is a tetramer protein that has a 3D structure consisting of two alpha and two beta subunits, which are non-covalently associated within erythrocytes and arranged around a central cavity. The purpose of this study is to assess the effect of MTBE on the membrane of erythrocyte, ROS production and Hb structure using hemolytic assay, UV–vis, fluorescence spectroscopy, and chemiluminescence methods. Hemolytic effect was amplified at increased concentration of MTBE. Based on the chemiluminescence results suggested that the hemolytic effect and conformational changes of Hb at different concentration of MTBE may involve the reaction of reactive oxygen species (ROS) with oxyHb.

Key words: MTBE, Human hemoglobin, Heme degradation.

[Inv-2]

Soy Whey Potential as Functional Food and Driving Microbial Fuel Cell

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Abstract

Wheyvolution is the whey "story" which is waste become major functional food. Whey used to be thrown in the river; then it was sprayed on the fields; next it was fed to pigs, and finally it was fed to humans. Nutrition is undergoing a revolution owing to the recognition that some foods contain trophic, health-promoting factors distinct from essential nutrients. In this revolution, whey is increasingly being viewed as more than a source of proteins with a particularly nutritious composition of essential amino acids. Those are the story of whey from cheese. Soy whey is a liquid residual of soy milk that has been coagulated in tofu processing. Tofu waste from industry in Indonesia reached 20 million cubic meters per year. The largest component in soy whey is protein and another important component that remains in the whey is isoflavones. In addition to protein and isoflavones, there are stachyosa carbohydrates and phytic acids. Microbial biotransformation of isoflavone in to aglycone has been widely reported and considered to have a better bioactive capacity. The result of decomposition of soybean protein with an enzyme treatment or fermentation also produces a variety of bioactive peptides with potential for extensive treatment. Soy protein can be degrade into a variety of bioactive peptides with various potentials have been reported, such as antioxidants and prevention of chronic diseases such as antihypertensive and anticancer. The extensive study of soy whey from tofu local industry trough fermentation have been carried out. The fermented products have been shown as functional food potential with broad bioactivities and also as prospective substrate for microbial fuel cell.

Key words: soy whey, fermentation, functional food, MFC

[Inv-3]

The Application of Integrated Multi Trophic Aquaculture Using Stratified Double Net Cage for Aquaculture Sustainability

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Abstract

The increase of fishery production nationally and internationally may impact on the potential emergence of a variety of environmental problems. The application of sustainable aquaculture is urgently needed by breeding fish for commercial purposes in a manner such that it has a minimum impact on the environment, contributing to the development of local communities and generating economic benefits. The design of the cage and farming practice in aquaculture activities are the important steps to ensure that farming activity is still observed in order to anticipate the risk of organic enrichment caused by the activities. The application of Integrated Multi-Trophic Aquaculture (IMTA) on the Stratified Double Floating Net Cage (SDFNC) integrated with biomonitoring are an appropriate solution to the ongoing productive farming practices. IMTA is an aquaculture practice using more than one species of biotas which have ecologically mutual relationship as a part of the food chain in the area at the same time. The application of IMTA allows farmers to get several aquaculture products in the same area without increasing the horizontal area of the farms. At first, the SDFNC has been applied for farming *Cyprinus carpio* and *Tilapia niloticus* as polyculture system in freshwater ecosystem of Rawapening Lake, Central Java. Its operation has been able to increase the

production capacity of at least 75% of conventional cages. The application of SDFNC-IMTA using milkfish (*Chanos Chanos*), seaweed (*Kappaphycus alvarezii*), and white shrimp (*Litopenaeus vannamei*) has been able to minimize the impact and maintain the water ecosystem in the Gulf Awerange, South Sulawesi.

Key words: sustainable aquaculture, SDFNC-IMTA, biomonitoring, environmental impact, and water ecosystem.

[Inv-4]

Nitrogen doped-Titanium Dioxide as A Photoanode for Improving The Performance of Dye Sensitized Solar Cells (DSSC)

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Abstract

Photoanode is a part of dye sensitized-solar cells (DSSC) which is semiconductor material coated on the TCO (transparent conductive oxide) with dye sensitizer inserted in the pore of semiconductor or coated on the surface of semiconductor. In this research, the titanium dioxide with addition of nitrogen (N-doped TiO_2) was synthesized and used as photoanode of the DSSC. The photoanode was prepared using two different methods which is spray deposition method and doctor blade method. Titanium tetraisopropoxide and urea were used as a raw material for TiO_2 and N source, respectively. Typically for photoanode that prepared by doctor blade method, the used N-doped TiO_2 was synthesized by liquid phase precipitation method. The materials and photovoltaic properties of the DSSC with N-doped TiO_2 photoanode were investigated sistematically. The improved photovoltaic property of N-doped TiO_2 based DSSC was observed. The overall light to electrical energy conversion efficience (ECE, η) in simulated solar light of DSSC with photoanode prepared by spray deposition resulted that undoped TiO_2 based DSSC was 0,60% with V_{oc} of 0,52 volt and J_{sc} of 1,95 mA. and the N-doped samples of 30 vol.% urea addition showed the η of 0,73% with (V_{oc} of 0,63 volt, J_{sc} of 2,01 mA). Whereas the efficiency of DSSC that uses photoanoda prepared using doctor blade method was 0.02, 0.14 and 0.18 for undoped TiO_2 based DSSC, N-doped TiO_2 (uses 0.25 M of urea addition), and N-doped TiO_2 (uses 0.5 M of urea addition) respectively.

Key words: DCCS, Nitrogen, TiO_2, Photoanode, Urea

Oral Presentation Abstracts

[O-1]
Formalin Exposure on the Rats Feeding Diet on Antioxidant Enzymatic activity and Oxidative Damage of Rats Liver Tissue

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Abstract

Using formalin or formaldehyde as an illegal preservative on food and ingredient Is very danger for health because formalin is a toxic and carcinogenic substance that potent as a sources of reactive oxygen species (ROS) and free radical exogenous. The aim of this research was to know the potent of formalin toxicities that exposure through the rats feeding diet on antioxidant enzymatic activity (SOD and GSH) and effect on oxidative damages of rat's hepar tissue (MDA). Twenty five of male rats of 8 to 10 weeks old, with the body weigh 100 to 120 g, were divided into 5 groups. Group I was the control group, treated with a standard pellet feeding diet without formalin. Group II, III, IV and V were administrated with treatment feeding diet with formalin content of each were 25 ppm, 50 ppm, 75 ppm and 100 ppm. The result showed that formalin exposure through the feeding diet of rats (*Rattus novegicus*) affect decreasing highly significantly ($P<0.01$) on antioxidant enzymatic (GSH) and decreasing oxidative damage (MDA) of liver tissue of rat (*Rattus norvegicus*).

Key Words: Formalin; Superoxide dismutase (SOD); Glutathion reduced (GSH); Malonyl dialdehyde (MDA)

[O-2]

Characterization of Local Coloured Rice from Java Island: Attempt on Searching Drought Resistance Rice

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Abstract

Coloured rice was a valuable source of antioxidants and their consumption having potency to overcome chronic diseases, such as diabetes, due to the production of minerals, vitamins, dietary fibres, and phenolics. Aleuron as the outer layer of coloured rice endosperm is of major importance site in nutrients storing for pollen formation ad seed germination, production of anti-microbial metabolites. Various types of bioactive and volatile compounds also producing by coloured rice as secondary metabolites are synthesized to protect plants against biotic and abiotic stress in facing environmental stresses. The objective of the study was characterize local coloured rice from central Java Island using several phenotypic trait in searching drought resistance rice. The result of the research gaining 10 cultivar among 50 cultivar as a promising candidate of local coloured rice based on their character and performance again drought stress environment.

Key words: coloured rice, drought, Java

[O-3]

Diversity and Abundance of Fish in the Border Waters of Coral Unarang, Kabupaten Nunukan, Kalimantan Utara

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Abstract

Kabupaten Nunukan, North Kalimantan Province is one of the outermost regions of NKRI directly adjacent to neighbouring country Malaysia, both land border and marine border. A part of the district is still subject of a claim by Malaysia. One this strategic area is coral Unarang water, a coral reef formations that are allocate close to the border. The most important natural resources of the water in the region are fisheries and coral reefs. The research objective was to determine the abundance and diversity of species of reef fish in the Coral Unarang. Besides, it is also to study of environmental factors operate, especially, the condition of coral reefs, turbidity, salinity, pH, flow etc. Data of reef fish was taken by sampling conducted using transect technique. Permanent transect line and sampling point for observations have been installed at the location in the water column. The sampling method used was the Underwater Visual Census (UVC), where the fish found at a distance of 2.5 meters on the left and right along the transect lines of 25 m were recorded, both name of fish species and its amount. Result shown that there were about 11 species of reef fishes in the coral Unarang waters. The diversity of the fish was qualified a small, particularly compared to diversity in surrounding of Bunaken reefs which reached 181 species. The most common species were Pullers (damselfish), Damselfish, Anemone fish and butterfly fish (butterfly). It was also known that fish H'diversity index of Shannon-Wiener were between 1.5 to 1.8. The value of was likely to be small, which indicated that the environmental stability tends to be low. This was mainly due to the fishing operation as well as quality of the coral which was tend to unhealthy. Environmental factors believed to affect were high turbidity, low value of pH, strong flow. The abundance and diversity of the fish should be managed, which can be done at least through conservation of the reef. Coral conservation will greatly support the abundance of fish catch for

fishermen. The existence of fisherman along the territorial boundary can also simultaneously serves to strengthen border patrol, so that the neighbouring countries would be reluctant to claim territory.

Key words: Fish coral diversity, Coral Unarang, territorial water

[O-4]

Synthesis Optimization of L-Aspartic acid β-hydroxamate by a novel Enzyme, β-Aspartyl-γ-glutamyl transferase

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Abstract

L-Aspartic acid β-hydroxamate or L-β-Aspartyl hydroxamate (BAH), water soluble-chemical compound currently obtains popularity due to its role in several important biochemical processes and to its bioactivities. The information regarding synthesis process of BAH is not available yet. Novel enzyme, β-aspartyl-γ-glutamyl transferase from *Pseudomonas syringae* can catalyse the transfer reaction of β-aspartyl moieties from β-aspartyl compounds to water or to hydroxylamine. In this study we describe the synthesis optimization of BAH using this novel enzyme. We prepared the L-β-aspartyl hydroxamate using L-asparagine as a donor substrate and hydroxylammonium chloride as an acceptor substrate. The effects of temperature, pH, concentrations of substrate donor and acceptor were investigated. Spectrophotometry and HPLC analyses were performed to determine the reaction products. The optimum synthesis reaction was observed in 60˚C. BAH synthesis was optimum at pH 6. The concentrations of donor and

acceptor substrates affected the BAH production and the best concentrations of both substrates were 80 mM and 40 mM, respectively. The BAH production of 0.106 mM has been obtained under the optimized condition and it is approximately two-times higher than 0.047 mM produced under in standard reaction. In conclusion, biosynthesis of L-β-aspartyl hydroxamate using a novel enzyme, β-aspartyl-γ-glutamyl transferase from *Pseudomonas syringae* was successfully performed for the first time. Under the optimized conditions, two times higher L-β-aspartyl hydroxamate production was obtained.

Key words: L-β-Aspartyl hydroxamate, β-Aspartyl-γ-glutamyl transferase, Biosynthesis, *Pseudomonase syringae*.

[O-5]

Ultrastructure and Nutrient Content of Waste Sago and the Potential as Compost Block for Plant Growth Media

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Abstract

One alternative industrial waste that has not been widely used by the public is sago waste. Sago solid waste into compost that has brown to black colour. The purpose of this study was to analyse the structure of fresh sago waste, compost and compost dry sago black by using SEM; assess the nutrient content. The results showed that the fresh waste, black compost and dried compost from sago waste has pores that have the potential as a store of water and causing aeration. Measurement of nutrient content of compost sago either fresh, dried and black for the content of N, P and K are relatively high, successive N (1.12 to 144 %), P (0.05 to 0.46 %) and K (1.29 to 2.22 %) . Based compost structure and water-holding power is relatively high, the composting of waste sago potential for growing media such as plant nurseries.

Key words: sago waste, compost, ultrastructure, media

[O-6]

Biological Soil Quality Index of Soil Microarthropods as Soil Quality Indicator of Organic and Inorganic Farming

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Abstract

Conservation of land or ecosystem greatly depend on sensitive and acurate tool for determining environment quality. Use of microarthropods as biology parameter in determining soil quality has great potential to be develop. Recently, more simple and applicable methods has been applied in temperate regions, namely BSQ (Biological Soil Quality) index. However, there is no microarthropods index specifically developed as bio-indicators of soil quality in tropical conditions as well as in Indonesia. Adoption BSQ index to be applied in Indonesia still requires a series of studies evaluating land suitability with many conditions including inorganic and organic farms. In general, this study has the objective to develop the microarthropods index as a determinant of the quality of soil in organic and inorganic farms. The study was conducted at organic and inorganic farm, in Kopeng area, Central Java. The method used to achieve these objectives is to perform a comparative index BSQ (using EMI scores) with indicators of the quality of soil chemical, physical and biological community structure using conventional index (Shannon Wiener index).

Key words: Microarthropods, soil quality, organic farming, soil fauna.

[O-7]

Bioavailibility of Cd, Pb, Cu, Zn in Sediment in Garapan, Cibungur, and Ciliman Rivermouth

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Abstract

Garapan, Cibungur, and Ciliman Rivermouth known as places for fishing. Those areas are surrounded by human settlement, agricultural, and industrial activities. The aim of this study is to investigate the bioavailibility of Cd, Pb, Cu, and Zn in sediment for biota (clams) from related location. Bioavailibility was determined using sequential extraction technique consisted of residual and nonresidual fractions. Samples of sediments taken using Ekman grab, while clams *Anadara pilula* taken using "garo". Heavy metals content was analyzed using AAS. Regression linear was used to see relationship between bioavalibility and heavy metal content in clams. Result showed that heavy metal content Cd, Pb, Cu, and Zn in sediment were highest in Garapan so were the content of Pb, Cu, and Zn in *Anadara pilula*. Result also showed that Cd and Pb were mostly bound to nonresidual fraction 100% and 54.65 – 64.69% respectively, while Cu and Zn were mostly bound to residual fraction 54.63 – 54.79% and 67.28 – 79.37% respectively, except in Garapan for Cu. Relationship between each fraction of heavy metal in sediment with heavy metal content in *Anadara pilula* show ascending pattern except for Cd.

Key words: bioavailibility, heavy metals, sediment, *Anadara pilula*, rivermouth

[O-8]

Riparian Vegetation of Suhuyon River, North Sulawesi

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Abstract

Riparian vegetation has important ecological roles in maintaining river quality. The declining of riparian vegetation will cause to decreasing of water quality and aquatic and terrestrial biodiversities. This study aimed to analyze riparian vegetation of Suhuyon River, North Sulawesi. Vegetation analysis method used in this study from upstream to downstream in February to July 2015.Riparia zone has been used as agricultural land and settlements. Riparian plants are coconuts, bananas, manggoes, langsat/langzones, durian and arenga palm. Vegetation habitus are shurbs, epiphytes, lianas, and trees. Riparian vegetation are classified into Acanthaceae, Anacardiaceae, Araceae, Arecaceae, Aspleniaceae, Asteraceae, Cyatheaceae, Dryopteridaceae, Euphorbiaceae, Gnetaceae, Lamiaceae, Leguminosae, Magnoliaceae, Malvaceae, Maranthaceae, Melastomataceae, Meliaceae, Mimosaceae, Moraceae, Myristicaceae, Myrtaceae, Phyllanthaceae, Piperaceae, Plantaginaceae, Poaceae, Rubiaceae, Sapotaceae, Schizaeaceae, Thelypteridaceae, Tiliaceae, Urticaceae and Verbenaceae.

Key words: Riparian vegetation, Suhuyon River, North Sulawesi

[O-9]

Enhancement LPOS Activity against *Staphylococcus aureus* in Lactose-Free-Bovine Milk and Whey Using Carrot Extract

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Abstrat

Carrot extract has been found as enhancer of antibacterial activity of Lactoperoxidase System (LPOS) by producing the intermediate compound of oxidized beta carotene that enable a remarkable effect in reduction the population of pathogenic bacteria. This research has been done for analyzing the antibacterial activity of LPOS plus carrot extract against *S. aureus* in lactose-free-bovine milk. Lactoperoxidase was purified from bovine whey using SP Sepharose Big Beads. Hyphothiocyanite, a product of LPOS, was obtained through the reaction involving hydrogen peroxide, thiocyanate and lactoperoxidase. The carrot extract has been added to the reaction from initial step. A solution containing high concentration of Hyphothiocyanite was then added to free-lactose-bovine milk containing *S. aureus*. Data have been statistically analysis resulting a significant reduction of *S. aureus* in milk from 6.7±1.1 to 4.9±1.7 log CFU/mL. The addition of carrot extract to the LPOS reaction solution was enable the enhancement of bacterial reduction from 6.8±0.6 to 4.1±0.9 log CFU/mL in milk indicating the enhancement of antibacterial activity of LPOS by carrot extract. The significant enhancement of carrot extract was also appeared in whey from bacterial count of 6.5±1.0 to 3.8±1.4 log CFU/mL. This finding may open the way to enhance the antibacterial activity of LPOS using the common substances such as carrot.

Key words: lactoperoxidase, carrot extract, lactose-free-bovine milk, whey.

[O-10]

Terminalia catappa L. Leaves Extract Enhance the Survival and Blood Profile of Ornamental Fish (*Betta sp*)

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Abstract

To determine the effects of *Terminalia catappa* leaves extract (TCL) on the survival and blood profiles of ornamental fish (*Betta sp*), TCL was qualitatively examined for phytochemicals content and tested again fish as bath supplementation. Ninety fishes were randomly assigned into six triplicates groups, including control group (A group of fish without TCL addition) and reared in various concentration of TCL *viz* 125, 250, 375, 500, 625 ppm for 30 days. After 30 days of trial, survival rate, Red Blood Cells (RBC), White Blood Cells (WBC), total haemoglobin (Hb), percentage of lymphocyte, and total protein serum (TPS) were analysed and compared with control group. Based on the qualitative phytochemicals test, saponin, steroid, triterpenoid, quinon, phenolic, tannins, and flavonoid were detected on the TCL. Adding of TCL above 375 ppm as bath supplementation resulted in significantly higher ($P<0.05$) survival rate, RBC, and Hb on the final day of trial. The highest WBC ($5.43 \times 10^3 \mu L^{-1}$) was found in the group of fish added with 625 ppm. However, any various concentration of TCL as bath supplementation did not affect on the limfosit and TPS of fish. In summary, adding TCL as bath supplementation above 375 ppm is beneficial to enhance survival and RBC, HB, and TPS of *Betta* sp.

Key words: *Terminalia catappa* L., survival, blood profiles, *Betta* sp.

[O-11]

Makroozobentos Mangrove Forest Succession in the Natural and Rehabilitation in Sinjai District, South Sulawesi

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Abstract

Succession macrozoobenthos biodiversity in mangrove ecosystem rehabilitation outcomes based on age mangrove necessary given the lack of information ecosystem is mainly attributed to organic carbon in sediments of mangrove forests and natural rehabilitation. The purpose of this study is to describe the macrozoobenthos community structure, succession, and the factors that affect the distribution of organic carbon to the sediment dynamics in the mangrove forest rehabilitation Tongke-tongke Village, Sinjai. Research by purposive sampling method, in which the study population is a community of mangrove vegetation and macrozoobenthos communities associated with mangroves. In addition, water quality, organic carbon and nitrogen content of sediments is also an object of research. Mangrove vegetation samples, macrozoobenthos and sediment taken purposively based on the location of the plot where mangroves grow. Epifauna and infauna identification results were found in non-vegetation areas, mangrove forests and natural rehabilitation results obtained by 47 macrozoobenthos species from 30 families and 5 classes. Gastropods found as many as 22 species and 11 families, 13 species and 8 Bivalvia families, 6 crustacean species and four families, Polychaeta 5 species and 5 families, as well as the kind that comes Ophiuroidea 1 of 1 family. Tongke-Tongke region dominated by Gastropoda and Bivalvia because both classes was found in the number of species that a lot of research on all stations. Followed by crustaceans. Macrozoobenthos density in the mangrove forest rehabilitation outcomes Tongke-Tongke village and in the village Samataring natural forests ranged from 85.60 to 266.10 ind m-2. Diversity index ranged from 2.28 to 4.00; uniformity index from 0.58 to 0, 95, and dominance index ranged from 0.089 to 0.294. Macrozoobenthos succession in mangrove forest rehabilitation Tongke-Tongke going to increase in number and diversity of

macrozoobenthos macrozoobenthos species with age mangrove vegetation. Need to develop a model of sustainable reforestation in coastal areas in South Sulawesi province based on the development potential of local communities by policy makers in order to rehabilitate the mangrove forests that have been converted in this area.

Key words: Succession, density, index of ecological and carbon content

[O-12]
Biological Study on Potential Use of *Macroalgae Sargassum* sp and *Gracillaria* sp as Fish Diet on Freshwater Fish

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Abstract

The study was conducted in order to determine the potential use of macroalgae for improving the quality of fish diet as well to compare the addition of taurine as free amino acids and inositol on fish diet. Macroalgae used in this study were *Sargassum* sp and *Gracillaria* sp which dried and blend to the commercial fish diet with as much as 10 g/100 g of fish diet. Taurine was added for 0.25 g/100 g fish diet and inositol was added for 10 mg/100 g fish diet. All these mix fish diets were given to juvenile gourami (*Osphronemus gouramy* Lac) in size of 7 – 9 cm length as much as 2% of their body weight and twice a day. All the gouramy juveniles were kept in laboratory within aquariums in size of 25x25x25 cm. Compeletely randomized design was applied for this study with treatment groups of control (commercial fish diet only), commercial fish diet with each of taurine, insositol, *Sargassum* sp, and *Gracillaria* sp. Each group consisted of 10 gouramy juveniles as replication. Four parameters were determined, namely change in body weight (BW), specific growth rate (SGR), food conversion rate (FCR) and survival number. Observation was made for every week up to 8 weeks. All data were analysed using one-way Anova followed by Tukey's test with 5% of significant levels. The results indicated that addition of taurine, inositol, *Sargassum* and *Gracillaria* increased the body weight significantly (p<0.05) compared to the control groups, namely 87.7% for taurine, 47.8% for inositol, and 32.1% for *Sargassum* and 33.4% for *Gracillaria* of the control group. The significantly differences also were found for the SGR and FCR. All the treatment groups was able to decrease 100% on FCR compare to the control group. Finally, for the survival number, all the treatment groups showed 100% in survival number while the control group lied in 80%.

Key words: *Sargassum*, *Gracillaria*, taurine, inositol, gourami

[O-13]
In Vitro Antioxidant Activity of Methanolic Extract of *Piper retrofractum* Vahl.

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Abstract

Cabai jamu (*Piper retrofractum* Vahl.), which is originally from Indonesia and is extensively cultivated and traditionally used in Sumenep, Madura possess high potential medicinal properties. Therefore, providing scientific rationale of their traditional usage would be necessarily required. This research aimed to investigate the antioxidant activity of methanolic extract of *P. retrofractum* Vahl. using 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay. This research was carried out using methanol concentrations of 0, 5, 15, 30, 45 and 60 ppm. In addition, ascorbic acid was used as the standard antioxidant. Meanwhile, the parameters measured are the extract yield, percentage of inhibition and IC_{50}. The results showed that the DPPH activity of the extracts was increased in a dose dependent manner, which was found in the range of 0-31.53% as compared to ascorbic acid (0-43.19%). The IC_{50} values of methanol extract in DPPH radical was obtained to be 101. 74 ppm. Meanwhile, the IC_{50} value of the ascorbic acid was found to be 66.12 ppm. This result indicates that methanol extract of *P. retrofractum* possess mild antioxidant activity. Therefore, further investigation using other solvent extracts need to be carried out to evaluate the antioxidant compounds present in the plant extract.

Key words: Antioxidant, Ascorbic acid, DPPH assay, *Piper retrofractum* Vahl.

[O-14]
Stakeholders Analysis on the Mangrove Forest Management in Lampung Province; a Case from Indonesia

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Abstract

Mangrove forest degradation along Lampung Province achieved more than 50% from 10.533,676 ha. Stand of mangrove cutting for other function caused by economic reason besides environmental needed. Most of that forest was as a conservation area. There were different of mangrove management based on physical, stakeholders involved, land statue, and the regulation implementation. Mangrove forest along East Lampung Coastal (Lampung Mangrove Center/LMC and Pasir Sakti) has undergone a physical change even once lost abraded by 1990-1995. Sustainability in mangrove forest management 2004-2015 was done by applying the tripartite cooperation concept among community-University of Lampung local government. There were identified 8 stakeholders (3 stakeholders as keyplayer: University of Lampung, East Lampung Regency, Community; and 5 stakeholders as the crowd: Print Media, Electronic Media, NGOs, Mangrove Working Group of Lampung Province, and the National Land Agency of East Lampung). Mangrove forest management in Pesawaran Regency was identified 5 stakeholders involved (1 stakeholder as keyplayer: Mitra Bentala; 2 stakeholders as the subject: Pesawaran Regency and Expert Staf of Local Government; and 1 stakeholder as context setter: National Land Agency).

Key words: degradation, tripartite, stakeholders, regulation, land statue

[O-15]
Oil Biodegradation and Synergisms of Oil Degrading Bacteria as Spent Bleaching Earth (SBE) Bioremediation Agent

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Abstract

Spent bleaching earth (SBE) is the biggest composition of waste in the crude palm oil industry that generated from solid waste of cooking oil refining process. SBE still contains 20-30% vegetable oil. SBE categorized as toxic and hazardous substances because the oil content is quite high. Oil properties that are not soluble in water has a significant impact on the ecosystem. From the previous research were obtained three oil degrading bacteria isolate from SBE. In this research want to determine the three potential oil degrading bacteria (L_1, L_2, and L_3) in reducing the oil content in the SBE, the optimum concentration of oil decrease, and to know the synergism between oil degrading bacteria, so it can be optimized to degrade SBE. The research used factorial completely randomized design (CRD) with two factors, namely oil degrading bacteria (L), consisting of 4 levels (without bacteria, bacteria isolate L_1, bacteria isolate L_2, and bacteria isolate L_3) and oil concentration (C), consisting of 3 levels (25%, 30%, and 35%). The result of the research indicate there are an increase in the number of bacterial cells of L_1 isolate was $2.2x10^9$ cell/ml, L_2 isolate was $6.0x10^9$ cell/ml, and L_3 isolate was $5.4x10^9$ cell/ml. The number of bacteria at various oil concentration (25%, 30%, and 35%) were $4.5x10^9$ cell/ml, $2.6x10^9$ cell/ml, and $3.2x10^9$ cell/ml. Percentage of oil content decrease by L1, L2, and L3 bacteria isolates were 64.18%, 35.91%, and 47.09% respectively. The percentage of oil content at various oil concentrations 25%, 30%, and 35% were 32.42%, 50.01%, and 40.66% respectively. The optimum concentration of oil in the oil degrade in SBE was 30.96% with percentage of oil content decrease of 50.33%. Three lipolytic bacteria isolate indicate a synergisms interaction between them

that means three bacteria are able to combine for consortium as a bioremediation agent.

Key words: oil biodegradation, synergism, spent bleaching earth, oil degrading bacteria

[O-16]
Potential of Bacillus as Siderophore Bacteria and Iron (Fe) Bioremoval

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Abstract

Some *Bacillus* strains can produce siderophore. Siderophore is a chelating agent for iron as a response to low iron environment. *Bacillus* also has potention as Fe resistance bacteria and Fe bioremoval. The aim of this research is to get siderophore *Bacillus* strain which can resist to Fe and to know the ability of the strain as Fe bioremoval.

This research uses *Bacillus* spp. as experimental strains. First, the strains are subcultured, reconfirmation tested, and screened for siderophore bacteria in Fe-CAS Agar medium. Resistance test uses NA- $FeCl_3.6H_2O$ 0,1 mg/L then increases to 5, 8, 25, 50 ppm and so on. Bioremoval Fe test is applied in 50, 100, dan 150 ppm. To know the viability, the strains from bioremoval Fe test are grown in NA medium without $FeCl_3.6H_2O$.

The result shows *Bacillus* A6, DA11, S6, and SS19 produce siderophore and also resist to Fe up to 300 ppm. The chosen strains for bioremoval Fe test are A6, DA11, and SS19. *Bacillus* DA11 has the highest ability of Fe bioremoval (83,248% Fe of 150 ppm) then Bacillus DA11 (80,410% Fe of 150 ppm), and Bacillus A6 (72,352% of 150 ppm). All of the chosen strains have high viability after growing in Fe containing medium with CFU <300.

Key words: *Bacillus*, Bioremoval, Fe, Siderophor

[O-17]
Agroforest Could Enhance Soil Moisture and Fertility In Farmlands

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Abstracts

Since draught and fertility of farmland can be considered as main constraint for food productions, mitigation of these constraints has to be continuously performed. The important of this mitigation mainly due to various data reported which show that rainforest has been continuously decreased for other uses. This decrease could then inhibited the potential of local water cycles and enhance draught. In order to minimize the overwhelming draught during dry seasons and flooding during rain seasons, agroforest system might become an option that has to be improved, as well as inhibiting the reduction of rain forest. These agroforest systems do not only vary income for small holder farmer, but also increased the capability of rain forest to maintain fresh water supply. This system could therefore also increase soil moisture and fertility of farmland. Mechanism by which this system could mitigate agricultural constraint is laid on the ability of deep root system of trees to absorb mineral and water. Whereas water taken up by this root system then evaporated to enhance local water cycles, mineral taken up from deep soil will enrich top soil of farmland. Thus, agroforest could become a promising method to sustain food productions.

Key words: agroforest, freshwater, water cycle, soil fertility and moisture.

[O-18]

Dynamics of Greenhouse Gas Emission and Their Soil Bacteria Diversity after Application of Compost into the Oil Palm Root Zone: A Research Study in Wetland

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Abstract

The greenhouse gas emission in the oil palm root zone which has been cultivated in wetland, particularly in acid sulphate soil was measured. And the same act the diversity of soil bacteria from the site in this research are also finished to characterized and identified. Measurement of gas emissions consist of CH_4, CO_2 and N_2O by chromatography gas type GHG 450. Besides that identification of soil bacteria were analysed by BIOLOG Microbial ID System. All parameters above were analysed after application of compost made by oil palm empty fruit bunches (OP EFB) and grasses. The result showed that application of compost can reduce of total gas emission. The fluxes of CH_4, CO_2, and N_2O in ($kg.m^{-2}.y^{-1}$) by adding of OP EFB are -43.46, -723.27, and 0.15, respectively. In addition, the fluxes of CH_4, CO_2, and N_2O in ($kg.m^{-2}.y^{-1}$) by adding compost made by grass are -91.91, -75.41 and 0.08, respectively. On the other hand, the fluxes of control treatment is higher than treatments by adding compost. Fluxes of CH_4, CO_2, and N_2O in ($kg.m^{-2}.y^{-1}$) are 53.42, 640.90, and 0.29, respectively. Meanwhile, measuring of gas emission rate day per day during 98 days are referred to dynamics of gas emissions for several treatments and control. Diversity of soil bacteria that found in oil palm root zone

envolved of *Bacillus badius*, *Bacillus pumilus*, *Corynebacterium variabile*, *Cupriavidus necator*, *Enterococcus casseliflavus*, *Kytococcus sedentarius, Pseudomonas mendocina*. And also three found of genere *Azotobacter, Bacillus*, and *Sporolactobacillus*. In short, the diversity of soil bacteria did not closely correlated with the emissions of CH_4, CO_2, and N_2O.

Key words: compost, diversity, gas emission, soil bacteria

[O-19]
Bacillus Resistance and Potensial as Chromium (Cr) Bioremoval

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Abstract

Chromium (Cr) is one of heavy metal that encountered environment from industrial waste so it can contaminate the environment. Chromium resistance bacteria can transform Cr(VI) to Cr(III). The aim of this research is to find out chromium resistance and bioremoval potential of Microbiology and Biotechnology Laboratory's collection *Bacillus* spp.

This research was started with resistance assay of 6 isolates *Bacillus* to determine growth ability of isolates on medium contained Cr. Range finding test were done to determine heavy metal concentration that used in research and determine 3 isolates that more resistance than others. Growth curves were measured by OD using spectrophotometer UV-Vis. Chromium bioremoval was measured by Atomic Absorption Spectroscophy method. Viability assay was done by pour plate method.

The result showed that *Bacillus* resistance to chromium at concentration ≤ 38.8 mg/L. DA11 got highest bioremoval efficiency percentage in the amount of 76.8% at concentration 38.8 mg/L, while at concentration 1.9 mg/L the amount of bioremoval efficiency percentage were same for all isolates. Chromium concentration were significantly influence the amount of bioremoval efficiency percentage, while type of isolates were not significantly influence.

Key words: *Bacillus*, bioremoval, Chromium, resistance.

[O-20]
Description New Species and Biogeographical Analysis of Indonesian *Xestoleberis*

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Abstract

Ostracode is small crustacean and diversified in various habitats. Genus *Xestoleberis* is one of cosmopolitan genus, however, so far no detail description and biogeographical analysis of *Xestoleberis* species from Indonesia. The objectives of this study are to describe *Xestoleberis* species from Indonesia and to know biogeographical of Indonesian *Xestoleberis* species. This study is the first report from Indonesia and South East Asia for this kind of study. Samples were taken from intertidal algae in Madura Island-Indonesia. The morphology such as mouthpart, sexual organ, maxillula, mandible, antennae, antennulae, first, second and third thoracic legs were described. The most important characteristics, they are: DDP (Differentiation Distributional pattern of Pore-system), carapace shape, frontal muscle scar shape, the number of setae of the third podomere of the mandibular palp, shape and position of the ejaculatory duct were described to classify ostracode into groups. Furthermore male copulatory organ also described in order to analyze zoogeographical Indonesian *Xestoleberis* species. As the results, 4 species of *Xestoleberis* were found, from the morphology features, *X.* sp. 2, *X.* sp. 3, and *X.* sp. 4 known as new species. Futhermore *X.* sp. 1 and *X.* sp. 2 belong to *Xestoleberis* dentata group, *X.* sp. 3 belongs to *Xestoleberis* hanaii group, and *X.* sp. 4 belong to *Xestoleberis* B group. However, Biogeographical analysis shows that *X.* sp. 1 and *X.* sp. 2 (Australian element), *X.* sp. 3 (unique species), *X.* sp. 4 (Oriental element). As expected, Indonesian species have complicated background, mixture of Australian element and Oriental element, in addition to a unique species.

Key words: *Xestoleberis,* ostracode, Indonesia

[O-21]
Diatoms and Water Quality of Toba Lake

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Abstract

Toba Lake is one of the biggest lakes in the world; 1,130 km^2 wide, 529 meter depth; and 4,311.58 km^2 of total catchment area. There is Samosir Island in the centre of lake. 19 rivers are enter to the lake but only has 1 outlet i.e. Asahan River. The main functions of Toba Lake are for hydroelectricity power, resource for drinking water, transportation, tourism, and irrigation. The town development in Toba Lake side and Samosir Island had induced water quality deterioration. This research was done to study the diatoms and water quality of Toba Lake. Water samples were taken on August 2014 for diatom and water quality analysis. Identification of diatoms was done using microscope with 1,000 magnification. Based on this research, the main problem of water quality in Toba Lake was heavy metals lead (Pb) and copper (Cu) that exceeded water quality criteria for all class. Based on total nitrogen (1.085-2.03 mg/L) Toba Lake was in the state of mesotrophic – hypereutrophic; based on total phosphorous 0.37-0.42mg/L), in the state of hyperetrophic, whereas based on chlorophyll-a in the state of hypereutrophic. pH in Toba Lake was exceeded 7, therefore *Falacea pygmaea* was found in Toba Lake, as well as several *Denticula* species.

Key words: Toba Lake, diatom, water quality, hyper-eutrophic, Falacea, Denticula

[O-22]
Iron Bioavailability in Vitro Digestion using Ferrous Fumarate and NaFeEDTA on Soy-Based Food

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Abstract

Low intake of iron from food is a major cause of iron deficiency anemia. To overcome iron deficiency disease in Indonesia is through the fortification iron in soybean-based foods which is eaten by the majority of Indonesian. The content of phytic acid and polyphenols in soybean can interfere iron absorption and reduce levels of iron in the blood. In this study obtained by the ratio between Fe and polyphenols of 1: 3 that used for additional variations of fortificant. In this study used two different types of fortificantie, NaFeEDTA(1) and Ferrous Fumarate(2) to be mixed in soybean-based foods such as tempeh, tofu, and soy milk. These two types of fortificant added on some additional variations and tested the bioavailability by in-vitro digestion. In-vitro digestion of the soy-based foods using pepsin enzyme, mixture of pancreatin enzyme, and bileextract. The concentration of Fe before fortification process, Fe non-polyphenols, and Fe in vitro-process are determined by mean of AAS (Atomic Absorption Spectroscopy). The results of this study indicate that the bioavailability of iron in fortified soybean-based foods can be absorbed either in fortificant NaFeEDTA and Ferrous Fumarate. The highest effectiveness value of fortificant NaFeEDTA in tempeh, tofu, and soybean was respectively 64.82%, 35.07% and 32.60%. While the highest effectiveness value of fortificant Ferrous Fumarate in tempeh, tofu, and soybean was respectively 18.87%, 3.60% and 7.00%.

Key words: soybean, NaFeEDTA, Ferrous Fumarate, In Vitro, fortification

[O-23]
Drought Resistance Analysis of the North Sulawesi Local Rice Based on the Root Characters

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Abstract

Rice is one of the important staple food in Indonesia with carbohydrate as its major component. Rice germplasm is so diverse in Indonesia including in North Sulawesi Province, which has 4 local rice cultivars, i.e Superwin, Ombong, Temo and Burungan. Regarding with the food security program in this province as well as in Indonesia, a study was conducted to evaluate root characters (the number of adventitious roots, maximum root length, root dry mass, root:shoot ratio, the number of hardpan penetrated roots) as response to drought in these North-Sulawesi local rice cultivars grown in the soil mixture at the vegetative phase. The drought treatment consisted of three different intensities (watering until 100% filed capacity/DA, watering until 50% filed capacity/½TA and no watering/TA) for 2 weeks in the glasshouse experiment using polyvinyl chloride (PVC) pots with 125 mm height and 60 mm diameter. The roots of Temo and Burungan were able to penetrate the hardpan (paraffin:vaseline=6:4) under drought, but the capacities were low. Based on the root penetration characters, Temo and Burungan had drought resistance. The results of this research enriched the information of drought resistant rice selection that was easy, cheap and fast in the plant breeding program in North Sulawesi.

Key words: Root hardpan penetration, vegetative phase, drought, glasshouse

[O-24]
Relationship of Physical and Chemical Conditions to Mean Growth Rate of Barramundi in Brackish Water and Sea Water

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Abstract

Marine culture is a method to face overfishing cases that happen along this time in several ocean. One of success keys in marine culture is an ideal water quality to provide productivity. Water quality described as an oceanographic condition of ocean consider to physical and chemical sea water conditions. This thesis research is about to study physical and chemical sea water conditions in Hurun Bay and brackish water pond Karawang, West Java and its influence to mean growth rate of barramundi (*Lates calcarifer*) in net floating cage. Physical and chemical sea water data source is from BBPBL Lampung. Using monthly data salinity, pH, temperature, dissolved oxygen (DO), phosphate (PO4) and dissolved inorganic nitrogen (DIN) from January 2010 – December 2014 and also mean growth rate data of barramundi from January 2014 – December 2014. Physical and chemical brackish water data source is from BLUPPB Karawang, using range data from 7 times sampling result in 2014 and mean growth rate of barramundi in brackish water from 3rd June 3rd 2014 – 3rd December 2014. Hurun Bay Lampung have salinity variation between 26 – 33 ppt, pH value between 7.1 – 8.2, temperature value between 28.6 – 30.7°C, dissolved oxygen (DO) value between 4.1 – 6.32 mg/L, phosphate (PO4) concentration between 0.003 – 0.37 ppm and dissolved inorganic nitrogen (DIN) concentration between 0.0185 – 0.6605 ppm. Growth rate mean of barramundi in Hurun Bay Lampung is 0.62 gram/day. Growth rate mean of barramundi in brackish water pond Karawang is 2.52 grams/day. Research shows that salinity effect on mean growth rate of barramundi. Barramundi grows faster in brackish water than in sea water.

Key words: physical and chemical conditions, growth rate, barramundi (*Lates calcarifer*), Hurun Bay Lampung, brackish water pond Karawang

[O-25]

Antimicrobial Activity of The Saponin Extract of *Sansevieria trifasciata* var. Golden Hahnii with Gel Diffusion Method

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Abstract

Sansevieria trifasciata used as an ornamental plant. It also used as a traditional medicine for influenza, cough and inflammation of the respiratory tract. The roots and leaves of *S. trifasciata* contains many secondary metabolites such as saponins that efficacious as a cough remedy, to treat sprains, injuries hit, venomous snake bites, ulcers, cough, inflammation of the respiratory tract and hair growth. (Stover, 1983). Microbes are used to seeing the antibacterial saponins activity of *S. trifasciata* are *Escherichia coli* and *Staphylococcus aureus*. The main reason for used these microbes because *E. coli* is a bacterium that causes diarrhea and *S. aureus* is one of the bacteria that cause cough in humans. Plants were used *S. trifasciata* var. Golden Hahnii. Based on research by Dewatisari (2008), states that the variety had the highest saponin content of *S. trifasciata* is Golden Hahnii among other varieties and the parts that had the highest saponin was in its roots. The aims of this article is to explain the effectiveness of saponin content from the roots of *S. trifasciata* var. Golden Hahnii as antimicrobials in inhibiting the growth of bacteria *S. aureus*, and *E. coli*. The test of *S. trifasciata* antibacterial activity used gel diffusion (well) method. The data analysed descriptively by measured the clear area outside the well by using a calliper. The results showed after 24 hours, saponin inhibitory activity against *S. aureus* bacteria were invisible, because there was no clear zone, while the activity of saponins to inhibit *E. coli* at a concentration of 70%, 60%, and 50% respectively are 3 mm, 2 mm, 1 mm

Key words: *Sansevieria trifasciata,* Saponin, Antibacterial

[O-26]
Carbon Sinks of Morphologic Tree Stands in Bandung City Green Space: Case Study Taman Balai Kota, Kebun Binatang, and Taman Lalu Lintas Ade Irma Suryani

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Abstract

One of the green house gases which have a big contribution at global warming issues is carbon dioxide gas (CO_2). Open green spaces in Bandung city are urban forest that can sequestration carbon dioxide gases and store it into biomass at stems, branches, or roots. The research was conducted from June to July 2015 at green spaces that the carbon sinks haven't been examine. The purpose of this research is to count the tree stands (DBH >5 cm) ability at Bandung green spaces in sequestrating carbon with quantitative approached. The carbon sequestration was estimated by allometric equations at RaCSA (Rapid Carbon Assessment) [5]. The research has been conducted in Kebun Binatang (KB), we found 35 families with 95 species. Taman Lalu Lintas (TLL) with 22 families and 47 species. Taman Balai Kota (TBK) has 19 families and 35 species. From the examined green spaces, there was structure differences which shown by the ISs of KB-TLL and TBK-TLL in the amount of 52.11% and 51.22%. It's different with KB-TBK's ISs index is 43.08%. Based on the stands structure (amount of individual, DBH size, and height average), it shows the difference among KB (745 individual, DBH 60 cm, and 11.3 m height), TLL (321 individual, DBH 14.97 cm, and 6.76 m height), while TBK (145 individual, DBH 25 cm, and 6.74 m height). Those stands structure also made different biomass density at KB (85.63 ton/Ha), TBK (36.64 ton/Ha), and TLL (33.04 ton/Ha). From the biomass density, the green space's carbon and CO_2 sequestration can be estimated at KB (41.81 ton C/Ha and 309.42 tonCO2/Ha), TBK (18.32 ton C/Ha and 135.57 ton CO_2/Ha), and TLL (16.52 ton C/Ha with 122.24 ton CO_2/Ha). The analysis shows that the carbon sequestration difference caused by the variance of stands

ages, size of tree (DBH), and stands structure value (amount of species and individual).

Key words: Biomass, Tree, RACSA, Green Space, Carbon Sink

[O-27]

Water Hyacinth Infusion (*Eichhornia crassipes* [Mart.] Solms) as Oviposition Atractant of Gravid *Aedes aegypti* (L.)

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Abstract

Aedes aegypti has been reported as vectors of diseases, including dengue fever (dengue hemorrhagic fever) and Chikungunya. Various efforts have been done to control *A. aegypti* either physically, chemically and biologically. However, these efforts have not been successful in reducing the density of the vector. The objectives of this study were to determine hyacinth infusion effect in attracting gravid *A. aegypti* mosquitoes. The research method used complete randomized factorial design. The preference test of *A. aegypti* oviposition used choice test method which was conducted by observing the number of eggs in each ovitrap which was oviposited by 100 individuals of gravid *A. aegypti*. The result shows that the oviposition preference on each treatment are Hyacinth (1:9) > Hay (1:9) > Hyacinth (3:7) > control. The number of *A. aegypti* laid eggs are 398; 258.5; 258.5 and 68.5 eggs, respectively. Hyacinth infusion shows as a potential oviposition attractant for *A. aegypti* with the attraction ability is 1.53 fold stronger than the hay infusion and it is 5.89 fold stronger than the control.

Key words: *Aedes aegypti*, Eichhornia crassipes, Ovitrap

[O-28]

Isolation of Local Lipolitic Isolate from Domestic Compost

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Abstract

Screening of lipolitic bacteria from domestic compost at the thermogenic phase resulting fifty viable isolates. Anisolate designated as AL17 was shown to be the best producer of extra cellular lipase. The 16 Sr RNAs genes of the bacteria have been sequenced, and phylogenetic analysis showed that the isolate belonged to genus *Pseudoxanthomonas*. The optimum pH and temperature of enzyme activity were pH 9.0 and 60°C. The enzyme production was synchronized with bacterial growth and reached a maximum level during the late-stationary phase. The isolate also showed alcohol tolerance in medium containing 3% and 5% methanol. The ability of bacterial cells to tolerate methanol is an important cell characteristic that determines their use as a biocatalyst in trans esterification and other industrial process.

[O-29]
Emic and Ethic Knowledge of Bamboo's Characteristic in Process of Making Angklung

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Abstract

Bamboo as an Angklung's raw material still haven't get more attention. Whereas, the bamboo that used is a choosed and specific bamboo. These information can obtained from Sundanese local people. However, the inheritance of these knowledge get an obstacle caused by unavailable standard of making angklung. Besides that, the information that determine from local people are still qualitative so it would be difficult to be queath. Therefore, this research are documenting the local knowledge of making angklung process and characteristic of bamboo that used in this process. The qualitative characters then will be translate become quantitative by measurement and test laboratory. The method that used is a combination of descriptive qualitative and quantitative. Emic knowledge was determined by deep interview method. While the laboratory test was conducted to test the water content, the density of the fiber, and the concentration of culm's monosaccharides. Repetition performed three times and were analysed by the middle value. The result shows that the process of making angklung consist of sound tube produce, tuning and assembly. There is one important stage out of this process, it is a raw materials selection. This process are consist of bamboo's selection, harvesting, and drying. The characteristic bamboo that used in this process are species of *Gigantochloa atroviolaceae* and *Gigantochloa atter*; growth on lowland altitude in 500 msal; growing stands on 45-90˚ from surface of land, ratio of straight's culm: curve's culm is 80% : 20%; 4-5 years old; and internode's length minimum is 44 cm.

Key words: emic, ethic, bamboo, process, angklung

[O-30]
Ester Compounds from Seeds *Entada phaseoloides*

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Abstracts

Entada phaseoloides well known as "bingkek" is a traditional herb medicine in Riau Province, Indonesia. Four ester compounds have been identified from seeds of plant. The chemical constituent are methyl 3-(4-hydroxyphenyl) propanoate (**1**). Hexadecanoic acid, methyl ester (**2**), 9,12-Octadecadienoic acid, methyl ester (**3**), and 9-Octadecenoic acid, methyl ester (**4**). Structure **1** was isolation from methanolic extract by Vacuum Liquid Chromatography (VLC) and elucidated by spectroscopy analysis, UV-vis, FT-IR, including NMR (^{1}H-NMR, ^{13}C- NMR, HSQC, HMQC, HMBC, COSY, NOESY). Compounds **2, 3, 4,** identified from oil of seeds and analysis by GC-MS.

Key words: *Entada phaseoloides*, seeds oil

[O-31]

Antioxidant and Qualitative Phytochemical of *Alpinia Purpurata* Fermented with *Saccharomyces Cerevisiae*

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Abstract

Red Galangal (*Alpinia purpurata*) is one of the herbs that can be enhanced its economic value into a functional food. The content of flavonoids, alkaloids and terpenoids makes *A. purpurata* potential as natural antioxidants. Many synthetic antioxidants became popular in society because of practical used with higher content. In order to increase the antioxidant capacity of natural resource, fermentation was choosen. In this research, *A. purpurata* is fermented with *Saccharomyces cerevisiae*. The capacity of antioxidants measured with DPPH and FCR method and determine the phytochemical characteristics. The preliminary study showed that fermentation at 6, 12, 24, and 48 hours giving different physical and chemical characteristic. The fermented product change in colour, viscosity, flavour and pH changed from 7 to 6. The antioxidant capacity showed with $IC_{50,}$ respectively according to fermentation time are: 1249.45 ppm; 770.24 ppm; 747.24 ppm; 815.06 ppm. The total phenol content respectively: 23.52 mg gallic acid/ g extract; 23.57 mg gallic acid/g extract; 23.95 mg gallic acid /g extract; 23.72 mg of gallic acid/g extract. The fermented extracts of *A. purpurata* are positive contain alkaloids, tannins and saponins

Key words: functional food, antioxidant, fermentation*, Alpinia purpurata, Saccharomyces cerevisiae*

[O-32]
Status of Heavy Metal Pollution within Sediment in Mangrove Forest of Semarang City and Demak Municipal Coastal Area

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Abstract

Heavy metal pollution in Semarang City and Demak Municipal are increasing as the increase of industrial activity at both location. This research aimed to study the difference of heavy metal concentration in sediment, and to study the level of heavy metal pollution within mangrove area of Semarang City and Demak Municipal coastal areas. This research was conducted through sampling and laboratory analysis. At each location, 3 stations was occupied with 3 sampling points at each stations. Sampling was conducted for sediment within mangrove area at both location, while laboratory analysis was conducted in Laboratory of Analytical Chemistry, Chemistry Major, Faculty of Science and Mathematics Diponegoro University. Heavy metals in sediment observed in this research was Co, Cu, Cr, Pb, Zn, Ni, Fe, Mn and Mg. The result showed that heavy metal concentration in sediment on both location was quiet high. Sequentially, the highest to lowest concentration of heavy metal was Fe > Zn > Mn > Mg > Ni > Cu > Cr > Co > Pb at Semarang City and Fe > Mn > Mg > Zn > Ni > Pb > Cu > Co > Cr at Demak Municipal. Heavy metal concentration of sediment for Co, Cu, Cr, Zn and Ni are significantly different between Semarang City and Demak Municipal area. Heavy metal in sediment for Zn, Ni, Fe and Mn at both location had exceeded the recommended limit by ANZECC/ARMCANZ and ISQG.

Key words: heavy metal, mangrove, pollution state, sediment

[O-33]

Optimization of Reaction Conditions in the Production of Gadolinium Diethylenetriamine Pentaacetate-Folate Using the Placket Burman Design and the Response Surface Methodology

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Abstract

In our study on the synthesis of a novel targeted Magnetic Resonance Imaging contrast agent gadolinium Diethylenetriamine Pentaacetate-Folate at laboratory scale, some parameters contributing to the course of the reaction had been experimented. For the purpose of subsequent scaling up the synthesis, the parameters particularly those determining the yield of the reaction product should be established. This report presents the use of The Placket Burman Design and the Response Surface Methodology in establishing the parameters. Thus, following the Placket Burman Design, a number of synthesis reactions were carried out, each with different reaction conditions, with respect to parameters to include: mole ratio of reactants (i.e mole of Gd^{3+} to DTPA-Folate), time of reaction, temperature, stirring rate, pH and solvent volume. Using this method, a conclusion could be drawn that the three factors were found to be significant. To get final conclusions on the optimal synthesis reaction conditions, the Response Surface Methodology was then applied. For this purpose, again, some synthesis reactions experiments

were performed. These were done, in accordance to the Response Surface Methodology, verified by analysis of contour plots, helped to locate the optimal value of the factors. The resulted data showed that for optimal yield of the synthesis reaction there were three dominant parameters. They were mole ratio of reactants, stirring rate process, and the volume of water.

Key words: *Magnetic Resonance Imaging, contrast agent, Gd-DTPA-Folate*, synthesis, scale-up, *Placket-Burman, Response Surface Methodology*

[O-34]

Antioxidant Capacity and Phytochemical of *Alpinia purpurata* Extracts Fermented by *Lactobacillus plantarum*

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Abstract

The preference to consume synthetic antioxidants are considered to be more practical, however excessive used consider will cause negative effects to the body. Natural antioxidants can be found in various plants but the content is relatively low. Fermentation has been known as an approach to increase the bioactive capacity. This research was conducted to observe the effect of fermentation of *Alpinia purpurata* by *Lactobacillus plantarum* towards antioxidant capacity and its phytochemical content. The antioxidant activity measured with scavenging DPPH and FCR methods. Our preliminary study showed that fermentation at 6, 12, 24, and 48 hours giving different physical and chemical characteristic. The fermented product change in colour, viscosity, flavour and pH changed from 7 to 5. The extract positive contains tannins, saponins, and quinone. The antioxidant capacity of liquid product that measured with DPPH showed that the highest antioxidant was in 12 hours fermentation. The fermented product will be freeze dried, extracted with methanol then measured the antioxidant capacity with DPPH and FCR methods.

Key words: functional food, antioxidant, fermentation, *Alpinia purpurata, Lactobacillus plantarum*

[O-35]

The Growth of Seaweeds, *Gracilaria verrucosa* in Brackish Water Pond Polyculture System with *Chanos Chanos*

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Abstract

Polyculture system in brackish water has a great potency to be developed in Mororejo, Kaliwungu, Kendal. The monoculture system has been widely applied by using high amount of inorganic fertilizer to promote the growth of natural feed. However, this treatment has led to environmental degradation. The aim of this research is to introduce seaweed in *Chanos chanos* pond to enhance better environment and high production. The seaweed *Gracilaria verrucosa* was culture together with *Chanos chanos* using a long line method. The growth of *Gracilaria* was measured weekly. Results indicated that the growth of *Gracillaria* in polyculture system was slightly higher compared to monoculture system, even though statistically the different was not significant. The Biomass of *Gracilaria verrucosa* in polyculture system are 291.8 gr. But, the biomass of *Gracilaria verrucosa* that cultivated in monoculture system are 273.5 gr.

Key words: Gracilaria, polyculture *Chanos chanos*

[O-36]

Comparative Study of Encapsulated Rhizome Extract of *Alpinia purpurata* (Zingeberaceae) in Alginate and Alginate-chitosan

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Abstract

Encapsulation is a coating process of bioactive compound. *Alpinia purpurata* has been well known as lengkuas merah an Asian tropical herbal which contain phenyl propanoid, phenolic and flavonoid. Phenolic and flavonoid compounds is an agent that can be used as anti-cancer. This research aim is to create a product of *Alpinia purpurata* extract which encapsulated in alginate or alginate-chitosan. The product of encapsulated has been observed towards SEM (Scanning Electron Microscopy) and spectroscopy Infra-Red method. Encapsulated product of lengkuas merah extract made through extrusion method in alginate and chitosan with ratio 1:1 (w/w) then dripped in 2% $CaCl_2$. The *Alpinia purpurata*/alginate/chitosan microcapsules (APCAM) is better than alginate microcapsules (APAM)

Key words: *Alpinia purpurata*, lengkuas merah, SEM, encapsulation, alginate/ chitosan

[O-37]
Temperature Profile of Cellulase and Xylanase Activity from Thermostable Lignocellulolitic Enzyme Complex of Sago Waste

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Abstract

Currently Indonesia consume sugar around 2.83 million tons/year, whereas the national sugar production have capacity 2.12 million tons/year. Every year the need of sweetener is getting higher, however the sugar national production from sugar cane hardly increase. In the other hand, the potential of lignocellulosic material from agricultural waste as a source of glucose is very abundant in Indonesia. The potential of sago in Indonesia reached 1.4 million acres or more than 50% of sago's world. Sago production left a lot of waste that contain 20.67% lignin and 19.55% cellulose. Hydrolysis lignocellulose to get glucose can be carried out in many approaches such as chemical, physics, microbiology and enzymatic. Enzymatic approach considered very effective and environmentally friendly but expensive. This research was conducted to get the lignocellulosic enzymes complex from the consortium of thermophilic compost. In order to get the effective starter for enzyme production, some experiment performed based on effective fermentation of sago waste. The results showed that the starter from suspension more effective comparing to solid and liquid starter, at 55^{o}C and pH 7 for 120 hours. The previous work has shown that the highest specific activity of cellulase and xylanase are in 20-40% and 40-60% ammonium sulphate saturation respectively. The enzyme production has been done and crude extract already collected. The next works are partial purification at 20-40% and 40-60% ammonium sulphate saturation, then enzyme activity determination at various temperature.

Key words: lignocellulose, sago waste, lignocellulolitic enzyme, cellulase, xylanase

[O-38]
Diversity and Regeneration of Mangrove in Pulau Panjang, Jepara Central Java

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Abstract

Mangrove ecosystems that are located in the beach area and has a good function ecologically, biologically and economically. As a small island that has the properties are very susceptible to changes in environmental and ecological pressure, the presence of mangrove vegetation in Pulau Panjang is very necessary to protect the ecosystem. The purpose of this study to determine species diversity and the regeneration of mangrove plant species on Pulau Panjang. The research method with purposive sampling. Choosing of research station is was determined using 4 stations (locations) located in the southern, western, northern and eastern Pulau Panjang. Each station taken three plots measuring 20 x 20 meters for tree stage, 5 x 5 m for saplings and 1 x 1 m for the seedling stage. Analysis of data using Important Values Index and diversity index. The research found 7 species of true mangrove and 7 species of mangrove association. The dominant mangrove species in Pulau Panjang are: *Phemphis acidula, Xyllocarpus granatum, Thespesia populnea* and *Passiflora foetida*. Regeneration of mangrove plants are not going well, as the number of species and number individual seedlings and saplings less than at the level of the tree. There are mangrove species endemic to the island of Java, *Excoecaria agallocha* and mangrove species were categorized as Least Concern (LC) is *Phemphis acidula.*

Key words: Small Island, regeneration, species diversity, endemic species

[O-39]
Identification and Antioxidant Activity of Terpenoid from *Terminalia Muelleri* Benth. Bark

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Isolation, characterization, and antioxidant activity test of terpenoid compound from Ketapang kencana *Terminalia muelleri* bark have been carried out. Isolation was done by extraction, followed by fractionation, and purification. Characterization of chemical structure was conducted using spectrophotometer UV-Vis, FTIR, and GCMS. FTIR spectrum showed characteristic groups of C–O ether aliphatic, CH_2, CH_3, =C-H, and C=C aromatic. Identification by GCMS resulted that the compound molecular weight was 296 g/mol. The results of antioxidant activity test indicate that isolate from *T. muelleri* bark does not have a potentiality as antioxidant (IC_{50}= 7424,462 ppm).

Key words: DPPH (1,1-diphenyl-2 picrylhydrazyl), Liebermann-Burchard,

[O-40]
Bacterial Silver Colloids from Slurry Of Silver Craft Industry and Its Activity as An Antibacteria

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Abstract

Colloidal silver is a mineral with a very small size (1-100 nm), accumulated in the form of mucous material on liquid waste from silver craft industry. Several species of bacteria from slurry of silver craft industrial waste were tolerant and able to grow on the form of colloids. Bacterial colloid silver was formed concomitant with bacterial growth specific characters of bacterial resistance upon Ag^+ ion. Colloidal Silver is the most potential antiseptic and antimicrobial agent against viruses, bacteria, fungi and pathogenic microorganisms. The purpose of the study was to obtain resistant bacteria which synthesize colloids nano silver; and to elucidate their antibacterial activity against bacterial pathogen. The research was commenced with selection of silver tolerant bacteria from slurry of silver craft industrial waste based on their growth ability on different $AgNO_3$ concentration. Formation of bacterial colloidal silver was observed through growth experiments using selected isolate grown on *Triptone Yeast Extract* (TYE) broth containing 0.1 mg/L $AgNO_3$. The bacterial colloid silver formed was detected using laser. Results revealed that only one strain (BAgAK 6) grew on medium containing 5 mg/L $AgNO_3$, and formed colloid mass. These colloids demonstrated as red line after exposed to laser beam. The bacterial colloidal silver of BAgAK 6 inhibited the growth of *Escherichia coli* FNCC 0091 and *Staphylococcus aureus* FNCC 0049 with inhibition index of 7.1 and 2.4, respectively. Conclusion of the research were strain BAgAK 6 resembled to *Bacillus* sp., resistant to a high concentration of Ag^+ was able to form bacterial colloidal silver, as antibacterial agent against to both gram negative and gram positive bacteria.

Key words: resistant, silver, bacterial colloidal silver, antibacterial, *Bacillus* sp.

[O-41]

Identification Geothermal Reservoir of Telomoyo Mount from Anomaly Magnetic Data using 3D Magnetic Inversion

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Abstract

The geophysical investigation research of Telomoyo Mount has been done. We aim to get a description about reservoir of the geothermal system by geomagnetic survey. Magnetic data acquisition has been carried out in 83 points with approximately 44 km ^{2} of around. The total magnetic anomaly directly modeled by *Mag3D* software. Using inversion of magnetic 3D, the alteration rock that to be a manifestation of geothermal field has been corrected in 3 areas, they are Keningar, Kendal Duwur, and Sepakung. They have low susceptibility value that approximately -0.173 to -0.498 (SI) and indicated as *upflow* zone of Telomoyo mount geothermal system. Kendal Duwur area becomes a main reservoir in the 1400 to 3000 meters of depth.

Key words: 3D Magnetic inversion, geothermal, Telomoyo mount

[O-42]

Proximate Composition and Cholesterol Content of Coconut (*Cocos nucifera L.*), Sesame (*Sesamum indicum L. Syn*), Candlenut (*Aleurites moluccana Willd*) and Jack Bean (*Canavalia ensiformis L.*)

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Abstract

The proximate composition and cholesterol content of coconut (*Cocos nucifera L.*), Sesame (*Sesamum indicum L. Syn*), Candlenut (*Aleurites moluccana Willd*) and Jack Bean (*Canavalia ensiformis L.*) were determined. This was done with a view to provide data to lead industrial exploitation of these seeds. The proximate composition and cholesterol contents of the seeds were in a wide variation. On the dry weight basis, proximate values were determined as crude protein content ranged between 7.2-32.7%, while the range of value for crude lipid, ash, moisture, and crude fibre content were 2.0-51.0%, 2.3-3.4%, 2.0-10.0%, and 1.2-16.4% respectively. Cholesterol level ranged between Not Detected (ND) for candlenut to 590 ppm for coconut. This study has established useful information for further utilization of these seeds.

[O-43]
Water Quality of Cilaja Catchment Area (Bandung) in Three Different Land Uses

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Abstract

Health water quality of the river was influenced by water discharged from the land activities. The land use is done by the people surrounding based on their need for their life and land type. These activities may cause to the alteration of water quality. Cilaja catchment area was the study location. The aim was to evaluate the water quality based on different land use activities (pines forest tree-coffee plantation, agricultural and residential area). Water chemistry measurement was done in the field and laboratory. Water and benthos sampling were done in order to study about water quality and benthos composition in three different land uses. The results showed that the water chemistry levels were under the water chemistry recommended by Health Department. It was reflected by the presence of bio indicator benthos. The presence of *Syncaris* (*Crustaceae*) in pines forest tree-coffee plantation area and *Baetis* (*Ephemeroptera*) in agriculture area and residential area indicated for the clean water. However, that water quality in the agriculture and residential area were contaminated by *Coli*. It was shown by the high level total *Coli* number (about 110 times than recommended levels). The presence of high *Coli* was due to the use of organic fertilizer in agricultural area and domestic wastes in residential area. In general, it can be concluded that nowadays, the effect of land uses activities was not really significant to contaminate the water quality.

Key words: water catchment area, water chemistry, bio-indicator benthos, land uses activities.

[O-44]
Magnetic Modeling of the Diwak-Derekan Geothermal Area with Extension to Bawen, Central Java

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Abstract

In an effort to further advance understanding of Diwak-Derekan geothermal system, a second period of geomagnetic survey of the area including Kaliulo hot spring, Jatikurung hot spring and Kendalisodo geothermal hot spring has been carried out. The magnetic residual anomalies have been reproduced especially on the southern part of the study area. 3D magnetic analysis and interpretation of geological data acquired and collected in the field. Based on magnetic field anomaly and the field geological data, a speculation shows that magnetization intensity assumed for the existence of a cooling magma intrusion is suggested at the southern part of the study area that is located at Sajen Village.

Key words: Magnetic modelling, Magnetic anomaly, Diwak-Derekan Hot spring

[O-45]

Computational Study of the Affinity between Gd-DTPA-folate and Folate Receptor Alpha for the Development of Cancer-specific MRI Contrast Agent

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Abstract

Cancer is one of a leading cause of death in the world. The development of diagnostic and therapeutic agents for cancer has become a priority. It is known that the folate receptor alpha (FRA) is over-expressed in several types of cancer. Therefore, folate-derivative compound can be used as a receptor-targeted diagnostic agent. Nowadays, Magnetic Resonance Imaging (MRI) contrast agents have been used for early detection of cancer. Previously, a computational study of the stability of Gd-DTPA-folate, as a selective MRI contrast agent, has been conducted. The aims of current study were to predict the binding mode of interaction between Gd-DTPA-folate and FRA using molecular docking, and to study the stability of ligand-receptor complex using molecular dynamics. The results showed good affinity between Gd-DTPA-folate and FRA. It is hoped that this results will be useful for the further development of target-specific MRI contrast agent.

Key words: Gd-DTPA-folate, MRI contrast agent, molecular dynamics, molecular docking, folate, receptor alpha

[O-46]
Phytochemical Screening and Antibacterial Activity of Leaves Extract Balangla (*Litsea cubeba* (Lour) Pers.) from Malinau, East Borneo

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Abstract

Balangla (Litsea cubeba) plant is used as traditional medicine by Dayak Kenyah tribe in East Kalimantan. It contains active compounds that are efficient in the treatment of many human diseases and believed to have an antibacterial activity. The purposes of this study were to determine the phytochemical compounds of the balangla leaves and to investigate the antibacterial activity of ethanol extract of leaves *L. cubeba*. Respectively, various levels of ethanol extract of *L. cubeba* leaves viz: 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100% were used to examine its antibacterial activity against bacteria gram positive (*Staphylococcus aureus*) and gram negative (*Escherichia coli*) by using pitting diffusion method. The results indicated that alkaloids, flavonoids, phenols and steroids have been found as phytochemical compounds in the ethanol extracts of *L. cubeba* leaves. Meanwhile, the antibacterial activities of ethanol extracts of *L. cubeba* leaves against the test organisms had been determined and significantly inhibited the growth of *S. aureus* and *E.coli*, forming a wide inhibition zone (15.91±0.950 mm) for *S. aureus* and (16.23±0.416 mm) for *E. coli*. Further, antibacterial activity of (*L. cubeba*) in vitro had been justified on its utility in traditional medicines for the treatment of infections of bacterial origin.

Keywords: Balangla (*Litsea cubeba*)**,** Lauracea, Antibacterial, Phytochemical Screening

[O-47]
Characterization of Dye-Sensitized Solar Cells (DSSC) with Improvement Absorption Visible Spectrum of Sunlight Using Multicolours Dye

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Abstract

Dye-Sensitized Solar Cells (DSSC) is known as organic solar cell which has the potential of high commercial appeal, low-cost investments, and high-efficiency conversion. Solar power provides huge potential as a solution to energy problems, but most solar farms can only produce up to 10% efficiency. By further developing DSSC with red colour of dye will be able to procure cells that have about 15% efficiency while still maintaining stability. The compositions and materials of dye used will be given and then, a hypothesis for improvement of the solar cells will be proposed.

In this research, it used organic dyes. This is because they can have multiple different molecular structures, are relatively cheap, are less environmentally detrimental, and have high absorbance rates. The dye, which is typically a metalorganic Ru- complex, is excited by absorption of a photon. There are 3 (three) colours of dye, such as colour of red with the absorption of 660 nm, green with the absorption of 510 nm, and blue with the absorption of 460 nm. With combination of these basic colours, we will absorption long spectrum regions.

A conclusion will explain the characteristic of DSSC with multicolours dye. The examinations show mesoporous TiO_2 electrode has helped shape what solar cells have become. In a DSSC, the electrodes are surrounded by a thin shell and a dye monolayer for 3 colours of dyes. The concentration of the dye within the nanoporous TiO_2 electrode and the absorption coefficient determine the fraction of light that is absorbed in a layer with the thickness d. Therefore the dye should have a high absorption coefficient in the long visible region and a high affinity to the TiO_2 to ensure a dense coverage of the surface. With increasing absorbance of

the TiO_2-electrode, the layer thickness can be decreased, therefore the recombination probability decreases with decreasing electrode thickness and more viscous electrolytes with low vapour pressure can be applied. Going to longer wavelengths, the absorption decreases significantly, thus a substantial fraction of the solar spectrum is lost.

[O-48]

The Effect of Configuration to Interaction Energy Between The Segments of Chitosan and Ascorbic Acid Molecule: Theoretical Study of Drug Release Control

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Abstract

Polymer systems plays an important role in drug delivery, which can control the time release of the drug, reduce the rate of degradation of the drug, and can reduce the toxic properties of the drug. Chitosan is a polymer of N-acetyl glucosamine that is biocompatible, biodegradable, and have active groups that can be used as a drug carrier matrix to control the release rate of the drug in the human body. The related research has been conducted experimentally by applying chitosan as a matrix to control the release rate of ascorbic acid by in vitro in an aqueous medium. So that, this study aimed to describe the interactions that occur between segments of chitosan and ascorbic acid theoretically using ab initio computational methods. Software used is Gaussian03, while the level of theory and basis set calculations determined is HF-SCF / 6-31G (d, p). The results for the nine configuration interaction calculations indicate hydrogen bonds between ascorbic acid molecules and chitosan segment. The interaction energy obtained is different for each configuration. It can be used as a basis for explaining the gradual release of ascorbic acid molecule from chitosan matrix. Ascorbic acid molecules that bound to the matrix of chitosan with lower energy will be easier to release on the medium that used.

Key words: chitosan, drug release, ab initio, interaction energy

[O-49]

Probiotic and Antioxidant Activities of Filamentous Fungi Isolated from the Indonesian Fermented Dried Cassava

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Abstract

Probiotics can be a natural alternative to synthetic antibiotic. Beside lactic acid bacteria, fungi are potential probiotic microorganisms for poultry. This study aimed to investigate the probiotic and antioxidant activities of filamentous fungi (*Acremonium charticola* and *Rhizopus oryzae*) isolated from the Indonesian fermented dried cassava (*gathot*). The probiotic activities of the fungal isolates were determined by two qualitative methods: (1) tolerance to gastrointestinal conditions (acid and base condition and bile salt) and (2) antifungal and antimicrobial activities against *Aspergillus flavus* and *Escherichia coli*, respectively. The antioxidant activity was determined by DPPH free radical scavenging assay. *A. charticola* and *R. oryzae* were able to grow in potato dextrose agar (PDA) adjusted to pH 3 and pH 8 or in PDA supplemented with bile salt up to 0.8%. The isolates could survive in PDA after soaking in the acid (pH 3) and base (pH 8) solution as well as in solution containing bile salt up to 0.8% for 20 min. *A. charticola* inhibited the growth of *A. flavus* in PDA and *E. coli* in plate count agar (PCA). Conversely, *R. oryzae* could not inhibit the growth of *A. flavus* and *E. coli*. Both fungal isolates exhibited strong antioxidant as indicated by the low IC_{50} values (<100 µg/mL). In conclusion, *A. charticola* isolated from *gathot* is a good candidate of probiotic for poultry. Further studies are needed to evaluate the beneficial impacts of *A. charticola* as a probiotic on the health and performance of poultry.

Keywords: *A. charticola*, *R. oryzae*, *gathot*, probiotic, antioxidant

[O-50]
A Simple Polarization for Powerful Preliminary Test of Oil Quality Level

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Abstract

In this paper, light polarization has been used to indicate level quality of various vegetable oils. A new indication of level quality used here was change of light polarization, and was measured using a simple pair of polarizer-analyzer. The result showed that the degradation of oil quality until to its date of expiration was indicated by higher change of polarization. It was proposed that the saturated fatty acid methyl stearate ($C_{19}H_{38}O_2$) and unsaturated fatty acids methyl oleate ($C_{19}H_{36}O_2$) in triglycerides molecules were the most fatty acids that could be responsible to the degradation of oil quality. This method also apparently has been relative more powerful than standard parameters such as free fatty acid (FFA) test. It has provided good prospect to evaluate the halal level of oil due to lard.

Key words: polarization, oil quality, saturated fatty acid (SFA), unsaturated fatty acids (UFA)

[O-51]
Effectivity of Komposit Chitosan-ZnO to Decolorize the Dye Remazol Golden Yellow

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Abstract

This study is aimed to making composite chitosan-ZnO, determining an optimal condition adsorption-photocatalytic process of remazol golden yellow and to comparing them with chitosan adsorption without addition of ZnO. Preparation of composite chitosan-ZnO by adding the photo-catalyst material ZnO at chitosan emulsion (liquid mixture). The process of composite making (construction) is done by dissolving ZnO powder into acetic acid 2 % followed by addition of chitosan. NaOH dropped slowly into the composite chitosan-ZnO. The formulated gel then was filtered and neutralized by using aquadest. The result of chitosan composite-ZnO is characterized by using SEM (Scanning Electron Microscopy) and FTIR (Fourier Transform Infra-Red), while the photocatalysis adsorption test is done by using spectrophotometer UV-Vis. The test of chitosan-ZnO in the process of photocatalysis adsorption was done against remazol golden yellow RNL which is expected to be able to decolouring the colour, so that substance is safe to be thrown into environment. The result shows that the optimum decolourisation percentage occurred at the chitosan ratio 1:2, pH 2, with 180 minutes contact time with illuminating. Within the above optimum condition, the chitosan composite-ZnO is able to decolorize the remazol golden yellow as much as 98.62 % and the dye has degradated during adsorption-photocatalytic process.

Key words: chitosan, ZnO, adsorption, photocatalysis

[O-52]
The Effects of Temulawak extract and Yoghurt on HDL-LDL Mice Blood Exposed Waste Cooking Oil

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Abstract

Using cooking oil repeatedly in processing the fried foods can cause health problems, especially cholesterol metabolism that affect levels of HDL, LDL, triglycerides and total cholesterol blood that can lead to blockage of blood vessels that lead to coronary heart disease. This study aims to determine the effect of temulawak extracts and yoghurt in lowering levels of LDL-HDL mice after given the used cooking oil. Treatments that temulawak extract at a dose of 280 mg/kg bw mice and 560 mg/kg bw mice and yoghurt concentration of 4% of the body weight of mice. Parameters measured were the levels of HDL (High Density Lipoprotein) and LDL (Low Density Lipoprotein) . The results showed that temulawak extract 560 mg/kg bw and yoghurt 4 % bw effective increase HDL levels and lower LDL levels mice blood.

Key words: temulawak extract, yoghurt, cooking oil, HDL-LDL, mice.

[O-53]
Aplications of Laser Induced Chlorophyll Fluorescence Imaging to detect Environmental Effect on Spinach Plant

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Abstract

Laser Induced Chlorophyll Fluorescence spectroscopy has been developed and used for many years and recently becomes a promising non-destructive method to detect early symptoms of environmental stresses on plants. An affordable, portable, and effective system of Laser Induced Chlorophyll Fluorescence detection needs to be developed that can be used by most farmers. In this research, a system of chlorophyll fluorescence imaging which consisted of some light sources, some optical components, samples, a CMOS camera has been used to detect the effect of sunlight intensity variation on plants of *Amaranthus tricolar* spinach. The variations of sunlight were about 90 % using a plastic cover and 40% using plastic and dark net cover compared to sunlight intensity without cover. The spinach plants were treated after 10 days growth. Diode lasers and LEDs with different wavelength were used as light sources, performances of both were compared. The samples were the detached spinach leaves and the spinach leaf extract in ethanol. The leaf samples were taken for investigation after 10 days treatment, the extraction was done after 15 day treatment. The detached leaves were showed by LED light and their images were taken by the CMOS camera. The spinach extracts were showed by diode lasers and LEDs. Their spectrums were also recorded by the camera. The fluorescence intensities were represented by RGB values found from RGB plot using ImageJ software. The research results show that fluorescence intensities of the detached samples without net cover were higher than those using net by 6,3% using red LED as the effective inducing light for detached leaf samples compared to blue and green LEDs. The difference between both treatments was seen higher when LED intensity was the lowest which was

about 41,6 % difference. For extract spinach leaf, laser and LEDS with violet wavelength provided more distinguished difference in fluorescence intensities for both sunlight intensity variation followed by green wavelength, and the least was the red wavelength. The small different in detected fluorescence intensity of spinach leaf from spinach plants grown under sunlight intensity variation due to only 10-15 day treatments.

Key words: *Amaranthus tricolor* spinach, CMOS camera, Chlorophyll fluorescence imaging, sunlight intensity variation, ImageJ

[O-54]
Synthesis of MIP Glucose, Characterisation and Selectivity

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Abstract

Research on the synthesis of MIP Glucose has done by using polyeugenol as a polymer functional and Polyethylene Glycol diGlycidyl Ether (PEGDE) as crosslinker agent. A characterization of MIP Glucose consist of test chemical resistance, reuse and selectivity. Chemical resistance test was conducted by soaking MIP with acetic acid, hydrochloric acid, HNO_3 and NaOH. Reuse conducted by MIP glucose adsorption test on of 300 mg / L glucose solution 10 times, while the selectivity test conducted on similar compounds (fructose) in the binary solution (mixture) with glucose and the results were analysed by HPLC. The results obtained showed that MIP Glucose resistant to any kind of organic acids (acetic acid) and inorganic acids (HCl, HNO_3) and NaOH. Reuse of MIP Glucose as a adsorbent showed decreased ability by ethanol, but tend to be stable if using aquadest as a released solvent. MIP Glucose selectivity seen in HPLC analysis.

Key words: Chemical Resistance, Reuse, MIP Glucose, selectivity

[O-55]

The Effectivity of Subculture *Helicoverpa armigera* Nuclear Polyhedrosis Virus (HaNPV1) in Variety Formulation on Body Weight of Target Insect Pests

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Abstract

Subculture *Helicoverpa armigera* Nuclear Polyhedrosis Virus (*Ha*NPV$_1$) is a virus that is propagated in the alternate host. *Ha*NPV$_1$ is one of the viruses that have the potential as a microbial control agent of insect pest populations. The research about Effectivity of Subculture *Helicoverpa armigera* Nuclear Polyhedrosis Virus (HaNPV1) in Variety Formulation on Body Weight of Target Insect Pests has been done. The research method was Randomized Block Design with factorial pattern which two factors (Four species of insect pests larval: *Spodoptera litura, Spodoptera exigua, Crocidolomia pavonana* and *Plutella xylostella* and seven variety formulation of HaNPV1) and four replications. The concentration of virus in the formulation was 4 x 107 polihedral/ml suspension or gram powder. The results showed that no interaction between the species of insects with a variety of viral formulations against larval weight. This suggested that the variety of formulation of the virus in a carrier media had no effect on body weight of larvae. The highest larvae weight occurred in larvae *C. Pavonana* infected by virus that was equal to an average of 57.6 mg / larvae. The weight of infected larvae showed a mechanism of defend against viral infection. The average weight of target larvae showed that the protective effect on plant virus formulation is less effective.

[O-56]
Acetone Gas Detection of Type 2 Diabetes Mellitus Patient's Breath Using Laser Photoacoustic Spectrometer

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Abstract

The laser power optimization of CO_2 laser photoacoustic spectrometer intracavity configuration has been conducted. It was generated 4 laser group and highest power was obtained at 53.1±0.1 W with medium active gas composition He:N_2:CO_2 was 48:64:80. The highest laser absorption line of standard acetone gas was determined at 9P32 and lowest detection limit was obtained at 2.2±0.04 ppb. Furthermore, photoacoustic spectrometer was used to measure gas concentration of acetone in breath sample of type 2 diabetes mellitus patient volunteers and healthy volunteers as control which each of volunteers amount 10 people. The lowest acetone concentration for patient with type 2 diabetes mellitus was 540±6 ppb and the highest concentration was 1050±8 ppb. For healthy volunteers, the highest acetone concentration was 520±6 ppb.

Key words: CO_2 laser photoacoustic spectrometer, acetone, diabetes mellitus.

[O-57]

Fabrication Material Zeolite Modified by Fe with Treatment and without High Energy Milling on Zeolite Materials

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Abstract

The existence of natural zeolite in Indonesia abundance is generally found in the form of large chunks and many impurities. The aim this research was conducted of creating and characterizing the modified zeolite Fe with treatment and without High Energy Milling on a zeolite material. This research method was milling the zeolite material using a High Energy Milling and modifications by soaking in a solution of iron (Fe). Natural zeolites was sifted and then in-milling by means of HEM, activation and modification Fe. Characterization tests performed by using SEM-EDX, BET and XRD. EDX results showed the percentage of Fe atoms ZmA-Fe amounted to 0.60% and ZA-Fe of 0.39%. The existence of the Fe on ZmA-Fe against natural zeolite increased by 566.67%, while ZA-Fe was 333.33%. SEM analysis showed the morphology of the surface of ZmA-Fe agglomerating elliptical with the size of 271 nm and ZA-Fe elliptical with a size of 229.9 nm. BET analysis of the ZmA-Fe against ZA-Fe shows the specific surface area decreased by a n of 15%, the pore volume increased of difference by 13.44%, and the average pore size increased of difference by 30.48%. XRD analysis shows the crystallinity ZmA-Fe and ZA-Fe did not differ significantly from the natural zeolite. Based on the analysis results indicate that the Fe which has been modified into the zeolite with treatment and without High Energy Milling.

Key words: zeolite, *High Energy Milling*, iron

[O-58]
Evaluation of Heat-Treatment at Pasteurisation Temperature on Farmers' Bovine Milk Considering The National Standard and The Heat-Property of *Coxiella burnetii*

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Abstract

A number of heat-treatment experiments were conducted on milk samples collected from farms located in Semarang, Salatiga and Boyolali in Central Java, Indonesia. The samples were treated at 72 °C for various holding times in 45 mL glasses bottles dipped in a water bath. The logarithmic changes in aerobic bacterial counts occurred ranging from 0.15 cfu/mL to 3.68 cfu/mL. The temperature histories along with the inactivation data will be calculated to generate the lethality parameters as well as the inactivation kinetics, considering the National Standard of Indonesia (SNI) for raw milk and pasteurised milk as well as the thermal property of *Coxiella burnetii*. The calculation will be carried out using *Octave* and *R* applications.

Key words: pasteurisation, bovine milk, *Coxiella burnetii*

[O-59]
The Influence of Iron Sand Quantity in Ararei Village, Regent of Sarmi on The Application of Mortar as Radiation Shield

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Abstract

This study is aimed to specify and to analyze the influence of the amount of iron sand on mortar that is applied as radiation shield. The method used in this research is an experimental method in laboratory by creating models of heavy concrete through mixing a certain quantity of iron sand into several thicknesses. The concretes were then tested as radiation shield. The mortar paste was created by mixing cement: fine aggregate: viscocrete-10 in 1 : 1,5 : 0,015. A different quantity of iron sand and river sand were applied to the fine aggregate. The result depicted that mortar with quantity of 1,5 : 0 of the iron sand and river sand reflected the highest absorbency coefficient materials at 0,1071/cm with a compressive value of 20.38 MPa. On the other hand, mortar with 0 : 1,5 of iron sand and river sand show the smallest coefficient value of 0.0953/cm to radiation with compressive value at 40.18 MPa. In conclusion, the HVT (Half Value Thickness) value of mortar with the iron sand and river sand at 1,5 : 0 by comparison is 6,47 cm. It is smaller than mortar with a mixture of iron sand and river sand of 0 : 1,5 which have a value up to 7.27cm.

Key words: Mortar, iron sand, radiation shield.

[O-60]
Transport Of Urea Through A Crosslinked Poly(Vinyl Alcohol)-Poly(Ethylene Glycol) Diglycidyl Ether/Chitosan Blend Membranes

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Abstract

Urea transport through a crosslinked PVA-P(EGDE) chitosan blend membranes has been studied. The aims of this research was to investigate the effect of P(EGDE) and PVA addition, membrane thickness and vitamin B_{12} in the source phase on the rate of creatinine and urea transport. The effect of PVA:P(EGDE) mole ratio and crosslinked PVA-P(EGDE):chitosan volume ratio were examined to obtain the best membrane composition for the transport of creatinine and urea. Membrane with the best composition was prepared with variations in the thickness and it was used to transport of urea and transport of a mixture of 3 species (creatinine, urea, vitamin B_{12}). The membrane was characterized using spectrophotometer FT-IR and water uptake measurement.

The results of this research showed that PVA:P(EGDE) mole ratio was optimum in ratio 30:1 with 130.34% water uptake and P(EGDE)-crosslinked PVA/chitosan blend volume ratio was optimal in ratio 6:4 with water uptake of 128.87%. Membrane with a thickness of 60 μm exhibited the best transport capabilities 35.50% for urea transport with water uptake of 156.35%. The presence of vitamin B_{12} can interfere the transport of creatinine and urea through membrane. The results of IR spectra indicated that there has been a crosslinking reaction between P(EGDE) and PVA.

Key words: chitosan, PVA, P(EGDE), urea, transport, crosslinked

[O-61]

Potency of Probiotic Bacteria from Noni Fruit (*Morinda citrifolia*) as Anti-*Helicobacter Pylori* Agent

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Abstract

Helicobacter pilory often found in patients with chronic gastritis despite standard medical treatment with antacids and antibiotics. Traditionally, noni fruit used for gastritis treatment and as a source of probiotics are able to compete with pathogenic bacteria *H. pilory*. This study was conducted to characterize the probiotic from noni fruit (*Morinda citrifolia*) as an anti *H. pylori* caused gastritis and gastric cancer with two stages: I. Isolation and identification of candidate probiotic bacteria and II. Characterization of potential probiotic candidates as anti *H. pylori*. Identification of bacteria is done with the API test and analysis of 16S rDNA, the characterization of anti *H.pylori* probiotics include acidic pH resistance tests, bile salts resistance test, anti-microbial test (inhibition zone) and the probiotic bacteria adhesion test against *H. pylori.* The study was descriptive and experimental. The research design used was a complete randomized design factorial pattern and the results were analysed by ANOVA (α.05) and significant results were tested with Duncan's multiple range (α.05). The parameters measured were the adhesion ability of probiotic bacteria against *H. pylori* and the width of the inhibition zone (mm). The results were obtained as a potential probiotic anti *H. pylori* are *Leuconostoc mesenteroides, Lactobacillus delbrueckii,* and *Bacillus licheniformis* and it can be concluded that all probiotics candidates are able to agglomerate *H. pylori* but *L. mesenteroides* inhibited *H. pylori* is Ø 33.0 mm greater than other

Key words: Gastritis, Helicobacter pylori, Probiotic, *Leuconostoc mesenteroides* and *Morinda citrifolia*

[O-62]
The Influence of Additional Lead Plate to Mortar with a Various Quantity of Iron Sand from Ararei Village in Sarmi as Radiation Shield

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Abstract

This study is aimed to specify and to analyze the influence of additional lead plates to the mortar with various quantity of iron sand that was applied to radiation shield. The method used in this research is an experimental method in laboratory by creating models of heavy concrete through mixing a certain quantity of iron sand into several thicknesses. On testing the mortar as radiation shield, a lead plate was added with the thickness of 0.04 cm as a coating. The mortar paste was created by mixing cement : fine aggregate : viscocrete-10 in 1 : 1.5 : 0.015. A different quantity of iron sand and river sand were applied to the fine aggregate. The result depicted that mortar with quantity of 1.5 : 0 of the iron sand and river sand reflected the highest absorbency coefficient materials at 0,1147/cm with a compressive value of 20.38 MPa. On the other hand, mortar with 0 : 1.5 of iron sand and river sand show the smallest coefficient value of 0.1013/cm to radiation with compressive value at 40.18 MPa. In conclusion, the HVT (Half Value Thickness) value of mortar with the iron sand and river sand at 1.5 : 0 by comparison is 6.04 cm. It is smaller than mortar with a mixture of iron sand and river sand of 0 : 1.5 that have a value up to 6.84 cm.

Key words: Lead plate, mortar, iron sand, radiation shield

[O-63]
Surface Modification of Nano diamond and Its Interaction to The Doxorubicin

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Abstract

Nanodiamond is one of the carbon-based materials having potential properties for drug delivery such as biocompatible, non-toxic, stable, high surface area and surface easily being modified using organic molecules. Research on the use of nanodiamond as drug carrier has been conducted intensively till recently. However, research on the effect of functional groups present onto nanodiamond surface to the drug loading capability of nanodiamond has not much been explored. Therefore, in the present work, the interaction between modified nanodiamond surface and drug (doxorubicin) will be studied.

Key words: nanodiamond, surface modification, drug delivery, carbon

[O-64]

Phytochemicals Analysis, Antioxidant Capacities and Antimicrobial Properties of barks Extract of Garlic Tree (*Scorodocarpus borneensis* Becc.)

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The methanol extract of the bark of Garlic tree (*Scorodocarpus borneensis* Becc) which is one of the wild plants at dipterocarpal low land forest, East Kalimantan, Indonesia was subjected to investigate its antioxidant, phytochemicals analysis and antibacterial properties. The GCMS study demonstrated the presence of different types of compounds. In the n-hexane fraction, there were six major compounds, including 9-octadecenoic acid 36.50%, hexadecanoic acid, methyl ester(16.68%), methyl 9 octadecenate (methyl oleate) (15.39%), octadecanoic acid,ethyl stearate (4.00%) and stigmasta-4,22-dien-3-one(2.43%) while in the ethyl acetate extract showed the existence of tetratriacontyl trifluoro acetate (41.61%), 2 pentanone (13.65%), oxacyclotetradecane 2,11-done (7,87%), 3-phenyl-2-propenoic acid (7.53%), 11-octadecenoic acid methyl ester, 1,2 benzenodicarboxylic acid, dioctyl ester (4.99%) and methyl ester (4.16%). The methanol extract of the plant was also tested for antioxidant activity using scavenging activity of DPPH (1,1-diphenyl-2-picrylhydrazil) radical method and antibacterial activity against *Staphylococcus aureus and Escherichia coli* bacteria using cup plate method. The extract exhibited high free radical scavenging activity. IC_{50} was found to be 55.5245 ppm. Antibacterial activity was observed against *bacterial* in dose dependent manner.

Key words: Bark tree *Scorodocarpus borneensis* L, phytochemical analysis, antioxidant potential, antimicrobial.

[O-65]
Analysis of Oil Pollution in Soil by Using Nd:YAG laser-Induced Plasma Spectroscopy

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Abstract

The oil pollution in soil has been found in Blora, Central Java, Indonesia since June 2014. The pollution caused large area of rice field were polluted and rice plants died. It is difficult to distinguish the polluted soil from the unpolluted soil near the housing residents. Various methods have been applied to perform soil analysis such as X-ray fluorescence spectrometry (XRF) and inductively coupled plasma atomic emission spectrometry (ICP-AES) [1-2]. The methods have high-sensitivity for detection of minor elements. However, the methods require delicate sample pretreatment and is labour intensive. In this study, a new method of optical emission spectroscopy has been employed by utilizing a pulsed Nd:YAG laser as an emission source. The method has been well known as laser-induced breakdown spectroscopy (LIBS) [3-4]. Compared to other conventional methods, the LIBS enables one to carry out rapid and direct *in-situ* analysis without time consuming. In this technique, the soil sample is prepared in the form of ordinary sample and pellet sample by comprising the soil into a pellet. A pulsed Nd:YAG laser beam was focused onto a sample surface to induce a laser plasma emission. The plasma with a diameter of approximately 3 mm contains elements from the sample. The plasma emission spectrum was obtained by detecting laser plasma radiation using optical multichannel analyser system. In the experiment, some variables have been varies including laser energy, environmental gas and its pressure in order to obtain optimum emission spectrum. By using this method, the polluted soil can clearly be distinguished from the unpolluted soil. The polluted sample has a specific emission spectrum, which is different from the case of unpolluted sample.

Keywords: Oil pollution, Soil, Laser-induced breakdown spectroscopy, LIBS, Laser-induced plasma spectroscopy, LIPS

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[O-66]
Synthesis of SiO_2/TiO_2 Pillared Clays and Its Activity for Photocatalytic Degradation of Rhodamine

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Abstract

The synthesis of silica (SiO_2) pillared clays with intercalation TEOS (tetraethylorthosilicate) of natural clay by varying the amount of dodecylamine surfactant to determine the relation between amount of surfactant and the basal spacing, specific surface area, pore distribution and total pore volume have been conducted. The pillarization was prepared through intercalation of clay by dodecylamine and TEOS followed by calcination at a temperature of 600°C. The basal spacing and crystallinity of pillared clays obtained were measured by X-ray diffraction, and the specific surface area, pore distribution and total pore volume were determined by gas adsorption analysis. The pillared clays were then impregnated by $TiCl_4$ followed by calcination to obtain TiO_2 which would be functioned as photocatalysts

The pillared clays' basal spacing and total pore volume increased compared with their original clays which was optimum at dodecylamine/clay ratio of 1:35. On average, the pillared clay surface areas increased more than 10-fold compared with their natural clay. The surface areas enlarged by increasing of dodecylamine amount added whilst the pore size distribution was irregular.

The application of SiO_2/TiO_2 pillared clays on degradation of rhodamine indicated that the more TiO_2 impregnated, the more Rhodamine degraded.

Key words: SiO_2/TiO_2 pillared clay, rhodamine, photocatalysts

[O-67]
Discrimination of Dengue based on Epidemiologic and Laboratory Parameters in Adult and Child Patients in Semarang 2015

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Abstract

Dengue Hemorrhagic Fever (DHF) has been a big problem in Indonesia. In 2006, Indonesia was the biggest country in South Asia suffered with DHF which contributed to 57% of patients. This was allegedly due to less specific in determining suspect reported as DHF case. Therefore, more accurate parameters are needed to overcome this problem. This study identified epidemiology and simple laboratory parameters of DHF suspect to determine factors influencing Dengue in infants and adults. Based on the characteristic of the suspects, epidemiologically it was found 116 DHF suspects in Semarang from the hospitals surround it. Of the suspects, 55 (47.4%) were men and 61 (52.6%) were women, with age range between 5 – 79 years old. Using IgG, IgM and NS1 test, 96 (82.8%) of the suspects were identified having Dengue Fever 30 (31.3%), Dengue Hemorrhagic Fever 33 (34.4%), Syndrome Shock Dengue (4.2%) and others 29 (30.4%). Most of the patients were child with 78 (81.3%) patients, whereas the rest were adult with 18 (18.8%) patients. Laboratory parameters detected were body temperature, hemoglobin, hematocrit and length of stay in the hospital.

Key words: dengue, epidemiology, laboratory, child, adult

[O-68]
Analyse of Classification Acceptance Subsidised Food Using Discriminant Kernel Method

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Abstract

Subsidised food is government program for social protection to poor households. The aims of this program are to effort households from starve and to decrease poverty. Less precisely target of this program has negative impact. So that to successful program, it's important to know accuracy classification of admission subsidy food. The variables classification are number of household members, number of household member in work, average expenditure capita, weighted household, and floor area. Discriminant analysis is a multivariate statistical technique which can be used to classify the new observation into a specific group. Kernel discriminant analysis is a non-parametric method which is flexible because it does not have to concern about assumption from certain distribution and equal variance matrices as in parametric discriminant analysis. The classification using the kernel discriminant analysis with the normal kernel function with optimum bandwidth 0.1 gives accurate classification 97%.

Key words: Subsidized Food, Discriminant Kernel, Bandwidth, Accuracy.

[O-69]
Automatic Speech Recognition for Indonesian using Linear Predictive Coding (LPC) and Hidden Markov Model (HMM)

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Abstract

Speech recognition is influential signal processing in communication technology. Speech recognition has allowed a software to recognize the spoken word. Speech recognition could be a solution to recognize the word of an utterance. This application was developed using Linear Predictive Coding (LPC) for feature extraction of speech signal and Hidden Markov Model (HMM) for generating the model of each word utterance. The data of utterance used for training and testing was produced by 10 speaker (5 men and 5 women) whose each speakers spoke 10 words and each of words utterance spoken for 10 times. This research is tested using 10-*fold cross validation* for each pair LPC order and HMM *states*. System performance is measured based on the average accuracy testing from men and women speakers. According to the test results that the amount of HMM states affect the accuracy of system and the best accuracy is 94.20% using LPC order =13 and HMM state=16.

Key words: Linear Predictive Coding (LPC), Hidden Markov Model (HMM), Speech Recognition

[O-70]

Applications Bioactive Material from the Snake Head Fish (*Channa striata*) for Repairing of Motor Activity and Learning and Memory Capability: A Case Study in Rats with Aging Physiological and Aging Due to Oxidative Stress

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Abstract

Physiological aging and aging due to oxidative stress is the main factor causing accelerated aging of the brain. The aging of the brain characterized by decreased function of the hippocampus in disorders that have an impact on two important indicators, namely the ability of learning and memory and motor activity. Based on these facts, this study was conducted to examine and analyse the ability of learning and memory and motor activity in animal models of aging after treated with bioactive material of *C. striata*. Repair second important indicator is an indication of the recovery of the functions of the hippocampus and brain antiaging process. This study was designed using a completely randomized factorial design with size 2x2, 4x replications. The first factor, consists of 2 models of aging in test animals, ie non-treatment of oxidative stress (physiological aging) and the treatment of oxidative stress (aging due to oxidative stress). The second factor, consisting of two levels of treatment in test animals, that supplementation of *C. striata* bioactive material and non-supplementation of *C. striata* bioactive material. The research consisted of two phases, which includes determination of motor activity and test the ability of learning and memory. Parameters measured in the determination of motor activity, such as distance travel, time stereotypes, ambulatory time, and resting time. Meanwhile, the parameters on the test the ability of learning and memory is the time needed by test animals to get food in the fourth space arm maze. The results showed that administration of bioactive materials of *C. striata* can increase motor activity and learning and memory in both animal models of

aging, aging either physiological or aging due to oxidative stress. The conclusion from this study is the bioactive material of *C. striata* can be used as a supplement to increase the motor activity and the ability of learning and memory in both aging conditions, either physiological aging or aging due to oxidative stress. Results of this study are expected to provide information comprehensive for antiaging research development in the long term as an effort to improve the degree of health particularly that associated with increased motor activity and the ability of learning-memory.

Key words: *Channia striata*, antiaging, hippocampus, mitochondria, the ability to learn and memory, motor activity

[O-71]
Quality Function Deployment and Fuzzy TOPSIS Methods in Decision Support System for Internet Service Provider Selection

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Abstract

Internet Service Provider (ISP) is a company or business organization that provides access to intenet and services related for individual consumer or companies. There are many ISP in Indonesia recently, and they have almost the same product to offered. This problem makes internet service provider selection become a major issue. Decision support system can be used to recommend the best ISP company based on need. The aim of this research is to used Quality Function Deployment with Fuzzy TOPSIS sequentially to select the best ISP company as needed, and implemented in decision support system for internet service provider selection. Quality Function Deployment and Fuzzy TOPSIS methods used to evaluate, and then recommend the ISP company by ranked. Quality Function Deployment method used to find out customers requirements about internet network, the weighting of the criteria and the assessment of each ISP company. Fuzzy TOPSIS used to rank ISP company. These two methods produce consistent ratings when sensitivity analysis is performed for fuzzy and crisp value. These two methods make decision support system result can be trusted.

Key words: Quality Function Deployment; Fuzzy TOPSIS; Sensitivity Analysis

[O-72]
A Model of Langerhans and TCD4$^+$ Cells Infection During Early HIV-1 Infection with Multiple Dose RTIs and PIs Treatments

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Abstract

We develop a within host mathematical model that captures the combined infection of Langerhans and CD4$^+$ T HIV-1 infection to describe the effects of antiretroviral treatment on early HIV-1 infection. We analyse the stability of uninfected equilibrium of the model under an alternative reproduction number. We investigate the effect of combined RTIs and PIs drugs with efficacy modelled by periodic functions of multi dose pharmacokinetics type. We explored various treatment scenarios incorporating perfect and imperfect drug adherence in drug administration. Our results show that PIs drugs are more effective than RIs drug and combined RTIs and PIs therapy is more effective than mono therapy of RTIs or PIs.

Key words: CD4$^+$ T, Langerhans, RTIs, PIs, pharmacokinetics

[O-73]

Utilization of Channels Digestion Golden Snail (*Pomacea canaliculata*) as Lytic Enzyme and Application on Yeast *Pichia manshurica* DUCC-Y15

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Abstract

Molluscs were one of invertebrate animals that have not been studied and used in particular in the field of enzyme. One type of mollusc that has not been exploited significantly by golden snail (*Pomacea canaliculata*), especially in the digestive tract for the production of lytic enzymes. Lytic enzymes can be used as a microbial cell wall breaking agents (yeasts) that will produce protoplasts, besides that this enzyme plays an important role in protoplast isolation technique that will produce good and healthy protoplasts. Protoplasts derived from the yeast *Pichia manshurica* DUCC-Y15. The yeasts were capable of producing the enzyme inulinase. The aim of this study was the use of the digestive tract golden snail (*Pomacea canaliculata*) as lytic enzymes and to determine the amount of the released protoplasts at a concentration level of lytic enzymes different from the digestive tract golden snail (*Pomacea canaliculata*). Lytic enzyme concentrations used in this study was 75% (E3) and 100% (E4). The results showed that the digestive tract golden snail (*Pomacea canaliculata*) can produce lytic enzymes, the higher the concentration of lytic enzymes digestive tract golden snail given, then the higher the protoplasts were released. At a concentration of 75% lytic enzyme (E3) liberate protoplasts of 6.7 x 1017 (33.4%) and 100% (E4) of 9.2 x 1017 (45%).

Key words: lytic enzyme, Mollusc, golden snail (*P. canaliculata)*

[O-74]
Volatility Modelling Using Hybrid Autoregressive Conditional Heteroscedasticity (ARCH) - Support Vector Regression (SVR)

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Abstract

High fluctuations in stock returns is one problem that is considered by the investors. Therefore we need a model that is able to predict accurately the volatility of stock returns. One model that can be used is a model Autoregressive Conditional Heteroscedasticity (ARCH). This model can serve as a model input in the Support Vector Regression (SVR) model, known as Hybrid ARCH-SVR. This modelling is one of the alternatives in modelling the volatility of stock returns. This method is able to show a good performance in modelling the volatility of stock returns. The purpose of this study was to determine the stock return volatility models using a Hybrid ARCH-SVR model on stock price data of PT. Indofood Sukses Makmur Tbk. The result shows that the determination of the input variables based on the ARIMA (3,0,3)-ARCH (5), so that the SVR model consists of 5 lags as input vector. Using a this model was obtained that the Mean Absolute Percentage Error (MAPE) of 1.98% and R^2 =99.99%.

Key words: ARCH; ARIMA; SVR; Volatility

[O-75]
Synthesis of Rice Husk-Based Zeolite Using Hydrothermal Method and Its Detergent Builder Properties

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Abstract

Detergents are cleaning agents that consist of a complex formulation such as surfactants, builders, bleaching, fillers and other additives. Detergent builder that commonly used is sodium tripolyphosphate (STPP) that are unfriendly environmentally. One of the detergent builders that is more environmentally friendly is zeolite. Therefore, in the present work, zeolite was synthesized using hydrothermal method by varying the temperature and characterised its detergent builder properties. Zeolite was synthesized by mixing sodium silicate (Na_2SiO_3) and sodium aluminate $NaAl(OH)_4$ with the presence of NaOH. Firstly, a mixture of sodium silicate and sodium aluminate formed sol and gradually became gel. After that, the gel had been treated by hydrothermal for 7 hours at different temperatures: 50 ^{0}C, 100 ^{0}C and 150 ^{0}C. Several characteristic techniques such as FTIR and XRD were applied to identify functional group and the crystal structure, respectively. Furthermore, the detergent builder properties were characterised using cation exchange capacity (CEC) and detergency test. The result showed that zeolite synthesised at 100 ^{0}C gave better washing capability than others.

Key words: zeolite, detergent, builder, rice husk, hydrothermal

[O-76]

The Improvement of Protein Content by the Use of *Oreochromis niloticus* in Tempeh as Aquaculture Product Diversification for Sustainable Aquaculture

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Abstract

Consumption of freshwater fish such as tilapia (*Oreochromis niloticus*) is favoured by most Indonesian society, especially in Kabupaten Magelang, Central Java. Mungkid, a village in Magelang Regency is one of the places that was developed as a Minapolitan. This study is aimed to supports the development of aquaculture product diversification, especially tilapia fish as a flagship product in the area. The farmed tilapia fish were used as source of animal protein for a variety of fermented food products, one of them is tempeh. The utilization of fish as a mixture in the tempeh production was assessed in laboratory for the best concentration to improve the protein content. Several procedures were carried out, including making fish flour, fermentation of boiled soybean, incubation of mixed fish flour and soybean, measurement of water, protein, fat, ash, and carbohydrate. After incubation in room temperature (27^{o}C) for 48 hours, the mixing of fish flour and soybean in tempeh fermentation produced the fish tempeh. Organoleptic test also done for their taste and physical performance. The result showed that fish flour of 3% is the best concentration for making fish tempeh. At this mixture, the contents of water, protein, fat, ash, and carbohydrate in fish tempeh were 17.4%, 26.62%, 6.78%, 1.6%, and 47.6% respectively. The optimum growth of fish tempeh was then applied by workshop/training activities. These activities involved academicians of Politeknik Magelang, fish farming group of Mungkid and Muntilan districts, and groups of “Dharma Wanita” of Magelang Regency.

Keywords: fish tempeh, aquaculture product diversification, Kabupaten Magelang, fiah farming group.

[O-77]
The Design of Cuda Parallel Processing for Accelerating Artificial Neural Network's Computational Time

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Abstract

Artificial Neural Network (ANN) is one of the artificial intelligence example which consist of layers formed of nodes and interconnected layers. A method which is known as one of the best method in solving several types of problem. The greater the number of hidden layers and neurons the greater the number of training and evaluation time are needed. The increasing number of training data samples also effects the computational time. Those matters occurs to some complex cases and the use of ANN become inefficient due to the long computational time. Therefore, the concept of parallel processing are needed, by harnessing the power of GeForce GPU. To fulfil the purpose, C++ programming language and CUDA SDK as the tools of parallel programming. The ANN backpropagation are chosen as the method. The ANN is implemented with sequential and parallel programming. The computational time of training and evaluation process are expected to be decreasing and how much fast the parallel processing is. In this paper, we propose that ANN needed to be designed and done in parallel programming to overcome this kind of situation.

Key words: Artificial Neural Network, parallel processing, parallel computing, backpropagation, GPGPU, CUDA.

[O-78]
Modification of Rice Husk-Based Activated Carbon Using Sodium Lauryl Sulfat (SLS) for Lead (Pb) Ions Removal

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Abstract

A rice husk-based active carbon modified using SLS surfactant showed an increase on Pb ionic metal removal with the efficiency of 99.965%. Activated carbon is commonly applied as adsorbent in waste water treatment, in particularly, waste water containing heavy metals and dye molecules. Even though it is commonly used, the adsorption efficiency of activated carbon to the heavy metal waste is still low. Therefore, in the present work, carbon from rice husk was modified using surfactant which further it is called surfactant modified active carbon (SMAC). Firstly, rice husk-based carbon was activated using 40% H_3PO_4 for 2, 6, 10, 14, 15 and 16 hours. The activated carbon was then modified by contacting it into SLS in different concentration 10, 20, 30, 40, 50, 60 and 70 ppm for 5 hours. Finally, the SMAC was then applied to remove Pb ionic metal. Moreover, several characterisation techniques were performed including FTIR, SEM, UV-Vis and AAS.

Key words: activated carbon, surfactant-modified active carbon, adsorption, rice husk

[O-79]
Isolation and Characterization Pure Phospholipids Compounds of Coconut (*Cocos nucifera*) and Its Application as Cancer Drug Carrier Systems

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Abstract

One of the constituents of the liposome is a phospholipid that is a natural amphiphilic compound has a unique structure. During these phospholipids used are generally derived from soy and egg. Research efforts to find alternative sources of new phospholipids have done that derived from coconut. This study aimed to isolate and characterize pure phospholipids are derived from coconut (*Cocos nucifera*) and its application as a cancer drug delivery systems. Insulating phospholipid done by solvent extraction using a mixture of chloroform-methanol (2: 1) and characterization includes testing by FTIR and GCMS. Making the drug carrier systems using thin-layer method and testing in drug testing applications using a UV-VIS. Results showed that phospholipid-containing oil contains methyl laurate ($C_{13}H_{26}O_2$) and methyl oleate ($C_{19}H36O_2$) and the results of the application runs optimum cancer drug for 23 days at pH 7.4 as the pH of the body, the concentration of beta-carotene is encapsulated obtained stable.

Key words: phospholipids, coconut, isolation, characterization

[O-80]
The Information System of Accident Prone Locations Mapping In Polrestabes Semarang

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Abstract

The road traffic accidents in Semarang City were handled by Unit Laka Sat Lantas Polrestabes Semarang. The Information System of Accident Prone Locations Mapping that provided information about accident prone locations in Semarang City to people was needed by Unit Laka. There were 3 methods that were used to obtain information based on the processing of accident data, namely Equivalent Accident Number (EAN) Method, Severity Index (SI) Method, and Population-Based Accident Rates (PBAR) Method. Those methods were used to generate information such as, the ranks of accident prone locations, the severity rates of accident prone locations, and the accident rates of sub districts that were displayed in maps, graphs, and tables. Linear Sequential Model and ArcView 3.3 for digitizing maps were used in this system development. The system was implemented using PHP programming language, MySQL database management system, and Scalable Vector Graphics (SVG). The final results of this research were the road map of Semarang City that displayed the ranks and the severity rates of accident prone locations information, the sub district map of Semarang City that displayed the accident rates of sub districts information, and the trend of sub district and road map of Semarang City that was classified into several categories based on the AEK values, SI values, and PBAR values.

Key words : Geographic Information Systems, Accident Prone Locations, Equivalent Accident Number, Severity Index, Population-Based Accident Rates, ArcView 3.3, SVG.

Poster Presentation Abstracts

[P-01]
The Yield Comparison of Purified Curcuminoids Using Vacuum Column Chromatography with Silica Gel and Its Regenerated as Stationary Phase

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Abstract

Purification of temulawak extract (Curcuma xanthorrizaRoxb) has been done by vacuum column chromatography using new and regenerated silica gel in laboratory scale. Temulawak extracts (contains 10.1195±0.5971% of curcuminoids) was purified by vacuum column chromatography (pressure: 45 kPa, column: 100mm on length and 16mm on diameter). Ethanol96% was compared with acetone as eluent. The amount of solvent andyield of curcuminoids were analyzed. Regenerated silica gel was heated to 600°C for 8 hours, both silica gel were analysed by IR spectroscopy. Furthermore, regenerated silica gel was used as the stationary phase in a vacuum column chromatography under the same conditions with the previous purification. All the purification experiments were performed in three repetitions. Curcumin's standard curve shows linier regression, y=0.132x+0.001 and r^2=0.991. The yield of curcuminoids on purify products using ethanol as eluent was improved 4.26% (to 14.3724±0.5749%), by acetone was improved 3.03% (to 13.1450 ±0.6318%). Ethanol as eluent showed better performance than acetone since using less eluent volume and higher level of purified products. The IR spectrum of both silica gel showed the same vibration profile. Regenerated silica gel has the same performance with new silica gel in purification of temulawak extract: by ethanol has increased 4.08% (14.1947±0.7415%) and 2.93% (13.0447±0.4822) by acetone. In addition, all purification products showed similar TLC profiles. Purification using regenerated

silica gel as the adsorbent on vacuum column chromatography has exactly the same potential with new silica gel.

Key words: *Curcuma xanthorrizha*, Curcumin, Regeneration of Silica Gel, Temulawak, Vacuum Column Chromatography

[P-02]

Histological Structure of Mice (*Mus Musculus* L.) Liver After Administration of Ethanol Extract and Spinasterol from Senggugu (*Clerodendron Serratum* L.) Leaves

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Abstract

Clerodendron serratum is a plant that used as traditional herbal contraceptive for males. Additionally, *Clerodendron serratum* contains several compounds that are classified into natural antifertility products, namely: apigenin, alkaloids, flavonoids, steroids, and triterpenes. This study was conducted to investigate the toxic effect of ethanol extract and spinasterol from senggugu (*Clerodendron serratum* L.) leaves on the mice liver. The study was used completely randomized design with 7 treatments and 6 replications. The mice was given the ethanol extract by dosage 250, 500 and 1000 mg/kg body weight, whereas spinasterol dose were 26 and 52 mg/kg body weight, and as a control agent were used distilled water and DMSO. The treatment was given orally by gavage for 9 and 18 days. The morphological and histopathological parameters were observed at the end of experimental period. The observation of liver macro pathology showed no significantly difference between the control compared to the treatment groups ($p<0.05$), while the liver histopathological showed significantly difference between the control compared to the treatment groups ($p>0.05$), except the ethanol extract by dosage 250 mg/kg body weigth. The highest score of liver histopathology was shown by ethanol extract of 1000 mg/kg body weight. The score was based on the degeneration of parenchyma, karyolisis, and necrosis. It can be concluded that the highest dose of ethanol extract and spinasterol of senggugu leaves was toxic against the liver histological structure of mice.

Key words: Clerodendronserratum, spinasterol, ethanol extract, hepar cell

[P-03]
Diversification of Cassava Starch in Producing Flakes Enriched by Dietary Fiber From Coconut Residue Flour

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Abstract

Food diversification is one of the method to strengthen national food existence by reducing people dependence of wheat flour in making many kind of food product through cassava starch utilization. High content of carbohydrate in cassava starch can be utilized in producing flakes. However as an instant food, this flakes needs to have sufficient nutrient. Adding materials containing dietary fiber is really important since it has a big role in preventing and maintaining large intestine cancer, hypertension, stroke and diabetes mellitus as well as increasing mineral supply in our body. One of the materials that have high dietary fiber content is coconut residue as a waste of VCO processing industry. This research aimed to produce cassava starch flakes enriched by coconut residue flour that has high content of dietary fiber as well as nutrient which will lead to functional food.

This research was initialized by analyzing raw materials needed to make flakes, they are cassava starch and coconut residue flour. Cassava starch : coconut residue flour contain 11.4%:4,85% of water, 0.23% :0,61% of ash. Cassava starch contains acidity level 0.66 mL NaOH/100 g, 95.21% of whiteness, and 79.5% of starch and metal contamination that are lower than Standard. Coconut residue flour contains 42.27% of Fat, 16.98% of Protein, 43.55% of Carbohydrate and 33.02% of Dietary Fiber and high mineral content than standard requirement. Microbial analysis showed that both cassava starch and coconut residue flour have a good cleanliness and food safety. Those data show that both flour has a good quality since they fulfill all requirements stated in Indonesian National Standard of cassava starch as well as wheat flour.

The next step of research was producing flakes with vary formulation between cassava starch and coconut residue flour. The formulations are 100% cassava flour, 75%:25%, 50%:50%, 25%:75%of coconut residue flour. Flakes formula 2 (F2) containing 75% cassava starch and 25% coconut residue flour was chosen as a best product based on organoleptic test against physical characteristic flakes of color, smell, texture, flavor as well as cripness. Result from the analysis have shown that flakes with formula 2 contained 3.30% of water, 1.77% of ash, 14.48% of fat, 2.44% of protein, 78.22% of carbohydrate, 12.14% of dietary fiber and minerals such as K 663.03 ppm, Na as much as 98.5 ppm, Fe 36.22 ppm, Ca 268.9 ppm and Mg .54 ppm.

Key words: cassava starch, coconut residue flour, flakes, dietary fiber

[P-04]

The Capability of *Streptomyces* sp. Isolated from Segara Anakan in Producing Pigment Substance

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Abstract

Actinomycetes strains K-2C, K-3E, K-4B were isolated from Segara Anakan environment and then identified as *Streptomyces* sp. Those isolates performed producing yellow and red pigment substances intracellularly and extracellularly, showed from their mycelium and medium around their growth colony. Pigment production was observed through liquid fermentation in oatmeal broth medium during 21 days. Evaluation pigment production was measured by extracting crude pigment from the mycelium and broth medium and furthermore measured using UV vis spectrophotometer. The result showed that those isolates capable in producing pigment intracellularly and extracellularly. The pigment extract of K-2C isolate had λmax at 480-535 nm, K-3E isolate was at 350-650 nm, and K-4B isolate at 523-525 nm. The pigment performed stability in pH variations.

Key words: *Streptomyces*, pigment substance, spectrophotometry.

[P-06]

Growth optimization of thermophilic bacteria *Bacillus thermoamylovorans*and *Brevibacillus* sp. in producing keratinolytic enzyme.

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Abstract

Some thermophilic bacteria have been isolated from Tanjung Sakti hot spring. Two isolates which showed qualitatively keratinolitic activiy, identified as *Bacillus thermoamylovorans* and *Brevibacillus* sp., were optimized the growth in producing keratinase enzyme. Keratinase is a group of proteolytic enzyme which able to hydrolyse insoluble protein (keratin).In this research, whole chicken feathers were used as keratin substrate. The growth curves and measurement of keratinase enzyme activities were determined to the isolates, with a span of measuring 4 hours during 48 hours incubation, and gained the growth and optimum enzyme activity at 28 h incubation. The isolates were then observed the growth and keratinase activity at several different temperatures and pH. The results showed that the optimum temperature and pH for both isolates were the same, i.e. at a temperature of 70° C and pH 7. The effect of adding a source of carbon and nitrogen into the medium were also observed. The growth and enzyme activity of both isolates were increased on the addition of 1% glucose and 0.4% casein.

[O-07]

Potency of Bioarang Briquette with Materials from Leather Cassava Tubers and Sludge of Wastewater Treatment Plant

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Abstract

The purpose of this study was to determine the quality of the bioarang briquette with materials from leather cassava tubers and sludge of wastewater treatment plant. The first, bioarang briquette analysed stability test and compressive strength. Then, bioarang briquette with best value analysed for parameter including moisture content, ash content, calorific content, and burned test. The result briquette quality based on compressive strength for bioarang briquettes carbonated water content between 3.8% - 4.5% and non-carbonated bioarang briquettes between 5.2% - 7.6%. Bioarang carbonation briquette ash content was between 5.30% - 7.40% and non-carbonated bioarang briquettes was between 6.86% - 7.46%. Bioarang carbonation levels briquettes heated between 578.2 calories/gram - 1837.7 calories/gram and non-carbonated bioarang briquettes between 858.1 calories/gram - 891.1 calories/gram. Carbonated bioarang burned test was between 48 - 63 minutes and non-carbonated bioarang was between 22 – 42 minutes. Emissions resulted from the bioarang briquettes for carbonated and non-carbonated composition according to the government regulations ESDM No. 047 of 2006 which, at 128 mg/Nm3 and 139 mg/Nm3.

Key words: Bioarang Briquette, Leather Cassava, Sludge, Wastewater treatment plant, water Content, Ash Content, Heat Content, NO_x

[P-08]
Novel Archaeal DNA Polymerase B from Domas Hot Spring West Java

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Abstract

Nine novel archaeal DNA polymerase genes from Domas Hot Spring, West Java have been cloned directly through the natural sample. The Characterisation of the genes showed that the genes are high homology to the DNA polymerase B of *Crenarhaea phyla*. Phylogenetic analysis of the amino acid sequences showed that the enzymes are grouped in a new branch from the other Crenarchaea's DNA Polymerase B. 3D structure analysis of the enzymes show that the structures are closed to the structure of DNA Polymerase B1 from *Sulfolobussolfataricus*. The nine structures of the enzymes could be grouped into four different structures.

Key words: DNA Polymerase B, Crenarchaea, Domas Hot Spring

[P-09]
Growth Improvement Of Mung Bean (*Vigna Radiata* (L.) Wilczek R.) by Application of Mycofer and Phosphate Fertilizer

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Abstract

The objective of the research is to observe the effect of mycofer inoculation and the phosphate fertilizer on growth improvement of mung bean (*Vigna radiata* (L.) R. Wilczek). The research method used experimental method, which used randomize block design 2 x 7 factorial with 3 replications. The first factor was mycofer inoculation (M), which consist of two levels, i.e. without mycofer inoculation (m_0) and with mycofer inoculation (m_1). The second factor was adding of phosphate fertilizer (P), which consist of seven levels of doses, i.e. without adding of phosphate fertilizer (p_0), 25 kg/ha (p_1), 50 kg/ha (p_2), 75 kg/ha (p_3), 100 kg/ha (p_4), 125 kg/ha (p_5) and 150 kg/ha (p_6). The observation parameter included the plant height, the leaf area, the dry weight, the number of pods, the seeds weight and the percentages of the root infection. The result showed that was interaction between mycofer inoculation and the adding posphate fertilizer to increase the plant height, the number of pods and the seeds weight. Phosphate fertilizer dose 75 kg/ha (p_3) is the best dose for increasing the growth of mung bean plants inoculated mycofer on all parameters observed, except best phosphate fertilizers dose for the parameters of dry weight is 50 kg / ha (p_2).

Key words: mycofer, phosphate fertilizer, growth, mung bean.

[P-10]

The Use of Endomycorhiza Propagules and Liquid Organic Fertilizer to Increase The Growth and Fresh Weight Caisim *(Brassica Juncea* L.) and Chinese Cabbage (*B.Chinensis* L) Plant

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Abstract

The purpose of this reseach was to investigation the effect of endomycorhiza and liquid organic fertilizer to increase the plant crops, especially vegetables of caisim and chinese cabbage. The method of this research was experimental completely ramdomized design 2x5 factorial with five replications. The first factors is the endomycorhiza propagul inoculant (M) wich two levels, i.e: without inoculation endomycorhiza propagules (m0) and with endomycorhiza inoculant (m1). The second factor is dose of liquid organic fertilizer (P), wich five levels, i.e: without liquid organic fertilizer 0 mL / L (p0), 0.5 mL / L (p1), 1 mL / L (p2), 2 mL / L (p3), and 4 mL / L (p4). Data were anayzed by variants analysis in the 5% significance level (α = 0.05) and determine the difference among the treatments carried out with Duncan's Multiple Range Test. The results of reserch on caisim plant (*Brassica juncea* L.) showed that endomikoriza propagules and liquid organic fertilizer 1 mL / L increase, the number of leaves 64.47%, leaf area 80.81% and fresh weight of plant 81.55%, and for chinese cabbage (*B.chinensis*) showed that endomikoriza propagules and liquid organic fertilizer 2 mL/L increase the number of leaves 45%, leaf area 96%, and fresh weight plant 85.55%. between the liquid organic fertilizer with endomycorhiza fertilizer have interaction on growth and fresh weight of plants, there have 50% infection endomycorhiza on roots caisim and chinese cabbage and was not found of pest.

Key words: Endomycorrhiza, propagul, *Brassica*

[P-11]
Identification of Sarang Semut Plant and Its Host Tree in Tanjung Palas, Bulungan District, North Borneo

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Abstract

Sarang semut plant which belongs to Rubiaceae family is an epiphytes. It is widely used as a medicinal plant, containing some active compounds such as flavonoids, tannins and polyphenols that are beneficial to the human body. Identification of plant species and its host tree in Bulungan district of North Borneo has not been done. It is closely related to the field of conservation, as well as efforts to further utilization of ant nest plant cultivation.

The research aim was to identify sarang semut plants and its host trees, located in the district of Tanjung Palas, Bulungan, North Borneo. Survey method, followed by the manufacture of herbarium and observations of morphological characters was performed in this research.

The result of the research showed that only one plant species of sarang semut, namely *Myrmecodia tuberose* Jack 'lanceolata, was found in the village of White Mountain and Antutan. Meanwhile, banyan (*Ficus benjamina* Linn.), Laban (*Vitex parviflora* Juss.), Durian (Durio zibethinus Murr.), Pulai (Alstonia scholaris Linn.), Rambutan (Nephelium lappaceum Linn.), jackfruit (Artocarpus integra Forst.), Langsat (*Lansium domesticum* Corr.) and Mango (Mangifera indica Linn.). were identified as the host tree of ant nests. In addition, Durian (Durio zibethinus Murr.) was found to be the most of the host tree of sarang semut plant

Key words: Identification, host trees, sarang semut plant.

[P-12]
Utilization of Coconut Residue Flour as Source Dietary Fiber for Functional Food Production

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Abstract

Coconut processing industry produces a by-product in the form of grated coconut as residue. Coconut residue from coconut processing industry has low market value and is sold as animal feed. In order to increase the value-added of coconut residue, it can be converted into coconut flour. Coconut residue is special because of its dietary fiber content. High content of dietary fiber in coconut flour was found plays an important role in preventing and controlling chronic diseases such as colon cancer, heart attack, hypertension, stroke and diabetes mellitus. This research aims to produce coconut residue flour-based product with high dietary fiber and good quality of nutrition that expected to become functional food production. In This research, brownies with coconut residue flour are made as functional food production. Brownies was made with specific formulation. The formulation are 100% wheat flour, 75%:25%, 50%:50%, 25%:75% of wheat flour:VCO residue flour, and 100% of coconut residue flour. Organoleptic analyze also conducted to resulted browniesto find out the level of acceptance of such products to the panelists. Brownies Formula 2 (F2) with 75%:25% composition of wheat flour:VCO residue flour become selected product based on rating scale and rank scale. Result have shown that F2 Brownies contain 22,1% of moisture, 1,56% of ash, 20,50% of fat, 5,52% of fat, 50,32% of carbohydrates and minerals such as 2971,59ppm of K, 2138,56ppm of Na, 24,27ppm of Fe, 195,03ppm of Ca and 565,66ppm of Mg and it also contained 5,48% of dietary fiber so that brownies can be claimed as food functional product.

Key words: Functional Food, Dietary Fiber, Coconut Residue Flour, Brownies

[P-13]
Analysis Stability of Mathematic Model of Worm Infection on Computer in a Network

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Abstract

Worm infection were an infection that attack a computer, it work by multiplied itself after got into a computer and made it over work and caused a computer to slowing down. Worm spreading infection describe by nonlinear mathematic model form with VEISV (Vulnerable, Exposed, Infected, Secured) as the model. Worm free equilibrium and endemic equilibrium were calculated to obtained the stability analysis, and numeric solution were performed by substituted the initial value and the parameter value using Runge-Kutta fourth-order method. From the result of stability analysis we obtained that worm free equilibrium were not stable and endemic equilibrium were locally asymptotically stable, and from the result of numeric solution every class proportion from model were obtained.

Key words: worm infection, VEISV model, stability analysis

[P-14]
Study of Three Additive Compounds Expected as Reactive Oxygen Species

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Abstract

In biological systems, heme proteins perform a number of vital physiological functions that are essential for life. The function including oxygen sensing, electron transport, signal transduction, and antioxidant defense enzymes. Most of these reactions are carried out by redox reactions of heme iron. Unlike enzymatic degradation, which specifically attacks the a-methene bridge, reactive oxygen species randomly attack all the carbon methene bridges of the tetrapyrrole rings, producing various pyrrole products in addition to releasing iron. Many additives in food, cosmetics and other products have been reported as reactive oxygen species that degrade hemoglobin. In this study, three additives that are commonly used in food and cosmetic product have been assayed. These are: methyl paraben, a preservative in cosmetics; sodium borate, an additive in food mostly used in "bakso"; and tertier butanol, an additive in petroleum. The heme degradation were assayed by red blood cell hemolysis test, UV-spectrophotometry titration toward normal hemoglobin, fetus hemoglobin and diabetes hemoglobin. The ROS candidate then assayed by fluorometry. The results showed that these three additive are not reactive oxygen species.

Key words: ROS, hemoglobin, methyl paraben, sodium borate, ter-butanol

[P-15]

Implementation of ARIMA Model to Predict the Waters Quality Based on Macrobenthos Abundance

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Abstract

One indicator of pollutions that affect the quality of the waters is macrobenthos abundance. The more macrobenthos abundance will indicate the better of the waters quality. Understanding spatial and temporal distribution of macrobenthos abundance has become an important part of research in the field of ecology. Here will be discussed application of the method of autoregressive integrated moving average (ARIMA) to predict the waters quality by using data macrobenthos abundance. From the simulation results found that forecasting using autoregressive integrated moving average method with the model of ARIMA (0,1,1) is obtained the smallest value of the mean square deviation (MSD). In this case indicates that the best forecasting models with ARIMA method to predict the waters quality for the coming period is the ARIMA (0,1,1).

Keywords: Forecasting, *ARIMA, MSD*, macrobhentos, waters quality

[P-16]

Effect of Growing Season on Growth and Relation of Height and Above Ground Biomass of *Avicennia marina*

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Abstract

Relation of height of seedling stands and above ground biomass is an important indicator of successful stand establishment and effectivity of carbon cycle which required further study. This research aimed to study the growth level of *Avicennia marina* seedling planted in dry season and rainy season and to analyse the relation of mangrove stand height to above ground biomass of seedling for each season. This research was conducted through field experiment involving grouped random design including group of seedling plantation in dry season and rainy season with 40 replication for each group and 6 months of experiment period. Data collection including stand height and above ground biomass, followed by data analysis on the relation of seedling height and above ground biomass. The result showed that the growth of mangrove stand planted in rainy season was better than those planted on dry season. Average height of mangrove *Avicennia marina* stand planted in dry season was 30,5 ± 7,3 cm while stand height of mangrove planted in rainy season was 42,7 ± 11,4 cm. Above ground biomass data showed the average of 4,1 ± 1,8 gr in the dry season treatment group and 6,6 ± 2,5 gr in the rainy season treatment group. Regression analysis on the relation of stand height and above ground biomass of *Avicennia marina* seedling showed that the above ground biomass was significantly affected by stand height both for dry season and rainy season treatments. But, there was a difference on the determination index and the coefficient of the effect on each treatment groups. The relation of stand height and above ground biomass was $Y = 0.1871 \cdot X^{0,8832}$ with $R^2 = 0.2802$ for the dry season group and $Y = 0.0506 \cdot X^{1,2892}$ with $R^2 = 0.743$ for the rainy season group. .

Key words: *Avicennia marina*, height, above ground biomass, seedling, seasons

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