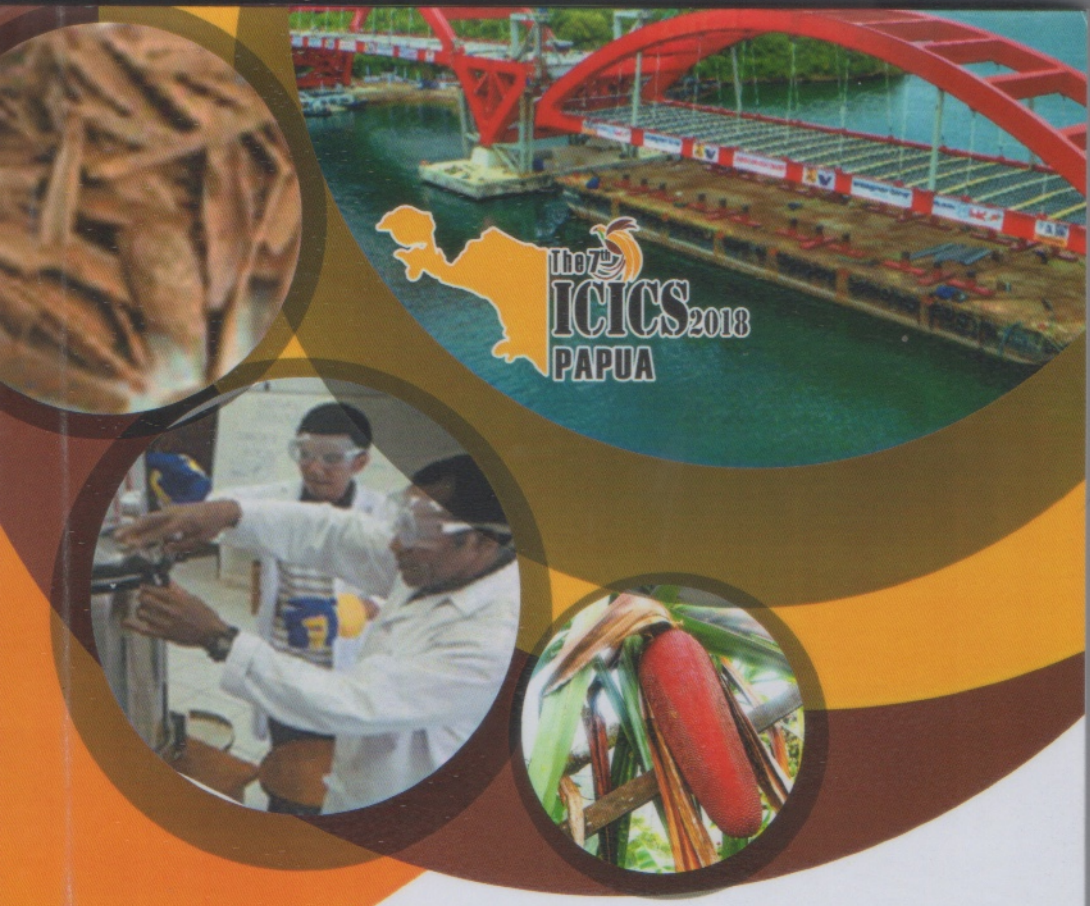

Program and Abstract Book

THE 7th INTERNATIONAL CONFERENCE OF THE INDONESIAN CHEMICAL SOCIETY (ICICS) 2018

"Indonesia and Papua's Natural Resources For the World Welfare"

September 24-27th, 2018
Jayapura - Papua

Organized by :

Himpunan Kimia Indonesia

Supported by :

PT Freeport Indonesia

bp

BANK PAPUA
Bersama Papua Membangun Negeri

PREFACE

On behalf of the conference organizing committee, we are happy to present the Book of Abstract of the Seventh Indonesian Conference of the Indonesian Chemical Society (ICICS 2018). The organizing committee of the ICICS 2018 is highly pleased to have nearly seventy abstracts submitted to the Conference. The ICICS's annual event is organized jointly by Indonesian Chemical Society and Regional branch manager of the Indonesian Chemical Society. This year, 2018, officials from the Papua and West Papua branches were elected as organizers of this international chemical conference. We are highly honored to host the event here in Jayapura, Papua.

The aim of the ICICS 2018 is to promote interdisciplinary researches in chemical sciences and technology, to encourage the development of chemical sciences and technology for sustainable development, and disseminate research in various fields of chemistry, natural sciences, and its related. The main theme of the ICICS 2018 is " Indonesia and Papua's Natural Resources for the World Welfare", with sub-themes "Sciences for Sustainable Development". The conference deals with Chemicals and Natural Sciences to fundamental and applied researches, including all scopes and topics that are organic chemistry, inorganic chemistry, analytical chemistry, environmental chemistry, health sciences, biosciences and biotechnology, pharmaceutical sciences, material sciences, mathematics, and computational chemistry.

Finally, we would like to express our gratitude to Rector of University of Cenderawasih, Dean of Faculty of Mathematics and Natural Sciences and all of the sponsors for financial support and as a main sponsor of this event and thank the

keynote and invited speakers as well as participants for their contribution in making the conference success. As general chairperson, I highly appreciate the great effort of the members of the organizing committee whose hard work really made it possible to have this conference.

Jayapura, September 26, 2018

Yohanis Ngili
Chairperson, ICICS 2018

Organizing Committee Members

Dr. Frans A. Asmuruf

Dr. Yohanis Ngili

Yane Ansanay, Ph.D

Agnes E. Maryuni, M.Si

Septiani Mangiwa, M.Si

Alfhons D. Sirampun, M.Si

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Organizing Committee Members

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Dr. Ilham Salim, M.Si

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Dr. Supeno

Darwanta, M.Si.

Suwito, M.Si

Sriyanto, M.Si

Dr. Albaiti, M.Pd

Alex A. Lepa, M.Si

Jukwati, M.Si

Frans Kafiar, M.Si

Catur F. Djarwo, M.Pd

Irwandi Y. Suaka S.Pd., M.Pd

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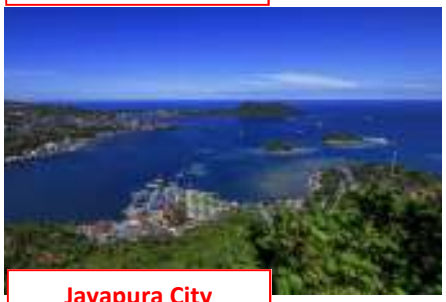
CONTENT

Sentani Airport

Sentani Lake

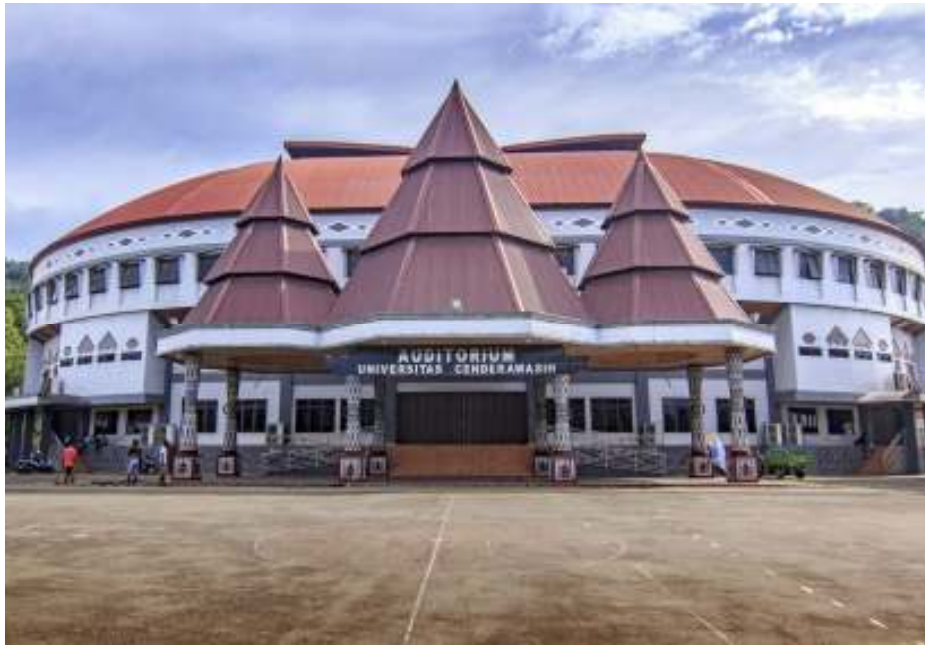


Jayapura City

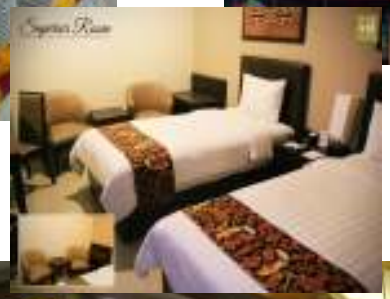
welcome

to

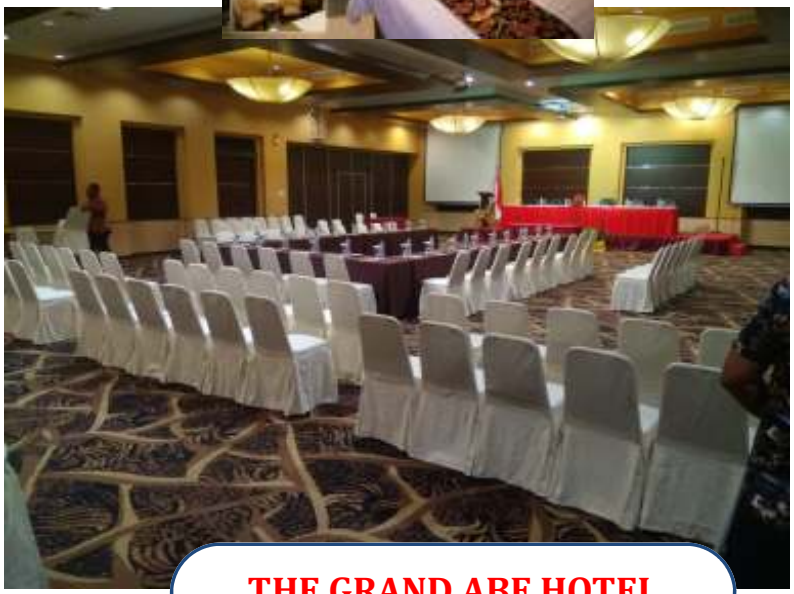
JAYAPURA



UNIVERSITY OF CENDERAWASIH



VENUE



THE GRAND ABE HOTEL

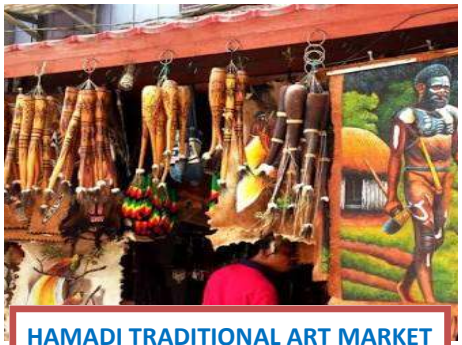
Wonderful places to Visit while in Jayapura

HOLTEKAM BRIDGE

LOVE LAKE

HOLTEKAM BEACH

BORDER



HAMADI TRADITIONAL ART MARKET

WELCOMING SPEECH

FROM CHAIRPERSON OF THE ORGANIZING COMMITTEE

Distinguish guests

1. Rector University of Cenderawasih, Dr. Ir. Apolo Safanpo, ST., M.T
2. Dean of Faculty of Mathematics and Natural Sciences, Dr. Dirk Y.P. Runtuboi, M.Kes
3. Head of Research and Community Services (LPPM) University of Cenderawasih, Dra. Rosye Tanjung, M,Sc., Ph.D
4. Keynote Speakers, Invited Speakers, Participants, Sponsorships, ladies and gentlemen.

Good morning and May Good be with us

It is my great privilege to greet you all to the 7th International Conference of the Indonesian Chemical Society (ICICS) 2018, Advances in Chemical Science: Indonesia and Papua's Natural Resources for the World Welfare, held in Indonesian Chemical Society region Papua and Papua Barat along with Department of Chemistry Faculty of Mathematics and Natural Sciences University of Cenderawasih, Jayapura, Indonesia. I realize that you are all fully dedicated to sessions that will follow, but do hope that you all will also take time to enjoy our fascinating Jayapura, with its cultural trade mark, city of culture, batik as well as its multicultural people.

Ladies and gentlemen, I recognize that this conference is principally designed to enhance the contribution of chemical science to development of the other applied sciences related towards a more sustainable use of chemical substances and natural resources. With this fast development of studies and researches on chemical topics, we realize that chemistry highly contribute to applied sciences and sectors, including medicine, pharmacy, agriculture, veterinary, and food as well as health industries. In this case, I am very alert to the increasing needs to understand chemistry in respect to biodiversity , rom molecular to ecosystem beneficial in the improvements of human prosperity. Therefore, I wish that this event will be a great opportunity and a wonderful venue for us to lay down a cooperative framework and to establish scientific collaboration between scientists internationally. An impressive roster of distinguish speakers and attendants from Japan, USA, Thailand, and Indonesia has been gathered in this conference.

Hereby, on behalf of the Organizing Committee, I acknowledge Prof. Nishikagi M. Toshiaki, Ph.D (Chairman of Tokyo Noni Research Centre, Japan), Prof. Dr. Supa Hannongbua (Kasetsart University, Thailand), Prof. Dr. Piyarat Boonsawang (Prince of Songkla University, Thailand), Tatas H.P Brotosudharmo, Dipl.Chem., Ph.D (Machung University, Indonesia), and Frans A. Asmuruf (University of Cenderawasih, Indonesia) as keynote speakers, and also to these following invited speakers: Prof. Dr. Yana Maolana Syah (Institut Teknologi Bandung), Dr. Agus Kuncaka, DEA (Universitas Gadjah Mada), Prof. Dr. Harno Pranowo (Universitas Gadjah Mada), Prof. Ni Nyoman Tri Puspaningsih (Universitas Airlangga), Prof. Dr. Drh. Maria Bintang (Institut Pertanian Bogor), Dr. Hendra Wijaya (Center for Agro Based Industry), Dr. Yusthinus Thobias Male (Universitas Pattimura), and Maureen G. Kumaunang, M.Si (Prince Songkla University/Universitas Sam Ratulangi) for delivering their valuable scientific information.

To make this program happen, I would like to gratefully acknowledge to valuable contributions from institutional sponsorship and funding including Government of Keerom regency, Government of Jayapura city, PT. Freeport Indonesia, PT. LNG BP Indonesia, Rector Universitas Cenderawasih, Department of Mathematics and Natural Sciences Universitas Cenderawasih, Papua Bank, beloved seniors Dra. Elizabeth Holle, M.Si and Drs. I Made Budi.

I also gratefully thank to the Indonesian Chemical Society and Dean and Vices Dean of Faculty of Mathematics and Natural Science, University of Cenderawasih for giving us opportunity and support to organize this conference. Heartfelt thank is delivered to the Steering Committee, the Academic Reviewers, members of the Organizing Committee for their strong support, active participation, cooperation, and hard works throughout this year in preparing and organizing this meaningful meeting and to those who have contributed their untiring effort in making this conference success.

Despite our best efforts, it is inevitable that there is a lack in organizing this conference and profoundly apologize to all speakers, oral and poster presenters, attendants, donators, and committee members. Finally, I would like to offer my best wishes for a highly enjoyable, successful, productive and fruitful conference.

Thank you

Yohanis Ngili

OPENING REMARKS FROM RECTOR

UNIVERSITY OF CENDERAWASIH

Distinguished guests, ladies and gentlemen,

On behalf of the University of Cenderawasih, I wish to congratulate and express my gratitude to the Faculty of Mathematic and Natural Science and to the Organizing Committee of the 7th International Conference of the Indonesian Chemical Society (ICICS) 2018: Advances in Chemical Science: Indonesia and Papua's Natural Resources for the World Welfare for succeeding this conference. My sincere thanks are also addressed to Dean of Mathematics and Natural Science, Head of Department of Chemistry-University of Cenderawasih, Prof. Nishikagi M. Toshiaki, Ph.D (Chairman of Tokyo Noni Research Centre, Japan), Prof. Dr. Supa Hannongbua (Kasetsart University, Thailand), Prof. Dr. Piyarat Boonsawang (Prince of Songkla University, Thailand), Tatas H.P Brotosudharmo, Dipl.Chem., Ph.D (Machung University, Indonesia), and Frans A. Asmuruf (University of Cenderawasih, Indonesia) as keynote speakers on this conference, all invited speakers to support this conference.

Chemistry is a core of fundamental science and the contribution of the applied chemistry sectors on the national economic development for Papua and Indonesia needs to be strengthened through the effort of developing prospective domestic and export of potential chemicals, biodiversity, and biotechnology products as mentioned in this conference theme. We still have some problems in chemicals, biodiversity, and biotechnology sector and that is why, this conference is now being conducted.

I wish the meeting will be successfully bring the audience to exchange and brainstorm the sciencific knowledge in order to provide valuable results for supporting the national biodiversity and biotechnology development. I also strongly hope that some ideas produced in conference will be applied for practical application of chemistry in Papua and Indonesia in near future.

Thank you and have a nice conference

Dr. Ir. Apolo Safanpo, ST., MT

Rector of University of Cenderawasih

PROGRAM SCHEDULE

THE 7th INTERNATIONAL CONFERENCE OF THE INDONESIAN CHEMICAL SOCIETY

ROOM : BALLROOM

Time	Activities
08.00-09.00	Registration and Coffee Break
09.00-09.10	Singing of Indonesian Anthem
09.10-09.15	Speech by Chairperson of ICICS 2018 Committee
09.15-09.20	Speech by Chair of the Indonesian Chemical Society
09.20-09.25	Papua Traditional Dance Performance
09.25-09.35	Speech by Rector of Cenderawasih University followed with Opening ceremony
09.35-09.45	Opening dance by "Honong Dance Group'
09.45-10.15	PLENARY SESSION 1. Prof. Dr. Supa Honnangbua Moderator: Yohanis Irenius Mandik, Ph.D
10.15-10.45	PLENARY SESSION 2. Tatas H.P. Brotosudharmo, Dipl. Chem., Ph.D Moderator: Yane O Ansanay, Ph.D
10.45-10.50	Papua Traditional Dance Performance
10.50-11.20	PLENARY SESSION 3. Prof. Dr. Piyarat Boonsawang Moderator: Yohanis Irenius Mandik, Ph.D

Time	Activities
11.20-11.50	PLENARY SESSION 4. Dr. Frans Asmuruf Moderator: Octolia Togibasa, Ph.D
11.50-12.20	PLENARY SESSION 5. Nishigaki M. Toshiaki, Ph.D Moderator: Maria Simonapendi, M.Si.
12.20-13.20	Lunch Break and Poster Session
13.20-14.50	PARALLEL SESION 1
14.50-15.00	Coffee break
15.00-17.00	PARALLEL SESION 2
17.00-17.15	The best Oral Presenter announcement
18.30-finish	Closing ceremony and Gala Dinner Hosted by Mayor of Jayapura City

Closing ceremony and Gala Dinner Schedule

Time	Activities
18.30-18.35	Speech by Head of ICS Branch of Papua
18.35—18.40	Closing Speech by the Chairperson of the ICICS 2018
18.40-18.50	Closing Ceremony by the Mayor of Jayapura City
18.50-19.15	- Signing MoU Between Indonesian Chemical Society and Thailand Chemical Society - Awards
19.15-	Dinner with the Mayor of Jayapura City

ORAL PRESENTATION SCHEDULE

ORGANIC CHEMISTRY & EDUCATION OF CHEMISTRY

Room: NAFRI 1

No.	Time	Code	Presenter	Title
1.	13.00-13.30	IS01	Prof. Yana M. Syah	Some Studies of Phytochemistry and Biological Properties of Three Indonesian Meliaceae Species
3.	13.30-13.40	OP01	Yanti	Chemical Profiling of Essential Oil From *Zanthoxylum Acanthopodium* Fruits And Its Antidiabetic Effect *In Vitro* And *In Vivo*
4.	13.40-13.50	OP02	Bambang Purwono	Synthesis And Activities Test Of Curcumin Analogues Derivatives As Anti-Malarial Agents From Vanillin
5.	13.50-14.00	OP03	Elvira Hermawati	Secondary Metabolites From One of The Indonesian Medicinal Plants : Leaves of *Desmodium triquetrum* Linn. (Fabaceae)
6.	14.00-14.10	OP04	Meiske Sangi	Determination of Total Phenolic Content and Antioxidant Activity from Several Fractions Ofaren's (*Arenga Pinata*) Mid-rib Flour
7.	14.10-14.20	OP05	Max R.J Runtuwene	Phytochemicals Content and Antioxidant Activity of Some Traditional Medicinal Plants of Sangihe Ethnics in North Sulawesi Province
8.	14.20-14.30	OP06	Dionysius Subali	GC/MS Identification of Tempeh Oil and Its Antiphotoaging Effect in UVB-induced

No.	Time	Code	Presenter	Title
8.	14.30-14.45	OP07	Effendi	Development of Basic Chemical Module of Thermodynamical Material with Stem Problem-Based Learning Approach for Study Program of Chemical Education Problem
9.	14.45-14.50	OP08	Florida Doloksaribu	Reconstruction of Basic Chemistry Modul Based on *Brainstorming Interactive* (BRAIN) to Enhance *High Order Thinking Problem Solving Papua* Chemical Education Students
10.	15.00-15.10	OP09	Daniel	Synthesis of 0-Carboxymethyl N-Palmitoil Chitosan Which Useful As An Edible Coating Film Through Interesterification and Amidation Reactions From Fatty Acid
11.	15.10-15.20	OP10	Suyanta	The Effect of Problem Based Learning Method on Students' Learning Independence of Chemistry Learning in High School
12.	15.20-15.30	OP11	A Albaiti	Increasing the Students Critical Thinking Skill Through Voltaic Cell Laboratory Activities Based on Their Mental Model
13.	15.30-15.40	OP12	Kasmudin Mustapa	The Effect Of Cooperative Learning Model Type Review Course Hooray (CRH) And Jigsaw Motivation and Learning Outcomes in the Redox Materials Subject on Chemistry Education Tadulako University
13.	15.40-15.50	OP13	Septiani Mangiwa	Phytochemical Screening and Antioxidant Activity of Methanolic Extract of Arabica Roasted Coffee Beans from Wamena and Moanemani
14.	15.50-16.00	OP14	Supriatno	Cytotoxic Limonoids from The Stembark of *Chisocheton pentandrus* (Meliaceae)

INORGANIC CHEMISTRY & PHYSICAL CHEMISTRY

Room: NAFRI 2

No.	Time	Code	Presenter	Title
1.	13.00-13.30	IS02	Prof. Dr. Harno Dwi Pranowo	Curcumin Analogues as Potential Anti-Inflamatory Study of Molecular Docking, Synthesis and in Vitro
2.	13.30-14.00	IS03	Dr. Agus kuncaka, DEA	Synthetic Humus (Slow Release of OrganicParamagnetic Fertilizer) As The Best Alternative to overcome Food Crisis Caused by World Population Explotion
3.	14.00-14.10	OP15	Ilham Salim	Transesterification of Used Cooking Oil into Biodiesel Using NaN3/Modified Clay Catalyst
4.	14.10-14.20	OP16	Henry F Aritonang	Synthesis of Silver Nanoparticles using Leaf Extract of Medicinal Plants and Analysis of Antimicrobial Activity
5.	14.20-14.30	OP17	Alex Lepa	The effect of Reaction Time of Hydrothermal Process on Modification of Natural Zeolite to Zeolite with Ratio of Si/Al = 1
6.	14.30-14.40	OP18	Lukman Atmaja	Pva/Chitosan-Montmorillonite Composite For Fuel Cell Application : Thermal and Physical Properties on Specific Balance
7.	14.40-14.50	OP19	Rikson Asman Fertiles Siburian	Performance of Graphite/Graphana, Manganese (Mn)/Graphite and Mn/ Grapheneas Electrode on Anodeof Primary Battery
8.	15.00-15.10	OP20	Yane O Ansanay	Activated Carbon to improve glucose production from Switchgrass.

No.	Time	Code	Presenter	Title
8.	15.10-15.20	OP21	Yanti Kiding Allo	Synthesis and Characterization of Activated Carbon from Sago Waste (*Metroxylon sagu*) with $ZnCl_2$ Activation And HNO_3 Modification
9	15.20-15.30	OP22	Gesyth Mutiara Hikhmah Al Ichsan	Preparation of Metal (ni,co)mo on supporting Material Indonesian Natural Zeolite
10.	15.30-15.40	OP23	Wahyu Prasetyo Utomo	Preparation and Morphological Property of Co_3O_4/ $Ba_xSr_{1-x}Co_{0.8}Fe_{0.2}O_{3-\delta}$ (x=0.5-0.7) Composite Membranes using Starch as Binder Agent
11.	15.40-15.50	OP24	Irdhawati	Anodic Stripping Voltametri for Determination Lead (Pb) in Pok Choi Vegetable
12.	15.50-16.00	OP25	Darwanta	Production Fuel From Plastic Waste With Reactor of 50 kg Capacity and Its Performance
13.	16.00-16.10	OP26	Roto Roto	Surface Modification and Characterization of Fe_3o_4@Sio_2 For Recovery of Gold
14.	16.10-16.20	OP27	Rurini Retnowati	Study The Influence of DistillationTime on Component Profile of Sweet Fennel Seeds (*Foeniculum vulgare* Mill. *var. dulce*) Essential Oils and Its Antibacterial Activity against *Staphylococcus aureus*
15.	16.20-16.30	OP28	Diana M Abulais	The Effect of Loading Zinc Oxideto The Surface Supported by Magnesium Fluoride

ANALYTIC AND ENVIROMENTAL CHEMISTRY

Room: YOKA 1

No.	Time	Code	Presenter	Title
1.	13.00-13.30	IS 04	Dr. Hendra Wijaya	Isolation of α-Carotene, β-Carotene, α-Cryptoxanthin, and β-Cryptoxanthin from Red Fruit Oil (*Pandanus Conoideus* Lam) by Open Column Chromatography (OCC), Flash Column Chromatography (FCC) and Preparative Column Chromatography (PCC)
	13.30-14.00	IS05	Yusthinus Thobias Male	Mercury Contamination from Artisanal Gold Mining in Buru Island , Indonesia
2.	14.00-14.10	OP29	Mohamad Rafi	FtIR And Uv-Vis Spectrum Combined With Chemometrics For Identification And Authentication Method Of Some Medicinal Plants
3.	14.10-14.20	OP30	Allwar	Adsorbtion of Phenol and 2-Clorophenol From Aquaeous Soluition by Activated Carbon Derived from Banana Empty Fruit Bunch by Hydrothermal-assisted KOH Activation
4.	14.20-14.30	OP31	P de Rozari	An Investigation Into The Use of Sand Media Planted With *Thypa Latifolia* In Constructed Wetland Ecotechnology In Removing Organic Matter, Suspended Solids And Nutrients From Domestic Wastewater
5.	14.30-14.40	OP32	Indra Ajie Gunawan	Characterization of The Dominant Carotenoids in Red Fruit Oil by Chromatography and Spectroscopy Techniques
6.	14.40-14.50	OP33	Dyah Iswantini Pradono	Chemical Profiling of Two Medicinal Plants, *Kaempferia rotunda* and *Garcinia cambogia*, using UPLC/QTOF-MS

No.	Time	Code	Presenter	Title
7.	15.00--15.10	OP34	Khairul Anam	Drying Influence of Extract on Chemical Content and Xanthine Oxidase Inhibition of *Avicennia Marina*
8.	15.10-15.20	OP35	Julius Pontoh	Extraction and characterization of fish oil from various parts of snakehead fish (*Channa striata*)
9.	15.20-15.30	OP36	Hubertus Ngaderman	Fabrication and Modeling Solar Cell using Gowok Fruit *(Syzygium polycephalum)* as Sensitizing and deposition TiO_2 exert Spin Coating Technique
10.	15.30-15.40	OP37	Hendrik O. Lintang	Vapors Induced Phosphorescent Changes in Molecular Self-Assembly of Copper Pyrazolate Complexes for Chemical Sensors of Methanol to Hexanol
11.	15.40-15.50	OP38	Leny Yuliati	Study on the Interactions between Nitrites, Nitrates, and Graphene Oxide as a Fluorescence Sensor
12.	15.50-16.00	OP39	Meliana Wahyuningtyas	Standardization of Extraction Methods of Gelatin From *Lutjanus Sp. S*cales
13.	16.00-16.10	OP40	E. Haryati	The Influence of Calcination Temperature to Mineral Composition in The Mangrove Crab Shells (Scylla

No.	Time	Code	Presenter	Title
14.	16.10-16.20	OP41	Jhon D. Kalor	FISH DIVERSITY OF MANGROVE ECO-SYSTEM IN DEMTA GULF JAYAPURA PAPUA
15.	16.20-16.30	OP42	Hendrawan	Preparation and Physico-Chemical Properties of *Gracilaria*/PVA/GA/CNT-Based Hydrogel for Slow/Controlled Release Material

BIOCHEMISTRY

Room: Yoka 2

	Time	Code	Presenter	Title
1.	13.00-13.30	IS06	Prof. Dr. Maria Bintang, M.,S.	Exploration of Endhophytic Bacteria to Produce Bioactive Compounds
2.	13.30--14.00	IS07	Prof. Dr. Ni Nyoman Tri Puspaningsih	Improving the Value-Added Agriculture Biomass By Enzymatic Bioconversion
3.	14.00-14.30	IS08	Maureen G. Kumaunang, M.Si.	Selection of Promising Hydrolytic Halo-tolerant Producing Bacterialin the Sea-food Fermentation Technology
4.	14.30-14.40	OP43	Verena Agustini	Antibacterial Activity of Three *Den-drobium*speciesfrom Papua Against *Eschericia coli* and *Staphylococcus au-reus*
5.	14.40-14.50	OP44	I Made Sukadana	Preclinical Trials of Anti-Atherosclerotic Extract of Inocarpus Fagiferus Fosb Seeds In Bali
6.	15.00-15.10	OP45	Alowis-ya.Futwembun	Antioxidant Activity Test of Extract In-fusion from Stem of Yellow Rope (*Archangelsia.Flava*.(L)Merr)
7.	15.10-15.20	OP46	Eva Susanty Simaremare	Anticoagulan Activity of Ethanolic Ex-tract Stingging Nettle *(Laporteaaestuans (L) Chew) from Biak*
8.	15.20-15.30	OP47	Henderina J Keiluhu	*Victoria Ground Pigeon*(*Goura victoria*) and Their Food Plants in The Nim-bokrang Forest Areaof Jayapura-Papua

No.	Time	Code	Presenter	Title
9.	15.30-15.40	OP48	Susilo TB	Population Analysis of D-loop mtDNA Buffalo (*Bubalus bubalis & Syncerus caffer*) Sequences From Gen-Bank DDBJ
10.	15.40-15.50	OP49	Rani Dewi Pertiwi	Antibacterial Activity of Daun Afrika Extract (Vernonia Amigdalina) Papua to Staphylococcus aureus and Escherichia coli Bacteria
11..	15.50-16.00	OP50	Elsye Gunawan	Test Anticoagulant Activity Ethanol extract daun jilat *(Villebrunea rubescens)* Against Human Blood
12.	16.00-16.10	OP51	Yohanis Ngili	Mitochondrial genome mutation analysis: Papuan mtG comparation with several GenBank sequence data on gene control and encoding regions
13.	16.10-16.20	OP52	Supeni Sufaati	Nutrition and antioxidant properties of *Pleurotus sajur-caju* Mushroom from Jayapura, Papua
14.	16.20-16.30	OP53	Yohanis I Mandik	Charaterization of Microalgae from Freshwater Pond of Buper Jayapura and from Seawater of Harlen Beach Jayapura Based on Their Lipids, Chlorophylls, Protein, and Carbohydrate Contents
15.	16.30-16.40	OP54	Agnes Eri Maryuni	Coconut Oil Production via Coconut Cream Fermentation by *Lactobacillus bulgaricus*

POSTER PRESENTATION LIST

No.	Code	Name	Title
1.	PP01	Matheis FJDP Tanasale	Preparation of chitosan with variations of molecular weight and its effect on depolymerization of chitosan with hydrogen peroxide using microwave technique
2.	PP02	M. Miqdam Musawwa[1]	Synthesis of magnetite/TiO_2-Cu as recoverable and sensitive photocatalyst under visible light radiation
3.	PP03	Nurcahyo Iman Prakoso	Study and Formulation of Anionic Surfactant for Enhanced Oil Recovery
4.	PP04	Tatang Shabur Julianto	The Influence of Fermentation Time and Cellulase Enzym Volume of Oyster Mushroom Stem at Bioethanol Production from Rice Straw Using Simultaneous Saccaharification and Fermentation (SSF) Method
5.	PP05	Wiyogo P. Wicaksono	Green Synthesis of Gold-Palladium Core-Shell Nanoparticles (Au@Pd CSNPs) Using Citrus Peel Extract
6.	PP06	Henry Fonda Aritonang	Antimicrobial of bacterial cellulose/ZnO/Ag Nanocomposite Membrane
7.	PP07	Irmanida Batubara	Extract of Zingiberaceae Leaves Steam Distillated Residue as Anti-bacterials and Biofilm Degradator
8.	PP08	Noor Fitri	The Extraction of Antocyanin Pigment from Eggplant Peels (*Solanum melongena L.*)and Its Application as Natural Acid Indicator
9.	PP09	Sri Handayani	Quality Test of Natural Bath-Soap with Clove Oil and Its Antibacterial Activity Against Staphylococcus Epidermidis

10.	PP10	Cecep Sa'bana Rahmatillah	Improving Waste Management performance of Laboratory Indonesian Islamic University (UII) Using Techniques Activated Carbon Adsorption and Coagulation with Aluminum Poly
11.	PP11	Tohari	Active Charcoal Effectiveness Of Leather Cassava As Cu Ion Adsorbent In Waste Water at Integrated Laboratory Indonesian Islamic University (UII)
12.	PP12	Norra Gus Priambodo	Optimization of Distillation Ginger Emprit using Methods of Boil And Modifications
13.	PP13	Is Fatimah	Physicochemical Evolution of Silica from Salacca Leaves for Adsorption
14.	PP14	Johnly Alfreds Rorong	Analysis Of Ferrous Ion Species In *Cinnamomum burmanii* Leaves As Biosensitizer In Iron Photoreduction Process Using Fluorocent Light
15.	PP15	Yati Maryati	Emulsification for Formulation of Natural Folic Acid Supplements prepared from Soybean Tempe (*Glycine soya L.*) and Fermented Spinach (*Amarantus sp*) for the Needs of Pregnant Women
16.	PP16	Dede Sukandar	Identification of Chemical Content and Activity of Essential Oil of Citronella Wangi (*Cymbopogon nardus*) Against *Staphylococcus aureus* and *Escherichia coli* Bacteria
17.	PP17	Iwan Aminudin	Efectivity and Characteristic Citronella (*Cymbopogon nardus* L.) Oil Lotion as Mosquito Repellent
18.	PP18	Habibi Hidayat	Antibacterial Activity Test of *Klebsiella pneumonia* from Tomato Fruit Extract *(Solanum lycopersicum L.)* as a prevention of Pneumonia

No.	Code	Name	Title
19.	PP19	Lilis Siti Aisyah1	Antibacterial Activity of Some Extracts (*Kalanchoe millotii)*
20.	PP20	Fri Rahmawati	Phytochemical and Bioactivity of Ethanol Extract of Cauliflower (*Brassica Oleracea* Var. Botrytis)
21.	PP21	Euniche R.P.F. Ramandey	Comparison of Phyllogenetic MSP 1 Jayapura, Papua and Central Sumba, NTT
22.	PP22	Dwi Hudiyanti	Determination Encapsulation Efficiency Beta Carotene and Vitamin C In Liposomes of Coconut
23.	PP23	Parsaoran Siahaan	Inhibiting of Interaction between E-Cadherin...E-Cadherin Protein by Cyclic Peptide ADTC4 (Ac-CDDTPC-NH_2) Inhibitor Simulated on 120 ns
24.	PP24	Purbowatiningrum R Sarjono	ANTIOXIDANT ACTIVITY FROM METABOLITE OF *Carica papaya* ENDOPHYTIC BACTERIA
25.	PP25	Yusmaniar	Adsorption of Eosin Y Dyes Using Modified Silica Gel Composites 3-aminopropyltriethoxysilane (APTES) - Active Carbon from Natural Resources
26.	PP26	Maria Prastiowati	Analysis of Students Authentic Assesment in Chemistry Through Flipped Classroom Model
27.	PP27	Winarto Haryadi	THE SYNTHESIS OF 2'-HYDROXY-4-METHOXYCHALCONE, 4'-METHOXYLAVONE, 2'-HYDROXY-4-CHLOROCHALCONE AND 4'-CLOROFLAVANONOL AND THEIR *IN VITRO* ACTIVITY TEST
28.	PP28	Dewa Gede Katja	Phytochemical and antioxidant ACTIVITIES IN EXTRACT n-hexan, Ethyl Acetat and Methanol SKIN BTANG Chisoceton sp.(Meliaceae)
29.	PP29	Wahyuni Karunia Dewi	Mechanical and Chemical Characteristics of Carrageenan Based Edible Film from Red Seaweed (Euchema sp.) from Biak (Papua) with Sorbitol as Plastisizer

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ABSTRACTS OF KEYNOTE SPEAKERS

KS01

3D-Molecular Structural Databases from Thai Natural Products and its Applications in Drug Discovery Research

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Southeast Asia has been rich of biodiversity, therefore, Natural products have increasingly attracted much attention as a valuable resource for the development of bioactive compounds for drug discovery and development as medicines due to the structural novelty and good bioavailability. Digital technology provides opportunity to the collection of molecular structures of bioactive compounds from Natural products with the physico-chemical properties obtained from both experimental and calculated data. This necessitates a comprehensive database for the natural products and the fractional extracts whose biological activities have been verified. The first structural database of Thai medicinal plants, **Chemiebase**, has been built as a platform for virtual screening, using knowledge from Thai traditional medicine and consisted of about 4,000 active compounds. Some examples using data from this database and other computer-aided molecular design methods to rationalize Thai traditional medicine are also presented, starting with virtual screening exercised on anti-SARS Corona Protease, anti-HIV-1 reverse transcriptase, anti-HIV-1 protease, anti-influenza A neuraminidase, and anti-cyclooxygenase (COX), candidates. The second example consists of the use of molecular modeling to propose drug mechanism for anti-tumor compounds, anti-TB, anti-Alzheimer, etc. The database has been successfully used to screen for novel active compounds. Therefore, extension of this database can be done by addition of reported bioactive compounds from Thailand such as Mushrooms as well as other regions in Malaysia and Indonesia. At the end, data science and analytics using this available database can be benefit to an advancement of Natural Products for future drug discovery against emerging diseases in more effectiveness and efficient to the well being of mankind.

Keywords: Natural products, molecular databases, bioactive compounds, tropical diseases, molecular modeling, computational chemistry

K02

Carotenoids from the Indonesian Exotic Species

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Carotenoids are a family of yellow to orange-red pigments, structurally consisted of 40-carbon atom to form 8-isoprene skeletons. Currently there are more than 500 carotenoid structures have been fully elucidated. Carotenoids are very interesting system. Their conjugated double-bond system determines the light-absorption properties and chemical reactivity that form the basis of most functions. Specifics interactions with other molecules in the immediate vicinity strongly influence the properties of a carotenoid and are also crucial to functioning. Carotenoids play important role in the photosynthesis reactions, i.e. to harness the sunlight energy, to transfer the excited energy to chlorophylls, and responsible for photo-protection such as in protection against UV- and blue-ray, singlet oxygen scavenging and quenching of chlorophyll triplet states. Our group works in determination of carotenoids from Indonesian natural resources, e.g. red fruit (*Pandanus conoideus*), a n indigenous plant in Papua Island, marigold flower (*Tagetes erecta* L.), a religious significant flower of Balinese Hindus, brown algae (Phaeophyceae), and a coral endophytic symbiont (*Erythrobacter* sp.). We are working with carotenoids such as as b-carotenone, semi-b-carotenone, lutein, fucoxanthin, and sulfated carotenoids. In this presentation, we would like to introduce the wide variety carotenoid, functions in photosynthesis reaction and functions in human health, efforts to determine the structure in various indigenous species, and the study about its aggregation properties in organic solvent, nanoparticles and in the native pigment-protein complex.

Keywords: aggregation, carotenoid, chromatographic separation, spectroscopic determination

K03

Biogas Purification Using Biofiltration System

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Abstract

Hydrogen sulfide (H_2S) is one of the major problems in biogas utilization because it is highly corrosive gas and damages the equipment including pipelines, cogeneration engines, and microturbine units. During the anaerobic digestion of sulfate rich feedstock, H_2S can be generated ranging from 1000–30000 ppmv. Therefore, the biogas cleaning is critically important for its diverse end use. Biofilter system is a promising biological method for H_2S removal due to several merits including low energy consumption, ease of process scale-up, and low operating and capital costs. In this process, the polluted gas is passed through packing media in a bioreactor, which the liquid is continuously recirculated through the packing media. The recirculation media provides moisture, nutrients, pH control to the biofilm, and allows the removal of inhibiting products. Sulfur oxidizing bacteria (SOB) are the key microbial group involved in biological oxidation of sulfide into elemental sulfur (S^0) and/or sulfate (SO_4^{2-}) in biofiltration system. The efficiency for H_2S removal and type of the end products depends on many factors including oxygen/sulfide ratio, the initial H_2S concentration, type of packing material, the microbial consortium, empty bed retention time.

Kerwords: biogas, purification, biofiltration

K04

Quantum Chemical Calculations of The Spectroscopy of Core Electrons

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The spectroscopy of core electrons is attractive for several reasons. The spatially local nature of the core orbitals and large energy difference between the core orbitals of different elements means that the spectroscopic techniques can provide an atom specific probe of electronic structure. Recent advances in X-ray sources have led to a renaissance in spectroscopic techniques in the X-ray region. These techniques that involve the excitation of core electrons can provide an atom specific probe of electronic structure and provide powerful analytical tools that are used in many fields of research. Theoretical calculations can often play an important role in the analysis and interpretation of experimental spectra. In this perspective, we review recent developments in quantum chemical calculations of X-ray absorption spectra, focusing on the use of time-dependent density functional theory to study core excitations. The practical application of these calculations is illustrated with examples drawn from surface science, bioinorganic chemistry, and large systems such as fullerenes.

Keywords: quantum calculations, core electrons, TDDFT, spectroscopy

K05

Buah Merah (*Pandanus conoideus*) from Papua, Indonesia

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It was in August of 2005 when I could visit Papua first time. Papua is Paradise-Bird island rich in natural resources covered with dense unexplored forest and surrounded by blue sea. There are more than 200 native tribes who are our human ancestors of Homo-Sapiens reached to this island 60,000 years ago. A part of Papuan people might move to Japan 20,000 years ago and become Jyomon-jin, ancestors of our present Japanese.

When we fly from Sentani airport to higher mountain area, we arrive at Wamena in Baliem valley, which looks like Shangri-La and completely different country introduced to the world in 1938. People in Baliem valley have been surviving under the severe environments for at least 30,000 years. Now it is well-known that the secret food for their survival under cold climate and poor animal origin foods is Buah Merah, Red fruits. Buah Merah is exclusively naturally grown in Papua.

Immediately after I encountered Buah Merah in Baliem valley in 2005 and I had decided this fruit must be my second subject to study in my remaining life following after Mengkudu. Buah Merah put on fire to my curiosity.

In 2006, our Buah Merah co-working team with Nagasaki University in Japan disclosed the richest presence of novel micronutrients, beta-cryptoxanthin as well as alfa- and beta-carotene, and alfa-cryptoxanthin. This was the first discovery in the world.

We also demonstrated that the entire profile of nutrition in Buah Merah oil and revealed rich in quality oil including Omega-3, 6 and 9 and vitamin E and beta-phytosterol. Ingredient rates of Buah Merah oil fatty acids are compatible with those of animal fats. These oil and lipophilic and carotenoids nutrients seem to be essential that Papuan folks living at the higher mountain areas have been surviving for a period of 30 millennium.

At the end of 20 century, intervention studies by excess and synthetic beta-carotene dosage were found to increase in lung-cancer risks. From these results,

the next question occurred what active ingredient in green-yellowish vegetables and fruits to prevent lung cancer was. The answer is beta-cryptoxanthin.

We examined the effects of Buah Merah oil against lung cancers in *in vitro* and *in vivo* studies using human lung cancer cells (H549). Both studies demonstrated inhibitory actions against H549 cellular line. American team disclosed that beta-cryptoxanthin administration to smoking ferrets prohibited squamous metaplasia and cellular signals related to cancer dose-dependently. Almost of all the epidemiological studies suggest beta-cryptoxanthin is a promising micronutrient to prevent lung cancers.

In addition to effect of beta-cryptoxanthin against lung cancer, deficiency of beta-cryptoxanthin is associated with several diseases such as diabetes mellitus, cervical squamous cell carcinoma, rheumatoid arthritis, inflammatory polyarthritis, liver dysfunction, atherosclerosis, esophageal cancer, DNA oxidation damage and so on.

My curiosity moved to the other social problems in beauty and aging in Japan. We have been conducting preliminary studies with human subjects for post-menopausal osteoporosis, *Acne vulgaris* and alopecia. The results suggest that Buah Merah oil can improve these conditions. In *in vitro* study, Buah Merah oil revealed anti-hypermelanogenesis by unique mechanisms.

The above effects of Buah Merah oil shall be confirmed by further researches and clinical trials.

Buah Merah is rare functional and natural fruit exclusively cultivated in Papua and seems to be one of identities of Papua people. Its fruit oil can be properly processed and manufactured in stable and easily accessible forms. Indonesian government recognized the merits of Buah Merah oil and gave an award of Indonesia innovation functional food to Buah Merah oil product at IID 2017 program.

It is my desire that Buah Merah can be contributed to human health as anti-aging supplement in the world and to welfare of Papuan people.

Keywords: buah merah, Papua

ABSTRACTS OF INVITED SPEAKERS

IS01

Some Studies on Phytochemistry and Biological Properties of Three Indonesian *Meliaceae* Species

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Meliaceae is a large plant family, consisting of 46 genera and about 560 species. Among of them, *Lansium domesticum* ('Duku', 'Langsat', or 'Kokosan'), *Sandoricum koetjapi* ('Ketjapi') and *Dysoxylum densiflorum* ('Majegau') are of important species in Indonesia. *Lansium domesticum* and *S. koetjapi* produce edible fruits which of significant economic value to the local people, while *D. densiflorum* is an iconic plant of Bali Island due to the wood is used for constructions of holy buildings. Previous chemical investigation on the three plants showed the presence of typical Meliaceaous secondary metabolites, namely triterpene and limonoids derivatives. Because these plants are endemic in Indonesia, we have an opportunity to do some chemical investigation on these plants: *L. domesticum* var. kokosan (seed and fruit peels), *S. koetjape* (seed, fruit peels, and roots) and *D. densiflorum* (leaves). Twenty six compunds had been isolated, including ten new triterpenes and limonoids, namely kokosanoic acid (**1**) from the fruit peels of *L. domesticum* var. kokosan, koetjapins A-D (**2**-**5**) and koetjapoic acid (**6**) from the seeds and ruit peels of *S. koetjape*, respectively, and a calamenol derivative **7** and densiflorinic acids A-C (**8**-**10**) from the seed and leaves of *D. densiflorum*, respectively. The structures of these compounds were determined mainly by extensive 1D- and 2D-NMR spectra and supported by their high resolution mass spectral data. Preliminary evaluation for antibacterial activity to the isolated compounds showed that most of the compounds exhibited moderate to weak activities, except that the calamenene derivatives (such as compound **7**) gave significant activities to *Bacillus substilis* and *Shigella dysenteriae* (MIC 3.12 mM). The calamenene derivatives were also showed significant inhibition to the growth of brown- and white-rots compare to the

triterpenic acid derivatives isolated from *D. densiflorum*. We also have an opportunity to test the isolates of *D. densiflorum* as an antifeedant against *Coptotermes formosanus* showing that only compound **7** that exhibited strong antifeedant activity. In conclusion, twenty six compounds had been isolated from the three Meliaceous plants of Indonesia, most of which were moderate to weak antibacterials, and only calamenene derivatives isolated rom *D. densiflorum* that showed significant activities against the growth of brown- and white rots and as antifeedant properties.

Keywords: phytochemistry, biological properties, *Meliaceae*

IS02

Curcumin Analogues as Potential Anti-Inflammatory: Study of Molecular Docking, Synthesis and *In Vitro*

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A virtual screening of curcumin analogues was carried out via docking of designed compounds into the COX-2 binding site to predict whether these compounds demonstrate an increased binding affinity to the COX-2 target. The results of the molecular docking studies imply that aromatic rings with electron-withdrawing groups bound to the curcumin ring would generate more potent anti-inflammatory agents, which can serve as potential leads for further anti-inflammatory studies. In particular, the molecular docking study showed that the CH_3O, OH, NO_2, and OCH_2O substituents of curcumin analogues were located deep inside the binding-pocket of the COX-2 active site, where the O-atoms of the respective groups formed H-bonds with the atoms of His90, Arg513, Met522, Ser530, Gly526, Phe518, Gln192, Leu353, Ser353 and Tyr355. By prioritizing the result of the molecular docking it is possible to identify the most promising compounds for synthesis. A simple an efficient synthesis of a novel curcumin analogue, namely 1-(3,4-Dimethoxy-phenyl)-5-(4-nitro-phenyl)-penta-1,4-dien-3-one was developed and confirmed with spectroscopic techniques. The compound exhibited remarkable anti-inflammatory activity comparable with that of diclofenac sodium, exhibiting a very high percentage inhibition at concentrations in the range of 100 to 600 µg/ml, compared to diclofenac sodium.

Keywords: *curcumin analogues, anti-inflammatory, molecular docking, synthesis, in vitro*

IS03

Synthetic Humus (Slow Release of Organic Paramagnetic Fertilizer) as the Best Alternative to Overcome Food Crisis Caused by World Population Explosion

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There have been synthesized the material nature humus-like called synthetic humus named Slow Release of Organic Paramagnetic (SROP) Fertilizer. This material has the ability to increase soil organic matter content, stable in the soil and affect to soil fertility. The SROP made of biochar, hydrochar, biomolecules and superparamagnetic particles mixture through the new road of humification. This method produce a stable material rich in carbon, nitrogen, oxygen and macro-micronutrients that plants need to grow up perfectly. The SROP was extracted using IHSS method to get synthetic humin as the most stable humus fraction. This study conducted a thorough synthetic humin characterization using $_{13}$C NMR, FTIR, XRD, SAA and TEM. The SROP has ability to adsorb biomolecule tested through experimental glucose adsorption.

The results showed synthetic humin is an amorphous material with mesoporous particle size that rich by carbon in a stable aromatic form, and oxygen enriched on the surface of synthetic humus. It is also contains silica from rice husk and Fe as superparamagnetic particle. Humin synthetic has the ability to adsorb glucose, which means synthetic humin and SROP generally can act as hosts for glucose and other biomolecules that exist in the soil.

Keywords: *SROP, humification, synthetic humus, synthetic humin, glucose adsorption.*

IS04

MERCURY CONTAMINATION FROM ARTISANAL GOLD MINING IN BURU ISLAND, INDONESIA

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In November 2011 gold was found in large quantities at "Gunung Botak", Buru Island, Mollucas Province, Indonesia. The local landowners invited illegal miners to set up operations for gold extraction. More recently mercury has been used in the *trommel* method to extract gold from the ore. This requires large volumes of water for flushing and results in the deposition of mercury into the upper catchment of the Way Lata river system. There are over 2000 *trommels* on the river banks all using mercury for gold extraction. Total mercury in waste ponds was over 680 mg/kg. In sediments at the mouth of the local river and a small feeder creek >3.00 mg/kg and 7.66 mg/kg respectively. River and bay sediments were proportionately higher in in available mercury than elemental mercury and more strongly bound mercuric sulphide compare to that in *trommel* waste. From this there is potential for food chain contamination and because of the close relationship of the villagers with the envrionment in relation to food resources and food security there is further risk of human health concerns.

Key Words: Gunung Botak, gold extraction, mercury, trammel, envrionment

ISO5

Isolation of α-Carotene, β-Carotene, α-Cryptoxanthin, and β-Cryptoxanthin from Red Fruit Oil (*Pandanus Conoideus* Lam) by Open Column Chromatography (OCC), Flash Column Chromatography (FCC) and Preparative Column Chromatography (PCC)

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Red fruit oil (*Pandanus conoideus* Lam) contains active components of carotenoids namely *α-Carotene, β-Carotene, α-Cryptoxanthin,* and *β-Cryptoxanthin*. Isolate of these compounds can be used for food, pharmaceutical, chemical standard reagent needs for analysis so that it is needed to develop isolation techniques. The methods used to isolate each of these compounds were Open Column Chromatography (OCC), Flash Column Chromatography (FCC), and Preparative Column Chromatography (PCC). The verification methods of isolation performance used were KLT, spectrophotometer, and HPLC-UV. Based on the results of evaluation and optimization, it was obtained that the isolation conditions by OCC method were silica gel stationary phase 64-210 µm, mobile phase hexane: acetone (7:3) flow rate of 15 drops/minute. The isolation conditions by FCC method were Buchi Flashpure Ecoplex Silica 12 g column, hexane solvent: ethyl acetate (9: 1) and flow rate of 30 mL/minute. The isolation conditions by PCC method were MeOH / MTBE / H2O mobile phase with gradient elution (81/15/4) gradually changing to (6/90/4) for 30 minutes. FCC and PCC method can isolate each compound of α-carotene, β- carotene, α- cryptosanthine, and β- cryptosanthine. OCC method can isolate α/β-carotene from α/β-cryptosanthine and has not isolated alpha from beta carotene as well as alpha from beta cryptosanthine.

Keyword: *red fruit oil*, *α-Carotene, β-Carotene, α-Cryptoxanthin,* and *β-Cryptoxanthin, OCC, FCC, PCC*

IS06

Exploration of Endophytic Bacteria to Produce Bioactive Compounds

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ABSTRACT

Some medicinal plants are known to produce bioactive compounds. Endophytes are microorganism which live inside plant tissues and do not show negative effect to their host plant. Utilization of bioactive compounds from plant extract need a large biomass. Instead, we can use endophytic bacteria which are known to produce agrochemicals, antibiotics, antiparasitics, antioxidants, antidiabetic and anticancer agents. It is an opportunity to get bioactive compounds which are natural, inexpensive and environmentally friendly. But we still need more comprehensive studies on the chemistry and biology of the bioactive natural products which are produced by endophytes.

Keywords: *bioactive compound, endofitic bacteria, medicinal plants*

IS07

IMPROVING THE VALUE-ADDED OF AGRICULTURE BIOMASS BY ENZYMATIC BIO-CONVERSION

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The agriculture biomass is mainly composed of lignocellulose material, generally consisting of celluloses (45-55 %), hemicelluloses (35-40%), and lignins (5-20%), which can be utilized as a substrate for biotechnological conversion. Large amounts of lignocellulosic waste are generated through forestry and many agro-industries and they pose an environmental pollution problem. The estimated total of oil palm waste biomass in Indonesia produced is around 100 million ton/ha/year. Indonesia also produces other types of agriculture biomass around 70 million ton/year from rice straw, corn biomass, soybean biomass and cassava. The majority of agriculture biomass is utilized as solid fuels for energy generation, as organic fertilizer in the form of composts and substrate for animal feed, chemical feed-stocks and building material. Bioconversions of lignocellulosic biomass will involve the use of enzymes, microbes (wild-types or recombinants) or other biological agents, individually or in combination. The main enzymes produced by lignocellulolytic bacteria and fungi are cellulases, hemicellulases, pectinases and ligninases.

Keywords: *Agriculture biomass*, *lignocellulolytic enzymes*, *biomass utilization*

IS08

Selection of promising hydrolytic halotolerant producing bacteria in the seafood fermentation technology

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Food fermentation is undeniably implementing a significant role in the food industry today. Almost one-third of total food consumption worldwide is fermented foods. However, mostly food fermentation was conducted in the traditional method which will lead to quality variations of fermented food results. Most problems arise in seafood fermentation are variation in the raw material and length of the fermentation process. One method that can be applied to control those problems is the application of starter culture. Before introducing the starter cultures, several investigations such as technological properties and safety attributes of the selected microorganisms must be performed firstly. Certain technological properties are essential to make sure the starters have special characteristics for improving the food quality. Safety attributes are obligatory to make sure that the starters are safe to be applied in the food fermentation and for human consumption. Based on these investigations, two promising starter candidates, selected from salted fermented shrimp paste which having halostable proteolytic and lipolytic activities were carefully chosen and applied in the seafood fermentation.

Keywords: *halotolerant, hydrolytic enzymes, safety attributes, seafood fermentation, starter cultures.*

ABSTRACTS OF ORAL PRESENTATIONS

OP01

Chemical Profiling of Essential Oil from *Zanthoxylum acanthopodium* Fruits and Its Antidiabetic Effect *In Vitro* and *In Vivo*

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Inflammation plays an important role in development of type 2 diabetes mellitus (T2DM), including obesity-related insulin resistance. Biomarkers of inflammation, such as C-reactive protein (CRP), tumor necrosis factor alpha (TNF-a), interleukin-6, and monocyte chemoattractant protein-1 (MCP-1) are present at increased concentrations in insulin resistant and obese individuals. The fruit of *Zanthoxylum acanthopodium* or lemon pepper is locally known as andaliman and belongs to endemic spicy plant in Tapanuli region, North Sumatera (Indonesia). Ripen *Z. acanthopodium* fruit has reddish-purple colour and the pericarp has strong lemon aroma due to its major essential oil contents. In this study, we investigated the chemical profiling of *Zanthoxylum acanthopodium* essential oil (ZAEO) and its antidiabetic potential through attenuation of proteins related to diabetes in hepatocytes *in vitro* and glucose level profile in diabetic mice induced by alloxan *in vivo*. ZAEO was extracted from *Z. acanthopodium* fruits using hexane and identified by using pyrolysis gas chromatography-mass spectrometry (py-GC/MS). ZAEO was tested for its cytotoxicity against human Chang liver cells as an *in vitro* cultured hepatocytes model. Effect of ZAEO (1-50 □g/mL) on protein expression related to T2DM, including CRP, TNF-a, and MCP-1 was quantified by enzyme linked immunosorbent assay (ELISA) assay. ZAEO at 10 and 25 mg/kg body weight was also given orally administration in alloxan-induced diabetic mice for 4 weeks, followed by the measurement of blood glucose level. Chromatogram profile demonstrated that ZAEO consisted of 69.03% of essential oil groups with major compounds of carveol, phytol, myrtanyl acetate, and citronellyl acetate. MTT profile showed that safest dose of ZAEO against hepatocytes was reached up to 10 □g/mL. ELISA data showed that among three proteins, ZAEO exerted significant inhibitory effect against MCP-1 protein expression secreted by hepatocytes. At lowest dose (1 □g/mL), ZAEO attenuated MCP-1 expression up to 30%, respectively. *In vivo* data demonstrated that ZAEO treatment at low dose (10 mg/kg body weight) showed the significant suppressive effect on blood glucose level compared to that of diabetic mice control. Interestingly, both ZAEO and metformin showed the similar effect on reducing the blood glucose level. These findings suggest that ZAEO may down-regulate inflammation related to T2DM through inhibiting MCP-1 expression that lead to the increase of insulin-stimulated glucose uptake.

Keywords: Zanthoxylum acanthopodium fruits, essential oil, antidiabetic effect, chemical profiling, in vitro, in vivo

OP02

SYNTHESIS AND ACTIVITIES TEST OF CURCUMIN ANALOGUES DERIVATIVES AS ANTI-MALARIAL AGENTS FROM VANILLIN

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Curcumin has been shown to possess many biological activities including antimalarial agents. In order to expand their potential as antimalarials, a series of analogues curcumin derivatives were synthesized from vanillin and evaluated for their activities using Hem Polymerization Inhibition Assay (HPIA). Three target compounds have been synthesized from vanillin namely 2,6-bis(4-hydroxy-3-methoxybenzylidene cyclohexa-1-one (**1**), 2,6-bis(5-bromo-4-hydroxy-3-methoxybenzylidene cyclohexa-1-one (**2**) and 2,6-bis(4-hydroxy-3-methoxy-5-morpholinobenzylidene cyclohexa-1-one (**3**). The activities antimalarials test using HPIA method showed that most potent derivatives compounds were **1**, **2**, and **3** with inhibition at IC_{50} of 19.85, 20.88 and 26.56 mM respectively. The analogue of curcumin derivatives exhibited lower anti-malarial potency against Chloroquine (IC_{50} of 6.03 mM) but still promising candidates for the further design of novel anti-malarial agents.

Keywords: *antimalarial, curcumin, HPIA, Chloroquine*

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OP03

Secondary Metabolites From One of The Indonesian Medicinal Plants : Leaves of *Desmodium triquetrum* Linn. (Fabaceae)

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Desmodium (Fabaceae) is known as a genus of plant which is used as the component of traditional medicines for diuretic, antiinflammation, hemorrhoids, tonicum, cough and antimicrobial. This genus distributed all over Indonesia. *Desmodium triquetrum* is one of species belonging to *Desmodium* genus which has not analyzed yet for its chemical contents. In preliminary assay, the methanol extract of leaves of *D. triquetrum* showed high activity on inhibition of tyrosine kinase assay with % inhibition was 59,4 % (100 µg/mL extract), and the same extract had high cytotoxic activity againts murine leukemia P-388 cell with IC_{50} 6,5 µg/mL. The secondary metabolites isolated from those extract by using varians chromatography techniques including vacuum liquid chromatography, radial chromatography, and gravity chormatography (sephadex LH-20) yielded three compounds and have been identified as epicathecin **(1)**, kaempferol **(2)** and *p*-hydroxy benzoic acid **(3)**. The stuctures of those isolated compounds were determined according to spectroscopic data incuding ^{1}H NMR and ^{13}C NMR. Cytotoxic evaluation of compounds **1** – **3** showed IC_{50}, 24.7, >100, and 55.0 □g/mL, respectively. One of the compound, *p*-hydroxy benzoic acid **(3)** has been examined on tyrosine kinase inhibitor assay and is not active.

Keywords: *Desmodium triquetrum, Fabaceae*

OP04

DETERMINATION OF TOTAL PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITY FROM SEVERAL FRACTIONS OF AREN'S (*Arenga pinata*) MIDRIB FLOUR

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Aren (*Arenga pinnata*) is a type of plant widely used by Indonesian people as a source of food and traditional medicine. Aren's midrib flour as a part of aren plant is commonly used by the people to eliminate itching and skin burned. The aims of this study were to determine the total phenolic content and antioxidant activity of some fractions of aren's midrib flour extract. Maceration with ethanol was applied as the extraction method followed by partition with several solvents such as petroleum ether, ethyl acetate, ethanol and aquades. Antioxidant activity was determined by DPPH (1,1-diphenyl-2-picrylhydrazyl) radical capture method using UV-Vis spectrophotometer at a maximum absorption of 517 nm. The results showed that ethyl acetate fraction gave the highest total phenolic content of 172.857 mg/kg, followed by ethanol fraction of 107.449 mg/kg, petroleum ether fraction of 91.531 mg/kg, and water fraction of 29.388 mg/kg, respectively. The highest antioxidant activity was also found in ethyl acetate fraction with IC_{50} value was 90.573 □g/mL, followed by ethanol extract 128.825 □g/mL, petroleum ether fraction 138.676 □g/mL and water fraction 217.270 □g/mL, respectively. Based on all results, it can be concluded that ethyl acetate could be applied as the good partition solvent to extract the phenolic compound in aren's midrib flour.

Keywords: *Aren's midrib flour, total phenolic content, antioxidant activity, DPPH*

OP05

Phytochemicals Content and Antioxidant Activity of Some Traditional Medicinal Plants of Sangihe Ethnics in North Sulawesi Province

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The Sangihe ethnic group in North Sulawesi province has local wisdom in utilizing plants to treat various diseases. However, scientific information about these plants are still limited. In this study, various aspects of these plants such as phytochemical content and biological activity were investigated. Firstly, the extraction step was applied by maceration method using the methanol solvent. Subsequently, each of the resulting extracts was investigated for their phytochemicals content and antioxidant activity. Phytochemicals content were determined using conventional chemical methods including precipitation and color reagents. Antioxidant activity was determined using diphenyl-picrylhydrazyl (DPPH) method. The results indicated that all medicinal plants contain various secondary metabolites such as alkaloids, flavonoids, glycosides, phenols, saponins, and sterols. In addition, some plants exhibit high antioxidant activity. As a conclusion, all results should be investigated further for the ethnomedicinal and pharmacological purposes of those medicinal plants.

Keywords: *Sangihe ethnics, medicinal plants, antioxidant activity, phytochemicals content*

OP06

GC/MS Identification of Tempeh Oil and Its Antiphotoaging Effect in UVB-induced Photoaging Mice

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Polyunsaturated fatty acid (PUFA) is one of the substances that are considered could prevent skin photoaging. Traditional fermented food, especially tempeh could be the best source for PUFA to replace animal PUFA from fish and nuts. Here, we determined the effectiveness of tempeh oil extracted from white and black soybean on reducing skin photoaging in UVB-induced photoaging mice through down-regulating the gene expression related to pro-inflammatory enzymes and cytokines by qRT-PCR analysis. Tempeh oil was also identified for its chemical components by gas chromatography mass spectrometry (GC/MS). For *in vivo* study, a total of 28 male mice aged 6 weeks were divided into 7 group, positive control (K+), negative control (K-), standard omega 3 (SO), black soybean tempeh oil 100 mg/kg body weight (HO100), black soybean tempeh oil 300 mg/kg body weight (HO300), white soybean tempeh oil 100 mg/kg body weight (PO100), and white soybean tempeh oil 300 mg/kg weight (PO300). The dorsal areas of the mice were shaved to give hairless condition. UVB radiation was given incrementally. Histopathology examination and gene expression analysis were done from skin sample. GC/MS profiling demonstrated that tempeh oil extracted from white and black soybean tempeh had high contents of PUFA in particular linoleic acids (52.3% and 85.69% in white and black soybean tempeh oil). Histopathology profile revealed that tempeh oil treatment affected the mice skin repair through epidermal atrophy by epidermis thinning and proliferation of hair follicles. Both tempeh oil (HO300 and PO300) effectively down-regulated the gene expression of MMP-1, MMP-3, MMP-9, COX-2, and iNOS in UVB-induced photoaging mice. These data indicate that both white and black soybean tempeh oil may offer a promising natural cosmeceutical candidate for treatment of skin photoaging caused by UVB exposure.

Keywords: Tempeh oil, white and black soybean tempeh, anti-photoaging effect, mice photoaging, UVB, *in vivo*

OP07

DEVELOPMENT OF BASIC CHEMICAL MODULE OF THERMOCHEMICAL MATERIAL WITH STEM PROBLEM- BASED LEARNING APPROACH FOR STUDY PROGRAM OF CHEMICAL EDUCATION STUDENTS

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Abstract: The purpose of this study is to produce the chemical modules of Thermochemical STEM Problem-Based Learning approach that meets the valid and practical criteria. The development model used is the ADDIE development model.ADDIE development model consists of three phases consisting of analysis, design, development, implementation, and evaluation. In this study, evaluation phase combined with formative evaluation Tessmer consisting of self-evaluation, expert review, one-to-one, small group, and a field test. The result of pedagogical validation test get 0,67 value and design get 1 value then material get 1 value. So for average expert review is 0,89 with the very decent category. The average test results practicality in stage one to one is 0.66 which is included in the medium category. Then, at the phase of a small group gain increased value from the previous phase, which is 0.88 with a high practicality category. Based on the results of research conducted showed that modules with STEM PBL approach have met the valid and practical criteria. For faculty and students make sure to use the Thermochemical Basic Chemistry I module with STEM PBL approach as a teaching material.

Keywords*: development research, basic chemical module, thermochemical, ADDIE*

OP08

Reconstruction of Basic Chemistry Modul Based on *Brainstorming Interactive* (BRAIN) to Enhance *High Order Thinking Problem Solving Papua* Chemical Education Students Papua.

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This study aims to obtain a module that can be used to improve the thinking skills of primary college of chemistry education at Cenderawasih University, based on brainstorming interactive (BRAIN). This module is devoted to the field of basic chemistry part one. The development is based on the indicator thinking of problem solving include to material content of chemistry part one. Design of modul based reconstruction model education (MER). The characteristics of this module are: (1) developed according to the needs and competencies aspects of the objectives and functions of the curriculum, (2) the material context is adapted to the needs of Papuan students based on local wisdom, (3) the material content is adjusted to the cognitive level of the chemistry part one, (4) the contents of the module are prepared based on material reconstruction from discourse analysis, subject matter clarification, refinement, composite material with thinking, revision and validation of the team. Based on expert validation with validation model of exvert judgmentet, known legibility and material conformity 85.3%, accuracy of illustration and picture 90.1%, and accuracy of task and exercise 87.7%. This indicates that the material and thinking instructional module is valid and feasible to use.

Key words: *Module, brainstorming interactive, problem solving thinking*

OP09

SYNTHESIS OF O-CARBOXYMETHYL N-PALMITOIL CHITOSAN WHICH USEFUL AS AN EDIBLE COATING FILM THROUGH INTERESTERIFICATION AND AMIDATION REACTIONS FROM FATTY ACID

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The aim of this research was to synthesize an edible coating film named O-Carboxymethyl N-Palmitoil Chitosan. This film was synthesized through amidation between O-Carboxymethyl Chitosan and Methyl Palmitat. O-Carboxymethyl Chitosan was prepared from esterification of Aldimine Chitosan and monochloro acetate acid. Amine substituent at chitosan was protected by converting acetaldehyde to aldimine chitosan and followed by deprotection by using sodium carbonate. Afterward, O-Carboxymethyl N-Palmitoil Chitosan was formed as Coating Film using acetic acid 1% which useful as an edible coating film. The FT-IR analysis of O-Carboxymethyl N-Palmitoil Chitosan showed that vibration peak at 3466.08 cm^{-1} indicated –OH vibration that overlap with –NH amide. Wavenumber at 1689.64 cm^{-1} displayed C=O amide substituent and carboxylic acid that overlap. Wavenumber at 1562.34 cm^{-1} exhibited the presence of -NH amide vibration, while wavenumbers at 2920.23 cm^{-1}, 2850.79 cm^{-1}, and 1463.97 cm^{-1} indicated the –CH vibration which supported by $(CH_2)_n$ vibration at wavenumber of 719.45 cm^{-1}. Wavenumber at 1072.35 cm^{-1} indicated C-O-C substitent from caboxymethyl ester. The HLB value of O-Carboxymethyl N-Palmitoil Chitosan is 11.7 which can be categorized as o/w emulsifier. Based on DTA Termogram, it showed the exothermic thermal degradation temperature is 440^{o}C for coating film, while SEM analysis displayed the changing in the surface of O-Carboxymethyl N-Palmitoil Chitosan. In addition, film tensile test showed that the value of film tensile is 0.02 Kgf. Microbiological testing of coating film displayed the antibacterial activity with LC_{50} value of 3738.47 ppm.

Key words: Chitosan, O-Carboxymethyl N-Palmitoil Chitosan, Amidation, Estericatión, Coating Film, Surfactant

OP10

THE EFFECTS OF PROBLEM-BASED LEARNING METHOD ON STUDENTS' LEARNING INDEPENDENCE OF CHEMISTRY LEARNING IN HIGH SCHOOL

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Chemistry learning in high school that trains and develops students' self-sufficiency and independence has not been done optimally because learners still depend on getting information and knowledge from teachers. Problem-based learning method used in the teaching and learning process is expected to facilitate students' with self -reliance and learning independence. This method is a problem-oriented learning method that makes students be accustomed to solving problems in order to train their ability in discoveringa concept in the learning process. Teaching learning process with PBL model is done for the subject matter of acid & base solution and electrolyte & non electrolyte solution. Learning independence assessed in this study were self-management, motivation, and confidence. The data of the study were in the form of descriptive quantitative data and analyzed using Anava / Anacova test. The research findings showed that there was a difference of students' learning independence through the application of problem-based learning method and control method in teaching and learning process.

Keywords: problem-based learning method, learning independence

OP11

INCREASING THE STUDENTS' CRITICAL THINKING SKILLS THROUGH VOLTAIC CELL LABORATORY ACTIVITIES BASED ON THEIR MENTAL MODEL

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Critical thinking skills (CTS) become a very important skills consideration among other transferable skills in order to succeed facing dynamic and complex world. The purpose of this study was to improve the students' CTS through voltaic cell laboratory activities based on their mental models. It was a mixed methods embedded experimental model research design. The study involved 15 students who took Physical Chemistry Laboratory courses, one of university in Papua. Essay test of 5 items was used to analyze their CTS that calculated by N-Gains value. Each items was designed to interconnect macroscopic, sub-microscopic, and symbolic levels. Then N-Gain Kruskal-Wallis test have been done between CTS descriptors. Students induced and considered induction descriptor was the highest students mastery meanwhile other descriptors were the same (no one reached the lowest mastery). It is necessary to integrate physical chemistry laboratory and physical chemistry lecture for increasing the students' CTS.

Keywords: *critical thinking skills, mental model, physical chemistry laboratory, voltaic cell*

OP12

The Effect Of Cooperative Learning Model Type Review Course Hooray (CRH) And Jigsaw Motivation and Learning Outcomes in the Redox Materials Subject on Chemistry Education Tadulako University

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This study aimed to determine the effect of cooperative learning model Type Review Course Hooray (CRH) And Jigsaw towards the collage students motivation and learning outcomes in the Redox Materials Subject on Chemistry Education Tadulako University. This research was a pre-experimental with the static pretest-posttest group design. The samples used in the study were students A (n=40) as a class experiment 1 and students B (n=38) as a experiment 2. The results of data analysis, the average value of class experiment 1 ($\overline{X}_1$) was 88.4 and the experimental class 2 ($\overline{X}_2$) was 83.12. Results of hypotheses testing by statistical t-test two parties it was obtained $-t_{table} \leq t_{coll} \geq + t_{table}$ (t_{coll} = 46,27 for class experiment 1 ; t_{coll} = 34.50 for class experiment 2 and t_{table} = 1.78) with a significance level a = 0.05 and degrees of freedom 56, then H_0 was rejected and H_a was accepted. The results of the students learning motivation questionnaire showed that the experimental class 1 was the attitude of "strong agree" with the positive category 80,10% and the experimental class 2 was in the attitude of "agree" with the positive category 81.15%. It can be concluded that there is influence of cooperative learning model Type Review Course Hooray (CRH) And Jigsaw to the students motivation and learning outcomes Chemistry Education study program on the Redox Materials Subject on Chemistry Education Tadulako University.

Keywords:*, type review course hooray, Jigsaw*, *motivation, learning outcomes,*

OP13

Phytochemical Screening and Antioxidant Activity of Methanolic Extract of Arabica Roasted Coffee Beans from Wamena and Moanemani

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Coffee beans contain a variety of secondary metabolite compounds that are believed to have various biological activities, one of which is as an antioxidant. Antioxidant compounds can counteract free radicals and reduce the risk of some diseases. The aims of this study were to determine phytochemical content and antioxidant activity of methanolic extract of Arabica roasted coffee beans from Wamena and Moanemani. The extraction was performed by maceration method using methanol as a solvent for 24 hours. Phytochemical screening was carried out using standard methods. Qualitative analysis of antioxidant activity was performed by DPPH method and quantitative analysis was determined by Spectrophotometer Uv -Vis at 517 nm wavelength. The result showed that methanolic extract of Arabica coffee beans from Wamena and Moanemani contain of alkaloid, flavonoid, torpedoed, siphoning and tannin. Both of extracts have antioxidant activity and can inhibit free radical 61,71 and 69, 7 % with IC_{50} value about 107,97 and 100,91 ppm, respectively. In conclusion, the methanolic extract of Arabica roasted coffee beans from Wamena and Moanemani can be used as source of natural antioxidant.

Keywords : *Arabica roasted coffee beans, phytochemical, antioxidant, DPPH method*

OP14

Cytotoxic Limonoids from The Stembark of *Chisocheton pentandrus* (Meliaceae)

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Six limonoids, pentandricine (**1**), ceramicine B (**2**), 6-de(acetyloxy)-23-oxochisocheton (**3**), 6-de(acetyloxy)-23-oxo-7-*O*-deacetylchisocheton (**4**), dysobinin (**5**) and epoxyazadirone (**6**) were isolated from the stembark of *Chisocheton pentandrus* through of combination of column chomatography on silica gel. The chemical structure were identified based on spectroscopic evidences and by comparison to those spectra data previously reported. These compounds were isolated from this plant for the first time. Epoxyazadirone (**6**), showed strongest cytotoxic activity against MCF-7 breast cancer cells with IC_{50} values of 9.12 µM.

Keywords: *Chisocheton pentandrus*, limonoid, Meliaceae, MCF-7.

OP15

Transesterification of Used Cooking Oil into Biodiesel Using NaN3/Modified Clay Catalyst

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Transesterification of used cooking oil into biodiesel has been done using NaN3/ modified clay catalyst.The Ni/modified clay catalyst was synthesized by destructing the Merauke clay with 8M HCl solution, then NaOH pellet (NaOH/clay ratio = 0.8), followed by treating with $AlCl_3.6H_2O$, CTAB and distilled water. Then the mixture was regulated to pH of 11.5. Next, the mixture was then poured into a reactor for hydrothermal process at 140 ^oC for 72 h. The results of the dealumination of clay was characterized by *X-ray Fluorescence* and the synthesized zeolite was characterized using X-Ray Diffraction, surface area analyzer and Scanning Electron Microscopy. The synthesized zeolite was impregnated by NaN3 solution as a precussor produced the NaN3/modified clay sample. The transesterification of used cooking oil process was carried out in the temperature of 65^oC and reaction time of 6h. rasio of catalyst : used cooking oil : methanol was 1.0 : 20.0 : 13.3. The main liquid product of transesterifikation was methyl ester and it was analyzed using Gas Chromatography Mass Spectrometer. The resulted showed that the dealumination of clay had Si content of 34.77 % and Al content of 5.67 %. The results of measurements with XRD produced a different form of chromatogram and type of zeolite. The results of transesterification used cooking oil into biodiesel using NaN3/modified clay catalyst was 91.5 wt %, meanwhile transesterification used cooking oil into biodiesel using modified clay catalyst was 85 wt % at the same of treatment.

Keywords: *clay, modified, zeolite, transesterification, used cooking oil, biodiesel*

OP6

Synthesis of Silver Nanoparticles using Leaf Extract of Medicinal Plants and Analysis of Antimicrobial Activity.

Henry F. Aritonang

Plant-mediated synthesis of nanomaterials has been increasingly gaining popularity due to its eco-friendly nature and cost-effectiveness. In the present study, we synthesized silver (Ag) nanoparticles by using medicinal plant from an aqueous solution of *Lantana Camara* and *Impatiens Balsamina* leaf extract as a bioreducing agent. This method allowed the synthesis of nanoparticles, which was confirmed by UV-Vis and TEM. UV–Vis spectra of Ag nanoparticles and visual perception of brownish yellow color from colorless reaction mixture confirmed the Ag nanoparticles formation. Additionally, TEM study confirmed that AgCl solutions for all concentrations have produced Ag nanoparticles. Moreover, *L. Camara* and *I. Balsamina* leaf extract were separately tested to examine their antimicrobial activities. The activities were tested against Gram-positive Staphylococcus aureus (S. aureus) and Gram-negative Escherichia coli (E. coli). The Ag nanoparticles synthesized from leaf extract of *L. Camara* shows highest antibacterial activity was observed against growth of bacteria species.

Keywords: *Medicinal plant; leaf extract; antibacterial activity*

OP17

The effect of Reaction Time of Hydrothermal Process on Modification of Natural Zeolite to Zeolite with Ratio of Si/Al = 1

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Modification of natural zeolite to zeolite with Si/Al = 1 ratio has been done. Natural zeolite is generally found in the form of the zeolite mineral blend systems with other types of zeolites, amorphous minerals such as feldspar, silica, alumina, transition metal oxides, and organic contaminants called heterogeneous composition. In order to function properly as catalyst or adsorbent, it needs to be modified into zeolite which is more homogeneous. The modified natural zeolite was synthesized by destructing the Klaten natural zeolite with 6M HCl solution. After drying at 120 ^{o}C for 4 h, then followed by treating with $AlCl_3.6H_2O$, NaOH, CTAB and distilled water. The mixture was regulated to pH of 11.5. and The mixture poured into a reactor for hydrothermal process at 140 ^{o}C. The reacted hydrothermal process was carried out in the variation of reaction time of 24, 48, and 72 h. Then dried in the oven for 4 h at 120 °C, and calcined in furnace at 350 ^{o}C for 3 h. The synthesized zeolite was characterized using FTIR (Fourier Transform Infra Red), XRD (X-Ray Diffraction), surface area analyzer. The resulted showed that analysing by XRD were new minerals formed and crystallinity increased.. Analysis of pore size used BET method, the porosity and surface area increased.

Keywords: *Natural zeolite, modification, heterogeneous, homogeneous, hydrothermal*

OP18

PVA/CHITOSAN-MONTMORILLONITE COMPOSITE FOR FUEL CELL APPLICATION : THERMAL AND PHYSICAL PROPERTIES ON SPECIFIC BALANCE

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Composite synthesis involving a combination of organic and inorganic materials is the main route for the search for materials for fuel cell membranes. In accordance with this, PVA/Chitosan-Montmorillonite membrane fabrication has been carried out with sulfuric crosslinking. PVA/Chitosan (3: 1) blend was varied with montmorillonite loading of 1, 2, 4, 6 and 8% and the resulting membranes were characterized by FTIR for functional group confirmation, TGA for thermal properties and tensile tests for mechanical properties. Membranes with 2% montmorillonite show the best thermal stability with temperatures up to 230 ^{0}C and the best mechanical properties with modulus of elasticity reaching 172.2 MPa. Under these conditions, the membrane will be in accordance with the requirements of mechanical and physical properties for the Direct Methanol Fuel Cell application.

***Key words** : Chitosan, Montmorillonite, PVA, Membrane, DMFC*

OP19

PERFORMANCE OF GRAPHITE/GRAPHENE, MANGANESE (Mn)/ GRAPHITE AND Mn/ GRAPHENE AS ELECTRODE ON ANODE OF PRIMARY BATTERY

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Research about properties electrode of Graphite/Graphene, Manganese (Mn)/ Graphite and Manganese (Mn)/Graphene on anode of primary battery was carry out. The purposes of this research are to generate electrode on anode of primary battery and to compare electrical conductivity primary battery anode with electrode Graphite/Graphene, Manganese (Mn)/Graphite and Manganese (Mn)/ Graphene as electrode on anode battery primary, respectively this reserch uses modified hummer method and impregnation mothod to produce Graphene and Graphite/Graphene, Manganese (Mn)/Graphite and Manganese (Mn)/Graphene electrodes respectively. The result show that the weak and broad peaks appear at 2θ (26^{o}) for Graphene, indicating Graphene is formed (XRD data). While the sharp peak appears at (31^{o}) for the Manganese (Mn)/Graphene, indicating Mn is well deposited on graphene. The XRD data is consitend with SEM-EDX data. The SEM-EDX data Image of Graphene show that its surface is thin and flat. For Manganese (Mn)/Graphene the blacks particles appear on Graphene, supposing Mn is deposited on Graphene it is Confirmed by EDX data. The conductifity data of Graphene and Manganese (Mn)/Graphene are also well confirm the XRD and SEM-EDX data. Conductivity of Graphene 130 μS/Cm is highest among Graphite 80 μS/Cm and anode primary battery 10 μS/Cm (as a reference). The conductivity of Manganese (Mn)/Graphene 1250 μS/Cm is also highest among Manganese (Mn)/ Graphite 940 μS/Cm and Graphite/Graphene 100μS/Cm. All of data indicate that Graphene and Manganese (Mn)/Graphene are potentially to use a candidate material for anode of primary battery.

Keywords : *Primary Battery's Anode, Graphene, Graphite/ Graphene, Manganese (Mn)/Graphite, Manganese (Mn)/Graphene.*

OP20

Activated Carbon to improve glucose production from Switchgrass.

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Activated carbon is widely used in industrial for various applications such as purification medium and catalyst to improve the chemical process reaction in the production of sugars. In this study the effectiveness and efficiently of carbon being modified into activated carbon as a solid catalyst has observed to optimize the production of glucose from switchgrass. The size of activated carbon was made into 1-1.5 mm by impregnated carbon into concentrated sulfuric acid. The finding obtained the highest glucose production of 54.71% and this activated carbon was able to be used for three times. Hence, the idea of utilizing solid catalyst for reuse in the process was supported through finding in this research.

Keywords : *activated carbon, switchgrass, glucose, reuse.*

OP21

Synthesis and Characterization of Activated Carbon from Sago Waste (*Metroxylon sagu*) with $ZnCl_2$ Activation And HNO_3 Modification.

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Previous researches have proved that activated carbon could be made from various raw material which contains lignocellulose such as cane dregs and pine waste. The aim of this research were to synthesis and characterize activated carbon from sago waste due to its ligocellulose content. The synthesis process was conducted through following stages: dehidration, carbonization, silica extraction with NaOH, activation with $ZnCl_2$ 10%, and surface modification with HNO_3 65%, successively. The chemical composition acquired from X-ray fluoroscence confirmed that silica content in carbon from sago waste has disappeared after silica extraction with NaOH. The X-ray diffraction patterns showed that samples before modification stage have amorphous activated cabon while samples after modification stages started forming exfoliated graphite crystal, as shown from peaks at 2θ 30,27° and 35,1°. Finally, the infrared spectra from both activation and modification stages confirmed that the presence of oxygen-containing groups has been increased.

Keywords: sago waste, activated carbon, activation with $ZnCl_2$, surface modification with HNO_3

OP22

Preparation of metal (Ni,Co)Mo on Supporting material Indonesian natural zeolite

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This research aims to prepare and characterize catalysts NiMo/NZ and CoMo/NZ. The bimetallic catalysts NiMo/NZ and CoMo/NZ were prepared by coimpregnation method. Activation of the catalysts included calcination and reduction. The minerals present in the catalyst was analyzed using *X-Ray Fluorescence* (XRF), functional groups was characterized using *Fourier Transform Infra Red (FTIR)*, crystallinity was characterized using *X-Ray diffraction* (XRD) and morphology was characterized using *Scanning Electron Microscope* (SEM). The result based on characterization, it is know that catalyst CoMo/NZ shows best amount metal impregnated (Co metal content is 3,90 % and Mo metal content 8,88%). The CoMo/NZ metal particels contained of CoO, MoO_3 and NiMo/NZ metal particles contained of NiO, MoO_3.. Ni, Co and Mo metals on the surface had significant influnce on the crystal structure and morphology accrording to XRD analysis. Base on characterization of the crystal stucture and the metal content it ist known that the CoMo/NZ was the best sample compared to NiMo/NZ.

Keywords: *natural zeolite, bimetallic catalyst, coimpregnation, characterization*

OP23

Preparation and Morphological Property of Co_3O_4/ $Ba_xSr_{1-x}Co_{0.8}Fe_{0.2}O_{3-\delta}$ (x=0.5-0.7) Composite Membranes using Starch as Binder Agent

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$Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_{3-\delta}$ (x=0.5-0.7) or BSCF was known as promising material to prepare MIEC membrane for oxygen separation. Several modifications have been performed to improve catalytic activity of BSCF membranes. One of the promising technique was coating of the membrane with catalyst layer such as Co_3O_4. This work investigates the simple and effective method to coat Co_3O_4 layer on the surface of Ba_xSr_{1-x} $Co_{0.8}Fe_{0.2}O_{3-\delta}$ \ disc membranes resulting Co_3O_4/BSCF composite membranes. BSCF were prepared using initial powders by dry pressing method followed by sintering at 1150 °C for 4 hours. The resulted BSCF dense membranes were coated with Co_3O_4 using starch as binder agent in the form of suspension. The coating suspension consist of 62.5% w/w of starch and 37.5% Co_3O_4. The coating suspension was directly coated on the surface of the BSCF dense membranes followed by firing at 800 °C for 3 hours. The surface morphology and cross section of the composite membranes were observed using Scanning Electron Microscope (SEM) equipped with Energy Dispersive X-ray (EDX). SEM images show that the method succeed to coat Co_3O_4 layer on the surface of BSCF membranes. However, the distribution of the Co_3O_4 was not uniform. The presence of Co_3O_4 layer was also indicated by the increasing of Co intensity in the surface of membranes as analyzed by EDX.

Key words: *BSCF membranes, Co_3O_4, composite membranes, coating method, starch.*

OP24

ANODIC STRIPPING VOLTAMMETRY FOR DETERMINATION OF LEAD (Pb) IN POK CHOI VEGETABLE

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Indonesia has a lot of kind of vegetables, including pok choi which is planted in Bedugul Bali. Due to increase the yield of vegetable, the farmers use chemicals as fungicide, fertilizers and pesticides. Pok choi can be contaminated by heavy metals through absorption in metabolism process. The objective of this study is to validate measurements and determine the concentration of lead (Pb) in whole pak choi using anodic stripping voltammetry. Measurements process used electrochemical detection with three electrodes system, namely platinum disk as working electrode, platinum wire/coil as counter electrode, and Ag/AgCl as reference electrode. The results showed the optimum of deposition time at 40 seconds, scan rate at 7.5 mV s -1, and deposition potential at -0.53 mV. Linear range concentration, limit of detection, and recovery measurements were obtained between 250 to 1500 ppb, 79 ppb, and 98,99% ± 0,13%, respectively. Horwitz ratio was less than 2.0 for repeatability ten times measurements. Although the farmers used chemicals contain Pb, the result showed the level of Pb was 0.44± 0.19 ppm, not more than acceptable level of 0.5 ppm.

OP25

PRODUCTION FUEL FROM PLASTIC WASTE WITH REACTOR OF 50 KG CAPACITY AND ITS PERFOMANCE TEST ON MACHINES

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Plastic waste as a complex problem each country in the world included Indonesia. Most of development country usually plastic waste management was not comprehenship. Many research proved that plastic waste was potential waste converted to fuel. Although many research only in laboratorium scale that included small weight sample. Since 2017 , Chemistry Departement in Cenderawasih University had done production of fuel from plastic waste in pilot plan with reactor of 50 kgs capacity. Pilot plan was operated in catalityc cracking method with temperature of processes 300-450 ^{o}C and powder natural zeolite as a catalyst. This pilot plan have four oulet product calculated from outlet nearest reactor. This succesfullness program arrived a new hopeness that prosses developed and implemented in industry and comercially scale. So in the long time goals both better plastic waste management and alternative energy source finding.

Research result that 40 kgs of plastic waste successfully converted to about 34 L of mix liquid fuel. Mostly of the product was brown-yellowis liquid, easy fluid and easy burned. The liquid product consisted many fraction of fuel i.e gasoline, kerosene, diesel, etc. With fractionation distillation process gasoline fraction can isolated from mixture. Gasoline product have characteristic: very clear, yellowis and very easy burned. GC-MS of gasoline fraction showed that more than 90 % as gasoline fraction like comercial fuel and little impurities. Octane number parameter was yielded 120 (distillate product),compared with 88 (premium fuel). Comparation of machine performance test between distilate product with premium fuel were carried. The fact showed that respectively distillate product/premium : electricity generator (129/128 minutes), motorcycle (44/42 km), minibus car (11/10 km) for every liter. Based on research result recomanded that plastic waste prospectively and competitively conversed to fuel.

Key words : *plastic waste, alternative fuel, pilot plan*

OP26

Surface modification and characterization of Fe_3O_4@SiO_2 for recovery of Gold

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Magnetic nanoparticles such as magnetite have been studied intensively for their unique properties that are susceptible to a magnetic field, ready to coat with silica and able to modify with a variety of functional groups. Moreover, the magnetite-silica core-shell system offers flexibility for extensive modification. In this work, the magnetic core is coated with tetraethyl orthosilicate (TEOS). Aminopropyl tri-methoxy silane was used to give an amine functionalized surface. Glutaraldehyde was further used to link the surface with chitosan to give Fe_3O_4@SiO_2 @chitosan. The produced material has an affinity to absorb Au^{3+} with a capacity of over 80 mg/g material. This versatile material is of future absorbents since, after adsorption, the material together with the ions can be recovered by use of a magnetic field before further separation and purification.

OP27

Study The Influence of DistillationTime on Component Profile of Sweet Fennel Seeds (*Foeniculum vulgare* Mill. *var. dulce*) Essential Oils and Its Antibacterial Activity against *Staphylococcus aureus*

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Sweet fennel seed (*Foeniculum vulgare* Mill. var dulce) oils has not become a major commodity although it has potential production. Isolation of sweet fennel oil can be done by using steam distillation. One of the factor affecting distillation process is time distillation. Time distillation influence quality and component profile of essential oils. Components of essential oils influence its antibacterial activity. This study aims to know the time distillation influence on yield, physical properties and component profile of sweet fennel seeds oils also its antibacterial activity against *Staphylococcus aureus*. The isolation was done by using steam distillation for 5, 7, and 9 hours. Physical properties of sweet fennel seeds oils were determined by its state and appearance, color, odor, refractive index and specific gravity. Profile component was identified using Gas Chromatography-Mass Spectrometer (GC-MS). Antibacterial test of sweet fennel seeds oils was done using disk diffusion on *S. aureus*. The results showed that yield of sweet fennel seeds oils obtained by steam distillation respectively were 1.1 %, 1.1 % and 1.19 %. The identified components using GC-MS analysis are 7, 6 and 11 compounds, respectively. The five main components of sweet fennel oil is anethole, fenchone, estragole, limonene and α-pinene. The highest concentration of anethole (77.57 %) was obtained by steam distillation for 7 hours. Sweet fennel seeds oils obtained in this research is clear yellow liquid, has distinctive fennel spicy odor, with mass gravity of 0.967–0.970 g/mL and refractive index of 1.53–1.54. The antibacterial activity of sweet fennel seed oils against *S. aureus* is classified as resistance category (8-11 mm). Time distillation influence the yield, component profile and antibacterial activity of sweet fennel seeds oils against *S. aureus*, but it does not influence the physical properties of sweet fennel seeds oils.

Keywords: sweet fennel oils, steam distillation, time distillation, GC-MS, antibacterial activity test.

OP28

The effect of loading zinc oxide to the surface supported by magnesium fluoride

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Synthesis of magnesium fluoride as a catalyst support and zinc oxide supported on magnesium fluoride was carried out in this study. Magnesium fluoride support were synthesized by sol gel method, whereas zinc oxide supported on magnesium fluoride were synthesized by the impregnation method. Solid obtained then measured their surface area by nitrogen adsorption-desorption method. It shows that solids have a small surface area value. Based on the observation, impregnation of zinc oxide on magnesium fluoride with loading variation of zinc oxide 5; 10 and 15% b / b show that the surface area decreases due to zinc oxide loaded the magnesium fluoride pore.

Key word : magnesium flouride, zinc oxide, impregnation, surface area

OP29

FTIR and UV-Vis spectrum combined with chemometrics for identification and authentication method of some medicinal plants

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Identification and authentication of a medicinal plant before its converted to an herbal medicinal product is a crucial task to ensure the quality and to prevent adulteration of a medicinal plant from its related species. An accurate and precise analytical method is necessary to be developed for identification and authentication of medicinal plant raw material. Fingerprinting approach by using FTIR or UV-Vis spectroscopy becomes popular for these purposes. We will have a large amount of data from FTIR or UV-Vis spectrum, so we need help from chemometrics for data handling and modeling for an identification and authentication methods. In this work, we described our developed method using FTIR based fingerprinting for identification and authentication method of *Caesalpinia sappan*, *Curcuma xanthorrhiza*, and *Vernonia amygdalina*.

Keywords: medicinal plant, identification, authentication, fingerprinting, FTIR, UV-Vis, chemometrics.

OP30

ADSORPTION OF PHENOL AND 2-CHLOROPHENOL FROM AQUEOUS SOLUTION BY ACTIVATED CARBON DERIVED FROM BANANA EMPTY FRUIT BUNCH BY HYDRO-THERMAL-ASSISTED KOH ACTIVATION

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Banana empty fruit bunch as a solid waste was successfully converted into activated carbon using KOH activation under hydrothermal carbonization. Activated carbon was used as adsorbent for the adsorption of phenol and 2-chlorophenol from aqueous solution. Pore structure was intensively studied involving surface area and pore size distribution. BET surface area shows a result of 624 m^2/g. BJH method adsorption indicates the mesopores with pore radius of 27.2 A. The surface functional group are O-H, C=O, C-O, C=C analyzed by FTIR. Morphology structure of activated carbon unsmooth surface with varied pore size. Adsorption capacity process was conducted with different pH solution, concentration, weight of adsorbent and contact time. Equilibrium adsorption was examined by the Langmuir and Freundlich models. The results of phenol and 2-chlorophenol adsorption is the mostly in the range of mesopores and macropores relating to the Freundlich method with correlation coefficient (R^2) >0.98.

Keywords: Banana empty fruit bunch, Activated carbon, KOH activation, Hydrothermal, Adsorption

OP31

An investigation into the use of sand media planted with *Thypa latifolia* in constructed wetland ecotechnology in removing organic matter, suspended solids and nutrients from domestic wastewater

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Deterioration of water quality continues to be a major concern in West Timor. Establishment of wastewater treatment is a crucial for eliminating this problem. Constructed wetland ecotechnologies (CWEs) are an alternative low cost wastewater treatment to solve wastewater problems in West Timor. This research aims to compare the effectiveness of *Thypa latifolia* in CWEs for the removal of BOD, COD, suspended solids, NH_4-N, NO_3-N and PO_4-P. The experimental design consisted of 6 (20 L) vertical flow mesocosms; 3 mesocosms planted with *Thypa latifolia* and 3 mesocosms as a control. The mesocosms were irrigated with synthetic wastewater for 6 months. The inflow had a 2-day hydraulic retention time. The inflow and outflow samples were monitored for BOD, COD, suspended solids, NH_4-N, NO_3-N and PO_4-P. The trend showed that the CWEs planted with *Thypa latifolia* reduced signifcantly the BOD, COD suspended solids, NH_4-N, NO_3-N and PO_4-P. This indicated that the CWEs planted with *Thypa latifolia* had a better performance in comparison with the control.

Keywords: *Constructed wetlands, Thypa latifolia, nitrogen, phosphorus, mesocosms,*

OP32

Characterization of The Dominant Carotenoids in Red Fruit Oil by Chromatography and Spectroscopy Techniques

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Red fruit (*Pandanus conoideus*) is an indigenous plant in Papua Island and is well known to have many functions for health, such as lowering blood sugar, preventing cancer [1, 2]. In addition, Papua residence uses red fruit as food source, edible oil source, natural colorant, etc. The red color appearance of red fruit oil is strongly influenced by the presence of carotenoids. Previously several studies have been identified some minor carotenoids, such as α- and β-carotenes and α- and β-cryptoxanthins, in the red fruit oil, although the other dominant carotenoids have not been characterized [3, 4]. The aim of this study is to characterize the dominant carotenoids in red fruit oil by chromatography and spectroscopy techniques. The separation and purification of the dominant carotenoids were carried out by reversed-phase high-performance liquid chromatography (RP-HPLC) using a gradient elution of methanol, methyl ter-buthyl ether and water. The isolated carotenoids were then identified based on the spectrophotometric, chromatographic and mass spectrometric properties compared to those in the references [5, 6]. Carotenoids from red fruit oil were well separated within 30 min by HPLC analysis. A trace amount of b-Cryptoxanthin, α- and b-carotenes were detected, while the dominant carotenoids were eluted in front of those three provitamin A carotenoids. Five dominant carotenoids had the maximum absorption wavelength (λ_{max}) in the range of 470–480 nm. The mass spectra of the 2nd and 5th dominant carotenoids showed $[M + H]^+$ at m/z 601.4 and at m/z 569.6, respectively. These carotenoids were tentatively identified as b-carotenone and semi-b-carotenone from the analysis of molecular ion and λ_{max} according to Britton et al. [6]. Moreover, the absorption spectra of these keto-carotenoids dissolved in several solvents showed different fine structures, indicating the presence of keto group in their molecular structure. The test of functional group and advance characterization of these carotenoids will be carried out by FT-IR and NMR, respectively. b-Carotenone and semi-b-carotenone were first keto-carotenoids found in red fruit oil and the other three dominant carotenoids are still under the study.

***Keywords**: carotenoid, characterization, chromatography, red fruit oil, spectroscopy*

OP33

Chemical Profiling of Two Medicinal Plants, *Kaempferia rotunda* and *Garcinia cambogia*, using UPLC/QTOF-MS

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Kaempferia rotunda and *Garcinia cambogia* is a plant that has been widely used as a traditional medicine because it has potential as an anticancer, antibacterial, anti-inflammatory, antioxidant and antifungal. This research used ultra-performance liquid chromatography coupled with quadrupole time of flight mass spectrometry (UPLC/QTOF-MS) to profile the phytochemical of *K. rotunda* and *G. cambogia*. The possible chemical compounds were identified from mass spectra dataset using MZmine. The prediction of the compound is determined by comparing the m/z with the database of compounds present in the genus kaempferia or garcinia. Evaluation of the MS data showed fourteen compounds were identified on *K. Rotunda.* The main constituent were had m/z 363. Sesquiterpene dimer, Parviflorene A is contained therein in large quantities. Thirty-one compounds were identified on *G. cambogia*. Compounds identified belongs to a class of phenolic acids and biflavonoid. Hydrocytric acid (HCA), which is a marker compound of *G.cambogia*, was identified at 6.33 min with m/z 209.

Keywords: *G. cambogia*, *K. Rotunda*, profiling, UPLC.

OP34

Drying Influence of extract on chemical content and xanthine oxidase Inhibition of *Avicennia marina*

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Avicennia marina is one of the mangrove species have various properties in traditional medicine such as for rheumatism, skin diseases, inflammatory, contraceptives and gout medicine. Previous research showed that the aqueous extract of this mangrove exudate has antihiperurisemia activity. This study was aimed at studying the drying influence of the extract on the content, chemical composition and xanthine oxidase (XO) inhibition of Avicennia marina exudate. Drying the extract is done by freeze drying and spray dryer. Composition and chemical content were analyzed by LC-MS. XO inhibitory activity performed in vitro. The study results showed that the method of drying effect on the content and composition of the extract. Extracts were dried by freeze drying method has a better XO inhibitory activity than spray drying method

Key Words: xanthine oxidase, Avicennia marina, chemical content, freeze drying, spray drying

OP35

Extraction and characterization of fish oil from various parts of snakehead fish (*Channa striata*).

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Snake head fish (*gabus* fish) is rich in omega three fatty acids, therefore it is intersted to study the potential for the production of omega three suplement. This study is focused on the extraction metode for omega three extraction. Snake head fish was purchased from lokal fishermen in Lake Tondano, North Sulawesi. The fish was cuted into three main parts including head, body and viscera. The fish parts were boiled with water to extract the oil and the fatty acid composition were determined by gas chromatographic method. The total oil content for whole fresh fish was 0,41 percent. The highest oil content in the mussles of snakehead fish were in the head (63.8 %) followed by viscera (19.9 %) and abdomen (16.3 %). The fatty acid composition of head, viscera and abdomen is consisting of lauric, palmitic, palmitoleic, stearic, oleic, linoleic, eicosapentaenoic and docosahexaenoic acids. The eicosapentaenoic and docosahexaenoic acids are relatively lower than those previously observed.

OP36

Fabrication and Modeling Solar Cell using Gowok Fruit *(Syzygium polycephalum)* as Sensitizing and deposition TiO_2 exert Spin Coating Technique

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The Focus of this research is DSSC gowok fruit *(Syzygium polycephalum)*, dye has been comporting like chlorophyl which absorption the light and then producted a carrier. The purpose of this researches are making DSSC and modeling it's in order to finding magnitude of the charge carrier. Modeling with using one of numerical method i.e least square method for determine several internal parameters microscopic. The Least Square Method was the method of fiting curve where the curve is a function i.e current *I* as the function of voltage *V*. Deposition TiO_2 applying for technical of Spin Coating, characteristics of the curent voltage better by use of the method than that of using previously method, automatically increasing efficiency. From the analysing of the curve characteristics then writer obtain a formulas to solar cell specifically gowok fruit. The current influenced by the process of harvest light, electron injection, charge collection and the maximum voltage under ilumination had been around of difference between quasi Fermi level semiconductor oxides and redox pairs within electrolyte. The voltage which retained comes from differences between the level conduction energy electrode TiO_2 with potential of the electrochemical electrolyte of pair redox whereas the current retained concerned straightly from the number of photon which involved in the process conversion and dependence at the intensities of radiation and so the activity of dye which are using. Illumination current I_L be equal to I_{SC} that have value $9{,}8.10^{-5}$ A. A quantity *q* related to diffusitivies and mobilities of the carrier. Diffusitivies and mobilities of the carrier have values that variably while occur process photocurrent. Since γ of the equation solar cell gowok fruit is a function that change so γ relation deeping from voltage (voltage is the variable which can be changes). It was made too the equation of DSSC gowok fruit which presented to the last equation of this research. Writer also finding the charge carrier i.e $0{,}0044kT$. The Location of the research taken place in the Laboratory of Institut Pertanian Bogor.

Keyword: dye gowok fruit, charge carrier.

OP37

Vapors Induced Phosphorescent Changes in Molecular Self-Assembly of Copper Pyrazolate Complexes for Chemical Sensors of Methanol to Hexanol

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Azolate complexes with phosphorescent properties of molecular assemblies via metal-metal interactions have received great interest for the chemical sensors of volatile organic compounds. However, chemical sensors with high sensing capability have not yet been reported using designed complex molecules from various ligands and metal ions. Here, we report molecular self-assembly of copper pyrazolate complexes, as-synthesized from pyrazole ligands having non-side chain (**1A**), 3,5-dimethyl (**1B**), 3,5-bis(trifluoromethyl) (**1C**), 3,5-diphenyl) (**1D**)and 4-(3,5-dimethoxybenzyl)-3,5-dimethyl ($\mathbf{1_E}$) and Group 11 metal ions, for chemical sensors of alcohol derivatives such as methanol to hexanol. Among all complexes with phosphorescent properties (emission center at 553-644 nm, large Stoke shift > 200 nm, green to red emission and microsecond lifetime), **2E(Cu)** showed the best performance for sensing through vapor induced phosphorescent changes. Moreover, the emission and color changes can be recovered without external stimuli. Such sensing capability indicates interactions of the vapors with the molecular assemblies via a weak intermolecular hydrogen bonding interactions.

Keywords; Chemical Sensor, Complex, Luminescence, Molecular Assembly, Vapor

OP38

Study on the Interactions between Nitrites, Nitrates, and Graphene Oxide as a Fluorescence Sensor

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The existence of nitrite and nitrate ions in water could lead to negative effects to both human and environments. Graphene oxide has been reported as a potential fluorescence sensor for detection of these ions. In this study, we further revealed the use of the graphene oxide for detection of nitrate and nitrite ions up to 100 mM. The reproducibility and the sensitivity in the presence of other interference ions were also evaluated. The computational study showed that among the possible sensing sites in graphene oxide, the hydroxyl and carboxyl sites were confirmed to show superior binding energy for nitrites and nitrates. The interatomic distances between these sensing sites and nitrites were closer than those between the sensing sites and nitrates. It was suggested that the interactions came from the hydrogen bonding. The stronger interactions between the graphene oxide and nitrites led to better detection towards the nitrites than the nitrates.

OP39

STANDARDIZATION OF EXTRACTION METHODS OF GELATIN FROM *Lutjanus sp.* SCALES

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The extent of applications in various fields makes the need for gelatin continue to increase in the global market. Fish gelatin is an alternative to mammalian gelatin and its use is more universal because it can be consumed by all religious followers. Fish gelatin has never been mass produced in Indonesia. Although the laboratory scale of fish gelatin has been successfully carried out, the standardization process to achieve commercial standards has also never reported. In this study, gelatin extraction from Red Snapper scales was conducted chemically using acid as a curing solution, i.e., HCl, H_3PO_4 and CH_3COOH. The optimum conditions in the extraction standardization obtained were using 1% curing H_3PO_4 solution for 24 hours with an extraction temperature of 80 °C for 4 hours, i.e., using parameters of swelling degree of 95.96 ± 0.54%, yield of 20.37 ± 0.23%, melting point of 60 °C and water content of 4,395 ± 0.025%. The existance of gelatin was confirmed by FT-IR spectra.

Key words : Gelatin, Red Snapper scales, Standardization

OP40

The Influence of Calcination Temperature to Mineral Composition in the Mangrove Crab Shells (*Scylla serrata*) from Merauke

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The analyses over mineral content of mangrove crab shells from Merauke have been studied. The shells of the mangrove crab that have been cleansed and dried under the sun for 24 hours, were mashed and then divide into two parts. The first section was used for the analyses of mineral composition, while the second part was previously calcined at three different temperature, 1173 K, 1273 K and 1373 K for 5 hours before analysed. The results showed that the raw powder of mangrove crab shell was contained 90,46% of calcium and 9,64% of other mineral content. The calcined process has succeeded to decrease the carbon content. It can be concluded that the mangrove crab shells from Merauke possess basic materials as bioceramic.

OP41

FISH DIVERSITY OF MANGROVE ECOSYSTEM IN DEMTA GULF JAYAPURA PAPUA

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Abstract

The Morphology, ecologycal, and biological condition on Demta Gulf is forming an ecosystem zone consisting of coral reefs ecosystem, seagrass, and mangrove. Mangrove ecosystem is very usefull as habitat, nursery ground, feeding ground, and spawning ground for various species of fish. This study was conducted from April to June 2018 in the mangrove ecosystem of Demta Gulf, Demta District, Jayapura regency, Papua. There were 3 research stations with 3 transects per station so that 9 transects and 28 fish capture effords. Data analysis were provided by Shannon-Wiener Diversity Index (H), Equivalence Analysis (E), Abundance Analysis. The result showed that Mangrove ecosystem of Demta Gulf had high fisheries resources was consisted of 21 families and 30 species. The level of diversity in St. Ambora is high 2.4 and abundance was 2241 individual/ ha, St. Yougapsa is high 2.8 and abundance was 1808 individual/ ha, Ambora-Tarfia is high 2.8 and abundance was 2550 individual/ ha. Fish resources and productivity will be highest and increase where mangrove productivity is hight, the total area of mangrove is an increase, and mangroves have greater physical complexity.

Key words: Fish, Mangrove, Demta, Jayapura, Papua

OP42

Preparation and Physico-Chemical Properties of *Gracilaria*/PVA/GA/CNT-Based Hydrogel for Slow/Controlled Release Material

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Abstract
Due to its application prospect, especially for slow/controlled release fertilizer, drug delivery, ion exchanger, and absorbent materials, hydrogel has been becoming an attractive material and being great interest of many scientists. However, the use of biodiversity-based hydrogels is still limited. In this study, we have synthesized a hydrogel from composites of *gracillaria* (GR), poly-vinyl alcohol (PVA), glutaraldehyde (GA), and carbon nanotube (CNT) later then denoted as GR/PVA/GA and GR/PVA/GA/CNT for sample without and with CNT addition, respectively. In particular, two kinds of PVA (technical and pro analysis grades) were used in this study. The characterization of hydrogels was conducted by means of FTIR and SEM. Meanwhile, the performance parameters of hydrogels i.e. swelling ratio, water retention, and release behavior of potassium from hydrogel into aqueous media were evaluated. FTIR spectra showed that the interaction of hydrogel components involved some functional groups. Meanwhile, the SEM images confirmed that the hydrogels were porous like material. The swelling ratio of technical PVA-based hydrogel was higher than that of pro-analysis one. Similarly, the hydrogel dried in incubator exhibited higher swelling ratio than that of dried without incubator. Additionally, the hydrogel demonstrated larger water retention. Insertion of CNT and K ions into hydrogel remarkably increased water retention. The hydrogel showed a typical slow release behavior for potassium ion. It can be inferred that the synthesized hydrogel is promising to be applied as slow-controlled release material (S-CRM).

Keywords: hydrogel, gracilaria, poly-vynil alcohol, CNT, S-CRM.

OP43

Antibacterial Activity of Three *Dendrobium* species from Papua Against *Eschericia coli* and *Staphylococcus aureus*

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Orchid found as one of medicinal plant in some areas, especially *Dendrobium*. Some species were investigated its antibacterial activity, but the information about antibacterial activity of Papuan *Dendrobium* species is still limited. The aim of this research was to determine the antibacterial activity of *Dendrobium* species from Papua against *Escherichia coli* and *Staphylococcus aureus.* There are three species of Dendrobium; *Dendrobium spectabile* (leaves and stem), *Dendrobium violaceoflaveus* (leaves and stem), and *Dendrobium antenatum* (stem). Dried simplisia was maserated using ethanol, then tested for the phytochemical content. Total ethanolic extract was fractionated into three fractions (ethanol, ethyl acetate and hexane fractions). Disc diffusion assay was used to examine the antibacterial activity of the total extract and the fractions.Total extract are positive for flavonoid, alkaloid and tanin, except *Dendrobium spectabile* stem extract. Saponin was not found in all of the total extract. The highest activity resulted from ethyl acetat extract of *Dendrobium spectabile* leaves in inhibiting *S. aureus* with diameter zone 20,5443 ± 1,4741 mm. It is indicated that the ethyl acetat of *Dendrobium spectabile* leaves is potential to be developed in antibacterial drug design research.

Keywords: antibacterial activity, Papua, Dendrobium, Escherichia coli, Staphylococcus aureus

OP44

PRECLINICAL TRIALS OF ANTI-ATHEROSCLEROTIC EXTRACT OF INOCARPUS FAGIFERUS FOSB SEEDS IN BALI

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Seed of Inocarpus fagiferus Fosb is empirically having an ability to reduce oxidative stress diseases. In this paper to describing the result of preclinical trials of ethanol extract from Inocarpus fagiferus Fosb seed in Bali to reduce oxidative stress especially to prevent atherosclerosis through some variables such as SOD activity, lipid profile, MDA, SOD-3, SOD-2, and ICAM-1 expression. The anti-atherosclerotic of ethanol extracts from Inocarpus fagiferus Fosb seed was proved on wistar rat with high cholesterol diet for 16 weeks with randomized posttest only control group design. The samples were 25 wistar rat, randomized into 2 control and 3 treatment groups, i.e. P_0 (negative control), P_1 (positive control, feed high cholesterol diet), P_2 (high cholesterol diet and ethanol extract in dose of 50 mg/kg bw), P_3 (high cholesterol diet and ethanol extract in dose of 100 mg/kg bw), and P_4 (high cholesterol diet and ethanol extract in dose of 150 mg/kg bw). After 16 weeks treatment, blood of the rats were driven for SOD activity, lipid profile, MDA and aorta for immunohistochemistry analyzed to give expression of SOD-3, SOD-2 and ICAM-1 datas. The results showed that doses of 50 mg/kg bw increases in percentage of rate inhibition (SOD activity) ($p<0.05$), decrease to total cholesterol and triglyceride level ($p<0.05$) but tends to uncahanged of HDL and LDL cholesterol levels ($p>0.05$), increase the expression of positive SOD-3 and SOD-2 aorta endhotel cell but decrease of positive ICAM-1 and decrease the concentration of MDA significantly ($p <0.05$) compared to P_1.

Keywords: Inocarpus fagiferus Fosb, anti-atherosclerosis, oxidative stress and preclinical trial

OP45

Antioxidant Activity Test of Extract Infusion from Stem of Yellow Rope (*Archangelsia.Flava*.(L)Merr)

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Yellow rope (Archangelisia flava) is known as a vine plant mostly found in the forests of Papua, West Papua and Kalimantan. Traditionally, this plant used by the indigenous people of Papua for health recovery, cleaning postpartum (puerperal women), and fever (caused by malaria). This study was aimed to determine the content of secondary metabolites and to test the antioxidant activity of bark extract infusion from yellow rope. Extraction method was applied in this research followed by evaporation to produce condensed extract product/dry product which further used for phytochemicals and antioxidant tests. Screening of phytochemical test was done using chemical reagents while the antioxidant test applied free radical method DPPH. The results showed that the water extract of the bark of yellow string contains as much as 8.36% of a group of secondary metabolites called terpenoids, alkaloids and flavonoids. Furthermore, antioxidant test obtained IC50 corresponding to a value of 49.04 mg / mL in which categorized as very strong.

Keywords : Yellow rope, infusion, antioxidant

OP46

Anticoagulan Activity of Ethanolic Extract Stingging Nettle (Laportea aestuans (L) Chew) from Biak Numfor

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Stinging nettle (Laportea aestuans (Linn) Chew) have been used empirically as relieving pain such as stiffness, headache, abdominal pain, muscle aches, joints and bruises. The aims of this study was to determine the effect of ethanol extract of stinging nettle leaf as an anticoagulant that used human blood (A, B, O and AB) using Lee-white method and blood smear. The stinging nettle leaf samples were taken from Biak Numfor, made simplicia, and macerated by 96% ethanol. The anticoagulant activity of ethanol extract was tested with preliminary of 50, 100, 150, 200, and 250 ppm. Then test was followed by anticoagulant activity by Lee White method and eustek method (blood smear). The results showed that in the preliminary test the minimum concentration of extracts of 45 ppm was observed for 120 minutes. Extracts Laportea aestuans have anticoagulant activity against various human blood groups as well as positive controls of EDTA. Both of them can binding calcium that the blood clotting factors so blood did not freeze. Blood clotting activity by eustek method showed that the extract of Laportea aestuans seen in the microscopic blood cells did not freeze because the unrelated blood cells were intact and separated from each other.

OP47

VICTORIA GROUND PIGEON (*Goura victoria*) and THEIR FOOD PLANTS IN THE NIMBOKRANG FOREST AREA of JAYAPURA- PAPUA

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An ecological study to find out the species of food plants of Victoria ground pigeon (*Goura vicoria*) was taken in the Yenggu Village in the Nimbokrang forest area of District Jayapura, Papua. Specific purposes of the research was to obtain the information about plants species including fruits and other parts which were used as natural food of *Goura victoria* as their natural feed. Data collection was carried out during June-July 2018, used survey method with interview technique. The research showed that only 16 species of plants from 12 families were naturally documented as *Goura victoria* food. *Goura victoria* preferred mostly fruits and usually left other plant's part such as shoot, leaves and twigs. The size of edible fruits ranged from 2.10 mm to 55.40 mm on diameter while fruit colors recorded as red, orange, green and red-purple black.

Key word: Victoria ground pigeon, food plants, Yenggu Village, Papua

OP48

POPULATION ANALYSIS OF D-*loop* mtDNA BUFFALO (*Bubalus bubalis & Syncerus caffer*) SEQUENCES FROM GENBANK DDBJ

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D-*loop* Mitochondrial DNA (mtDNA) of buffalo's sequences had been used as a determinant of genetic distance and spread of migration that useful for study of human prehistory migration. The study of *Bubalus bubalis* had been conducted in Egypt, China, India, Indonesia, Ireland, Pakistan, Philippines, and Thailand; for *Bubalus bubalis carabanensis* in India; and for *Syncerus caffer* in South Africa, Belgium, Netherland, Denmark, and Norway, however overall it had not been summarized. This is study by collecting 400 D-loop Mitochondrial DNA (mtDNA) of buffalo's sequences from GenBank DDBJ. Furthermore, it was analyzed by Spreadsheet, PHYLIP, ANN methods and visualization by using TreeView and MatLab. The result is showed that genetic distance was 0 between DQ364163 (China), KR872756 (Indonesia), and KR872764 (Indonesia) by Spreadsheet method and the spread centered was India by ANN (MatLab) method. Genetic distance was 100% between DQ364163 (China), KR872756 (Indonesia), and KR872764 (Indonesia) by PHYLIP method and the spread centered was China by TreeView. Genetic distance was 0,2040 between the China and Indonesia populations and spread centered was Norway by Spreadsheet method. Genetic distance was 0,1460 between the China and Indonesia populations and the spread centered was Norway by ANN (MatLab) method.

Keywords: D-loop mtDNA of Buffalo, DDBJ, ANN

OP49

Antibacterial Activity of Daun Afrika Extract (*Vernonia amygdalina*) Papua to *Staphylococcus aureus* and *Escherichia coli* Bacterial

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Daun Afrika from Papua widely utilized by local people, one of them to treat acne. Some research of *Vernonia amygdalina* contained flavonoids, tannins, saponins andterpenoids. The aim of this study was to investigate the Antibacterial Activity of *Vernonia amygdalina* Extract from Papua to *Staphylococcus aureus* and *Escherichia coli* bacterial byusing Diffusion Assay. Research result show that the extract inhibited the growth of *Staphylococcus aureus* and *Escherichia coli*. Inhibition zone was observed in leaf of*Vernonia amygdalina* agains *Staphylococcus aureus* 100 µg/ml (6,69 mm) and *Escherichiacoli* 100 µg/ml (6,52 mm) respectively. The extract of *Vernonia amygdalina* leaves fromPapua has a antibacterial activity at minimum concentration extract, can be taken as good evidence for a possible aplication of those compounds as antibagterial agents.

Keywords : Antibacterial, Vernonia amygdalina, Staphylococcus aureus, Escherichia coli

OP50

Test Activity Anticoagulant Ethanol extract daun jilat (Villebrunea rubescens) Against Human Blood.

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Daun jilat (Villebrunea rubescens) is one of the traditional remedies in the Yapen Islands District that is empirically used to treat bruises or bruises. The samples of daun jilat used were taken from the Yapen Islands Regency and macerated with 96% ethanol. This study aims to determine the activity of anticoagulant extract etanol daun jilat (Villebrunea rubescens) against various types of human blood group. The method used is Lee-white and Eustek (blood smear) with a concentration of 250 ppm. The results obtained from ethanol extract of daun jilat on Lee-white and Eustek methods indicate the existence of anticoagulant activity against various types of human blood group.

OP51

Mitochondrial genome mutation analysis: Papuan mtG comparation with several GenBank sequence data on gene control and encoding regions

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Comparative study of DNA mutations occurring in human mitochondrial genomes in Papuan humans and its comparison with some ethnic worlds has been studied. The aims of this study was to analyze mutant variants in all the complete human genome mitochondrial areas by using repli-G techniques for mitochondrial genomic amplification, the result of Papuan human nucleotide sequencing was then compared against some individuals representing some ethnicities in the world. DNA samples were isolated from human tissue and then sequenced using 10 pairs of primers to amplify human mtG. The mtG sequence is aligned and compared with rCRS using the DNAstar program. The result of mutation analysis shows the presence of point mutation in some mtG region fragments with different mutation proportions. Most mutations outside the HVS1 and HVS2 D-loops are in the ATP6 region. The encoding region of ATP6 is the gene coding region of human mtG and shows a high mutation rate of CRS. This opens a new paradigm for mutation analysis on ATP6 areas other than the mtG D-loop. The ATP6 gene segment located at 8553-8902 can be selected for studies in population genetics, forensic medicine and bioethnoanthropology studies, in addition to the HVS1/HVS2 D-loop areas that have been used.

Keywords: *mtG genome, variant, mtDNA, mutation, Indonesian, ethnic groups*

OP52

Nutrition and antioxidant properties of *Pleurotus sajor-caju* from Jayapura, Papua

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Pleurotus sajor-caju is one of the wild edible mushrooms consumed by people in Jayapura, Papua and is known by the local name as Tambir. Tambir consumed as a vegetable because it is believed to contain nutrients. This study aims to determine the composition of nutrient content and antioxidant properties of Tambir. Samples were collected from traditional market in Perumnas 3 Waena, Jayapura. The composition of nutrient content was performed by proximate analysis (water, ash, fat, crude protein and carbohydrate content). The Gravimetric method was used to analysis the water and ash content, Soxhlet for fat content, Kjeldahl for crude protein content and Luff Schoorl for carbohydrate. Phytochemical screening of alkaloids, flavonoids, terpenoids, steroids, tannins and saponins was carried out using standard methods. The antioxidant properties was determined by scavenging activity on 1,1-diphenyl-2-picrylhydrazyl (DPPH) radicals against the methanolic extracts of Tambir and measured by spectrophotometry Uv-Vis at 517 nm wavelength. The results showed that Tambir has 12. 1 % water content, 5.53 % ash content, 1.16 % fat content, 28.5 % crude protein and 23.5 % carbohydrate. The methanolic extracts of wet and dried mushroom showed that both extract contained alkaloids and saponins. While, the radical scavenging activity was 68.20 % and 39.40 %, respectively at 25 mg/ml concentration. Therefore Tambir can be used as a source of nutrition, especially protein but has no potential as an antioxidant.

Keywords : *Pleurotus sajor-caju, Tambir, wild edible mushroom, nutrition, antioxidant properties.*

OP53

Charaterization of Microalgae from Freshwater Pond of Buper Jayapura and from Seawater of Harlen Beach Jayapura Based on Their Lipids, Chlorophylls, Protein, and Carbohydrate Contents

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Microalgae were known as photosynthetic microorganism which has great potential to be developed as biodiesel feedstock. This research was conducted to isolate, to cultivate and to characterize potential species of marine and freshwater microalgae from Jayapura, as Jayapura located close to equator therefore mostly exposes to sun light along year. The chlorophylls content, lipid content, protein content, and carbohydrate content of selected microalgae were characterized after cultivating in urea and NPK fertilizer liquid growth medium which is a low cost medium. Several species of microalgae were isolated and identified as marine *Chlorella sp.* and marine *Zoochlorella sp*. from Harlen beach area of Jayapura while Freshwater *Chlorella sp.* were from Buper Freshwater pond of Jayapura. Furthermore, both marine *Chlorella sp.* and freshwater *Chlorella sp.* which grew well were subsequently selected to cultivate for larger scale. Chlorophylls content of freshwater *Chlorella sp.,* harvested at the peak of growth rate were 2.837 $\pm$ 0.149 mg/L while the lipids content was 13-37%, Protein content was 48.22%, and Carbohydrate content was 12.29%. Meanwhile, Chlorophylls content of marine *Chlorella sp.,* harvested at the peak of growth rate were 2.046 $\pm$ 0.343 mg/L while the lipids content was 6-28%, Protein content was 36.48%, and Carbohydrate content was 16.50%. Both of Jayapura isolates of freshwater *Chlorella sp.* and marine *Chlorella sp.,* exhibit great ability to grow in a cheap fertilizer containing medium. The lipids could be utilized as biodiesel feedstock, the chlorophylls are applicable as healthy food supplement and antioxidant products, the carbohydrate could be utilized for fermentable sugar production, while protein could be applied in animal feed production.

Keywords: *biodiesel, chlorophylls, freshwater Chlorella sp., marine Chlorella sp., Jayapura Isolate Microalgae*

OP 54

Coconut Oil Production via Coconut Cream Fermentation by *Lactobacillus bulgaricus*

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Coconut cream fermentation was performed by *Lactobacillus bulgaricus* to produce coconut oil. This research aimed to find a low temperature process of coconut oil production as well as to improve the quality of the oil. The emulsion equilibrium of the protein, oil and water in coconut cream was broken down by the bacterial proteolytic activity. Then the coconut oil was released from the emulsion to the fermentation mixtures. The highest volume of oil produced was 28.15 mL which was obtained from the inoculum concentration of 7% (v/v) in 100 mL of substrate (coconut cream) and fermentation time of 36 hour, at incubation temperature of 30 ^{o}C. Furthermore, the product exhibited great characteristics as following, water content was 0.14%, iodine number was 8.819, saponification number was 238.819, peroxide number was 2.811 and the free fatty acid was 0.106%. This method shows promising potentials in the field of coconut oil production, considering its high quality product, low energy consumption, and low environmental cost.

Keywords: *coconut cream, coconut oil, emulsion, fermentation, Lactobacillus bulgaricus*

ABSTRACTS OF POSTER PRESENTATIONS

PP01

Preparation of chitosan with variations of molecular weight and its effect on de-polymerization of chitosan with hydrogen peroxide using microwave technique

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Abstract

Chitosan depolymerized with hydrogen peroxide (H_2O_2) using microwave technique has been done by varying molecular weight of chitosan. This study aims to determine optimum conditions of chitosan depolymerization and influence of molecular weight for preparation of chitosan depolymerized. Chitosan was produced with different molecular weight by variation of chitosan heating time in 5% acetic acid for 2, 12, 24, and 24 hours and molecular weight of chitosan was determined by the viscometric method. Chitosan produced from technical chitin has molecular weight 7.90×10^3 (TC-2), 6.70×10^3 (TC-12), 6.50×10^3 (TC-24) and 5.60×10^3 g/mol (TC-120) for 2, 12, 24, and 120 hours of heating time, respectively. These results suggest that the resulting chitosan was affected by the heating time. The longer heating time, the lower molecular weight of chitosan are produced. Next, the chitosan has depolymerized by varying concentration of H_2O_2 and depolymerization irradiation time using microwave technique. The process of depolymerizing chitosan with H_2O_2 was influenced by H_2O_2 concentration and irradiation time which the optimum conditions were 6% H_2O_2 and irradiation time for 75 seconds for TC-2 which produced oligochitosan with molecular weight of 3.5×10^3 g/mol and rendemen 25.65%.

Keywords: *chitosan, depolymerization, hidrogen peroxide, oligochitosan, , microwave technique*

PP02

Synthesis of magnetite/TiO_2-Cu as recoverable and sensitive photocatalyst under visible light radiation

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Synthesis of magnetite/TiO_2-Cu as alternative photocatalyst to overcome the pure titania deficiencies has been done in this study. The aim of magnetization was to give magnetic properties so that the photocatalyst being recoverable after its using. Cu doping aims to make photocatalysts sensitive to visible light radiation. Magnetite (Fe_3O_4) was synthesized through precipitation process. The doping process was carried out by sol gel method. The results of X-Ray Diffraction (XRD) showed characteristic peaks of magnetite were at 2θ (^{o}) 30; 35; 43; 53.9; 57; 62, 73.9 and titania peaks were at 25.38; 38.7; 48.54, 54.06; 55.2, 62.88. Transmission Electron Microscopy (TEM) has confirmed the spherical form of material synthesized with the size around were 25 nm. Magnetic ability was confirmed quantitatively by Vibrating-sample magnetometer (VSM) as 6.98 emu g^{-1} and qualitatively was confirmed by its interaction with external magnets. Based on the characterization datas, the magnetite /TiO_2-Cu confirmed to be successfully synthesized.

Key words: photocatalyst, magnetite, TiO_2-Cu

PP03

Study and Formulation of Anionic Surfactang For Enhanced Oil Recovery

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Sodium Ligno Sulphonate (SLS) is one of the types of anionic surfactants that can be made from oil palm empty fruit bunches's lignin. Therefore, these surfactants have the opportunity to applied as cheap EOR agent because of the presence of highly abundant raw materials. In this study, we investigated the ability of lone SLS and mixed SLS with some support materials as EOR agent. In the initial screening, we conducted IFT test for selecting viable EOR agent where surfactant's IFT value must be in range 10^{-3} mN/M. This test was very important for a preliminary test like core flooding and another advanced test. The results demonstrated that SLS can't stand alone as EOR agent and must be blended with another supporting materials like Na-fatty acid and cosolvent. There are 4 surfactant formulas that potentially as EOR agent, BRP14, CRP14, B_3RP14, F_1RP14 and HRP14.

Keywords : SLS, EOR, Surfactant

PP04

THE INFLUENCE OF FERMENTATION TIME AND CELLULASE ENZYME VOLUME OF OYSTER MUSHROOM STEM AT BIOETHANOL PRODUCTION FROM RICE STRAW USING *SIMULTANEOUS SACCHARIFICATION AND FERMENTATION* (SSF) METHOD

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A study in production of bioethanol from rice straw using SSF method has been done. Rice straw is an agricultular waste containing lignocellulose that can be utilized for manufacturing alternative energy such as bioethanol. This study aimed to determine the optimum both fermentation time and volume of cellulose enzyme on the concentration of ethanol produced, also to know the effect of base pretreatment on straw sample on the concentration of ethanol produced. The method used is SSF *(Simultaneous Saccharification and Fermentation)* where the process of hydrolysis and fermentation was done simultaneusly. The advantages of this process are the short period of Saccharification and Fermentation, occuring in one reactor and saving the production cost. The hydrolysis process was carried out by cellulase enzyme extracted from oyster mushroom stem, while the fermentation process was done by yeast *S. cerevisiae*. The rice straw samples were smoothed and dried to remove the moisture content. The samples were mixed into an SSF medium containing aquadest, cellulase enzymes and yeast *S. Cerevisiae* and then fermented for several days. Cellulose content in straw would be hydrolyzed into glucose by cellulase enzymes, and then would be directly converted to ethanol by yeast *S. Cerevisiae.* Purification of ethanol was done by simple distillation. Variables used were cellulase enzyme volume and fermentation time. Variations in cellulase enzyme volume ranged from 0, 10, 15, 20 and 25 mL. While the fermentation time starts from 2, 4, 6, 8 and 10 days. Based on the results of the research, it was found that the highest bioethanol concentration was 14.52% with the variation of 10 days fermentation time and 25 mL enzyme volume, while the bioethanol concentration in the control sample (base pretreatment) was 9.75%.

Keywords : *Bioethanol, Oyster Mushroom, Rice Straw, Simultaneous Saccharification and Fermentation (SSF).*

PP05

Green Synthesis of Gold-Palladium Core-Shell Nanoparticles (Au@Pd CSNPs) Using Citrus Peel Extract

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Gold-palladium core-shell nanoparticles (Au@Pd CSNPs) has been successfully synthesized through a two-step facile and green method using $HAuCl_4$ precursor and citrus peel extract (CPE) both as reducing and stabilizing agent. Firstly, a series of CPE was used to synthesize the core gold nanoparticle (AuNPs). Afterwards, 100 µL of H_2PdCl_4 10 mM was employed to produce the Pd shell. The synthesized NPs was characterized by UV-Vis and Infra-Red (IR) spectroscopy, as well as Transmission Electron Microscopy (TEM). UV-Vis spectra showed a strong absorbance at 541 nm which indicated the optimal formation of AuNPs using 6 g of CPE, whereas there was no peak of CPE observed. Furthermore, the formation of Au@Pd CSNP was indicated by the disappearance of the peak at 541 nm. The result from IR spectroscopy showed OH group from the CPE has a main role in the NPs formation. TEM image showed a core-shell structure of the Au@Pd CNPs with an 8 nm and 2 nm core diameter and the shell thickness, respectively. In conclusion, this method used the no-cost material, such as citrus peel waste that is very simple and powerful to synthesize the Au@Pd CNPs.

Keywords: *green synthesis, gold-palladium core-shell nanoparticles, citrus peel extract*

PP06

Antimicrobial of bacterial cellulose/ZnO/Ag Nanocomposite Membrane

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This study is a preliminary study to analyze the antimicrobial activity of the bacterial cellulose/ZnO/Ag nanocomposite membrane. Therefore, various microscopic and spectroscopic techniques not done. The bacterial cellulose/ZnO/Ag nanocomposite membrane has been synthesized by co-precipitation method. These were obtained by immersing bacterial cellulose into $Zn(NO_3)_2.4H_2O$ and $AgNO_3$ solution under basic conditions. Furthermore, dry nanocomposite membranes were tested for their antibacterial activity using Gram-negative Escherichia coli (E. coli) and Gram-positive Staphylococcus aureus (S. aureus). The nanocomposite membranes exhibited strong antimicrobial activity against Gram-negative and Gram-positive bacteria.

Keywords: *Co-precipitation; Bacterial cellulose/ZnO/Ag; naocomposite membrane; Antimicrobial*

PP07

Extract of Zingiberaceae Leaves Steam Distillated Residue as Anti-bacterials and Biofilm Degradator Against *Streptococcus mutans*

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Zingiberaceae is a family that used to treat various diseases and as spice in cooking. This research aimed to determine the potency of the extract of Zingiberaceae leaves steam distillation residue as anti-bacterial and biofilm degradator against *Streptococcus mutans*. The distillation residue of Zingiberaceae leaves (*Curcuma longa, Curcuma zeodoaria, Curcuma aeruginosa, Zingiber officinale, Zingiber cassumunar*) was extracted by soxhletation method using 3 different solvent namely n-hexane, ethyl acetate, and methanol. Antibacterial and biofilm degradation assay were performed using microdilution technique. Methanol extract of *C. zeodoaria* leaves gave the best antibacterial potency with minimum inhibitory concentration and minimum bactericidal concentration value of 15,63 ppm and good biofilm degradation activity with inhibitory concentration 50% (IC_{50}) of 15,33 ppm. There are 4 spots at thin layer chromatography bioautogram with spot with Rf 0.90 as the most active spot. Terpenoid was suggested as antibacterial and biofilm degradation group compound.

Keywords: *antibacterial, biofilm degradator, Streptococcus mutans, Zingiberaceae leaves*

PP08

THE EXTRACTION OF ANTHOCYANIN PIGMENT FROM EGGPLANT PEELS (Solanum melongena L.) AND ITS APPLICATION AS NATURAL ACID INDICATOR

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The purpose of this research is to extract the anthocyanin pigment from eggplant peels which can be used as natural acid indicator. This extraction was performed by using two techniques i.e. maceration and microwave techniques. The research steps include sample preparation; maceration and microwave extraction using ethanol : HCl 1% (2: 1); phenolic compound test; anthocyanin compound test; pH solution test, identification using UV-Vis Spectrometer, FTIR and LC-MS / MS as well as application of extract eggplant peels as natural acid indicator. The results showed the yield obtained from eggplant peels extract in maceration technique for 48 hours was 3.18% while in microwave technique with time variation of 3, 5 and 7 minutes were 3.14%, 2.85% and 2.97%. Eggplant peels extract was further identified by FTIR and LC-MS / MS. The results of identification using FTIR showed the presence of aliphatic C-H groups, C = C aromatics, and O-H, the group was also present in the anthocyanin group. The result of identification using LC-MS / MS showed the presence of two components of anthocyanin group compound with Delphinidin 3 Glucoside type at retention time of 3.02 with m/z = 465 and Peonidin 3 Glucoside at retention time 3.07 with m/z = 463. The qualitative test result of eggplant peels extract showed the existence of phenolic compound marked by color changing into blackish green. The positive pH test on the eggplant peels extract using 1-12 pH solution was at pH 3-4. The research showed that eggplant peels extract can be applied as natural acid indicator at pH 3-4.

Keywords: *Anthocyanin, Eggplant peels, Indicator, Maceration, Microwave, FTIR, LC -MS/MS*

PP09

Quality Test of Natural Bath-Soap with Clove Oil and Its Antibacterial Activity Against Staphylococcus Epidermidis

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Main object of the present work was to use clove oil as an additive to make natural bath-soap as a new approach of herbal cosmetics and medicine. Product of natural bath-soap with clove oil was expected to have a good quality based on Indonesian National Standart 2016 and effective as potential antibacterial agent. Natural bath-soap was made by saponification reaction of olive oil, palm oil, vco and castor oil with aqueus NaOH via cold process methods. Stirring was done until a trace-soap formed at room temperature, then clove oil was added. The mixture was poured in mold and wait for 2 days until solid-soap ready to unmolding. Curing process was done for 3-4 weeks. Antibacterial activity tests was performed by Kirby -Bauer diffusion method against Staphylococcus epidermidis. The soap quality as water content, total fat, insoluble material in ethanol, total free alkali, total chloride and unsaponificable fat are 1.524%,. 92.052%, 0.8%, 0.0053%, 1.17%, and 0.0038%, respectively. The highest inhibitory zone diameter is 22,28 mm on 10% (m/v) concentration at 12 hours incubation. Thus, the addition of clove oil in natural bath-soap proved to be effectively used as an antibacterial soap.

Keywords : *bath-soap, clove oil, antibacterial agent*

PP10

Waste Management of Integrated Laboratory of Universitas Islam Indonesia (UII) using Adsorption Technique with Activated Carbon and Coagulation with Poly Aluminum Chloride (PAC)

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Study on UII Integrated Laboratory waste treatment by adsorption using activated charcoal which is included in PVC pipes or known as system flow has been conducted. In this method, the waste is returned to the reservoir, then processed using PAC with a batch system. Waste and PAC are stirred until homogeneous, then deposited. clear waste is analyzed in accordance with the parameters of wastewater quality. The results showed that the adsorption process using activated carbon with a variation of stirring time and weight of PAC was very effective. From the study, it was found that the longer the stirring time and the more activated carbon added, the more effective it was to reduce the COD levels in waste, which was 79.394% with stirring for 30 minutes and 90.197% by weight of 7 grams of activated carbon. In the coagulation process with Poly Aluminum Chloride (PAC), wastewater samples are analyzed first for several chemical parameters, especially heavy metals, before being flowed through the reactor tube. The results of the analysis show that the integrated laboratory waste samples of UII contain chromium (Cr), lead (Pb) and cadmium (Cd) which are below the critical limits set by the Government of the Republic of Indonesia, so that it can be concluded that the observations in the storage ponds are actually feasible. to the aquatic environment.

Keywords: *laboratory waste, adsorption, activated carbon, coagulation, Poly* Alumunium Chloride

PP11

Effectiveness of Activated Charcoal from Cassava Skin as Adsorbent of Cu Ion on Wastewater Integrated Laboratory of the Universitas Islam Indonesia (UII)

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Study of the reduction of the levels of Cu in the UII Integrated Laboratory wastewater by adsorption method using activated charcoal cassava peel has been conducted. This research was conducted to determine the most optimum activator and concentration, the character of functional groups in activated charcoal before and after the adsorption process, and to find out the amount of Cu ions which can be adsorbed from laboratory wastewater using activated charcoal of cassava peel. Dry cassava peel is carbonized using a muffle furnace at 400o C for 3 hours. Activation was carried out chemically using HCl, NaOH and Na2CO3 at 0.2 concentrations respectively; 0.5 and 1 M as much as 50 ml for 24 hours. The most optimum activator for adsorption of Cu ions in laboratory wastewater is HCl at a concentration of 0.5 M with adsorption capacity of 90.62%. The functional group in the activated charcoal of cassava skin is –OH, aromatic C = C, Si-H, Si-O, and the presence of C = O group from aromatic acid esters. Activated charcoal after use for adsorption of Cu ions in laboratory wastewater has a higher% of transmission compared to activated charcoal before adsorption

Keywords: *charcoal, adsorbent, wastewater*

PP12

Optimization of Zingiber officinale Distillation with Boiled and Modified Methods

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One method to get ginger (Zingiber officinale) essential oil is distillation. This study aims to determine the effect of preparation and differences distillation methods on the yield of *ginger* oil. The distillation methods used are boiled distillation and modified boiled distillation. Samples of ginger were ground and sliced for 3 kg to each methods. The distillation process is carried out for 2 hours using maximum fire from the gas stove. The optimum results obtained from modified distillation with milled ginger samples yielded 0.4% yield, oil has a distinctive ginger smell, clear yellowish color.

Keywords: *boiled distillation, Zingiber officinale, rendement*

PP13

Physicochemical Evolution of Silica from Salacca Leaves for Adsorption

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Preparation of silica material from Salacca leaves ash has been investigated. Silica was caustic extracted and the physic-chemical characterization was performed by using x-ray diffraction (XRD), scanning electron microscope energy dispersive x-ray (SEM-EDX), and Brunair-Emmet-Teller (BET) gas sorption analysis. The result was applied for salycilic acid adsorption. The result showed that silica was obtained with the specific surface area of about 14.2 m^2/g and dominated with silica. It is found that it is a potential performance of silica preparation and adsorption capability of the derived material.

PP14

Analysis Of Ferrous Ion Species In *Cinnamomum burmanii* Leaves As Biosensitizer In Iron Photoreduction Process Using Fluorocent Light

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Analysis of ferrous ion species in agriculture waste extracts of *Cinnamomum burmanii* leaves have been conducted using UV-Vis spectrophotometry. Samples were extracted of cinnamon leaves powder (Cinnamomun burmani) with methanol, ethanol, and ethyl acetate solvents in 25, 50, and 75%. Solution without extract was used as reference sensitizer and solution without illumination was used as the control. Research has been carried out: laboratory analysis for maceration extraction, evaporated and dried in the oven. Determination of total phenolic, flavonoid and tannin content on cinnamon leaves, with reagents: Folin Ciocalteu 50%; 2% aluminum chloride in ethanol and vanillin 4% in methanol and divortex, followed by UV-Vis spectrophotometric analysis at wavelengths; 750; 520 and 415 nm. Photoreduction analysis uses a 65 watt Fluorosenst light source. The effect of the extract on Fe^{3+} photoreduction can be seen from the formation of Fe^{2+} as a result of the reduction of Fe^{3+} extract after being lit for 5 hours, reacted with 2.2 bipyridine 0.07% to form orange-pink colored complex solution, followed by UV-Vis spectrophotometer with 520 nm wavelength.

Cinnamon (*Cinnamomun Burmani*) leaves extract contains organic material, phytochemical compounds: Phenolic, Flavonoid and Tanin are rich in electrons so they can donate one electron to produce biosensitizer. Biosensitizers (natural sensitizers) are produced because of the Fluorosenst rays from the sun that occur in soil/farmland in the iron photoreduction process causing ferric ions to turn into ferrous ions in the iron photoreduction process. Plants needed Ferro ions to increase soil fertility so that the growth and development of plants become fertile.

The results of photoreduction analysis using 65 watt Fluorescent light source for 0, 1, 2, 3, and 5 hours, showed that the concentration of iron was reduced as follows for methanol solvent 25%: 1.055; 1.777; 3,888; 9,833; and 9.944 mg / L. Methanol 50% is 1,166; 2; 3.222; 9,055; and 9.277 mg / L. 75% methanol is 1.111; 1,277; 2,388; 8,277; and 8.722 mg / L. 25% ethanol solvent is 1,111; 1,333; 2,333; 8,833; and 9.055 mg / L. 50% ethanol is 1.611; 1.888; 2,833; 8,333; and 8.5 mg / L. Ethanol 75% is 4,388; 5; 7; 10,888; and 11.722 mg / L. Acetate ethyl solvent 25%, ie 1,277; 1.777; 3,555; 3,888; and 10.944 mg / L. Ethyl Acetate 50% is 2,555; 3,166; 3,833; 5,388; and 13.388 mg / L. Ethyl Acetate 75% ie 7,222; 7,666; 8.5; 15,556; and 19,888 mg / L. SL is 1.5; 1.444; 1,111; 1.444; and 5,055 mg / L. SWL is 1.5; 1,222; 1,222; 1.944; and 5.888 mg / L.

PP15

Emulsification for Formulation of Natural Folic Acid Supplements prepared from Soybean Tempe (*Glycine soya L.*) and Fermented Spinach (*Amarantus sp*) for the Needs of Pregnant Women

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Folic acid naturally can be obtained from vegetables and fruits. Routine consumption of folic acid for pregnant women before and during pregnancy lowers neural tube defects (NTDs) risk for infants, *spina bifida* (anomalies in the spine) and *anencephaly*. Folic acid supplements are recommended for the pregnant women, since it has active therapeutic functions preventing neural tube defects. The role of food supplements are to balance nutritional food needs of pregnant women. This study was purposed to investigate emulsification process for the formula of natural folic acid supplementation from the mixture of fermented soybean tempe (*glycine soya L.*) and spinach (*Amarantus sp*). Ratio of fermented soybean tempe by *Rhizopus oligosporus* C1 and fermented spinach vegetables by kombucha culture was 1:2.5% ; 1:5% ; 1:7,5%, with the addition of emulsifier ratio of carboxy methyl celullose and gelatin, with concentration variations (0.2:4) and (0.4:8). The results showed that the highest levels of folic acid were found in mixed paste preparations (1:2.5%) with 0.4% CMC (w/w) with gelatin at concentration of 769.67 □g/mL).

Keywords: *supplement, folic acid, emulsifier, fermentation*

PP16

Identification of Chemical Content and Activity of Essential Oil of Citronella Wangi (*Cymbopogon nardus*) Against *Staphylococcus aureus* and *Escherichia coli* Bacteria

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Essential oil of citronella (*Cymbopogon nardus*) is one of the many essential oils produced in Indonesia that are used as antibacterial. The purpose of this study was to determine the essential oil content of citronella (*Cymbopogan nardus*) and to see antibacterial activity against the growth of *Staphylococcus aureus* and *Escherichia coli* bacteria. This antibacterial activity test was performed by disc diffusion method. Essential oils (*Cymbopogon nardus*) have antibacterial activity against *Escherichia coli* and *Staphylococcus aureus*. From the results of the discovery of components using GC-MS showed that the largest content was 33.86% sitronelal, geraniol 18.29%, sitronellol 14.97%. Essential oils (*Cymbopogon nardus*) have antibacterial activity against *Escherichia coli* and *Staphylococcus aureus*. In the diffusion method the concentrations can inhibit *Escherichia coli* and *Staphylococcus aureus* bacteria at a concentration of 700 ppm with moderate inhibitory power. The citronella essential oil has a smaller antibacterial ability than the chloramphenicol antibiotics.

Keywords : Antibacterial, *Cymbopogan nardus, Escherichia coli,* essential oil*, Staphylococcus aureus*

PP17

Efectivity and Characteristic Citronella (*Cymbopogon nardus* L.) Oil Lotion as Mosquito Repellent

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Repellent is a material that has the ability to protect humans from mosquito bites when applied to the surfaces of the skin. One of the natural ingredients that has the potential as a repellent is the citronella (*Cymbopogon nardus* L) with sitronellol and geraniol as the main compounds. Lemon grass oil is formulated into a lotion preparation with concentration variations of 0.5%, 1%, 1.5%. the purpose of this research is to make citronella oil lotion and test the characteristics, stability, and protection against mosquito bites. Lotion formula is then tested by measuring the stability of pH, color, texture, aroma, and consistency. Effectiveness test is done through protection power test by using alive mosquito directly. The result of this study shows that all of the three formulas of citronella oil lotion have sensory characters with good color, aroma, texture, and consistency. The stability of resulting lotion is homogeneous and has a pH in the range of 7-8 and has an acceptance level above 60% in the organoleptic test. The lotion formula with a concentration of 1.5% has 50% mosquito bite protection for 6 hours of testing time. The formula also does not have an irritating effect.

Kata kunci : *Repellent, Citronella Oil, Mosquito, Lotion.*

PP18

Antibacterial Activity Test of *Klebsiella pneumonia* from Tomato Fruit Extract *(Solanum lycopersicum L.)* as a prevention of Pneumonia

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Tomato is a fruit that a lot of spread in almost every region in the archipelago and has a high nutritional value. The process of isolation and identification of tomato extracts has been done. Fermentation process from tomato fruit for each fermentation time and obtained pH range as many as 5.0 and 4.0. The identification morphology of bacteria for each T_{36} and T_{48} samples were shaped bacil and positive Gram, don't have spores and colonize and then, the samples is done to acid resistance test at pH 2.0 until pH 6.0 and obtained for each T_{36} and T_{48} samples having resistance at pH 4.0 and 3.0. So that, the samples still able to survive in an acid condition. After that, all of the samples is done to antibacterial activity test with using Mueller Hinton and Agar nutrient medium into petridish. The process of activity test that carried out for 3 days using antibiotic as control like an ampicillin and erythromycin when using *Klebsiella pneumonia* as test bacterial obtained clear zone value from T_{36} sample respectively as many as 7 mm, 10 mm and 11 mm while T_{48} sample as many as 17 mm, 17 mm and 18 mm. So, the conclude that tomato fruit extract having ability as antibacterial against *Klebsiella pneumonia* bacteria in an effort to prevention of pneumonia.

Keyword : *Antibakteri, Klebsiella Pneumonia, Tomat, Pneumonia*

PP19

ANTIBACTERIAL ACTIVITY OF SOME Extracts COCOR BEBEK LEAF *(Kalanchoe millotii)*

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Cocor bebek (Kalanchoe millotii), is one species of Kalanchoe that is traditionally used to treat several diseases, one of which is antibacterial. This study aims to examine the antibacterial activity of n-hexane extract, methylene chloride, ethyl acetate, and K. millotii leaf ethanol against Staphylococcus aureus, Bacillus subtilis, Escherichia coli and Salmonella typhimurium, using liquid microdilution method. The results showed that the antibacterial activity of n-hexane extract was active against S. thypimurium bacteria by giving MIC and KBM values of 7.8 µg / mL and 15.7 µg / mL; methylene chloride extract, active against B. subtilis by giving MIC and KBM values of 7.8 µg / mL and 62.5 µg / mL; ethyl acetate extract, active against S. aureus, E. coli and S. typhimurium by giving MIC and KBM values of 3.9 µg / mL and 15.7 µg / mL, and ethanol extract, active against S. aureus bacteria and E. coli gave MIC and KBM values of 7.8 µg / mL and 62.5 µg / mL. The results showed that K. milloti leaves could potentially be used as an antibacterial.

Keywords: K.millotii, extract, antibacterial activity, MIC, MBC

PP20

Phytochemical and Bioactivity of Ethanol Extract of Cauliflower (*Brassica Oleracea* Var. Botrytis)

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Antioxidants are compounds that can inhibit the reaction of free radicals in the body. This study aims to determine the phytochemical content of cauliflower by the Harbone method, the antioxidant activity with DPPH (2,2-diphenyl-1-pikril hidrazil) method and toxicity test by the BSLT (*Brine Shrimp Lethality Test*) method of cauliflower extract (*Brassica oleracea* var. Botrytis). Cauliflower extract was made using maceration extraction method with ethanol solvent p.a. The results showed that the phytochemical test of cauliflower containing alkaloids, glycosides, steroid, triterpenoids, flavonoids, and saponins. The IC_{50} value of cauliflower ethanol extract was 292.26 ppm and LC_{50} 677.95 ppm. While the IC_{50} value of vitamin C is 6.733 ppm. This value shows cauliflower has weak antioxidant activity, but at IC50 concentration is not toxic to shrimp larvae.

Keywords: *Antioxidants, BSLT, Cauliflower, DPPH, phytochemical*

PP21

Comparison of Phylogenetic MSP 1 Jayapura, Papua and Central Sumba, NTT

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Tropical malaria is an endemic disease in almost all regions of NTT and Papua. Tropical malaria is caused by the Plasmodium falciparum parasite that lives and develops in human blood. Widespread parasites of P.falciparum and irregular treatment has made this disease more difficult to eradicate. Treatment failure against malaria caused by P. falciparum in Jayapura and Central Sumba (NTT) is quite high, therefore, handling malaria can be done with a vaccination program. Genetic change from P.falciparum can occur due to fusion of gametes and also produce different recombination strains. Genetic recombination results in genetic diversity of P. falciparum, more specifically related to the highly antigenic merozoite surface protein (Merozoite surface protein / MSP1). Mutations that occur in the gene that encode this protein are considered responsible for various invasion and resistance abilities of P. falciparum. Based on 10 blood samples of malaria patients in Jayapura Public Hospital, the MSP1 allele group found at 1049 bp. The allele group of MSP 1 Jayapura occur at the same 1 locus. When compared with a sample from secondary data of MSP 1 from Sumba Besar, NTT there were groups of alleles at 3 loci.

Key word: *Plasmodium falciparum, MSP1 Jayapura, Malaria Tropica*

PP22

Determination Encapsulation Efficiency Beta Carotene and Vitamin C In Liposomes of Coconut Phospholipids (*Cocos Nucifera L.*) Choline Species

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Abstract. In this research, coconut phospholipid (*Cocos nucifera L*.) choline species or phosphatidylcholine (PC) were used as liposomes making materials. Coconut PC liposomes are used to encapsulate beta carotene and vitamin C. The stability of liposomes can be increased by adding 10% cholesterol in liposomes. The efficiency of beta carotene and vitamin C encapsulation in liposomes of coconut phospholipid (*Cocos nucifera L*.) choline species was 58.79% and 63.15%. The addition of 10% cholesterol increased encapsulation efficiency vitamin C in liposome of coconut phospholipid (*Cocos nucifera L*.) choline species by 75.61%, while the beta carotene encapsulation efficiency in liposomes of cocos phospholipid (*Cocos nucifera L*.) choline species decreased to amounted to 55.99%.

Keyword : *Beta carotene, Vitamin C, Encapsulation Efficiency*

PP23

Inhibiting of Interaction between E-Cadherin E-Cadherin Protein by Cyclic Peptide ADTC4 (Ac-CDDTPC-NH_2) Inhibitor Simulated on 120 ns

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Modulating on molecular level of molecular and binding conformation between protein molecules was able to change the activity of protein on the cell. This principle was applied for developing the peptide for diagnostic and therapeutic purposes. On the molecular level, molecular docking computational methods have been widely used for understanding the mechanism of modulating of those conformation changes. The treatment of diseases on the central nervous system cell which is blocked by E-Cadherin of tight junctions can be overcame by modulating approach. By modulating, the molecules that have a BM more than 500 D and more than 11 Å in diameter are predicted able to pass. Experimentally, the ADTC4 peptide which is a E-cadherin-derived peptide was able to modulate the E-cadherin...E-cadherin interaction of tight junctions. The ADTC4 peptide can induce and increasing the porosity of tight junction in BBB. On molecular level, the increased porosity predicted because of the inhibiting of interaction between E-cadherin...E-cadherin peptides by modulator or blocker of ADTC4 peptide. However, the mechanism of ADTC4 peptide to inhibite the E-cadherin...E-cadherin interactions have not been widely understand and studied. In order to explain the experimental results molecularly, the molecular docking methods have been applied. In this study molecular docking modeling have been carried out to determine the binding energy and binding site between ADTC4 cyclic peptide with E-cadherin. At the first of stage was the optimation of the linear and cyclic ADTC4 peptide by molecular dynamics using GROMACS software. At the second stage, the molecular docking was carried out to determine the lowest binding energy between one linear and 20 structure of cyclic ADTC4 and E-cadherin EC1-EC2 domain using Autodock software. The A18 conformation which have the binding energy -28.24 $kJmol^{-1}$ was the greatest inhibitor. The binding sites was at the residues Trp2, Val3, Ile4, Gln23, Ile24, Lys25, Ser26, Asn27 and Met92 in the adhesion-arm acceptor pocket region of tight junction.

PP24

ANTIOXIDANT ACTIVITY FROM METABOLITE OF *Carica papaya* ENDOPHYTIC BACTERIA

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One source of antioxidant compounds are secondary metabolites which can be obtained from the leave of papaya (*Carica papaya*). The secondary metabolites can be isolated from plants and endophytic bacteria that is symbiotic with papaya plants. The endophytic microbacteria have many advantages in produce bioactive compound. This study aims to isolate the endophytic microbes that is symbiotic with papaya, obtaining data of antioxidant activity with DPPH method and obtaining phytochemical screening qualitative data of secondary metabolites production of the endophytic bacteria.The results from this study is one isolate endophytic bacteria that is symbiotic with papaya leave. Obtained bacterial isolate has staphylococcus shape and is a type of gram-negative bacteria. The antioxidant activity of secondary metabolites of endophytic bacteria isolate using DPPH method has IC_{50} of 22.472 ppm. Phytochemical screening shows that the production of secondary metabolites of endophytic bacteria which were isolated from papaya leave contains alkaloids, flavonoids, tannins and saponins.

Keyword : *papaya leave, DPPH, antioxidant activity, endophytic bacteria*

PP25

Adsorption of Eosin Y Dyes Using Modified Silica Gel Composites 3-aminopropyltriethoxysilane (APTES) - Active Carbon from Natural Resources

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Eosin Y dye have been successfully tested on adsorption using silica gel, activated carbon, and composite adsorbent. Initial effect on pH and contact time showed that the adsorbents are on pH 4 and 30 minute, respectively. The isotherm adsorption model of eosin Y toward silica gel composite modified by APTES – activated carbon following the Langmuir isotherm with maximum adsorption capacity and Langmuir constant value are 21,28 mg g-1 and 0,165, respectively.

Keywords: *Adsorption, Eosin Y, Rice Husk Ash, Coconut Shell, Activated Carbon, Silica Gel, APTES, Composite*

PP26

ANALYSIS OF STUDENTS AUTHENTIC ASSESSMENT IN CHEMISTRY THROUGH FLIPPED CLASSROOM MODEL

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This study aims to determine the results of authentic assessment of students that include cognitive, affective and psychomotor aspects during acid-base learning process using flipped classroom model. The qualitative method was used in this study with data collection techniques through learning outcome tests for cognitive aspects, observation for assessment of affective and psychomotor aspects, and questionnaires. Flipped classroom model is done by combining 50% of activities in the classroom and 50% of activities outside the classroom. The learning process uses four learning videos consist of two videos about the concept of acid-base and two video experiments on acid-base. The results showed that student learning outcomes increased on cognitive aspects. It is supported by changes in affective and psychomotor aspects during the learning process. The average score of students in each indicator of affective and psychomotor aspects has increased. It can be concluded that flipped classroom model can be used to improve student learning outcomes on cognitive, affective and psychomotor aspects.

Keywords: *flipped classroom, authentic assessment, cognitive, affective, psychomotor*

PP27

THE SYNTHESIS OF 2'-HYDROXY-4-METHOXYCHALCONE, 4'-METHOXYLAVONE, 2'-HYDROXY -4-CHLOROCHALCONE AND 4'-CLOROFLAVANONOL AND THEIR *IN VITRO* ACTIVITY TEST

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The synthesis of 2'-hydroxy-4-methoxychalcone, 4'-methoxyflavone, 2'-hydroxy -4-chlorochalcone and 4'-chloroflavanonol and cytotoxicity activity test to HeLa, WiDr, T47D, MCF7 and Vero cells were performed. Chalcone is synthesized by reaction between 2-hydroxyacetophenone and 4-methoxybenzaldehyde and 4-chlorobenzaldehyde with NaOH catalyst in ethanol solvent. The reaction product is separated and refined. Then 2'-hydroxy-4-chlorokhalkon is reacted with acetic acid anhydride in the ethylacetate solvent and the $NaHCO_3$ catalyst to produce 2'-acetyl chalcone. The resulting 2'-acetylchloride was oxidized through Algar-Flynn-Oyamada reaction and undergoing β-cyclization process to form 4'-chloroflavanonol.

The results of the analysis using the UV-Vis spectrometer, FT-IR, GC-MS, 1H-, 13C-NMR showed the resulting compounds according to 2'-hydroxy-4-methoxycha, 4'-methoxiflavone, 2'-hydroxy-4-chlorochalkone and 4'-chloroflavanonol. The cytotoxic activity test of 2'-hydroxy-4-methoxyrous, 4'-methoxiflavone, 2'-hydroxy-4-chlorochlaine and 4'-chloroflavanonol in vitro against HeLa, T47D, WiDr and Vero cells denotes chalcone ie 2'-hydroxy -4-methoxyethylene and 2'-hydroxy-4-chlorochalcone provide IC50 values successively 9, 10, 12, 76 gmL-1 and 20, 33, 21, 149 gmL-1. While 4'-methoxylavone and 4'-chloroflavanonol gave IC50 values respectively 468, 318, 400 g/mL and 353, 55, 4. 10 + 4 ,, 4. 10 + 4 g/mL. The IC50 value data above shows that the 2'-hydroxy-4-methoxylate compound exhibits highly active cancer cell growth (HeLa), breast cells (T47D) and colon (WiDr), while 2'-hydroxy-4- chloroquin show very active cell-cell growth against uterine (HeLa) and colon (WiDr) cells but is quite active against breast cells. 4'-methoxiflavone compounds are inactivated to the growth of cancer cells HeLa, T47D and WiDr while 4'-chloroflavanonol is only active enough against T47D cells.

PP28

Phytochemical and antioxidant ACTIVITIES IN EXTRACT n-hexan, Ethyl Acetat and Methanol SKIN BTANG Chisoceton sp.(Meliaceae)

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Abstract

This study aims to determine the class of secondary metabolites, compounds and antioxidant activity of each extract of the bark of Chisocheton sp. (Meliaceae). The extraction of 40 g of powdered bark Chisocheton sp (Meliaceae) with n-hexan, ethyl acetate and methanol each with 2000ml (3x2000mL) successively produced 8 g of n-hexan ekstrat concentrated, 5.2 g of concentrated ethyl acetate extract and 6.7 g of concentrated methanol extract. Phytochemical test results indicate the presence of compounds of flavonoids, terpenoids, steroids and phenols. The test results of antioxidant activity with DPPH method showed that the ethyl acetate extract gives IC50 value of 22 ppm less than the IC50 vitamin C at 22 ppm, which means ethyl acetate extract had the greatest ability to capture free radicals.

Keywords: Chisocheton. sp, terpenoids, flavonoids, steroids, phenols, DPPH and phytochemicals.

PP29

Mechanical and Chemical Characteristic of Edible Film From Carrageenan Based Red Seaweed (Euchema sp.) From Biak with Sorbitol as Plastisizer

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The aim of this research was to characterize the mechanical and chemical properties of the carrageenan based edible film. Edible film made by blending method. Carrageenan was mixed with sorbitol with carrageenan concentration 0.6;0.8;1;1.2 and 2%. Variable analyzed were tensile strength , elongation at break and FTIR. Research showed that the best mechanical characteristics was resulted from edible film made from 2% carrageenan, with tensile strength 39,168 Mpa and elongation at break 41,533%. FTRI analysis showed thar the addition of sorbitol caused the decreasing of internal hydrogen bonding between polimer in the matrix.