Andalas University
Indonesia

ICBEAU ICoMSB UPKI UNIT PENELITIAN DAN KEGIATAN ILMIAH

Multidisiplin, Kejasama dan Solusi
PROGRAM PASCASARAJANA UNIVERSITAS ANDALAS

ABSTRACT BOOK and SEMINAR PROGRAM

3rd ICBEAU

International Conference of Bio-Based Economy for Aplication and Utilization

in conjunction with

1st ICoMSB

International Conference of Medical Science and Biotechnology

Via Zoom Meeting on November 10th, 2021

Welcome Address by The Head of LPPM in Andalas University

Assalamu'alaikum wr. wb,

Good morning to all of you.

Dear respected keynote speakers,

Members of the organizing committee,

Dear participants and observers,

Distinguished guests, respected colleagues, ladies, and gentlemen.

We are very happy to welcome all participants of the International Conference on Bio-Based Economy for Application and Utilization (ICBEAU-2021). This year's conference collaborates with the Faculty of Medicine, 1st International Conference in Medical Science and Biotechnology (ICoMSB). This conference has a very strategic position in responding the global development.

Need on an agricultural product is not dominated currently in food aspect, but is becoming more broadly to the new aspect beyond the food. Fossil-based energy currently contributed to many pollution issues in the whole of the world, besides its existence which is scarce in the future. Drug development, based on synthetic chemicals and materials is believed and regarded to play a significant role in the occurring of new health problems and diseases. For that reason, a shift in medical treatment back to nature is becoming a trend nowadays. The pandemic of CoVid-19 switches medical science to explore more on the role of genomics in virulence and diseases, further the science in medical biotechnology and vaccine development is needed. This ICBEAU-2021 in conjunction with ICoMSB, should have a very significant impact on the above-mentioned issues.

Respected Ladies and Gentlemen,

As the Head of LPPM at Andalas University, I personally very much support this event. We thank all parties supporting and contributing to implementing this International Conference. Especially I would like to thank all keynote speakers who responded positively to our request to share their insight, experience, and expertise in this conference.

- Prof. Prashanta CN, REVA University, India.
- Assoc.Prof. Dr. Pasupuleti Visweswara Rao, Universiti Malaysia Sabah, Malaysia.
- Gunadi, MD, Ph.D, Pediatric Surgeon, Gadjah Mada University, Indonesia.

- Dr. Zolkapli Eshak, Universiti Teknologi Mara, Malaysia.
- Rauza Sukma Rita, MD, Ph.D, Andalas University, Indonesia.
- Asst. Prof. Dr. Sutthiwal Setha, Mae Fah Luang University, Thailand.

Finally, I would like to congratulate the organizing committee for their tremendous efforts in organizing the conference.

Success for all of us,

Head of the LPPM in Andalas University,
Dr.-Ing. Ir. Uyung Gatot Syafrawi Dinata, M.T.

Welcoming Speech of The Committee's Chairman

Good morning, ladies and gentlemen,

On behalf of the committee, first of all let me welcome you and express our great thanks for participating in this 3rd International Conference of Bio-Based Economy for Application and Utilization 2021 (ICBEAU-2021). This year ICBEAU 2021 collaborate with Faculty of Medicine, Andalas University, 1st International Conference of Medical Science and Biotehcnology. Thus, our conference theme is "Biotechnology for Better Life".

Nowadays, we are still facing the CoVID-19 pandemic issue, which is significantly impact our activities and thus also our lifestyle as well. However, this situation on the other side, provide many opportunities particularly in the application and utilization of bio-based drugs and materials. Medical Science and medical biotechnology also has a great advancement and innovations to overcome this situation, especially in genomics and vaccine development. In this context, this seminar event should meet its relevancies and urgencies.

Dear honored participants,

In this opportunity let me sound my great thanks to all parties involving and contributing to the implementation of this seminar. Special thanks to our respected keynote speakers; Assc. Professor Prashanta CN from Reva University, India; dr, Rauza Sukma Rita, Ph.D from Andalas University; Assoc. Prof Dr Pasupuleti Visweswara Rao from Universiti Malaysia Sabah, Malaysia; Asst Prof Sutthiwal Setha, Ph D, from Mae Fah Luang University, Thailand, Dr. Zolkapli Eshak from Universiti Teknologi Mara, Malaysia, and dr. Gunadi, Ph.D, Sp.BA from Gadjah Mada University, for their collaboration and their kindness to share their experience and their expertise in this forum.

Many, many thanks also addressed to the Rector of Andalas University and head of Institution of Research and Community Service of Andalas University, Dr. Uyung Gatot, Director of Graduate School of Andlas University, Professor Dr.rer.soz.Nusyirwan Effendi, also all parties and valuable participants that could not be mentioned in this opportunity. Finally, we hope this seminar could bring a significant impact and contribution to the future application and utilization of Bio-Based economy.

Regards,

Chairman of the Committee

Hirowati Ali, MD, Ph.D

The Committee Structure of

3rd International Conference of Bio-based Economy for Application and Utilization 2021

in conjunction with

1st International Conference of Medical Sciences and Biotechnology

Date: November 10th, 2021

STEERING COMMITTEE

Rector of Andalas University

Head Of Research And Public Service Institution, Andalas University

Dean of Faculty of Medicine, Andalas University

CONFERENCE COMMITTEE

Head of Committee

Hirowati Ali, M.D, Ph.D

Secretariate

Lily Syukriani, S.P., M.P.

Sisca Dwi Yarni, S.Si., M.Biotek.

Liza Aulia Yusfi, S.Si., M.Biotek.

Rahmi Hidayati, S.P., M.Biotek.

Dohan Pramudia

Suhada Tri Marneli

Nicholas Farrell Wijaya

Treasury

Roza Yunita, S.P., M.Si.

Event Coordinator

Bastian Nova, S.Si., M.Biotek.

Robi Trivano, S.P.

Oliviana Evricia

Amalia Azizah

Yuanda Barta, S.E.

Irnaldi Yusuf, S. Kom.

Master of Ceremony

Aisyah Salsabilla, S.P.

Muhammad Irsyad

Keynote Speaker

Prof. Prashanta CN, REVA University, India

Assoc.Prof. Dr. Pasupuleti Visweswara Rao, Universiti Malaysia Sabah, Malaysia

Gunadi, MD, Ph.D, Pediatric Surgeon, Gadjah Mada University, Indonesia

Dr. Zolkapli Eshak, Universiti Teknologi Mara, Malaysia

Rauza Sukma Rita, MD, Ph.D, Andalas University, Indonesia

Asst. Prof. Dr. Sutthiwal Setha, Mae Fah Luang University, Thailand

Moderator on Panel Session of Keynote Speaker

Prof. Dr. sc. agr. Ir. Jamsari, M.P.

dr. Mutia Lailani, M.Sc.

Parallel Session Moderator

Dr. Raudhatul Fatiah, S.P., M.Biotek.

dr. Al Hafiz, Sp. THT-KL

Dr. My. Syahrawati, SP. M.Si

Dr. Ir. Irawati, M.Rur.Sc.

Maythesya Oktavioni, S.P., M.Biotek.

Dr. P.K. Dewi Hayati, SP., M.Si.

SCHEDULE

3rd International Conference of Bio-Based Economy for Application and Utilization in Conjunction with 1st International Conference of Medical Sciences and Biotechnology

Wednesday, 10nd November 2021

via Zoom, Meeting - ID: 685 343 6245, Passcode: UNAND

Time	Event	PIC
07.45-08.00	Log in zoom	IT
08.00.08.02	Opening ceremony	MC
08.02-08.05	Singing National Anthem "Indonesia Raya"	Recorded Song/IT
08.05-08.15	Opening Speech from the Head of LPPM Andalas University	Dr. Uyung Gatot
08.15-08.25	Opening Speech from the Director of Postgraduate Program of Andalas University	Prof. Nursyirwan Effendi
08.25-08.35	Opening Speech from the Dean of Medical Faculty of Andalas University	Dr. Afriwardi
08.35-08.45	Welcoming Video of ICBEAU 2020	IT Team
	Keynote speech (1st Panel discussion)	
08.45-10.15	1. Assoc. Prof. Dr. Pasupuleti Visweswara Rao (Medicinal plants & Bio Nanoparticles for oxidative stress and metabolic diseases) 2. Asst. Prof. Dr. Sutthiwal Setha (From Agro-Technology to Agro-Industry: A Case Study in 'Phulae' Pineapple) 3. Dr.Zolkapli Eshak (Effect of Malaysian Pineapple Honey on Weight Loss, Control, and Prevention In Vitro and In Vivo Models)	Prof. Jamsari
	Appreciation and Photo Session	MC

10.15-10.25	Introduction of Unand	IT
	Keynote speech (2nd Panel discussion)	
10.25-11.55	1. Gunadi, MD, Ph.D, Pediatric Surgeon (The Role of Genomics During Covid-19 Pandemic) 2. Assoc. Prof. Prashanta CN, Ph.D (Pharmacogenomic Approaches towards Personalized Medicine) 3. Rauza Sukma Rita, MD, Ph.D (Islet Isolation and Primary β-Cell Culture Techniques to Study Diabetes)	dr. Mutia
	Appreciation and Photo Session	MC/IT
11.55-12.15	Direction to joint seminar room	IT
12.15-13.00	Break	Committee
13.00-13.30	Log in Parallel Session	IT
13.30-16.00	• Room A1: Biomedical Science, Nutraceutical, and Drug Developments - Re-emerging Infectious Diseases - Public Health, Midwifery, and Psychology Issue - Biomedical Sciences and Bioinformatics (Dr. Raudhatul Fatiah, S.P., M.Biotek. - Yuanda Barta, SE) • Room A2 : Biomedical Science, Nutraceutical, and Drug Developments - Cancer, Aging, and Degenerative Diseases - Biomedical Engineering and Bioremediation - Biodiversity and Microbiology (dr. Al Hafiz, Sp. THT-KL - Irnaldi Yusuf, S.Kom.) • Room B1 : Natural Resources, Agriculture, and Food Technology - Biodiversity and Microbiology (Dr. My. Syahrawati, SP. M.Si - Oliviana Evricia)	IT/Room Coordinator

	• Room B2 : Natural Resources, Agriculture, and Food Technology - Biodiversity and Microbiology (Dr. Ir. Irawati, M.Rur.Sc.- Amalia Azizah) • Room C1 : Natural Resources, Agriculture, and Food Technology - Biodiversity and Microbiology (Maythesya Oktavioni, S.P., M. Biotek. - Muhammad Irsyad) • Room C2 : Natural Resources, Agriculture, and Food Technology - Biodiversity and Microbiology (Dr. P.K. Dewi Hayati, SP., M.Si. - Suhada Tri Marneli)	
16.00-16.20	Break	
16.20-17.00	Closing Ceremony 1. Best Presenter Announcements 2. Clossing Speech from Chief of Committee	MC/ Chief of Committee

ABSTRACT OF KEYNOTE SPEAKERS

Keynote Talk: Medicinal plants & Bio Nanoparticles for oxidative stress and metabolic diseases

Assoc Prof Dr Pasupuleti Visweswara Rao

Research Coordinator, Head, Non-Communicable Diseases Research Niche Areas & Head of Internationalisation unit, Department of Biomedical Sciences, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, Kota Kinabalu, 88400, Sabah, Malaysia

Abstract

Medicinal plants and herbs play an important role in human life and diseases. Medicinal plants and their extracts are being used since ages for various types of diseases. The isolated compounds from different plant species play very crucial role in treating numerous diseases including microbial diseases, inflammatory diseases, metabolic disorders, skin diseases etc. The modern technology using synthesis of nanoparticles using plant materials is now a booming field of research, where the synthesis occurs with the bio reductants and the nanoparticles are potential in treating various diseases and complications too. The most important components in the plants are secondary metabolites which acts as antioxidants and thereby playing their role in suppressing the free radicals or external particles entered the cells or tissues. These biologically synthesised nanoparticles with the smaller size perform larger activities at the cellular level. Natural products are always better since they possess very little or no toxic compounds. Testing the toxicity of the nanoparticles and the crude extracts is very important to apply these nanoparticles in the environment, human, plant or animal related issues.

Keywords: Natural Products, Medicinal plants, Metabolic diseases, herbal medicine, nanoparticles.

Keynote Talk: From Agro-Technology to Agro-Industry, A Case Study in ‘Phulae’ Pineapple

Assistant Professor Sutthiwal Setha, PhD

School of Agro-Industry, Mae Fah Luang University, Chiang Rai 57100, Thailand; Research Group of Postharvest Technology, Mae Fah Luang University; E-mail; sutthiwal.set@mfu.ac.th

Abstract

Pineapple 'Phulae' is an important economic crop and is considered a geographical indication of Chiang Rai Province, Thailand. It is suitable for consumption in fresh form due to its unique appearance and taste, as well as its high nutritional content. Although 'Phulae' pineapple is popular among consumers and has the potential to be exported to the international market, it is limited by its short self-life. Therefore, developing technologies to maintain the quality for export of 'Phulae' pineapple is extremely important to increase the number of fresh pineapples exported. Pineapple also has potential in the fresh-cut pineapple market due to its valued sensory attributes and demand for immediate consumption. The advantages of the fresh-cut process are lower transportation costs and problems with the internal quality of the fresh product. However, peeling, trimming or cutting injure the product, stimulate metabolism and initiate the growth of microorganisms, resulting in rapid spoilage. The application of postharvest treatments to the quality and safety of fresh cut 'phulae' has been developed. In recent years, increasing pineapple production has resulted in oversupply and lower prices. Processed pineapple is one way to increase the value of pineapple. High hydrostatic pressure (HHP) processing, a cold pasteurization process, has been applied to maintain the nutritional quality and shelf life of pineapple juice. HHP treatment was able to obtain higher nutritional value and more antioxidants than heat-treated pineapple juice. As the processed pineapple industry has huge number of by-products (30-50%) which are generally undervalued. The utilization of pineapple by-products as functional ingredients for food and feed is also being explored.

Keywords: pineapple, postharvest technology, fresh-cut process, high hydrostatic pressure, waste utilization.

Keynote Talk: Effect of Malaysian Pineapple Honey on Weight Loss, Control, And Prevention In Vitro And In Vivo Models

Dr. Zolkapli Eshak

Universiti Teknologi Mara, Malaysia

Abstract

Obesity is a global issue that can lead to chronic diseases. Honey is one of the nutrients that help manage weight. This study used in vivo and in vitro models to assess pineapple honey's anti-obesity effects. An initial screening of chosen honey such Gelam, Acacia pineapple and two adulterated honey was conducted. Gelam honey had the highest phenolic component and flavonoid concentration, followed by pineapple honey. Sugar profiles, HMF, and glucose oxidase activity of adulterated honey A and B did not meet IHC Honey Board quality criteria. On the other hand, the effect of honey on cell proliferation, adipogenesis, and adipocytokines was studied in vitro for 24, 48, and 72 hours. The MTT assay was used to assess cell proliferation, followed by oil red O staining to assess lipid triglyceride, adipogenesis, and Feret's diameter. Gelam, Acacia, and pineapple honey suppressed adipogenesis in 3T3-L1 adipocytes by lowering lipid accumulation, Feret diameter, and intracellular triglyceride content. Also, Gelam, Acacia, and Pineapple Honeys reduced leptin and resistin levels. The results suggested honey may help prevent obesity by modulating adipocytokines involved in adipogenesis.

The effects of honey on obesity were studied in Sprague Dawley rats fed hypercaloric or hyperlipidemic diets. For eight weeks, rats were fed a 45% fat high-fat diet (HFD). Anthropometrical, biochemical, and obesogenic data were assessed. After eight weeks, all high-fat diet groups became obese. In vivo research found that obese rats fed pineapple honey had significantly lower weight gain, BMI, lipids, glucose, plasma leptin, and resistin. The study also found that obese rats given adulterated honey gained weight and adiposity index compared to the NC group. Compared to the HFD group, the HFDPH AND orlistat group showed a 4% decrease in adiposity index.

Furthermore, lipids, cholesterol, and glucose levels were considerably lower than HFD and both adulterated honey groups (FHA and FHB). The study found that rats fed pineapple honey and orlistat had lower levels of leptin ($p<0.05$). The HFDPH group had slightly less aberrant changes than the HFD group but was not significantly different from the NC group.

In conclusion, honey may reduce obesity-related parameters in cell culture and animal models while also regulating adipocytokine production to counteract the effects of a high-fat diet. Honey modulates lipid metabolism by reducing plasma leptin and resistin levels in obese rats. Thus, it may indirectly promote lipolysis by reducing the physical barrier protection of lipid droplets, preventing fat buildup in cells.

Keynote Talk: Pharmacogenomic approaches towards personalized medicine

Prashantha CN

Assistant Professor, Department of Biotechnology, School of Applied Sciences, REVA University, Bangalore-560064.

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Mobile: +91-9844158444

Abstract

Pharmacogenomics is an important example of the field of precision medicine, which aims to tailor medical treatment to each person or to a group of people. Pharmacogenomic approaches help to understand how the patient DNA affects the way they respond to drugs. When a gene variant is associated with a particular drug response in a patient, there is the potential for making clinical decisions based on genetics by adjusting the dosage or choosing a different drug. Many drugs that are currently available are “One size fit all”, but they don’t work the same way for everyone. It can be difficult to predict who will benefit from a medication, who will not respond at all, and who will experience negative side effects (called adverse drug reactions). Adverse drug reactions are a significant cause of hospitalizations and deaths. With the knowledge gained from the Human Genome Project, researchers are learning how inherited differences in genes affect the body’s response to medications. These genetic differences will be used to predict whether a medication will be effective for a particular person and to help prevent adverse drug reactions. Realizing this ambition requires nothing less than the ability to derive a genotype-to-phenotype map for a trait of interest. In the current study have adopted genome-wide association study (GWAS) will help to understand the large-scale determination of genetic variations correlated them with the phenotype of interest. Single locus approaches also helps for analyzing the functional effects of single loci, SNP, haplotype, and even intron variation. Based on these approaches that is likely that of Bayesian approach that incorporates prior knowledge on genetic association towards the personalized medicine or predictive medicine.

Keynote Talk: Islet Isolation and Primary β-Cell Culture Techniques to Study Diabetes

dr.Rauza Sukma Rita, Ph.D

Department of Biochemistry, Faculty of Medicine, Universitas Andalas, Padang, Indonesia.

Abstract

The pancreas is a large, retroperitoneal organ in the abdominal cavity. The pancreas is primarily an exocrine gland, although it also performs critical endocrine activities. The exocrine pancreas secretes digestive enzymes. The islets of Langerhans, which are found throughout the pancreatic substance, represent the endocrine component of the pancreas. Insulin-producing beta cells, glucagon-producing alpha cells, and somatostatin-producing delta cells are among the most common cell types found in islets. The pancreatic islets of Langerhans secrete hormones that are critical for blood glucose management, making them an essential subject of diabetes research. It is necessary to prepare the Langerhans islets properly. Every step of islet preparation, including solution preparation, islet isolation, and islet picking up, is vital and must be completed in the best condition. Islets of good quality can be used for islet insulin release experiments or primary β-cell culture, which has led to a variety of diabetes studies.

TIME TABLE OF THE PARALLEL SESSION

TIME TABLE OF THE PARALLEL SESSION

Room : A1
Topic : Biomedical Science, Nutraceutical, and Drug Developments
Re-emerging Infectious Diseases
Public Health, Midwifery, and Psychology Issue
Biomedical Sciences and Bioinformatics
Moderator : Dr. Raudhatul Fatiah, S.P., M.Biotek.
Operator : Yuanda Barta, SE

No	Time		ID	Author (s)	Title	Presentation ID
1	13:30	13:40	164	Gestina Aliska, Elly Usman, Yusticia Katar, Fadrian, Wirza Rahmania Putri, and Nisa	Differences of Cost Estimation by National Health Insurance Program (JKN) and Hospital Bills for Sepsis Cases in Indonesia	A1-164-Presenter Name
2	13:40	13:50	170	Nuryanto, Sri Maryani, Reni Oktarina, Oom Komalasari, Niken PNR, and A. Ubaidillah	Clean and Healthy Living Behavior of Purun Artisan Family in Pedamaran Village Ogan Komering Ilir Regency	A1-170-Presenter Name
3	13:50	14:00	171	Reni Oktarina, Nuryanto, Oom Komalasari, Sri Maryani, and Ekowati Retnaningsih	Implementation of Covid-19 Preventive Health Protocol in Palembang City, South Sumatera Province	A1-171-Presenter Name
4	14:00	14:10	175	Arina Widya Murni and Elfira Yusri	Analysis of The Relationship of Emotional Stress with Clinical Picture and Ratio of Neutrophil Lymphocytes in Covid-19 Sufferers at Andalas University Hospital	A1-175-Presenter Name
5	14:10	14:20	251	Elizabeth B and Roslaili R	Detection of People at Risk of Corona Virus Disease 2019 (Covid-19) to Visitors of Alai Health Center in Padang City	A1-251-Presenter Name

6	14:20	14:30	223	Noverika Windasari, Citra Manela, Taufik Hidayat, and Rika Susanti	Profile of Clinical Forensics from 2014 to 2018 at Dr. M. Djamil General Hospital Padang, Indonesia	A1-223-Presenter Name
7	14:30	14:40	179	Citra Manela, Rika Susanti, Djong Hon Tjong, and Ahmad Yudianto	Allele Frequency of 13 Loci Short Tandem Repeats (STR) in Minangkabau Ethnic group of Indonesia	A1-179-Presenter Name
8	14:40	14:50	239	Linosefa and Fory Fortuna	Phenotypic Characteristics and SHV Gene Distribution of Extended Spectrum β-lactamase (ESBL)-Producing *Acinetobacter baumannii* from Dr. M. Djamil Hospital Padang	A1-239-Presenter Name
9	14:50	15:00	241	D D A Bakhtra, Yanwirasti, F S Wahyuni, and D Handayani	Cytotoxic Activity of Marine Sponge-Derived Fungus *Penicillium citrinum*	A1-241-Presenter Name
10	15:00	15:10	243	Fitra Fauziah, Dian Handayani, Hirowati Ali, Ilmiawati, Dwi Dinni Aulia Bakhtra, and Muhammad Taher	Marine-Derived Fungus *Penicillium citrinum* Xt6 isolated from *Xestospongia testudinaria* DD-01 induce Adipocyte Differentiation on 3T3-L1 Preadipocytes	A1-243-Presenter Name
11	15:10	15:20	246	Roza Silvia, Fory Fortuna, and Hirowati Ali	Cisplatin has The Highest Risk to Induce Apoptosis based on The STITCH Database	A1-246-Presenter Name

TIME TABLE OF THE PARALLEL SESSION

Room : A2
Topic : Biomedical Science, Nutraceutical, and Drug Developments
Cancer, Aging, and Degenerative Diseases
Biomedical Engineering and Bioremediation
Biodiversity and Microbiology
Moderator : dr. Al Hafiz, Sp. THT-KL
Operator : Irnaldi Yusuf, S.Kom.

No	Time		ID	Author (s)	Title	Presentation ID
1	13:30	13:40	208	Z Taufiqa, DN Chandra, NI Lipoeto, and B Hegar	Chocolate Dadiah Pudding, as a Food Supplement for Pregnant Women Modified from Dadiah, Minangkabau Yogurt	A2-208-Presenter Name
2	13:40	13:50	253	Desmawati, Nur Indrawati Lipoeto, Neni Fitra Hayati, and Dita Hasni	Correlation of Macronutrient Intake with Blood Pressure and Lipid Profile in Minangkabau Women Ethnicity	A2-253-Presenter Name
3	13:50	14:00	185	Refa Rahmaddiansyah, Rauza Sukma Rita, and Almurdi	The Effect of Jamblang (*Syzygium cumini*) Leaves Extract on Serum Creatinine Level at Rats Induced by Lead Acetate	A2-185-Presenter Name
4	14:00	14:10	205	Husnil Kadri, Alwis Asidiq, and Firdawati	Effect of *Apis dorsata* Forest Honey and Metformin on Blood Glucose Levels in Alloxan-Induced Diabetic Mice	A2-205-Presenter Name
5	14:10	14:20	240	RS Rita, BO Putri, and E Kurniawan	Green Tea Decreased Blood Glucose and Total Cholesterol Serum Level in Rat Induced-Diabetic Model	A2-240-Presenter Name
6	14:20	14:30	174	Eva Decroli, Alexander Kam, and Upi Puspita	Description of Insulin Resistance and Prothrombotic Factors in Prediabetic Patients	A2-174-Presenter Name

7	14:30	14:40	202	Syamel Muhammad and Dheanisa Nofia	Analysis of Factors Related to The Incidence of Epithelial Ovarian Cancer	A2-202-Presenter Name
8	14:40	14:50	172	Restu Susanti and Yuliarni Syafrita	Analysis of Inducible Nitric Oxide Synthase, CXCL1 Serum Levels and Pericranial Tenderness Scores in Tension-Type Headache	A2-172-Presenter Name
9	14:50	15:00	257	Rizki Rahmadian, Marlina, Maharani Safitri, Riki Meksiko, and Nur Elida	Effect of Platelet-Rich Plasma on Differentiation of Sinovial Membrane-Derived Mesenchymal Stem Cells	A2-257-Presenter Name
10	15:00	15:10	258	Al Hafiz and Dolly Irfandi	The Effect of Nose Surgery on The Functionality of The Nose and Middle Ear in Minangkabau Ethnic	A2-258-Presenter Name
11	15:10	15:20	190	Nora Harminarti, Nuzulia Irawati, Hasmiwati, Sri Wahyuni Handayani, Zilga Ekha Regina, and Abdul Khairi Munzi Yulianto	Detection *Cryptosporidium sp* with Ziehl-Neelsen and ELISA Method in HIV/AIDS patients	A2-190-Presenter Name

TIME TABLE OF THE PARALLEL SESSION

Room : B1
Topic : Natural Resources, Agriculture, and Food Technology
Biodiversity and Microbiology
Moderator : Dr. My. Syahrawati, SP. M.Si
Operator : Oliviana Evricia

No	Time		ID	Author (s)	Title	Presentation ID
1	13:30	13:40	180	Haliatur Rahma, Trizelia, Martinius, Gita Flawerina, and Yolma Hendra	In-vitro Antagonism of *Beauveria bassiana* Against *Curvularia lunata*	B1-180-Presenter Name
2	13:40	13:50	192	Trizelia, Haliatur Rahma, and Martinius	Selection of Endophytic Fungus from Shallots as Antagonists of *Colletotrichum gloeosporioides*	B1-192-Presenter Name
3	13:50	14:00	200	Yulmira Yanti, Hasmiandy Hamid, Reflin, and Yaherwandi	The consortium of Indigenous Endophytic Bacteria for Control of Fusarium Wilt (*Fusarium oxysporum* f. sp *lycopersici*) and to Increase Growth and Yield of Tomatoes	B1-200-Presenter Name
4	14:00	14:10	248	Nurbailis, Akmal Djamaan, and Yulmira Yanti	Extraction of Secondary Metabolites from *Trichoderma viridae* with Ethyl Acetate Solvent and Test the Ability in Suppressing The Growth of *Colletotrichum gloesporoides* Causes of Anthracnose in Chili	B1-248-Presenter Name
5	14:10	14:20	201	Tunjung Pamekas and Usman Kris Joko Suharjo	Variation of Symptoms and Severity of Blast Disease in 10 Swamp Paddy Rice of Bengkulu University	B1-201-Presenter Name
6	14:20	14:30	178	Chairil Ezward, Irfan Suliansyah, Nalwida Rozen, and Indra Dwipa	Resistance of Local Rice Genotypes Against Bacterial Leaf Blight based on Observed Parameters Incubation Period and Lesion Length	B1-178-Presenter Name

7	14:30	14:40	209	L A Yusfi, D H Tjong, I Chaniago, and J Jamsari	Screening The Effect of YM Media Component and Tryptophan Levels on IAA Production of *Serratia plymuthica* UBCF_13	B1-209-Presenter Name
8	14:40	14:50	210	Z Andini, L A Yusfi, and J Jamsari	Optimization of Culture Medium Volume for Indole-3-Acetic Acid [IAA] Production by *Serratia plymuthica* UBCF_13	B1-210-Presenter Name
9	14:50	15:00	212	A Salsabilla, L A Yusfi, and J Jamsari	Determination of The Optimum Duration for Indole-3-Acetic Acid [IAA] Production in *Serratia plymuthica* UBCF_13	B1-212-Presenter Name

TIME TABLE OF THE PARALLEL SESSION

Room : B2
Topic : Natural Resources, Agriculture, and Food Technology
Biodiversity and Microbiology
Moderator : Dr. Ir. Irawati, M.Rur.Sc.
Operator : Amalia Azizah

No	Time		ID	Author (s)	Title	Presentation ID
1	13:30	13:40	230	I. Darfis, A. Maulana, A. N. M. Fathi, D. Rezki, Junaidi, and Herviyanti	The Effect of Pyrolysis Methods and Particle Size on Biochar Characteristics of Coconut Shell as Ameliorant	B2-230-Presenter Name
2	13:40	13:50	233	Herviyanti, T. B. Prasetyo, M. Harianti, A. Maulana, A. L. Lita, and R. Ryswaldi	The Chemical Characteristics of Secondary Forest and Mixed Gardens of Inceptisol Order with the Addition of Rice Husk Biochar	B2-233-Presenter Name
3	13:50	14:00	238	T. B. Prasetyo, A. Maulana, Z. Naspendra, V. Sukma, and Herviyanti	In-situ Inactivation of The Contaminated Ex-Gold Mining Soil of Hg Using Biochar from Young Coconut Waste and Its Effect on Growth of Corn (*Zea mays* L.)	B2-238-Presenter Name
4	14:00	14:10	245	M. Harianti, Junaidi, O. Emalinda, Herviyanti, S. Yasin, Z. Naspendra	Correlation of β-glucosidase Activity and Soil Physicochemical Properties in Monoculture and Agroforestry Land in Mount Talang, Solok	B2-245-Presenter Name
5	14:10	14:20	198	Hermansah, Nurainas, L Maira, Suryani, and L N Hakim	Characteristics and Stock of Soil Nutrients at The Microhabitat of Traditional Medicinal Plants in West Sumatera	B2-198-Presenter Name
6	14:20	14:30	221	S. Prima, Z. Naspendra, A. Maulana, T. B. Prasetyo, M. Harianti, K. Febriana, and H. Herviyanti	Identification of Mercury (Hg) Status in Gold Mining Land in Dharmasraya, Indonesia	B2-221-Presenter Name

7	14:30	14:40	237	Gusmini, Hermansah, Adrinal, Panji Romadhan, and Aldo Aditya	Residual of Ex-Gold Mining Land Residual on Sunflower Growth in The Second Growing Season	B2-237-Presenter Name
8	14:40	14:50	218	Fitri Ekawati, Doni Hariandi, Meisilva Erona S, and Irfan Suliansyah	The Effect of Liquid Organic Fertilizer Towards Increased Vegetative Growth Some Varieties of Grapes (*Vitis vinifera* L.)	B2-218-Presenter Name

TIME TABLE OF THE PARALLEL SESSION

Room : C1
Topic : Natural Resources, Agriculture, and Food Technology
Biodiversity and Microbiology
Moderator : Maythesya Oktavioni, S.P., M. Biotek.
Operator : Muhammad Irsyad

No	Time		ID	Author (s)	Title	Presentation ID
1	13:30	13:40	263	Bastian Nova, Jamsari Jamsari, Irfan Suliansyah, and Irawati Chaniago	Genetic Variability of Begomovirus Replicase gene in West Sumatera	C1-263-Presenter Name
2	13:40	13:50	270	Irfan Suliansyah, Bastian Nova, Fitri Ekawati, and Doni Hariandi	Genetic Diversity of West Sumatera Pepper (*Capsicum Annuum* L.) based on Sequence-related amplified polymorphism	C1-270-Presenter Name
3	13:50	14:00	264	Epi Supri Wardi, Sumaryati Syukur, Zulkarnain Chaidir, Jamsari Jamsari, Muthia Miranda Zaunit	DNA Barcoding for the Discrimination of *Uncaria gambir* and rbcL Closely Related Species Using rbcL Genes	C1-264-Presenter Name
4	14:00	14:10	229	Try Surya Harapan, Nurainas, and Syamsuardi	Crown morphological characteristics of national protected tree *Castanopsis argentea* and their allied species (Family: Fagaceae) using UAV high-resolution aerial photograph	C1-229-Presenter Name
5	14:10	14:20	256	N Azizah, R Fatiah, R Trivano, and J Jamsari	Response of *OocE* and *OocO* Gene Expression Levels in *Serratia plymuthica* UBCF_13 to the Presence of Pathogenic Fungus *Colletotrichum gloeosporioides*	C1-256-Presenter Name
6	14:20	14:30	254	R Trivano, N Azizah, R Fatiah, and J Jamsari	Transcription Level of Pyrrolnitrin Biosynthesis Pathway Related Genes in *Serratia plymuthica* UBCF_13	C1-254-Presenter Name

7	14:30	14:40	259	Nicholas Farrell Wijaya, Bastian Nova, and Jamsari	In Silico Studies of Molecular Interaction of Various PepYLCV's Replication Enhancer (C3) Protein with *Capsicum annuum*'s Retinoblastoma-related Protein (pRBR)	C1-259-Presenter Name
8	14:40	14:50	249	R Yunita, R Hidayati, L Syukriani, and J Jamsari	Isolation and Characterization of HPPD Gene Active Domain in Sunflower	C1-249-Presenter Name
9	14:50	15:00	236	L Syukriani, R Hidayati, M Oktavioni, D Saputra, I Suliansyah, A Asben, and J Jamsari	Isolation of Starch Branching Enzymes (SBE) Genes from Banana (*Musa paradisiaca*) Raja Genotypes and Prediction of Secondary and Tertiary Protein Structures	C1-236-Presenter Name

TIME TABLE OF THE PARALLEL SESSION

Room : C2
Topic : Natural Resources, Agriculture, and Food Technology
Biodiversity and Microbiology
Moderator : Dr. P.K. Dewi Hayati, SP., M.Si.
Operator : Suhada Tri Marneli

No	Time		ID	Author (s)	Title	Presentation ID
1	13:30	13:40	182	Arief Munandar, P.K. Dewi Hayati, Agung Primatara M, Auzar Syarif, and Risa Meutia Fiana	Performance, Heritability, and Variability of Grain Characters of 29 West Sumateran Local Upland Rice Cultivars	C2-182-Presenter Name
2	13:40	13:50	203	Usman Kris Joko Suharjo and Tunjung Pamekas	Gamma Rays Irradiation Induced Drought Tolerance in Potato Crops Grown at Medium Elevation	C2-203-Presenter Name
3	13:50	14:00	206	Nalwida Rozen, Musliar Kasim, and Indra Dwipa	The Effect of Organic Mulch on Yields Components of Batang Piaman Rice Variety with SRI Method	C2-206-Presenter Name
4	14:00	14:10	220	F N Rosadi, M Sitepu, N Ramadhan and J Jamsari	Study of Morpho-physiology of Sunflower Plants in The Highlands and Lowlands Areas	C2-220-Presenter Name
5	14:10	14:20	197	Irfan Suliansyah, Yusniwati, and Fadilla Arishadea	Agronomic Characters of Several Genotypes of Sigah Red Rice at Two Location in West Sumatera	C2-197-Presenter Name
6	14:20	14:30	231	Mutia Muharani, Nurainas, and Syamsuardi	Local knowledge on the utilization of Bilongkiang *Zingiber* sp. (Zingiberaceae) in Solok Regency, West Sumatera	C2-231-Presenter Name
7	14:30	14:40	217	Afrianingsih Putri, Rahmat Syahni, Hasnah, and Alfan Miko	Factors Affecting Coffee Supply in West Sumatera	C2-217-Presenter Name

8	14:40	14:50	215	L Triana, R Syahni, N Nofialdi, YH Yeni	Marketing Response and Innovation of Coffee Powder SMEs Address Unstable Business Environment	C2-215-Presenter Name
9	14:50	15:00	207	Devi Analia and Cipta Budiman	Identification Aspects of Covid-19 Adaptive Tourism Sustainability in Padang City, West Sumatera	C2-207-Presenter Name

ABSTRACT OF ORAL PRESENTERS

Differences of Cost Estimation by National Health Insurance Program (JKN) and Hospital Bills for Sepsis Cases in Indonesia

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Abstract. Sepsis has become the most common condition presented in critical care, the leading cause of morbidity and mortality, and one of ten common causes of death. Its treatment is consistently costly. However, the studies revealing the precise costs are not available widespread because of the controversy regarding typical comorbidity that accompanies the sepsis itself. Universal health coverage is achieved by implementing national health insurance in Indonesia. It provides sepsis costs coverage for all populations with various economic levels. However, in some cases, the funds estimated for sepsis by the insurance are not suitable for the amount that health services expect. We did implementation research of the national health insurance in Indonesia by observing how much the health services expend cost for sepsis patients. Knowing the cost generated by sepsis can assess the insurance made the appropriate cost estimation for that case. We compared the sepsis cost expenditure with the insurance cost estimation for sepsis. A retrospective cohort study was performed in the Internal Medicine Department of Dr. M. Djamil Hospital in West Sumatera from January through December 2017. All data needed were collected from the sepsis patients' medical records and analyzed statistically by using SPSS 16. Among all sepsis patients, men are dominant. Regarding age, most patients were under 60 years, with the youngest patients aged 17 years. These sepsis patients have 4 kinds of sites of infection. The number of comorbid most had by these patients is 2 to 4 comorbid. They were hospitalized for 5-24 days. The most commonly used antibiotic combination for patients with sepsis is Ceftriaxone-Ciprofloxacin. The cost difference in CBG estimation with a hospital bill for each patient varied from -35,894,613.00 IDR to 19,662,093.00 IDR. Each sepsis case causes different hospital bills, but the estimated cost of the CBG is considered sufficient to cover the losses that can be caused by several cases for the hospital. Several factors are counted to affect the hospital bill, including length of stay, comorbidity, the severity of sepsis, choice of medicines, survival of the patients.

Keywords: case base groups, hospital bills, national health insurance, sepsis, universal health coverage

Clean and Healthy Living Behavior of Purun Artisan Family in Pedamaran Village Ogan Komering Ilir Regency

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Abstract: This study aims to find out the clean and healthy living behavior (PHBS) of the purun artisan family in Pedamaran District of Ogan Komering Ilir Regency. The research was carried out as quantitative research with a cross-sectional design. The data is obtained through interviews using a list of questions and direct observations to 87 households. Primary data includes household characteristics, PHBS, and socio-economic conditions of households, namely poverty levels measured based on BPS indicators. The data were analyzed descriptively and analytically using chi-square with a significant level of about 0.05. The results showed the behavior of the purun artisan community in Pedamaran Village of Ogan Komering Ilir Regency has not entirely run PHBS. However, there is no difference in clean and healthy living behavior between poor and not low-income families in purun artisans in the village.

Keywords: behavior, craftsman, economic status, poverty.

Implementation of Covid-19 Preventive Health Protocol in Palembang City, South Sumatera Province

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Abstract. In South Sumatera, the increase in Covid-19 occurred after three weeks of confirmed cases in Indonesia. The community's knowledge, attitudes, and behavior towards Covid-19 is an integral part of the fight against Covid-19. Community compliance with preventive behavior against Covid-19 can reduce transmission rates. This study aims to describe the community behavior (using masks, washing hands, and social distancing) in Covid-19 prevention in Palembang. Crossectional study methods were conducted on 602 respondents using questionnaires collected using google forms. The chi-square test is used to see the description of preventive behavior and the factors that affect it. Most of the respondents already have good knowledge and attitude about the prevention of Covid-19. Respondents who used masks as much as 95.2% kept their social distance (89.9%) and washed their hands (92.4%). The results show variables related to the use of masks are age group, type of work, education level, level of knowledge, and positive attitude of respondents towards Covid-19. The variables related to social distancing behavior are respondents' knowledge and attitude, while those on handwashing behavior are education and knowledge levels. The use of masks is the primary choice in the prevention of Covid-19. As they get older, respondents are more obedient to use masks and wash their hands, but it is not social distancing.

Keyword: covid-19 prevention protocol, knowledge, mask, social distancing, washing hands.

Analysis of The Relationship of Emotional Stress with Clinical Picture and Ratio of Neutrophil Lymphocytes in Covid-19 Sufferers at Andalas University Hospital

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Abstract. The new Coronavirus (COVID-19) infection has been confirmed to cause pneumonia with a total of 45,171 cases (as of 12 February 2020). Outbreaks can create significant psychological distress which can cause unfavorable effects on overall psychological health. Psychological stress is proven to affect a person's immune system. Being in a state of prolonged crisis will disrupt the body's defenses and in fact, the body's immunity will decrease. This study was conducted to be able to assess the relationship between the degree of emotional stress using the DASS 21 questionnaire with the clinical picture and the neutrophil-lymphocyte ratio (NLR) in COVID-19 patients treated at Andalas University Hospital. A cross-sectional study was carried out on confirmed COVID-19 patients in the isolation room of the Andalas University Hospital. Data were obtained from interviews, medical records, and blood laboratory examinations. The results show a total of 100 subjects who determined the selection criteria were included in the study, the affected ages ranged from 18 to 40 years (45%) with 54 (54%) of whom were women. Based on the analysis of multiple trials in this study, there is no significant relationship between emotional stress, clinical picture, and NLR. But it was found that there is a strong relationship between moderate to severe emotional stress, clinical picture, and NLR. So, there is a weak relationship between emotional stress, clinical picture, and NLR in patients with COVID -19 at the Andalas University Hospital, but in the patient with emotional stress moderate-severe, there is a strong relationship with clinical picture and NLR.

Keywords. COVID-19, clinical picture, emotional stress, neutrophil-lymphocyte ratio (NLR)

Detection of People at Risk of Corona Virus Disease 2019 (Covid-19) to Visitors of Alai Health Center in Padang City

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Abstract. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a virus that attacks the respiratory system. This viral infectious disease is called Covid-19. Coronavirus can cause disorders of the respiratory system, acute pneumonia, to death. The high risk of people contracting the Covid-19 virus without symptoms so can be detected with a Covid-19 rapid test. The purpose was to screen the presence of the Covid-19 virus of people at risk for Covid-19 to visitors of Alai Health Center in Padang City. A descriptive study with a cross-sectional study was obtained using a rapid test of 198 people. The characteristics of people at risk obtained were 19 men (9.60%) and 179 women (90.40%) with the highest age of 36 -53 years as many as 78 people (39.40%), 18-35 years as many as 62 people (31.31%), and 54-71 years as many as 48 people (24.24%). The dominant education was high school students as many as 146 people (73.74%). The most jobs as integrated service post cadres were 65 people (32.80%) and government employees/republic police were 57 people (28.80%). The results of the Covid-19 rapid test only obtained 2 reactive cases (1.01%) and 196 non-reactive cases (98.99%). Cases that had contact with Covid-19 patients were 35 people (17.70%) and non-contact 163 people (82.30%), followed by contact cases with people coming from outside the Padang city obtained as many as 13 people (6.60%) and non-contact as many as 185 people (93.40%). The conclusion of the Covid-19 screening results for people at risk of Covid-19 to visitors of Alai Health Center in Padang City was obtained the most non-reactive.

Keywords: coronavirus, MERS, pneumonia, SARS

Profile of Clinical Forensics from 2014 to 2018 at Dr. M. Djamil General Hospital Padang, Indonesia

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Abstract. Clinical forensics is part of the forensic medical service that examines living victims for the benefit of justice. Doctors play an important role in documenting injuries or abnormalities on the victim's body in the patient's medical record. This study aims to determine the characteristics of cases and injuries of patients at General Hospital M Djamil during 2014-2018. This was a descriptive retrospective study that uses secondary data from the medical records of patients who were examined and consulted to the Forensic Department of Dr. M. Djamil General Hospital, Padang City, Indonesia from January 1st, 2014 to December 31, 2018. During the period of study, 6,335 patients (victims) were examined and consulted to Forensic Department. Most of the victims were 10-19 years old (31%), and 20-29 years old (23%). Traffic accident is the most cases (81,4%), followed by persecution (6,6%), and work accident (3%). Vulnus excoriatum and vulnus laceratum is the most types of injury. Head and neck is the most injured part of the body. Based on the type of wound on the victim's body, most injuries were caused by blunt force (88.4%) and sharp forces (3.2%). This study concluded that forensic clinic cases in Dr. M. Djamil General Hospital are quite varied, which is dominated by blunt forces by traffic accident, which located in head and neck of body.

Allele Frequency of 13 Loci Short Tandem Repeats (STR) in Minangkabau Ethnic group of Indonesia

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Abstract. Allele frequencies for some short tandem repeats loci have been reported for the Indonesian populations. Indonesian population consisted of various ethnicities. Further studies are needed to determine the most polymorphic loci for each subpopulation group or ethnic in Indonesia. We report allele frequencies and statistical parameters of 13 loci short tandem repeats (STR) loci determined in 25 unrelated individuals of the Minangkabau ethnic group in West Sumatera Province, Indonesia. We observed 88 alleles with allele frequencies between 0.02 – 0.36. The highest observed heterozygosity was at the vWA and D16S539 loci, the highest Power of discrimination was at the D21S11 and FGA locus and the highest Match Probability was at the FGA locus. The Chi-square test showed that all STR loci followed Hardy–Weinberg equilibrium ($p > 0.05$). All loci were highly polymorphic (PIC > 0.5). The combined discrimination capacity of each locus in the population was 99,999%. The combined match probability was 1,089 x 10 -28. The 13 STR loci are useful for forensic analysis and population genetic studies of the Minangkabau ethnic group.

Keywords: allele frequency, minangkabau, short tandem repeats

Phenotypic Characteristics and SHV Gene Distribution of Extended Spectrum β-lactamase (ESBL)-Producing *Acinetobacter baumannii* from Dr. M. Djamil Hospital Padang

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Abstract. Antibiotic resistance is becoming a serious problem in global health. One of the concerns was Extended-spectrum beta-lactamases (ESBLs) producing *Acinetobacter baumannii* which is usually encoded by the SHV gene so that it can be resistant to penicillins and third-generation cephalosporins. Our study was conducted to characterize ESBL producing *Acinetobacter baumannii* phenotypically and configure SHV gene distribution in Padang, West Sumatera, Indonesia. A total of 159 isolates was enrolled in this study. The highest sensitivity was to amikacin (85%) and 67,3 % were ESBL producers. Only 27% of ESBL-producing *Acinetobacter baumannii* had the SHV gene. ESBL producing *Acinetobacter baumannii* is resistant to commonly administered antibiotics. Continuous antimicrobial resistance surveillance and quick detection of ESBL isolates are needed especially in health care facilities for the selection of appropriate treatments and to enhance infection control policies.

Keywords: β-lactamases genes, antimicrobial resistance, MDR

Cytotoxic Activity of Marine Sponge-Derived Fungus *Penicillium citrinum*

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Abstract. Marine sponge-derived fungi are a potential source of natural products which have a unique chemical structure with interesting bioactivities. This study aimed to test the cytotoxic activity of the ethyl acetate extract of *Penicillium citrinum*. The cytotoxic activity was done using the MTT method(*3-(4,5-Dimethylthiazol-2-yl)-2,5-Diphenyltetrazolium Bromide*) against T47D and HeLa cancer cells. The research results showed that the extract has cytotoxic activity with IC50 60.6 µg/ml against cells T47D, but it was not toxic against HeLa cells (IC50 1108 µg/ml). The presence of chemical constituents of secondary metabolites in the fungus extract alkaloids and phenol are thought to be compounds that produce toxic effects on cancer cells.

Keywords**:** sponge-derived fungi, *Penicillium citrinum*, MTT method, T47D, HeLa cancer cell

Marine-Derived Fungus *Penicillium citrinum* Xt6 isolated from *Xestospongia testudinaria* DD-01 induce Adipocyte Differentiation on 3T3-L1 Preadipocytes

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Abstract. Marine-derived fungi are well-known as an essential source of a variety of diverse secondary metabolites. *Penicillium citrinum* Xt6 was a fungus isolated from the marine sponge *Xestospongia testudinaria*. The previous study has confirmed that *P. citrinum* can reduce blood glucose levels and increase insulin sensitivity in the animal model. In the present study, we investigated antidiabetes activity through adipocyte differentiation of *P.citrinum* in 3T3-L1 cell preadipocytes. Ethyl acetate was used to extract *P. citrinum*. Various concentration extracts were used in viability assay was performed using (*3-(4,5-Dimethylthiazol-2-yl)-2,5-Diphenyltetrazolium Bromide)* MTT method, and adipocyte differentiation assay was performed using Oil red O staining method. The results indicated that *P. citrinum* could increase adipocyte differentiation more than rosiglitazone, a drug clinically used to treat diabetes mellitus ($p<0.05$). It may be concluded that *P. citrinum* has an insulin-mimicking effect by inducing adipogenesis. It can be developed for further study and used in diabetes mellitus therapy.

Keywords: adipogenesis, diabetes mellitus, marine sponge, *Penicillium citrinum*

Cisplatin has The Highest Risk to Induce Apoptosis based on The STITCH Database

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Abstract. One of the main issues in chemotherapy with alkylating agents is the side effect to the ovary related to apoptosis. It gains general concern as infertility and long-term effects of ovarian failure seem to be a great risk of young female cancer patients who are treated with these drugs. However, only a few studies have specifically investigated the risk of chemotherapy to induce premature ovarian failure. This study aimed to evaluate interactions between alkylating-agents chemotherapy and some pro-apoptotic proteins using a bioinformatic approach. This study was done using a bioinformatic tool, STITCH database version 5.0. A group of alkylating agents (17 drugs) was connected respectively to CASP3, a pro-apoptotic protein based on the KEGG pathway database. The shared network displayed by STITCH analysis presented other proteins which also had interaction in this mechanism, i.e CASP6, CASP8, CASP9, PARP1, BIRC2, BIRC3, and APAF1 and XIAP. The type of interaction was identified either as 'activation' or 'inhibition'. The score of interactions was compared and ranked. A score higher than 0.900 was categorized as 'highest interaction'. This study showed that Cisplatin had the highest level of interaction with CASP3 (interaction score 0.968). It also interacted very highly with most other proteins evaluated (CASP9, CASP8, PARP1, BIRC2, and BIRC3, with interaction scores 0.933, 0.945, 0.967, 0.755, and 0.747 respectively). It can be predicted that cisplatin has the highest risk to induce apoptosis. This condition may also result in a higher potential for ovarian failure.

Keywords: chemotherapy, apoptosis, premature ovarian failure, KEGG pathway database

Chocolate Dadiah Pudding as a Food Supplement for Pregnant Women Modified from Dadiah, Minangkabau Yogurt

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Abstract. Undernutrition of mothers during pregnancy correlated with low-birth-weight outcomes. As a potential source of probiotics, dadiah, a traditional fermented dairy product from Minangkabau, also contain macronutrients. This research aimed to determine the contents of carbohydrate, protein, and fat in chocolate dadiah pudding as a modification of the original dadiah. Chocolate dadiah pudding was manufactured using dadiah originated from Gaduik region, Bukittinggi, West Sumatera. Carbohydrate, protein and fat levels were analyzed according to Indonesian National Standard (SNI) and total calories were calculated by using 4:4:9 kcal/g conversion. There were 4.75 g of carbohydrate (SNI 01-2891-1992,9), 4.7 g of protein (SNI 01-2891-1992,7.1), 5.47 g of fat (SNI 01-2891-1992,8.1), and 87.03 kcal in 100 g of chocolate dadiah pudding. This research found that macronutrients and total calories content in chocolate dadiah pudding may help cover one-third until half of the additional daily intake during pregnancy. We suggest chocolate dadiah pudding as a local and potential food supplementation in optimizing birth outcomes.

Keywords: chocolate dadiah pudding, food supplementation, Minangkabau yogurt, pregnant women, West Sumatera

Correlation of Macronutrient Intake with Blood Pressure and Lipid Profile in Minangkabau Women Ethnicity

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Abstracts. Macronutrients are the main source of human energy. It also affects all processes that occur in the body including risk factors for cardiometabolic disease. The study aimed to determine the relationship between macronutrient intake and risk factors for cardiometabolic disease in Minangkabau women ethnicity. This study used a cross-sectional design conducted on 118 women in Padang City, West Sumatera. Data of macronutrient intake were taken through guided interviews using a semiquantitative-food frequent questionnaire (SQ_FFQ). Blood pressure (BP) was measured by using a sphygmomanometer in a sitting position. Lipid profile dan blood glucose was examined from venous blood. Data were analyzed by using the Pearson correlation test. The results showed that the average total energy intake was 1777.3 (1000.9 - 3548.9) Kcal, carbohydrate intake was 233.6 (120.9 - 436.4) grams, fat intake was 59.2 (15.4 - 191.5) grams, and protein intake was 76.9 (15.9 - 253.4) grams. BP and blood glucose were in the normal range, but there were some subjects with dyslipidemia. There were a significant correlation between total intake, fat intake, and protein intake with systolic BP, and also fat intake that correlates with diastolic BP. There was no significant correlation between macronutrient intake with lipid profile in Minangkabau women ethnicity. It can be concluded that macronutrient intake was correlated with systolic BP in women of the Minangkabau ethnic.

Keywords: blood pressure, intake, macronutrient, lipid profile

The Effect of Jamblang (*Syzygium cumini*) Leaves Extract on Serum Creatinine Level at Rats Induced by Lead Acetate

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Abstract. Lead (Pb) is a toxic metal element that affects various organ functions in the body, especially in the kidneys. Jamblang (*Syzygium cumini*) leaves contain various phytochemical compounds which act as antioxidants. This study aims to determine the effect of giving jamblang leaf extract on serum creatinine levels of rats (*Rattus norvegicus*) Wistar strain with lead acetate induction. This research is an experimental research that used 24 male rats which were divided into 3 groups, namely the negative control (K-), positive control (K+), and treatment (P). The K- group was given standard feed, K+ was induced with lead acetate at a dose of 40 mg/kgBW, and the treatment group (P) was induced with lead acetate at a dose of 40 mg/kgBW and jamblang leaf extract at a dose of 150 mg/kgBW using an oral probe for 30 days. Serum creatinine was examined using Micro Lab 300 by Jaffe Reaction method. Data is analyzed by One Way ANOVA. The average serum creatinine level obtained in the K- group was 0.52±0.09, K+ was 0.80±0.08, and P was 0.49±0.07. It can be concluded that jamblang leaf extract affects the serum creatinine levels of rats induced by lead acetate.

Keywords. Jamblang leaf extract, lead acetate, serum creatinine

Effect of *Apis dorsata* Forest Honey and Metformin on Blood Glucose Levels in Alloxan-Induced Diabetic Mice

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Abstract. Forest honey from *Apis dorsata* is believed to have health benefits. The objective of this study was to compare the effect of forest honey and metformin on blood glucose levels in alloxan-induced diabetic mice. This study was an experimental laboratory using a pre and post-test control group design and conducted on 25 male white mice (*Mus musculus*), which were divided into five groups. The five groups were the normal group (1), the alloxan-induced group only (2), the metformin at 2.6 mg/day in the alloxan-induced group (3), the forest honey at 1 g/kgBW/day in the alloxan-induced group (4), and the forest honey at 2 g/kgBW/day in alloxan-induced group, respectively for 21 days (5). Blood glucose levels were measured using glucometer. Data were analyzed using the Kruskall-Wallis and the Mann-Whitney test. The result showed decrease in blood glucose on Group 3 from 153.00 + 10.84 mg/dl (mean ± SD) to 81.60 + 21.27. Then group 4 from 196.60 + 19.15 to 121.80 + 16.69. While in group 5 from 193.40 + 63.81 to 68.40 + 10.53. The data showed that there were differences in the average value of blood glucose levels among these groups ($p<0.05$). The conclusion of this research is *Apis dorsata* forest honey can reduce blood glucose levels as effective as metformin.

Keywords: alloxan, blood glucose levels, forest honey, metformin

Green Tea Decreased Blood Glucose and Total Cholesterol Serum Level in Rat Induced-Diabetic Model

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Abstract. Hyperglycemia is a symptom of diabetes mellitus caused by inadequate insulin secretion, incorrect insulin responses, or both. Untreated hyperglycemia can lead to severe problems that require immediate medical attention, such as a diabetic coma. Long-term hyperglycemia can cause problems with the eyes, kidneys, nerves, and heart. A rise in total cholesterol levels can also be noticed in those with diabetes mellitus. Therefore, efforts are needed to keep blood glucose and total cholesterol levels within normal limits. Green tea, which includes antioxidants, is one of the efforts performed. This study aimed to determine the effect of green tea on blood glucose and total cholesterol levels in diabetic rats. A total of 30 rats were divided into five groups: negative control, positive control, and treatment group, which received three different doses of green tea drinks (27 mg/200 g, 54 mg/200 g, and 81 mg/200 g). Alloxan was given to the rat at a dose of 150 mg/kg BW. Green tea was given for four weeks if blood glucose levels exceeded 200 mg/dl. Blood glucose and total cholesterol levels were measured in the rat's serum after four weeks. The results demonstrated that green tea administration in treatment groups 1 and 2 significantly lowered blood glucose levels ($p<0.05$ vs. positive control). Treatment groups 2 and 3 showed a substantial reduction in total cholesterol levels ($p<0.05$ and $p<0.01$ vs. positive control, respectively). It concludes that green tea drinks have a potential effect as antihyperglycemic and antihypercholesterolemic in diabetic conditions.

Keywords: blood glucose, diabetes mellitus, green tea, rat, total cholesterol

Description of Insulin Resistance and Prothrombotic Factors in Prediabetic Patients

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Abstract. Prediabetes is the forerunner of diabetes mellitus. The main condition is insulin resistance that can lead to a prothrombotic state. This research aims to obtain a description of insulin resistance and prothrombotic factors in prediabetic patients. This study is an analytic observational study with a cross-sectional approach. HOMA-IR assessed insulin resistance, and prothrombotic factors were assessed by plasminogen activator inhibitor-1 and soluble CD40 Ligand. These indicators were assessed on 30 prediabetic patients. There are 30 samples with a mean age was 31.47 (5.03) years old, consisting of 19 (63%) men and 11 (37%) women. The mean BMI was 33.49 (4.90) kg/m2, and all subjects had central obesity. HDL mean level was 45.57 (8.37) mg/dl, triglycerides was 134.13 (61.65) mg/dl, HOMA-IR was 3.69 (1.12). About 30% of subjects had dyslipidemia, and 20% had hypertension. The mean level of PAI-1 was 10.26 (3.72) ng/mL, and the PAI-1 levels were increased (>7 ng/mL) in 87% of the subjects. The mean of sCD40 Ligand levels was 4495.7(1136.3)pg/ml, and sCD40 Ligand levels were increased (> 4000 pg/ml) in 63% of subjects. So, in prediabetic patients, increased levels of HOMA-IR, PAI-1, and CD40 Ligand were found.

Keywords: HOMA IR, PAI-1, prediabetes, sCD40 Ligand.

Analysis of Factors Related to The Incidence of Epithelial Ovarian Cancer

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Abstract. Ovarian cancer is the seventh most common cancer and ranks eighth as the cause of death in women with cancer in the world. More than 90% of all ovarian cancer incidents are cancers originating from the ovarian surface epithelium. Based on its histopathology, epithelial ovarian cancer is divided into type I and type II. The purpose of this study was to determine the relationship of age, parity, hormonal contraception, body mass index, and family history of the incidence of epithelial ovarian cancer type I and type II at RSUP Dr. M. Djamil Padang. This study was an observational analytic study with a cross-sectional approach using patients' medical record data in 2017-2018. The sample in this study consisted of 100 samples, of which 50 samples for type I and 50 for type II were determined through a purposive sampling technique. Data analysis used the Kruskal-Wallis test for bivariate analysis and logistic regression test for multivariate analysis. The Kruskal-Wallis test showed that age (p = 0,838), parity (p = 0,158), hormonal contraception (p = 0.118), body mass index (p = 0.082), and family history (p = 0.750) had values p> 0.05. Logistic regression test showed p-value >0,05 for all variables. So it can be concluded there is no relationship between age, parity, hormonal contraception, body mass index, and family history with the incidence of epithelial ovarian cancer type I and type II.

Keywords: age, body mass index, epithelial ovarian cancer, family history, hormonal contraception, parity

Analysis of Inducible Nitric Oxide Synthase, CXCL1 Serum Levels and Pericranial Tenderness Scores in Tension-Type Headache

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Abstract. Tension-type headache (TTH) is becoming a global health problem nowadays. Abnormalities of the peripheral and central nociceptive systems combined with environmental, emotional, and genetic factors play a key role in the pathophysiology of TTH. Thus, it is important to identify peripheral nociceptive sources to prevent central sensitization in patients with episodic TTH and reduce central sensitization in chronic TTH. This study aimed to analyze the levels of inducible Nitric Oxide Synthase (iNOS), CXCL1, and pericranial tenderness in patients with TTH. This is a cross-sectional study on TTH patients in Neurology Polyclinic at RSUP Dr. M. Djamil Padang between January 1st and June 30th, 2021. Examination of Total Tenderness Score (TTS) was done manually. Examination serum levels of iNOS and CXCL1 using the ELISA method. The correlation between iNOS, CXCL1 serum levels, and TTS was done Spearman's test. P-value <0.05 was considered statistically significant. There were 33 patients with TTH who met the inclusion criteria. Most of the subjects were women (81.81%), with a mean age of 29.61 years (SD±5.154). The mean number of TTS scores was 24.55 (SD±8.58). The median number of iNOS serum levels was 3.263 ng/ml. The median number of CXCL1 serum levels was 222,647 ng/ml. There was a moderate positive correlation between iNOS serum levels and TTS values (p=0.010;r=0.444). Also, there was a moderate positive correlation between CXCL1 levels and TTS values (p=0.039;r=0.361). It was concluded that there was a moderate positive correlation between iNOS, CXCL1 serum levels, and pericranial tenderness in TTH patients.

Keywords: CXCL1, iNOS, total tenderness score, tension-type headache

Effect of Platelet-Rich Plasma on Differentiation of Sinovial Membrane-Derived Mesenchymal Stem Cells

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Abstract. There are promising results in the use of platelet-rich plasma (PRP) for tissue repair and degenerative diseases application. However, the variability in the methodology for its obtaining may cause different and opposing findings in the literature. Particularly, the choice of the anticoagulant is the first definition to be made. In this study, blood was collected with sodium citrate (SC), ethylenediaminetetraacetic acid (EDTA), and Heparin. Growth factors release TGF-β quantification was performed using the ELISA method, and the effects of PRP on synovial membrane-mesenchymal stromal cell (SM-MSC) culture differentiation gene expression were evaluated using RT-qPCR analysis. Based on the result, PRP obtained with anticoagulant sodium citrate resulted in higher TGF-β concentration, compare to another anticoagulant. Moreover, the RT-qPCR analysis of level expression of chondrogenic marker gene SOX9 was higher in the 15% PRP group, while osteogenic marker gene RUNX2 was higher in the 10% PRP group than 5%, 15%, 20% PRP, and control group. In conclusion, our results show that PRP obtained with anticoagulant sodium citrate may affect on differentiation activity of synovial membrane-derived mesenchymal stem cells in vitro.

Keywords: differentiation, platelet-rich plasma, synovial membrane-derived mesenchymal stem cells (SM-MSCs)

The Effect of Nose Surgery on The Functionality of The Nose and Middle Ear in Minangkabau Ethnic

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Abstract. Chronic nasal obstruction, one of which is caused by a deviated nasal septum can cause an obstruction that will affect the function of the eustachian tube, which connects the nasal cavity and the middle ear. This condition can trigger nasal congestion, ear fullness affects the ventilation of the middle ear, and has an impact on hearing. The main role of the eustachian tube is in ventilation of the middle ear to maintain the balance of air pressure in the middle ear. Eustachian tube dysfunction occurs due to obstruction of the eustachian tube orifice in patients with the deviated nasal septum, which is caused by nasal inflammation and increased secretions from the nasal glands that accumulate and block the tubes. This situation can reduce ventilation which triggers negative middle ear pressure and can impact hearing. Minangkabau ethnicity is one of the major tribes that ranks 7th out of all ethnic groups in Indonesia. Ethnic-based research is important for the future, as the basis for determining strategies for prevention, early detection, and therapy. There are still some conflicting research results on whether rhinoplasty in the form of septoplasty, rhinoplasty, and or septorhinoplasty can improve middle ear pressure, eustachian tube function, and nasal physiological function or not. This research is an analytical study. The population and sample are Minangkabau ethnic groups who live in Padang and qualify for the inclusion and exclusion criteria. Functional examination of the nose with peak nasal inspiratory flow (*PNIF*) and saccharin test and ear function with tympanometry and otoacoustic emissions (OAE).

Keywords: deviated nasal septum, middle ear function, Minangkabau ethnic, nasal function, septoplasty

Detection *Cryptosporidium* sp with *Ziehl-Neelsen* and ELISA Method in HIV/AIDS patients

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Abstract. *Cryptosporidium* is a microscopic parasite that causes the diarrheal disease cryptosporidiosis. It is one of the significant causes of diarrhea in HIV-positive patients. This study aimed to find out the *Cryptosporidium* sp. infection in HIV/AIDS patients with a cluster of differentiation 4 (CD4) ≤ 350 cells/µL in RSUP Dr. M. Djamil Padang. This study was descriptive observational research with a Cross-Sectional design conducted by taking the feces of the patients as the sample. There were 44 total samples with 4 dropout samples because they were included in the exclusion criteria. Sample collection was conducted from July 2018 until August 2019. These research samples were part of the population that fulfilled the inclusion and exclusion criteria in the VCT Policlinic of RSUP Dr. M. Djamil Padang. 2 from 40 respondents of this study were found positive of *Cryptosporidium* sp. oocyst in their feces by microscopic examination using the Ziehl-Neelsen method. From the anamnesis using questionnaires, these 2 respondences with positive results did not have diarrhea (asymptomatic). The result shows that out of 40 samples examined, 100% were negative of *Cryptosporidium* sp by ELISA examination. The conclusion of this research was positive results by microscopic but negative by ELISA.

Keywords*:* CD4 cells, *Cryptosporidium* sp, diarrhea, HIV/AIDS

In-vitro Antagonism of *Beauveria bassiana* Against *Curvularia lunata*

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Abstract. The pathogenic fungus *Curvularia lunata* is a pathogen that causes black kernel disease in rice plants. This pathogen can reduce the quality of rice production. *Beauveria bassiana* is a type of endophytic fungus that has the potential as a biocontrol agent against plant-disturbing organisms. The purpose of this study was to obtain *B. bassiana* which can inhibit the growth of *C. lunata* in-vitro. This research was an experimental study using a completely randomized design. The experiment consisted of 8 isolates of *B. bassiana* which were tested for their antagonistic ability against the fungus *C. lunata* using multiple and volatile culture techniques. The results showed that the double culture test of *B. bassiana* isolates did not significantly affect the growth suppression of *C. lunata* either at 7 or 14 days after inoculation. However, isolates TD312 and P114 were able to suppress the number of *C. lunata* conidia with suppression effectiveness of 43.16% and 41.18% on day 14 after inoculation. A total of 4 isolates of *B. bassiana* BbJg, TD312, PB211, and PA221 significantly inhibited the growth of *C. lunata* in the volatile test, with the percentages of inhibition respectively 54.28%, 40.60%, 39.93, and 38.99 %. This study showed that isolates of *B. bassiana* had the potential to inhibit the growth of the pathogenic fungus *C. lunata* in the volatile test.

Keywords: antagonist test, *Beauveria bassiana*, *Curvularia lunata*, O*ryzae sativa*

Selection of Endophytic Fungus from Shallots as Antagonists of *Colletotrichum gloeosporioides*

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Abstract. Anthracnose is one of the main diseases of shallots (*Allium cepa* var. *ascalonicum*) caused by the pathogen *Colletotrichum gloeosporioides*. This pathogen can be controlled biologically by using endophytic fungi. This study aims to obtain endophytic fungi that have the potential as biocontrol agents against *C. gloeosporioides*. Endophytic fungi were isolated from healthy shallot plant parts (roots, tubers, stems, and leaves) using Malt Extract Agar (MEA) media. The antagonistic ability of endophytic fungi against *C. gloeosporioides* using the dual culture method and the volatile method. In the dual culture method, 18 isolates of endophytic fungi were able to inhibit the growth of *C. gloeosporioides* with the percentage of inhibition 58.05-88.97% at the age of 14 dai. By using the volatile method, the endophytic fungus was also able to inhibit the colony area of *C. gloeosporioides* with the percentage of inhibition 10.77 – 55.92%. The endophytic fungus S2D11 (*Trichoderma* sp) was the most effective isolate in inhibiting the growth of *C. gloeosporioides*.

Keywords: antagonist, dual culture, endophytic fungi, trichoderma, volatile

Extraction of Secondary Metabolites from *Trichoderma viridae* with Ethyl Acetate Solvent and Test the Ability in Suppressing The Growth of *Colletotrichum gloesporoides* Causes of Anthracnose in Chili

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Abstract. *Trichoderma viridae* has the potential to be developed for controlling plant pathogens that infect the parts above the soil surface (leaf, stalk, and fruit). Secondary metabolites produced by *T. viridae* have a function as antibiotics. The purpose of this study was to indicate the best concentration of ethyl acetate extract from secondary metabolites of *T. viridae* in suppressing the growth of *C. gloeosporoides* in vitro. The research method used a completely randomized design (CRD) with 5 treatments and 4 replications. The treatment was the concentration of the ethyl acetate extract, namely 10%, 1%, 0.1%, 0.01%, and sterile distilled water as a control. Parameters observed were colony area, colony diameter, number of conidia, conidia germination, and number of propagules. Data were statistically analyzed using analysis of variance and a further test of DNMRT at a 5% significance level. The results showed that the concentration of 10% was the best in suppressing the growth of *C. gloeosporoides* with colony growth, number of conidia, number of propagules, and germination lower than the other treatments (1%, 0.1%, 0.01%)

Keywords: *Colletotrichum gloeosporoides*, extraction, secondary metabolite, *Trichoderma viridae*,

The consortium of Indigenous Endophytic Bacteria for Control of Fusarium Wilt (*Fusarium oxysporum* f. sp *lycopersici*) and to Increase Growth and Yield of Tomatoes

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Abstract. *Fusarium oxysporum* f. sp *lycopersici* (Fol), which causes wilt disease, is one of the severe obstacles in tomato cultivation, which can cause losses of up to 100%. Fol control is still oriented to synthetic fungicides, causing resistance to this soil-borne pathogen making it difficult to control. Control by utilizing biological agents such as endophytic bacteria is an alternative that can be developed. The study aimed to obtain the best consortium of selected indigenous endophytic bacteria isolates that effectively controlled *F. oxysporum* f. sp *lycopersici* and promoted the growth and yield of tomatoes. The research consisted of 2 stages. The first stage was conducted to prepare a consortium of indigenous endophytic bacteria isolates in the microbiology laboratory. The second stage was conducted in planta in the experimental garden of the Faculty of Agriculture, Andalas University. The results showed that six consortiums of compatible indigenous endophytic bacteria were combined. Consortium 2, 4, 5, and 6 were the best consortium effective in controlling *F. oxysporum* f. sp *lycopersici* with suppression of disease incidence reaching 100% and increasing tomato yield with a fruit weight of 53.60 g/plant.

Keywords: consortium, endophytic bacteria, *Fusarium oxysporum* f.sp *lycopersici*

Variation of Symptoms and Severity of Blast Disease in 10 Swamp Paddy Rice of Bengkulu University

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Abstract. Blast disease has spread and is known in 85 rice-growing countries in the world that cause a reduction in rice production and productivity and threaten the main food reserves. In Indonesia, blast disease has spread in almost all rice production centers. Rice plants with high-intensity blast symptoms caused a decrease in plant weight and grain. Therefore, breeding rice varieties that are resistant to blast disease is very necessary. This study aimed to evaluate the variation of symptoms and the level of resistance against blast disease in 10 swamp rice lines from the University of Bengkulu. The research was carried out by planting 10 swamp rice lines bred by the University of Bengkulu and the Inpari 32 variety as a resistance variety control. A completely randomized design was used to plant rice seedlings in 3 blocks with a plot size of 3 x 2.5 m, a distance between plots of 0.5 m, a distance between blocks of 1 m, and a plant spacing of 25 x 25 cm. Observations were made on the symptoms and the severity of blast disease in each genotype of rice at the age of 2 and 4 WAP. The results showed that there were variations in the symptoms of blast disease in the form of rhombic spots on the leaves of rice plants. Which is oval spots with a pointed tip (rhombus) with a gray or whitish center of the spot and brown edges. Blast disease was able to attack rice in all test genotypes in the vegetative phase. The severity of blast disease in all test genotypes increased with increasing rice age. Swamp rice line G2 showed the highest resistance level to blast disease.

Keywords: blast disease, genotype, paddy rice, resistance

Resistance of Local Rice Genotypes Against Bacterial Leaf Blight based on Observed Parameters Incubation Period and Lesion Length

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Abstract. Rice is an important crop in Indonesia, a decrease in rice production will cause economic and social impacts for the community. The factor causing the decrease in production is bacterial leaf blight. Bacterial leaf blight caused by *Xanthomonas oryzae* pv. *oryzae* (Xoo). This disease can be controlled by using national superior varieties or resistant local genotypes. This study aimed to determine the level of resistance of the local genotype of Kuantan Singingi Regency based on the observation parameters of the incubation period and lesion length. In this study we used a one-factor Completely Randomized Design with four replications. The treatment factor was the local rice genotype, namely twenty-four local rice genotypes of Kuantan Singingi Regency plus one resistant variety (Inpari 30) and one susceptible variety (IR64). The results showed that the 24 local genotypes tested were susceptible to bacterial leaf blight. The incubation period in this study was less than 8 (eight) days after Xoo inoculation. The length of the lesions in 24 genotypes showed a number greater than 6 (six) cm, which indicated that 24 genotypes were susceptible to bacterial leaf blight.

Keywords: bacterial leaf blight, genotype of local rice, incubation period, lesion length, resistance

Screening The Effect of YM Media Component and Tryptophan Levels on IAA Production of *Serratia plymuthica* UBCF_13

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Abstract. *Serratia plymuthica* UBCF_13 has known as auxin-producing bacteria that produced Indole-3-Acetic Acid (IAA) best on YM media. Optimization of IAA production by UBCF_13 has been studied based on incubation time, pH, tryptophan concentration, culture media type, the addition of wall affecting agent and metals. Based on the previous study, the maximum IAA production of UBCF_13 was found in YM media with 300 µg/ml tryptophan. The data from the former study have not shown the maximum level of tryptophan for IAA production. Meanwhile, the effect of each component of YM media on IAA production is still unknown yet. This study is aimed to screen the effect of YM media component and the best concentration of tryptophan on IAA production by UBCF_13. IAA production was screened based on each YM media component (mannitol, yeast extract, K_2HPO_4, $MgSO_4$, NaCl, and $CaCO_3$) and tryptophan levels (100-1000 µg/ml). The results show that optimal tryptophan concentration to produce maximum IAA on YM media was 600 µg/ml with 197 µg/ml IAA. The effect of each YM media component on IAA production indicated that no nitrogen (YM media without yeast extract) treatment did not have the reduction of IAA production significantly compare to YM complete (YM media with yeast extract).

Optimization of Culture Medium Volume for Indole-3-Acetic Acid [IAA] Production by *Serratia plymuthica* UBCF_13

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Abstract. *Indole-3-Acetic Acid* [IAA] is one of the auxin hormones that affect plant physiological processes. One of the bacteria that can produce IAA hormone is from the *Serratia* sp. group. *Serratia plymuthica* strain UBCF_13 is a bacterial collection of the biotechnology laboratory of Agriculture Faculty of Andalas University which is known to produce IAA hormone. This study aimed to determine the best culture media volume to obtain optimal IAA production. The media used were YM media and added tryptophan 300 µg/mL. The volume of media used was 10 ml, 20 ml, 30 ml, 40 ml, 50 ml, 60 ml, 70 ml, 80 ml, 90 ml, and 100 ml. From this study, the optimum IAA results were obtained at a media volume of 40 ml with an IAA production of 114.59 µg/mL.

Keywords: IAA, media volume, *Serratia plymuthica* UBCF_13

Determination of The Optimum Duration for Indole-3-Acetic Acid [IAA] Production in *Serratia plymuthica* UBCF_13

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Abstract. Serratia plymuthica UBCF_13 is a group of bacteria that is capable to produce the hormone Indole-3-Acetic Acid [IAA] which plays an important role in plant physiological processes. IAA production in bacteria is influenced by several factors, one of them is culture duration. This study aimed to determine the optimum duration of IAA production of *Serratia plymuthica* UBCF_13 on YEM media with the addition of 300 µg/mL L-Tryptophan. Determination of the optimum time for IAA production was carried out with differences in 24 hours, 48 hours, 72 hours, and 96 hours and the presence or absence of the addition of Calcium metal [Ca]. The results of this study showed that the bacteria *Serratia plymuthica* UBCF_13 produced IAA optimally of about 107.84 µg/mL at a 24 hours culture duration with Ca ion addition.

Keywords: culture duration, IAA, *Serratia plymuthica* UBCF_13, YEM medium

The Effect of Pyrolysis Methods and Particle Size on Biochar Characteristics of Coconut Shell as Ameliorant

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Abstract. Waste to biochar has potential as a solution in organic farming applications and reduces CO2 emissions on agricultural land. The study was determined the effect of pyrolysis methods and particle size on biochar characteristics of coconut shell waste as ameliorants. This research was carried out in two experimental steps. First, the effect of pyrolysis methods in biochar production, namely the Kon-Tiki method (A), Drum method (B), and Soil-Pit method (C). Then secondly the effect of particle size is as follows 2.80 – 4.74 mm (A), 2.00 – 2.80 mm (B), 1.00 – 2.00 mm (C), 0.50 – 1.00 mm (D), and ≤0.50 mm (E). In each experiment step, a completely randomized design (CRD) with three replications was used. The first experimental step showed that Kon-Tiki methods give a significant effect on the duration of firing, dry weight and yield ratio of biochar production, and chemical properties of coconut shell biochar. The second experimental step showed that particle size gives a significant effect on the chemical properties of coconut shell biochar, where ≤ 0.5 mm is the best particle size for coconut shells biochar. It is recommended in the production of coconut shell biochar using the Kon-Tiki method and application at a particle size of ≤0.5 mm.

Keywords: ameliorant, biochar, coconut shell, particle size, pyrolysis methods

The Chemical Characteristics of Secondary Forest and Mixed Gardens of Inceptisol Order with the Addition of Rice Husk Biochar

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Abstract. This study aimed to determine the effect of rice husk (RH) biochar on the chemical characteristics of Inceptisols in two land uses, namely secondary forest and mixed gardens (land contaminated with pesticides). This study was carried out from April to June 2021 in the Chemistry and Soil Fertility Laboratory, Soil Department, Faculty of Agriculture, Andalas University, Padang. Soil samples were taken from Nagari Sariak, Sungai Pua District, Agam Regency. This study used a completely randomized design with 5 treatments with 3 replications on two types of land use. The treatment was a dose of RH biochar consisting of 5 doses, namely B1 = 0% (control), B2 = 0.5% (2.5 g/500 g soil) equivalent to 10 tons ha-1, B3 = 1% (5 g/500 g soil) equivalent to 20 tons ha-1, B4 = 1.5% (7.5 g/500 g soil) equivalent to 30 tons ha-1, and B5 = 2% (10 g/500 g soil) equivalent to 40 tons ha-1. From the research, it was concluded that the addition of RH biochar of 40 tons ha-1 was the best dose in increasing the chemical characteristics of inceptisol soils from the secondary forest and mixed garden. Where the pH increased from 4.97 and 4.90 to 5.90 and 5.67 units. Then EC increased from 0.08 and 0.07 to 0.13 and 0.11 dS m-1. The organic-C increased from 2.97 and 1.46 to 4.72 and 2.71%. P-available increased from 7.41 and 11.66 to 18.30 and 35.45 ppm. Total-N increased from 0.34 and 0.16 to 0.53 and 0.42%. Then CEC increased from 30.25 and 57.63 to 65.06 and 75.27 cmol kg-1.

Keywords: biochar, chemical characteristics, inceptisol, rice husk

In-situ Inactivation of The Contaminated Ex-Gold Mining Soil of Hg Using Biochar from Young Coconut Waste and Its Effect on Growth of Corn (*Zea mays* L.)

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Abstract. The solution offered in the remediation technique of the contaminated ex-gold mining soil of Hg is technical remediation of in-situ inactivation with amelioration technology using biochar from young coconut waste. The purpose of this study was to study in-situ inactivation techniques through amelioration with young coconut waste biochar to improve the chemical properties of ex-gold mine soil in maize cultivation (*Zea mays* L.). This study used a Completely Randomized Design (CRD) with 5 treatments and 3 replications, where the treatment used biochar from young coconut waste with a dose of (A) 0 [0g 15 kg^{-1}], (B) 10 [75g 15 kg^{-1}], (C) 20 [150g 15 kg^{-1}], (D) 30 [225g 15 kg^{-1}], and (E) 40 t ha^{-1} [300g 15 kg^{-1}]. The results showed that the in-situ inactivation technique through amelioration with young coconut waste biochar had a significant effect on ex-gold mine soil and maize cultivation. Treatment of biochar 40 t ha^{-1} with a significant effect on increasing negative charge activity and nutrient reserves, where there was an increase in pH [3.54 units], EC [0.09 dS m^{-1}], CEC [2.01 $cmol_c$ kg^{-1}], SOM [0.62%], pH (3.1 units), N [0.07%], P [20.53 ppm], K [0.96 $cmol_c$ kg^{-1}], Ca [0.20 $cmol_c$ kg^{-1}] and Mg [1.46 $cmol_c$ kg^{-1}] and decreased ash [0.60%] and Hg [1.69 mg kg]. In addition, the in-situ inactivation technique through amelioration with young coconut waste biochar significantly gave the best results for corn plant height [81.66 cm], when compared to 0 t ha^{-1}.

Keyword: biochar, corn, ex-gold mining soil, in-situ inactivation, mercury, coconut waste.

Correlation of β-glucosidase Activity and Soil Physicochemical Properties in Monoculture and Agroforestry Land in Mount Talang, Solok

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Abstract. β-glucosidase activity is an enzyme that can accelerate the decomposition of organic matter that interacts with the soil physicochemical properties due to different land management. The aim of the study was to examine the correlation of β-glucosidase activity with soil physicochemical properties in monoculture and agroforestry farms. The research was conducted by survey method, taking random soil samples at a soil depth of 0-20 and 20-40cm in monoculture, agroforestry, and forest cropping patterns as controls. The results showed that β-glucosidase activity was higher than monoculture and forest land, about 31.08 units/hour at 0-20cm layer and 23.16 units/hour at 20-40cm layer. In agroforestry land, there is a very significant correlation between soil physicochemical parameters with β-glucosidase activity, while in monoculture land only a few physicochemical properties are significantly correlated. Agroforestry land use is a land management concept that can be adopted for agriculture in highland areas such as Mount Talang which can maintain the stability of soil fertility.

Keyword: β-glucosidase activity, agroforestry, monoculture, soil physicochemical

Characteristics and Stock of Soil Nutrients at The Microhabitat of Traditional Medicinal Plants in West Sumatera

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Abstract. To clarify the characteristics of microhabitat of traditional medicinal plants in West Sumatera, an investigation of soil nutrient characteristics and its stock in the several microhabitats of medicinal plants such as *Cassia alata, Senna obtusifolia, Centella asiatica, Phyllanthus niruri, Elephantopus scaber* L.*, and Zingiber macradenium* was conducted. The soil nutrient characteristics varied among the different species of medicinal plants at two different locations, Limau Manis Village in Padang City and Rantih Village in Sawahlunto City. The range of organic C nutrients under five medicinal plants was 0.16-0.92 % in Limau Manis Village and 0.12-0.69 % at Rantih Village. The concentration range of Ca, Mg, K, and N, P at Limau Manis Village were 0.12-20.92, 1.05-2.18, 0.04-0.37 cmol/kg, and 0.01-0.03 % N, 8.49-45.86 ppm P, respectively. While at Rantih Village were 3.77-12.73, 0.24-1.58, 0.14-0.29 cmol/kg and 0.001-0.02 %, 6.42-29.04 ppm for Ca, Mg, K and N, P, respectively. The highest concentration of Ca was found under *Senna Obtusifolia* at Limau Manis Village and under *Centella Asiatica* at Rantih Village. While the lowest concentration was found under *Elepahantropus sp* both in Limau Manis and Rantih. The highest concentration of P found under *Senna obtusifolia* for both Limau Manis and Rantih and the lowest concentration of P found under *Centella asiatica* both in Limau Manis and Rantih. The stock of soil nutrients shows a similar trend to the nutrient concentration. The soil nutrient status at the same medicinal plants is significantly different between Rantih and Limau Manis. This was presumably due to the difference in soil type. The study result shows that spatially, the status of nutrients under medicinal plants was closely related the soil type and land management. It was suggested that the nutrient characteristics of soil as microhabitat of medicinal plants were significantly affected by the management of land use.

Keywords*:* characteristics, microhabitat, medicinal plants, soil nutrients, West Sumatera

Identification of Mercury (Hg) Status in Gold Mining Land in Dharmasraya, Indonesia

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Abstract. Gold mining activities have become one of the primary sources of mercury (Hg) that contaminate the soil and the environment. This pollution has an impact on human health. In the gold mining activities at Dharmasraya, Hg is still used in the amalgamation process, while the residual Hg is predicted to contaminate the soil and the environment. Therefore, this study was conducted aimed to identify Hg levels and their movement in the soil and to analyze the relationship of Hg to several soil properties. A total of 18 soil samples were taken from 3 prominent gold mine locations in Sitiung and Pulau Punjung, Dharmasraya, namely GM1, GM2, and GM3. The results showed that the average Hg level in the gold mining land in Dharmasraya was around 4.42 mg/kg, which was above the safe quality standard in the soil according to WHO, EU, and US EPA. The Hg level of each mine site followed the order of GM1>GM3>GM2 with values of 5.02, 4.23, 4.01 mg/kg, respectively. The movement of Hg in the soil of the mining area shows that Hg is leached to the subsoil with a value of 3.72 mg/kg in the soil surface layer and 4.51 mg/kg in the subsurface layer. Soil Hg levels and their movement on ex-mining land were positively correlated with organic matter, CEC, and soil pH. This finding found that the Hg was 88 times higher than the safe threshold WHO standard. However, it is urgent to end the use of Hg in a gold mining operation to decrease human and environmental risks.

Keyword: amalgamation, gold, leaching, mercury, soil

Residual of Ex-Gold Mining Land Residual on Sunflower Growth in The Second Growing Season

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Abstract. Ex-gold mining land is soil that has a poor chemical, physical, and biological properties so that its fertility is very low. The residual effect of rice husk biochar and manure is beneficial for the next growing season. The purpose of this research was to determine the residual of rice husk biochar and manure on sunflower growth in the second plants season. The treatments consisted of a combination of rice husk biochar and manure at a dose of 40 tons/ha equivalent to 100%. The results of this research should that the treatments of 100% manure on first growth season, pH value 6,28, total N 0,0072, available P 59.74 ppm, K-exchangeable 0,07 Cmol/kg, and Cation Exchange Capacity 18,267 Cmol/kg. The second growth season showed that the treatment of 100% manure had a pH value of 5,82, total N 0,84%, and CEC 20,42 Cmol/kg. The manure treatment still had an effect on improving the chemical properties of the ex-gold mining land in the second growing season.

Keyword: ex-gold mining land, manure, residual effect, rice husk biochar

The effect of liquid organic fertilizer towards increased vegetative growth some varieties of grapes (*Vitis vinifera* L.)

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Abstract. Grape (*Vitis vinifera* L.) is one of fruit plant perennial has many benefits, especially in the health sector. The research aimed to know the effect of liquid organic fertilizer (from rice water waste) towards increasing vegetative growth varieties of grapes. The research uses a Factorial Complete Randomized Design (CRD) with 2 factors, namely varieties (Taldun, Akademik, and Jupiter), and liquid organic fertilizer (without liquid organic fertilizer and with application liquid organic fertilizer) with 4 replication. Parameters observed were increased stem size, increase plant length, and increase in the count of the leaf. The result showed that varieties, liquid organic fertilizer, and interaction from varieties and liquid organic fertilizer significantly towards all parameters.

Genetic Variability of Begomovirus in West Sumatera

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Abstract. The West Sumatra begomoviruses complete gene was compared with other begomoviruses around the world to identify the genetic source of the West Sumatra begomoviruses.Viral DNA of begomovirus consist of complement region C1, C2, C3, and C4 open reading frames (ORF), and virulent region V1 and V2 ORF. The 3 West Sumatra begomoviruses and 53 begomoviruses from various location outside Indonesia were aligned to create a phylogenetic tree. The interspecies analysis of 3 West Sumatra begomovirus showed Alahan Panjang and Tanah Datar isolates have close relationshiop relative to Pesisir Selatan isolate. Moreover, the phylogenetic showed the 3 West Sumatra begomoviruses have close relationship with other Asian begomoviruses, and long relationship with the African and European begomoviruses, relatively. This result suggests that West Sumatra begomoviruses might have originates or evolved from Asian region rather than Africa or Europe region.

Keyword: begomovirus, diversity, genetic variability

Genetic Diversity of West Sumatera Pepper (*Capsicum annuum* L.) based on Sequence-related amplified polymorphism

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Abstract. Pepper is an important and widely distributed crop in West Sumatera. Many varieties of pepper have been used for spice and medicine. Molecular characterization of these varieties is important for the geographical distribution of genetic diversity. This study characterized 15 samples taken from different areas in West Sumatera and SRAP markers to determine the genetic diversity among of 15 samples and. The information from this study will help to understand the pepper population in West Sumatera.

Keyword: *Capsicum anuum*, genetic diversity, SRAP

DNA Barcoding for the Discrimination of *Uncaria gambir* and rbcL Closely Related Species Using rbcL Genes

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Abstract. *Uncaria gambir* is one of the Uncaria species as medicinal plant that grows in Indonesia. The function of this species as medicine has been widely explored but the relationship between the *Uncaria gambir* and other Uncaria species is still unclear. The rbcL gene as DNA barcoding was used in this study to reveal this relationship. Genomic DNA was isolated from 2 main cultivated variants of *Uncaria gambir* species in Indonesia. The rbcL primer were used to amplify specific genes. The genetic distance analysis was carried out on the *Uncaria gambir* and other Uncaria species. The phylogenetic tree was created to determine the relationship among Uncaria spesies with the Maximum Likelihood method. The rbcL primer was succesfuly amplified the rbcL region in *Uncaria gambir*. The genetic distance and the phylogenetic tree analysis showed *Uncaria gambir* have a close relationship with *Uncaria scandens, Uncaria yunnanensis,* and *Uncaria macrophylla*. Although the DNA barcoding gap is absent in genetic distance analysis, the phylogenetic tree analysis from the rbcL region can differentiate the *Uncaria gambir* from other Uncaria species.

Keywords: DNA barcoding, *Uncaria gambir*, rbcL

Crown morphological characteristics of national protected tree *Castanopsis argentea* and their allied species (Family: Fagaceae) using UAV high-resolution aerial photograph

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Abstract. Indonesia has many endangered tree species. Identifying large trees, however, is challenging. Recently, *Castanopsis argentea* has been classified as endangered tree species by the Indonesian government and the International Union for the Conservation of Nature (IUCN). High-resolution aerial photography using an Unmanned Aerial Vehicle (UAV) can be a solution. This study aimed to characterize *Castanopsis argentea* comparing its crown cover with one of the other species of Fagaceae. We conducted direct ground survey fieldwork in the Biological Education and Research Forest of Andalas University (HPPB) and Gamaran Forest, Lubuk Alung, both in West Sumatra. We selected 18 trees belonging to 8 species of Fagaceae on both study sites. The genera were Castanopsis (*C.argentea, C.costata, C.inermis*), Lithocarpus (*L.gracilis, L.urceolaris, L.hystrix*) and Quercus (*Q.argentata, Q.oidocarpa*). The selected trees were identified in the Herbarium of Andalas University (ANDA). The crown cover of each identified species was then collected using a UAV camera, 50 m above the ground. Fagaceae showed a conspicuous yellow "spike" flowering form that can be used for its identification through aerial photography. The crown characteristics clearly differed between Fagaceae species. *Castanopsis argentea* and *Castanopsis inermis* presented similar features, but the presence or absence of spreading limbs can be used to differentiate them.

Keywords**:** aerial photograph, drone, Saninten

Response of *OocE* and *OocO* Gene Expression Levels in *Serratia plymuthica* UBCF_13 to the Presence of Pathogenic Fungus *Colletotrichum gloeosporioides*

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Abstract. *Serratia plymuthica* strain UBCF_13 is a biocontrol agent that has the potential to inhibit the pathogenic fungus *C. gloeosporioides*. *S. plymuthica* produces several antifungal compounds, such as oocydin A. The biosynthesis of oocydin A involves 23 genes, namely *oocA* to *oocW*. However, only a few genes play a crucial role in the biosynthesis of oocydin A, such as *oocE* and *oocO* genes. This study was conducted to determine the changes in the expression levels of the *oocE* and *oocO* genes of *S. plymuthica* strain UBCF_13 against the presence of *C. gloeosporioides*. The method used is qRT-PCR. The culture treatment consisted of a single culture and co-culture with the age of bacteria from each culture was 4, 8, and 12 days. The results showed that the presence of the pathogenic fungus *C. gloeosporioides* could increase the expression of the *oocE* gene and decrease the expression of the *oocO* gene in *S. plymuthica* UBCF_13 because the *oocE* and *oocO* genes have different regulatory pathways. The expression of the *oocO* gene is under the control of Quorum Sensing and its regulation is regulated by the *RpoS* gene, while the regulation of the oocE gene is still unknown.

Keywords: antifungal compound, biocontrol agent, biosynthesis, qRT-PCR, transcription

Transcription Level of Pyrrolnitrin Biosynthesis Pathway Related Genes in *Serratia plymuthica* UBCF_13

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Abstract. Pyrrolnitrin is one of the antifungal compounds produced by *Serratia plymuthica* UBCF_13. Pyrrolnitrin biosynthesis involves a gene cluster consisting of four genes, namely *prnA*, *prnB*, *prnC,* and *prnD*. In this study, we assessed two of the four gene expression level, *prnA,* and *prnD*. This study evaluated the influence of *Colletotrichum gloeosporioides* toward and expression levels of *prnA* and *prnD* genes in UBCF_13. The method used was RT-qPCR to compare the expression levels of *prnA* and *prnD* genes in single culture and co-culture. The results of this study showed that the *C. gloiosporioides* affected the transcription of both *prnA* and *prnD* genes in UBCF_13, but the expression levels of both genes are different. The fungus *C. gloiosporioides* was able to decrease the expression of *prnA* and *prnD* genes on day forth and on day sixth it was able to increase the expression of both genes, but only the *prnD* gene increased its expression almost 2-fold.

Keywords: *Colletotrichum gloeosporioides,* gene expression, real-time PCR, *Serratia plymuthica*

In Silico Studies of Molecular Interaction of Various PepYLCV's Replication Enhancer (C3) Protein with *Capsicum annuum*'s Retinoblastoma-related Protein (pRBR)

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Abstract. Replication enhancer protein (REn or C3) is one out of six genes encoded by PepYLCV, which in previous studies shows its capability to bind with C1, host-proliferating cell nuclear antigen (PCNA), host-retinoblastoma related protein (pRBR), and itself (C3). Based on its function as a viral DNA accumulation enhancer in infected plants and the important role of pRBR in cell proliferation control, we hypothesize that sequence variation in 7 PepYLCV's genomes (3 from Indonesia, 3 from China, and 1 from Thailand) will affect its binding capability. Based on the amino acid sequences deposited in the NCBI database, alignment was carried out using ClustalW through MEGAX and protein structures were generated using different software, such as AlphaFold2, Robetta, Phyre2, and RAPTORX. Quality assessments of each model were done using ERRAT, PROCHECK, Ramachandran plot analysis, and QMEANDisCo. Protein-protein interaction was done using PatchDock, which its results were visualized and analyzed using ChimeraX. ClustalW alignment shows that only 61.19% of residues are more than 80% conserved. In terms of location, hydrogen bond, and clashes quantity, we found differences between various isolates. Most clashes were found in YN65-1, YN65-10, and YN57-4 isolates. However, based on field experiment, clashes quantity reflects its pathogenicity (specifically PSSWS-14 isolate that shows its symptoms in just 8 days after inoculation and only has 339 clashes with 12 hydrogen bonds between proteins).

Keywords: pathogenicity, PepYLCV, protein-protein interactions, replication enhancer protein, retinoblastoma-related protein

Isolation and Characterization of HPPD Gene Active Domain in Sunflower

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Abstract. The productivity of sunflower oil in Indonesia is minimal in terms of quality, quantity, and continuity. Therefore, Indonesia to have to import sunflower oil from other countries to meet domestic needs. One solution that can be done is to assemble hybrid varieties that have the advantage of being able to produce higher oil through genetic engineering efforts. This study aimed to obtain information on the characteristics of the *4- hydroxyphenylpyruvate dioxygenase* (HPPD) gene that regulates tocopherol biosynthesis. This study succeeded in isolating the DNA sequence of the sunflower HPPD gene with a product size of 1730 bp, with a level of similarity reaching 100% with the reference gene with accession number XM_02215003.

Keyword: 4- hydroxyphenylpyruvate dioxygenase, gene regulation, sequence, tocopherol

Isolation of Starch Branching Enzymes (SBE) Genes from Banana (*Musa paradisiaca*) Raja Genotypes and Prediction of Secondary and Tertiary Protein Structures

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Abstract. Bananas are the leading fruit commodity in Indonesia, the production of which always increases every year. It has the potential to be a functional food that can be used as an alternative diabetes treatment. This can be realized by increasing the formation of resistant starch. Resistant starch can reduce the glycemic response and insulin response so that it can protect against diabetes. Starch is composed of two types of glucose polymers; amylopectin and amylose. In amylose synthesis, there are several genes involved, one of which is the Starch Branching Enzyme [SBE]. This gene has an important role in inhibiting the formation of branching points in amylopectin chain metabolism. In this study, PCR-based isolation of the SBE gene from banana genotype Raja and sequencing was carried out. Sequencing data were then compared with SBE on *Musa acuminata* subsp. *malaccensis*. In addition, the secondary structure was compared using Profunc software and the tertiary structure using the Swiss Model. The isolation of the SBE gene was successfully carried out and it is known that the SBE gene in the Raja genotype banana has 23 different bases (substitution of 18 bases, insertion of 4 bases, deletion of 2 bases) compared to SBE of *Musa acuminata* subsp. *malaccensis*. Information about the differences between the two samples will be used as a reference in further research to increase the production of molecular-based resistant starch.

Performance, Heritability, and Variability of Grain Characters of 29 West Sumateran Local Upland Rice Cultivars

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Abstract. A high level of rice consumption with specific rice preferences makes it necessary to meet the needs of West Sumatera province in rice. The abundance of genetic diversity, especially the local upland rice from West Sumatera, makes a great opportunity in obtaining local cultivars with the desired characters. The study aimed to assess the performance, heritability, and variability of grain characters of 29 local upland rice cultivars of West Sumatera. The evaluation of 29 local upland rice cultivars was conducted at the Experimental Field, Faculty of Agriculture, Andalas University, using a Randomized Complete Block Design with three replications. Results showed the variation in grain size and shape and 100-grain weight among 29 West Sumateran local upland rice cultivars. The upland rice was classified into extra-long and long grain size, slender and medium grain shape, and light and heavy 100-grain weight. Two cultivars possess low amylose content, 17 cultivars with moderate amylose content, and ten cultivars with high amylose content, indicating high amylopectin content dominated most West Sumateran local upland rice cultivars revealed creamy and sticky texture of rice after cooking. The Phenotypic Coefficient Variance (PCV) was higher than the Genotypic Coefficient Variance (GCV) for all characters, indicating the environmental influences on the expression of these characters. High heritability estimates were detected for all characters, indicating selection might be successful for grain size, shape, and 100-grain weight characters. Among 29 West Sumateran local upland rice cultivars, Buyar that performed extra long grain size, medium grain shape, moderate amylose content (23,6%), was higher in 100-grain weight (3.18 g) than Jatiluhur as control variety.

Keywords: amylopectin, amylose, GCV, grain character, PCV

Gamma Rays Irradiation Induced Drought Tolerance in Potato Crops Grown at Medium Elevation

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Abstract. Potato crops are very sensitive to water deficit, due to their shallow rooting system. On the other hand, potato crops are grown where an irrigation system is not available, especially in Indonesia. Because of this, a new potato cultivar must be available for medium elevation lacking water resources. The objective of this research was to study the effect of gamma rays irradiation on the growth and yield of potato crops grown at medium elevation exposed to water deficit. Potato seeds exposed to gamma rays irradiation (0, 30 Gy) were grown at the glasshouse at medium elevation for two consecutive years at different places (District of Kepahiang and Argamakmur) then exposed to water stress-induced chemically by PEG8000 (0, 2, 4, and 8%) or physically by holding water irrigation (1 day, 2 days, 3 days, and 4 days). Variable measured include the time of crop emergence, percentage of the crop emerged, percentage of surviving crops, number of tubers produced, the diameter of tuber, and weight of tuber, growth reduction, and yield reduction. The results showed that gamma rays irradiation improved crop growth and yield in both experiments, water stress treatments either induced physically or chemically reduced crop growth and yield, then irradiating potato seeds with 30 Gy gamma rays significantly improved crop performances when exposed to water stress. It is recommended to carry out further study to evaluate whether the trait of being tolerant to water stress after gamma rays irradiation is inherited to the next seeds.

Keywords: drought tolerant, gamma rays, PEG8000, potato, watering regime

The Effect of Organic Mulch on Yields Components of Batang Piaman Rice Variety with SRI Method

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Abstract. Rice production can be increased through intensification. System of Rice Intensification (SRI) is one of the intensification cultivation systems that can increase rice production. However, in the application of the SRI method, weeds are an obstacle. If weeds are not weeded, yields will be reduced by up to 70%, so weeds need to be overcome by weeding or using organic mulch. This research was carried out on community-owned rice fields of Saniang Baka Village, Solok Regency, West Sumatra Province. This study aimed to obtain organic mulch that is suitable to be applied to rice fields using the SRI method. This study used a Completely Randomized Design (CRD) with three treatments of organic mulch (straw, reeds, and corn stalks) with four replications. Observational data were analyzed employing variance, and if the results were significantly different, it was continued with Duncan's New Multiple Range Test (DNMRT) with a significance level of 5%. The observed variables were yield components and yields of the Batang Piaman variety of rice. The results obtained were that the three types of organic mulch gave the same effect on the yields components and products of the Batang Piaman variety of rice using the SRI method.

Keywords: Batang Piaman, intensification, organic mulch, production, rice fields

Study of Morpho-physiology of Sunflower Plants in The Highlands and Lowlands Areas

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Abstact. Sunflower is a commodity that has great potential to be developed. The seeds contain antioxidants that are very needed in the pharmaceutical industry and the health sector. The market price of sunflower plant seed oil is very high but the amount of sunflower production in Indonesia is quite low. This potential can be utilized by developing sunflower cultivation in the highlands and lowlands. This research aimed to study the morpho-physiological responses of sunflower plants grown in the highlands and lowlands. The study was conducted at Alahan Panjang (highland) and Padang (lowland). The method used in this study is qualitative. The results based on the T-test showed that the morphology and physiology of sunflowers in the highlands showed plant height, leaf width, number of empty seeds, the weight of 100 seeds, and chlorophyll content lower than sunflower plants grown in the lowlands.

Keyword: antioxidant, morpho-physiology, sunflower

Agronomic Characters of Several Genotypes of Sigah Red Rice at Two Location in West Sumatera

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Abstract. This study aimed to improve the genetics of West Sumatera's local red rice, Sigah mutants of the 3rd generation to obtain mutants that have an early age character with better productivity and quality than the original plant. We used the multilocation test technique in two areas with different elevations to see the interaction between genotypes and the environment and to determine the stability of agronomic characters in the production. The medium plain area is Jorong Sungai Batang, Tanjung Raya District, Agam Regency with a medium elevation level of 637,032 m above sea level. While the lowland area is Surau Gadang Village, Nanggalo District, Padang City with a minimum elevation level of 10,363 m above sea level. The materials used were seeds from the M3 harvest of Sigah genotype red rice, namely mutant numbers MG2-209, MG13, MG5-58, MG6, MG9, and control seeds of Sigah genotype. The results showed that in the aspect of quantitative traits, genotype and location interactions on the agronomic characters of mutant plants numbered MG6 and MG9 were not evenly distributed for the characters of harvest age, total tiller number, number of pithy grain per panicle, the weight of pithy grain per panicle, number of grain per panicle, and weight of 1000 grains. Mutants genotypes number MG13, MG2-209, and MG5-58 have the potential to be developed in Agam regency and Padang city. They are more stable than genotypes mutant number MG6 and MG9 in each character, so can be proposed to do further testing.

Keywords: different elevations, multi-location test, production, sigah mutant

Local knowledge on the utilization of Bilongkiang *Zingiber* sp. (Zingiberaceae) in Solok Regency, West Sumatera

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Abstract. Bilongkiang is a wild species from the Zingiberaceae family consumed by local people as food, hence commonly traded in the traditional market. The objectives of this study, therefore, were to document local knowledge regarding the utilization of Bilongkiang as food in Solok Regency and to put the baseline for conservation effort of local foods by highlighting Bilongkiang as a functional food. The research was carried out using an ethnobotanical approach. Data were collected through observation and interview techniques, which were then qualitatively and quantitatively analyzed. Quantitative data was also evaluated using the Cultural Food Significance Index (CFSI). The study involved 20 informants who have knowledge of and consume Bilongkiang. The result shows that Bilongkiang has a CSFI value of as many as 36, placing its importance at a moderate level. The inflorescence of this plant, that consumed as food, contains 1.14% carbohydrate, 2.18 % crude fiber, 0.25% total fat, 0.43% protein, 94.2 % liquid, 108 mg/kg calcium and 8.93 mg/kg calorie. As far as this study goes, there has been no knowledge that this plant is being cultivated by the people who consume it.

Keywords: bilongkiang, CSFI, ethnobotany, sumatera, zingiberaceae

Factors Affecting Coffee Supply in West Sumatera

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Abstract. Coffee is a leading plantation commodity that has the potential to be developed. Increased coffee consumption is an opportunity to strengthen this commodity. The increasing demand for coffee will also increase in coffee supply. West Sumatra is an area that continues to increase coffee production. This study aims to analyze the factors that influence the supply of coffee in West Sumatra. The method used is a desk study using secondary data for 2010-2020. The variables used are coffee production, land area, number of farmers, international Arabica coffee prices, international Robusta coffee prices, average prices for domestic producers, urea fertilizer prices, and imported coffee. Data were analyzed quantitatively using multiple regression analysis. The results showed that all variables simultaneously affect the supply of coffee. However, partially, only land area has a significant effect on coffee supply in West Sumatra. It shows that an increase in the land area affects coffee production, but this increase must be in line with increased productivity.

Keyword: consumption, production coffee, supply

Marketing Response and Innovation of Coffee Powder SMEs Address Unstable Business Environment

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Abstract. The external environment of the business that is always changing, requires SMEs to always be responsive and innovate to survive. This article discusses how coffee powder SMEs respond to external shocks (in this case is Covid-19 pandemic) and the marketing innovations that were undertaken to overcome them. We also analyze the influence of marketing mix variables on income to find out which attributes need to be improved. We conducted interviews with 100 entrepreneurs of coffee powder in Tanah Datar Regency, West Sumatera Province, who were chosen randomly. There are 56% of respondents have established their business for more than 20 years. The results show that SMEs are not responsive to shocks. There are almost no innovations to marketing mix attributes carried out by SMEs during the Covid-19 pandemic, even though the Covid-19 pandemic has resulted in many SMEs going bankrupt. The multiple regression results show that attributes of production quantities, packaging variations, price, marketing areas, and marketing media have a significant effect on income. Therefore, it is necessary to improve the performance of these attributes.

Keywords: coffee powder SMEs, marketing response, unstable business environment

Identification Aspects of Covid-19 Adaptive Tourism Sustainability in Padang City, West Sumatera

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Abstract. This study aims to identify aspects of the sustainability of Covid-19 adaptive tourism in Padang City, West Sumatera. The results of the study indicate that the variables that affect this economic aspect are that tourist location information is easy to obtain, officers provide convenience in providing services, officers can interact with visitors, tourist destinations provided exceed those offered, additional destinations provided are attractive and in accordance with the concept tourism in the region. Variables that affect environmental aspects are road signs that are easy to find, clear and provide information that is immediately understood. Variables that affect socio-cultural aspects are local people knowing the history of the destination, sellers do not disturb visitors when selling, where sellers are decent or neatly arranged, tourist officers come from nearby locations, local people provide information on tourist destinations, easy access to local transportation, condition of people's homes. neat and proper local community and local people who have used electronic communication tools.

Keywords: covid-19, economic aspects, environmental aspects, socio-cultural aspects, tourism sustainability