



**Kampus
Merdeka**
INDONESIA JAYA



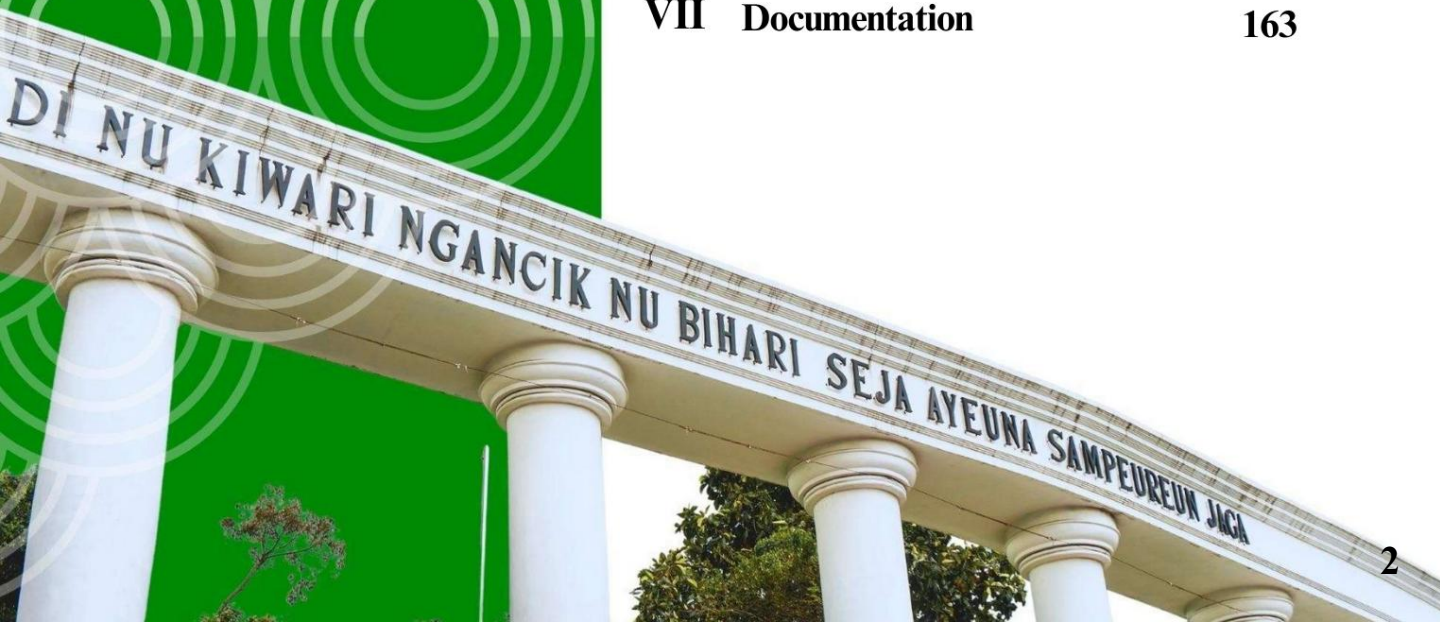
ICOTENS BOOKS

the 1st International Conference on Technology and Sciences 2024

Faculty of Mathematics and Natural Sciences
Universitas Pakuan

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ICOTENS Organizing Committee

Pelindung	: Rektor UNPAK	Prof. Dr. Ir. H. Didik Notosudjono, M.Sc.
Pengarah	: Dekan FMIPA UNPAK	Asep Denih, S.Kom., M.Sc., Ph.D.
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	Wakil Dekan II	Dr. apt. Sri Wardatun, S.Si., M.Farm.

Ketua Panitia	: Dr. Diana Widiastuti, S.Si., M.Phil.
Wakil	: Sara Nurmala, S.Farm., M.Farm.
Sekretaris	: Gustian Rama Putra, S.Kom., MMSI
Bendahara	: Linda Jati Kusumawardani, M.Si.
Koordinator Program Studi	: 1. Dra. Triastinurmiatiningsih, M.Si.
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	3. Dr. Ir. Fitria Virgantari, M.Si.
	4. Arie Qur'ania, S.Kom., M.Kom.
	5. apt. Dra. Ike Yulia W., M.Farm.

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	2. Usep Suhendar, S.Pd., M.Si.
	3. Maya Widyastiti, S.Si., M.Si.
	4. Tanti Sutanti, S.Kom.
	5. M. Nizar Zulfikar, S.Si.
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	2. Irma Anggraeni, S.T., M.Kom.
	3. Prof. Dr. Ir. Sata Yoshida Srie Rahayu, S.Pi., M.Si.
	4. Dr. Embay Rohaeti, S.Si., M.Si.
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	6. Uswatun Hasanah, S.Si., M.Si.
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	9. Muhammad Fathurrahman, S.Pd., M.Si.
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	5. Aisya Ayu Andayani, S.Si.
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	2. Mohamad Iqbal Suriansyah, S.Kom., M.Kom.
	3. Asep Saepulrohman, S.Si., M.Si.
	4. Reza Rizaldi, S.Kom.
	5. Endra Pratama, S.Ak.
	6. Hanif Hanan Al Jufri
5. Konsumsi	: 1. Siti Warnasih, S.Si., M.Si.
	2. Dr. apt Bina Lohitasari, M.Pd., M.Farm.
	3. Irfana Fauziah, M.Sc.
	4. Chusnul Syahri, S.Si.
	5. Siti Nurjanah

Greetings from The Rector



**Assalamualaikum warahmatullahi wabarakatuh,
Bismillahirrahmanirrahim,**

Distinguished Guests, Esteemed Speakers, and
Participants,

It is great honor and pride for me to welcome all of you to the 1st International Conference on Technology and Sciences. This event comprises a series of activities for the 44th Anniversary of Pakuan University. This event marks a significant moment in our journey towards fostering multidisciplinary research and innovation that bridges the fields of technology and natural sciences. Our International Conference theme is, "Transformation Towards Sustainable Natural Sciences based on Technology," it could not be more timely as we navigate an era of rapid technological advancements and increasing environmental challenges.

I would like to extend my sincere gratitude to all of the organizing committee members, distinguished speakers, and participants from across the globe for your active involvement and contribution to the success of this conference. It is through your efforts that we are able to create a platform for meaningful discussions, knowledge exchange, and future collaborations.

Finally, thank you for your attention and I hope this international conference can increase our insight, experience, networks, and can strengthen our collaboration.

Wassalamualaikum warahmatullahi wabarakatuh.

Prof. Dr. Ir.H. Didik Notosudjono., M.Sc.
Rector of Universitas Pakuan



Greetings From The Dean

Assalamualaikum warahmatullahi wabarakatuh,

Respected Colleagues, Esteemed Guests, and Distinguished Participants,

It is my utmost pleasure to welcome you to the 1st *International Conference on Technology and Sciences* here at IICC which held by FMIPA UNPAK. The theme of this conference is, "Transformation Towards Sustainable Natural Sciences based on Technology". Reflects our commitment to harnessing technological advancements for the betterment of natural sciences and society as a whole.

This conference brings together experts from diverse fields such as pharmaceutical sciences, chemistry, biotechnology, and data analytics, showcasing the importance of multidisciplinary collaboration in addressing global challenges. I would like to take this moment to thank our organizing committee, sponsors, and all participants for their hard work and dedication in making this event possible.

I hope this conference provides an opportunity for all of us to engage in enriching discussions, establish new networks, and inspire future innovations that contribute to a sustainable future.

Thank you, and I wish you a successful and inspiring conference.

Wassalamualaikum warahmatullahi wabarakatuh

Asep Denih, S.Kom., M.Sc., Ph.D.

Dean of the Faculty of Mathematics and Natural Sciences
Universitas Pakuan

Greetings from Chairperson of the Organizing Committee's

Honorable Rector of Universitas Pakuan
Honorable Dean of FMIPA Universitas Pakuan
Honorable Speaker and Participants

Assalamualaikum warahmatullahi wabarakatuh,

On behalf of the organizing committee, it is my great pleasure to welcome you to the *1st International Conference on Technology and Sciences 2024*. We hope this seminar will bring communication and cooperation in educational and research activities with the support and collaboration of government, non- governmental organizations, research institutions and scientific associations both in Indonesia and overseas.

As a chairperson, we are very proud to report that today, the international seminar is attended by more than 130 participants, coming from Indonesia, United States of America, Vietnam, Turkey, Saudi Arabia, Cyprus, Philippines, Japan, Libya, Malaysia and Thailand. There are 113 papers to be presented orally and 17 papers presented by poster.

I would like to express my deepest appreciation to our sponsors, speakers, and all committee members who have worked tirelessly to organize this event. Your efforts have made this conference possible, and I am confident it will be a great success.

Finally, I thank and welcome all of you to this conference. I would like to express my gratitude and hope you will have a good atmosphere conference and fruitful meeting.

Thank you.

Wassalamualaikum warahmatullahi wabarakatuh

Dr. Diana Widiastuti, M.Phil.
Chairperson





Schedule

1st INTERNATIONAL CONFERENCE ON TECHNOLOGY AND SCIENCES (ICoTenS)

Schedule

Day/Date : Thursday/October, 31st 2024
Venue : IICC- Botani Square, Jl. Pajajaran No. 40 Bogor

Time	Activity
07:45 - 08:30	Participation Registration & Poster Acceptance
08:30 – 09:15	Opening Ceremony - Chairperson of Organizing Committee (Dr. Diana Widiastuti, M.Phil.) - Dean of Faculty of Mathematics and Natural Sciences Universitas Pakuan (Asep Denih, S.Kom., M.Sc., Ph.D.) - Rector of Universitas Pakuan (Prof. Dr. rer. pol. Ir. H. Didik Notosudjono, M.Sc., IPU., Asean Eng.)
09:15 – 09:30	Coffee Break
09:30 - 10:30	Plenary Session 1 Prof. Dr. Anna Permanasari, M.Si. Prof. Dr. Eng. Kuwat Triyana, M.Si. (Moderator: Asep Denih, S. Kom., M.Sc., Ph.D.)
10:50 – 12:05	Plenary Session 2 Prof. Dr. Abdul Talib bin Bon Prof. Masahiro Tasumi (Moderator: Prof. Dr. Ir. Sata Yoshida Srie Rahayu, M.Si)
12.10 - 13.00	Poster session and break
13:00 – 17:00	Parallel Session Room 1 (Hall C1, 2nd Floor) <i>Invited Speaker:</i> Dr. Muhammad Yudhistira Azis, M.Si. Room 2 (Hall C2, 2nd Floor) <i>Invited Speaker:</i> Hisyam Abdul Hamid, Ph.D. Room 3 (Parallel Room 3rd Floor) <i>Invited Speaker:</i> Prof. Adrian J. Forca Room 4 (Parallel Room 3rd Floor) <i>Invited Speaker:</i> Prof. Madya Dr. M. Syaifullah bin Rusiman Room 5 (Parallel Room 3rd Floor) <i>Invited Speaker:</i> Dr. Fathi Alhashmi Ali Room 6 (Online-Breakroom 1) <i>Invited Speaker:</i> Dr. Thanh Tien Nguyen Room 7 (Online-Breakroom 2) <i>Invited Speaker:</i> Kindi Farabi, Ph.D.
17:00 – 18:00	Closing (hall) Awards for best presenter and poster

Poster Session

No	Code	Presenter
1	PP110	Muhammad Faisal Raafi
2	PP111	Afdhal Amri
3	PP112	M. Iqbal Prakoso
4	PP113	M. Rafli Ardana
5	PP114	Burhan Ma'Arif
6	PP115	Novia Maulina
7	PP116	Salsabela
8	PP117	Serli Meilani
9	PP118	Bagas Annasta

No	Code	Presenter
10	PP119	Siska Simalango
11	PP120	Hotmian
12	PP121	Ruqiah Ganda Putri Panjaitan
13	PP122	Moch Fahdin
14	PP123	Karenina Tantri
15	PP124	Sofiyanti
16	PP125	Friska Noerfitria
17	PP126	Sri Handayani



Parallel Session

Day/Date : Thursday, October 31st, 2024
Venue : IICC- Botani Square
Time : 13.00 – 17.00

Duration	Room 1 (Hall C1, 2 nd Floor)		Room 2 (Hall C1, 2 nd Floor)	
	Code	Presenter	Code	Presenter
13.00 - 13.30 (Invited Speaker)		Dr. M Yudhistira Azis, M.Si.		Hisyam Abdul Hamid, Ph.D.
13.30 - 13.45	OP01	Rissa Shafa Salsabila	OP15	Faizatin Liyan Syibyan
13.45 - 14.00	OP02	Aqilah Chandra	OP16	Rahmitha Auliya Rana
14.00 - 14.15	OP03	Salsa Nur Ryani	OP17	Ade Maysaroh
14.15 - 14.30	OP04	Resti Friyanti Cahya	OP18	Muhammad Fajar Saeful Fatah
14.30 - 14.45	OP05	Ratna Sari Kusumawati	OP19	Lilik Sulastri
14.45 - 15.00	OP06	Kurnia Aeni	OP20	Naziah Salsabila
15.00 - 15.15	OP07	Ivanny Dwi Krisanthy	OP21	Fitria Dewi Sulistiyono
15.15 - 15.30	OP08	Damaristha	OP22	Euis Nining
15.30 - 15.45	OP09	Eka Herlina	OP23	Erni Rustiani
15.45 - 16.00	OP10	Farida Nuraeni	OP24	Fitria Dewi Sulistiyono (Oom K)
16.00 - 16.15	OP11	Yulian Syahputri	OP25	Bina Lohita Sari
16.15 - 16.30	OP12	Yulianita Y	OP26	Siti Mahyuni
16.30 - 16.45	OP13	Ani Iryani		
16.45 - 17.00	OP14	Sutanto		

Duration	Room 3 (Parallel Room 3 rd Floor)		Room 4 (Parallel Room 3 rd Floor)	
	Code	Presenter	Code	Presenter
13.00 - 13.30 (Invited Speaker)		Prof. Adrian J.Forca		Prof. Madya Dr. M. Saifullah bin Rusiman
13.30 - 13.45	OP27	Garry Vanz Blanca	OP40	Putri Apriyanti
13.45 - 14.00	OP28	Rendy Nurul Saputra	OP41	Aprilianti Solihat
14.00 - 14.15	OP29	Sri Restu Ningsih	OP42	Fitria Virgantari
14.15 - 14.30	OP30	Sri Devi	OP43	Yasmin Erika Faridhan
14.30 - 14.45	OP31	Agus Ismangil	OP44	Hagni Wijayanti
14.45 - 15.00	OP32	Kotim Subandi	OP45	Oom Komala
15.00 - 15.15	OP33	Teguh Puja Negara	OP46	Prasetyorini Djarot
15.15 - 15.30	OP34	Boldson Herdianto S.	OP47	Zaldy Rusli
15.30 - 15.45	OP35	Aries Maesya	OP48	Marybet Tri Retno Handayani
15.45 - 16.00	OP36	Arie Qurania	OP49	Yusma Yanti
16.00 - 16.15	OP37	Adriana Sari Aryani	OP50	Cantika Zaddana
16.15 - 16.30	OP38	Dini Suhartini	OP51	Asep Saepulrohman
16.30 - 16.45	OP39	Eneng Tita Tosida	OP52	Tjut Awaliyah Zuraiyah
16.45 - 17.00	OP129	Bira Arya Setha	OP53	Sahila Ika

Duration	Room 5 (Parallel Room 3 rd Floor)	
	Code	Presenter
13.00 - 13.30 (Invited Speaker)		Dr. Fathi Alhashmi Ali
13.30 - 13.45	OP54	Diana Widiastuti
13.45 - 14.00	OP55	Desy Kartina
14.00 - 14.15	OP56	Ade Heri Mulyati
14.15 - 14.30	OP57	Prihastuti Harsani
14.30 - 14.45	OP58	Linda Jati Kusumawardani
14.45 - 15.00	OP59	Uswatun Hasanah
15.00 - 15.15	OP60	Siti Warnasih
15.15 - 15.30	OP61	Novi Utami
15.30 - 15.45	OP62	Sri Wardatun
15.45 - 16.00	OP63	Mohamad Iqbal S.
16.00 - 16.15	OP64	Sara Nurmala
16.15 - 16.30	OP65	Gustian Rama Putra
16.30 - 16.45	OP66	Fajar Delli Wihartiko
16.45 - 17.00	OP67	Lita Karlitasari
17.00 - 17.15	OP68	Agung Prajuhana Putra

Online Parallel Session

Duration	Room 6 • (Online-Breakroom 1)		Room 7 • (Online-Breakroom 2)	
	Code	Presenter	Code	Presenter
13.00 - 13.30 (Invited Speaker)		Dr. Thanh Tien Nguyen		Kindi Farabi, Ph.D.
13.30 - 13.40	OP69	Elis Khatizah	OP89	Fitriani Fitriani
13.40 - 13.50	OP70	Yanuar Firmansyah	OP90	Nur Hayati
13.50 - 14.00	OP71	Lea Ymalay (Gio Albert)	OP91	Taufiq Dwi Tamtomo
14.00 - 14.10	OP72	Lea Ymalay	OP92	Huda Al-Sayedahmed
14.10 - 14.20	OP73	Rachmawati Felani Djuria	OP93	Muhammad Yusuf
14.20 - 14.30	OP74	Aini Rahmah Annisa	OP94	Agung Prakoso
14.30 - 14.40	OP75	Alfi Nabila	OP95	Dea A. Ekaputri
14.40 - 14.50	OP76	Stephanie Asseta	OP96	Teguh Sukriawan
14.50 - 15.00	OP77	Irwan Kurnia	OP97	Nurul Fajar Santosa
15.00 - 15.10	OP78	Mutia Anggraeni	OP98	Hasrudin
15.10 - 15.20	OP79	Mersiana Winda Tateang	OP99	Risnawati
15.20 - 15.30	OP80	Lilis Supratman	OP100	Yeni Wahyuni Hartati
15.30 - 15.40	OP81	Aip Muhamad Irpan	OP101	Irna Mariska
15.40 - 15.50	OP82	Dhita Ayu Pradnyapasa	OP102	Tria Tessalonica Potaka
15.50 - 16.00	OP83	Hersandy Dayu Kusuma	OP103	Nanda Asyura
16.10 - 16.20	OP84	Rutiani	OP104	Surti Kurniasih
16.20 - 16.30	OP85	Lilis Setiawati	OP105	Vic Grout
16.30 - 16.40	OP86	Cut Dian	OP106	Sumanto
16.40 - 16.50	OP87	Dezahwa Almalidea	OP107	Baiq Leadyana Hanesty
16.50 - 17.00	OP88	Risda Adriana	OP108	Ian Imanuel
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The background of the page is a dense, abstract pattern of overlapping, thin green rectangular outlines. These rectangles are of various sizes and are oriented at different angles, creating a complex, geometric texture. In the top right corner, there is a solid green rectangular block containing the word "Abstracts" in white text.

Abstracts



POSTER SESSION

Application of Convolutional Neural Networks (CNN) in the Classification of Tea Leaf Bud Maturity Levels

Muhammad Faisal Raafi, Hermawan and Mulyati.

Department of Computer Science, Faculty of Mathematics and Natural Science, Pakuan University

ABSTRACT

Tea is a beverage made from tea leaf buds that have undergone certain processing. Indonesia is one of the major tea-producing countries in the world. In harvesting tea leaves, it is essential to determine which leaves are at the optimal maturity level to ensure the best quality and flavor of the tea produced. The maturity levels of tea leaf buds include immature, half-mature, mature, dan old tea leaves. Visual observations made by foremen during the harvesting process are often inaccurate in determining when to pick in certain seasons. This research aims to classify the maturity level of tea leaf buds by applying the Convolutional Neural Networks (CNN) algorithm. CNN Algorithm has the main advantage of recognizing complex patterns and features through convolution layers. The architectures implemented are LeafNet and VGGNet11, which have different levels of layer complexity. Supported by the Knowledge Data Discovery (KDD) data mining method to maximize in building a model. Distribution of datasets at different proportions, including 70:15:15, 80:10:10, and 90:5:5. The LeafNet achieves the highest validation accuracy of 98.08% with a low loss of 0.117 at a proportion of 90:5:5. The result indicate that the LeafNet performs better at generalizing new data, and the proportion of the dataset can affect the performance of the model.

Keywords : Classification, Convolutional Neural Networks, LeafNet, Tea Leaf Buds, VGGNet11

Optimization of H₂O₂ Concentration in Presumptive Test of Blood Spot Samples for Forensic DNA Examination Using Real-Time PCR

Afdhal Amri¹, Ade Heri Mulyati², Vira Saamia³

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ABSTRACT

A presumptive test is an identification test to determine whether a blood spot is present. Forensic researchers in the world in assessing blood spots have developed several methods, such as Electron Paramagnetic Resonance (EPR), Reflectance Spectroscopy, and High-Performance Liquid Chromatography (HPLC). These methods are difficult to apply directly at crime scenes due to their cumbersome nature, limited availability of equipment, and high operational costs. The most practical method of assessing blood spot samples found at crime scenes is presumptive testing using the LMG (Leucomalachite Green) test. However, direct application of presumptive tests to blood spots can damage DNA due to the addition of Hydrogen Peroxide (H₂O₂) if the concentration is inappropriate. This study aims to determine the optimum concentration of H₂O₂ for presumptive tests of blood spots and determine the effect of H₂O₂ concentration from presumptive tests on the results of forensic DNA examination using Real-Time PCR. The method used in this study was experimental, with procedures including taking samples from donors, presumptive tests, and DNA analysis. DNA analysis of blood spot samples begins with DNA extraction using the Prepfilertm method, quantification by Real-Time PCR using QuantifilerTM Trio PCR Reaction Mix, DNA amplification and reading using CE (Capillary Electrophoresis) using Applied Biosystems 3500 Genetic Analyzer and Gene Mapper software. Based on the research conducted, the test results show that to determine the presence of blood spots; a presumptive test is needed as a first step to identify a commonly used blood sample, namely by adding LMG and H₂O₂, the addition of 3% H₂O₂ provides the fastest and most precise presumptive test results as evidenced by the time required is only 5.29 seconds and can give positive results, so the addition of this concentration is effectively used to prove blood spots or not. The concentration of H₂O₂ added can identify blood spots well but can damage DNA, as evidenced by the degradation index value > 1, and the electroferogram has no DNA profile.

Keywords : blood spots, DNA, H₂O₂, LMG, presumptive test

"Identification of Active Compounds and Testing of Antidiabetic Activity of Red Shoot Leaf Extract (*Syzygium myrtifolium* Walp) *In Vitro* and *In Silico*"

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ABSTRACT

Diabetes mellitus (DM) is a global disease that affects 537 million or 1 in 10 people living with diabetes worldwide, and it is estimated that in 2045 it will reach 783 million people. Diabetes treatment cannot be separated from synthetic drugs which have side effects such as hypoglycemia, headaches and digestive disorders. Therefore, people are turning to natural ingredients as alternative medicine and curative measures for diabetes. One natural ingredient that can be used as medicine is the Bitter plant (*Syzygium myrtifolium* Walp) which has anti-diabetic, anti-cancer, anti-inflammatory and antibacterial properties. This study aims to determine the antidiabetic activity of red shoots leaf extract (*Syzygium myrtifolium* Walp), identify and predict the interaction between the active antidiabetic compounds from red shoot leaf extract (*Syzygium myrtifolium* Walp) and the α -glucosidase receptor. The methods used in this research include preparation of red shoots leaf samples, making simplicia, water content testing, maceration using ethanol, hexane, ethyl acetate solvents, In Vitro antidiabetic activity testing, α -glucosidase inhibition method, compound identification using GC- MS, Lipinski's rule of five screening, pharmacokinetic screening, toxicity screening, and In Silico antidiabetic activity testing. Based on research conducted, the results of the In Vitro antidiabetic activity test on red shoot leaf extract (*Syzygium myrtifolium* Walp) showed the best IC₅₀ value, namely the ethanol extraction of 83,6881 ppm compared to the ethyl acetate extract and hexane. The results of the identification of active compounds using GC-MS in the ethanol extraction of red shoot leaf extract (*Syzygium myrtifolium* Walp) identified 45 secondary metabolite compounds which the terpenoid group dominated. The results of the In Silico antidiabetic activity test of ethanol extracts of red shoot leaves (*Syzygium myrtifolium* Walp) show that out of 25 compounds there are 4 compounds that have activity as antidiabetics based on Gibbs free energy (ΔG) (kcal/mol) there are 3 compounds namely α -Gurgujene, α -Selinene and γ -Cadinene while based on interaction analysis of amino acid residues and distance to ligand there is 1 compound that has the same interaction with acarbose, namely Neophytadiene.

Keywords: *Syzygium myrtifolium* Walp, Maseration, antidiabetic, α -glucosidase enzyme, docking.

THE APHRODISIAC EFFECT OF ETHANOL EXTRACT OF *Uvaria rufa* Blume. BARK ON MALE MICE (*Mus musculus*)

THE APHRODISIAC EFFECT OF ETHANOL EXTRACT OF *Uvaria rufa* Blume. BARK ON MALE MICE (*Mus musculus*)

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ABSTRACT

While sexual desire is critical for achieving a harmonious sexual life, a reduction in sexual function can disrupt the household's harmony. Across the world, around 31% of men experience sexual dysfunction in their lifetime in the form of erectile dysfunction. Erectile dysfunction drugs like Sildenafil have potential side effects such as cyanosis, blurred vision, and hypertension. The people of East Nusa Tenggara, Indonesia, traditionally use *Uvaria rufa* Blume, a plant, as an aphrodisiac to treat men's sexual dysfunction. Objective: This study aims to evaluate the acute toxicity of *U. rufa* bark extract as well as its aphrodisiac efficacy in mice (*Mus musculus*). Methods: The bark of *U. rufa* was extracted using 70% ethanol (URE). The acute toxicity was assessed by estimating the LD50 and performing histological investigation of the liver and kidneys in mice following the injection of URE using the fixed dose method. Aphrodisiac efficacy was assessed by measuring Leydig cells, Sertoli cells, seminiferous tubule diameter, and testicular weight following the injection of URE at doses of 0.425, 0.85, and 1.7 mg/20 gBW. Utilizing sildenafil at a dose of 0.13 mg/20 gBW as a positive control. Results: The acute toxicity test yielded a LD50 value of 3.435 mg/kg, indicating a slight toxicity, while the histological observations of the liver and kidney cells revealed no signs of necrosis, degeneration, inflammatory infiltration, or cholangitis. According to the results of the aphrodisiac activity test, the dose of 0.85 mg/20 gBW URE was the most optimal dose for increasing the parameters of Leydig cells, Sertoli cells, seminiferous tubule diameter, and testicular weight. Conclusion: URE has demonstrated safety and efficacy as an aphrodisiac, indicating its potential for development as an alternative therapy for sexual dysfunction.

Keywords : . Herbal medicine, sexual dysfunction, etnomedicine, alternative therapy, sildenafil

Marketing Research Of Marsilea Cranata C. Presl. Leaves Powder Drink Products Using Organoleptic Test And SWOT Analysis

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ABSTRACT

Marketing research are needed for a new product before commercialization stage. For instance, herbal powder drink product with neuroprotective properties which was extracted from *Marsilea crenata* C. Presl leaves. This research aims to find out hedonic assessment and hedonic quality of products between orange flavor (A) and apple flavor (B), then to obtain a good marketing strategy through the SWOT analysis method. Methods: The quantitative descriptive observational using purposive sampling technique was used by involving 100 people (aged 25 years and over) living in Malang City. The results of the Hedonic test using Wilcoxon showed A variation got mean value ranging from 2.58 -3.14 and B variation in the range of 3.02-3.39. In the hedonic quality test of these two variations, it had almost similar quality. Results: The results of SWOT analysis was obtained an IFAS value of 0.610 and an EFAS value of 0.503. From these results, quadrant I was obtained which supports aggressive marketing strategy policies. From the results of the organoleptic test assessment, it can be proven that both product variations are acceptable to the panelist. The marketing strategy of *M. crenata* leaves extract powder is categorized in quadrant I, which means a condition that supports aggressive growth policies. Conclusion: From the results of the organoleptic test assessment, it can be proven that both product variations are acceptable to the panelist. The marketing strategy of *M. crenata* leaves extract powder is categorized in quadrant I, which means a condition that supports aggressive growth policies.

Keywords : Marketing research, Organoleptic test, SWOT analysis, Instan drink, M. crenata leaves

CODE : PP115

PROXIMATE TEST AND EFFECTIVENESS OF HANJELI TAPE AS AN ANTIBACTERIAL *Staphylococcus aureus* CAUSES OF SKIN DISEASES

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Abstract

Functional food has important compounds that can maintain human health, one of which is fermented food which has a higher nutritional value than the original food, because there is the work of fermentative microbes which can break down complex compounds into simple ones, so that the food is easily digested. Indonesia is rich in various kinds of traditional fermented foods that can be developed into functional foods, one of which is tape hanjeli from West Java. The nutritional content of hanjeli seeds is very diverse, one of which is complex carbohydrates, which means it has the potential to replace rice. Hanjeli has a chewy texture but is not sticky so it can be an alternative food as a food diversification effort because it has a fairly high source of carbohydrates, where 100 grams of hanjeli contains 76.4% carbohydrates, 14.1% protein, 7.9% fat, vitamin B1 0.48 mg, calcium 54 mg and fiber 0.9% (Nurmala, 2010).

Keywords : Anti-bacterial, Proximate, *Staphylococcus aureus*, Tape Hanjeli

IN VITRO GROWTH OF LOQUAT (*Eriobotrya japonica* Lindl) IN MURASHIGE AND SKOOG (MS) MEDIA WITH 6-BENZYL AMINO PURINE (BAP) AND NAPHTHALENEACETIC ACID (NAA) ENRICHED

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Abstract

Loquat or biwa fruit (*Eriobotrya japonica* Lindl) is a woody plant belonging to the Rosaceae family, originating from China (Normasiwi et al., 2019). This plant has potential medicinal properties and is rich in nutrients; its seeds and leaves contain amygdalin, which is used as an anti-cancer medication. *Eriobotrya japonica* is considered an unpopular fruit plant because only a small portion of the population cultivates it, mainly as a backyard plant (Nasution et al., 2014). Limited information on propagation and cultivation technology contributes to conventional planting methods, which are timeconsuming and result in limited seedlings. This plant is susceptible to collar rot and root rot caused by *Diplodia natalensis*, leading to rapid plant death (Jonathan et al., 2006). According to Latifah (2017), MS media contains appropriate nutrients for plant needs and is rich in nutrients, thus promoting rapid growth and development. The addition of BAP and NAA as exogenous cytokinin and auxin can enhance cell metabolism and explant growth (Surya et al., 2019). In the study by Surya (2019), it was shown that shoots of *Eriobotrya japonica* can form from shoot and stem explants with a combination of BA 2 ml/L + NAA 0.1 ml/L.

Keywords : *Eriobotrya japonica*, Propagation, MS media

Formulation and Evaluation of Saga Rambat Leave Extract (*Abrus precatorius* L.) Oral Thin Film Preparation with HPMC Various Concentration

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Abstract

Thrush is an inflammation that occurs in the oral mucosa. One of the causes of thrush is *Candida albicans* fungal infection. One of the plants that is widely used to treat thrush traditionally is saga rambat (*Abrus precatorius* L.) leaves. This study aims to determine the OTF preparation that produces the best physical quality and determine the most preferred OTF preparation based on the hedonic test results. This research method was carried out descriptively exploratory and experimental in the laboratory with saga rambat leaf extract as the active ingredient extracted by maceration. This study designed 4 formulas with different HPMC concentration variations, namely 0.75, 1, 1.25, and 1.5%. Each formula was evaluated for physical quality with organoleptic test parameters, moisture content, pH, weight uniformity, film thickness, folding resistance, dissolving time, percentage of elongation, and hedonic test. The results showed that F4 was the preparation with the best physical quality test based on the dissolving time test and F3 was the most preferred preparation based on the hedonic test.

Key words: Oral Thin Film, Thrush, Saga Rambat Leaf Extract, HPMC

ANTINFLAMMATORY ACTIVITY OF ETHANOLIC EXTRACT OF ALANG ALANG ROOTS (*Imperata cylindrica* L.) IN VITRO AND IN SILICO

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ABSTRACT

Inflammation is a protective response caused by physical trauma, damaging chemicals, or microbiological agents. The results of health research conducted by the Indonesian Ministry of Health in 2021, the incidence of diseases involving inflammation in Indonesia is quite high. Currently, the administration of non-steroidal anti-inflammatory drugs (NSAIDs) is one of the efforts to treat inflammation. These drugs still have limitations including causing adverse side effects to the digestive tract and causing chronic kidney failure. Therefore, an alternative treatment is needed. Alang-alang roots contain secondary metabolites that can have potential in the treatment of inflammation. The purpose of this study was to determine the potential of reed root secondary metabolite compounds as antiinflammatory in silico against COX-2 enzyme receptors and in vitro using the protein denaturation method through inhibition of heat-treated protein denaturation. The results of in silico research obtained cyclovalone ligand has the highest interaction and stability with Gibbs free energy of -9.3 kcal/mol, the value is lower than the control ligand diclofenac sodium of -6.5 kcal/mol. The results of in vitro analysis showed that ethanol extract of reed roots had inflammatory activity against BSA protein with an IC₅₀ value of 71,786 µg/mL, which is included in the weak category. Based on these results, the ethanol extract of reed roots contains cyclovalone compounds that can have potential as antiinflammatory.

Keywords: Anti-inflammatory, reed roots, COX-2 enzyme.

Validation and Authentication of Keji Beling (*Strobilanthes crisper* (L.) Blume) Using a Thin Layer Chromatography (TLC) Based Metabolomics Approach

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ABSTRACT

Strobilanthes crisper (L.) Blume (keji beling) is commonly used in traditional medicine to treat various diseases. Keji beling products have been sold commercially as combined herbs (jamu) and single herbs (keji beling powder) packaged in capsules or sachets. There are other plants that have the same leaf shape as keji beling, namely *Piper aduncum* L. (sirih hutan) and it will be very difficult to distinguish if it is already in powder form. Besides, the price of keji beling in the market is generally higher than that of sirih hutan, so sirih hutan is possible to use as a counterfeiter for keji beling. If the keji beling raw material is falsified, the quality and safety of the final keji beling product will change. Therefore, a step is needed to determine or confirm the identity and authenticity of keji beling, namely by validation and authentication using a thin layer chromatography (KLT)-based metabolomics approach. Based on the method validation test data, all validation test parameters have met the requirements. The KLT fingerprint of keji beling detected under UV 366 nm produced 11 bands, while the sirih hutan produced 12 bands. Authentication grouping of keji beling using the PCA technique and AUC value shows that keji beling samples have been successfully grouped from mixing and sirih hutan (adulterant) with a total PC value of 93%, although mixing variations of 5%, 25%, and 50% have not been well grouped. From this study, it can be concluded that the validation and authentication method using KLT can be used for quality control of keji beling as a raw material for herbal medicinal products.

Keywords : Keji Beling, Validation, Authentication, KLT, Quality Control.

Traditional Diabetes Mellitus Treatment by the Dayak Seberuang Ethnic Group in Tempunak, Kapuas Village, Tempunak District, Sintang Regency, West Kalimantan

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ABSTRACT

Traditional treatment for diabetes mellitus has been passed down from the ancestors of the Dayak Seberuang ethnic group who live in Tempunak Kapuas Village, Sintang Regency, West Kalimantan. However, this knowledge in traditional medicine is only understood by traditional healers and efforts regarding its preservation have not been made. This study aims to identify the types of plants, the plant organs used, and the methods of processing plants in the traditional treatment of diabetes mellitus. This study uses a qualitative descriptive method with triangulation techniques that combine observation, expert interviews, and documentation of plants used by the Daya Seberuang ethnic, then making herbarium and identifying them. The study results showed that there are four types of plants used in the traditional treatment of diabetes mellitus, namely *Annona muricata* L., *Orthosiphon stamineus* B., *Dillenia suffruticosa* (Griff.) Martelli, and *Syzygium polyanthum* (Wight) Walp. The organs used are leaves. How to process *Annona muricata* L., *Orthosiphon stamineus* B., and *Syzygium polyanthum* (Wight) Walp. leaves is boiled and then drink the decoction. While the *Dillenia suffruticosa* (Griff.) Martelli leaves are processed by cooking them as a vegetable dish.

Keywords: *Annona muricata* L., *Diabetes mellitus*, *Dillenia suffruticosa* (Griff) Martelli, *Orthosiphon stamineus* B., *Syzygium polyanthum* (Wight) Walp.

Intelligent System for Automated Monitoring of Waste Management Based on IoT

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ABSTRACT

The accumulation of waste is a phenomenon where a large amount of waste piles up and is considered normal by the community. In Bogor Regency, an urban area with a population of 5,489,539, the issue of waste accumulation has become crucial, and there is a need for automated waste monitoring to prevent this problem from recurring. Automation is a technology used to replace human jobs or business processes automatically, thereby creating a more efficient workflow. This research aims to develop an automated waste monitoring system based on the Internet of Things (IoT) and artificial intelligence (AI) to monitor waste volume in Bogor Regency in real-time. This system uses ultrasonic sensors connected to an ESP32 module and LED to notify cleaning staff when the trash bin is full. The developed prototype includes a mobile application that displays data from the sensors and provides alerts when the trash volume approaches full capacity. Thus, this system can enhance waste management efficiency and support the concept of an environmentally friendly smart city. The research results show that this system is effective in providing real-time notifications and can be integrated with the regional cleanliness system to improve waste management.

Keywords : Automation, Monitoring, IoT, Waste, Bogor

DETERMINATION OF FLAVONOID LEVELS OF PURPLE LEAF (*Graptophyllum pictum* (L) Griff) Ethanol EXTRACT BASED ON DIFFERENCES EXTRACTOR CONCENTRATION

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ABSTRACT

Purple leaf plants are effective as drugs that contain chemicals such as non-toxic alkaloids, saponins, anthocyanins, flavonoids and alcohol. This research is an experimental study using a quantitative descriptive design. Purple leaf powder was extracted by maceration method using ethanol solvent with different concentrations of 50%, 70% and 96%. The extract was tested for phytochemical screening, and determined of flavonoid content using UV-Vis spectrophotometry. The purpose of this study was to determine the effect of different solvent concentrations on the flavonoid content of purple leaf extract (*Graptophyllum pictum* (L.) Griff). Based on the results of this study indicate that different solvent concentrations affect to flavonoid content of purple leaves. The content of flavonoid ethanol extract 50, 70 and 96% of purple leaf were $0.365\% \pm 0.03308\%$, $0.34\% \pm 0.01565\%$, $0.23\% \pm 0.01565\%$ and $0.365\% \pm 0.03308\%$, respectively.

Keywords: Extraction Concentration, Flavonoid Content, Purple Leaf Ethanol Extract, *Graptophyllum pictum* (L.) Griff

ACUTE TOXICITY OF MAHONI TREE EXTRACT (*Swietenia macrophylla* King) ON ZEBRAFISH EMBRYOS (*Danio rerio*).

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Abstract

In people's lives, plants are widely used as traditional medicine for the treatment of various types of diseases. One of the plants that have been used by the community as traditional medicine is mahogany seeds. Various studies have reported the efficacy of mahogany seeds, among others, as antidiabetic, and anticancer. This study aims to determine the toxicity category of Lethal Concentration 50 (LC50) of mahogany seed extract using the Zebrafish Embryo Acute Toxicity (ZFET) method, identify symptoms of abnormalities in the morphology of zebrafish embryos after exposure from the administration of mahogany seed extract, determine the Effective concentration 50 (EC50) value that can cause abnormalities in the morphology of zebrafish embryos, and determine the teratogenic index category of mahogany seed extract (*Swietenia macrophylla* King). The results showed that the Lethal Concentration 50 (LC50) value of mahogany seed extract with observation time for 24 hours, 48 hours, 72 hours and 96 hours was obtained at 97.462 ppm, 88.843 ppm, 73.706 ppm and 65.481 ppm which fell into the range of 10-100 µg/mL (ppm) with the category slightly toxic or slightly toxic. There are abnormalities in zebrafish embryos characterized by abnormalities such as abnormalities in the tail, spinal abnormalities, swelling (edema) of the yolk and pericardium and death in zebrafish embryos after exposure to mahogany seed extract. The EC50 value of mahogany seed extract is 162.1 ppm, 97.32 ppm, 80.81 ppm and 79.98 ppm which can cause abnormalities in zebrafish embryos with a teratogenic index (TI) category < 1, meaning it is included in the non-teratogenic category.

Keywords: *Extract Of Mahogany Seeds, Acute Toxicity, Zebrafish Embryos.*

THE EFFECTS OF JAVANESE CHILI (*Piper retrofractum* Vahl.) AND LEMON (*Citrus limon* L.) FORMULA ON TOTAL CHOLESTEROL LEVELS IN MALE WHITE RATS

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ABSTRACT

Hypercholesterolemia is an increase in cholesterol levels in the blood exceeding the limit the body needs beyond the normal state, which is above 200 mg/dL. Javanese chili (*Piper retrofractum* Vahl.) and lemon (*Citrus limon* L.) are natural ingredients native to Indonesia that can potentially reduce cholesterol levels in the blood. This study aims to determine the effect of a combination of Java chili and lemon on lowering total cholesterol levels in male white rats. Measurement of total cholesterol levels was carried out by the Cholesterol Oxidase Peroxidase Aminoantypirin (CHOD-PAP) method using 35 experimental animals which were divided into seven treatment groups, namely the normal group (not treated), the positive group (simvastatin 0.018mg/200 g BW), negative group (induction and Na CMC solution), Dose 1 (Java chili 8 mg/200 g BB and lemon 14 mg/200 g BB), Dose 2 (Java chili 8 mg/200 g BB and 28 mg/200 g BB), Dose 3 (Java chili 16 mg/200 g BB and 14 mg/200 g BB), and the positive group of herbal medicine (scientific herbal medicine 0.18 grams/200 g BB). The results showed that combining Java chili and lemon reduces total cholesterol levels in male white rats induced by a high-fat diet and KKT induction. Statistical results showed no significant effect on the profile of total cholesterol levels in the treatment group with simvastatinpositive and herbal medicine-positive groups ($P>0.05$) during treatment.

Keywords: CHOD-PAP, Javanese Chili, KKT, Lemon, Total Cholesterol

Ex Situ Conservation of Green Larat Orchid (*Dendrobium capra* J.J Smith) Using Vacin Went and Knudson C Medium

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Abstract

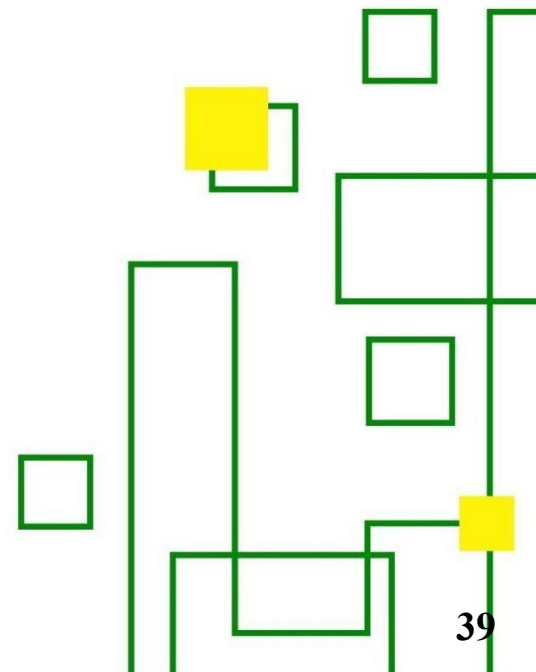
Dendrobium capra J.J. Smith, commonly known as the green larat, is an orchid endemic to the island of Java, particularly in Central Java and East Java (Lawrie et al., 2021). According to the CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora, 2020), *Dendrobium capra* J.J. Smith is listed in Appendix II. Moreover, the IUCN Red List has categorized it as endangered, indicating it is threatened with extinction. Consequently, conservation efforts are necessary to protect the population of *D. capra* (Ningrum et al., 2023). In vitro propagation is one way of ex situ preservation. But the basic VW medium (Vacin & Went) and KC medium (Knudson C) use is insufficient to promote optimal orchid growth, necessitating the addition of organic materials (Pramesyanti, 1999; Sitohang, 2006). The purpose of this study is to observe the response of *Dendrobium capra* J.J. Smith to VW and KC media with modifications of organic material in vitro.

Keyword: Conservation, *Dendrobium Capra*, Vacin Went, Knudson C.



ROOM 1

(HALL C1; 2ND FLOOR)



Growth Profile of Cyclotella striata TBI Diatoms with the Addition of Artificial Contaminant Ni (II) and Fe (III) Ions in Culture Media

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Abstract

Several heavy metal's ions are known to be nutrients important for the survival growth of diatoms, one of which is the Ni (II) and Fe(III) ions. Exploring the potency of diatoms in surviving heavy metal's water could be a strategic step to decrease the Ni (II) and Fe(III) ions content in waters. *Cyclotella striata* (C. striata) strain TBI is among the most abundant diatoms in Indonesian waters. However, its growth studies in the presence of high Ni(II) and Fe (III) ions content has not been carried out. Therefore, we aim to study the growth profile of the diatom C. striata TBI and its potential to reduce nickel(II) ion levels in the culture media. The study is initiated by analyzing the growth pattern of C. striata using the cell counting method and the optical density method (OD676) in various culture media containing Ni(II) ions contaminant 2 and 4 mg/L. For Fe (III) ions, the cultivation of C. striata on F/2 media and F/2 media containing Fe(III) ion contaminants of 2.00 and 4.00 mg/L from FeEDTA and FeCl₃·6H₂O. Then, morphological observations of C. striata were carried out using a light microscope. Afterwards, an analysis of the physical characteristics of the culture media was conducted by measuring the Potential of Hydrogen (pH) and Dissolved Oxygen (DO), as well as analysis of the levels of Ni(II) and Fe(III) ions in the culture media using an Atomic Absorption Spectrophotometry (AAS) instrument. This study showed that the growth of C. striata decreased by approximately 9.44 – 50.61% (exponential and stationary phase) in the media containing 2.00 mg/L of Ni(II) ion and the growth was severely inhibited in the media with a Ni(II) ion level of 4.00 mg/L. Morphological observations of C. striata showed cell deformations in the presence of Ni(II) ion. On the other hand, the pH value in the culture media increased until the end of cultivation, while the DO value was decreased. The largest decrease in Fe(III) ion levels was observed in media containing Fe(III) ion contaminants, which was 3.80 mg/L. DO analysis showed that along with the increasing number of C. striata, the DO value decreased. Conversely, pH analysis showed that along with the increasing number of C. striata, the pH of the media increased. Interestingly, the growth of C. striata was inhibited in the media containing 4.00 mg/L Fe(III) ion from FeCl₃·6H₂O and in media with Fe(III) ion from FeEDTA. This study shows that C. striata can decrease Fe(III) ion levels in the media, however, this ability depends on the concentration and source of Fe(III) ion.

Keywords: Contaminants, *Cyclotella striata* TBI, growth curve, Ni(II) ion, Fe (III) ion

Characteristics and Formulation of Gluten-Free Dry Noodles Based on Orange Sweet Potato Flour (*Ipomoea batatas* L.) Substituted Sago Flour.

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ABSTRACT

Composite flour can be used as a partial replacement for wheat flour which is usually made from rice, corn, soybeans, and tubers when making low-gluten noodles. Sweet potato is one of the tubers that can be used as a composite flour that does not contain saturated fat or cholesterol and contains high nutritional content such as carbohydrates, vitamins, minerals, and betacarotene compounds. This research uses orange sweet potato flesh as a food additive to replace wheat flour to obtain nutritious noodle products as a healthy food alternative.

This research was conducted in two stages, namely by making orange sweet potato flour by testing its physical and chemical characteristics in accordance with SNI. The next stage was to make dry noodles using different sweet potato flour formulations of 30% (F1), 40% (F2), 50% (F3), 60% (F4), 70% (F5). From the five formulations, an organoleptic test (hedonic test) was carried out to determine the best formulation after which it was continued with testing of characteristics, formulations, and microbiology according to SNI and previous research. The orange sweet potato flour produced has physical and chemical characteristics, namely solubility 45.17%, moisture content 7.44%, ash content 3.53%, protein content 4.88%, fat content 0.87%, carbohydrate content 83.28%, beta-carotene 116.84 mg/kg. In the organoleptic test (hedonic test) tested by 30 untrained panelists so that 2 formulations with different drying were obtained. For oven drying method, the best formulation is F1 with 30% orange sweet potato flour and fried drying method, the best formulation is F7 with 40% orange sweet potato flour. F1 has the characteristics of WHC 8.1259 g/g, OHC 5.8107 g/g, cooking loss 9.04% with a cooking time of 5 minutes. While F7 WHC 8.3199 g/g, OHC 6.5760 g/g, cooking loss 13.83% with cooking time 2 minutes.

Keywords : *Orange Sweet Potato, Orange Sweet Potato Flour, Betacarotene, Dried Noodles*

Optimization of Bromelain Enzyme Production from Pineapple Stem Waste Through Solid State Fermentation (SSF) Process.

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ABSTRACT

Pineapple waste is a raw material that has the potential to be processed into products that will support the added value of superior pineapple varieties. One of the products that has added value from this waste is the bromelain enzyme which is included in the protease enzyme group. The bromelain enzyme is included in the extracellular protease enzyme group that can hydrolyze proteins into simpler compounds such as short-chain peptides and amino acids. Bromelain enzyme production can be used in various industrial fields, including the food, textile and cosmetic industries. This study aims to determine the comparison of the composition formulation of pineapple stem waste and the type of substrate added to the solid state fermentation (SSF) process on the quality and quantity of the bromelain enzyme. The production of bromelain enzyme from pineapple stem waste is carried out using the solid state fermentation (SSF) method and adding several other wastes as substrates. The substrates used are pineapple skin, corn cobs, rice straw and sugarcane bagasse. The incubation time of the SSF used is 3 days at a temperature of 37 °C, then extracted with phosphate buffer. After extraction, centrifuged at a speed of 4500 rpm at a temperature of 4 °C for 20 minutes. The bromelain enzyme extract obtained was then purified and continued for enzyme activity analysis using the Walter method and protein content analysis using the Bradford method. The results of the optimum bromelain enzyme study produced in the K1P2 treatment produced a protein content of 0.8 mg/mL and an enzyme activity of 0.71 U/mL, indicating that the bromelain enzyme produced in a mixture of pineapple stem waste and corn cob substrate was the highest. In the purification of the K1P2 treatment showed a significant increase, namely enzyme activity before purification of 0.71 U/mg, and specific enzyme activity after purification of 0.78 U/mg.

Keywords : Pineapple waste, Bromelain Enzyme, Solid State Fermentation (SSF), Purification Flavonoids

“Formulation and Characterization of Dry Noodles Based on Purple Sweet Potato Flour (*Ipomea Batatas L.*) with the Addition of Hydrocolloids”.

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ABSTRACT

The food industry based on wheat flour is developing rapidly, so there is a need to be an alternative as a substitute for wheat flour in processed food products. As a source of starch, purple sweet potato has high potential to be developed as a functional food because it contains bioactive components of anthocyanins. The utilization of purple sweet potato is still relatively low, therefore this research will process purple sweet potato into flour which will then be used as a raw material for making dried noodles with the addition of carrageenan as a hydrocolloid.

This research was conducted in three stages, namely raw material analysis, product formulation using flour from the best treatment with 5 formulations of different compositions of purple sweet potato flour, namely 30% (F1; F6), 40% (F2; F7), 50% (F3; F8), 60% (F4; F9), 70% (F5; F10). The resulting noodle products were then determined for the best formulation with organoleptic tests using the hedonic method, followed by tests on their chemical and physical characteristics.

The purple sweet potato flour used in the process of making dried noodles is flour with $\text{Na}_2\text{S}_2\text{O}_5$ soaking resulting in anthocyanin content of 75.83 mg/100g, and has chemical characteristics of moisture content 8.91%; ash 2.64%; protein 2.40%; fat; carbohydrates 85.61%, and solubility 11.86%. In the organoleptic test (hedonic test), the best formulation of purple sweet potato dried noodles was obtained, namely F4 with the addition of 60% purple sweet potato flour using the oven method and F10 with the addition of 70% purple sweet potato flour using the frying method. Chemical characteristic tests were conducted on F4 and F10, where the dried purple sweet potato noodles F4 had an anthocyanin value of 24.98 mg/100 g; WHC 8.6951 g/g; OHC 6.8942 g/g; cooking loss 6.86% with a cooking time of 5 minutes. Meanwhile, F10 has an anthocyanin value of 12.53 mg/100mg; WHC 8.6270 g/g; OHC 6.7754 g/g; cooking loss 9.09% with a cooking time of 2 minutes.

Keywords : *Purple sweet potato, Purple sweet potato flour, Hydrocolloid, Anthocyanin, Dried Noodle*

PHYSICOCHEMICAL CHARACTERIZATION OF SORGHUM RICE (*Sorghum bicolor* L. Moench) WITH VARIOUS CONCENTRATIONS AND SOAKING TIMES WITH Na₂CO₃ SOLUTION

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ABSTRACT

Sorghum is a non-rice commodity with potential as a rice substitute, possessing relatively high nutritional content. However, sorghum contains relatively low levels of antinutritional compounds due to its high tannin content. Sorghum contains a high amount of tannins, which can cause a bitter and itchy taste. Therefore, efforts are needed to reduce the tannin content in sorghum, which is expected to improve its nutritional quality. This research aims to determine the physicochemical characteristics of sorghum after soaking with various concentrations of Na₂CO₃ and soaking times. This research was conducted in two stages: stage 1. Reduction of tannin content using the soaking duration method and Na₂CO₃ concentrations of 0 M; 0.1 M; 0.3 M; and 0.5 M. Stage 2. Determination of the best soaking amount from 1, 2, 3, and 4 times with the best research results from stage 1. The research results show that the optimization of soaking duration and Na₂CO₃ solution with a concentration of 0.5 M can produce good sorghum rice, and the best soaking treatment that can reduce tannin content is the soaking of Na₂CO₃ solution with a concentration of 0.5 M for 15 minutes, which can reduce tannin content by up to 44.92%, moisture content by 10.97%, ash content by 2.65%, protein by 0.8%, fat content by 7.50%, and dietary fiber by 4.18%. Stage II research resulted in a moisture content of 10.97% and a tannin content of 44%.

Keywords : Tanin Content, Sorghum, Na₂CO₃ Solution, Moisture

Determination of the Shelf Life of Capsules of Broccoli (*Brassica oleracea*) and Pegagan Herb (*Centella asiatica*) Extract Combination with Various Types of Packaging

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ABSTRACT

Shelf life is defined as the period of time from the time a pharmaceutical product is made to the time it is finished so that the product must be of guaranteed quality, stable, and provide a good therapeutic effect. Shelf life is influenced by the dosage form, type of packaging used and storage time. The capsule dosage form tested contains broccoli extract (*Brassica oleracea*) and gotu kola herb extract (*Centella asiatica*). Broccoli extract contains flavonoid compounds and antioxidants serving as neuroprotective whereas gotu kola herb contains asiaticoside compounds serving in enhancing cognitive capacity. This study aims to determine the shelf life of the combination capsule of extracts broccoli and gotu kola herb packed in HDPE plastic bottles and brown glass bottles. The test method used is the Accelerated Shelf Life Test (ASLT) method in the Arrhenius equation model. The test was conducted with variation of storage temperature and humidity (40 °C, 50 °C, and 60 °C) with RH $\pm$ 75% within a period of 2 months. The observation parameters include physical stability, chemical stability (flavonoid and asiaticoside content), disintegration time and dissolution rate. The results of physical observations in organoleptic tests over a period of 2 months, are greenish brown in color; very bitter taste; distinctive aromatic odor. Capsule flavonoid contents in the 8th week of HDPE plastic bottle packaging are 1,61 mg/g–1,98 mg/g whereas in brown glass bottle packaging are 1,36 mg/g–1,55 mg/g. Capsule asiaticoside concentrations in the 8th week of HDPE plastic bottle packaging are 0,110%–0,0163% whereas in brown glass bottle packaging are 0,136%–0,148%. In conclusion, the shelf life of the combination capsules of broccoli extract and gotu kola herb in plastic bottles are 6 months and 3 weeks and in brown glass bottles are 2 months and 2 weeks.

Keywords: *Flavonoids, Asiaticosides, Antidementia, ASLT.*

APPLICATION OF SINGLE INDEX MODEL IN ANALYZING STOCK PORTFOLIO

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Abstract

Investors in choosing stocks not only on one type of stock, but can diversify. In this study used Blue Chip Stocks with a single index Model to obtain optimal stock portfolio. The purpose of this study, applying a single index Model to analyze the portfolio of Blue-Chip Stocks. In the single index Model, data is used for the period 01 February 2021 to 01 February 2024. The results showed optimal shares of 13 stocks from 41 Blue Chip stocks, namely ADRO, AKRA, AMRT, BBCA, BBNI, BBRI, BMRI, HRUM, ITMG, MAPI, MEDC, SRTG, and TPIA. The highest percentage result of the optimal proportion of shares can be the shares selected by investors in BMRI shares of 39.11%. This study investors can expect a portfolio return of 5.33% with a portfolio risk of 1.76%.

Keywords: Blue Chip Stocks, Stock Price Performance, Single Index Model, Optimal Stock Price

CHARACTERISTICS OF PYROLYSIS OIL FROM B3 WASTE SLUDGE OIL

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Abstract

Sludge oil waste is a category of B3 waste that will cause pollution to the surrounding environment if it is not handled properly, such as air pollution if it is burned directly or soil pollution if this waste is buried without initial processing. This study uses the pyrolysis method to recover the oil contained in the sludge oil and use it as a fuel substitute. This study aims to determine the quality, characteristics and yield of pyrolysis oil at various temperatures (250, 300 and 350oC) and times (5, 6, 7 and 8 hour). The results of the study showed that the pyrolysis temperature determine the type of pyrolysis oil produced, namely the Light Fuel Oil (LFO) type at a temperature of 250°C and 300°C. Meanwhile, at a pyrolysis temperature of 350 °C, the produced oil is Heavy Fuel Oil (HFO). Duration of pyrolysis time can increase the yield of pyrolysis oil obtained by 60.86%, 65.75%, and 70.69% at each temperature for 5-8 hours. The quality analysis conducted on the produced LFO and HFO shows that both meet the standards and quality specifications of fuel oil according to KepDirjen No.0179.K/10/DJM.S/2019.

Keywords: Sludge Oil Waste, Pyrolysis, Pyrolysis Oil Characteristics, Fuel Oil

Alternative lubricant from Palm Kernel Oil with Cu/Nipah Fiber Activated Carbon Catalyst

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Abstract

Technological developments have an impact on the high use of lubricants for engine and automotive in the industrial world. Lubricants currently on the market use petroleum as raw materials which are considered not environmentally friendly, so alternative lubricants that are ecologically friendly are needed. Biolubricants can be made from vegetable oils that are synthesized with the help of catalysts. In this study, palm kernel oil was used as the raw material for biolubricants and activated carbon impregnated with $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$ metal using the sonication method as a catalyst. This study aims to synthesize Cu/activated carbon catalysts and test their effectiveness in the synthesis of biolubricants based on palm kernel oil. This research was conducted in several stages, namely sample pyrolysis at a temperature of 400°C for ± 4 hours; the resulting carbon was activated by the steam method at a temperature of 800°C for 90 minutes; impregnation of $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$ on activated carbon using the sonication method for 4 hours; characterization of carbon, activated carbon, Cu/activated carbon catalyst with XRD, BET, FTIR, and FESEM-EDS instruments; biolubricant synthesis using the reflux method at a temperature of 150°C for 3 hours; testing the characterization of biolubricants physically (viscosity and density) and chemically (GC-MS). The results of the study showed that the quality of Nipah fiber activated carbon gave a value of 90% approaching the quality requirements of activated carbon set by SNI. 06-3730-1995 concerning technical activated carbon. The Cu/activated carbon catalyst was successfully loaded with Cu metal with concentrations of 5% and 7%. The quality of activated carbon obtained a yield of 43%, iodine absorption capacity of 815.27 mg/g, and methylene blue absorption capacity of 95.8 mg/L. The results of the characteristics with the instrument showed differences in the characteristics of carbon, activated carbon, and catalysts. The results of GC-MS testing on biolubricant products showed the formation of methyl esters, where the effective catalyst in the synthesis of biolubricants was with a concentration of 5% and produced a density value of 0.9263 g/mL and a viscosity of 19.655 cSt (40°C) and 14.925 cSt (100°C).

Keywords: Alternative lubricant, Palm Kernel Oil, Activated Carbon, Nipah Fiber, Catalyst

The Antioxidant Potential of Pineapple Peel Waste (*Ananas comosus L.*) and Its Utilization for Gel moisturizer Formulation

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ABSTRACT

Indonesia was recorded as the third largest pineapple producer in the Southeast Asian region, leading to an increase in pineapple peel waste. The use of gel moisturizer formulations has the purpose to prevent dehydration of the skin's layers caused by exposure to sunlight and free radicals, such as sunlight, which can be inhibited by antioxidants. The impact of synthetic antioxidants can lead to negative and carcinogenic effects; hence, natural antioxidants such as vitamin C are needed to substitute for synthetic antioxidants. The objective of this research is to determine the antioxidant potential of pineapple peel waste (*Ananas comosus L.*), identify its bioactive compounds, and establish the best formulation for a gel moisturizer containing pineapple peel antioxidants. This research was conducted in several stages. Pineapple peel (*Ananas comosus L.*) was extracted using the maceration method with 96% ethanol. The preparation of gel moisturizer involved varying concentrations of pineapple peel extract and vitamin C. Organoleptic, homogeneity, viscosity, pH, microbiological, and accelerated stability tests were conducted. The best formulation that met the specified standards was selected, and antioxidant testing was performed on the stable gel moisturizer formulation. Based on the research results, the pineapple peel extract (*Ananas comosus L.*) exhibited antioxidant potential of 173.52 ppm, and identified compounds that actively contribute to its antioxidant properties include anthocyanins and dihydrocapsaicin. The best formulation, which exhibited the highest antioxidant value, was Formulation IV, with an IC₅₀ value of 153.73 ppm. It met the standard testing parameters and ingredient percentage requirements according to BPOM Regulation Number 17 of 2022 on "Technical Requirements for Chemical Ingredients in Cosmetics" and SNI 16-4399- 1996. Pineapple peel (*Ananas comosus L.*) can be considered an alternative active ingredient for Gel moisturizer skincare products with antioxidant properties.

Keywords : Pineapple Peel (*Ananas comosus L.*), Antioxidant, Maceration, Gel moisturizer, Stability

**CODE : OP09
ROOM : 01**

PURIFICATION OF PATCHOULI OIL (*POGOSTEMON CABLIN BENTH*) USING NATURAL ZEOLITE ADSORBENT WITH THE ADSORPTION METHOD

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ABSTRACT

Patchouli oil is an essential oil that is often used to make perfume. Patchouli oil is produced by distilling the leaves and stems of the patchouli plant (*Pogostemon cablin benth*). However, traditional distillation results in patchouli oil with high levels of Fe metal, namely 195.17 ppm, causing the color to become dark. This research aims to purify patchouli oil to comply with SNI 06-2385-2006 specifications using natural zeolite as an adsorbent for patchouli oil to reduce the Fe metal content contained in patchouli oil. The natural zeolite used is 100 mesh in size and then activated chemically and physically, namely by heating at 300 °C and with 3M HCl. Variations in optimum conditions include zeolite weight percentages, namely 3, 5, 7 and 10% of the oil mass at 25, 40, 60 and 80 °C with contact times of 30, 60, 120 and 120 minutes. The optimum conditions for the adsorption of natural zeolite were found to be a zeolite weight percentage of 10% at a temperature of 60 °C and a contact time of 120 minutes. Adsorption of patchouli oil was carried out under optimum adsorption conditions which are known to reduce the Fe metal content in the oil from 195,17 ppm to 156.52 ppm with an adsorption efficiency of 19.8%. This adsorption process also increases the oil alcohol patchouli content from 30.52% to 31.25%. The adsorption isothermal test shows that the adsorption of patchouli oil by natural zeolite includes physisorption.

Keywords : *Adsorption, Fe metal, Patchouli, Zeolite*

Synthesis and Characterization of Lanthanide-Metal Organic Frameworks (Sm-MOF and Dy-MOF) with Perylene Ligands

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ABSTRACT

This research focuses on the synthesis of single-crystal Lanthanide-Metal Organic Frameworks (Dy-MOF and Sm-MOF) with perylene Ligands. MOFs have advantages over other porous materials due to the combination of various types of metals and organic ligands that will produce various unique MOF structures, namely their large surface area, framework flexibility, and tunable pore surface properties, as well as “tailor-made” framework functionality. ” making it a promising candidate for a wide range of applications, such as gas separation and absorption, luminescence, drug delivery, magnetism, chemical sensors, energy storage, and photocatalysis. The study addresses the challenge of obtaining single-crystal Ln-MOFs, which are crucial for understanding their atomic-level structures and properties. This research aims to synthesize and characterize MOFs based on Lanthanide metals, namely Samarium (Sm) and Dysprosium (Dy), with Perylene ligands using the solvothermal method with variations in temperature and reaction time. The resulting Ln-MOFs were characterized using X-ray diffraction (XRD) and FTIR.

Keywords : Lanthanide -MOFs; Samarium; Dysprosium; Solvothermal and Perylene

Determination Of Total Phenol Content Of Red Ginger (*Zingiber officinale* Var. *Rubrum*) Using Natural Deep Eutectic Solvent Based On Choline Chloride-Acid.

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ABSTRACT

Red ginger (*Zingiber officinale* var. *Rubrum*) is a type of plant that has benefits for preventing and treating various diseases. Red ginger contains chemical compounds such as phenolic compounds. This study aims to determine the highest total phenol content of red ginger (*Zingiber officinale* var. *Rubrum*) using Natural Deep Eutectic Solvent with a combination of choline chloride - acid base with UAE. The NADES used is based on choline chloride as Hydrogen Bond Acceptor (HBA) with 6 types of organic acids, namely, lactic acid, oxalic acid, citric acid, ascorbic acid, tartaric acid and malic acid as Hydrogen Bond Donor (HBD). Extraction was carried out using the Ultrasonic assisted Extraction (UAE) method. Determination of phenolic content was carried out using the Folin Ciocalteu method with gallic acid as a standard. The research results showed that the phenol content of red ginger extract samples using NADES with a combination of 6 types of acids was 0.7014 ± 0.0395 ; 1.1043 ± 0.0783 ; 1.4478 ± 0.0496 ; 1.9270 ± 0.1255 ; 1.715 ± 0.0407 ; 1.5115 ± 0.0167 mg/mL NADES. The best combination of choline chloride NADES with acid is choline chloride and ascorbic acid with the highest phenol content of 1.9270 ± 0.1255 mg/mL NADES.

Keywords : Red Ginger, Phenol, Natural Deep Eutectic Solvent, Choline chloride, Acid

Purification of Waste Cooking Oil with Avocado Seed Powder as Biosorbent

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ABSTRACT

Cooking oil is one of the basic needs for food consumption. Repeated use of cooking oil by heating it at high temperatures will produce free fatty acids, which are used as an indicator of cooking oil damage to produce used cooking oil. Free fatty acid levels in used cooking oil can be reduced through an adsorption process with biosorbents from avocado seeds. This study aims to make, activate, and test the quality of avocado seeds as biosorbents, then determine the optimum adsorption conditions at various temperatures, contact times, and masses of activated avocado seed biosorbents for cooking oil refining and determine the adsorption efficiency and adsorption capacity. The results of this study obtained that activated avocado seed biosorbent has a moisture content of 5.40%, an ash content of 0.68%, an iodine absorption capacity of 768 mg/g, a methylene blue absorption capacity of 22.57 mg/g, and a surface area of 84.69 m²/g. The optimum condition of free fatty acid adsorption was obtained at 90 °C, 120 minutes of contact time, and 20 grams of adsorbent mass. After optimization, the free fatty acid content of used cooking oil was 0.40%, the peroxide number was 9.49 mek O₂/Kg, and the water content was 0.04%. With the efficiency of reducing free fatty acids by 58.05%, the peroxide number was 46.39%, and the water content was 12.31%. The adsorption capacity of avocado seed biosorbent on water content was 6.16 mg/g, free fatty acid was 27.96 mg/g, and peroxide number was 3.28 mg/g.

Keywords : biosorbent, used cooking oil, avocado seed

Utilization of Agave sisalana Leaf Fibers for Ethylenediamine-Modified Cellulose as Adsorbent for Copper and Zinc Metals

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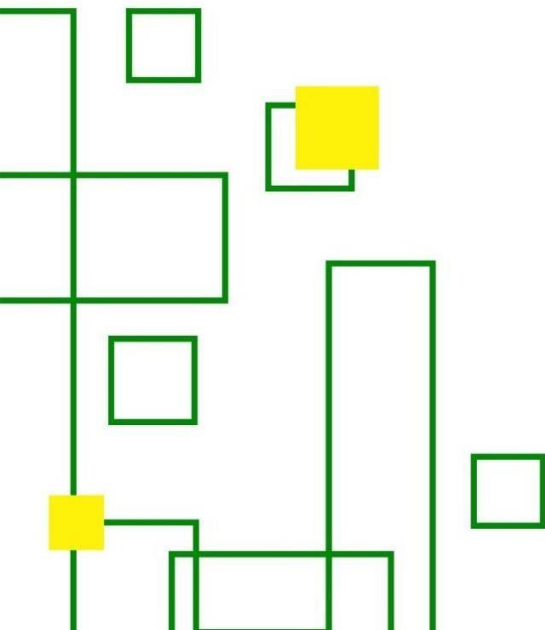
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ABSTRACT

The increasing discharge of heavy metal pollutants into water bodies due to industrial activities poses serious environmental and health risks. Conventional water purification methods such as ion exchange, precipitation, and coagulation are often expensive and inefficient. Adsorption presents a more economical alternative for removing heavy metals like copper (Cu) and zinc (Zn) from wastewater. In this study, cellulose extracted from Agave sisalana fibers was modified with ethylenediamine to enhance its adsorption properties for these metals. The modification was carried out through a direct process, and the resultant biosorbent was characterized using Fourier Transform Infrared Spectroscopy (FTIR) and Scanning Electron Microscopy (SEM). FTIR analysis confirmed successful modification, with changes observed in functional groups critical for metal binding. SEM imaging revealed increased surface area, improving the adsorptive capacity. Optimization of adsorption parameters, including contact time, temperature, and adsorbent dosage, showed that maximum adsorption occurred at 30.9 °C with a dosage of 0.1404 grams and a contact time of 240 minutes. The Langmuir and Freundlich isotherm models were applied to evaluate adsorption characteristics, yielding maximum adsorption capacities of 14.12 mg/g for Cu and 11.93 mg/g for Zn under optimal conditions. This study highlights the potential of modified Agave sisalana fibers as an effective, low-cost adsorbent for the removal of heavy metals from wastewater.

Keywords : Agave sisalana Leaf Fibers, Modified Cellulose, Ethylenediamine, Copper and Zinc Metals Adsorption

ROOM 2
(HALL C1; 2ND FLOOR)



Oxygen Plasma Treatment for Improved Hydrophilicity and Natural Dye Attachment in Cassava Starch-Based Bioplastic

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ABSTRACT

This study explores the innovative use of oxygen-based Glow Discharge Plasma (GDP) technology to modify cassava starch-based bioplastic film, aiming to enhance their hydrophilicity and adhesion to natural dyes. The research focuses on improving the interaction between bioplastics and eco-friendly dyes under low pressure and temperature conditions of oxygen plasma treatment. Oxygen plasma treatment showed significant progress in developing sustainable materials. Characterization techniques such as ATR-FTIR, EDX, and XPS confirmed an increase in polar functional groups and oxygen content, while FE-SEM revealed improvements in surface roughness and wettability. The treated bioplastics exhibited greater hydrophilicity and crystallinity, with tensile tests showing enhanced strength and reduced elongation. Additionally, UV-Vis spectroscopy indicated better dye retention and minimized leaching. This research demonstrates the potential of GDP technology to effectively integrate natural dyes into bioplastics, supporting the advancement of environmentally sustainable materials.

Keywords : bioplastic, natural dye, oxygen, plasma, surface modification

The Optimization Number of Buccal Swab for DNA Extraction Using Chelex Method

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ABSTRACT

The forensic analysis involves multi disciplines sciences, including molecular biology and chemistry, that used to reveal crime in a case. One method commonly used in forensic analysis is the DNA profiling from samples in the field, which can be oral mucosa, blood, or hair, to identify an individual. The easiest way to take a DNA sample is using the buccal swab technique, which is convenient and economical. The DNA extraction using Chelex method effectively produces pure DNA, at an affordable cost. Small quantity of DNA samples (~1 ng/μL) amplified by PCR using the short tandem repeat (STR) markers, are able to accurately identify a human individual. There was no standard reference yet for the optimal number of buccal swabs to produce an adequate quantity of DNA. Previous research only stated that minimum 20 swabs can produce optimal DNA quantity. This study aimed to test the treatment of 1, 3, 5, 7 buccal swabs, and extract the DNA samples using the Chelex method, and PCR amplification with 27 STR loci, then check the PCR results using the capillary electrophoresis. The results showed that the 7 swabs treatments obtained the highest DNA quantity (14.19 ng/μL), with an average electrophorogram peak height 1,200 RFU. The treatment of 1 swab obtained 4.12 ng/μL DNA (exceeding the minimum quantity 1 ng/μL), with an average peak height value 1,084 RFU. The treatment of 1 swab could produce sufficient quantity of DNA for PCR amplification, and is able to read 27 STR DNA loci to identify an individual accurately.

Keywords : : buccal swab, capillary electrophoresis, Chelex, STR.

INCREASING PUBLIC AWARENESS OF THE APPROPRIATE AND SAFE USE OF MEDICATIONS.

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ABSTRACT

Public awareness regarding the correct way to use drugs needs to be increased, because this is closely related to the success of the therapy they undergo. When receiving medicine at a pharmacy or hospital, people often do not try to understand more about the medicine they receive, only receiving one-sided information from the pharmacist. This Community Service Program aims to increase public understanding of drug information so that its use can be carried out optimally. This activity was carried out at the Babakan Madang Community Health Center, aimed at patients who would receive medicine. The method used includes education about the importance of knowing the drugs to be consumed, starting with a pre-test to measure the community's initial level of knowledge. After counseling, a post-test was carried out using the same questions. The results showed increased knowledge in 79% of patients. It is hoped that increasing public understanding of the correct use of drugs can help reduce drug use errors and improve overall public health. Apart from that, this activity also provides free health checks, including checking blood pressure and blood sugar levels.

Keywords : Public Health; Correct use of medication; Counseling

INHIBITION OF α -GLUCOSIDASE ENZYME ACTIVITY OF 96% ETHANOL EXTRACT SALAM LEAF [*Syzygium polyanthum* (WIGHT.) WALP] AND YACON LEAVES (*Smallanthus sonchifolius*) AND THEIR COMBINATIONS

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ABSTRACT

Diabetes mellitus is a metabolic disease characterized by elevated blood glucose levels that are high or above normal values. One treatment that can be used in diabetes mellitus is to inhibit the activity of the α -glucosidase enzyme. The plant that has the potential to inhibit the activity of the α -glucosidase enzyme is the Salam plant, *Syzygium polyanthum* (Wight.) Walp, and yacon plants (*Smallanthus sonchifolius*). The purpose of this study is to determine the inhibition activity of α -glucosidase enzyme from salam leaf extract and yacon leaf and their combination. The withdrawal of active compounds of salam leaves and yacon leaves using nhexane, ethyl acetate, and 96% ethanol was carried out by the maceration method, while the withdrawal with water was carried out using the Dekok method. Inhibition of α -glucosidase enzyme was carried out in-vitro using a UV- Vis spectrophotometer. The phytochemical content of 96% ethanol extract of salam leaf indicates the presence of alkaloids, flavonoids, tannins, steroids, and phenols, while 96% ethanol extract of yacon leaves contains flavonoid compounds, tannins, saponins, steroids, and phenols. The results of the test of the inhibitory activity of α -glucosidase enzyme showed that the IC₅₀ values of 96% ethanol extract of salam leaf and yacon leaf were 9.45 and 18.84 ppm. The combination of 96% ethanol extract of salam leaf and yacon leaf with a ratio of 1:1, 1:3, and 1:3 had a consecutive IC₅₀ value of 22.29; 17.02; and 16.79 ppm.

Keywords: α -glucosidase enzyme, *Syzygium polyanthum*, *Smallanthus sonchifolius*, Antidiabetic

Optimization of Temperature and Solvent Concentration use Ultrasound-Assisted Extraction on Alkaloid Content Leaf *Erythrina Lithosperma* Miq.

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ABSTRACT

Erythrina Lithosperma Miq. leaf is one of the plants in Indonesia which belongs to the *Papilionaceae* family. It contains saponins, flavonoids, polyphenols, tannins, and alkaloids which are known to be effective in reducing fever and also as antibacterial. Optimization is useful in developing, improving and optimizing extraction processes, and evaluating the effects of variables and their interactions to obtain the best results. Ultrasound Extraction-assisted (UAE) is a modern extraction has an advantage such as low consumption of solvent and fewer damages of active compounds, over the conventional extraction. This study aims to determine the optimum conditions for obtaining alkaloid content from *Erythrina Lithosperma* Miq. leaf. The method used to extract the alkaloid compounds in it is the ultrasound-assisted extraction method. Extraction conditions were determined by Response Surface Methodology (RSM) with the Central Composite Design (CCD) to evaluate the effect of 2 factors with 3 levels, that is ethanol concentration (60, 70, 80%) and temperature during extraction (40, 45, 50 °C) with 11 different runs and 3 center points. The predicted results of the CCD experimental design for optimum conditions were shown in extraction with 70% ethanol concentration solvent and 45°C temperature obtained an alkaloid content of 6,9810 mg/g. This value is close to the confirmation results of the alkaloid content values obtained experimentally with higher results of 7.2110 mg/g with extraction conditions using the same solvent and temperature. Based on the results, the interaction between the concentration of solvent and the temperature used affects the alkaloid content obtained so that optimization using RSM can increase the alkaloid content.

Keywords : *Erythrina Lithosperma* Miq., alkaloid, ultrasound-assisted extraction (UAE), response surface methodology (RSM)

Isolation and Molecular Identification of Endophytic Bacteria From Root of Ginger ((*Zingiber officinale* Rosc).) Cultivar Gajah Ginger

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ABSTRACT

Gajah ginger is the largest in size of all gingers and its roots are known to be knobby and yellow, white in colors. Interactions between plants and endophytic bacteria are mutualistic - the utilization of culturable endophytes, particularly endophytic fungi in pharmacological aspects, has been reported in many literatures works. The aim of this study is to identify endophytic bacteria from Ginger ((*Zingiber officinale* Rosc).) Cultivar Gajah Ginger with 16S rRNA, bacterial identification was carried out by using a combination of morphological characteristic and molecular analysis of DNA sequence. Then, seventeen endophytic bacteria were successfully isolated from root of gajah ginger plant. As a result, antibacterial activity, which is a pathogenic bacterium on human, was tested against *Staphylococcus aureus*. Antibacterial activity test was done according to the Kirby-Bauer test, with inhibition zone around each disc considered to measure antibacterial activity of endophytic bacteria. While the isolate KLTR AJP 17P have inhibition of 17 mm which is considered to be very strong, the similarity between molecular identification of KLTR AJP 17 P and *Bacillus vazezensis* was found to be 99.93%.

Keywords : *Endophytic, root ginger, molecular*

Analysis of Organophosphate Pesticides Residues on Carrot (*Daucus carota L.*) Tubers from Traditional Market of Bogor City

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ABSTRACT

Excessive pesticide application in plant cultivation can leave pesticide residue on agricultural produce and environmental. One of the horticultural plants commonly consumed by Indonesian people is carrots. This study aims to test the residues of organophosphate pesticides on carrot tubers from the traditional markets of Bogor City. The tested sample came from three traditional markets in Bogor City, namely Jambu Dua Market, Anyar Market and Bogor Market. The samples carrot tuber tested against 24 organophosphate compounds, using the liquid chromatography tandem mass spectroscopy method, refers to AOAC 2007.01. The test results indicated that all tested carrot tubers were not detected to contain organophosphate pesticide residue. This study concluded that the samples of local carrot tubers from traditional markets of Bogor City did not contain organophosphate pesticide residues.

Keywords : Organophosphate; pesticide residue; carrot

Formulation and Evaluation of Fast Disintegrating Tablets (FDT) of Broccoli Extract (*Brassica oleracea*) with Combination of Superdisintegrant Crospovidone and Ac-Di Sol

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Abstract

Broccoli (*Brassica oleracea*) is known to contain flavonoid and glucosinolate compounds that act as acetylcholine enzyme inhibitors so as to improve memory in humans. To be practical and easy to use, broccoli is made in tablet dosage form. This study aims to determine the effect of the superdisintegrant concentration of crospovidone and Ac-Di Sol on the physical quality of the FastDisintegrating Tablet (FDT) of broccoli extract. A total of 3 formulas were made using the wet granulation method. All formulas were made using different concentrations of crospovidone and Ac-Di Sol, namely formula 1 (crospovidone 5% : Ac-Di-Sol 2%), formula 2 (crospovidone 4.5% : Ac-Di-Sol 2.5%), and formula 3 (crospovidone 4% : Ac-Di-Sol 3%). Tablet quality testing included hardness, friability, disintegration time, wetting time, and determination of total flavonoid content of FDT. The results of broccoli extract FDT tablets have a brownish white color with black spots, are round in shape with a flat surface, have a distinctive odor, and have a slightly bittersweet taste. ANOVA statistical analysis of tablet hardness (sig 0.967 > 0.05) showed that there was no significant effect of crospovidone and Ac-Di-Sol concentrations on tablet hardness. While other test results showed a significant effect of crospovidone and Ac-Di-Sol concentrations on tablet friability (sig. 0.013 < 0.05), tablet disintegration time (sig. 0.000 < 0.05), and tablet wetting time (sig. 0.000 < 0.05). Formula 1 (crospovidone 5% and Ac-Di- Sol 2%) is the best formula based on the physical quality of tablets, with an average tablet hardness value of 2.23 kp, friability of 0.95%, disintegration time of 1 minute 37 seconds, wetting time of 1 minute 15 seconds, and total flavonoid content of 2.62 mg QE/g (101.83%).

Keywords: glucosinolate, acetylcholine, granulation, hardness, flavonoids.

Antibacterial activity and phytochemical components of leaf extract of *Nephelium lappaceum*.

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ABSTRACT

Diarrhea is defecation with a soft to watery consistency or even in the form of liquid occurring three times a day or more. On the other hand, *Nephelium* leaf contains compounds such as flavonoids, alkaloids and saponins and tannins. The aim of this study is to determine the antibacterial activity of the ethanol extract of rambutan (*Nephelium lappaceum* L) leaves extracted from Microwave Assisted Extraction against *Escherichia coli* and *Shigella dysenteriae*. Antibacterial testing determining the MIC (minimum inhibitory concentration) was performed on concentrations of 10, 15, 20, and 25% with the results of the inhibitory power carried out on concentrations of 25, 30 and 35%. The positive control was Ciprofloxacin 10ppm and the negative control at 10% DMSO solution and the following results showed that the MAE 96% ethanol extract of rambutan leaves could inhibit *E. coli* and *S. dysenteriae* bacteria that were with MIC at 25% concentration. The highest inhibitory value was found at a concentration of 35%, which was 10.68 mm with the strong category for *S. dysenteriae* and 9.93 mm in the medium category for *E. coli*. Rambutan leaf extracted with the MAE method have antibacterial activity against *Escherichia coli* and *Shigella dysenteriae*.

Keywords: *Nephelium lappaceum* L, MAE (Microwave Assisted Extraction, *Escherichia coli*, *Shigella dysenteriae*

Antidiarrheal Activity of *Padina australis* Ethanol Extract in Male Mice (*Mus Musculus L.*) Induced *Escherichia coli*

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ABSTRACT

Diarrheal is an endemic disease that often occurs in society. This disease can be lifethreatening, especially in toddlers, one of which can cause dehydration, which is very dangerous if not treated appropriately. *Padina australis* (*P. australis*) is a brown seaweed that has antidiarrheal activity with the mechanism actions of inhibited the growth of *Escherichia coli*. This study aims to test antidiarrhea activity and determine the effective dose of *P. australis* ethanol extract in *Mus musculus L.* male mice induced by *E. coli* bacteria. Extraction is done by Microwave-Assisted Extraction (MAE) method using 50% ethanol solvent. Antidiarrhea activity test of *P. australis* extract was done by intestinal transit method in male mice to be induced by *E. coli*. The treatment group consisted of a negative control group, a positive control group (Loperamide 0.02 mg / 20gBW), dose groups I, II, and III with *P. australis* ethanol extract as much as 3.64 mg / 20gBW, 7.28 mg /20gBW, and 14.56 mg / 20gBW, respectively. Based on the results of this study showed that *P. australis* ethanol extract at a dose of 7.28 mg / 20gBW was the most effective dose with an antidiarrhea effect of 105% against Loperamide as positive control.

Keywords : . Antidiarrheasl; *E. coli*; ethanol extract; *Padina australis*

Biochemical Profiling of Fermented Soybean Dregs (Oncom) Using GC-MS

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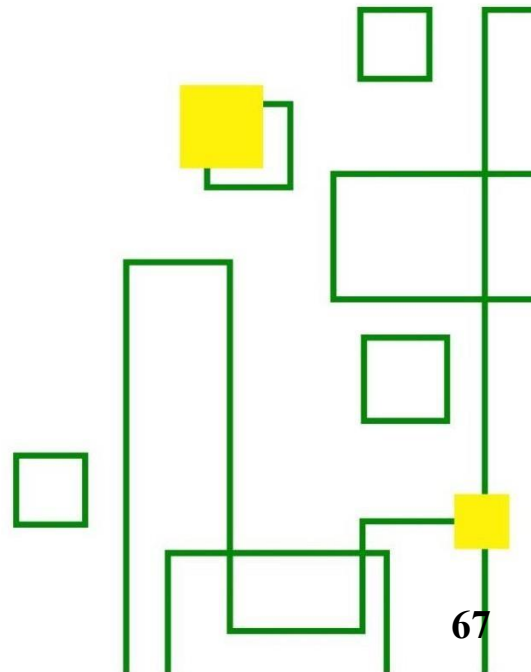
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ABSTRACT

The fermentation process can produce new nutraceutical and pharmaceutical compounds. Oncom is a fermented food from fermentation of soybean dregs using *Neurospora* sp. This food is widely consumed by the people of West Java, but its biochemical profile is not well known. This study aims to identify biochemical compounds contained in oncom extracted with methanol and ethyl acetate solvents using GC-MS with 2 different operational condition -flow rate, oven temperature, ion source temperature. The resulting chromatogram shows the presence of 9,12-Octadecadienoic acid (Z,Z)-, n-Hexadecanoic acid, Vaccenic acid and oleic acid both in methanol and ethyl acetate extracts and in GC-MS setting 1 and setting 2 with a value of 39 - 62% T. Linoleic acid was detected in methanol and ethyl acetate extracts GC MS setting 1 but not in setting 2. Gamma sitosterol was detected only in methanol extracts in GCMS setting 1 (3% T) and Squalene (0.3% T) was detected only in ethyl acetate extracts in GCMS setting 2. The total number of compounds detected reached 43 types. In general, the compounds detected in methanol and ethyl acetate extracts are the same, however there are several compounds detected only in certain solvents and GC-MS condition. Overall, GC-MS data shows that fermented soybean dregs or oncom contain complex biochemical compounds, which have the potential to be developed as a functional food and raw materials for producing nutraceutical compounds.

Keywords : Neurospora, soybean dreg, GC-MS, functional food, nutraceutical compounds

ROOM 3
(Parallel Room 3rd Floor)



Confirmatory Factor Analysis and Reliability Test of Scale for the Assessment of Non-Experts' Artificial Intelligence Literacy in a Philippine Academic Community

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ABSTRACT

Artificial Intelligence (AI) is rapidly becoming a cornerstone in various sectors, and academia is no exception. This study highlights the Confirmatory Factor Analysis (CFA) and reliability test for artificial intelligence literacy instruments for the academic community. This adapted instrument from Laupichler et al. (2023) was conducted among 305 secondary school teachers in the division of Romblon, selected using convenience sampling and Raosoft for calculating the sample size. Jamovi software was used to test the model fitness and Smart PLS version 4.0 for the confirmatory factor analysis. Chi-square $\chi^2=3212$ ($< .001$), Root Mean Square Error of Approximation (RMSEA = 0.151), Comparative Fit Index (CFI = 0.90), Tucker-Lewis Index (TLI = 0.634), Standardized Root Mean Square Residual (SRMR = 0.116), Average Variance Extracted (AVE = 0.66), and Cronbach's Alpha ($\alpha= 0.91$), majority suggest the model fitness of the AI literacy test. CFA test also noted that all indicators were in an acceptable factor loading threshold (0.50-1.28) among the dimensions namely: Technological Understanding, Critical Appraisal, and Practical Application. It is recommended that this instrument be used in different academic institutions to test the level of AI literacy in their respective institutions for a more targeted technological initiative and program.

Keywords : *Artificial intelligence literacy, confirmatory factor analysis, reliability test, academic community, secondary school teachers*

Game Animation as an Education Tool for Raising Awareness on Climate Change

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ABSTRACT

Climate change is a global issue that is becoming increasingly urgent and has serious impacts on human life, such as extreme temperature increases, natural disasters, rising sea levels, and the spread of diseases. However, the public's understanding of this issue is still limited. Along with the rapid development of technology, especially among the younger generation, educational-based animated games can be one of the innovative solutions to raise public awareness about climate change. This research aims to develop a 2D multimedia-based educational game using the Multimedia Development Life Cycle (MDLC) method, implemented through the Unity platform for Android and iOS devices. This game not only offers an enjoyable learning experience through visuals and interactions but also conveys important information about the features, characteristics, and impacts of climate change. It is hoped that through this interactive and engaging approach, the community, especially the younger generation, can better understand the importance of preserving the environment and contribute to climate change mitigation. The result of this research is the creation of a 2D educational game aimed at raising public awareness about climate change, with the hope of bringing a positive impact on the survival of humanity in the future.

Keywords: Climate Change, Technology, Educational Game, MDLC

Arduino Uno-based Stunting Detection Application Innovation in Toddlers as a Strategy for Achieving Universal Health Coverage in the SDGs Era

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ABSTRACT

The stunting rate in West Sumatra Province is still high compared to the national average. In Pariaman City, the prevalence of stunting is still at 16%, where the national target is 14% by 2024. The problem that occurs is that there is no development of an arduino uno-based stunting application. The purpose of this research is an application that can detect stunting in pregnant women and toddlers using arduino uno. The target of this application is to be able to measure the height and weight of pregnant women and toddlers automatically, so as to prevent stunting and the realisation of Pariaman City which is free from stunting problems. The research method begins with the data analysis stage of the factors and symptoms of stunting detection, the formation of applications and stunting detection tools, calculations using the stunting application and the results of the percentage of stunting detection. Implementation ends with the technology implementation stage to the community. The result of this research is a technological innovation in the form of an application using Ardiuno Uno, which can measure the weight and height of pregnant women and toddlers automatically and is directly processed by the SIPASBU application (Information System for Prevention of Stunting in Mothers and Toddlers), so that it can detect whether pregnant women or toddlers are stunted or not. The importance of this innovation was developed because this programme is a form of technological innovation that can later be utilised by the wider community in the form of health independence for pregnant women. The results of this technological innovation can be seen in Figure 1 below:

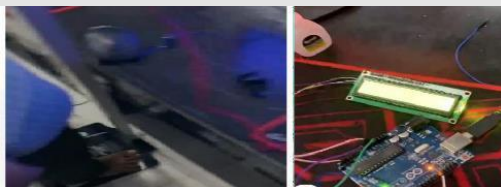


Fig 1. Automatic Height and Weight Measurement Results with Arduino Uno

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Keywords : *stunting arduinouno SIPASBU*

Comparison of Double Exponential Smoothing and Support Vector Regression Methods for Precious Metal Price Prediction

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ABSTRACT

Gold is one of the precious metals that can be used as a long-term investment asset. The relatively upward price trend is one of the options for low-risk investment. But the price of gold is always fluctuating, causing risk uncertainty for investors. So a method is needed to minimize losses. Price forecasting from historical data can be done using statistical algorithms and machine learning algorithms. This study aims to compare the performance of the Double Exponential Smoothing (DES) and Support Vector Regression (SVR) models with RBF kernels to forecast precious metal gold prices with daily data on Antam precious metal gold prices from the period 2 January 2019 – 30 August 2024 and make predictions for the next 30 days. The process of testing splitting data and hyperparameter tuning on the model to get the optimal model by evaluating using MAPE and R^2 . The results obtained by the best model from the DES and SVR methods, are the DES method using parameters α 0.3 and β 0.1 with data division of 70% training data and 30% testing data, have a MAPE evaluation value of 0.0553 and R^2 of 0.6257 and the SVR method using parameters $C = 1000$; $\gamma = 0.001$; $\varepsilon = 0.001$ with data division of 90% training data and 10% testing data has a MAPE evaluation value of 0.0055 and R^2 of 0.9897. So that predictions are made for the next 30 days with the SVR method where the prediction results experience fluctuations that tend to increase.

Keywords: *Comperation, Precious Metal Price Prediction, Double Exponential Smoothing, Support Vector Regression, RBF*

DESIGNING TO BUILD ROBOTS TO DETECT BOTTLE GARBAGE BASED ON DEEP LEARNING

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ABSTRACT

The advancement of innovative robotic technology is greatly needed by the community to overcome the challenges required. By using the TensorFlow method as one of the deep learning technologies to help identify the type of bottle waste, identifying bottle waste in images or videos. The TensorFlow method can detect many objects in an image or video. The results obtained on the bottle waste detection system robot by detecting plastic bottles, cans and glass bottles, with an Epoch value of 35, Precision 0.97, Recall 1, and mAP 0.99. The accuracy results obtained on the bottle waste detection system robot reached 80%, indicating that this research was successful with bottle waste detection robot technology using the TensorFlow method and Arduino Uno with an android remote control to create an efficient system in bottle waste detection and actuator control.

Keywords : Robotic, TensorFlow, Deep Learning, Bottles, Android Remote Control.

CODE : OP31
ROOM : 03

Awareness Cybercrime Phishing Email Menggunakan Secure Socket Layer Sebagai Interpretasi Information Security

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ABSTRACT

Phishing is an act of activity that threatens and directs someone by making people very interested in the information sent. By deceiving someone so that the person indirectly provides all the personal information needed by someone who has no interest. Phishing is included in cyber crime. Mail phishing is a type of cyber attack in which perpetrators attempt to deceive victims through emails sent with the aim of stealing sensitive information such as passwords, credit card numbers and other personal data. Phishing emails are often designed to appear to be accurate and legitimate emails from trusted organizations, such as banks, online services, or by including the names of large companies. Phishing emails often include urgent messages or threaten victims to take immediate action, such as providing account information and personal data. For personal safety from phishing attacks, it is important to be aware of always being alert to unknown or suspicious emails. It is best not to click on sent links or not download attachments from unknown or untrusted senders, make sure to always re-verify information through a network that is equipped with a firewall or proxy. and if you receive a request that is considered untrustworthy, immediately delete the email that enters your inbox. In the journals and articles that researchers will present, there are several ways to deal with phishing on the most commonly used network activities. Based on survey results from several journals, the incident that happened to user, this is one of the sources of phishing threats that often occurs and how to prevent it by using the Secure Socket layer to interpret safe and accurate information

Keywords : phishing mail ,cybercrime, secure socket layer

Analysis of Transmission Characteristic of a 1D Photonic Crystal Sandwiched by Two Grapnene Layer using Finite Difference Time Domain Method.

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ABSTRACT

Simulation of electromagnetic wave propagation on 1D photonic crystal structures using analytical and numerical methods is a study that continues to be developed, because it involves strict mathematical equations with accurate results. In this study, the Finite Difference Time Domain (FDTD) method was developed to analyze the transmission characteristics of a 1D photonic crystal sandwiched by two graphene layers. The one-dimensional photonic crystal structure consists of 7 alternating layers of and with thicknesses of and, respectively. The single layer graphene thickness is reported between 0.4 and 1.7 nm based on previous research. The electric and magnetic fields have been simulated to propagate through the photonic crystal structure, experiencing reflection and transmission at each layer of the structure. The simulation result shows that attachment of the two single atomic graphene sheets into the system will cause a decrease in the transmitted field although changes in the electrical conductivity will not change the band gap since the graphene layer is very thin relative to the dielectric slabs. These results can serve as a standard for fabrication and can be further developed for sensor applications, including two-dimensional and three-dimensional photonic crystal structures

Keywords: Surface, Plasmons, Resonance, Photonic, Crystal

**CODE : OP33
ROOM : 03**

A Systematic Literature Review of Computer Vision for Fruit Ripeness Identification: Research Trends, Datasets, Methods and Frameworks

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ABSTRACT

Fruit ripeness identification is a crucial aspect in the agriculture and food industries to ensure product quality and minimize post-harvest losses. In recent years, computer vision technology has been widely adopted as a non-destructive approach to automatically and efficiently detect fruit ripeness levels. This review aims to examine the latest developments in the application of computer vision for fruit ripeness identification, focusing on image acquisition methods, image processing techniques, and machine learning models used for ripeness classification. Additionally, key challenges in implementing these techniques, such as fruit visual variability, lighting conditions, and the need for representative datasets, are discussed. Through a comprehensive literature review, this paper identifies recent research trends and future opportunities to improve the accuracy and efficiency of computer vision-based ripeness identification systems, as well as the potential integration of IoT and deep learning technologies. This review is expected to provide valuable insights for researchers and practitioners in developing smarter and more adaptive solutions in the field of smart farming.

Keywords : . Computer vision, Fruit ripeness identification, Image processing, Deep learning, Smart farming

Implementation of Failover and Bandwidth Management Using the Per Connection Queue (PCQ) Method on Cikeas Aps Residential and Rented Internet Services

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ABSTRACT

This research discusses the implementation of load balancing, failover, and bandwidth management using the Per Connection Classifier (PCC) method for load balancing and the implementation of the Per Connection Queue (PCQ) method. The tests carried out measure the performance of network connectivity, failover mechanisms, and network Quality of Service (QoS) resulting from load balancing, failover, and Bandwidth Management methods. This research employs the NDLC method as its network development approach. Based on the research conducted, it can be concluded that the implementation of load balancing using the PCC method in APS Cikeas residences and rentals has been successfully executed. For the failover method, it has been successful, with a 2-second transition time for the second ISP to take over in the event of a lost connection or RTO (Recovery Time Objective). Additionally, the results of quality of service testing are very good for upload, download, delay, and jitter, and they fall into a good category for throughput and packet loss based on TIPHON standards.

Keywords : . failover, load balance, bandwidth management, mikrotik

Identifying Patchouli Varieties Based on Leaf Morphological Using Deep Learning

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ABSTRACT

Patchouli (*Pogostemon cablin Benth*) holds a strategic position in the global essential oil industry, utilized in diverse industries such as perfumes, cosmetics, and pharmaceuticals, which makes Indonesia one of the largest essential oil producers in the world. There are several patchouli varieties are cultivated, such as Sidikalang, Patchoulina 2 (P2), Tapak Tuan, and Lhoksumawe, each exhibiting distinct leaf morphological characteristics and varying levels of Patchouli Alcohol (PA). However, not all patchouli varieties can be commercially viable due to some condition like having lower oil content and non-optimal quality, such as Tapak Tuan and Lhoksumawe. This condition has an impact on the low yield of patchouli oil, which has the potential to reduce the quality of the final product and increase the risk of loss for farmers. Therefore, this study aims to develop a classification system using a Convolutional Neural Network (CNN) to differentiate varieties based on leaf morphological images. The model was trained using 5,975 leaf image samples from four varieties. The developed system was integrated into a web application and can be widely accessed, allowing users to easily identify varieties with an accuracy rate of up to 99%.

Keywords : Nilam, Convolutional Neural Network (CNN) , Klasifikasi Citra , Deep Learning

Estimating Meso-Scale Emission Rates of Particulate Matter 10 In Palembang with Meteorological Data Using Python.

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ABSTRACT

Emissions of Particulate Matter 10 (PM10) resulting from peatland fires pose significant environmental and health risks, particularly in urban areas such as Palembang. This study aims to estimate the meso-scale emission rates of PM10 produced by peatland fires using meteorological data and Python programming. By integrating PM10 concentration data with relevant meteorological parameters, such as wind speed along the x and y axes, we applied the Gaussian plume model to calculate the emission rates. Meteorological data were obtained from local weather stations, while PM10 concentration measurements were sourced from environmental monitoring systems. Our findings indicate that the calculated emission rates correlate strongly with the observed PM10 levels, highlighting the effectiveness of using meteorological data in emission estimation. Although PM10 values are already known, calculations are necessary to derive approximate emission rate values on a meso scale. Calculating the emission rate is essential for measuring PM10 concentrations at locations affected by fires using appropriate air monitoring equipment. Subsequently, meteorological parameters, including wind speed and direction, are sourced from local meteorological data to accurately determine dispersion patterns. The Gaussian plume model is then applied, utilizing equations that relate PM10 concentrations to meteorological variables, in order to generate more precise estimates of emission rates. The resulting emission rates are expressed in mass units, such as micrograms per cubic meter per second, providing a clear picture of the amount of pollutants released into the atmosphere. Thus, the analysis of these results not only enhances the understanding of pollution sources but also provides critical information for developing pollution control policies and more effective peatland fire mitigation strategies. The data obtained from these calculations are crucial in mitigation efforts, as they allow for more accurate identification of pollution sources and the development of more effective control measures. Furthermore, the generated information can be used to strengthen public policies related to air quality and public health. Therefore, this analysis not only deepens the understanding of pollution sources but also offers essential insights for the development of pollution control policies and more effective strategies for mitigating peatland fires.

Keywords : particulate matter10, meso scale, emission rate, peatland fires, python

CODE : OP37

ROOM : 03

Implementation of forward chaining in tracing immunization reminders for toddlers using the incremental methodology

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ABSTRACT

Many Indonesian children have not received, or do not receive, complete immunizations, which makes them vulnerable to dangerous diseases. Immunization schedules have traditionally been recorded in the Maternal and Child Health book provided by Posyandu or doctors. This results in many parents often missing their children's immunization schedules for various reasons. The era of Industry 4.0 and Society 5.0 is a time when almost all community activities rely heavily on the internet and smartphones. This development makes it easier for people to do many things, including a mobile-based immunization reminder application to help parents remember their children's immunization schedules. This application was developed using the incremental methodology, which consists of Requirement Analysis, Design and Development, Coding, Testing, and

Implementation. The tracing method for reminders uses forward chaining, which utilizes the child's birth date as a reference for tracking and applies immunization rules according to the Minister of Health Regulation No. 12 of 2017. The mobile Android-based immunization reminder application features an intro, onboarding page, login, registration, main page, profile, add child data, child data and immunization page, as well as the immunization reminder display. This application can be

downloaded from the Play Store and installed as a tool to help parents remember their child's immunization schedule, ensuring that the child receives complete immunizations on time.

Keywords : Forward Chaining; Remainder; Immunization; Incremental; Toddler

Identify the potential for handling crime through the Smart Spatial Decision Support System to acceleration of smart village development

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ABSTRACT

Crime is a complex problem that has a significant impact on society, both socially, economically and psychologically. This can be an obstacle in efforts to develop smart villages. Therefore, a process for identifying crime handling through Spatial Smart Decision Support System (DSS) in villages is proposed. K-means Clustering can identify complex crime patterns and group high-risk areas, while AHP allows the evaluation of various relevant criteria in the decision-making process. The proposed hybrid technique via K-means and AHP can provide deeper insight and more optimal solutions in handling crime. This hybrid technique is implemented through a mapping technique that can identify hot spots where high frequency crime occurs. This allows law enforcement to focus prevention and response efforts in those areas. In an effort to overcome the challenges faced in handling crime, especially to reduce obstacles in efforts to develop smart villages, the use of technology and data analysis is becoming increasingly important. By understanding crime patterns, law enforcement agencies can take more proactive steps in preventing and handling crime cases. From the results of K-means clustering with 3 clusters which are described as Prone Clusters, Moderately Prone Clusters, and Not Prone Clusters. Crime Handling Management using AHP produces DSS with alternatives that prioritize the Kamtibmas alternative followed by Policing and the Ronda/Siskamling Community. Test results of the K-Means Clustering model using DBI of 0.65 and AHP with Consistent Ratio produced 0.060 and 0.047, which means ≤ 0.1 or 10%. The results of the mapping were made using maps of vulnerable areas in 2023, areas in 2023 as well as notifications on the map marked in red as vulnerable areas, in yellow as moderately vulnerable areas and in blue as non-vulnerable areas. With this system, the Regional Government can identify hotspots of regional vulnerability and crime patterns, identify areas that need higher supervision and appropriate management, which can help law enforcers make more informed decisions, better allocate resources and prevent prevention strategies. which is more effective. So as to create an environment that is safer and more responsive to community needs, in order to accelerate the development of smart villages.

Keyword: Clustering; Crime pattern; DSS; Spatial; Smart village.

CLASSIFICATION OF STUNTING AND DISTRIBUTION OF REGIONAL ZONES USING SUPPORT VECTOR MACHINE AND EXTREME GRADIENT BOOST METHOD IN CIAWI DISTRICT

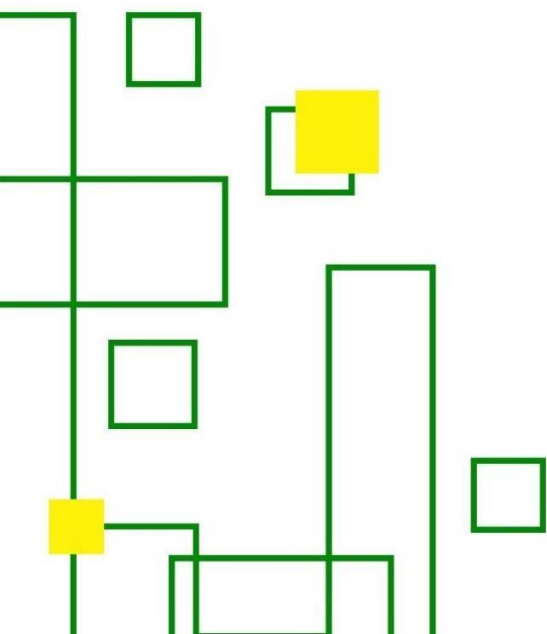
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Abstract

Stunting is one of the leading causes of morbidity and mortality in children under the age of five in most developing countries. The main purpose of this study is to design a model for the classification and distribution of stunting zones using a twobased model, namely Support Vector Machine (SVM) and EXtreme Gradient Boosting (XGBoost). This study uses data from the Citapen health center starting from February 1 2024 to February 29 2024, which has 2769 data and 33 variables. Classification is carried out using the Support Vector Machine (SVM) algorithms with 4 kernels namely RBF, Linear, Sigmoid, and Poly then EXtreme Gradient Boosting (XGBoost) algorithms. The first stage was carried out, namely the data cleaning and transformation stage, after which the division of training data and test data was carried out, namely 70:30. The model in this study was evaluated with a confusion matrix. So it is known that the Support Vector Machine (SVM) algorithm is 97.83% with its 4 kernels namely RBF is 97.83%, Linear is 99.04%, Sigmoid 97.83%, Poly is 97.83% and EXtreme Gradient Boosting (XGBoost) is 99.88%. The comparison shows that the XGBoost algorithm produces more accurate classification values than the Support Vector Machine (SVM) algorithms which are then selected to create a web application system using the Streamlit framework. Based on a series of processes that have been carried out in this study, it can be concluded that this study has succeeded in building the best model and web application for stunting prediction using the XGBoost algorithm.

Keywords : Stunting, XGBoost, Classification Model

ROOM 4
(Parallel Room 3rd Floor)



Modelling and Evaluation of Bitcoin Price Forecasts Using Vector Error Correction Model (VECM) Based on Historical Data

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ABSTRACT

This study explores the innovative use of oxygen-based Glow Discharge Plasma (GDP) technology to modify cassava starch-based bioplastic film, aiming to enhance their hydrophilicity and adhesion to natural dyes. The research focuses on improving the interaction between bioplastics and eco-friendly dyes under low pressure and temperature conditions of oxygen plasma treatment. Oxygen plasma treatment showed significant progress in developing sustainable materials. Characterization techniques such as ATR-FTIR, EDX, and XPS confirmed an increase in polar functional groups and oxygen content, while FE-SEM revealed improvements in surface roughness and wettability. The treated bioplastics exhibited greater hydrophilicity and crystallinity, with tensile tests showing enhanced strength and reduced elongation. Additionally, UV-Vis spectroscopy indicated better dye retention and minimized leaching. This research demonstrates the potential of GDP technology to effectively integrate natural dyes into bioplastics, supporting the advancement of environmentally sustainable materials.

Keywords : Bitcoin, Forecasting, MAPE, Modelling, VECM

CLUSTERING DISTRICTS/MUNICIPALITIES BY POVERTY LEVEL USING CLUSTER ANALYSIS K-HARMONIC METHOD

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ABSTRACT

The poverty rate is the proportion of people who are below the poverty line and is seen as an inability to fulfill the basic needs of life. The poverty rate in West Java Province increased by 0.7 percent from 2019 to 2023. In overcoming poverty, it is necessary to group based on regional characteristics using K-Harmonic Means cluster analysis. This research aims to apply the K-Harmonic Means method in analyzing the number of optimal clusters. The data used in this study were taken from the official website of the Central Statistics Agency (BPS) and Open Data JABAR in 2022 as many as eight variables. The results of this study indicate that the most optimal grouping is 2 clusters based on the silhouette coefficient value of 0.909. Cluster 1 has 19 members, namely Bogor Regency, Sukabumi Regency, Cianjur Regency, Bandung Regency, Garut Regency, Tasikmalaya Regency, Ciamis Regency, Kuningan Regency, Cirebon Regency, Majalengka Regency, Sumedang Regency, Indramayu Regency, Subang Regency, Purwakarta Regency, Karawang Regency, West Bandung Regency, Pangandaran Regency, Tasikmalaya City, and Banjar City. Cluster 2 has 8 members, namely Bekasi District, Bogor City, Sukabumi City, Bandung City, Cirebon City, Bekasi City, Depok City, and Cimahi City. Based on the results of the clustering using K-Harmonic Means, it can be said that the districts/cities in Cluster 1 need to be the top priority in efforts to reduce the poverty rate and the second priority is the districts/cities in Cluster 2.

Keywords : K-Harmonic Means, Poverty Rate, Silhouette Coefficient

IMPLEMENTATION OF EXPONENTIAL GENERALIZED AUTOREGRESSIVE CONDITIONAL HETEROSCEDASTICITY MODEL TO ANALYZE STOCK RETURN VOLATILITY PT KALBE FARMA Tbk

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ABSTRACT

This research aims to analyze the volatility of stock returns in the pharmaceutical sector in PT. Kalbe Farma Tbk by using the EGARCH (Exponential Generalized Autoregressive Conditional Heteroscedasticity) model. The EGARCH model is a model with the ability to deal with volatility asymmetry and leverage effect. The data used in this research is the monthly stock return from PT. Kalbe Farma Tbk which is listed on the Indonesia Stock Exchange from January 2019 to December 2023. The results of the analysis show that there is asymmetric volatility in PT. Kalbe Farma return data and the best model to describe the volatility is EGARCH (1,1) model because it gives the smallest AIC (Akaike information Criterion). The prediction results show that PT Kalbe Farma Tbk's return volatility increased from the first period to the fifth period with an RMSE value of 0.046785.

Keywords : Volatility, Stock Return, EGARCH model, PT Kalbe Farma Tbk

Modeling and Evaluation of Bitcoin Price Forecasts Using Vector Error Correction Model (VECM) Based on Historical Data

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ABSTRACT

Bitcoin is the first decentralized cryptocurrency, created by Satoshi Nakamoto in 2009 [1]. Decentralization implies that bitcoin is not under the authority of any government, which in turn makes the price of bitcoin very volatile; therefore predicting the future price of bitcoin using a reliable time series method is necessary [2]. One such method the Vector Error Correction Model (VECM). VECM is effective in analyzing historical data as well as modeling short-term and long-term relationships. VECM is a further development of the Vector Autoregressive (VAR) when the data is non-stationary at the level and cointegrated [3]. The purpose of this research is to forecast the price of bitcoin in Indonesia using historical data on the opening price, closing price, high price, and low price of bitcoin for the period of April 2021 to April 2024. Analysis of this data using VECM produces the best model at lag 9, which is used to forecast the four prices for the period from 1 May to 14 May 2024. MAPE values for three of the prices (opening price, closing price, and high price) are at less than 10%, which implies highly accurate forecasting. Forecasts on low prices has a MAPE value of 13%, which is considered good forecasting. Overall, this is a good result; however, for future research, a slight decrease in forecasting values on low prices might be further investigated.

Keywords: Bitcoin, Forecasting, MAPE, Modelling, VECM.

The Vehicle Routing Problem (VRP) Model with a Robust Goal Programming (RGP) Approach for Determining the Optimal Bus Rapid Transit Routes.

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Abstract

The use of public transportation is an essential part of urban development aimed at meeting the public's needs for public transit services, including Bus Rapid Transit (BRT). The BRT service faces challenges in determining vehicle routes (Vehicle Routing Problem) that not only aim to meet customer service demands, but also consider other factors such as operational costs, bus capacity, travel distance, and time. Moreover, in the Vehicle Routing Problem (VRP), data on the number of customers and travel times are not precisely known. Therefore, the main objective of this research is to determine the optimal route that can meet all the desired goals while addressing data uncertainty. In this research, a Goal Programming (GP) model is formulated for the VRP, integrating multiple objectives by minimizing deviations from set targets. These objectives include minimizing operational costs, maximizing bus capacity, and minimizing travel time and distance. To address issues related to uncertain data, Robust Optimization (RO) is used to make the developed model resilient to data changes. Uncertainty in customer numbers and travel times is assumed to be represented by a polyhedral uncertainty set. The development of this Robust Goal Programming (RGP) model will be implemented in the BRT routing problem to determine the optimal route that can improve operational efficiency and service quality, thereby enhancing customer satisfaction.

Keywords : BRT, Vehicle Routing Problem (VRP), Goal Programming, Robust Optimization

Antibacterial Activity and Phytochemical Components of Leaf Extract of *Nephelium lappaceum*.

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ABSTRACT

Diarrhea is defecation with a soft to watery consistency or even in the form of liquid occurring three times a day or more. On the other hand, *Nephelium* leaf contains compounds such as flavonoids, alkaloids and saponins and tannins. The aim of this study is to determine the antibacterial activity of the ethanol extract of rambutan (*Nephelium lappaceum* L) leaves extracted from Microwave Assisted Extraction against *Escherichia coli* and *Shigella dysenteriae*. Antibacterial testing determining the MIC (minimum inhibitory concentration) was performed on concentrations of 10, 15, 20, and 25% with the results of the inhibitory power carried out on concentrations of 25, 30 and 35%. The positive control was Ciprofloxacin 10ppm and the negative control at 10% DMSO solution and the following results showed that the MAE 96% ethanol extract of rambutan leaves could inhibit *E. coli* and *S. dysenteriae* bacteria that were with MIC at 25% concentration. The highest inhibitory value was found at a concentration of 35%, which was 10.68 mm with the strong category for *S. dysenteriae* and 9.93 mm in the medium category for *E. coli*. Rambutan leaf extracted with the MAE method have antibacterial activity against *Escherichia coli* and *Shigella dysenteriae*.

Keywords: *Nephelium lappaceum* L, MAE (Microwave Assisted Extraction, *Escherichia coli*, *Shigella dysenteriae*

ANTIMICROBIAL TESTING OF GREEN BETEL LEAF EXTRACT RESULTS FROM ULTRASONIC ASSISTED EXTRACTION WIYH THE SOLVENT *n*-Hexane, ETHYL, ACETATE, ETHANOL 96% AGAINS *Streptococcus mutans* AND *Candida albicans*

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ABSTRACT

Red betel (*Piper ornatum*) is an ornamental plant with potential antibacterial and antioxidant properties due to its bioactive compounds, including alkaloids, flavonoids, steroids, triterpenoids, saponins, and tannins. This study aimed to determine the relationship between flavonoid content, antioxidant activity, and antimicrobial activity in red betel leaves. Ultrasound-Assisted Extraction (UAE) was employed using three solvents of varying polarity: *n*-hexane (non-polar), ethyl acetate (semi-polar), and ethanol (polar). Total flavonoid content was determined spectrophotometrically based on flavonoids' ability to form complexes with $AlCl_3$. Antioxidant activity was assessed using the DPPH (2,2-diphenyl-1-picrylhydrazyl) method. Antibacterial and antifungal properties were evaluated through Minimum Inhibitory Concentration (MIC) and Zone of Inhibition (ZOI) tests. MIC was determined using the agar dilution method, while ZOI was measured using the disc diffusion method. Results showed that the 96% ethanol extract yielded the highest flavonoid content (4.748%) and the strongest antioxidant activity ($IC_{50} = 47.185$ ppm, classified as very strong). The *n*-hexane extract at 25% concentration exhibited the best antibacterial activity against *Streptococcus mutans* (ZOI = 17.43 mm), while the 96% ethanol extract at 25% concentration demonstrated the highest antifungal activity against *Candida albicans* (ZOI = 17.02 mm). In conclusion, red betel leaf extracts show promising potential as strong antioxidants and antimicrobial agents against *C. albicans* and *S. mutans*.

Keywords : Red betel, Antioxidants, Antimicrobial activity, *Streptococcus mutans*, *Candida albicans*, Flavonoids

Development of equation and Procedure for Determine Tannin Content Indirectly

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ABSTRACT

This study presents a specific and accurate procedure and novel equation for quantifying indirect tannins content. Tannin is a secondary metabolite compound found in plants and has been applied in many industries, such as leather, wood, plastic, food and pharmaceutical industries. Generally, tannin can be analyzed using the colorimetric and the protein precipitation method, but each of them has a limitation. The procedure in this research combines the colorimetric assay and the protein precipitation method. This procedure analyzes three kinds of solutions, namely polyphenols solution (without protein precipitation), non-polyphenols solution (with protein precipitation) and blank of protein (matrix of procedure). All the solutions were quantified with total phenol assay method using Folin-Ciocalteu reagent and visible spectrophotometer. A novel equation for calculating the tannin content of this method has been developed. The results found that the equation and procedure can be used to measure the tannins content in any sample. The advantages and limitations of this procedure have been described in this article

Keywords : Development method; Phenolic compounds; Colorimetric assay; Protein precipitation; Novel equation

EFFECTIVENESS OF A COMBINATION GEL OF BILIMBI LEAF AND ALOE VERA EXTRACT FOR HEALING BURN IN MALE WHITE RATS

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ABSTRACT

Burns are a global public health problem that results in approximately 180,000 deaths each year. The incidence of second-degree burns in Indonesia accounts for 46.7% of all burn incidents. These wounds are characterized by redness, swelling, ulcers, and severe pain. The purpose of this study was to determine the effectiveness, the most effective concentration of extracts, and the length of time to administer a combination gel of bilimbi leaf and aloe vera extracts on the healing of second-degree burns in male white rats. Morton's method was used in this study to make and measure the diameter of the burn wound. The treatments of this study included a combination gel of bilimbi leaf and aloe vera extracts with variations in the ratio of F1 (6:5), F2 (6:10), F3 (12:5), and the control group. The results showed that the gel combination of extracts of bilimbi leaves and aloe vera extracts was effective in treating burns in rats. Duncan's test of the treatment of variations in extract concentration showed a significant difference. The concentration of 12% bilimbi leaf extract and 5% aloe vera (F3) has the fastest and best wound healing effect with a wound healing time of 7 days, while F2 and F1 have slow healing indicated by a larger wound diameter. The existence of burn wound healing activity is because the extracts used contain alkaloids, flavonoids, saponins, and tannins which can increase the proliferation of epithelial cells and collagen and the formation of new tissues.

Keywords : Burns, gel, bilimbi leaf extract, aloe vera extract, morton method

Revealing Spatio-temporal Pattern for Stunting in Indonesia

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ABSTRACT

This study investigates the spatio-temporal patterns of stunting in Indonesia using data from 2019 across 34 provinces. Stunting, a critical indicator of child malnutrition and overall health, varies significantly across different regions. To analyze these variations, we employ the Generalized Lasso method, a powerful statistical tool capable of handling high-dimensional data while capturing spatial dependencies. Our approach is unique in that it focuses exclusively on stunting data, without incorporating additional socio-economic or environmental variables, allowing for a pure examination of spatial patterns. The Generalized Lasso method facilitates the detection of spatial similarities in stunting rates among neighboring provinces by addressing the issue of spatial autocorrelation. In this study, we aim to uncover clusters of provinces that exhibit similar stunting trends and to understand how these trends are distributed geographically. To ensure the accuracy and reliability of our model, we implement two sophisticated techniques for selecting the tuning parameter in the Generalized lasso: Approximate of Leave-One-Out Cross-Validation (ALOCV) and Generalized Cross-Validation (GCV). These methods are crucial for optimizing the tuning parameter, which controls the regularization of the model and thus influences the detection of spatial patterns. Our analysis identifies distinct spatial clusters of provinces with similar stunting patterns, highlighting regions where stunting rates are notably aligned. The results provide valuable insights into the geographic distribution of stunting in Indonesia, showing how certain provinces are interconnected through similar stunting dynamics. These findings have significant implications for public health interventions, as they enable policy makers to target specific regions more effectively. By understanding spatial patterns and regional similarities in stunting rates, targeted strategies can be developed to address the issue more efficiently.

Keywords : *Clustering, Generalized lasso, Spatio-temporal patterns, Stunting, Tuning parameter optimization*

Cookies Bar Formulation of Red Dragon Fruit Skin Flour (*Hylocereus polyrhizus* Britton and Rose) Combination of Black Soybean Flour (*Glycine max* L.) as an Alternative Snack for Patients with Diabetes Mellitus

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ABSTRACT

Diabetes mellitus is a metabolic disease characterized by high blood sugar levels. Consumption of foods with high fiber and protein levels is known to control blood sugar levels in diabetics. Red dragon fruit skin and black soybean are foods that contain high fiber and protein. Cookie bars made from red dragon fruit peel flour and black soybean flour can be an alternative snack for diabetics. The purpose of this study was to determine the cookies bar formula that meets SNI quality requirements and determine the formula most favored by panelists. The experimental design used was a completely randomized design (CRD). Cookies bar made from red dragon fruit peel flour and black soybean flour consisted of 3 formulas, namely F1 (90:10), FII (70:30), and FIII (50:50). The results showed that formula III met the SNI quality requirements with nutritional values: moisture content (4.79%); ash (1.27%); fat (23.62%); protein (18.12%); carbohydrate (52.20%); microbial contamination (0.77×10^4 colonies/gram); and total dietary fiber (20.86%). Based on the hedonic test results, cookies bar formula III was the most preferred by the panelists

Keywords : . Diabetes, Red Dragon Fruit Peel, Black Soybean, Cookies Bar

Electronic Voting Based on Blockchain Technology with New Chaos Encryption

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ABSTRACT

Advances in blockchain technology, smart devices can now be designed to reduce the risk of data manipulation such as presidential elections, regional heads, etc. In the context of a secure e-voting system, we propose blockchain-based e-voting with chaotic encryption to guarantee data security and privacy and a work system that was previously carried out centrally, then this work system becomes decentralized which makes data storage protected from fraudulent access and can be accessed in real time. The proposed scheme is tested with different image sets to evaluate performance metrics such as Number of Pixel Change Rates (NPCR), Unified Average Change Intensity (UACI), Correlation Coefficient, and entropy under various attack scenarios. These values show that blockchain-based e-voting with this new chaotic encryption will be safe from attacks from outside. The initial study in this paper begins with an analysis of phase portraits, Lyapunov exponents, and bifurcation diagrams..

Keywords : : Chaotic encryption, blockchain, e-voting, entropy, bifurcation

Implementation Tree Models: Extreme Gradient Boost, Random Forest and Decision Tree for Stunting Classification and Regional Zone Distribution

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ABSTRACT

Stunting is one of the leading causes of morbidity and mortality in children under the age of five in most developing countries. The main purpose of this study is to design a model for the classification and distribution of stunting zones using a tree-based model, namely decision tree, random forest and XeXtreme Gradient Boosting (XGBoost). This study uses secondary data from the Bogor City Health Office in 2022-2024 on 1,800 children. Classification is carried out using the Decision Tree, Random Forest and XGBoost algorithms. The first stage was carried out, namely the data cleaning and transformation stage, after which the division of training data and test data was carried out, namely 70:30. The model in this study was evaluated with a confusion matrix. So it is known that the Decision Tree algorithm is 84.01%, Random Forest is 84.69%, and XGBoost is 85.57%. The comparison shows that the XGBoost algorithm produces more accurate classification values than the Decision Tree and Random Forest algorithms which are then selected to create a web application system using the Streamlit framework. Based on a series of processes that have been carried out in this study, it can be concluded that this study has succeeded in building the best model and web application for stunting prediction using the XGBoost algorithm

Keywords : Stunting classification XGBOOST random forest decision tree stunting distribution zone

Antibacterial Activity of Chinese New Leaf (*Artemisia vulgaris* L.) in Vitro and In Silico and Compound Identification Using LC-MS/MS”.

Sahila Ika Maharani

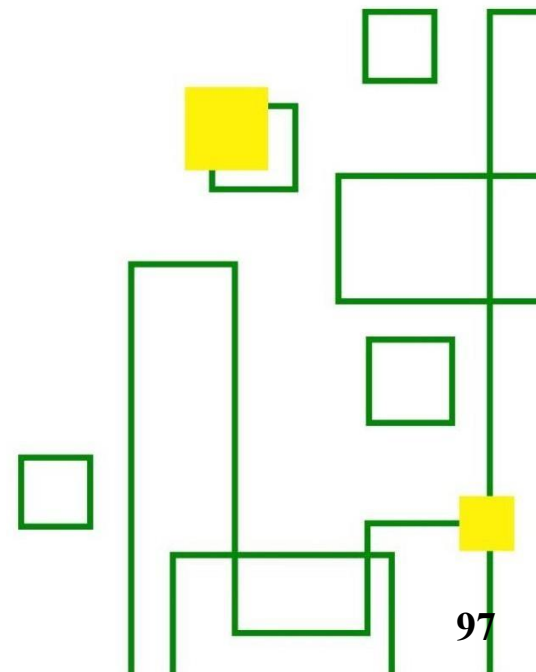
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ABSTRACT

According to dermatology study records Indonesia, females in the age range of 14-17 years and males in the age range of 16-19 years have the highest prevalence of acne vulgaris. 16-19 years old have the highest prevalence of acne vulgaris. Treatment in treating or preventing acne is by using antibiotics. However excessive use of antibiotics can cause resistance and side effects such as skin irritation. Therefore, the search for natural antibacterial compounds that are not harmful to humans are needed. New Chinese leaf (*Artemisia vulgaris* L.) has metabolite content that has the potential in inhibition of acne-causing bacteria. The purpose of this study was to determine antibacterial activity of extracts and fractions of new chinese leaves against *Propionibacterium acnes* in vitro and in silico and identify secondary metabolite secondary metabolite compounds. This research was conducted experimentall laboratory and computation through several stages. The initial stage is preparation of simplisia, analysis of water content, extraction of maceration method with solvent 96% ethanol, fractionation with three solvents; n-hexan, ethyl acetate,n-butanol. The extracts and viscous fractions obtained were tested for antibacterial activity in vitro against *Propionicbacteria acnes* using the disc diffusion and solid dilution methods. The best test sample in inhibited the bacteria were identified using LC-MS/MS and tested for effectiveness as an antibacterial in silico through molecular docking approach against TGF- β 1 receptor (PDB ID: 3TZM). The results of in vitro analysis research obtained ethanol extract at a concentration of 80% can inhibit bacterial growth with a low weak category (2.62 mm). And the minimum inhibitory concentration is at concentration of 20%. The results of LC-MS/MS identification of ethanol extracts of new chinese leaves identified 10 secondary metabolite compounds were identified. And there are 6 compounds that have therapeutic effect as an antibacterial agent namely α -pinene, saponarin, umbelliferone, nandrolone, curcumene, and ganoderol A. In silico test results obtained potential compounds against TGF- β 1 receptors are nandrolone and curcumene, because they meet the test parameters including ΔG values of -9.8 and -7.5 kcal/mol lower than the comparator ligand clindamycin of -7.0 kcal/mol, Lipinski's rule is fulfilled, and the toxicity is quite low. By Therefore, Chinese new leaf has the potential to be used as an antibacterial for acne treatment.

Keywords: *Artemisia vulgaris* L., Antibacterial, *Propionibacterium acnes*, LCMS/MS, In Silico

ROOM 5
(Parallel Room 3rd Floor)



A CASE STUDY OF THE ENVIRONMENTAL REALITY OF MEDICAL WASTE AT AL-ZAWIYA MEDICAL EDUCATIONAL CENTER - WESTERN LIBYA

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ABSTRACT

Medical waste constitutes one of the most important environmental and health problems that societies around the world suffer from. Despite the important role of health institutions in raising the quality of health services for members of society, it has become a source of danger to them and to the environment. This study aimed to study the environmental situation of medical waste in Al-Zawiya Medical Educational Center in terms of the process of sorting, collecting, transporting, storing, and final disposal of waste. The study relied on the method of collecting data is provided through a questionnaire form for the medical staff (doctors, nurses, and administration staff) as well as cleaning workers, in addition to personal interviews with them. Through analyzing the results of questionnaire forms and personal interviews with medical staff and cleaning workers at Al-Zawiya Medical Educational Center, it was found that there is a lack of health and environmental awareness among the workers charged with disposing of medical waste in this center, and a failure to implement the World Health Organization's instructions for managing Medical waste. The study also showed that there is a medical waste incinerator inside the hospital in the city of Zawiya, but it has been out of operation for a long time. The study recommended the necessity of implementing a sorting system for hazardous medical waste and non-hazardous medical waste from the source and in the correct ways, and also using protective means for workers in the field of medical waste, as well as raising the level of cooperation between the various institutions concerned with medical waste management in order to solve the existing problems to develop this system, and restore Operating the incinerator temporarily until alternative, environmentally sound incinerator technologies are available.

Keywords : Medical, Waste, Constitutes, One, Environmental, Societies

Fortification Of Tilapia Fish Flour (*Oreochromis niloticus*) In Brackish Water For Making High Protein Snacks

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ABSTRACT

Tilapia (*Oreochromis niloticus*) is one of the fish that people like to meet their animal protein needs because of its thick flesh and good palatability. The aim of this research is to increase the nutritional value of snacks and determine the best formulation by fortifying Nirwana Tilapia) fish meal in different ways, namely 10%, 20%, 30% and 40%. Then a hedonic test, proximate test (water, ash, protein, fat content), analysis of total microbial contamination and determination of the shelf life of snacks are carried out. The chemical characteristics of Nirwana tilapia fish meal were obtained in accordance with SNI 2715 of 2013 and had a protein content of 73.59. Snacks (F3) are selected products based on organoleptic tests. The results of the chemical characteristics of snacks (F3) are in accordance with the 2015 SNI 2886 standard concerning snacks and increase protein by 12.89%. Then for the ALT test it was found to be 1.7×10^3 , E.Coli was negative, and Staphylococcus Aureus was 1×10^2 and the shelf life of snacks (F3) was obtained with metallized plastic packaging for 11 months (343 days).

Keywords : Fortification, Nirwana Tilapia, Fish Flour, High Protein Snack

Development of Te(IV) Methyl Isobutyl Dithiocarbamate Complex: Characterization and Potential as Anti-Tuberculosis Agent

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ABSTRACT

Tuberculosis (TB) is one of the oldest known human diseases and is still one of the biggest killers of infectious diseases that kill five thousand people every day. New drugs are needed to stem the TB epidemic by studying the synthesis of complex compounds that can be developed as anti-tuberculosis agents. A new complex of dithiocarbamate, methyl isobutyl dithiocarbamate Te(IV) were synthesized using an 'in situ' method by reaction complexes in a 1:1:3 molar ratio in refluxing ethanol. The complex were characterized by using Ultra Violet Visible (UV-Vis), Fourier Transform Infra Red (FT-IR), Nuclear Magnetic Resonance (NMR), conductivity, and melting point. The result UV-Vis to methyl isobutyl dithiocarbamate Te(IV) is 212 nm, electronic transition is $\pi \rightarrow \pi^*$ of CS₂ and N=C=S. Infra-Red absorption spectra at wave number Te(IV) methyl isobutyl dithiocarbamate 374nm⁻¹ is coordination occurred dithiocarbamate ligands and atoms M=S. ¹³C NMR (ppm) spectra Te(IV) methyl isobutyl dithiocarbamate 20.1, 28.0, 43.3, 64.5. ¹H NMR (ppm) 0.976 (d), 0.962 (d), 2.3 (m), 3.770 (d), 3.455 (s), 3.755 (d). Complex characterization using UV-Vis, IR, and NMR showed that complexes are successfully synthesis. The bioassay results show these complexes are potential as anti-tuberculosis agents.

Keywords : Dithiocarbamate, In situ method, Anti-tuberculosis assay, Characterization, Complexes

Anticholesterol Activity and Identification of Active Compounds from Menteng Leaf (*Baccaurea racemosa*) in Vitro

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ABSTRACT

The World Health Organization (WHO) estimates that the number of cases of high cholesterol worldwide reaches 16-33 million incidents of high cholesterol (Hypercholesterolemia). Hypercholesterolemia is one of the factors that triggers the emergence of various diseases related to death such as heart disease, stroke, diabetes mellitus and atherosclerosis (blockage of the arteries). The treatments for hypercholesterolemia tends to take a long time, more expensive and causes various side effect due to the use of synthetic drugs. One way is to use plants such as Menteng leaf (*Baccaurea racemosa*) as an alternative medicine to sufferers of hypercholesterolemia. This research aims to determine the anticholesterol activity of Menteng leaf (*Baccaurea racemosa*) extract fraction in vitro and identify secondary metabolite compound contained in the most active fraction using LC-MS/MS. The methods used in this research include Menteng leaf sample preparation, simplisia production, maceration extraction, water content testing, phytochemical screening, multilevel fractionation using *n*-hexane, ethyl acetate, *n*-butanol solvents, in vitro anticholesterol activity testing using Liebermann Burchard method, and compound identification with LC-MS/MS. Based on research conducted, the results of the in vitro anticholesterol activity test on Menteng leaf extract (*Baccaurea racemosa*) showed the best EC₅₀ value in the *n*-butanol fraction at 38,52 mg/L compared to ethanol extract, *n*-hexane fraction and ethyl acetate fraction. The identification of active compounds with LC-MS/MS in the *n*-butanol fraction of Menteng leaf extract (*Baccaurea racemosa*) identified 7 secondary metabolite compounds from phenolics group such as Nicotiflorin; flavonoids groups such as Quercitrin, Apigenin and Vitexin; Alkaloid groups such as Indole; Phenylpropanoid groups such as Umbelliferone and Coumarin

Keywords : Menteng leaves, *Baccaurea racemosa*, Fractionation, Anticholesterol, In vitro.

Analysis of Resumes in Curriculum Vitae Using Named Entity Recognition (NER)

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ABSTRACT

The application of natural language processing (NLP) technology is becoming increasingly essential for automating and accelerating the information extraction process. One useful NLP technique in text analysis is named entity recognition (NER). The implementation of NER can be utilized in resume analysis to extract key information from resumes, such as candidate names, work experience, education, and skills, thus facilitating the candidate selection and evaluation process. The data used in this research is a dataset obtained from the Kaggle website, containing annotated document data. NER can identify text components consisting of degree, skill, person, organization, email, and experience. The model evaluation results for Macro average (the simple average of precision, recall, and F1 - score across all classes) yielded Precision: 0.92, Recall: 0.92, and F1 -score: 0.89. The Weighted average (the weighted average of precision, recall, and F1-score, accounting for the sample count in each class) achieved values of Precision: 0.94, Recall: 0.88, and F1-score: 0.88.

Keywords : Natural Language Processing (NLP), Named Entity Recognition (NER), Resume Analysis, Model Evaluation

TiO₂/Zeolite Coal Fly Ash Nanocomposite for Photodegradation of Naphthol Blue Black Dye: Optimization and Mechanism under Visible Light

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ABSTRACT

The naphthol blue black dye is a non-biodegradable compound that can cause environmental pollution because its carcinogenic and insoluble in water. Using a semiconductor material, the photocatalytic degradation process can be used to cure dye. The purpose of this work is to use TiO₂/zeolite nanocomposites to photodegrade naphthol blue black dye under visible light in order to find the best conditions and efficiency. The existence of Ti-O-Si and Ti-O-Al functional groups, as well as a band gap energy value of 2.03 eV that is suitable for visible light consumption, were discovered during analysis of the TiO₂/zeolite nanocomposites. The results of the test showed that adding 1.2 mL of 30% H₂O₂, bringing the pH of the solution down to 2, adding 0.1 grams of catalyst, starting at a concentration of 12 mg/L, and irradiating for 75 minutes produced the best conditions for degrading naphthol blue black in 100 mL, with a degradation efficiency of 99.68%. With a reaction rate constant of 0.0312 min⁻¹, the photodegradation kinetics were pseudo-first-order Langmuir Hinshelwood kinetics. Using LC-MS/MS to identify naphthol blue black photodegradation products, it was possible to determine that complex molecular structure converts into simpler, lower-molecular-weight molecules

Keywords: Photodegradation, TiO₂/zeolite Nanocomposites, Naphthol blue black, TiO₂, Zeolite Coal Fly Ash

Validation and Authentication of Keji Beling (*Strobilanthes crispus* (L.) Blume) Using Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS) Based Metabolomic Approach

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ABSTRACT

Keji beling (*Strobilanthes crispus* (L.) Blume) is extensively used in traditional medicine for treating various ailments and is commercially available in both combined herbal formulations (jamu) and single-herb products, such as keji beling powder in capsules or sachets. However, adulteration with a morphologically similar plant, sirih hutan (*Piper aduncum* L.), poses a significant risk to the quality, efficacy, and safety of keji beling products. Differentiating between keji beling and sirih hutan, particularly in their dried form (simplicia), presents a major challenge. To address this, a metabolomics approach using Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS) was employed to authenticate keji beling and detect adulteration with sirih hutan. Keji beling and sirih hutan samples were collected from West, Central, and East Java. The dried leaves were extracted using ethanol p.a., followed by sonication and filtration through a membrane filter. A 2 μ L aliquot of the filtrate was injected into the LC-MS/MS system. The analysis utilized a C18 column and a gradient elution program with mobile phases of 0.1% formic acid in acetonitrile (B) and 0.1% formic acid in water (A), with a flow rate of 0.2 mL/min over 34 minutes. Method validation was performed to ensure reliability, employing chromatographic fingerprinting and chemometric analysis. Multivariate techniques, including Principal Component Analysis (PCA), were applied to differentiate between keji beling, sirih hutan, and their mixtures (5%, 25%, and 50%). The results demonstrated clear clustering between the different sample groups, with principal component values of 43% (PC-1 = 24%; PC-2 = 19%). In conclusion, the LC-MS/MS-based metabolomics approach, combined with chemometrics, provides a precise and effective method for validating and authenticating keji beling products, ensuring the detection of adulteration with sirih hutan.

Keywords : Keji Beling, Validation, Authentication, LC-MS/MS, Chemometrics

Antioxidant Activity and Identification of Secondary Metabolite in the Ethanolic Extract of Yellow Onion (*Allium cepa* L.) Using LC-MS/MS.

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ABSTRACT

Yellow onion (*Allium cepa* L.) is a common plant used as a cooking ingredient. Previous studies have shown that yellow onion extracts contain phenolic compounds, flavonoids, quinones, saponins, tannins, steroids, and triterpenoids and exhibit antioxidant activity. This study aims to determine the levels of flavonoids, antioxidants, and total phenols in yellow onion ethanol extracts and identify secondary metabolites in the yellow onion extract using LC-MS/MS. The research methodology involved extracting yellow onion using maceration and sonication methods with 96% ethanol as the solvent, followed by the analysis of total phenols, flavonoids, and antioxidant activity. Subsequently, the secondary metabolites were identified using LC-MS/MS. The flavonoid and total phenol content in the maceration extract were found to be 7.20 mgQE/g and 19.36 mgGAE/g, respectively, while the sonication extract yielded 8.79 mgQE/g and 18.23 mgGAE/g. The antioxidant activity showed an IC₅₀ value of 20.44 ppm for the maceration extract and 17.84 ppm for the sonication extract. LC-MS/MS identification of the ethanol extract from yellow onion revealed the presence of Quercetin, Austallide L, Kaempferol, Catechin, Apigenin, Limonene, Lobaric acid, Alliospiroside D, 26-Desclucoavenacoside A, Capsicoside C3, and Tanshinone IIA. These results indicate that yellow onion contains secondary metabolites with potential antioxidant properties.

Keywords: *Allium cepa* L., Antioxidant, Sonication, Yellow Onion

EFFECT OF DIFFERENT SOLVENT CONCENTRATIONS ON ACTIVITY ANTIOXIDANT *Syzygium myrtifolium* Walp LEAVES EXTRACT

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ABSTRACT

Syzygium myrtifolium Walp. Leaves are ornamental plants that contain secondary metabolite compounds such as phenols, flavonoids, alkaloids, saponins, and tannins that have potential as antioxidants. The antioxidant content in *Syzygium myrtifolium* Walp. leaves can reduce oxidative stress due to damage by free radicals. To utilize these active compounds, it is necessary to withdraw secondary metabolite compounds by maceration extraction. This study aims to determine the effect of different concentrations of ethanol solvent as an extraction solvent on the antioxidant content of *Syzygium myrtifolium* Walp. leaves using the DPPH and ABTS methods. In this study, *Syzygium myrtifolium* Walp. leaves were extracted using the maceration method for 3 days and remacerated 3 times with the solvent used, namely 50, 70 and 96% ethanol. The extracts obtained were then tested for antioxidant activity using the DPPH and ABTS methods. The results showed that 70% ethanol had better antioxidant activity with an IC_{50} value of 36.3496 ± 0.0313 in the ABTS method and 76.0780 ± 0.0345 in the DPPH method compared to 50% and 96% ethanol as evidenced by the sig value <0.05 and there is an effect of differences in solvent concentration of *Syzygium myrtifolium* Walp. leaves extract on antioxidant activity.

Keywords : *Syzygium myrtifolium* Walp. leaves, Antioxidant, 50% Ethanol, 70% Ethanol, 96% Ethanol

Flavonoid Content and Metabolite Variation of *Muntingia calabura* L. Leaves in Response to Different Polarity Solvent.

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ABSTRACT

Cherry, or *Muntingia calabura* L., is a plant that has many benefits and can support health. The use of this plant wasn't optimal because it is considered to have no economic value. Cherry leaves contain flavonoids, tannins, saponins, and alkaloids. The type of solvent influences the level and variation of the metabolites extracted. This research aims to determine the response of the flavonoid level and the variation of the extracted metabolite to different polarities of solvents. We extracted cherry leaves using three types of solvents: methanol, ethyl acetate, and n-hexane solvents. We determined the flavonoid levels using an aluminum chloride reagent, measured them with a spectrophotometer UV-visible at 430 nm, and identified the metabolites using gas chromatography mass spectrometry. The determination results show that the flavonoid levels in methanol, ethyl acetate, and n-hexane solvents were 42.85 mg QE/g, 29.08 mg QE/g, and 20.40 mg QE/g, respectively. These results indicate that different polarity solvents have different responses to flavonoid extraction. The metabolites of cherry leaves in methanol with a match score > 95% were δ -tocopherol, 2-butoxy ethyl acetate, eugenol, ethanol 2-butoxy, and β -amyrin. The metabolites of ethyl acetate extract that were most alike were δ -tocopherol, 3-allyl-6-methoxyphenol, caryophyllene, 2-butoxyethyl acetate, 9,12-octadecadienoic acid methyl ester, ethanol 2-butoxy, hexadecanoic acid methyl ester, 9,12,15-octadecatrienoic acid methyl ester, and 7-hydroxy flavanone. The n-hexane extract had molecules with a match score >90% were neophytadiene, linoelaidic acid, and 1-heptadecene.

Keywords: Cherry, Flavonoid, Metabolite, Response, Solvent

OPTIMIZATION OF FREQUENT PATTERN GROWTH IN DISCOVERING SALES PATTERNS OF FOUR-WHEELED VEHICLE SPARE PARTS AT AUTO REPAIR SHOPS

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ABSTRACT

The Frequent Pattern Growth (FP-Growth) algorithm is an algorithm within the Association Rule method that aims to identify relationships or associations between two or more items. FP-Growth serves as an improvement over the Apriori Algorithm, particularly in terms of the efficiency of searching for frequently occurring data sets (frequent itemsets). Unlike Apriori, which requires a candidate generation process, FP-Growth utilizes the concept of FP-Tree, making the search for frequent itemsets faster. The data processing process in FP-Growth involves three main stages: Conditional Pattern Base Generation, Conditional FP-Tree Generation, and frequent itemset Search. In the mentioned research, 1778 data were used with a minimum support value of 1% and a minimum confidence value of 85%. In addition to manual calculations, this research also utilized the Python programming language and the RapidMiner application to test the FP-Growth algorithm. The research results showed a difference in the number of rules generated, namely 6 rules from Python and 5 rules from RapidMiner. This difference can be explained by the variation in criteria or stages applied by each platform in the implementation of the FP-Growth algorithm.

Keywords : Frequent Pattern Growth, Sales Pattren, Algorithm

CUCUMBER JUICE AS ANTIHYPERURICEMIA IN MALE RATS

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ABSTRACT

Uric acid is the final product of purine metabolism. Gout is a disease caused by the accumulation of uric acid or crystals in joint tissue. Cucumber contains flavonoid compounds that have a mechanism of action that inhibits the xanthine oxidase enzyme so that it can reduce uric acid levels. This study aims to determine the effect of cucumber juice (*Cucumis sativus L.*) on reducing uric acid levels in male rats. The experimental animals used were 25 male white rats and were divided into 5 groups, each group consisting of 5 experimental animals as a replication. The treatment groups consisted of: negative control (CMC Na 0.5%), positive control (Allopurinol 10 mg/kgBW), dose 1 (cucumber 0.14 g/200gBW), dose 2 (cucumber 0.28 g/200gBW) and dose 3 (cucumber 0.54 g/200gBW). The test animals were measured for normal uric acid levels, each treatment was induced with 20% chicken liver juice and 250 mg/kgBW potassium oxonate until the animals reached a state of hyperuricemia. The test animals were given treatment for 15 days. Measurements were taken on days 0, 5, 10 and 15 using the strip method to measure uric acid levels in male rats. The results showed that in the positive control group, doses 1, 2 and 3 had the effect of lowering uric acid levels. At a dose of 3 cucumbers 0.54 g/200gBW with a duration of 15 days was the most effective dose in lowering uric acid levels with a percentage decrease of 49.8%.

Keywords : Uric acid, Cucumber Juice, Rat, liver and potassium oxonate

Development of BAZNAS RI Mobile Application based on Artificial Intelligence.

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ABSTRACT

This research develops an artificial intelligence-based mobile application (AI) for the National Amil Zakat Agency (BAZNAS) of the Republic of Indonesia, aiming to improve efficiency in the management and distribution of zakat, infaq, and alms. The main novelty of this application lies in the application of cutting-edge AI technologies, including machine learning and natural language processing (NLP), to provide solutions that are more advanced and responsive to user needs. This application brings innovation through the integration of AI features that support predictive analysis, personalized recommendations, and more intuitive interactions. Using machine learning, applications can analyze donation data in depth to identify patterns and trends, as well as provide customized recommendations to users to maximize the impact of their zakat. Additionally, NLP is used to improve the user experience through more natural and responsive text-based interactions. The research methodology involves a user-based design approach, prototype development, and field evaluation. Prototypes are tested in a variety of scenarios to ensure functionality and user comfort. The evaluation shows that this application not only increases efficiency in zakat distribution but also increases transparency and accountability in fund management. New features such as sentiment analysis from user feedback and anomaly detection for data security reinforce the app's added value. The results of this study show that the AI-based BAZNAS RI mobile application has succeeded in increasing user engagement and satisfaction, as well as providing a more effective solution in zakat management. The study recommends the integration of advanced AI features and improved security protocols to ensure the sustainability and effectiveness of the application in the long term.

Keywords: Artificial intelligence, Baznas, Innovation, Machine learning, Mobile apps.

Modification of Greedy Algorithm for Constraint Coloring Problem

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ABSTRACT

The constraint coloring problem is a significant challenge in graph theory and its applications, often arising in contexts such as scheduling, resource allocation, and circuit design. Conventional greedy algorithms, while simple and computationally efficient, frequently struggle to handle additional constraints and high complexity in real-world coloring problems. This paper introduces a modification of the greedy algorithm aimed at improving performance in addressing constraint coloring issues. The modification involves adopting a more adaptive color selection technique and heuristics tailored to accommodate various types of constraints that may arise. We explore new approaches to account for constraint priorities and evaluate the performance of the modified algorithm through simulations and experimental analysis on several relevant graph classes. Results show that the modified algorithm provides more efficient and higher-quality solutions compared to standard greedy methods under complex constraint conditions. This research contributes significantly to the understanding and development of improved graph coloring techniques for real-world applications facing additional limitations.

Keywords : Greedy Algorithm, Ai, Coloring

Agricultural Knowledge Management System Model in the Context of Plant Taxonomy

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ABSTRACT

Effective knowledge management is crucial for enhancing agricultural practices, particularly through a detailed understanding of plant taxonomy. This research develops an Agricultural Knowledge Management System (KMS) model focused on plant taxonomy to support sustainable agricultural practices.

The objective is to create a system that improves the management, documentation, and accessibility of plant-related knowledge to aid in sustainable farming. The methodology employs the Knowledge Management System Life Cycle (KMSLC), which includes stages of planning, design, development, implementation, evaluation, and updating. The planning phase involves identifying user needs through consultations with farmers, botanists, and agricultural experts. The design phase constructs a comprehensive plant taxonomy structure, incorporating content such as plant species classification, cultivation techniques, and pest management guides. Development uses web-based technologies and databases to ensure efficient and user-friendly access. The system was then piloted with user groups to assess its functionality and relevance.

The results indicate that the KMS model provides structured and comprehensive access to plant taxonomy information, thus enhancing users' knowledge and supporting sustainable agricultural practices. The content includes a detailed taxonomy database, technical guides, and interactive training modules.

For future improvements, it is recommended that the system be regularly updated with the latest information and tailored to user feedback. Additionally, ongoing training and support for users are essential to maximize the system's effectiveness and adoption in promoting sustainable agriculture

Keywords : Knowledge management system, Plant taxonomy, Sustainable agriculture, Agricultural information technology, KMSLC

"Trigger Running Hour": Improving Operational Efficiency and Streamlining Costs by Transforming Real-Time Maritime Equipment Monitoring

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ABSTRACT

Reliability and cost-effectiveness in the maritime sector depend on precise tracking of equipment utilization and prompt maintenance. However, there are frequently disparities between reported usage and actual operational hours due to ship engineers' existing reliance on manual record-keeping. This mismatch may result in unneeded overhauls of equipment that still has useful life left, or it may cause key components like deck cranes, auxiliary engines, and pumps to require maintenance that is past due. These inefficiencies raise operating expenses while jeopardizing the safety and dependability of boats.

This problem is addressed by the IoT-based "Trigger Running Hour" device, which offers real-time equipment utilization monitoring. To determine if each essential units or components is being used actively, it uses an advanced system of current sensors. The captured data is relayed to a receiver using LoRa (Long Range) technology, ensuring dependable connection even over long distances aboard the ship. After that, the data is processed at a central gateway, where it is combined and made ready for delivery. The gateway ensures precise and efficient integration with the Planned Maintenance System (PMS) by sending the processed data in batches to a time series server.

This technology gives ship operators accurate records of equipment utilization by automating the collection and processing of operational data. The "Trigger Running Hour" optimizes maintenance planning and lowers associated expenses by preventing both overdue maintenance and needless overhauls by ensuring that maintenance schedules are based on precise, real-time usage data.

The study describes the creation and use of the Trigger Running Hour gadget, emphasizing its IoT architecture, LoRa-based connection, and workflow for data processing. This system represents a significant improvement in maritime maintenance management by bridging the gap between reported and actual equipment utilization. It provides a dependable solution for increasing operational efficiency and lowering expenses overall.

Keywords : : IoT, Real-Time Monitoring, Trigger Running Hour



ROOM 6

(Online Breakroom 1)

Investigating Similar Profiles and COVID-19 Pandemic Conditions in ASEAN Countries and Comparable Nations

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ABSTRACT

This paper examines the potential relationship between countries' profiles and COVID-19 conditions in 10 ASEAN countries, focusing on new confirmed cases and deaths. We initially clustered the countries based on demographic profiles and then observe the pandemic situation within each cluster. The samples of genome sequence, particularly the Omicron variant collected from each country, are also clustered to investigate the spread of the virus. Furthermore, we created a simple algorithm to identify countries with profiles similar to ASEAN nations. Our findings show that countries with similar demographic profiles and geographically proximate are more likely to experience similar pandemic conditions even though they have no identical genome sequence of the virus. Five of the 10 ASEAN countries have similar demographic profiles to countries within the ASEAN region and as assumed, experienced similar COVID-19 situations. Conversely, the remaining ASEAN countries, which share profiles with countries outside the region, demonstrate fairly different COVID-19 conditions, particularly with regard to the timing of the spread of the virus. With comparable resources at hand, insights from countries with similar profiles provide valuable information for effective pandemic management efforts in the future.

Keywords: *ASEAN profiles, Clustering, COVID-19, Demographic Profiles, Pandemic management*

Shallot Growth Stage Monitoring with Multispectral Imagery using MobileNetV2

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ABSTRACT

Shallots are a strategic horticultural commodity, playing a pivotal role in the Indonesian food supply as a staple food. It is anticipated that the demand for shallots will increase in the future. However, the production level is still insufficient, so it is necessary to import shallots. The success of the production process is contingent upon the monitoring of the crops by the farmers themselves. The current manual approach to this process has proven to be inadequate, necessitating the development of agricultural technology. Remote sensing has the potential to become a valuable technology in agriculture and represents a feasible methodology for accurate land mapping. However, its application in Indonesia remains constrained by the heterogeneity of the mapped areas and the quality of the images obtained. Furthermore, Indonesia's agricultural land is extensive and heterogeneous. This research presents the use of multispectral cameras for the precise monitoring and mapping of agricultural land. The imaging system employs a multispectral camera attached to a UAV to perform land mapping. RGB imagery and vegetation indices, including NDVI, NDRE, and OSAVI, are calculated to ascertain the crop status within a single shallot planting period. The shallot growth stage prediction is proposed using MobileNetV2 architecture. The proposed method demonstrated an accuracy of 84.78% using RGB and 44.78% using a combination of vegetation indices.

Keywords : Shallot, Unmanned Aerial Vehicle, Multispectral Imagery, Remote Sensing, MobileNetV2

GRADUATE SCHOOL STUDENT DECISION SUPPORT SYSTEM FOR GRADUATION: A DEVELOPMENT USING NAIVE BAYES ALGORITHM

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ABSTRACT

This study was directed towards the development of Graduate School Student Decision Support System for Graduation: A Development using Naive Bayes Algorithm for Guimaras State College in Mclain, Buenavista, Guimaras, Philippines. The software was provided with years' worth of data that include student profiles, masteral profile, comprehensive exam, grades, training, testing, result, f-measure, graph and most importantly grades records as main input. The aforementioned data were gathered, processed, and analyzed in order to come up with reliable forecasts and efficient management of graduate school students records. To realize its primary goal, Bayesian Algorithm was integrated in the system as an enabler for its data analysis component which will forecast the graduation probability of graduate school students. As for the system's performance, the proponent used F-measure to evaluate the accuracy of the system's forecasting capability against actual students performance in subjects and grades. Moreover, the system was evaluated based on the ISO 25010 International Quality Standards for computer software. The result revealed that the system highly conformed to international standards in terms of its functionality suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability. During the accuracy test, the F-Measure value using the harmonic mean of precision and recall is 77.67% which implies that the accuracy of the forecasting capability of the system was Medium to High. Meanwhile, an over-all mean of 4.84 established that the system has "excellent" quality based on the ISO 25010 International Standards.

Keywords : . Grades, F-measure, Forecasting, Decision Support System

Rice Seed Quality Analysis: A Decision Support System using Image Processing Techniques

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ABSTRACT

This study is directed towards the development of the Rice Seed Quality Analysis: A Decision Support System using Image Processing Techniques for the Rice Processing Center situated in Cabano, San Lorenzo, Guimaras, Philippines. The software was provided with sufficient data that includes the rice seed's appearance, minimum width and length, maximum width and length, and the rice seed's average area. The data mentioned above were gathered, processed, and analyzed for the system to generate accurate reports of the rice seed quality. To perform its goal, Image Processing Techniques were integrated into the system as an enabler for its data analysis component, which will generate a report about the quality of the rice seed sample. The system was evaluated based on ISO 25010 International Quality Standards for computer software. The results revealed that the system had met the requirements of the international standards in terms of its functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability, with an overall mean of 4.67 which establishes that the system has "excellent" quality based on the ISO 25010 International Standards.

Keywords : . Decision Support System, Image Processing Techniques, Rice Seeds,

Development of Research Instruments for Implementation Analysis and Evaluation Effectiveness of Clinical Pharmacy Services and Need Identifying for Telepharmacy Services

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ABSTRACT

Pharmaceutical services must always be subject to continuous quality control (through monitoring and assessing services). There are 4 indicators used in measuring effectiveness, namely input, process, results (output) and productivity. One of the productivity of pharmaceutical services is the application of telepharmacy services, It has become a need in Indonesia since the Covid-19 pandemic. Therefore, it is necessary to develop research instruments for implementation analysis and evaluation of the effectiveness of clinical pharmacy services as well as identifying the need for telepharmacy services so that the implementation of telepharmacy services is right on target. The research method used is qualitative and quantitative research to obtain valid and reliable draft question items in the research instrument. The stages of instrument development carried out were literature study, expert panel, validity and reliability testing and instrument testing. The research results showed that at the expert panel stage using CVR-Lawshe analysis, all instrument question items 1 and 2 were valid because they had a CVR value > 0.56 , while in instrument 3 there were 17 answer choices that were invalid because the CVR value was < 0.56 . Based on the i-CVI value for all instruments > 0.80 . Therefore, it can be concluded that the question items in all instruments are relevant to the research objectives and have very high validity. At the validity and reliability testing stage, the Alpha Cronbach value of instrument 2 on the topic of compliance questions was 0.709 and the topic of questions on appropriateness of drug use was 0.866, the Alpha Cronbach value of instrument 3 was 0.951. Therefore, it can be concluded that the reliability of instrument 2 is high and instrument 3 is very good. At the trial stage, all instruments can be used well judging from the level of respondents' understanding of the questions without any direction in answering the questions. Based on the research results, it can be concluded that all research instruments are valid and reliable and can be used in research.

Keywords: Instruments, Clinical Pharmacy, Telepharmacy Service

Grouping Provinces in Indonesia Based on Factors Affecting the Unemployment Rate Using K-Means Clustering.

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ABSTRACT

Indonesia ranks first in Southeast Asia with the highest unemployment rate in 2022. The unemployment rate in each province of Indonesia has a different amount. The similarity of characteristics becomes the basis in grouping a region so that it can use cluster analysis. This research aims to optimally group provinces in Indonesia using K-Means Clustering based on factors that influence the unemployment rate. The variance ratio analysis method is used to determine the best cluster as seen from the smallest variance ratio value among all clusters. This data uses secondary data from the official website of BPS and the Ministry of Manpower of the Republic of Indonesia in 2022. The variables used in this study consist of Open Unemployment Rate, Human Development Index, Labour Force Participation Rate, Domestic Investment, Provincial Minimum Wage and Gross Regional Domestic Product adjusted to 34 provinces in Indonesia. The optimal clustering result is the formation of two clusters with a variance ratio value of 1.73%. The results of the clustering process using the K-Means Clustering method are cluster 1 has 28 members, namely Aceh, North Sumatra, West Sumatra, Jambi, South Sumatra, Bengkulu, Lampung, Bangka Belitung Islands, Riau Islands, Central Java, Yogyakarta, Bali, NTB, NTT, West Kalimantan, Central Kalimantan, South Kalimantan, North Kalimantan, North Sulawesi, Central Sulawesi, Southeast Sulawesi, Gorontalo, West Sulawesi, Maluku, North Maluku, West Papua and Papua. Cluster 2 has six members, namely Riau, DKI Jakarta, West Java, East Java, Banten and East Kalimantan. Provinces in cluster 1 need to be considered and prioritised in development and creating jobs in order to reduce the unemployment rate in Indonesia.

Keywords : Unemployment, Provinces in Indonesia, K-Means Clustering, Variance Ratio

Nonparametric Regression with Spline Truncated Approach in Modeling Labor Force Participation Rate in West Java Province.

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ABSTRACT

The Labor Force Participation Rate is an indicator of the involvement of human resources in the country's development. In 2022, West Java Province is the province with the largest working-age population in Indonesia. In August 2022, the Labor Force Participation Rate in West Java Province reached 66.15% but was still below the national Labor Force Participation Rate which reached 68.63%. The low Labor Force Participation Rate can lead to low community welfare and hamper the development of the region. The method used is truncated spline nonparametric regression which is flexible because in the spline there are knot points that indicate changes in the surrounding data pattern. This study aims to model and analyze the factors that influence the Labor Force Participation Rate in West Java Province using spline truncated nonparametric regression. The data used is secondary data taken from the publication of BPS West Java Province and Open Data Jabar website. The variables used are Labor Force Participation Rate, percentage of poor people, minimum wage, Human Development Index, and GRDP. The results of this study indicate that the best model for the Labor Force Participation Rate in West Java Province in 2022 is a spline truncated nonparametric regression model with a knot combination (4,4,4,4) with a minimum GCV value of 1.49 and a coefficient of determination of 99.16%. Based on simultaneous and partial parameter testing, the percentage of poor people, minimum wage, Human Development Index, and GRDP affect the Labor Force Participation Rate in West Java Province.

Keywords : Truncated Spline Nonparametric Regression, Knot Points, Labor Force Participation Rate

Transformation Towards Sustainable Natural Sciences Based On Technology

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Abstract

The growing challenges of environmental sustainability demand innovative approaches where technology plays a crucial role. This study explores the integration of advanced technologies, such as artificial intelligence (AI) and Internet of Things (IoT), in building sustainable urban ecosystems. The primary focus is on creating smart cities where nature and technology coexist harmoniously to reduce carbon emissions and promote energy efficiency[1]. By incorporating renewable energy solutions, automated environmental monitoring, and data-driven decision-making, cities can achieve sustainability goals while improving the quality of life for residents. This research highlights case studies of technology-driven urban solutions and emphasizes the importance of fostering collaboration between environmental scientists and engineers. Through the transformation of natural science practices with technological advancements, the pathway to greener and more sustainable futures becomes clearer. This abstract contributes to the conversation around the future of sustainable development and provides insights into how technological innovations can bridge the gap between environmental goals and modern urban demands.

Keywords : Smart Cities, Sustainability, Artificial Intelligence (AI), Internet of Things (IoT), Data-Driven Decision Making

CODE : OP76
ROOM : 06

Enhancement Surface Properties of Activated Carbon by Thermal Air Oxidation Treatment for Pb²⁺ Adsorbent

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Abstract

Heavy metals are non-biodegradable and tend to accumulate in living beings, with most of them being carcinogenic. Activated carbon (AC) is a potential adsorbent used in water treatment of industrial effluent contaminated with heavy metal ions, such as Pb²⁺ ions. However, the poor adsorption performance of AC towards heavy metal ions needs to be improved. The thermal air oxidation process was applied to enhance the adsorption capacity of activated carbon (AC). The purpose of this study is to investigate the thermal air oxidation effects on the increases of adsorption capacity of Pb²⁺. The AC was modified through thermal oxidation by heating it in a muffle furnace. The change of physicochemical parameters of modified activated carbon were analyzed using Boehm titration. Also, the parameters of isotherm and kinetic was determined on AC and air modified AC. The result shows the thermal air modified AC had a total oxygenated functional group of 491.07 µmol/g that is higher than untreated AC (34.79 µmol/g). The thermal air modified AC demonstrates 3 times higher than the non-treated AC. The adsorption parameter results show the non-treated AC and thermal air modified AC are classified as chemisorption on heterogeneous surfaces.

Keywords: Activated carbon, Thermal air oxidation, Water pollutant, Heavy metal ion, Pb²⁺.

THE MORPHOMETRIC BASED IDENTIFICATION OF SEXUAL DIMORPHISM OF *Nyctixalus margaritifer* FROGS AT SITU GUNUNG SUKABUMI

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Abstract

The *Nyctixalus margaritifer* frog is native species to Java, and its existence in nature is increasingly threatened. This species has very limited distribution in West Java, and no information has been obtained on its sexual dimorphism. This research was aimed to explore the presence of *N. margaritifer* in Situ Gunung area in the Gunung Gede Pangrango National Park, and to analyze sexual dimorphism based on morphometrics. The study was held in September-December 2023, data collected using the Visual Encounter Survei method. The coordinate of individual frogs recorded using GPSMAP. The data of 23 morphometric characters were then analyzed using the non parametric Mann-Whitney. The Principal Component Analysis was carried out to determine characters that form group structures. The data were tested using the Bartlett test of homogeneity variance, and declared significant at a P value <0.05. The statistical analysis was performed using R software. We succeeded in finding 6 males and 10 females *N. margaritifer* in 4.34 hectare home range. They were found at 10-80 cm height from the ground, attached to the leaves or stems of fern *Shillaginella* sp., *taro Homalomena* sp., *Cyrtandra* sp., and *Laportea* sp. The frogs defensive behavior was observed, they stop moving and making sounds, press their limbs on the perches, remains still, and appears dead. The results of the non-parametric analysis obtained three characters that differentiate sex, with significant value $P < 0.05$, namely snout vent length (SVL), third toe length (T3), and wrist width (Lt.M). The results of PCA scatter plot showed that the three characters do not contribute maximally as separators, while the K mean cluster analysis produces clustering of SVL, T3, and Lt.M, but it was not strong enough to be used as a sex distinguishing characters.

Keywords: Frogs, Morphometrics, *Nyctixalus margaritifer*, Sexual dimorphism,

**CHARACTERISTICS OF RICE HUSK BRIQUETTE CHARCOAL IN
TANAH HARAPAN VILLAGE, PALOLO DISTRICT, SIGI REGENCY
USING RED DRAGON FRUIT PEEL POWDER ADHESIVE (*Hylocereus polyrhizus*)**

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Abstract

Rice husk is an agricultural waste that contains lignin ($C_9H_{10}O_3$)(CH_3O) by 20-25%, cellulose ($C_6H_{10}O_5$) by 45-50%, and hemicellulose ($C_5H_8O_4$) by 15-20%. These contents are the main components that must be present in charcoal briquette raw materials. Dragon fruit peel is used as an adhesive because it is known to contain 20.1% pectin, which functions to bind one or more materials. This study aims to identify the characteristics and the best concentration of adhesive used in making charcoal briquettes. The percentage of adhesive used was 15%, 20%, and 25%. The research method used is experimental, by conducting experiments, observations, data collection, and data analysis. The best results of the briquettes obtained in this study were at a concentration of 25%, with a density of 0.6940 g/cm^3 , moisture content of 4.52%, ash content of 7.54%, compressive strength of 3.6452 kg/cm^2 , calorific value of 4,324.47 cal/g, volatile substance content of 10.68%, and bound carbon content of 81.78%. This research is expected to contribute to the development of more efficient and environmentally friendly charcoal briquettes.

Keywords : Rice Husk, Charcoal Briquettes, Dragon Fruit Peel, Adhesive Concentration

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ROOM: 06**

LICHEN PSEUDOCYPHELLARIA MAPPING IN CIBODAS BOTANICAL GARDEN CONSERVATION PARK

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ABSTRACT

In Indonesia, research on Lichen inventory is very limited. Some Lichen families enter critical levels such as *Lobariaceae*. The study was conducted from June 2013 to June 2014 with the aim to: 1) record and collect the *Lobariaceae* family as rare lichen, 2) analyze population data of the *Lobariaceae* family, 3) inform the growth and development of *Lobariaceae* family transplants. Lichen mapping using exploration methods. . The identification of lichen collections from the mapping results was carried out to the species stage using the determination key of Galloway et al. (2001). In this study, the genus *Pseudocyphellaria* was obtained. consists of four species namely *Pseudocyphellaria* sp., *P. aurata*, *P. crocata* and *P. argyracea*. The total number of *Pseudocyphellaria* thallus is 340 consisting of *Pseudocyphellaria* sp, *P. aurata*, *P. crocata* and *P. argyracea*. *Pseudocyphellaria* sp was found in 2 blocks, namely blocks IA and IIA in 2 trees with a total LPBP of 9.4 m². *P. aurata* was found in 2 blocks, namely IA and VIC blocks on 2 trees with a total LPBP of 3.4 m². *P. crocata* was found in 6 blocks namely IA, IK, IVD, IVE, VIB and VIC blocks on 6 trees with a total LPBP of 26.22 m². *P. argyracea* was found in 2 blocks, namely IK and IID blocks on 3 trees with a total LPBP of 3.84 m². *P. argyracea* consists of 10 thalluses (2.95%) For one year *Pseudocyphellaria* transplants showed no growth in terms of increased talus cover. The development that occurs is that the transplant is able to attach well to the substrate. It is thought that it takes longer for the thallus of *Pseudocyphellaria* to adapt well to the substrate in order to grow and develop. The development of transplants in *P. crocata* in the tenth month appears apothesium.

Keywords: *Lichen, Pseudocyphellaria, Lobariaceae, Cibodas botanical garden, Conservation*

Macroalgae Ecology Index in Leuweung Sancang Nature Reserve Area

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Abstract

One of the many marine organisms in Indonesia is *macroalgae*. This study aims to determine the diversity, dominance, and equity found in the Leuweung Sancang Nature Reserve Area. This study used a survey method with data return using the quadrant transect method. The results showed that macroalgae species found in the Leuweung Sancang Nature Reserve Area amounted to 11 species including *Turbinaria ornate*, *Padina australis*, *Sargasum aquifolium*, *Sargasum polycystum*, *Ulva reticulate*, *Chaetomorpha crassa*, *Ulva lactuca*, *Boodlea composite*, *Amphiroa rigida*, *Amphiroa fragilissima*, and *Glacilaria coronopifolia*. The *macroalgae* diversity index value in the Leuweung Sancang Nature Reserve Area is included in the fair category, the dominance index value is included in the low category and the evenness index value is included in the low category.

Keywords : *Macroalgae, Ecology Index, Diversity, Dominance, Evenness, Leuweung Sancang.*

Carbon Footprint in the Environment of Institut Teknologi Indonesia (ITI), South Tangerang

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ABSTRACT

Carbon emissions are one of the main causes of climate change and are a concern for society. The existence of buildings such as universities has a very significant impact on the environment. This is due to the activities carried out in universities and their operational activities. This study aims to determine the amount of carbon emissions generated by the Indonesian Institute of Technology. Based on the calculation methodology of scopes 2 and 3 according to The Greenhouse Gas Protocol and descriptive analysis on one aspect of Green Building GBCI, the results showed that the carbon footprint value generated from activities at the Indonesian Institute of Technology on the use of electricity consumption carbon footprint value of 141,50 tons of CO₂, the use of LPG carbon footprint value of 2,488 tons of CO₂, and transportation of student vehicles 102,663 tons.CO₂. So that the total carbon footprint value at the Indonesian Institute of Technology is 246,651 tons of CO₂. Some efforts can be made such as using air conditioning with a predetermined temperature, using public transportation or walking, planting trees periodically, and implementing a car- free system in the area of the Indonesian Institute of Technology.

Keywords: *Carbon Footprint, Greenhouse Gas Emissions, The Greenhouse Gas Protocol, Green Building, Institut Teknologi Indonesia*

Enhanced Performance of lignin-derived Carbon Mesoporous using Manganese oxide for supercapacitor electrodes)

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Abstract

This study explores porous carbon derived from lignin by means of a template that employs surfactants as agents for forming pores, with the aim of achieving mesoporous structures. Despite lignin derived from biomass having emerged as a promising source of carbon precursor, the resulting lignin-derived carbon typically exhibits low capacitance. The objective of this study is to enhance the electrochemical characteristics of supercapacitors that are composed of carbon-based materials and manganese oxide. The present study employed a combination of Pluronic F-127 and manganese nitrate to modify lignin-derived carbon-based supercapacitors. The process involved carbonizing the composite to a temperature of 900°C, resulting in the production of carbon/manganese oxide derived from lignin. In order to comprehend the properties of the material, various analytical techniques were employed. To understand the material characteristic, including Fourier transform infrared (FTIR) spectroscopy, scanning electron microscope-energy dispersive X-ray (SEM-EDX) mapping, X-ray diffraction (XRD), and N₂-sorption analysis. All characterization confirmed the success of the composite synthesis. The present study reports on the surface area and mean pore size of lignin-derived carbon modified with manganese oxide. The results indicate that the highest surface area of approximately 1425 m²/g and mean pore size of 3.14 nm was observed for the modified lignin-derived carbon. Furthermore, the addition of 20% manganese oxide resulted in a surface area of 922 m²/g and a pore size of 5.23 nm. The addition of manganese at a weight percentage of 20% resulted in the highest capacitance value of 345 F/g

Keywords: Lignin, Mesoporous carbon, Manganese oxide, Supercapacitor

Students' Entrepreneurship Interest In Learning Integrated Chemo-Entrepreneurship Oriented Science Projects In Automotive Expertise Program At Vocational School Center Of Excellence

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The Center for Excellence Vocational School program has the goal of producing graduates who are absorbed in the world of work, as well as becoming entrepreneurs. Supporting this, this study aims to describe the condition of students' interest in entrepreneurship after being given metal plating subject matter in learning the IPAS project packaged in the form of chemoentrepreneurship-oriented projectbased learning (CEP). The subjects in this study were 42 students of the Automotive Expertise Program at SMK Negeri 3 Palu. The instrument used in this study is a non-test instrument in the form of a student entrepreneurship interest questionnaire. The data analysis technique used in this research is quantitative descriptive analysis. The results of this study indicate that the student's entrepreneurial interest, in the application of chemoentrepreneurship-oriented IPAS learning project learning, the percentage results are 86.13% classified as very high criteria.

Keywords: *project-based learning (PJBL), chemo-entrepreneurship (CEP), interest in entrepreneurship*

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In Vitro Anticholesterol Activity Test And Identification Of Metabolites Compounds Of Tin Leaf Extract (*Ficus carica L.*) Using LC-HRMS

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Abstrack

Tin Plant is one of the plants used as traditional medicine in Indonesia. The fig leaves contain flavonoids, terpenoids and steroids that have the potential to lower cholesterol levels. If cholesterol levels exceed normal limits, it can cause blockages in blood vessels and trigger degenerative diseases such as hypertension, heart attacks, strokes and others. Flavonoids can erode cholesterol on the coronary walls and have a mechanism in inhibiting the work of the HMG-CoA reductase enzyme so that it can lower cholesterol levels. The use of natural ingredients for the treatment and prevention of disease is considered safer than using synthetic ingredients. This study aims to determine the activity of fig leaf extract and fractions (*Ficus carica L.*) in lowering cholesterol levels and identifying metabolite compounds contained in fig leaf extract (*Ficus carica L.*). The methods used in this study include preparation of tin leaf samples, making simple drugs, maceration extraction, measuring air content, phytochemical screening, fractionation using n-hexane, ethyl acetate, n-butanol solvents, in vitro anticholesterol activity test using the Lieberman-Burchard method, identification of active compounds using LC-HRMS (Liquid Chromatography High Resolution–Mass Spectrometry) and data analysis. The results showed that the 70% ethanol extract of tin leaves had an EC₅₀ value of 26.98 µg/mL while the EC₅₀ values of the air, n-hexane, ethyl acetate, and butanol fractions were 253.97; 98.76; 143.20 and 108.24 µg/mL. Simvastatin as a positive control is also active as an anti-cholesterol with an EC₅₀ value of 6.89 µg/mL Based on the results of the study, 70% ethanol extract has the highest anticholesterol activity compared to other fractions. Meanwhile, the n-hexane fraction showed the highest anticholesterol activity compared to other fractions. The results of the identification of 70% ethanol extract of tin leaves showed that there were various metabolite compounds classified as alkaloids, flavonoids, phenols, tannins, terpenoids, steroids, saponins, amino acids, fatty acids, esters, hydrocarbons produced and amides.

Keywords: Tin leaves, Anticholesterol, Liebermann Burchard Method, Flavonoids, EC₅₀, LC-HRMS.

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ROOM : 06

The environmental friendly in artisanal and small-scale gold mining practices, is it possible?: a systematic review

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ABSTRACT

The Artisanal Small-Scale Gold Mining (ASGM) Sector with the use of mercury or cyanide as a chemical for gold processing still faces various and complicated problems. The aim of this study is to review the literature related to sustainable and environmentally friendly ASGM practices. The literature review used PRISMA framework within scientific databases searched documents. 192 (one hundred and ninety-two) article papers published between 2004 and 2024 were selected for further analysis based on the inclusion and exclusion criteria. This study revealed that ASGM using cyanide during the process, with a good waste management, will be more environmental friendly. Gold processing using cyanide is expected to replace mercury which has been used for centuries and has been proven to pollute the environment and to harm the human health. Hopefully, the environmental friendly ASGM will sustain the environment and harmless to the human health as well as increasing the livelihood of the practioners.

Keywords: *Artisanal small-scale gold mining, Mercury, Cyanide, Gold processing, Sustainable development, Sustainable gold mining*

Antifungal Activity of Aloe Vera (*Aloe barbadensis* Miller) Peel Waste In Vitro and In Silico, and Identification of Compounds Using LC-MS/MS.

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ABSTRACT

Fungal infections, such as candidiasis, are common and are often caused by resistance due to repeated antifungal treatments. Bioactive compounds in aloe vera peel (*Aloe barbadensis* Miller), such as alkaloids, flavonoids, tannins, and saponin are known to have antifungal potential. This study aims to evaluate the antifungal activity of aloe vera peel extracts and fractions against the growth of *Candida albicans* through in vitro and in silico testing, as well as identify secondary metabolite compounds. The research methods include the preparation of simplisia, determination of moisture content by gravimetry, followed by maceration extraction using 96% ethanol as the solvent. The ethanol extract was then fractionated with n-hexane, ethyl acetate, and n-butanol. The antifungal test using the disk diffusion method, followed by the identification of secondary metabolite compounds through LC-MS/MS analysis, and an in silico test using the 6UEZ receptor. The in vitro results showed that the ethanol extract of aloe vera peel and its various fractions did not exhibit antifungal activity against the growth of *Candida albicans*. However, the LC-MS/MS analysis identified several secondary metabolites in the ethanol extract with potential antifungal activity, Decahydroquinoline, Nicotiflorin, Usnic acid, Hesperetin, and Pheophorbide A. In silico test results show that Asperglaucid has potential as an antifungal through the mechanism of inhibiting the protein lanosterol 14- α demethylase (6UEZ). With a Gibbs free energy of -9.2 kcal/mol which is lower than ketoconazole -9.1 kcal/mol, as well as fewer violations of Lipinski's rule and lower toxicity,

Keywords: *Aloe barbadensis* Miller, Antifungal, *Candida albicans*, LC-MS/MS, In Silico

Synthesis and Characterization of Carboxymethyl Cellulose (CMC) from Nipa Fronds of Kolaka and Its Application as a Solid Polymer Electrolyte Membrane

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ABSTRACT

Liquid electrolytes are a crucial component in lithium-ion batteries but are corrosive, volatile, and flammable. Therefore, solid polymer electrolytes (SPEs) are used to replace liquid electrolytes, which can be developed using modified cellulose. This study aimed to modify cellulose from Kolaka nipa fronds using a carboxymethylation reaction to produce carboxymethyl cellulose (CMC) and applied as a lithium-ion battery SPE. There were two main stages in modifying cellulose from nipa fronds: the alkalization and the etherification process. The SPE membranes were prepared using the casting solution technique, where the various weight percentages of lithium perchlorate (LiClO_4) were mixed to CMC and poly(vinyl alcohol) (PVA) (50/50). The evaluation of functional groups, ionic conductivity, crystallinity, and thermal stability was performed using FTIR, EIS, XRD, and TGA, respectively. The optimum condition was obtained by the 20wt-% glycerol addition, exhibited ionic conductivity of $7.16 \times 10^{-6} \text{ S cm}^{-1}$, tensile strength of 6.81 MPa, crystallinity index of 27.63 %, and decomposition temperature interval of 264-266°C, respectively. Based on the results, the CMC/PVA/ LiClO_4 shows potential as a solid polymer electrolyte with further modification.

Keywords : CMC, PVA, LiClO_4 , ionic conductivity, lithium-ion battery, polymer electrolyte membranes

LOW-INTERFERENCE NOREPINEPHRINE SIGNAL ON DOPAMINE DETECTION USING NAFION-COATED BORON DOPED DIAMOND ELECTRODES

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Abstract

The detection of dopamine in the presence of norepinephrine using nafion-coated boron doped diamond (Nafion-BDD) electrodes was presented. An increase current signal for dopamine could be observed at around 0.75 V using Nafion-BDD, while a change in the current signal of norepinephrine that appears at similar potential was not observed. This might be due to electronegativity of the norepinephrine that is not positive enough to be attracted towards the nafion membrane, albeit neutral enough to pass through the membrane and undergo electrochemical oxidation. An optimization process including accumulation time of dopamine inside the nafion layer, solution of the pH, and nafion thickness was conducted to exploit the difference electrochemical behavior between those two catecholamines at the Nafion-BDD. Using an accumulation time of 300 s, solution pH of 7, and nafion thickness of 1.1 μm , dopamine's LOD was found to be 0.966 μM . Low-interference signal of norepinephrine to the dopamine could be observed with an excellent %recovery of dopamine in 5% range when the concentration of norepinephrine was 10 times lower compared to dopamine concentration.

Keywords: BDD; Dopamine; Nafion; Nafion-coated BDD; Norepinephrin

Cost, Complexity, and Efficacy of Prompt Engineering Techniques for Large Language Models

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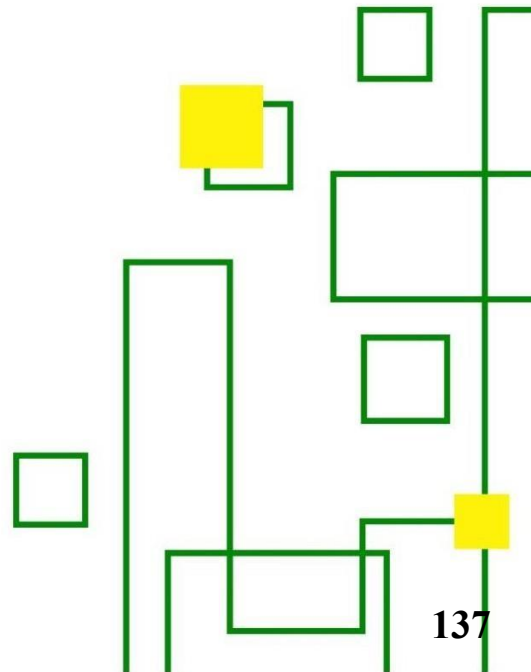
ABSTRACT

This research investigates the impact of various prompt engineering techniques on the length, cost, complexity, and accuracy of responses from large language models (LLMs). By comparing direct prompting with zero shot, few-shot, and chain-of-thought (CoT) methods on tasks like GSM8K and creative writing, I analyze the trade offs between token usage and response quality. Results show that while zero-shot CoT prompting is highly effective and cost-efficient, other methods like Least-to-Most and Tree-of-Thought add significant length and complexity without proportional accuracy gains. Additionally, I discuss the financial implications, finding that GPT-4's unique pricing structure narrows the cost difference between manual/few-shot and zeroshot methods. Complexity analysis reveals that more intricate prompts often lead to convoluted outputs, challenging human review and implementation. Our findings guide the selection of prompt engineering strategies to optimize both performance and resource utilization.

Keywords : GPT LLM Artificial intelligence Machine learning

CODE : OP131
ROOM : 06

ROOM 7
(Online Breakroom 2)



Isolation of Stigmastane-Steroids Fatty Acid Ester from the Stembark of *Aglaia cucullata* and Their Cytotoxic Activity.

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ABSTRACT

Indonesia is known as a country with the highest biodiversity in the world. One of Indonesia's native plants, recognized for producing a variety of secondary metabolites with highly diverse activities, is the genus *Aglaia*. *Aglaia cucullata* is a unique member of this genus due to its ability to thrive in mangrove forest ecosystems. This study began with the collection of *A. cucullata* bark samples from the banks of the Manggar River, Balikpapan, East Kalimantan, followed by drying and grinding. A total of 3.5 kg of dried *A. cucullata* bark powder was macerated with ethanol and successively partitioned with *n*-hexane, ethyl acetate, and *n*-butanol. The *n*-hexane fraction yielded 64 g, containing steroids as indicated by significant results in phytochemical tests. Further isolation and purification of the *n*-hexane fraction using various chromatographic methods, including vacuum liquid chromatography, open column chromatography, and thin-layer chromatography, successfully produced two steroid compounds (1 and 2), weighing 74.3 mg and 321 mg respectively, both in the form of colorless oils. The chemical structures of these two compounds were determined by various spectroscopic methods and identified as 3-sitosteryl palmitate (1) and 3- β -sitosteryl oleate (2). Both were reported for the first time to be present in the bark of *A. cucullata*. Cytotoxicity testing of these two compounds showed that both exhibited low activity against MCF-7 breast cancer cells, B16-F10 melanoma skin cancer cells, and normal kidney CV-1 cells, with IC₅₀ values > 500 μ M compared to the positive control.

Keywords : *Aglaia*, *Aglaia cucullata*, stigmastane-steroid, chromatography, cytotoxic activity

Fabrication of Lithium-ion Battery Solid Polymer Electrolyte Membrane for prepared by Citric Acid-crosslinked Carboxymethyl cellulose (CMC)/Poly(vinyl) alcohol (PVA)

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ABSTRACT

Achieving high performance of lithium-ion batteries solid polymer electrolyte membranes is challenging. This study aims to develop solid polymer electrolyte membrane from citric acid-crosslinked carboxymethyl cellulose / (poly (vinyl alcohol) (CMC/PVA). The membranes were prepared by using a casting solution technique, where a selected cross-linked CMC/polyvinyl alcohol (PVA) with ratio of 50/50 was mixed to various weight percentages of lithium perchlorate (LiClO₄). at the incorporation of 25 wt-% LiClO₄ to citric acid-crosslinked CMC/PVA (50/50) where it exhibited an ionic conductivity of 1.25×10^{-4} S/cm, a crystallinity index of 59.05%, and thermal stability interval of 272.09 - 285.75°C. Based on results, the optimum condition of SPE membrane in this work fulfills the standard requirement of lithium-ion batteries solid polymer electrolyte membrane.

Keywords : CMC, Crosslinked, Ionic conductivity, Lithium-ion battery, Oil palm fronds, PVA, Solid polymer electrolyte membrane.

Extraction of Carrageenan from Red Algae (*Eucheuma cottonii*) using 0.1 N KOH Solvent

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ABSTRACT

Carrageenan is a type of polysaccharide from seaweed that has high economic value. The abundance of *eucheuma cottonii* in Indonesia has the potential to increase carrageenan production. The purpose of this research was to examine the characteristics of carrageenan from red algae (*eucheuma cottonii*) using FTIR and SEM instruments. The method used was extraction using 0.1 N KOH solvent. FTIR analysis showed the presence of galactose-4- sulfate functional groups in the 846-927 cm⁻¹ spectrum which identified the kappa type. Microstructure characteristics of carrageenan using SEM 2000x magnification shows a rough surface and irregular clumps.

Keywords : Carrageenan, *Eucheuma cottonii*, FT-IR, Potassium Hydroxide, and SEM

Stakeholder Perspectives on Sustainable Lake Management: Case Studies from Indonesia

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ABSTRACT

Lakes in Indonesia are vital for ecological balance and socio-economic development, providing essential ecosystem services, supporting livelihoods, and contributing to economic activities. However, they face significant challenges such as pollution, sedimentation, and biodiversity loss. This study focuses on Lake Batur in Bali, highlighting the importance of stakeholder engagement in sustainable lake management. By identifying and analyzing the roles of various stakeholders, including local communities, government agencies, NGOs, and the private sector, the research aims to promote collaborative management practices. The study employs a comprehensive stakeholder identification and analysis approach, utilizing both secondary and primary data sources. Key findings emphasize the need for clear regulations, active community involvement, sustainable economic alternatives, and robust infrastructure to ensure the long-term sustainability of Lake Batur. The insights gained provide a foundation for developing an effective institutional framework that balances ecological preservation with socio-economic development.

Keywords : sustainable lake management, stakeholder analysis, environmental management

CODE : OP91
ROOM : 07

Impact of Accreditation Certification on Improving Healthcare Quality and Patient Safety at Johns Hopkins Aramco Healthcare

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Abstract

Accreditation is a widely recognized tool for improving healthcare quality and patient safety by increasing adherence to standards and enhancing organizational performance. Johns Hopkins Aramco Healthcare (JHAH) has been accredited by the Joint Commission International (JCI) since 2002. This study evaluates the impact of accreditation on healthcare quality performance, specifically focusing on compliance with JCI's International Patient Safety Goals (IPSGs) over a 4- year period (2017–2020) and its correlation with patient safety and satisfaction.

Keywords : Accreditation, Healthcare Quality, Patient Safety, Patient Satisfaction

Rice Seed Quality Analysis: A Decision Support System using Image Processing Techniques

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Muhammad Baghery Rafsanjani.**

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ABSTRACT

Poly(δ -valerolactone) (PVL) is a polyester that can be produced through the ring-opening polymerization reaction of δ -valerolactone (δ -VL) using a metal catalyst such as bis(β -diketonate)Zr complex. PVL has superior properties such as biocompatibility, low melting point, controlled biodegradation rate, permeability, and flexibility. These superior properties make it as an attractive material for use in a variety of applications, including drug delivery systems, artificial implants, scaffolds, tissue engineering, medical devices, and biodegradable packaging. This study aims to explore the use of bis(β -diketonate)Zr complex catalyst in the ring-opening polymerization (ROP) of δ -VL. This catalyst has stable properties against water vapor and air so that it is not easily decomposed or undergoes chemical changes when exposed to moisture or oxygen from the air. This provides several advantages in its use and handling, especially in tropical climates, which usually have high humidity. The results of chemical and thermal property analysis showed that PVL had been successfully synthesized using bis(β -diketonate)Zr catalyst and has a lot of potential for use in biomedicine, like in drug delivery systems.

Keywords : . bis(β -diketonate)Zr, δ -valerolactone, Poly(δ -valerolactone), and drug delivery systems,

Folic acid conjugated poly-L-arginine grafted mesoporous silica nanoparticles as Doxorubicin carriers.

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ABSTRACT

Targeted cancer therapy harnessing nanomaterials is progressing rapidly and offering significant potential for improving therapeutic outcomes. Mesoporous silica nanoparticles functionalized with poly-L-arginine (PLR) and folic acid have emerged as powerful vectors for enhanced cellular uptake and specificity due to its high affinity for overexpressed folate α receptors on cancer cells. In this study, the MSN-PLR-folate system was chemically synthesized to facilitate the targeted delivery of the chemotherapeutic agent Doxorubicin. The drug release profile was evaluated through in vitro kinetic assays and its diffusion mechanism was elucidated via kinetic models. These findings underscore the potential of MSN-PLR-folate nanocarriers as an effective strategy for killing tumor cells.

Keywords : Doxorubicin delivery, Folic acid, Mesoporous silica nanoparticles, Poly-L-arginine

Anti-inflammatory Activity of Vetiver Extract (*Vetiveria zizanoides* L.) and Active Compound Identification using GC – MS In Vitro and In Silico”.

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ABSTRACT

Vetiver (*Vetiveria zizanoides* L.) has various benefits such as aromatherapy, insect repellent, cosmetics, and traditional anti-inflammatory drugs especially to treat pain due to lack of oral and dental health. With dental health issue being quite high in Indonesia, the use of vetiver boiled water can be a safe and effective alternative in treating dental pain for people who do not have access to dental health services. This research aims to determine anti – inflammatory activity, identify secondary metabolite compounds, and determine the linkage of COX – 2 enzyme in vetiver originating from Wonosobo Regency, Central Java. This research methods involved making a thick vetiver extract through maceration using ethanol (3 x 24 hours), fractionation using liquid – liquid extraction (*n*-hexane, ethyl acetate, and *n*-butanol), phytochemical screening, determining anti – inflammatory activity of vetiver extract using protein denaturation inhibition method measured by UV – Vis spectrophotometer, identification of secondary metabolite compounds, and ending with molecular docking of active compounds against COX – 2 enzyme which appears due to inflammation. The result showed that the ethanol extract with 11,02% yield contained flavonoids, alkaloids (Dragendorf and Wagner), triterpenes, also phenolics, the anti – inflammatory activity of ethanol extract was greater with a lower IC₅₀ value (24,48 µg/mL) compared to diclofenac sodium as positive control (31,88 µg/mL) with a very strong anti – inflammatory category. 83,15% of secondary metabolite compounds were identified as sesquiterpenes such as oplopanone (2,85%), α – isonootkatol (3,04%), khusimol (6,87%), isovalencenol (4,91%), khusenic acid (13,56%), dan valerenic acid (2,78%) which has potential as anti - inflammatory. α -isonootkatol has the smallest binding energy value (–7,7 kcal/mol) linked in silico to COX–2 enzyme compared to diclofenac sodium as positive control (–7,3 kcal/mol).

Keywords : anti-inflammatory, COX –2 enzyme, secondary metabolites, traditional medicine, vetiver

The Use of Anthocyanin from Purple Trumpet Flower Extract as Acid-Base Indicator

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ABSTRACT

Anthocyanin is one of the compounds found in purple trumpet flowers. This compound is a natural pigment that is sensitive to changes in pH, so it has the potential to be used as a natural acid-base indicator that can replace synthetic indicators that are expensive and not environmentally friendly. This study aims to explore the use of anthocyanins from purple trumpet flowers (*Ruellia tuberosa* L.) as natural acid-base indicators. This research begins with an extraction process using a gradual maceration method with n-hexane, ethyl acetate, and 70% ethanol solvents. The extract of purple trumpet flower (Ex.TU) obtained was tested qualitatively for the presence of anthocyanins by adding strong acid (HCl) and strong base (NaOH). While the quantitative test was carried out by UV-VIS spectrophotometric method of differential pH. The results showed that purple trumpet flower extract indicated the presence of anthocyanins with an average total anthocyanin content of 42,0811 mg/L. Based on the test results at various pH buffer solutions, Ex.TU showed significant color changes at various pH ranges, namely: red at strong acid pH (1-2), pink at weak acid pH (pH 3-5), colorless at pH 6-7, green at pH 9-12, and yellow at pH 13-14. The results of this study can be concluded that purple trumpet flowers contain anthocyanins and the resulting anthocyanin extract can be used as a safe, cheap, and environmentally friendly alternative acid-base indicator. Based on the color change in a certain pH range, Ex.TU can replace the use of phenolphthalein (PP) and methyl orange (MO) indicators. However, further research needs to be conducted to evaluate the reproducibility and stability of Ex.TU as an acid-base indicator.

Keywords : Anthocyanins, purple trumpet flower, acid-base indicator, extraction, pH trajectory

CODE : OP96
ROOM : 07

Characterization of Chemical Compounds, In Vitro and In Silico Analysis of Antidiabetic Activity of Kersen Leaf Extract (*Muntingia Calabura L.*)

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ABSTRACT

Diabetes mellitus (DM) is a metabolic disorder caused by a decline in pancreatic function in producing insulin, which affects the conversion of glucose into energy and reduces fat synthesis. One form of treatment for DM patients is the administration of alpha-glucosidase inhibitor drugs. However, oral medications available on the market can have side effects such as hypoglycemia, headaches, nausea, vomiting, and digestive disturbances. Therefore, alternative treatments are needed, one of which involves medicinal plants that can maintain low blood glucose levels and prevent high blood pressure. One such plant is the kersen plant (*Muntingia calabura L.*). Kersen leaves can lower fasting blood glucose level in diabetic mice. [1] The bioactive compounds found in kersen leaves include flavonoids, saponins, tannins, terpenoids, and phenolic compounds. [2] The objective of this research is to determine the antidiabetic activity of kersen leaf extract (*Muntingia calabura L.*), identify the bioactive compounds in kersen leaf extract, and predict the interaction between the bioactive compounds in kersen leaf extract and the alpha-glucosidase enzyme receptor. The methods used in this research include sample preparation of kersen leaves, production of simplicia, water content testing of simplicia, extraction through maceration using ethanol solvent with varying ethanol:water ratios, in vitro testing of alpha-glucosidase enzyme inhibition activity, compound identification with LC-MS/MS, prediction of inhibition activity of kersen leaf extract compounds using molecular docking, Lipinski's rule testing, and ADMET pharmacokinetics screening. This study revealed that the solvent composition with the best enzyme inhibition activity was the extract with 50% ethanol solvent, with an IC_{50} value of 156.3365 ppm, which was better than the 96% ethanol and water solvent compositions. Analysis with LC-MS/MS on the 50% ethanol extract of kersen leaves successfully identified twelve secondary metabolite compounds, primarily flavonoids and alkaloids. The prediction of alpha-glucosidase enzyme inhibition interaction, Lipinski's rule testing, and ADMET pharmacokinetics screening showed that the compounds gnaphaliin, apigenin 7,4'-dimethyl ether, and kaempferol 3,7,4'-trimethylether have the have potential to inhibit alpha-glucosidase enzyme.

Keywords : *Muntingia calabura L* Antidiabetic LC-MS/MS in silico molecular docking ADMET

CODE : OP97
ROOM : 07

ANALYSIS OF BIOACCUMULATION OF MERCURY (Hg) IN YUYU CRABS (*PARATHELPUSA CONVEXA*) IN THE JANJA RIVER, MALOMBA VILLAGE, DONDO DISTRICT, TOLITOLI REGENCY

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ABSTRACT

The phenomenon of environmental damage due to unlicensed gold mining activities harms aquatic ecosystems. Mercury (Hg) waste from the mining process has the potential to cause bioaccumulation in aquatic biota such as fish and crabs which can lead to mercury contamination in the human body through the food pyramid. The bioaccumulation process can also produce toxic organic compounds that are harmful to human health. Therefore, this research aims to determine whether bioaccumulation of mercury occurs in yuyu crabs in the Janja River, Malomba Village, Dondo District, Tolitoli Regency due to gold mining activities. The method used in the research is the calibration curve method with Cold Vapor Atomic Absorption Spectrophotometry (CV-AAS) analysis. The results obtained from this research are that bioaccumulation has occurred in yuyu crabs that live in the Janja River. The highest accumulated mercury metal levels were obtained at upstream locations with an average of 5.24 ppb, and the lowest was in the midstream is 1,53 ppb, and at the downstream location it has a mercury concentration of 4.53 ppb. So it shows that the mercury contamination in the yuyu crab samples is below the quality standard threshold Indonesian National Standard No. 7387 of 2009 for the heavy metal mercury in other types of crabs and crustaceans is 1.0 ppm or 1000 ppb.

Keywords :Mercury (Hg) Bioaccumulation Yuyu Crab Tolitoli

CHARACTERISTICS OF CHARCOAL BRIQUETTES FROM COCONUT SHELLS (*Cocos nucifera* L.) WITH RED JATROPHA LEAVES (*Jatropha gossypifolia*) AS ADHESIVES

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ABSTRACT

Coconut shells are biomass that contains a composition of substances that can be used as energy for making briquettes because they contain 26.60% cellulose, 27.70% pentose, and 29.40% lignin. This content indicates that coconut shells can be processed into charcoal which contains a lot of carbon. This study aims to identify the characteristics of charcoal briquettes from coconut shells with red jatropha leaves as an adhesive. The variation in the concentration of Adhesive: Coconut Shell Charcoal used in this study was 15%: 85%, 20%: 80% and 25%: 75%. This study uses an experimental method by conducting experiments, observing, collecting data, and analyzing data. The results obtained from this research were the best concentration of adhesives used in the manufacture of coconut shell charcoal briquettes, namely charcoal briquettes with an adhesive concentration of 15% with a density of 0.9236 g/cm³, a calorific value of 4,166.87 cal/g, moisture content of 8.26%, a volatile substance content of 10.65%, a bonded carbon content of 76.79%, compressive strength of 1.6059 kg/cm² and an ash content of 12.56%. Based on the results obtained in the research that has been carried out, red castor leaves can be used as an adhesive in making charcoal briquettes because they have met several characteristics of charcoal briquettes under (SNI-01-6235-2000) such as density, volatile substance content, and bound carbon content

Keywords : Coconut Shells Red Castor Leaves Charcoal Briquettes

CODE : OP99
ROOM : 07

RISPR/Cas12a-Based Electrochemical Biosensor Targeting *S. Scrofa* D-loop mtDNA for Food Adulteration Detection

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ABSTRACT

Halal food adulteration has become a global concern, particularly for health and religious issue. We propose a CRISPR/Cas12a-based electrochemical biosensor as a detection method by targeting the D-loop mtDNA of *S. scrofa* and optimizing each step in this development method. The gRNA sequence was designed based on the off-target hybridization value of 99.8 with the specific target of porcine mtDNA. The biotinylated ssDNA-MB probe was immobilized on electrodeposited-CeO₂/streptavidin-modified SPCE. The CRISPR/Cas12a complex with gRNA was then incubated on the electrode surface at 37°C. Optimization using Box-Behnken design obtained the BSA concentration, target incubation time, and target volume for each 0.1%, 30 minutes, and 2 µL, respectively. This procedure has successfully determined a detection limit of 28 fM and a quantification limit of 284 fM for the range 10 nM - 10 fM. This CRISPR-based biosensor can be application to determine the concentration of porcine mtDNA in raw and processed meat samples.

Keywords : *CRISPR/Cas12a, electrochemical biosensor, mtDNA D-Loop, pig (*Sus scrofa*), BBD (Box-Benhken Design).*

POTENTIAL OF RED DRAGON (*Hylocereanea polyrhizus*) POWDER CRACK AND EXTRACT AS NATURAL CORROSION INHIBITOR ON BLACK STEEL (Base plate) A36

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ABSTRACT

Corrosion of steel is a serious problem that causes significant economic losses. This study aims to evaluate the potential of red dragon fruit peel (*Hylocereanea polyrhizus*) powder and extract as a natural corrosion inhibitor on A36 black steel. The methods used include qualitative analysis of tannin compounds, measurement of weight loss, inhibition efficiency, determination of reaction order, and characterization of steel surface morphology using SEM. The results showed that the lowest corrosion rate and highest inhibition efficiency were obtained by immersing A36 steel for 12 days in 3% HCl corrosive media with the addition of 3 grams of inhibitor powder, achieving a corrosion rate of 0.0001 mg/cm².day and an inhibition efficiency of 99.48%. Meanwhile, for the concentrated extract, the lowest corrosion rate was obtained with the addition of 3 mL of extract, where the corrosion rate was recorded at 0.0002 mg/cm².day and the inhibition efficiency was 98.73%. Analysis showed that the corrosion rate followed 1st order for both inhibitors, with the lowest corrosion rate of 0.0001 mg/day using 9 grams of powder and 9 mL of concentrated extract. These data indicate that both forms of inhibitor from red dragon fruit peel can significantly inhibit the corrosion rate of A36 steel, which has potential for further applications in the field of material protection. This research is expected to pave the way for the development of environmentally friendly solutions in corrosion protection of metal materials, as well as encourage further research on the potential of other natural compounds as corrosion inhibitors.

Keywords: *Red Dragon Fruit Peel, A36 Steel Plate, Corrosion Rate, Inhibition Efficiency.*

**COMPARISON OF THE COMPOSITION OF CHARCOAL BRIQUETTES FROM
COCONUT SHELL MIXTURE (*Cocos nucifera* L.) AND DURIAN PEEL
(*Durio zibethinus* Murr) BY USING DURIAN SEED ADHESIVE**

Tria Tessalonica Potaka and Sitti Rahmawati

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Abstract

Durian peels contain carbon elements that have the potential to become bio energy but are only a by-product of agriculture and are underutilized. This study purpose to determine the best comparison between coconut shell charcoal briquette *mixtures* (*Cocos nucifera* L.) and durian peel (*Durio zibethinus* Murr) uses durian seed adhesive that can be used as an alternative fuel. Characteristics of charcoal briquettes mixed with coconut *shells* (*Cocos nucifera* L.) and durian peel (*Durio zibethinus* Murr) uses durian seed adhesives which include compressive strength, density, ash content, moisture content, bound carbon content, calorific value, volatile substance content and FTIR analysis. The variation in the composition of coconut shell charcoal and durian peel used is (60:20)%, (40:40)%, (20:60)% and the composition of the durian seed adhesive used is 20 grams. The results showed that there was a significant influence along with the increase in the composition of durian peel charcoal (*Durio zibethinus* Murr) on the coconut shell charcoal briquette mixture (*Cocos nucifera* L.) using durian seed adhesive so that the quality of the briquettes is better. The best briquette yield is obtained in the composition of the mixture (40:40)%. The results obtained were 6.43% moisture content, 6117 cal/g calorific value, 78.78% bound carbon content, 0.429 g/cm³ density, 10.72% ash content, 10.41% volatile substance content and 1.98 kg/cm² compressive firmness. FTIR analysis shows the functional groups contained in the briquettes.

Keywords : *Durian Peel, Charcoal Briquettes, Alternative Fuel, FTIR Analysis*

**CODE : OP102
ROOM : 07**

ABSTRACT ANALYSIS OF THE LEVEL OF PHARMACY STUDENTS' UNDERSTANDING OF ANTIBIOTIC RESISTANCE IN THE PATHOPHYSIOLOGY CLASS IN 2024

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ABSTRACT

Antibiotic resistance has become an increasingly urgent and complex global health problem according to the World Health Organization (WHO). The importance of understanding the factors that influence antibiotic resistance, as well as efforts to prevent it, is crucial in health education, including pharmacy students as one of the future health professionals. This study aims to evaluate the extent to which students understand the concept, causes, and impacts of antibiotic resistance. Through this semi-experimental study, pharmacy students' knowledge was checked before and after being given an intervention of providing material on antibiotic resistance. Based on the results of the answers of 143 respondents from the questionnaire in general, the level of understanding of pharmacy students before being given material on antibiotic resistance was in the sufficient category (60.71%). Then the level of understanding of pharmacy students after being given material on antibiotic resistance increased to the good category (73.81%) as seen from the number of correct answers being greater than before. This indicates an improvement in pharmacy students' understanding of antibiotic resistance.

Keywords: antibiotic resistance 1st, knowledge 2nd, pharmacy students 3rd

Diversity of Pteridophyta on the Rasamala Trail, Bodogol Area, Mount Gede Pangrango National Park

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Pteridophyta is part of the Kingdom Plantae, of which 630 species have been identified on the island of Java. Pteridophyta has an important role as (ground cover, producer, bioindicator, maintaining forest ecosystem, food, medicine, and crafts. Research on pteridophyta diversity in the Rasamala Trail of the Bodogol TNGGP Area has not been conducted so there is no data on pteridophyta. This study aims to analyze the diversity of pteridophyta in the Rasamala Trail of the Bodogol TNGGP Area. The method used is the sampling method, namely the line transect with a route of 500 meters divided into 5 transects with each transect being 100 meters long. Each transect consists of 10 plots, each measuring 5 x 5 m and an interval of each plot of 5 m. The abiotic parameters measured were temperature, soil pH, air humidity and altitude. The results of the study obtained pteridophyta as many as 4 classes, 5 orders, 9 families, 16 genera, and 19 species totaling 2,890 individuals. Based on the results of the analysis, the diversity of pteridophyta in the Rasamala Trail of the Bodogol Area TNGGP is categorized as moderate with a moderate evenness index and low dominance value. This shows that the Rasamala Route supports the growth of pteridophytes.

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CODE : OP104

ROOM : 07

Why Isn't Technology Ethics Happening?

A discussion of obstacles and attitudes towards ethical approaches to technology

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ABSTRACT

Technology ethics is a fashionable topic. In the past few years, media interest has increased and academic courses have proliferated. However, beneath this surface, the practical application of ethical principles to emerging technology has been poor. This paper discusses the various reasons for this slow start from several perspectives: philosophical, academic, social, economic and political. It discusses concerns for the technological future world without adequate ethical safeguards and outlines possible mitigation.

Keywords: Technology ethics; Future and emerging technology

CODE : OP105
ROOM : 07

Real-Time Detection of Huanglongbing (HLB) Disease in Citrus Leaves Using Enhanced YOLO V8 Algorithm for Improved Accuracy and Early Intervention

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ABSTRACT

This study addresses the complex challenge of detecting Huanglongbing (HLB) disease in citrus leaves, which is known as one of the most lethal plant diseases with no known cure. The primary issue in HLB detection is the difficulty in identifying symptoms early and accurately, particularly in dynamic and uncontrolled field environments. Therefore, the main focus of this research is the development of a real-time detection approach using the YOLO V8 algorithm to more accurately detect and classify HLB symptoms in citrus leaf images. The objective of this study is to design a technique that can enhance the detection of HLB disease and compare its performance with the conventional YOLO V8 method. This research also aims to address the limitations of previous studies that used the Support Vector Machine (SVM) method, which only achieved an accuracy of 80%. To achieve this objective, the study utilizes a dataset consisting of 1200 citrus leaf images, representing various levels of severity, including mild, moderate, severe, and healthy leaves. The method employed in this research involves the use of the YOLO V8 algorithm to detect and classify HLB symptoms in citrus leaf images. This approach was tested through a series of experiments to measure accuracy, precision, recall, and computational efficiency. The experimental results consistently demonstrate that the developed approach outperforms the basic YOLO V8 and previous methods using SVM, with an improvement in HLB disease detection accuracy reaching 98%. This study provides critical insights into early detection of HLB disease, potentially serving as a powerful tool to support efforts in preventing the spread of this disease across citrus orchards. Additionally, this research opens opportunities for further development in real-time plant disease detection by integrating more advanced AI technologies and applying similar methods to other plant diseases. Future research can focus on developing more

Keywords : *Huanglongbing Deep learning Plant Health Yolo HLB*

Testing of Anticholesterol Activity and Identification of Active Compounds from Mango Leaf Extract (*Mangifera indica* L.) In Vitro and In Silico

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ABSTRACT

Hyperlipidemia is a clinical symptom characterized by increased levels of total cholesterol and Low Density Lipoprotein (LDL) cholesterol in the blood, which is one of the risk factors for coronary heart disease (CHD) (Hasim et al., 2018). Mango leaves contain various secondary metabolites such as flavonoids, alkaloids, tannins, saponins, and phenolic compounds, making mango leaves beneficial as a fat reducer, antioxidant, and wound healer (Olasehinde et al., 2018; Anggraeni et al., 2020). The aim of this study is to determine the anticholesterol activity of mango leaf extract in vitro, identify the active compounds in mango leaf extract using LC-MS/MS, and determine the anticholesterol activity of mango leaves with HMG-reductase receptor protein in silico. The research methods include the preparation of mango leaf samples, the production of simplicia, testing for moisture content, extraction with ethanol solvent through maceration, fractionation with *n*-hexane, ethyl acetate, *n*-butanol, and water, determining the yield of the mango leaf extract and fractions, testing anticholesterol activity in vitro using the Lieberman-Burchard method, identifying compounds with LC-MS/MS, identifying and predicting the interactions of anticholesterol compounds with the HMG CoA reductase, and testing Lipinski's rules and pharmacokinetic screening (ADMET). The results of the study indicate that the simvastatin control has anticholesterol activity with EC₅₀ 41,19 mg/L and classifying as very strong. Ethanol extract of mango leaves has the best anticholesterol activity with an EC₅₀ value of 48.62 mg/L and classifying as very strong. Identification of compounds in the ethanol extract of mango leaves using LC-MS/MS revealed 27 secondary metabolites from the groups of flavonoids, alkaloids, ketones, steroids, and terpenoids. In silico analysis was conducted on compounds with anticholesterol activity based on the literature are mangiferin, mangiferin 6'-gallate, quercetin 3-galactoside, quercetin, 3'-O- benzoylmangiferin, and (S)-[10]-gingerol. Based on the interaction test results between mango leaf compounds and the HMG CoA reductase in silico, along with Lipinski's rules and ADMET pharmacokinetic screening, two compounds were identified as the most potential anticholesterol agents are mangiferin and 3'- O-benzoylmangiferin.

Keywords : Anticholesterol, HMG CoA reductase, In silico, In vitro, Mango leaves

Immunoreactivity of recombinant protein MPT63 *Mycobacterium tuberculosis* as serodiagnostic tuberculosis

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ABSTRACT

Mycobacterium tuberculosis protein-63 (MPT63) is an extracellular protein encoded by the Rv1926c gene with a size of 16 kDa. MPT63 is able to specifically induce macrophage activation, stimulate cytokine production (TNF- α and IL-6) and can stimulate Th1 cells. The immunogenic properties of MPT63 can be concluded from the presence of a high density of T cell epitopes in the Nterminal immunodominant region. The purpose of this study was to determine the antibody response to the MPT63 recombinant protein and to determine the percentage of its sensitivity and specificity values. This type of research is qualitative and is a diagnostic study. Serum samples were taken from Hasanuddin University Hospital stock with a total of 10 for healthy serum and 36 for sick serum. Determination of optical density values is based on the results of the ELISA reader. Sensitivity and specificity were tested using the Mc Nemar formula and then they calculated the sensitivity and specificity values manually. Based on the calculation results, a sensitivity of 50% and a specificity of 58.33% were obtained.

Keywords : *MPT63 Protein, Mycobacterium tuberculosis, Antibody Response, ELISA*

Naive Bayes Algorithm for Superior Accuracy in Stunting Risk Classification.

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ABSTRACT

Stunting is a serious health issue in developing countries, where children experience impaired growth due to chronic malnutrition. Early identification and classification of stunting risk factors are crucial for effective intervention. Previous research using traditional classification methods achieved only 75% accuracy in predicting stunting risk, indicating that these approaches were suboptimal and required improvements for more accurate results. This study aims to enhance the accuracy of stunting case classification by using the Naive Bayes algorithm. With the Naive Bayes approach, the prediction accuracy is expected to increase to 92%, enabling more precise identification of children at risk of stunting and facilitating quicker and more targeted interventions. The method used in this study involves the Naive Bayes algorithm, a probabilistic classification technique. The dataset includes various stunting risk factors, such as socio-economic conditions, dietary patterns, access to healthcare, and maternal health. The Naive Bayes model is applied to probabilistically model the relationship between these factors and stunting incidence. Experimental results show that the Naive Bayes algorithm can improve classification accuracy to 92%, marking a significant improvement over previous methods. This study provides an important contribution to stunting prevention efforts by offering a more accurate and efficient classification model. Future research could explore the use of more advanced algorithms, such as ensemble models or deep learning, to further enhance prediction accuracy. Additionally, future studies could focus on integrating data from various sources, such as genetic and environmental data, to provide a more comprehensive analysis of the factors influencing stunting. This is expected to strengthen prevention and intervention efforts against stunting in a broader range of contexts.

Keywords : Naive bayes, stunting, classification, machine learning Paper

EFFORT TO IMPROVE MATHEMATICS LEARNING OUTCOMES USING KERADIGA TEACHING AIDS AND THE GEOGEBRA APPLICATION

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ABSTRACT

Mathematics is an important subject because it is compulsory at the primary to secondary level. A high level of abstraction is required in learning mathematics, especially in the three-dimensional sub-material. Many teachers still use conventional methods in the learning process, where students do not explore the material themselves. This results in students not being able to understand the three-dimensional material well. Therefore, it is necessary to have more interesting and interactive learning so that the material is easier for students to understand. One way is by using keradiga props (three-dimensional skeleton) and the GeoGebra application. The purpose of this research is to make keradiga props and use the GeoGebra application as a support for learning activities for mathematics three-dimensional material. The data used is primary data taken directly from students, namely 36 students in 12th grade at SMAN 1 Megamendung. The method used is by planning props and GeoGebra applications, testing the results of planning, pre-test, direct delivery to students, then post-test. The results obtained from the pre-test and post-test are, the post-test scores obtained by students tend to be higher than the pre-test scores. At the time of the pre-test 22.22% of students scored above the KKM (minimum completeness criteria) with an average score of 62, and during the post-test 80.556% of students scored above the KKM with an average score of 89. This shows that learning with keradiga props and GeoGebra applications is considered to be able to improve student learning outcomes in mathematics with three-dimensional sub-materials.

Keywords: mathematics, third dimension, keradiga, GeoGebra application

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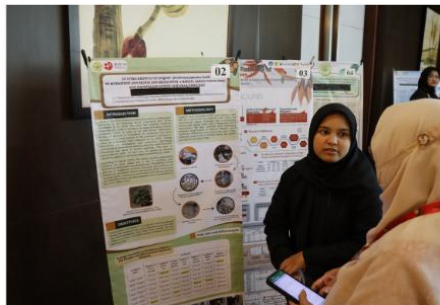
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